START

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL NO 1040

MARCH

1984

MICRO PHOTO DIVISION
BELL & HOWELL

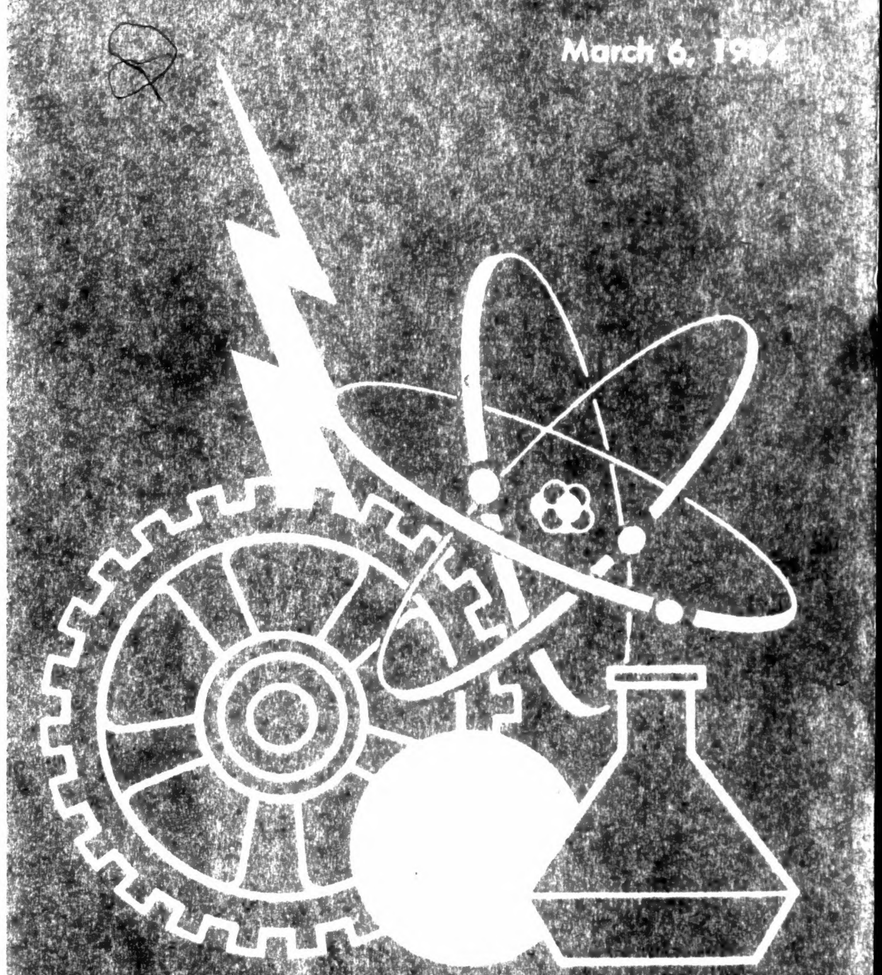
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 6, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
March 6, 1984 Volume 1040 Number 1

CONTENTS

		Page
Patent and Trademark Office Notices		
Patent Cooperation Treaty (PCT) Information	1040 OG	2
Reissue Applications Filed	1040 OG	2
Requests for Reexaminations Filed	1040 OG	2
Patent Certificates of Correction	1040 OG	3
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1040 OG	4
Condition of Patent Applications	1040 OG	5
Reexaminations		1
Defensive Patent Publication (104,001)		3
Reissue Patents Granted (31,527)		5
Plant Patents Granted (5,199)		9
Patents Granted		
General and Mechanical (4,434,511)		11
Chemical (4,435,181)		249
Electrical (4,435,610)		367
Design Patents Granted (272,864)		451
Index of Patentees		PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees		PI 51
Index of Applicants of Defensive Publications		PI 54
Classification of		
Patents (Including Reissues and Reexaminations)		PI 55
Designs, Plants and Defensive Publications		PI 58
Geographical Index of Residence of Inventors		
Patents (Including Reissues)		PI 59
Designs, Plants and Applicants of Defensive Publications		PI 60
Change of Address Form and Subscription Order Form		Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 30, 1984.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,088,424, Re. S.N. 546,420, Filed Oct. 28, 1983, Cl. 417/368, WET PICK-UP VACUUM UNIT MOTOR BEARING AIR SEAL, Robert L. Hyatt, et al., Owner of Record: *Ametek, Inc., Kent, Ohio,* Attorney or Agent: Albert L. Ely, Jr., Ex. Gp.: 343

4,318,105, Re. S.N. 568,557, Filed Jan. 5, 1984, Cl. 343/103, LORAN-C NAVIGATION APPARATUS, Lester R. Brodeur, Owner of Record: *Sanders Associates, Inc., Nashua, N.H.,* Attorney or Agent: Louis Etlinger, et al., Ex. Gp.: 222

4,371,495, Re. S.N. 568,458, Filed Jan. 5, 1984, Cl. 376/209, SELF RUPTURING GAS MODERATOR ROD FOR A NUCLEAR REACTOR, George R. Marlatt, Owner of Record: *Westinghouse Electric Corp., Pittsburgh, Pa.,* Attorney or Agent: Z. L. Dermer, et al., Ex. Gp.: 221

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,190,602, Reexam. No. 90/000,496, Requested: Feb. 2, 1984, Cl. 560/053, MONOACETALS OR AROMATIC 1,2-DIKETONES, Jean Brunisholz, et al., Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.,* Attorney or Agent: Karl F. Jorda, Ex. Gp.: 126, Requester: Ciba-Geigy Corp., Ardsley, N.Y.

PATENT NOTICES

Certificates of Correction for the Week of Mar. 6, 1984

Re. 31,450	4,393,318	4,403,997	4,415,222
D. 271,082	4,393,952	4,404,076	4,415,456
3,997,298	4,397,251	4,404,424	4,415,555
4,155,787	4,397,517	4,404,571	4,415,774
4,232,144	4,397,572	4,404,816	4,416,687
4,250,156	4,397,656	4,404,881	4,416,696
4,295,004	4,398,082	4,405,016	4,416,887
4,298,787	4,398,266	4,405,656	4,416,915
4,318,935	4,398,425	4,406,036	4,417,543
4,325,121	4,398,479	4,406,779	4,418,745
4,335,039	4,399,033	4,407,926	4,418,949
4,346,460	4,399,040	4,408,057	4,419,085
4,348,496	4,399,618	4,409,067	4,419,169
4,349,658	4,399,703	4,409,495	4,419,278
4,353,921	4,401,080	4,409,496	4,419,683
4,357,152	4,401,700	4,411,460	4,420,124
4,357,480	4,402,493	4,411,496	4,420,402
4,368,852	4,402,587	4,411,792	4,420,499
4,375,246	4,402,701	4,412,052	4,420,568
4,377,843	4,402,821	4,413,025	4,420,792
4,384,215	4,402,993	4,413,029	4,420,934
4,384,328	4,403,114	4,413,132	4,421,854
4,384,342	4,403,156	4,414,148	4,423,481
4,387,972	4,403,343	4,414,225	4,423,974
4,393,210	4,403,917	4,414,995	4,424,105

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF February 4, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-20-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-16-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-15-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-03-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	3-17-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-30-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-04-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-18-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-26-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-20-81

Expiration of patents: The patents within the range of numbers indicated below expire during February 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

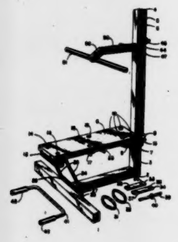
Patents ..... Numbers 3,302,213 to 3,307,199, inclusive
Plant Patents ..... Numbers 2,707 to 2,722 inclusive

REEXAMINATIONS

MARCH 6, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,072,309 (171st)
MULTI-PURPOSE EXERCISE DEVICE
Jerry L. Wilson, 5816 Vista Clara, El Paso, Tex. 79912
Reexamination Request No. 90/000,357, Mar. 28, 1983.
Reexamination Certificate for Patent No. 4,072,309, issued Feb. 7, 1978, Ser. No. 698,463, Jun. 21, 1976.
Int. Cl.³ A63B *21/04*
U.S. Cl. 272—136



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 6 and 8, having been finally determined to be unpatentable, are cancelled.

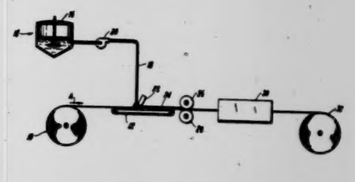
Claims 1 and 7 are determined to be patentable as amended:

Claims 2–5, dependent on amended claims, are determined to be patentable.

New claim 9 is added and determined to be patentable.

1. Multiple purpose exercise apparatus comprising:
a frame having forward and rearward positions comprising a ground-supported base and a stationary vertical support member extending upwardly from the rear of the base, *wherein the vertical support member includes a rail having a plurality of vertically aligned bores therein,*
a bench, support means associated with said frame for maintaining the bench at a level above the base,
a lever arm pivotally attached to said vertical support member and extending outwardly over said base, *the lever arm also comprising two fingers extending from the rearward portion thereof, each finger having a bore therein axially aligned with respect to the other, the apparatus also comprising a removable pin having circular-cross section for insertion consecutively through the bore in one finger, a bore in the rail, and the bore in the other finger, thereby pivotally connecting the lever arm to the rail so that the lever arm can move freely only in a vertical plane,* [fastening means for securing the lever arm to the support member comprising a plurality of vertically aligned bores in the support member, a transverse bore carried by the rearward portion of the lever arm, and pin means extending through both bores for removably pivotally attaching the lever arm to the vertical support member such that the lever arm can move freely only in a vertical plane,]
biasing means attachable to the lever arm at a position spaced from the connection of the lever arm on the vertical support member for selectively providing resistance to upward or downward motion of the lever arm in the vertical plane, and
removable attachment means *selectively* mountable in *a bore in the rail at a location either above or below the connection of the lever arm to the rail* [the vertically aligned bores] for selectively attaching the biasing means at various [position] *positions* on the vertical support member.

B1 4,266,976 (172nd)
FABRIC TREATING COMPOSITIONS
Razmic S. Gregorian, Aiken, and Chettoor G. Namboodri, North Augusta, both of S.C., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.
Reexamination Request No. 90/000,270, Oct. 4, 1982.
Reexamination Certificate for Patent No. 4,266,976, issued May 12, 1981, Ser. No. 15,030, Feb. 26, 1979.
Continuation of Ser. No. 794,627, May 6, 1977, abandoned, which is a division of Ser. No. 584,389, Jun. 6, 1975, Pat. No. 4,118,526.
Int. Cl.³ C09K *3/18*
U.S. Cl. 106—2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–14 is confirmed.

1. In a foamable composition suitable for treating fabrics with a finishing agent comprising a fabric finishing agent in an amount effective to impart the properties of the finishing agent to a fabric, a foam stabilizer, and a liquid diluent; the improvement comprising about 0.5 to 8 percent foam stabilizer and in an amount sufficient to form said composition into a stable foam having a blow ratio in the range from about 2:1 to 20:1, a foam density in the range from about 0.5 gm/cc to 0.05 gm/cc, and which is sufficiently stable to substantially retain its characteristics during application until a mechanical force is applied thereto.

6. In a stable foamed composition suitable for continuously treating fabrics with a finishing agent comprising a fabric finishing agent in an amount effective to impart the properties of the finishing agent to a fabric, a foam stabilizer and a liquid diluent; the improvement comprising about 0.5 to 8 percent foam stabilizer and in an amount sufficient to form a stable foam having a flow ratio in the range from about 2:1 to 20:1, a foam density in the range from about 0.5 gm/cc to 0.05 gm/cc, and which is sufficiently stable so that upon application onto a fabric said foam composition will flow on the fabric surface and not break down until a mechanical force is applied thereto.

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 6, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T104,001
METHOD FOR RECOVERING GOLD FROM REFRACTORY ORES

Richard S. Kunter, 2614 S. Field St., Lakewood, Colo. 80227, and John R. Turney, 12128 W. 70th Ave., Arvada, Colo. 80004

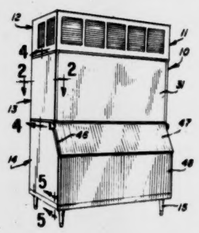
Continuation of Ser. No. 349,149, Feb. 16, 1982, abandoned.
This application Sep. 26, 1983, Ser. No. 536,222
Int. Cl.³ C01G *7/00*
U.S. Cl. 75—118 R
No Drawing. 30 Pages Specification

A process for pretreating refractory ores improves the recovery of gold from such ores upon subsequent cyanidation. After comminuting the ore and forming an aqueous slurry, the ore is subjected to pressurized oxidation at an elevated temperature. By adjusting the pH to below about 1.85 and maintaining the pressure and temperature above 300 psig and 160° C., respectively, very high recovery of gold can be achieved. Additionally, by maintaining a preselected soluble iron concentration in the slurry, the oxidation of the ore is promoted and proceeds at a more rapid rate.

T104,002
MODULAR INSULATED CABINET CONSTRUCTION

John F. Morrison, 3151 W. Owasso Blvd., St. Paul, Minn. 55112; Harold E. Jensen, 1016 Island Lake Ave., Shoreview, Minn. 55112, and Donald F. Gode, 3538 Glenarden Rd., St. Paul, Minn. 55112

Continuation of Ser. No. 71,351, Aug. 29, 1979. This application Dec. 28, 1981, Ser. No. 334,748
Int. Cl.³ A47B *81/00*
U.S. Cl. 312—214
2 Sheets Drawing. 22 Pages Specification

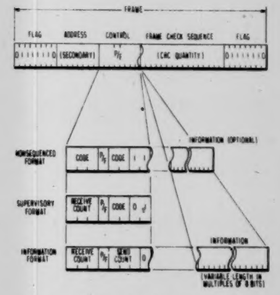


An insulative cabinet construction having a shell portion formed of a plurality of panels having securing portions interlocked in secured relationship. A liner is spaced inwardly of the shell structure, and foamed-in-place insulation is formed between the shell structure and liner so as to be adhered to the shell structure and liner and effectively embed the securing portions of the shell to maintain the interlocked secured relationship thereof. The interlocked portions of the shell may be crimped portions, staked portions, or stamped-together portions, as desired. The shell panels may include flanges on edge portions to provide column strength at the corners of the cabinet. The shell panels may be prefinished. Preformed closure means are provided extending between the liner and shell structure outwardly of the insulation.

T104,003
SYNCHRONOUS DATA LINK SLOW-POLL PROTOCOL

Lon E. Hall, 8413 Maine Dr., Austin, Tex. 78758, and Richard E. Eveland, 11214 Deadoak La., Austin, Tex. 78759

Filed Nov. 9, 1982, Ser. No. 440,263
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200
3 Sheets Drawing. 13 Pages Specification



A first data processor (10) and at least a second data processor (11) are connected by a data link (12). The processors each have a communication adapter (14) which is connected to the data link and system clock (21) which times functions within the processor. Under a synchronous data link control (SDLC) protocol which has information frames and supervisory frames, one of the processors is designated as the primary station and the other, the secondary station. Whenever supervisory frames are transmitted between the primary and secondary stations, means are operative for inserting a mandatory non-polling quiet period of a predetermined length prior to each poll so that the processor at the secondary station is freed for non-polling functions.

T104,004
TASTE IMPROVEMENT OF TABLE TOP PREPARATIONS CONTAINING ACESULFAME K

Gert-Wolfhard von Rymon Lipinski, c/o Hoechst Aktiengesellschaft P.O. Box 80 03 20, D-6230 Frankfurt am Main 80, Fed. Rep. of Germany

Filed Aug. 31, 1983, Ser. No. 528,057
Claims priority, application Luxembourg, Sep. 3, 1982, 84363
Int. Cl.³ A23F *1/236*
U.S. Cl. 426—548
No Drawing. 13 Pages Specification

For special applications modifications of the sweetness intensity or the taste characteristics of the new non-nutritive sweetener Acesulfame K may be required. The taste of Acesulfame K can be modified using mixtures with magnesium sulphate, sodium glutamate, disodium inosinate, disodium guanylate, quinine sulphate, maltol, ethyl maltol, 2.5-dimethyl-3-hydroxy-4-oxo-4.5-dihydrofurane, or thaumatin alone or in suitable combinations, in which Acesulfame K is the main ingredient. These mixtures may be used instead of pure Acesulfame K in the following preparations. For preparing granules, powders, tablets, or solutions Acesulfame K can be mixed with potassium chloride, potassiumdihydrogen phosphate, potassium acetate, potassium hydrogentartrate, disodium hydrogenphos-

phate, trisodium citrate glucono-δ-lactone, starch syrups of low DE (=Dextrose Equivalent) values, low-viscosity carboxymethyl cellulose, and gumarabic alone or in suitable combinations. A dilution of Acesulfame K to low sweetness intensities is possible using calcium chloride, tricalcium phosphate, calcium lactate, calcium gluconate, potassium hydrogen carbonate, potassium chloride, potassium polyphosphate potassium hydrogen tartrate, sodium chloride, trisodium phosphate, disodium hydrogenphosphate, sodium gluconate, glycin, fumaric acid, citric acid, malic acid, tartaric acid, glucono-δ lacton, glucose, fructose, maltose, lactose, sorbitol, starch syrups having low to medium DE-values, gum arabic, hydrolyzed soluble casein, and soluble gelatin. The taste of the mixtures was rated superior or equivalent to the pure Acesulfame K.

REISSUES

MARCH 6, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

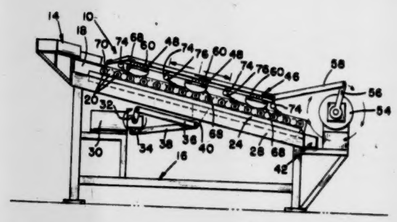
Re. 31,527
METHOD AND APPARATUS FOR EVISCERATING SCALLOPS

William R. Lambert, 750 Scallop Dr., Port Canaveral, Fla. 32920

Original No. 3,829,933, dated Aug. 20, 1974, Ser. No. 277,600, Aug. 3, 1972. Continuation of Ser. No. 96,534, Nov. 21, 1979, abandoned. Application for reissue Jul. 28, 1982, Ser. No. 402,712

Int. Cl.³ A22C *29/00*

U.S. Cl. 17—51 5 Claims



11. Apparatus for eviscerating shucked scallops having attached viscera comprising: a plurality of parallel rollers mounted adjacent each other in an inclined flight, means for driving at least selected ones of said plurality of parallel rollers, means for directing scallops onto the upper portion of said rollers, displaceable scrubber means mounted above said rollers for urging scallops into contact with said rollers and for distributing said scallops upon said plurality of rollers by leveling, turning and displacing scallops over the rollers, and means for displacing said scallop urging and distributing means, mounted above said plurality of rollers, longitudinally of the inclined flight of rollers for controlling the flow of scallops along the incline of flight of rollers, and further including fluid spray means mounted upon said scallop urging and distributing means mounted above said rollers for displacement therewith.

13. The method of separating edible scallop muscles from the viscera of shucked scallops comprising the steps of: placing the muscles and attached viscera on the upper surface of an inclined path formed by a plurality of parallel rollers; longitudinally reciprocating water sprays spaced above said inclined path of parallel rollers and scallop muscles for evenly distributing and leveling the scallops on the rollers by positively forcing the scallops onto the rollers and into the valleys between adjacent rollers and positively turning scallops over the rollers; pulling the viscera from the muscles by gripping the viscera in the nips between adjacent rollers by rotating the upper portions of selected rollers; and controlling the flow of muscles down the inclined path.

Re. 31,528
GRID TEE FOR SUSPENSION CEILINGS OR THE LIKE

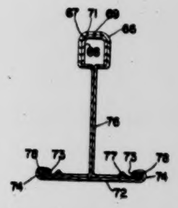
David F. Mieyal, Strongsville, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Original No. 4,206,578, dated Jun. 10, 1980, Ser. No. 929,281, Jul. 31, 1978. Application for reissue Nov. 12, 1981, Ser. No. 320,618

Int. Cl.³ E04B *5/52*

U.S. Cl. 52—730 38 Claims

1. An elongated grid tee for suspension ceilings or the like having a web, a bulb, and oppositely extending flanges comprising a first elongated strip of thin metal bent along its center to provide a closed bulb and extending from said bulb in face-to-face abutting adjacency to provide a central web having two abutting layers and at the edge of said web remote from said bulb bent to provide oppositely extending flanges, a cap formed of a separate second strip of thin metal secured to and extending along substantially the entire length of said flanges on the side thereof remote from said bulb, and a stiffener formed of a separate third strip of metal enclosed within said bulb, a substantial portion of said stiffener engaging the surface



of said bulb so that said stiffener and the material of said bulb cooperate to provide a substantially unitary structure, said stiffener and cap increasing the material at the extremities of said tee without increasing the thickness of said web.

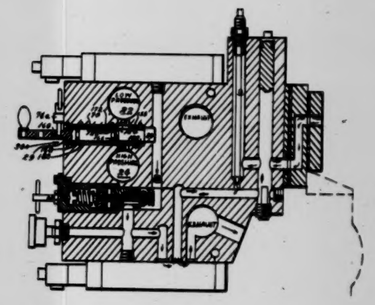
Re. 31,529
ELECTRONIC VALVE ASSEMBLY FOR GLASSWARE FORMING MACHINERY

Earl L. Lowe, Winchester, Ind., assignor to Ball Corporation, Muncie, Ind.

Original No. 4,293,004, dated Oct. 6, 1981, Ser. No. 68,276, Aug. 20, 1979. Continuation-in-part of Ser. No. 12,862, Feb. 16, 1979, abandoned. Application for reissue Jan. 15, 1982, Ser. No. 339,367

Int. Cl.³ F15B *13/08*

U.S. Cl. 137—884 40 Claims



33. A valve block for selectively effecting operation of respective machine elements from two supplies of fluid under different pressures, comprising first and second plenums connected to respective supplies of fluid, a plurality of valve means for selectively effecting fluid communication between two ports associated with each valve means, fluid passageway at each valve means communicating with one of said ports, an output passageway at each valve means communicating with the other of said ports, the output passageways from the valve block being adapted for connection to the machine elements, and selector means for coupling said first plenum at one pressure or said second plenum at another pressure to said fluid passageway.

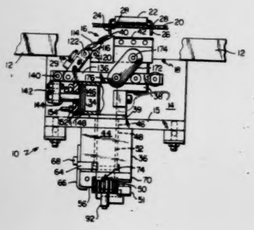
Re. 31,530
MULTIPLE LEAD CUT AND CLINCH MECHANISM

Phillip A. Ragard, Binghamton, N.Y., and Crawford A. Matson, Wyalusing, Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Original No. 4,135,558, dated Jan. 23, 1979, Ser. No. 883,242, Mar. 3, 1978. Continuation of Ser. No. 773,347, Mar. 1, 1977, abandoned. Application for reissue Jan. 29, 1981, Ser. No. 229,777

Int. Cl.³ B21F *1/00*

U.S. Cl. 140—105 **10 Claims**



15. *An apparatus for cutting and clinching leads of electronic components, said leads inserted into and projecting from a circuit board, said mechanism cutting the projecting leads to trim their length and clinching the trimmed leads to said circuit board, and comprising:*

a first housing assembly raisable and lowerable along and angularly positionable about a vertical axis;

single lead means, attached to said first housing assembly for vertical and angular movement with said first housing assembly, for cutting and clinching of a single lead of aligned leads of an electronic component;

multiple lead means, attached to said first housing assembly for vertical and angular movement with said first housing assembly, for cutting and clinching of at least one other lead of said aligned leads of said component in a direction transverse to that of said single lead;

means for actuating said multiple lead means and comprising cut and clinch piston means and first cut and clinch linkage means, said cut and clinch piston means for driving said first cut and clinch linkage means to actuate said multiple lead means;

for actuating said single lead means and comprising said cut and clinch piston means and second cut and clinch linkage means, said cut and clinch piston means for driving said second cut and clinch linkage means whereby said single and multiple lead means are actuated substantially simultaneously;

vertical positioning piston means and vertically positioning linkage means for vertically raising and lowering said first housing assembly along said vertical axis, said vertical positioning piston means for actuating said vertical positioning linkage means to raise and lower said first housing assembly; and

means for angularly positioning said first housing assembly, whereby said multiple lead means is angularly positioned about said vertical axis to receive said other lead.

16. *An apparatus as in claim 15, wherein said vertical positioning linkage means is of adjustable length such that vertical raising and lowering of said first housing assembly is variable.*

17. *An apparatus as in claim 15, wherein said single lead means comprises a shaft having a beveled cutting and clinching end, said shaft received within a bore in said first housing assembly.*

18. *An apparatus as in claim 15, wherein said means to angularly position, to vertically raise and lower, and to actuate include linear actuator means.*

Re. 31,531
BRAKE ASSEMBLY

William J. Williams, Franklin, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Original No. 4,206,834, dated Jun. 10, 1980, Ser. No. 791,368, Apr. 27, 1977. Continuation-in-part of Ser. No. 687,063, May 17, 1976. Application for reissue Jun. 22, 1981, Ser. No. 276,065

Int. Cl.³ F16D *65/09*

U.S. Cl. 188—341 **18 Claims**



1. A brake shoe *for a brake assembly of the type including a brake drum and a pair of brake shoes having adjacent ends pivotally mounted to a support and actuating means disposed between the other ends of the brake shoes to pivot said brake shoes into frictional contact with said brake drum thereby developing a circumferential force which complements the force actuating one shoe and a circumferential force opposite to the force actuating the other shoe, said shoe* including at least one continuous rigid web having an open ended recess at one end, said recess being of a width to radially, slidably engage a cylindrical bearing surface of an anchor pin mounted to a support on a vehicle axle [housing] and being [oriented] *adapted* to pivot about said cylindrical bearing surface of said pin in response to an outwardly directed *brake actuating* force applied at the other end of said brake shoe [and], *said recess having an inner arcuate surface in bearing abutment with said bearing surface of said pin and being oriented to extend on both sides of a plane passing through the axis of curvature of said bearing surface and parallel to a major axis of said brake assembly which passes through the center of said actuating means, said arcuate surface intersecting said plane on the side of the axis of curvature of said bearing surface remote from said actuating means and said portion of said arcuate surface which lies on the side of said plane opposite to the major part of the web extending between 5° and 30° therebeyond* to [abut] *maintain said arcuate surface in abutment with* said [cylindrical] bearing surface and prevent *substantial* movement *other than pivotal movement* of said brake shoe *relative to said anchor pin* in response to a *drum derived* force tending to move said brake shoe away from said anchor pin.

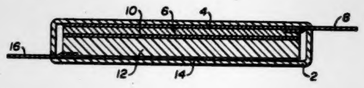
Re. 31,532
PRIMARY CELLS AND IODINE CONTAINING CATHODES THEREFOR

Alan A. Schneider, Baltimore, Md., and James R. Moser, Shrewsbury, Pa., assignors to Catalyst Research Corporation, Baltimore, Md.

Original No. 3,674,562, dated Jul. 4, 1972, Ser. No. 106,657, Jan. 15, 1971. Application for reissue Jun. 3, 1981, Ser. No. 270,216

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 **12 Claims**



1. A plastic cathode consisting essentially of a mixture of iodine and a charge transfer complex of iodine with an organic donor component selected from the group consisting of poly-2-vinylquinoline and poly-2-vinylpyridine the mixture containing between about 2 and 15 molecules of iodine for each atom of nitrogen.

Re. 31,533
INFORMATION CARRYING DISCS

Terry W. Lewis, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Original No. 4,296,158, dated Oct. 20, 1981, Ser. No. 117,466, Feb. 1, 1980. Application for reissue Dec. 3, 1982, Ser. No. 446,635

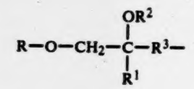
Int. Cl.³ B32B *3/02*

U.S. Cl. 428—65 **16 Claims**

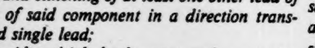
1. An information-carrying element comprising a substrate having adhered to at least one surface thereof a separate layer having a maximum thickness of from 1.0 to 100 μm and a circular or spiral pattern of grooves with or without modulations, depressions, protuberances, said separate layer comprising a polymer layer derived from 15 to 100% by weight of at least one polyacryloyl-containing heterocyclic wherein said heterocyclic is selected from the formulae:

$$A^1—Z—A^2 \quad (1)$$

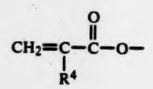
wherein A^1 and A^2 independently are alkoxyalkyl groups having terminal ethylenic unsaturation and having the formula



wherein R—O— is a monovalent residue of an aliphatic terminally unsaturated primary alcohol, ROH, formed by the removal of the active hydrogen from the primary —OH group, R having the formula:



wherein E is



b is zero or an integer of from 1 to 6,

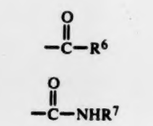
c is an integer of from 1 to 6,

R^1 and R^4 are independently selected from hydrogen and methyl,

R^5 is an aliphatic group having from 1 to 15 carbon atoms, and no more than two catenary oxygen or carboxy groups, a valence of m+1.

m is an integer of from 1 to 5,

R^2 is selected from hydrogen and groups of the formula



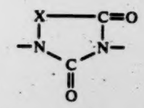
wherein

R^6 is selected from alkyl and alkenyl groups

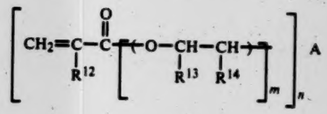
R^7 is an aliphatic or aromatic group of up to eight carbon atoms,

R^3 is an alkylene group of from 1 to 6 carbon atoms with up to one catenary oxygen atom, and

Z is a heterocyclic group of the formula



wherein X is a divalent group which is required to complete a 5- or 6-membered heterocyclic ring, or



(2)

wherein

R^{12} and R^{13} independently represent hydrogen or methyl,

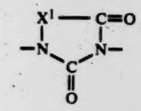
R^{14} represents hydrogen, an alkyl group, or a phenyl group,

R^{13} and R^{14} together may represent trimethylene or tetramethylene group,

m represents a number of from 1 to 30,

n is 2 or 3, and

A represents a group of the formula



wherein X^1 represents the divalent radical necessary to complete a 5- or 6-membered heterocyclic ring group[, said process comprising exposing said composition to radiation while the composition is in the presence of an atmosphere of at least 2% by volume of oxygen to polymerize said components having formula (1) or (2)].

Re. 31,534
COMMUNICATION SYSTEM CONFERENCING ARRANGEMENT

Francis M. Fenton, Middletown; James H. Van Ornum, Hazlet; Tse L. Wang, Holmdel, and Carl D. Weiss, Little Silver, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 4,150,259, dated Apr. 17, 1979, Ser. No. 847,216, Oct. 31, 1977. Application for reissue Aug. 30, 1982, Ser. No. 412,873

Int. Cl.³ H04M *1/00*

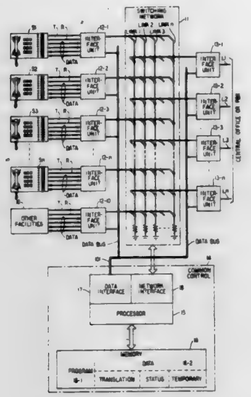
U.S. Cl. 179—99 R **10 Claims**

7. [The invention set forth in claim 6 further comprising] *In a communication system having a plurality of stations each having capability of communicating with other stations over communication links internal to the system as well as having the capability of communicating with stations external to the system over communication lines extended between the system and a central source, an arrangement for establishing conference connections between at least three stations each station having a plurality of nonlocking buttons operable to establish features or communication connections to said station,*

a switching network having a plurality of communication paths with a single communication path extended to each said station from said switching network,

means including the designation of one of said buttons at each said station as a conference control button responsive to the operation of said conference control button followed by the operation of a button associated with an idle system facility for connecting said system facility in common with already active system facilities connected to said station, and means

responsive to the operation of said conference control button followed by the operation of a button associated



with a currently active communication path for disassociating said communication path from said network.

PLANT PATENTS

GRANTED MARCH 6, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,199

LILY NAMED ROSARIO

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Sep. 23, 1982, Ser. No. 421,901
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct Oriental hybrid lily cultivar, substantially as herein shown and described, characterized by its large pink outwardly facing flowers, the petals of which are recurved slightly and have numerous maroon spots on the basal half, the flowers being borne on strong still outwardly projecting pedicels and the blooms being long lasting whether on the plant or as cut flowers.

5,200

LILY NAMED WHITE DREAM

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Sep. 23, 1982, Ser. No. 422,203
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Oriental Hybrid lily plant substantially as herein shown and described, characterized by its large, white, slightly down-facing flowers borne on long, strong, outwardly projecting pedicels having petals that are moderately covered with red spots and recurve slightly at their tips, by its dark green and relatively disease-free foliage, and by blooms that are relatively long lasting whether on the plant or as cut flowers.

5,201

LILY NAMED PINK SENSATION

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Sep. 23, 1982, Ser. No. 422,201
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Oriental Hybrid lily, substantially as herein shown and described, characterized by its large generally pink outwardly facing flowers having white edged recurved petals moderately covered with dark maroon spots, the flowers being borne on long, strong outwardly and upwardly projecting pedicels and long lasting whether on the plant or as cut flowers and the foliage is dark green.

5,202

CHRYSANTHEMUM PLANT(FLASH)

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 29, 1982, Ser. No. 343,923
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium*, Ramat., known by the cultivar name Flash, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; bronze ray floret color, with minimum color oxidation; diameter across face of capitulum ranging from 70 to 80 mm. at maturity; uniform eight week photoperiodic flowering response to short days; long peduncle length; medium plant height when grown single stem; 10 to 20 cm. peduncles on open, normally terminal sprays; slow development of tight green discs, and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

PATENTS

GRANTED MAR. 6, 1984

ERRATA

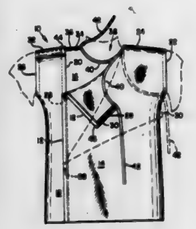
For CLASS	See PATENT NO.
409–109	4,435,105
502–157	4,435,312
502–101	4,435,313
502–154	4,435,314
548–473	4,435,323
528–493	4,435,337
381–044	4,435,617
381–007	4,435,618

PATENTS

GRANTED MARCH 6, 1984

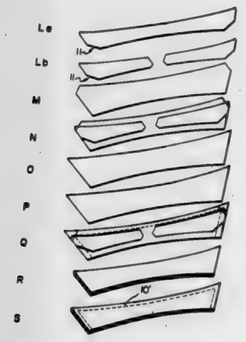
GENERAL AND MECHANICAL

4,434,511
HOSPITAL GOWN
Georgiann Weiser, Dallas, Oreg., assignor to Weiser Designs, Ltd., Amity, Oreg.
Filed Jan. 24, 1983, Ser. No. 460,451
Int. Cl.³ A41B *9/00*
U.S. Cl. 2—114 **6 Claims**



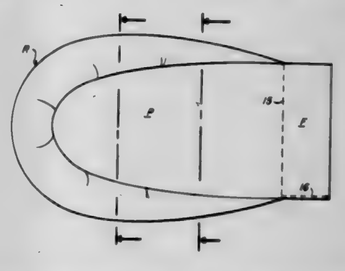
1. A gown for hospital patients and the like comprising; a first front panel portion having a starting end edge adapted to be located at the front of one side of the patient and extending across the front of the patient to the other side, a back panel interconnected with the first front panel portion at said other side and adapted to extend across the back of the patient to said one side, and a second front panel portion interconnected with the back panel at said one side and extending to said starting end edge of the first panel portion and forming thereat an ending end edge; said back panel and first front panel portion having interconnected upper edge sections adjacent said other side to form a first shoulder portion, and said back panel having an upper edge section adapted to engage an upper edge section of each of the first and second front panel portions adjacent to starting and end edges thereof, and releasable fastening means for releasably fastening the end edges together and the upper edges of the front panel portions to the back panel to thereby form a second shoulder portion.

4,434,512
STAYLESS SHIRT COLLAR
Vagn A. Hansen, Prescott, Canada, assignor to Warnaco of Canada Limited, Prescott, Canada
Filed Jul. 30, 1981, Ser. No. 288,362
Claims priority, application Canada, Oct. 10, 1980, 362244
Int. Cl.³ A41B *3/00*
U.S. Cl. 2—129 **9 Claims**



1. A stayless shirt collar cape having a base edge for attachment to a collar band, a finished free edge substantially parallel with said base edge, and two relatively short finished leading edges extending outwardly from the base edge to the free edge to form points, said cape comprising exterior shells with an interlining disposed therebetween, stiffening material disposed between the shells and secured to the interlining, the stiffening material being in the form of at least one patch extending from the points along the free edge in a longitudinal direction of the cape and along the leading edges in a transverse direction of the cape to coincide with a substantial area of the cape between the leading edges, the stiffening material being relatively stiff in the transverse direction of the cape and relatively flexible in the longitudinal direction of the cape.

4,434,513
INFANT HEAD PROTECTOR
Marilyn L. Welch, Aurora, Colo., assignor to Gold, Inc., Denver, Colo.
Filed Nov. 13, 1981, Ser. No. 321,245
Int. Cl.³ A42B *1/06*; A47C *27/00*; B60R *7/00*
U.S. Cl. 2—410 **15 Claims**



1. A protector for surrounding the head of an infant, comprising:
a panel which an infant may engage;
a roll attached to and extending around one end and at least a portion of each side of said panel, said one end of said panel being convexly curved and said roll following such curvature of said panel and being constructed and arranged to surround the head of an infant;
said roll being formed of an outer layer surrounding a resilient but compressible material;
said roll extending with a generally similar transverse dimension around said one end and along the sides of said panel to a predetermined position; and
the transverse dimension of the sides of said roll decreasing from said predetermined position to a position spaced from the opposite end of said panel.

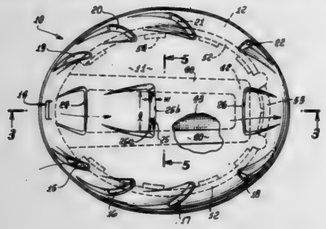
4,434,514
BICYCLISTS HELMET WITH AIR FLOW AND PERSPIRATION CONTROL
James G. Sundahl, Irvine, and Lester V. Broersma, Bellflower, both of Calif., assignors to Bell Helmets Inc., Norwalk, Calif.
Filed Jan. 7, 1982, Ser. No. 337,815
Int. Cl.³ A42C *5/04*; A42B *3/00*
U.S. Cl. 2—425 **28 Claims**

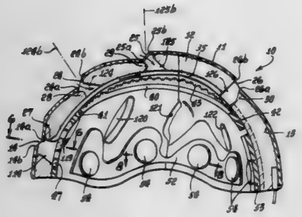
1. In a forwardly extending protective helmet, the combination including
(a) an outer shell containing distributed openings located inwardly of a dome defined by the shell outer surface through which air streams may enter the helmet, said openings defined by transversely elongated, narrow slits

of substantially constant width along the lengths of the openings,

(b) a liner in said outer shell and supporting same adjacent said openings,

(c) the liner forming left and right air flow channels communicating with said openings, the channels openly facing





the interior of the helmet lengthwise of said channels for conducting air toward the rear of the helmet,

(d) each slit having two elongated edges, one of which is closer to the helmet interior than the other, the liner extending into proximity to said edges at the inner side of said shell and forming additional through openings in registration with said slits.

4,434,515

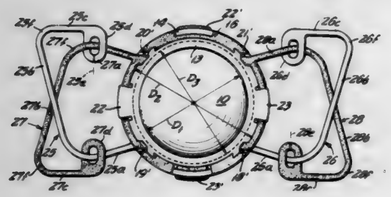
INTRAOCULAR LENS

Stanley Poler, New York, N.Y., assignor to Lynell Medical Technology Inc., New York, N.Y.

Filed Jul. 26, 1982, Ser. No. 402,037

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **24 Claims**



1. As an article of manufacture, an optically finished intraocular lens element having a generally circular periphery about its optical axis, and a mounting adapter for said lens element, said adapter comprising two circumferentially continuous annular body members having a circular inner edge of diameter less than the diameter of said lens element, said body members being adjacent opposite axial sides of the peripheral region of said lens element and being connected to each other within a geometrical annulus radially outside said lens element, and a plurality of angularly spaced lens-positioning foot elements having cantilevered radially compliant connection to at least one of said body members; a first of said foot elements having a radially outward root portion connected at one end to its body member and having an angularly offsetting intermediate portion integrally connected at one end to the other end of said root portion, and said foot element having a radially inward end portion integrally connected at one end to the other end of said intermediate portion, whereby said radially outward root portion and said radially inward end portion are at angular offset from each other; a second of said foot elements having a radially outward root portion connected at one end to its body member at substantially the location of such angular offset; and interengaging means formed integrally with one of said first and second foot elements and establishing generally radially guided displacement of part of said radially inward end portion of said first foot element along the root portion of said second foot element.

4,434,516

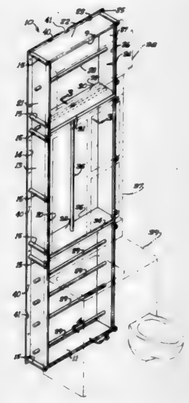
WALL SLEEVE AND INSTALLATION JIG FOR MULTIPLE ADJACENT FIXTURE MOUNTING

Earl L. Morris, La Habra Heights, and V. Walter Hafner, Whittier, both of Calif., assignors to Acorn Engineering Company, City of Industry, Calif.

Filed Jan. 5, 1983, Ser. No. 455,746

Int. Cl.³ A47K *4/00*; E03D *11/00*

U.S. Cl. 4—252 R **12 Claims**



1. A wall sleeve and installation jig having multiple adjacent fixtures mounted thereon comprising:

a horizontal base member having a chase edge and a cell edge and a web therebetween, said base member having a flange positioned along its chase edge;

a first vertical side member affixed at its bottom to one end of said base member, said first side member having a chase edge and a cell edge and a web therebetween, said first vertical member having a flange positioned along its chase edge;

a second vertical side member affixed at its bottom to the other end of said base member, said second side member having a chase edge and a cell edge and a web therebetween, said second vertical member having a flange positioned along its chase edge;

a horizontal top member affixed at one end to the first vertical side member and at the other end to the second vertical side member, said top member having a chase edge and a cell edge and a web therebetween, said top member having a flange positioned along its chase edge;

a least one horizontal cross channel member affixed at one end to said first vertical side member and at its other end to said second vertical side member, said cross channel member having a chase edge and a cell edge, said cell edge of said cross channel member having a cell flange positioned on the plane formed by the cell edges of said horizontal base member, said first and second vertical side members and said horizontal top member, the vertical position of said cross channel being such that the cell flange is located at the intersection of the fixtures mounted on the jig;

a bottom rectangular fixture mounted on said jig, the upper edge of said bottom fixture lying along the cell flange of a cross channel, the lower edge of said bottom fixture lying below the surface of said horizontal base member; and

a top rectangular fixture mounted on said jig, the lower edge thereof being adjacent the cell flange of a cross channel, the upper edge of said top fixture lying above the surface of said horizontal top member.

4,434,517

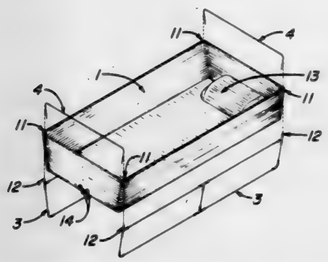
INVALID'S BATHTUB

Gordon L. Dorris, 2445 Mobile Dr., Boise, Id. 83709

Filed Apr. 26, 1982, Ser. No. 371,920

Int. Cl.³ A47K *3/06*

U.S. Cl. 4—585 **2 Claims**



1. An invalid's bathtub comprising:

a supporting framework having a pair of side frames and a pair of end frames, said side frames each including a pair of vertically spaced horizontal members connected at opposing ends by a pair of vertically spaced end members, said end members each provided at their uppermost opposing terminal ends with a pin-socket joint member; and each of said end frames including at least one horizontal member provided at opposing ends with a mating pin-socket joint member temporarily engagable with a respective pin-socket joint member of each of the end members of each of said side frames to produce a boxlike framework; and

a watertight, flexible liner having a bottom section, two opposing side wall sections and two opposing end wall sections defining a boxlike reservoir when in use, said liner provided with a pair of side panels, each of said side panels connected at its sides and top to a respective side wall section of said liner to define a bottom opening pocket adapted to slip over and be held in place by respective side frame of said supporting framework, without fasteners, and said liner provided with openings for accommodating respective pins of said pin-socket joint members.

4,434,518

SPORT SHOES

Morio Watanabe, Sakai, Japan, assignor to Daicel Chemical Industries, Ltd., Sakai, Japan

Division of Ser. No. 120,952, Feb. 13, 1980, Pat. No. 4,335,528.

This application Mar. 2, 1982, Ser. No. 353,799

Claims priority, application Japan, Jul. 30, 1979, 54-97905

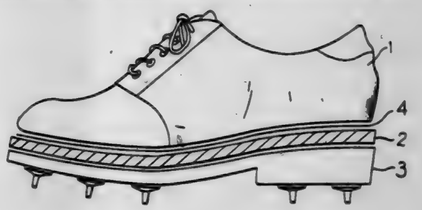
Int. Cl.³ A43C *13/08*; A43B *13/12, 5/00*

U.S. Cl. 12—142 RS **7 Claims**

1. A process for making a sport shoe comprising the steps of:

(a) forming a shoe upper made of natural or artificial leather;

(b) separately from said shoe upper, preparing an integrally laminated shoe sole by placing into an injection mold a preformed insert material layer made of a material which does not undergo thermal deformation at injection-molding temperatures and pressures and which displays good bondability to the shoe upper, said material being selected from the group consisting of natural leather, artificial leather, rubber, nonwoven fabric, felts, and fibers, and then injecting a molten synthetic resin into said mold so as



to form a monolithic synthetic resin layer which is bonded to the lower surface of said insert material layer and then solidifying said synthetic resin whereby to obtain said integrally laminated shoe sole;

(c) removing said shoe sole from said injection mold; and

(d) bonding the upper surface of said insert material layer to the lower portion and insole of said shoe upper with an adhesive.

4,434,519

APPARATUS FOR CLEANING SUBMERGED SURFACES

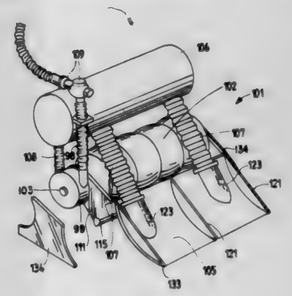
Johann N. Raubenheimer, Bedfordview, South Africa, assignor to Peacock Investments (Proprietary) Limited, Johannesburg, South Africa

Filed Sep. 28, 1981, Ser. No. 306,616

Claims priority, application South Africa, Sep. 30, 1980, 80/6049

Int. Cl.³ E04H *3/20*

U.S. Cl. 15—1.7 **8 Claims**



1. Apparatus for cleaning a submerged surface (118) comprising:

(a) a housing (99);

(b) an outlet (98) from the housing adapted to be connected to a suction box (109) which connects with a source of section;

(c) an inlet (123) to the housing arranged to face the submerged surface so that when suction is applied to the outlet the apparatus is biased towards the surface;

(d) a shaft (103) journalled for rotation in the housing;

(e) a turbine having a series of blades (104) mounted on the shaft adapted to be rotated by uninterrupted flow of liquid from the inlet to the outlet through the housing;

(f) carrying structure (111) separate from the housing;

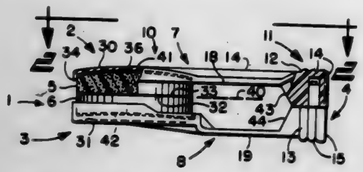
(g) at least one friction support (115) mounted on the carrying structure for engaging the submerged surface; and
(h) means (110) connecting the shaft to the carrying structure to cause the carrying structure to reciprocate relative to the housing to thereby generate reciprocating forces oblique to the surface and alternately acting through the friction support in two opposed directions, the force in a first direction tending to lift the friction support from the surface and the force in a second direction tending to push the friction support back onto the surface, the resulting effect of said oblique forces and the bias caused by suction causing the apparatus to advance over the surface in a step by step manner.

4,434,520

EYEGLASS WIPING DEVICE

Joseph E. Canigila, 5368 E. 134th St., Cleveland, Ohio 44125

Filed Sep. 11, 1981, Ser. No. 301,310
Int. Cl.³ G02C *13/00*
U.S. Cl. 15—214 **17 Claims**



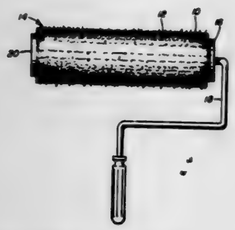
1. An apparatus for cleaning lenses or the like, comprising wiping means for wiping a lens, support means for supporting said wiping means, and adhesive means for attaching said wiping means to said support means wherein said support means further comprising a pair of support platforms for supporting at least two wiping means, a pair of arms and connector means, said arms respectively coupling said support platforms with said connector means, and said connector means comprising means for connecting said support means to support said wiping means in opposed relation to each other to wipe a lens, including a protruding member associated with one of said support means a receptacle associated with the other of said support means, at least one of said member and receptacle being tapered, whereby upon forced insertion of said member into said receptacle the two cooperate to form a secure connection therebetween.

4,434,521

APPLICATOR FOR APPLYING A COATING TO A SURFACE

Emil Martin, Pittsburgh; Herbert W. Barch, Natrona Heights, and S. Thomas Greer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 30, 1982, Ser. No. 393,916
Int. Cl.³ B05C *17/00, 17/02*
U.S. Cl. 15—230.11 **17 Claims**



1. A coating applicator comprising:

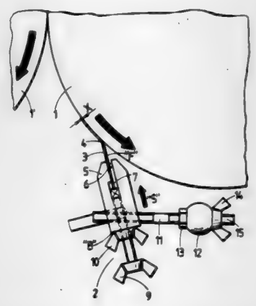
a. a core having an inner and outer surface surface, where the core is adaptable for being held;
b. a mat of one or more glass fibers engaged to the outer surface of the core, where the one or more glass fibers have on a substantial portion of their surface the dried residue of a treating composition of a carrier, film forming polymer, and compatible coupling agent.

4,434,522

KNIFE SCRAPER FOR DRUMS, PARTICULARLY THE DRUMS OF A CYLINDER MILL

Robert Linxberger, Abtwil, Switzerland, assignor to Gebruder Buhler AG, Uzwil, Switzerland

PCT No. PCT/EP81/00049, § 371 Date Dec. 11, 1981, § 102(e) Date Dec. 11, 1981, PCT Pub. No. WO81/03289, PCT Pub. Date Nov. 26, 1981
PCT Filed May 19, 1981, Ser. No. 330,312
Claims priority, application Switzerland, May 10, 1980, 3913/80; Fed. Rep. of Germany, Jun. 25, 1980, 3023824
Int. Cl.³ B02C *4/40*
U.S. Cl. 15—256.51 **9 Claims**



1. A knife scraper for a drum having an axis, particularly for the drum of a cylinder mill, comprising:
a knife having a cutting edge and knife surface;
a bendable knife beam on which said knife is mounted, said knife and knife beam being elongated in the axial direction of said drum;
means pivotally mounting said knife beam for pivotal movement about a pivot axis substantially parallel to said drum axis;
counterweight means operatively associated with said knife beam for pressing the knife on said drum, said counterweight means and said knife being spaced from said pivot axis; and
a plurality of tension elements connected to said knife beam along the length of said knife beam and upon which said counterweight means are mounted wherein said knife beam is selectively elastically bendable under the influence of force applied to said tension elements, said knife being positioned relative to said drum such that said entire cutting edge is pressed against said drum by said tension elements.

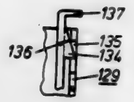
4,434,523

DOOR HINGE FOR FURNITURE DOORS OR THE LIKE

Alfred Grass, Konsumstrasse 20, A-6973 Höchst, Austria

Filed Jul. 20, 1981, Ser. No. 285,265
Claims priority, application Austria, Nov. 14, 1980, 5623/80
Int. Cl.³ E05D *7/04*
U.S. Cl. 16—242 **6 Claims**

1. An improved semi-concealed door hinge for mounting between a frame and a door wherein the door has a receiving slot portion that is open to a back side thereof which comprises, a socket part adapted to fit in the slot portion of the door, means for securing said socket part in position within the slot portion, a connector plate, a swing arm extending from said connector plate and swingably connected to said socket part for door opening and closing movements with respect to the frame, an adjustment plate having spaced-apart wedge-shaped projecting portions on a face thereof, said connector plate having offset portions in a cooperatively aligned and engaging relation with said wedge-shaped projecting portions, one of said plates having opposed side-positioned flange means positioned along opposite side edges of the other of said plates



for accurately aligned sliding adjusting movement between said plates to move said adjustment plate on said wedge-shaped projecting portions in an "in" and "out" relation with respect to said connector plate and provide lateral adjustment of the door with respect to the frame, single screw means adapted to extend through said connector and adjustment plates for securing them in an adjusted relation with respect to each other on the frame in such a manner that the door may be adjusted and retained in a parallel relation with respect to the frame and said adjustment plate being rotatably adjustable with respect to said connector plate.

4,434,524

MAGNETIC DOOR HARDWARE

Henry R. Gilchrist, Burlington, Mass., assignor to Eckel Industries, Inc., Cambridge, Mass.

Filed Apr. 20, 1982, Ser. No. 370,113
Int. Cl.³ E05D *11/00, 11/10;* E05F *1/14*
U.S. Cl. 16—250 **10 Claims**



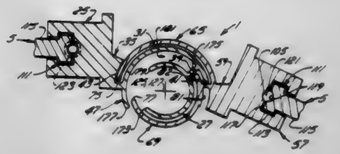
1. Magnetic door hardware for a swinging door, said hardware comprising in combination:
a door mounting post to which one side of said door is affixed, said post having an upper end and a lower end;
a door frame around the periphery of said door, said frame comprising at least a header member above said door and a vertical side jamb member parallel to and adjacent said one side of said door affixed to said door mounting post;
means for rotatably connecting said post to said side jamb member so as to allow said door to rotate to the open or closed position; and
magnetic means for urging said door to rotate from open position back to closed position;
said magnetic means comprising a first permanent magnet attached to one end of said door post so as to rotate therewith; a second permanent magnet affixed to said door frame so as to be aligned with and adjacent said first magnet; and a first magnetic field, associated with said first magnet, interacting with a second magnetic field associated with said second magnet, so that when said first magnet rotates relative to said second magnet, a radial torque results that urges said door to rotate to the closed position.

4,434,525

HINGE HAVING OPEN CURVED PORTIONS

Henri M. R. Labelle, Cornwall, Canada, assignor to Martinray Industries Ltd., Cornwall, Canada

Continuation-in-part of Ser. No. 141,277, Apr. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 917,154, Jun. 20, 1978, abandoned. This application Apr. 1, 1982, Ser. No. 364,312
Int. Cl.³ E05D *1/04*
U.S. Cl. 16—355 **9 Claims**



1. A hinge having first and second elongated hinge members; the first hinge member having a base portion and a curved guide spaced from one side of the base portion; a long, curved, first arm extending from the one side of the base portion in one direction about the curved guide and concentric therewith; a web, spaced inwardly from the free end of the first arm, connecting the curved guide to the first arm; a short, curved second arm extending from the one side of the base in an opposite direction to the first arm; the second hinge member having a base portion with a long, curved, third arm extending from one side of the base portion in one direction and a long curved fourth arm extending from the one side in the opposite direction to the third arm; the third and fourth arms curving toward each other and having a gap between their free ends, the first and second hinge members adapted to slidably interconnect with the curved guide located within the fourth arm, the fourth arm located within the first and second arms, and the first arm located within the third arm; the arms having a length such that with the interconnected hinge members in a closed position, with the base portions located on the same side of the curved guide, the third arm slightly overlaps the first arm; and with the interconnected hinge members in an open position, with the base portions nearly aligned on opposite sides of the curved guide, the second arm slightly overlaps the fourth arm.

4,434,526

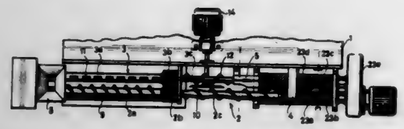
DEVICE FOR SEPARATING AND PROCESSING THE GIZZARDS OF SLAUGHTERED POULTRY

Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT BV, Netherlands

Filed Feb. 10, 1982, Ser. No. 347,531
Claims priority, application Netherlands, Mar. 4, 1981, 8101055
Int. Cl.³ A22C *21/00, 21/06*
U.S. Cl. 17—11 **6 Claims**

1. A device for separating gizzards from the connected intestines of slaughtered poultry comprising side-by-side parallel synchronously counter-rotating elongated substantially cylindrical bar elements, a continuous spiral raised conveyor element for gizzards on one of said bar elements turning therewith, plural circumferentially equidistantly spaced longitudinal rows of ribs on the other bar element, the ribs in the rows being equidistantly spaced longitudinally and being of equal lengths and being adapted to enter into spaces between adjacent con-

volutions of said spiral raised conveyor element, the tips of said ribs wipingly contacting the cylindrical surface of the rotating bar element having the spiral raised conveyor element thereon, the engaging surfaces of the ribs and the rotating bar element having the spiral raised conveyor element thereon being



adapted to mutually yield during engagement elastically, means at the upstream ends of said bar elements to deliver gizzards with attached inteatines onto the upstream ends of the bar elements, and means at the downstream ends of the bar elements to complete the separation of gizzards from the intestines.

4,434,527

SAUSAGE SKIN STORAGE AND FEEDER APPARATUS FOR A SAUSAGE STUFFING MACHINE

Georg Staudenrausch, Rissegg, and Hans-Ernst Weerth, Winterstettenstadt, both of Fed. Rep. of Germany, assignors to Albert Handtmann GmbH & Co., Biberach, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 265,897

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019981

Int. Cl.³ A22C *11/00*; B65G *41/12*

U.S. Cl. 17—33 **20 Claims**

1. A sausage skin storage and feeder apparatus for a sausage stuffing machine, comprising a storage container for storing a plurality of layers of sausage skins folded bellows-fashion in their longitudinal direction, said storage container having a bottom wall, power-operated conveyor means for slowly advancing the lowermost layer of sausage skins in said container transversely of their length over a distance corresponding to a multiple of their diameter in a first direction along the bottom wall of the storage container toward a withdrawal location at the end of the container, the bottom wall of the container being upwardly inclined in the first direction at an angle to the horizontal at least equal to a flow angle permitting the sausage skins overlying the lowermost layer to roll backwards in said container in a second direction opposite said first direction, a chute extending from said withdrawal location to a location adjacent a stuffer barrel for receiving the lowermost layer of sausage skins from the conveyor means and for storing a plurality of sausage skins, means for dispensing individual sausage skins from the chute and for mounting them one at a time on the stuffer barrel, and means in said container adjacent said withdrawal location for removing surplus sausage skins and causing them to be conveyed in said second direction in said container when said chute is filled with sausage skins.

4,434,528

PROCESS AND APPARATUS FOR MAKING PARTIALLY FILLED AIR-FREE SAUSAGE CASINGS

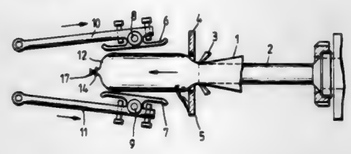
Herbert Niedecker, Am Ellerhang 6, D 6240 Königstein 2, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,264

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121101

Int. Cl.³ A22C *11/02*

U.S. Cl. 17—49 **6 Claims**



1. In the filling of a sausage casing initially closed at one end and closing the second end of the casing on a machine having filling means and means for closing the casing, wherein the casing is filled to less than its entire volumetric capacity and thereafter is closed at its second end, the improvement which comprises first tightly filling the casing beginning with the first end, when the desired amount of filling has been supplied compressing the casing laterally between its two ends while permitting the casing to advance forwardly to provide additional casing material to accommodate the filling displaced by the compression, the additional casing material sliding past the locus of partial closure, and thereafter closing the second end.

4,434,529

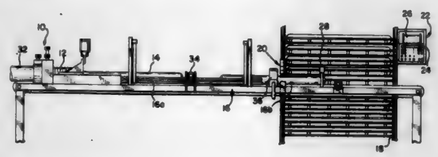
SAUSAGE DIAMETER MONITORING APPARATUS AND METHOD

Ronald W. Jensen, Chicago, Ill., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Oct. 13, 1981, Ser. No. 310,776

Int. Cl.³ A22C *11/00*

U.S. Cl. 17—49 **17 Claims**



10. A method for monitoring the difference of the diameter of sausages from a selected standard diameter, as the sausages are carried by a conveyor away from the sausage stuffing apparatus, the method comprising:

contacting the surface of a sausage as the sausage moves along the conveyor with a sausage contact member which is mounted at a fixed position along the conveyor but is movable toward and away from the conveyor;

detecting the change in position of the contact member as the sausage diameter differs;

numerically displaying the difference between the sausage diameter and the selected standard diameter; and

triggering said numerical displaying step, said triggering step including contacting an end of the sausage at a location along the conveyor that is spaced from the sausage contact member by a selected distance.

4,434,530

PROCESS FOR THE PRODUCTION OF HIGHLY SHRINKABLE SPLIT TOWS OF ACRYLONITRILE POLYMERS

Ralf Miessen; Hans Wilsing, and Fritz Schultze-Gebhardt, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 241,199

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010045

Int. Cl.³ D01G *1/08*; D01F *6/18*

U.S. Cl. 19—0.46 **10 Claims**

1. An improved process for the production of high-shrinkage stretch-broken tows of acrylonitrile polymers by spinning, drawing and stretch breaking in the usual way, comprising fixing with saturated steam at maximum temperature of 140° C. after drawing and before stretch breaking and stretch breaking at a draft of at least 30% whereby the resultant stretch broken yarn has a shrinkage of at least 30%.

4,434,531

APPARATUS FOR CONTROLLING THE WORKING CONDITIONS IN A PROCESSING MACHINE OF THE STAPLE FIBER SPINNING PLANT

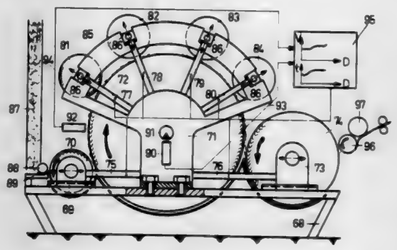
Giancarlo Mondini, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 179,291, Dec. 11, 1979, Pat. No. 4,384,388. This application Jun. 17, 1982, Ser. No. 389,480

Claims priority, application Switzerland, Apr. 25, 1978, 4442/78

Int. Cl.³ D01G *15/12*

U.S. Cl. 19—99 **22 Claims**



1. Apparatus for controlling the working conditions between two rotating cylinders equipped with a point clothing, and on the cylindrical surface of which a fiber web is mutually transferred, and which cooperate at a small mutual distance of a processing machine of a staple fiber spinning plant, characterized in that a measuring element is provided for continuously or cyclically scanning a characteristic which is directly connected with the dimensions of at least one of the two cylinders and that the support members of at least one cylinder are arranged movable mutually parallel in a plane substantially parallel to the plane containing the axes of both cylinders, and that moving elements for the movable support members of the cylinder and control means are provided, which control the moving elements in function of the characteristic scanned.

4,434,532

APPARATUS AND METHOD FOR DEPOSITING TEXTILE FIBER SLIVER

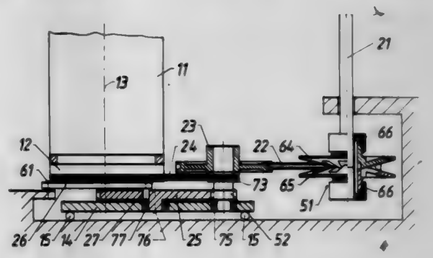
Peter Oehy, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed May 4, 1982, Ser. No. 374,880

Claims priority, application Switzerland, May 4, 1981, 2873/81

Int. Cl.³ B65H *54/80*

U.S. Cl. 19—159 R **15 Claims**



1. An apparatus for depositing a textile fiber sliver in a can, said apparatus comprising

a rotatable turntable for supporting a can thereon to rotate about a first longitudinal axis;

a funnel gear wheel rotatably mounted above said turntable on a second longitudinal axis spaced from and parallel to said first longitudinal axis, said gear wheel having a funnel for passage of a sliver therethrough, said funnel being radially offset from said second axis;

means for moving said turntable relative to said gear wheel to vary the lateral distance between said axes; and

means for varying the rotational speed of said turntable as a function of the lateral distance between said axes whereby said turntable is rotated at a maximum speed with said lateral distance being at a minimum and said turntable is rotated at a minimum speed with said lateral distance being at a maximum.

4,434,533

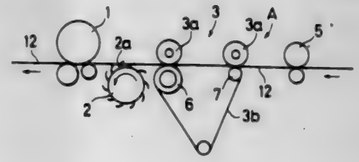
HIGH DRAFT APPARATUS FOR WORSTED SPINNING PROCESS

Goro Ogawa, Mie, Japan, assignor to Nakagawa, Seisakusho Co., Ltd., Japan

Filed Feb. 18, 1982, Ser. No. 349,850

Int. Cl.³ D01H *5/86*

U.S. Cl. 19—247 **12 Claims**



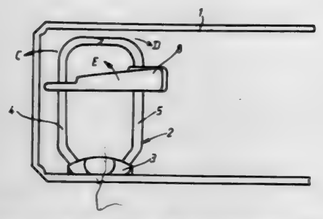
1. A high draft apparatus for use in the worsted spinning process wherein between a front roller and a back roller at the gilling or bobinoir step of the worsted spinning process a porcupine roller is arranged on the side of the front roller, and an intermediate roller separate from and not engaged with the porcupine roller is arranged on the side of the back roller between the back roller and separate porcupine roller to construct a series of a draft apparatus.

4,434,534

HOLDING-DOWN AND CLAMPING DEVICE FOR SHACKLE MECHANISMS

Anthony Handler, Mühlbachergasse 14, Vienna, Austria A-1130

Filed Jan. 21, 1982, Ser. No. 341,291
Claims priority, application Austria, Feb. 4, 1981, 491/81
Int. Cl.³ B42F *13/00, 3/00, 1/00*
U.S. Cl. 24—67.1 **5 Claims**



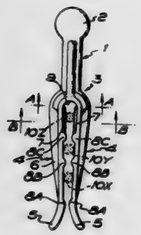
1. A clamping device for a paper filing system having at least two spaced apart sheet reciving shackles for receiving punched paper, each shackle having two legs, which comprises a substantially flat body portion having at least two spaced L-shaped apertures having two legs, the spacing between the apertures at corresponding portions thereof corresponding to the spacing between the sheet receiving shackles, the shackles lying in parallel planes and one leg of each aperture extending parallel to the planes containing the shackles and the other leg of each aperture extending transversely to said planes, the transverse legs being aligned one with the other, the body portion also having two hook portions, one associated with each aperture in the body portion and each defining a bite for receiving one leg of the shackles, the hook portions extending substantially parallel to the transverse legs of the associated apertures and the spacing between each hook portion and its associated transverse leg being substantially equal to the spacing of the two legs of each shackle so that the clamping device may be clamped to the shackles when one shackle leg is engaged in the transverse leg of the aperture and the other shackle leg is engaged in the associated hook portion bite.

4,434,535

CLOTHES PEG

Raymond L. Woodley, 20 Nook Road, Scholes, Leeds LS15 4BU, Yorkshire, England

Filed Jan. 26, 1981, Ser. No. 228,448
Int. Cl.³ D06F *1/00*
U.S. Cl. 24—562 R **7 Claims**



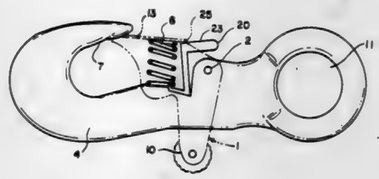
1. A one-piece plastics clothes peg comprising a pair of limbs which engage over a clothes line to grip clothes thereto, said limbs extending from a shoulder region so as to converge to an open end and to be resiliently spread when the peg is pushed over the clothes line, and wherein at least one of the inner faces of the limbs adjacent the shoulder region is flat and has a centrally located longitudinally extending rib which has a generally flat face lying parallel to the inner face of the limb so that the flat face of the rib and the portions of the limb face on opposite sides of the rib, form a clothes line engaging face.

4,434,536

LOCKING SNAP HOOK

Terrance L. Schmidt, Littleton, and Wayne L. Olson, Evergreen, both of Colo., assignors to Rose Manufacturing Company, Englewood, Colo.

Filed Oct. 13, 1982, Ser. No. 433,873
Int. Cl.³ A44B *13/02*
U.S. Cl. 24—241 PP **7 Claims**



1. A locking snap hook comprising:
a snap hook body having an open hook shaped end having pivotally attached thereto a spring biased latching means for closing the open portion of the hook;
said spring biased latching means including a latch body, spring means within said latch body for urging said latch body into a position where the open hook shaped end of the snap book body is closed by said latch body; and
locking means at least partially received within said latch body and cooperating with said snap hook body and with the spring means and the latch body for alternatively permitting opening and closing of the open portion of the hook shaped end of the snap hook body by said latching means; and
wherein said locking means is capable of occupying at least two different positions and when in a first position a portion of said locking means rests in a recess in said snap hook body proximate to the pivotal attachement of said latch body to said snap hook body, while another portion or said locking means engages a portion of said body in a manner to interfere with the movement thereof and when in a second position said locking means rests in said recess in said snap hook body in a manner such that the remainder of said locking means does not interfere with the movement of said latch body; and
said spring means within said latch body cooperates with said locking means, said latch body and said snap hook body so as to urge movement of said latching means about its pivot connection to the snap hook body to effect closure of the open portion of the hook shaped end with the latch body.

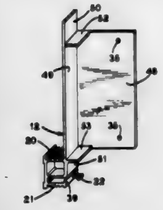
4,434,537

INTEGRAL LATCHING MECHANISM FOR MODULE FRONT PLATE

Thomas R. Bean, Concord; Edward F. Stockmaster, Mentor, and George S. Whaley, Eastlake, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 17, 1981, Ser. No. 284,262
Int. Cl.³ G12B *9/00*; H05K *1/14, 7/12*
U.S. Cl. 24—380 **11 Claims**

11. A method for latching and unlatching to and from a mounting rack a circuit board module having a module front plate and being slidably disposed in the mounting rack having a latch aperture comprising the steps of:
providing a finger hold on a lower portion of the module front plate which finger hold extends from the module front plate in a direction away from the circuit board defining a forwardly direction;
providing a resilient tab integrally connected with the finger hold and extending in a direction toward the circuit board defining a rearwardly direction;
providing a prong including a shaft extending rearwardly from the resilient tab and terminating in a portion defining an head having a shoulder forwardly thereof;
deflecting said resilient tab to align said head with said aperture;



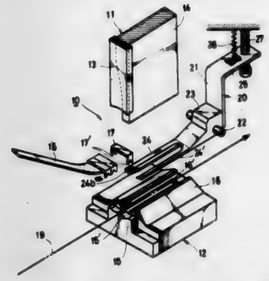
fully inserting the circuit board module in the rack and said head of said prong through the aperture;
releasing said resilient tab to allow said shoulder to engage said rack to preclude withdrawal of said module therefrom;
gripping said finger hold and said resilient tab to deflect said resilient tab toward said finger hold to align said head with said aperture; and
withdrawing said head of said prong through the aperture and the circuit board module from the rack.

4,434,538

BOTTOM STOP APPLYING AND GAPPING APPARATUS FOR A SLIDE FASTENER CHAIN

Tatsuo Osaki, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,809
Claims priority, application Japan, May 28, 1980, 55-73689[U]
Int. Cl.³ B21D *53/56*
U.S. Cl. 29—33.2 **7 Claims**



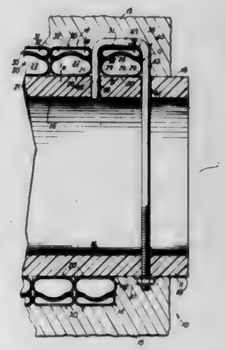
1. A bottom stop applying and gapping apparatus for a slide fastener chain having a pair of support tapes each carrying on and along its one longitudinal edge a row of fastener coupling elements, which apparatus comprises a punch assembly including a clamping punch and a cutting punch integral therewith, a die assembly including a clamping die and a cutting die integral therewith, said punch assembly and said die assembly cooperating in applying a bottom stop to the fastener chain and simultaneously gapping the chain at predetermined intervals, and a means for positioning and holding a group of fastener coupling elements on the chain, said means comprising a crank arm resiliently supported on a machine frame and having two parallel prongs spaced by a distance corresponding to the transverse width of a coupled set of fastener elements and have respective flat bottoms engageable with the support tapes, said crank arm having at one of its ends a link, a spring member connecting said link to the machine frame and normally biasing said crank arm toward said die assembly.

4,434,539

METHOD OF MANUFACTURING A HEAT EXCHANGER

David M. Sanborn, Roswell, and Andrew L. Blackshaw, Dunwoody, both of Ga., assignors to E-Tech, Inc., Atlanta, Ga.

Division of Ser. No. 202,888, Nov. 3, 1980, Pat. No. 4,316,502.
This application Feb. 16, 1982, Ser. No. 349,180
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 V **12 Claims**



1. A method of forming a heat transfer coil comprising the steps of:
(a) winding first and second pieces of tubing helically around a winding mandrel to form a coil so that the second piece of tubing lies against said first piece of tubing with both the pieces of tubing lying in generally the same radial plane around the winding mandrel where each of the pieces of tubing is deformed into a non-circular shape and the passage through at least one of the pieces of tubing has a deformed cross-sectional area smaller than the desired cross-sectional area the passage is to have when the heat transfer coil is completed; and,
(b) internally pressurizing at least the piece of tubing having the passage with the deformed cross-sectional area smaller than the desired cross-sectional area while the tubing is maintained in the helical configuration to non-elastically deform both pieces of tubing to change the cross-sectional areas of the passages through the pieces of tubing to a desired final size while maintaining intimate physical contact between the pieces of tubing.

4,434,540

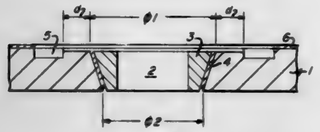
PROCESS FOR REPAIRING OR MODIFYING REFRACTORY PLATES OF LADLE CASTING CASSETTES

Romano Cappelli, Milan, Italy, assignor to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

Filed Oct. 5, 1981, Ser. No. 308,733
Claims priority, application Italy, Aug. 7, 1981, 23358 A/80
Int. Cl.³ B22D *11/10*
U.S. Cl. 29—402.11 **6 Claims**

1. A method of renovating a spent orificed slide gate of a sliding gate valve for use in controlling the flow of molten metal, said slide gate comprising a flat, elongated refractory plate having a sliding face on one side thereof, a flow passage through the interior portion of the plate and a refractory discharge nozzle forming an extension of said flow passage being integral with and depending from the other side of said refractory plate, said method comprising the steps of:

(a) boring said flow passage to remove areas of wear, said boring being to a greater diameter through said plate and part way along said discharge nozzle and to a smaller diameter along the remainder of said flow passage through said discharge nozzle;
(b) securing a prefabricated refractory insert ring having an axial length greater than the thickness of said plate in said greater diameter portion of said boring;



(c) positioning an elongated tubular former concentrically within said smaller diameter portion of said boring; and
(d) filling the space between said former and the confronting inside wall of said smaller diameter boring portion with cementitious material to form a lining through said discharge nozzle.

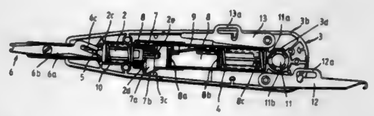
4,434,541
ELECTROMAGNETIC SHIELDING
Donald H. Powers, Jr., Needham, Mass., assignor to Chomerics, Inc., Woburn, Mass.
Filed Dec. 22, 1980, Ser. No. 219,069
Int. Cl.³ B23P *19/00*; H01P *1/00, 11/00*
U.S. Cl. 29—526 R **10 Claims**



1. The method of providing electromagnetic shielding between two surfaces which comprises placing an electromagnetic energy shield between said two surfaces, said electromagnetic energy shield having a volume resistivity to be effective as an electromagnetic energy shield, said shield having dispersed therein electrically conductive irregularly shaped particles, said particles comprising an outer surface of silver on a sensitizing layer of tin which is on an aluminum central core, said tin being present on said aluminum in an amount sufficient to provide a surface to which the silver may be placed thereon, said particles having the ability to withstand 120° C. for 120 hours without exhibiting substantial loss in conductivity.

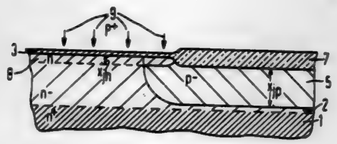
4,434,542
TOOL FOR ELECTRICALLY CONNECTING INSULATED WIRES
Horst Forberg; Hermann Herfort; Gunter Hegner, and Manfred Müller, all of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany
Filed May 14, 1981, Ser. No. 263,699
Claims priority, application Fed. Rep. of Germany, May 20, 1980, 8013494[U]
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—566.4 **9 Claims**

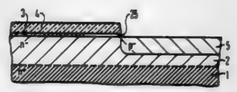
1. A tool for electrically connecting an insulated wire to a terminal element having two oppositely disposed resilient togues defining a longitudinal contact slot, said tool comprising:
a handle grip member comprising a hollow housing;
a striker mechanism within said housing, said striker mechanism comprising:
a Slider mounted for selective longitudinal movement with respect to said housing;
a rear compression spring normally biasing said slider forwardly with respect to said housing;
a ram member mounted to said housing for selective longitudinal movement with respect thereto, the rearward end of said ram being detachable coupled to said slider for longi-

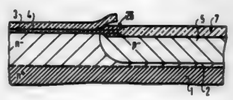


tudinal movement therewith, the forward end of said ram projecting outwardly from the forward end of said housing;
a longitudinally slotted pressing plate mounted on the forward end of said ram, said plate being adapted to transversely urge the wire into the contact slot in the terminal, said pressing plate being formed with stop means for limiting the depth of insertion of the wire into the contact slot;
a scissors blade pivotably mounted to said ram; and
means on said housing for pivoting said blade to sever the wire a predetermined distance from said terminal upon insertion of the wire therein.

4,434,543
PROCESS FOR PRODUCING ADJACENT TUBS IMPLANTED WITH DOPANT IONS IN THE MANUFACTURE OF LSI COMPLEMENTARY MOS FIELD EFFECT TRANSISTORS
Ulrich Schwabe, Munich, and Erwin Jacobs, Vaterstetten, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Nov. 2, 1982, Ser. No. 438,903
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149185
Int. Cl.³ H01L *21/263, 21/22*; B01J *17/00*
U.S. Cl. 29—576 B **15 Claims**

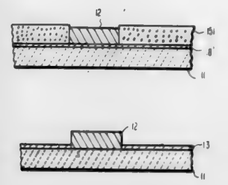






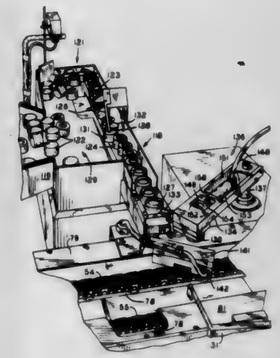
1. In a method for producing adjacent tubs implanted with doping material ions in the manufacture of LSI complementary MOS field effect transistor circuits, with which, for the acceptance of the n- or, respectively, p- channel transistors of the circuit in a silicon substrate (1), p-doped or respectively, n-doped tubs (5, 8) are produced in an epitaxial layer (2) applied to the substrate (1), with the corresponding dopant material atoms being introduced into said tubs by means of multiple ion implantations (6, 9, 10, 16, 21, 23) for defining the different transistor threshold voltages and whereby masking for the individual ion implantations occurs by structures composed of a material selected from the group consisting of photosensitive resist, silicon oxide and silicon nitride, wherein the improvement comprises a sequence of the following steps:
(a) producing a p-tub (5) by a boron ion implantation (6) in a n-doped epitaxial layer (2) applied onto a n^+ -doped substrate (1) and covered with an oxide layer (3), after carrying out a masking of the remaining regions with a silicon nitride mask (4);
(b) stripping off the oxide layer (3) while undertaking a deliberate underetching (25) of the silicon nitride layer (4);
(c) conducting a local oxidation process and diffusing the implanted boron ions down to a penetration depth x_{jp}, which is in the range of the epitaxial layer (2) thickness;
(d) stripping off the silicon nitride mask (4);
(e) producing a n-tub (8) by a implantation (9) of phosphorous or arsenic ions and subequently diffusing the so-implanted ions to a significantly lower penetration depth x_{jn} than the depth of the p-tub (x_{jp}), so that x_{jp} is $\geqq 4x_{jn}$.

4,434,544
MULTILAYER CIRCUIT AND PROCESS FOR MANUFACTURING THE SAME
Akihiro Dohya; Yasuhiko Hino, and Mitsuo Abe, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Division of Ser. No. 232,051, Feb. 5, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,636
Claims priority, application Japan, Feb. 25, 1980, 55-22471; Feb. 25, 1980, 55-22472
Int. Cl.³ H01L *29/46*
U.S. Cl. 29—578 **10 Claims**



1. A process for manufacturing a multilayer circuit comprising the steps of:
depositing a layer consisting of a base metal on a heat-resistant insulating substrate;
depositing a thin film layer of a first noble metal on said layer of base metal;
depositing a conducting layer of second noble metal on a predetermined region of said thin film layer of said first noble metal;
converting the remaining region, not covered by said conducting layer, of said base metal into an insulating metal oxide by oxidizing at a high temperature, said oxidizing step also producing an alloy of said first noble metal and said second noble metal; and
removing the remaining region, not covered by said conducting layer, of said thin film layer of said first noble metal by etching with an etching solution ineffective for etching the alloy of said first noble metal and said second noble metal.

4,434,545
METHOD FOR ASSEMBLING DYNAMOELECTRIC MACHINE END SHIELD PARTS
James M. Tomson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.
Division of Ser. No. 128,085, Mar. 7, 1980, Pat. No. 4,348,791. This application Jul. 16, 1982, Ser. No. 399,121
Int. Cl.³ H02K *15/14*
U.S. Cl. 29—596 **3 Claims**



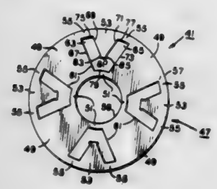
1. A method of lifting the end frame of a dynamoelectric machine from a conveyor at an oil well cover assembly work station; wherein the end frame includes a centrally disposed bearing supporting portion and laterally extending portions, at least some of which are susceptible of being supported on conveyor means; the method comprising: moving an end frame on the conveyor means into proximity with a lift mechanism and guiding the end frame in the vicinity of the lift mechanism with guide means; aligning the end frame with the lift mechanism and arresting movement of the end frame with a lift mechanism by moving a latch mechanism into the path of movement of the end frame by moving an inclined surface thereof into interfering relation with a portion of the end frame so that movement of the end frame up the incline will at least tend to raise a portion of the end frame from the conveyor; engaging the end shield in the vicinity of the bearing supporting portion thereof while holding the end frame in engagement with the conveyor means with the guide means; elevating the end frame above the conveyor means with the lift mechanism while continuing to engage the end frame with the guide means and thereby holding the end frame against the lift mechanism; performing a work operation on the end frame at the work station between the time that the lift mechanism elevates the end frame from the conveyor means and a subsequent time at which the lift mechanism has redeposited the end frame on the conveyor means; and further comprising: grasping an oil well cover about a cylindrical periphery thereof, moving the oil well cover into overlying and aligned relationship with the centrally disposed bearing supporting portion of the end frame while the end frame is held stopped by the latch mechanism over the lift mechanism and while the end shield is supported on the conveyor means; thereafter elevating the lift mechanism and guide means as set forth hereinabove, and inserting the centrally disposed bearing supporting portion of the end frame into the oil well cover while lifting the end frame from the conveyor, and thereby effecting assembly of the oil well cover and end frame; releasing the oil well cover; and only thereafter lowering the lift mechanism.

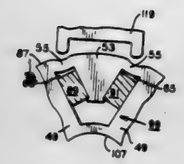
4,434,546

METHOD OF MAKING A CORE

Doran D. Hershberger, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 77,784, Sep. 21, 1979, Pat. No. 4,327,302.
This application Sep. 22, 1981, Ser. No. 304,536
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—598 35 Claims





1. A method of making a core adapted to be used in a dynamoelectric machine, the core having a plurality of laminations with each lamination respectively including a body of generally thin ferromagnetic material, an inner peripheral edge and an outer peripheral edge on the body, a plurality of openings through the body and spaced apart generally thereabout, each opening having a pair of leg parts with a pair of end portions spaced apart generally adjacent the outer peripheral edge and a common end edge opposite the end portion pair spaced generally adjacent the inner peripheral edge, a plurality of first pole sections on the body between adjacent ones of the openings and the inner and outer peripheral edges, a plurality of means on the body between the inner peripheral edge and the common edge of the openings for integrally interconnecting with the first pole sections, a plurality of second pole sections on the body between the leg part pair of the openings and extending from the outer peripheral edge generally toward the common end edge, a pair of opposite seats on the second pole sections extending into the leg part pair, and a plurality of means on the body between the outer peripheral edge and the end portion pair of the openings for bridging between the second pole sections and the ones adjacent thereto of the first pole sections, respectively, and a plurality of pairs of magnetic material elements, the method comprising the steps of:

stacking the laminations and aligning the openings with each other so as to define a plurality of corresponding slots extending through the laminations in the stack thereof, respectively;

disposing the magnetic material element pairs within the leg part pairs of the slots and engaging the magnetic material element pairs with the opposite seat pair on the second pole sections, respectively;

deforming the bridging means pairs and moving thereby the second pole sections with respect to the adjacent ones of the first pole sections so as to insure abutting engagement of the magnetic material element pairs between the second pole sections and the adjacent ones of the first pole sections, respectively;

providing in the slots a nonmagnetic hardenable material so as to at least generally fill the interstices of the slots between the magnetic material element pairs therein, the second pole sections and the adjacent ones of the first pole sections and forming a pair of opposite end rings of the hardenable material adjacent a pair of opposite ends of the lamination stack, with the hardenable material of the end rings being integral with that in the slots, respectively;

solidifying the hardenable material;

removing a part of the deformed bridging means pairs so as to disjoin the second pole sections from the adjacent ones of the first pole sections, respectively; and

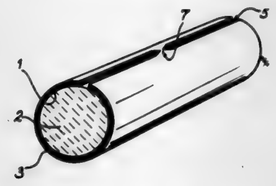
machining the outer peripheral edges of the laminations in the stack thereof to provide the core with a preselected outside diameter, respectively.

4,434,547

PROCESS FOR THE MANUFACTURE AND ADJUSTMENT OF A JOSEPHSON EFFECT MAGNETIC FLUX PICK-UP

Daniel Pascal, Orsay, and Denis Duret, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 29, 1981, Ser. No. 323,534
Claims priority, application France, May 5, 1980, 80 09968
Int. Cl.³ H01L *39/24*
U.S. Cl. 29—599 15 Claims



1. Process for manufacturing and adjusting a Josephson effect magnetic flux pick-up, comprising depositing a thin, uniform layer (1) of a superconducting material on a cylindrical insulating bar (2) having an axis and a cylindrical surface, then making a cut (5) through the layer of superconducting material on a line along the cylindrical surface of the cylindrical bar (2), which line is parallel to the axis of the cylindrical bar, while leaving a bridge (7) between two edges of the layer of superconducting material defined by the cut, then subjecting the pickup thus manufactured to pulses for adjustment of the critical current, by induction, and measuring, by induction, the parameters of the pick-up.

4,434,548

METHOD OF MANUFACTURING PLUG-IN ELECTRICAL FUSES

David G. E. Beswick, Warminster, England, assignor to Kenneth E. Beswick Limited, Frome, England

PCT No. PCT/GB80/00209, § 371 Date Jul. 27, 1981, § 102(e) Date Jul. 27, 1981, PCT Pub. No. WO81/01627, PCT Pub. Date Jun. 11, 1981
PCT Filed Dec. 3, 1980, Ser. No. 286,815
Claims priority, application United Kingdom, Dec. 3, 1979, 7941694
Int. Cl.³ H01H *69/02*
U.S. Cl. 29—623 13 Claims

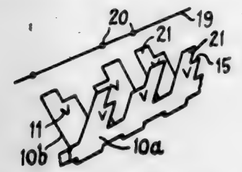
1. A method of manufacturing a plug-in electrical fuse of the type in which the fusible element is disposed within an insulating housing and is electrically connected between the adjacent ends of two spaced substantially-coplanar blade-like terminals secured within and projecting from the housing comprising the steps of:

forming a generally H-shaped terminal blank from sheet metal material, said blank having laminar uprights integrally joined by a laminar cross-bar portion,

folding said H-shaped blank about an axis substantially parallel to said cross-bar portion of said blank to dispose upper and lower laminar portions of said uprights of said H-shaped blank in generally mutually opposed relationship,

locating a fusible element so that it is disposed between the opposed laminar portions of said blank,

flattening said opposed laminar portions together with said fusible element disposed therebetween to form an assembly including blade-like terminal portions of double laminar construction having said fusible element electrically connected therebetween,



mounting said assembly in an insulating housing with said fusible element disposed within said housing and the leading ends of said blade-like terminal portions projecting therefrom, and

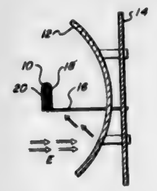
severing said cross-bar portion from between said terminal portions.

4,434,549

METHOD OF MAKING AN IMPROVED PYROELECTRIC SENSOR

Peter R. Smith, Littleton, and Charles Coleman, Lakewood, both of Colo., assignors to Statitrol, Inc., Lakewood, Colo.

Division of Ser. No. 205,146, Nov. 10, 1980, Pat. No. 4,379,971.
This application Sep. 30, 1982, Ser. No. 431,002
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—832 4 Claims



1. A method of making a infrared sensing device including the steps of:

a. mounting a sheet of thin film pyroelectric material in a peripheral holding frame;

b. forming a symetrical pattern of electrodes on both sides of said thin film material and properly aligning the respective electrodes on each side to form a plurality of individual infrared sensors;

c. coating the entire outer surface of one side of said thin film material with a layer of energy absorbing material, said absorbing material being transparent to all energy outside of the infrared band but capable of absorbing and converting to heat energy all energy within this band;

d. forming an equal number of sensor holders sized and symetrically positioned to correspond to and receive said plurality of infrared sensors, said holders being joined together in an integral matrix and each of said holders having a central opening formed therein;

e. adhering the sheet of thin film to the surface of the holder matrix with the coated surface in contact with the surface of the matrix, said sheet being properly positioned so that each infrared sensor is precisely aligned with a holder and its central opening; and

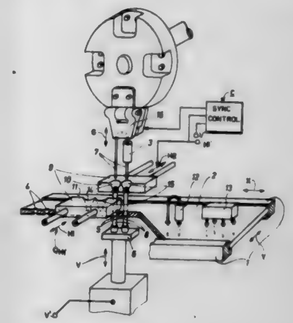
f. separating each holder and its attached infrared sensor from said matrix to form an individual infrared sensing device.

4,434,550

METHOD AND APPARATUS FOR INSERTION OF ELECTRICAL COMPONENTS INTO A CIRCUIT BOARD

Heinz Wilke, Diekholzen, and Klaus-Uwe Fonck, Hildesheim, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,426
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044860
Int. Cl.³ H05K *3/00*; B23P *19/00*
U.S. Cl. 29—837 7 Claims



1. Method of insertion of electrical network components (3), having at least one connection wire (7), into a printed circuit board (2) formed with receiving holes (4, 5) therethrough,

in which the network components are gripped by an insertion gripper (16) and moved towards the printed circuit board, with the at least one wire thereof extending essentially perpendicularly to the plane of the printed circuit board,

and in which the printed circuit board is aligned with respect to the at least connection wire so that the receiving holes are in essential alignment therewith,

comprising, in accordance with the invention, the steps of

guiding at least one thin-walled tube (8) to and through the holes (4, 5) of the printed circuit board from the side remote from said gripper means (16) until the at least one tube extends out of the plane of the printed circuit board at the side close to the gripper means and beyond said plane;

introducing the at least one connection wire (7) into the at least one tube (8) by moving the gripper means towards the printed circuit board;

releasing the network component from the gripper means to permit the component, with the at least one connection wire in the tube, to drop;

and withdrawing the tube (8) from the hole to thereby introduce the at least one connection wire into the hole, and continuing to withdraw the at least one tube until it clears the connection wire.

4. Apparatus for insertion of electrical network components (3) having at least one connection wire (7) into a printed circuit board (2) formed with at least one receiving hole (4, 5) therethrough,

and having an insertion gripper means (16) positioned above the printed circuit board, and movable towards the printed circuit board, for gripping a network component (3) with its insertion wire (7) extending essentially perpendicularly to the plane of the printed circuit board, and in alignment with a receiving hole (4, 5) through the printed circuit board,

comprising, in accordance with the invention,

a holder or carrier (6) positioned below the printed circuit board, and movable upwardly towards the printed circuit board;

a thin-walled tube (8) extending upwardly from the holder or carrier and in alignment with the receiving hole (4, 5) and of sufficient length to extend upwardly through and beyond the upper surface of the printed circuit board upon movement of the holder or carrier to an upper position, while clearing the printed circuit board upon movement of the holder or carrier (6) to a lower position to permit introduction of the tube (8) through the hole and insertion of the connection wire (7) of the component into the tube (8) extending above and beyond the upper surface of the printed circuit board, and subsequent withdrawal of the tube through the hole (4, 5) and lowering of the component towards the top surface of the printed circuit board, and subsequent withdrawal of the tubes (8) from the printed circuit board to effect positioning of the connection wire (7) through the hole (4, 5) of the printed circuit board.

4,434,551

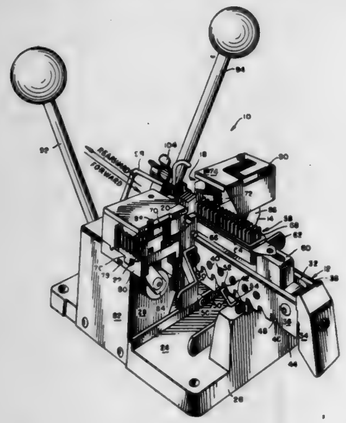
CONDUCTOR TERMINATION APPARATUS

Harley R. Holt, Forest Park, Ill., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 232,928, Feb. 9, 1981, abandoned. This application Feb. 23, 1981, Ser. No. 237,192

Int. Cl.³ H01R *43/04*; B23P *19/00*

U.S. Cl. 29—861 **37 Claims**



1. A method for terminating a plurality of conductors to a corresponding plurality of contacts mounted in a connector body comprising the steps of:

A. supporting said connector body at a loading station;

B. aligning retention means with a group of said contacts corresponding to a portion of said connector body and inserting a group of said conductors in said retention means;

C. transporting said corresponding portion of said connector body along with said retention means to a termination station and effecting termination of said group of conductors to said group of contacts; and

D. sequentially performing steps B and C on succeeding groups of said conductors and said contacts corresponding to succeeding portions of said connector body until said plurality of conductors has been terminated to said plurality of contacts.

3. In an apparatus for terminating a plurality of conductors to a corresponding plurality of contacts mounted in a connector body, the apparatus including terminating means for effecting termination of the conductors to the contacts, and means for actuating the terminating means, the improvement comprising:

wire hold-down means which are integral with said terminating means and which move linearly in unison with said actuating means, said wire hold-down means being used for applying a clamping force to said conductors only during termination thereof.

4,434,552

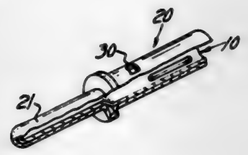
METHOD OF MAKING A PIN TYPE ELECTRICAL CONNECTOR CONTACT

Robert W. Brush, Sr., Unadilla, and R. Amelia Piscitelli, Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1982, Ser. No. 353,757

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—876 **1 Claim**



1. A method of making a two piece pin type electrical connector contact comprising the steps of:

stamping from a sheet of metal a rectangular shaped piece;

forming said rectangular piece into a sleeve having an axial opening running the entire length of said sleeve, a rear open end portion and a forward closed end pin shaped portion, the diameter of the opened end portion being greater than the diameter of the closed end portion of said sleeve;

cold drawing from a piece of metal a tubular member having a rear open end portion, an enlarged middle portion having a forwardly facing shoulder and a rearwardly facing shoulder, and a forward closed end pin shaped portion, said diameters of said forward and rear end portions of said tubular member being slightly less than the respective diameters of said forward and rear end portions of said sleeve;

radially compressing said sleeve so that the axial opening in said sleeve is reduced, thereby reducing the diameter of the forward and rear portions of said sleeve;

inserting said sleeve into said tubular member so that the closed end portion of said tubular member surrounds the closed end portion of said sleeve; and

punching a wire stop and inspection hole through said sleeve and member in the open end portions thereof.

4,434,553

DRY-SHAVING APPARATUS HAVING A TRIMMER

Werner Kness, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

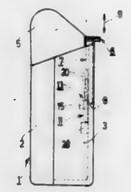
Filed Apr. 19, 1982, Ser. No. 369,872

Claims priority, application Austria, May 5, 1981, 1983-81

Int. Cl.³ B26B *19/38*

U.S. Cl. 30—34.1 **3 Claims**

1. A dry-shaving apparatus which comprises a housing section having an opening formed therein; a trimmer constructed as a flat unit and arranged on said housing section so as to be slidable between at least two positions, the trimmer unit being mounted in said opening; two lateral guide portions formed on the trimmer unit and extending parallel to each other and to the sliding direction of the trimmer unit; guides formed on the housing section and respectively co-operating with said guide portions, said guides, viewed in the sliding direction, being arranged near one end of the opening; a bridge arranged near the other end of the opening and extending across said opening transversely of the sliding direction, said bridge engaging the trimmer unit from the inside of the housing section; and a resilient strip extending from the trimmer unit in the sliding direction and projecting into the interior of the housing section towards the bridge, the normal distance, measured in the sliding direction, between the free end of the strip and those ends of the guide portions remote from said free end of the strip being greater than the clearance between the bridge and those ends of the guides facing said bridge.



4,434,554

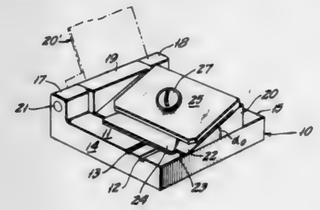
OPTICAL FIBER STRIPPING DEVICE

Kenneth N. Korbelak, Jackson, N.J., assignor to GK Technologies, Incorporated, Greenwich, Conn.

Filed Jun. 29, 1982, Ser. No. 393,378

Int. Cl.³ H02G *1/12*

U.S. Cl. 30—90.8 **5 Claims**



1. A stripping tool for stripping the buffer coat from a buffer-coated optical fiber that is characterized by overall coated diameter of magnitude D_C on an optical fiber of diameter of magnitude D_F, said tool comprising a base having a flat upper surface with at least two elongate grooves therein, a knife and knife holder having a flat bottom surface transversely spanning said grooves and having an articulated connection to said base such that in one position the cutting edge of the knife held by said holder and the bottom of said holder are both in contact with the flat upper surface of said base and in another position said knife and holder are sufficiently removed from the flat upper surface of said base to permit manually applied entry of a length of coated optical fiber in one of said grooves, the width of said grooves being in excess of the magnitude D_C, the depth of one of said grooves being in a first slight excess of the magnitude $(D_C+D_F)/2$, and the depth of the other of said grooves being in a second slight excess of the magnitude D_F.

4,434,555

CUTTER FOR FLEXIBLE PIPES

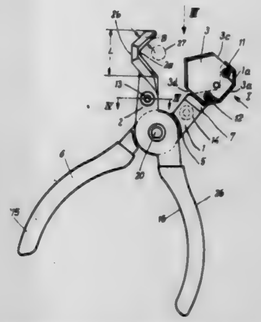
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,636

Int. Cl.³ B26B *17/00*

U.S. Cl. 30—92 **15 Claims**

1. A hand-held cutting tool, comprising elongate first and second members and a blade; said first and second members being pivotally coupled to each other between their ends and being pivotal relative to one another about an axis; one end of each said member being a handle and the other end thereof being a jaw, said jaws being moved between a closed position adjacent each other and an open position spaced from each other in response to relative pivotal movement of said first and second members; said blade being releasably secured to said jaw of said first member, projecting therefrom toward said jaw of said second member, and having a cutting edge facing said jaw of said second member; said jaw of said second member having means defining a V-shaped surface which faces and opens toward said blade and which has therein a deep, elongate slot which is parallel to and receives said blade in said closed position of said jaws; and said jaw of said first member being disposed on one side of said blade, having a flat surface against which said blade is disposed, having means defining a threaded opening in said flat surface, and including a screw which has a threaded shank engaging said threaded opening and a head disposed against a side of said blade remote from said flat surface, said blade being securely clamped between said flat surface and said head of screw.



4,434,556

ARRANGEMENT FOR LUBRICATING SAW CHAINS OF POWER SAWS

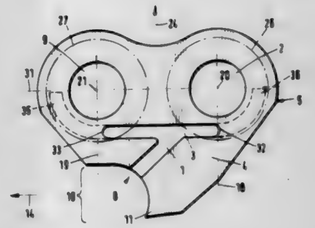
Karl Nitschmann, Schorndorf; Günther Weyda, Waiblinge-Hohenacker; Bodo Emmrich, Stuttgart, and Kärl O. Stimpfig, Waiblingen-Beinstein, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,614

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016596

Int. Cl.³ B27B *17/12*

U.S. Cl. 30—123.4 **14 Claims**



1. An arrangement for lubricating the saw chain of a power-driven chain saw having a guide for accommodating and guiding the saw chain, the saw chain including chip-removing members, cutting-tooth members, and connecting members, all of which are respectively provided with two rivet holes, said members being interconnected in a specific pattern by means of rivets and said rivet holes to form rivet connections, said chip-removing members having respective extensions which run in

the guide bar provided with an oil supply for lubricating the saw chain, the arrangement comprising:

at least one groove defining an oil guide formed in the side surface of each of said chip-removing members, the oil guide having an inlet opening communicating with the oil supply, the oil guide being disposed in said surface to extend counter to the running direction of the saw chain and to extend at an angle upwardly toward one of the rivet holes;

each of said chip-removing members further having at least one oil channel formed in said side surface and communicating with the end of said oil guide remote from said inlet opening; said oil channel of each of said chip-removing members being at least partially covered by a member of the saw chain connected to the chip-removing member; and,

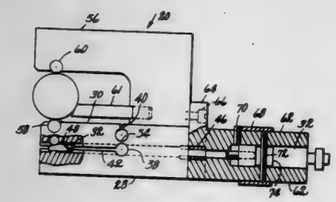
said oil channel having two ends, one end of said channel being located in the vicinity of one of the rivet holes, and the other end of the channel being located in the vicinity of the other one of said rivet holes whereby oil from said oil guide is directed to both of said rivet holes.

4,434,557

INDICATOR SNAP GAGE ASSEMBLIES

Franklin Meyer, Jr, P.O. Box 1, Forestdale, R.I. 02824

Filed Dec. 10, 1982, Ser. No. 448,840
Int. Cl.³ G01B 5/08
U.S. Cl. 33—148 R **9 Claims**



1. An indicator snap gage head adapted to being releasably coupled to an indicator mechanism for indicating, on the mechanism, a graduated value of an external dimension of a workpiece, comprising a base, a fixed jaw mounted on the base and having a workpiece engaging surface spaced from the base, a movable jaw pivotally mounted on the base opposite the fixed jaw for movement in a measuring plane toward and away from the fixed jaw, the pivot being located inwardly towards the mechanism from the measuring plane and interconnecting means between the movable jaw and the indicator mechanism including a spring-pressed plunger slidable in the base in a direction generally perpendicular to the measuring plane and having a tapered end engaging the movable jaw and its opposite end adapted to be releasably coupled to the indicator mechanism for urging the movable jaw toward the fixed jaw and for translating, by the degree of its taper, the position of the movable jaw in engagement with the workpiece into an indication on the mechanism of the value of the dimension.

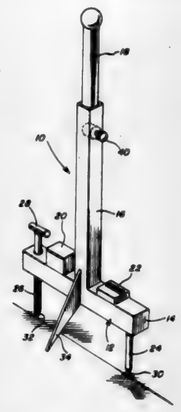
4,434,558

SURFACE PROFILE MEASURING APPARATUS AND METHOD

Samuel A. Face, Jr., and Samuel A. Face, III, both of P.O. Box 6341, Norfolk, Va. 23508

Filed Sep. 18, 1981, Ser. No. 303,714
Int. Cl.³ G01B 7/34
U.S. Cl. 33—174 P **11 Claims**

1. In a device for measuring flatness deviations of a surface profile having an undulation wavelength, including a rigid frame, an inclination sensor mounted on the frame and having a sensitivity axis extending therethrough, and signal readout means connected to the sensor for indicating inclination measurements of said sensitivity axis, the improvement comprising a pair of frame supporting elements mounted on the frame a fixed distance from each other along said sensitivity axis, each of the said supporting elements having surface contacting means engageable with the surface at point locations, means connected to the frame for angular displacement thereof about



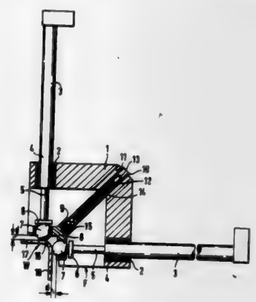
one of the point locations at which the frame may be pivoted, and signal adjustment means connected to the signal readout means for converting said inclination measurements into elevation differences between the surface contacting means of the respective frame supporting elements.

4,434,559

TOOL FOR GAUGING THE CORNERS OF WORKPIECES OF SHEET METAL OR THE LIKE

Gerhard Lauer, Grosswaldstrasse 6, D-6686 Eppelborn; Alfred Morawiez, Oderring 13, D-6610 Lebach, and Jürgen Wild, Am Stehlsberg 4, D-6601 Riegelsberg, all of Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,794
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043430
Int. Cl.³ G01B 3/56
U.S. Cl. 33—174 L **23 Claims**



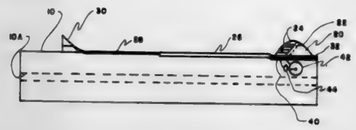
1. A tool for use in a system for automatically ascertaining the location of a corner between mutually inclined first and second surfaces of a workpiece, especially a rounded corner of a workpiece which is made of sheet metal, comprising: first and second sensors; means for supporting said sensors in such orientation that each sensor is movable toward the respective surface of the workpiece; means for moving said sensors with reference to said supporting means toward the respective surfaces along first and second paths; and work contacting means interposed between said sensors and said surfaces, said work contacting means comprising first and second portions movable by the respective sensors toward the corresponding surfaces of the workpiece and adapted to yieldably abut against said workpiece, at least said first portion being movable substantially transversely of the path of movement of the first sensor when said first portion already engages the first surface of the workpiece while the second portion continues to advance toward the second surface of the workpiece.

4,434,560

AIMING AID FOR AN AIMING DEVICE IN A LOW LIGHT LEVEL ENVIRONMENT

Robert G. Comeyne, Stafford, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1983, Ser. No. 469,671
Int. Cl.³ F41G 1/32, 11/00
U.S. Cl. 33—241 **9 Claims**



1. An aiming aid for visual orientation of an aiming device in a very low light level environment without emitting light in the forward direction to disclose the location of said aiming device, said aiming aid comprising:

a switchably energized light source comprised of a light emitting diode enclosed inside a hollow section of an aiming device housing;

a front sight fiber optic means having a cavity in an input end with said cavity in cooperation with said hollow section to accept transmitted light from said light source and an output that emits light in a select front sight light pattern in the rearward direction of said aiming device; and

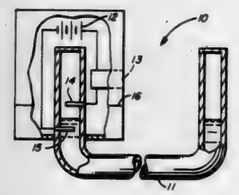
a rear sight fiber optic means having an input end in cooperation with said light source for receiving light therein through a light scattering rod partially embedded in the top of said aiming device to provide a visual orientation of said aiming device and transmitting the light to an output for emitting light in a select rear sight light pattern in a rearward direction wherein alignment of said select front and rear sight light patterns of emitted light establish a front to rear sight alignment of said aiming device.

4,434,561

LEVEL INDICATOR

Michael E. Gaspar, 115 W. Willow St., Newberry, Mich. 49868

Filed Oct. 19, 1981, Ser. No. 312,615
Int. Cl.³ G01C 9/06
U.S. Cl. 33—366 **5 Claims**



1. A level indicator which comprises:

A. A tube which is partially filled with fluid (,):

B. A means for detecting a fluid level to which one end of said tube is attached and which comprises the following elements:

i. A transistorized amplifier having a signal input terminal, a signal output terminal, a power supply terminal and a ground terminal;

ii. An energy source connected to the power supply and ground terminals of said transistorized amplifier;

iii. A first electrode, within said tube, connected to the signal input terminal of said transistorized amplifier;

iv. A second electrode which would contact the fluid below the first electrode and would be connected to the ground terminal of said transistorized amplified;

v. An electrically conductive fluid in said tube which would complete a circuit between the first and second electrodes when the fluid reaches the level of (the) a reference point marking;

vi. An exterior surface on said means for detecting a fluid level;

C. A signaling device connected to said signal output terminal and actuated by said means for detecting a fluid level; and

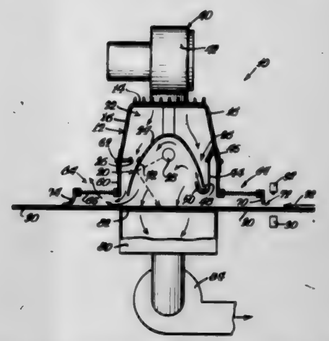
D. A reference point marking on the exterior surface of said means for detecting a fluid level which aligns with the fluid level at the first electrode where said signaling device is actuated.

4,434,562

CURING APPARATUS AND METHOD

Henry J. Bubley, Deerfield; Gene M. Faulkner, Palatine; Alex Iaccino, Mt. Prospect, and Giuseppe Rescio, Berwyn, all of Ill., assignors to American Screen Printing Equipment Company, Chicago, Ill.

Filed Sep. 2, 1981, Ser. No. 298,575
Int. Cl.³ F26B 3/28
U.S. Cl. 34—4 **11 Claims**



1. A method of curing ink, or the like, on a moving piece of work moving through a curing station having an arcuate reflecting shield facing downwardly and covering an elongated curing lamp and a blower means for blowing air for cooling, and exhaust means for pulling air from the unit, said method comprising the steps of:

directing cooling fluid from the blower means downwardly along the upper and outer surface of the arcuate reflector shield to cool the same,

directing cooling air upwardly and inwardly along the inner surface of the reflector shield to wipe the same with air to cool the same,

directing radiation from the lamp onto a work moving under the lamp and reflector shield,

trapping radiation with baffles at the upstream entrance and downsteam exit of the work on the conveyor, flowing air through the baffles, and

pulling air downwardly across the work and through the conveyor and exhausting the same from the unit.

4,434,563

METHOD AND APPARATUS FOR DRYING TOBACCO

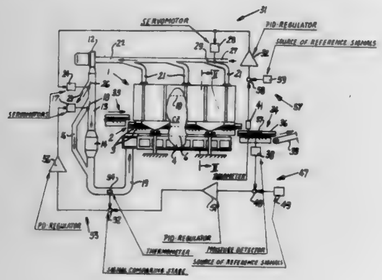
Gerhard Graalmann, Wohltorf, and Heiko Niehues, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,172

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007489

Int. Cl.³ F26B *3/04, 3/24*

U.S. Cl. 34—28 **16 Claims**



1. A method of drying tobacco, comprising the steps of transporting a continuous stream of tobacco particles through a conditioning zone; directly contacting tobacco particles in the conditioning zone with a hot gaseous fluid; converting tobacco particles in the conditioning zone into a fluidized bed during contact with hot gaseous fluid; measuring the moisture content of the thus dried tobacco particles; comparing the measured moisture content with a predetermined value; regulating the heat content of the gaseous fluid when the measured moisture content deviates from said predetermined value, including regulating a first parameter of such fluid outside of the conditioning zone; measuring the temperature of dried tobacco particles; comparing the measured temperature with a preselected value; and regulating a second parameter of the gaseous fluid outside of the conditioning zone when the measured temperature of tobacco particles deviates from said preselected value.

4,434,564

HEAT RECOVERY SYSTEM FOR CLOTHES DRYERS AND THE LIKE

John C. Braggins, Jr., 8521 Lowell Blvd., Westminster, Colo. 80030

Filed Feb. 15, 1977, Ser. No. 768,823

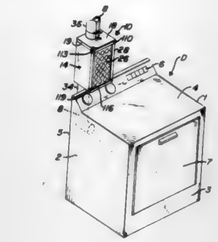
Int. Cl.² F26B *19/00*; B01D *50/00*

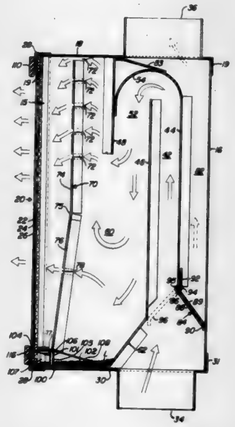
U.S. Cl. 34—86 **23 Claims**

1. Exhaust heat recovery apparatus for clothes dryers and the like, comprising:

an enclosed chamber having an inlet port for receiving exhausted air from a clothes dryer, and an indoors exhaust opening through which the dryer exhaust air is discharged into the interior environment of the home; and

scrubber means within said chamber for removing lint from the exhausted dryer air prior to discharging said air through said indoors exhaust opening, said scrubber means including a plurality of partitions forming an elongated entry flow passage and an intermediate flow passage, said entry flow passage having one end in communication with said inlet port and the opposite end in communication with said intermediate flow passage, said intermediate flow passage being of larger cross-sectional area than said entry flow passage, said scrubber means further including an enlarged plenum for reducing the velocity of flow of the dryer air stream through said chamber, baffle means substantially dividing said plenum into at least two sections, and a plurality of flow passage means extending through said baffle means, said sections being in fluid communication with one another through said plurality of flow passage means, said intermediate flow passage communicating with one of said sections and said indoors exhaust opening communicating with the other of said sections.





4,434,565

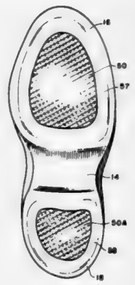
NON-SLIP OVERSHOE

Robert D. Haley, 2525 Robb Cir., Lakewood, Colo. 80215

Continuation-in-part of Ser. No. 134,192, Mar. 27, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,096

Int. Cl.³ A43B *1/10, 3/16, 13/26*

U.S. Cl. 36—7.3 **7 Claims**



1. An overshoe of the kind to be worn over the normal shoes of a wearer, comprising:

a. an upper;

b. a sole connected to the upper around the periphery of the sole and formed of resilient, flexible material;

c. metal plate means for improving traction on slippery surfaces removably attached to the lower surface of said sole, said plate means extending throughout a substantial portion of the sole and comprising an upper surface and a lower surface, and having a plurality of projections extending outwardly therefrom substantially beyond said lower surface of said plate means; and

d. metal plate attachment means for removably attaching said metal plate means to said sole;

wherein said metal plate attachment means comprises resilient flap means fixedly attached to the lower surface of said sole for stretchably receiving said metal plate means.

4,434,566

LAUNDRY MANGLE WITH ROLL COVERING REEL

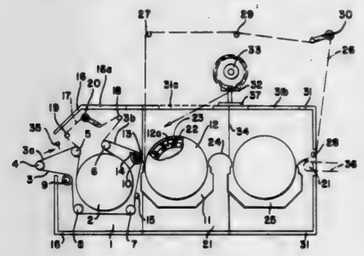
Theo Krauss, Aue; Ludwig Herrmann, Bockau, and Konrad Berger, Schneeberg, all of German Democratic Rep., assignors to VEB Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Filed Jun. 2, 1982, Ser. No. 384,320

Claims priority, application German Democratic Rep., Aug. 3, 1981, WPD06F/232327

Int. Cl.³ D06F *69/02, 67/02*

U.S. Cl. 38—8 **5 Claims**



1. A smoothing and drying apparatus for damp laundry, comprising

(A) at least one mangle cylinder and corresponding mangle trough,

(B) a frame on which said mangle cylinder and trough (A) are arranged,

(C) at least one revolving laundry guiding belt extending around said mangle cylinder (A) for guiding laundry through said apparatus for smoothing and drying,

(D) at least one shifting device around which said revolving laundry guiding belt passes, for directing said laundry guiding belt back to receive more laundry and guide said laundry to be smoothed and dried, and

(E) a covering adapted to be wound around said mangle cylinder, wherein the improvement comprises

(F) a device for winding and unwinding said covering around said cylinder, said device (F) positioned above said mangle cylinder (A) and below a portion of said revolving laundry guiding belt (C) passing around said shifting device (D).

4,434,567

MEMORABILIA REPOSITORY

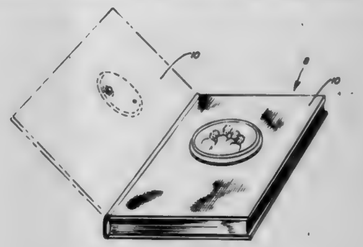
Robert LeVeau, Overland Park, Kans., assignor to Hallmark Cards, Inc., Kansas City, Mo.

Filed Apr. 19, 1982, Ser. No. 369,982

Int. Cl.³ B42D *3/12*

U.S. Cl. 40—157 **6 Claims**

1. A repository for memorabilia having a front cover which is movable between open and closed positions, said front cover being provided with an opening therein, a housing for a sound emitting device disposed within said opening and a sound emitting device within said housing which emits sound when the front cover is in open position, said housing being formed of top and bottom housing sections adapted for snap fit engagement with each other, said bottom housing section being a generally flat element of a size larger than the opening in the front cover and sufficient to conceal said opening and having



a plurality of upstanding positioning members spaced to hold the sound emitting device by frictional engagement therewith, said top housing section being a generally flat or convex element of a size larger than the opening in the front cover sufficient to conceal said opening and having a plurality of legs therefrom adapted for snap fit engagement with said bottom section to form a unitary structure and to clamp therebetween said front cover.

4,434,568

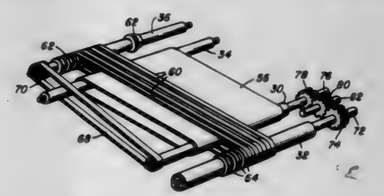
GRAPHIC DISPLAY ASSEMBLY FOR DYNAMIC PROGRAM PRESENTATION

Emilio C. Guerrero Q., Av. Francisco Miranda (California Norte) Centro Comercial Puerta del Este Local 16-B, Caracas, Venezuela

Continuation-in-part of Ser. No. 74,830, Sep. 12, 1979, abandoned. This application Oct. 16, 1981, Ser. No. 312,121

Int. Cl.³ G09F *11/12*

U.S. Cl. 40—518 **10 Claims**



1. A graphic representation assembly comprising a panel, a program carrying member mounted in said panel and presenting a fixed representation of a program, multiple movable coplanar tapes overlying said program carrying member and the fixed representation of a program, said tapes being transparent for a viewing of said fixed representation therethrough, said tapes including representations thereon coordinated to the fixed representation, means for moving said tapes relative to said program carrying member and said fixed representation and for varying the relationship between the representations on the tapes and the fixed representation to accommodate program changes, said means for moving the tapes relative to said fixed representation including first means for moving said tapes simultaneously, and second means for moving said tapes individually, a pair of laterally spaced rotatably mounted outer shafts, a first one of said outer shafts having multiple reels rotatably mounted thereon, each reel having one of said tapes extending thereabout, each of said tapes also extending about

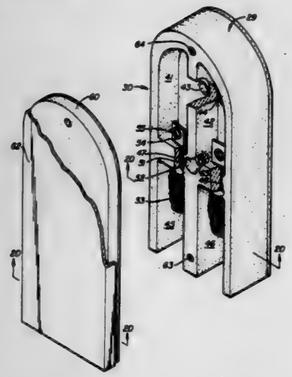
the second outer shaft, external control means for rotating said second outer shaft and the tapes thereon to define said first means for moving said tapes simultaneously, said reels being independently manually rotatable to define the second means for moving said tapes individually, and means for adjusting said program carrying member relative to the direction of movement of the tapes.

4,434,569

CONNECTOR HOUSING FOR NEON TUBING

Robert W. Minogue, 25200 Carlos Bee Blvd., Hayward, Calif. 94542

Filed Jun. 11, 1981, Ser. No. 272,630
Int. Cl.³ G09F 13/22
U.S. Cl. 40—545 7 Claims



1. A connector for receiving the paired ends of conductive neon tubing for mounting to a sign backing, said connector comprising in combination: a dielectric housing having a side exposed to said sign backing; said side having a recess therein; said recess in cooperation with said sign backing defining a common cavity sufficient to receive and split electrical conduit into two conductors; paired dielectrically isolated side-by-side tube receiving chambers extending in spaced-apart parallel relation to said side of said dielectric housing and opening to the exterior of said housing; each of said tube receiving chambers having tube connector means disposed interiorly thereof for making an enclosed electrical connection to an inserted neon tube; dielectrically isolated paired paths for threading each of said conductors between said common cavity at one end and one of said neon tubes at the other end; and connection means interior of said connector for connecting said tube connector means to said conductors.

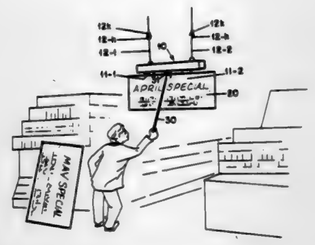
4,434,570

ADVERTISING HOLDER

Johannes Roos, Wateringen, Netherlands, assignor to Rollex B.V., The Hague, Netherlands

Filed May 10, 1982, Ser. No. 376,449
Int. Cl.³ G09F 1/12
U.S. Cl. 40—617 10 Claims

1. An advertising holder comprising
a housing;
movable suspension means for controllably suspending said housing from a surface;
means for releaseably securing an advertising appendage to said housing whereby the position of said advertising appendage can be selectively adjusted with respect to a viewer and said appendage can be replaced as desired;



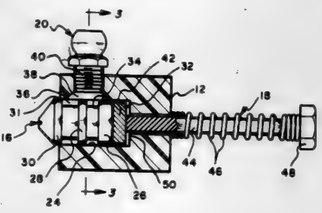
wherein the movable suspension means includes a spring loaded cylinder contained within said housing for regulating the position of said housing.

4,434,571

DEVICE FOR LUBRICATING MUZZLE-LOADING BULLETS AND METHOD FOR HANDLING AND LOADING THE BULLETS

Warren V. Eisenhuth, 113 Dorchester Dr., Vincentown, N.J. 08088

Filed Aug. 2, 1982, Ser. No. 404,568
Int. Cl.³ F41C 27/00
U.S. Cl. 42—90 6 Claims



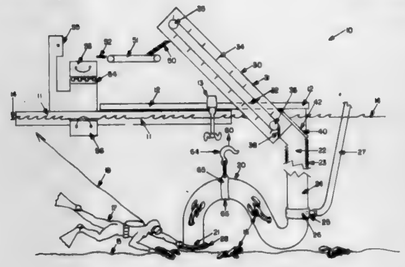
1. A device for lubricating muzzle-loading bullets, having a front ring and at least one rear ring forming at least one groove to be filled with lubricant, the device comprising:
(a) a housing body,
(b) a cylindrical chamber opening one end of the body and terminating at a chamber end in the body,
wherein the depth of the chamber to the end is longer than the distance from the front ring to the base of the longest bullet to be inserted into the chamber, and
wherein the diameter of the chamber opening is large enough to allow the rear ring or rings to push fit into the chamber but small enough to prevent the front ring from entering the chamber,
(c) a lubrication entrance port means in the body to receive lubricant
(d) a lubrication charging chamber distribution means in the body in flow communication with the port means and the groove or grooves in the bullet, when it is placed in the cylindrical chamber,
(e) a plunger piston means attached in the body located at the end of the cylindrical chamber, capable of moving against the base end of the bullet during lubrication and of pushing and ejecting the lubricated bullet.

4,434,572

RETRIEVAL OF LOBSTERS AND OTHER OBJECTS

William W. Sheldon, R.F.D. #2, Box 292, Ellsworth, Me. 04605, and Theodore G. Axford, Milbridge, Me., assignors to William W. Sheldon, Ellsworth, Me.

Filed Mar. 23, 1981, Ser. No. 246,599
Int. Cl.³ A01K 80/00
U.S. Cl. 43—6.5 15 Claims



1. Apparatus for lifting lobsters and similar objects from the bottom or floor of a lobster pound or other water body to the surface of the water and for handling the objects above the water surface for delivery above said surface comprising:
flexible passageway means having a length at least sufficient to extend from the bottom to the water surface and having a diameter sufficient to accommodate objects to be lifted, said passageway means having an open inlet end for movement adjacent the bottom and an open outlet end for positioning adjacent the water surface;
conveying means for receiving objects adjacent the water surface and delivering said objects above the surface of the water;
means for establishing a flow of water upward from the bottom to the water surface in the flexible passageway means whereby objects are entrained in the water flow and lifted to the surface; and
coupling guide means operatively arranged for coupling the outlet end of the flexible passageway means to the conveying means and for guiding and directing objects lifted to the surface onto said conveying means, said coupling guide means comprising chamber means having an angled cover surface, said angled cover surface operatively arranged and angled for directing objects lifted to the water surface onto the conveying means, said angled cover surface formed with openings for passing water away from the conveying means.

4,434,573

FISHING APPARATUS

Vincent B. Hodshire, 2701 NE. Adams St., Peoria, Ill. 61603

Filed Sep. 16, 1982, Ser. No. 418,684
Int. Cl.³ A01K 91/06, 97/12
U.S. Cl. 43—15 2 Claims



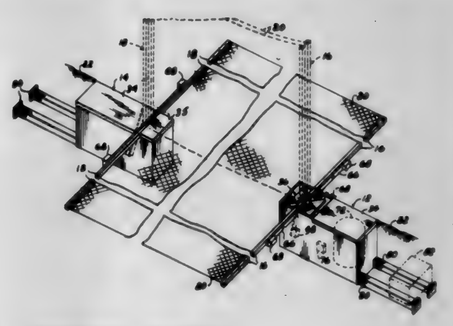
1. A fishing apparatus comprising:
a main support member;
a first member connected to said main support and movable between first and second positions;
a trigger member connected to said first member;
an extension connected to said trigger, said extension including a pair of spaced apart members having an axle extending therethrough;
means for retaining said trigger and said first member in said first position;
means for resiliently urging said trigger and said first member toward said second position;
a first guide in said main support;
a wire releasably connected to said axle and extending through said first guide;
first and second limiting means carried by said wire for limiting movement of said wire through said guide in response to said second limiting means engaging said first limiting means and said first limiting means engaging said main support member;
a reel mounted on said main support;
a second guide in said main support;
a fishing line extendably connected to said reel and extending through said second guide;
means connected to said wire for releasably engaging said second line; and
means for releasably locking said trigger in said first position, said means including a lock pin urged through an aperture formed in said main support member adjacent said means for retaining said trigger.

4,434,574

BIRD ENVIRONMENTAL INSPECTION TRAP

Calvin G. Benito, Rte. 2, Box 168, Pauls Valley, Okla. 73075

Filed Jun. 28, 1982, Ser. No. 393,200
Int. Cl.³ A01M 23/02
U.S. Cl. 43—63 5 Claims



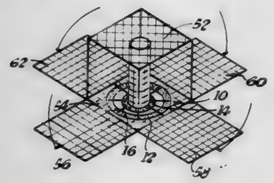
1. A wild bird trap, comprising:
a pair of spaced-apart housings;
frame means within each housing;
a pair of net arms extending transversely of the respective housing in longitudinally aligned relation and pivotally connected at one end portion with said frame means for vertical pivoting movement of the other end portion of said pairs of net arms in unison from a horizontal unsprung position to an upright position;
netting extending between said housings and connected with each pair of arms;
pressure cylinder means within each housing and operatively connected with each net arm of said pairs of net arms for pivoting each pair of net arms to a sprung position; and,
remotely operated control means for actuating said pressure cylinder means.

4,434,575

MARINE TRAP SENSING SYSTEM

Arthur W. Pearson, 2045 SW. 17 Clr., Deerfield Beach, Fla. 33441

Filed Sep. 29, 1982, Ser. No. 427,690
Int. Cl.³ A01K 69/00
U.S. Cl. 43—100 9 Claims



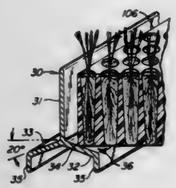
1. A saline water animal sensing system comprising:
a circuit closure means normally open for indicating entry across said closure means,
an electrical current producing source connected to each said closure means,
electronic circuit means for annunciating a closed circuit across said circuit closure means,
said electronic circuit means comprising means for preventing current flow across said circuit closure means due to the immersion of the circuit closure means in saline water.

4,434,576

SUPPORT SYSTEM FOR PLANTING TRAYS

Owen D. Sowerwine, Salinas, Calif., assignor to Castle & Cooke Techniculture, Salinas, Calif.

Filed May 10, 1982, Ser. No. 376,796
Int. Cl.³ A47C 7/00
U.S. Cl. 47—39 5 Claims



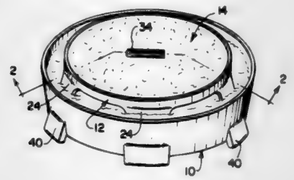
1. A support rail for use in forming a system for supporting a planting tray during an initial growing period, said tray having a matrix of apertures therethrough containing seeded soil plugs, said support rail comprising:
a horizontally extending, vertically disposed web member;
first and second tray-support members projecting from opposite sides of said web member at its lower extremity and extending the length thereof, each said tray-support member being formed to present a sloped planar surface at a downward angle to the horizontal; and
first and second vertically disposed, spaced-apart standoff members secured to said tray-support members at the undersides thereof and extending downward therefrom, said standoff members terminating at their lower extremities in parallel edges, whereby said rail engages an underlying rail-supporting structure only at the parallel edges of said standoff members and whereby the bottoms of apertures in said matrix closest to an edge of said planting tray will be exposed when said planting-tray edge rests along one of said planar surfaces.

4,434,577

CAPILLARY DISC AND SUPPORT THEREFOR

Reinhold Holtkamp, Werther Strasse 112, 4294 Isselburg, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,964
Int. Cl.³ A01G 25/00
U.S. Cl. 47—81 7 Claims



1. A plant watering device comprising:
(a) a tray,
(b) support means adapted to rest on the bottom of said tray, said support means including a support disc and a plurality of arcuately spaced legs extending downwardly and outwardly from said disc so as to elevate said disc from the bottom of the tray, said disc being formed with an opening therein,
(c) means for positioning and locking said support means in said tray so as to prevent relative rotation between said support means and said tray, said positioning and locking means comprising water-tight pockets formed in said tray at arcuately spaced locations therearound corresponding to the location of said legs, said legs extending into said pockets for aligning said support means and preventing relative rotative movement between said support means and said tray, said pockets extending below the bottom wall of said tray for supporting the bottom of said tray above a supporting surface, and
(d) pad means constructed of water absorbent material positioned on said disc, said pad means having a movable tab hinged at one end thereof to said pad means and aligned with and commensurate in size with said opening in said disc, said tab being adapted to be bent downwardly through said opening in said disc for submergence in the water in the tray,
whereby water is transmitted by capillary action from said tab to and uniformly throughout said pad for providing water to a pot positioned on said pad.

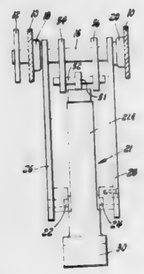
4,434,578

AUTOMATIC TRAFFIC CONTROL GATE

Raphael J. Rumpz, 33863 Cornelissen, Sterling Heights, Mich. 48077

Filed Jun. 17, 1982, Ser. No. 389,180
Int. Cl.³ E01F 13/00; E05F 11/24
U.S. Cl. 49—49 2 Claims

1. An automatic traffic control gate, comprising:
support means;
a shaft rotatably mounted on the support means;
an arm carried on the shaft so as to be movable therewith as the shaft is being rotated from a generally horizontal, lower position toward a raised position;
power means mounted in the support means, the power means having a rotatable output member;
an outer tube mounted on the support means;
an inner tube telescopically, slideably mounted in the outer tube;
a pair of trunnions mounted on opposite sides of one of said tubes, and a pair of elongated hangers having their ends connected to the shaft and their lower ends journaling the trunnions;
lever means connecting one of said tubes to the shaft such that as the inner tube and the outer tube are moved in a relatively slideable motion in a first direction, the shaft is rotated in a first direction to raise the arm, and as the inner tube and the outer tube are moved in a relative motion in the opposite direction, the shaft is rotated in the opposite direction to lower the arm;
an elongated screw disposed in said inner tube;
a ball nut mounted in the inner tube and connected to the screw to longitudinally move the inner tube with respect



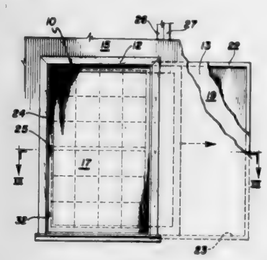
to the outer tube in either said first direction or said second direction depending upon the direction the screw is being rotated; and
slip clutch means connected between the power means and the screw to rotate it along its longitudinal axis but to permit the power means output member to rotate with respect to the screw whereby the output member is rotatable independently of the motion of said shaft.

4,434,579

INSULATING STRUCTURE

John S. Murphy, 167 Webbers Path, West Yarmouth, Mass. 02673

Continuation of Ser. No. 215,806, Dec. 12, 1980, which is a continuation of Ser. No. 44,355, May 31, 1979. This application Mar. 19, 1982, Ser. No. 359,949
Int. Cl.³ E05B 65/04
U.S. Cl. 49—63 4 Claims



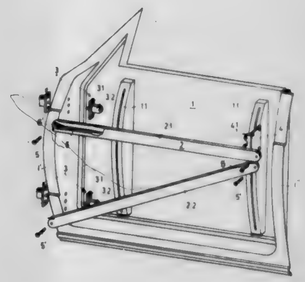
1. Insulating structure for use with a window which is enclosed within a rectangular window frame which defines a rectangular window opening, said insulating structure comprising:
(a) a rigid rectangular envelope having an opening along one side, the envelope being adapted to being fastened in a wall with the opening facing the window opening, and located in a plane that is offset from the plane of the window, the envelope being substantially air-tight except for the said opening, the envelope consisting of two similar rigid rectangular sheets held in spaced parallel relationship by spacer blocks extending around three side edges, the fourth side edge being free of a spacer block and constituting the said opening, the side of each sheet which faces the interior of the pocket having a flat smooth continuous surface,
(b) a main sheet of insulating material slidable in the envelope from an inoperative position in which it is entirely enclosed in the envelope to an operative position in which it is substantially outside the envelope and is co-extensive with the window opening and in front of the window, and
(c) a groove which extends entirely around the inside of the window frame except for said opening for receiving the edges of the main sheet when the main sheet lies within said window opening to form a tight seal around the edges of the main sheet.

4,434,580

DOOR, ESPECIALLY FOR MOTOR VEHICLES

Ernst Engelsberger, Glonn, and Ralf-Thilo Schulz, Putzbrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 28, 1981, Ser. No. 334,641
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102328
Int. Cl.³ B60J 5/04
U.S. Cl. 49—502 7 Claims



1. A door, especially for a motor vehicle, comprising door frame means including vertically extending frame members, hinge means operatively secured to one frame member of said vertically extending frame members, a lock base plate operatively secured to the other frame member of said vertically extending frame members, a first substantially horizontally extending rail (2.1) having a longitudinal axis, first journal bolt means (5) for journalling said first rail with one end thereof to a respective one of said hinge means and with the other rail end to said lock base plate, a second rail (2.2) extending at an angle to the first rail, second journal bolt means (5') for journalling said second rail with one end thereof to the respective other hinge means and with the other rail end also to the lock base plate, said first and second journal bolt means (5, 5') extending also substantially horizontally and perpendicularly to the respective rail end for movably mounting the rail ends so that the first and second rails are substantially free of deformations under load condition until the brake stress is reached, and irreversibly expandable cable means secured with their/ends to said first journal means whereby said cable means extend substantially in parallel at least to said first rail.

4,434,581

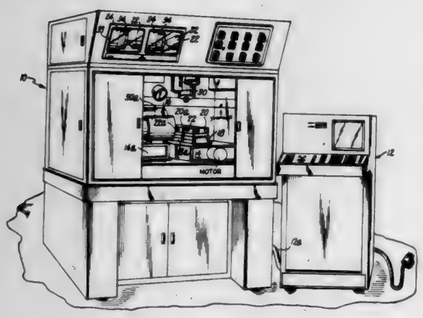
APPARATUS ADAPTED FOR AUTOMATIC OR SEMI-AUTOMATIC FABRICATION OF ULTRA-PRECISION OPHTHALMIC LENSES, E.G., CONTACT LENSES

Robert G. Spriggs, St. Petersburg, Fla., assignor to Automated Optic, Inc., N. Saint Petersburg, Fla.

Continuation of Ser. No. 180,323, Aug. 22, 1980, abandoned, which is a continuation of Ser. No. 928,973, Jul. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 821,162, Aug. 2, 1977, abandoned. This application May 11, 1982, Ser. No. 377,105

Int. Cl.³ B24B *5/00*

U.S. Cl. 51—67 16 Claims



1. An apparatus for generating a microinch optical surface on an optical lens precursor to yield a lens for proximate contact with an eyeball, comprising

a substantially heavy table bed;

a fluid bearing work support spindle including an air collet for holding a lens precursor;

a first air-bearing slide supported on said table bed and adapted for rectilinear translation along a first horizontal axis that is in a plane parallel to the axis of rotation of said spindle;

a circular tipped cutting tool mounted on said first slide;

a second air-bearing slide supported on said table bed and adapted for rectilinear translation along a second horizontal axis that is in said plane and perpendicular to said first axis, said fluid bearing work support spindle being mounted upon said second slide;

a pair of D.C. torque motors respectively coupled to said first and second slides by means of zero backlash lead screws to provide translational movement of said slides along their respective axes;

a computer control system for generating control signals for said motors to provide predetermined coordinated movement of said cutting tool and said spindle in accordance with the mathematical function describing the geometry of the optical surface to be generated only in a rectangular coordinate system; and

electro-optical encoders for monitoring the positions of said first and second slides.

4,434,582

GLASS TRIMMING CUTTER WITH ROLLER CONVEYOR

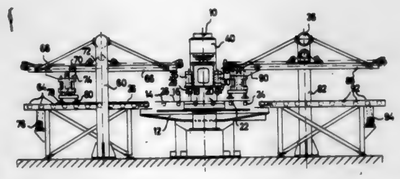
Gottfried Strauss, Heiligenhaus, and Horst Schumann, Ratingen, both of Fed. Rep. of Germany, assignors to Sack Glastechnik GmbH, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 967,869, Dec. 8, 1978, abandoned. This application Nov. 4, 1980, Ser. No. 203,970

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756443

Int. Cl.³ B24B *17/02*

U.S. Cl. 51—101 R 1 Claim



1. Apparatus for automatically cutting the edges of generally planar glass panes, comprising:

a generally circular table including a conveyor track for transporting the glass planes in a conveying direction and for providing a substantially horizontal support for the glass panes, said conveyor track extending over substantially the entire diameter of said table between a loading end at which the glass panes are fed onto said track and an unloading end at which the glass panes are discharged from said track, said table being arranged for rotation about a vertical axis which is normal to the surfaces of the glass panes;

means for rotating said table about said vertical axis at a desired rate;

gripping means responsive to rotation of said table for releasably gripping the glass panes on said table to fix the glass panes against movement relative to said table when said table is rotated and the glass panes are cut;

means for cutting the edges of the glass panes to a desired contour as said table is rotated from an initial position to an end position;

a feed conveyor fixed with respect to the rotation axis of said table and arranged to be aligned in said conveying direction with the loading end of said conveyor track when said table is in either of said initial and said end positions for horizontally supporting and delivering the glass panes to the loading end of said conveyor track;

means associated with said feed conveyor for loading the glass panes onto said conveyor track, said loading means including a first feed carriage including at least one suction cup for releasably holding the glass panes;

a first track fixed with respect to the rotation axis of said table and arranged parallel to and above said feed conveyor for guiding said first feed carriage between a first end position whereat said first feed carriage grasps a glass pane to be cut and a second end position whereat said first feed carriage release the glass pane when the glass pane is loaded onto said conveyor track and said gripping means is operated, said first track extending above and parallel to said conveyor track of said table for a distance of about one-third the length of said conveyor track;

a discharge conveyor fixed with respect to the rotation axis of said table and arranged to be aligned in said conveying direction with the unloading end of said conveyor track when said table is in either of said initial and said end positions for horizontally supporting and discharging the glass panes from the unloading end of said conveyor track;

means associated with said discharge conveyor for unloading the glass panes from said conveyor track, said unloading means including a second feed carriage including at least one suction cup for releasably holding the glass panes;

a second track fixed with respect to the rotation axis of said table and arranged parallel to and above said discharge conveyor for guiding said second feed carriage between a first end position whereat said second feed carriage grasps a glass pane which has been cut on said conveyor track when said gripping means releases the cut glass pane, and a second end position whereat said second feed carriage releases the cut glass pane for further processing, said second track extending above and parallel to said conveyor track of said table for a distance of about one-third the length of said conveyor track;

means including a rope drive arrangement for moving said first and said second feed carriages along said first and said second tracks, respectively, in corresponding relationship with rotation of said table so that said feed carriage delivers a first glass pane to be cut to said table while said second feed carriage simultaneously discharges a second, cut glass pane from said table, and said first feed carriage thereafter returns to deliver a third glass pane to be cut to said table while said second feed carriage simultaneously returns to discharge the first, then cut glass pane from said table; and

a cantilever support arm extending over said table, wherein said gripping means is mounted to said support arm and includes a number of uniformly distributed, downwardly projecting suction cups.

4,434,583

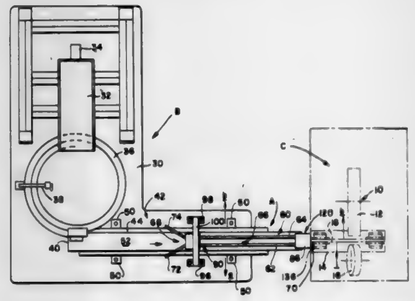
AUTOMATICALLY ADJUSTABLE WORKPIECE GUIDE AND FEED MECHANISM

Warren C. Burgess, Jr., 31922 Lake Rd., Avon Lake, Ohio 44012

Filed Jul. 6, 1981, Ser. No. 280,904

Int. Cl.³ B24B *5/18*

U.S. Cl. 51—103 TF 9 Claims



1. An adjustable feed mechanism for feeding workpieces to a centerless grinder wherein said grinder includes a work rest generally intermediate the circumferential grinding surface of a grinding wheel and a regulating wheel and wherein at least said work rest and regulating wheel are selectively adjustable toward and away from said grinding surface to accommodate variations in the grinding wheel dimensions, said feed mechaniam comprising:

means defining a workpiece flow path for grinding said workpieces in a desired orientation therein from a first end toward a second end spaced therefrom, said first end being cooperably associated with a workpiece supply area and said second end operably communicating with said work rest for feeding workpieces thereto;

first mounting means adjacent said first end for supporting said first end while allowing selective movement of said workpiece flow path defining means generally laterally of the flow path defined thereby;

second mounting means adjacent said second end for fixedly securing said second end for movement with said work rest, whereby said flow path is automatically moved generally laterally in response to generally lateral movement of at least said work rest toward and away from said grinding wheel grinding surface; and,

wherein said flow path defining means comprises a pair of elongated spaced apart guide members defining said flow path therebetween and further includes movable conveyor means therebeneath for defining an elongated flow path bottom at least between said first and second ends, said conveyor means being generally stationarily mounted relative to said workpiece supply area in spaced and unconnected relationship to said guide members and said work rest with said guide members being movable generally laterally of said flow path bottom in response to generally lateral movement of said work rest.

4,434,584

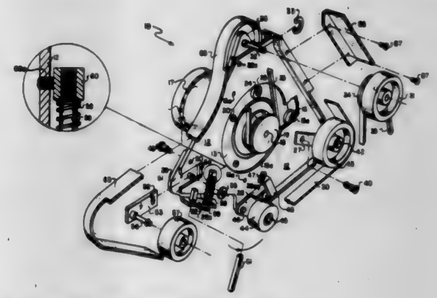
TURRET BELT GRINDER

Aaron P. Rasmussen, 9606 Candy La., La Mesa, Calif. 92041

Filed Jul. 16, 1981, Ser. No. 284,018

Int. Cl.³ B24B *21/12*

U.S. Cl. 51—135 R 13 Claims



1. A turret belt grinder comprising:

a drive shaft having a longitudinal x-axis;

means for rotating said drive shaft;

a turret frame oriented substantially perpendicular to said drive shaft;

a ring plate fixedly mounted with respect to said means for rotating said drive shaft, said drive shaft and said ring plate sharing a common axis;

means for rotating said turret frame through 360 degrees which maintains it with 360 degrees rotational concentricity with the x-axis of said drive shaft comprising at least three flanged bushings each of which is secured to the rear surface of said turret frame at a predetermined point by a shoulder bolt, said flanged bushings revolve on said bolts thereby acting as rollers and track on the radial edge of said ring plate;

at least three wheels, each of which is rotatably mounted on its own individual axle;

means for mounting said axles on said turret frame at points laterally spaced from one another and said axles being oriented substantially parallel to the axis of said drive shaft;

a closed loop grinding belt passing around the perimeter of the geometric configuration formed by said laterally spaced wheels;

one of said plurality of wheels being a drive wheel; and

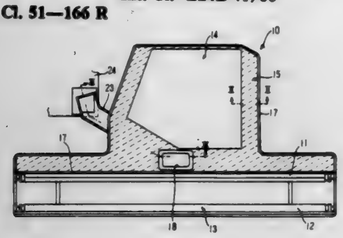
means for transmitting the rotational motion of said driveshaft to said drive wheel to rotate it, thereby driving said grinding belt around its closed loop path.

4,434,585

BED FOR GRINDING MACHINE

Kenichi Munekata; Kunihiko Unno, and Yasuo Suzuki, all of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 3, 1981, Ser. No. 270,024
Claims priority, application Japan, Jun. 6, 1980, 55-79677[U]
Int. Cl.³ B24B *41/00*
U.S. Cl. 51—166 R **2 Claims**



1. A bed for a grinding machine having a table and a wheel head and comprising:

a bed body having at an upper surface portion thereof a table support portion for slidably supporting said table of said grinding machine, a wheel head support portion for supporting said wheel head of said grinding machine, and a coolant receiving portion including a peripheral wall of said bed body, a trough portion surrounding the remainder of said bed body inside said peripheral wall and a flat surface portion formed between said support portions and recessed from said support portions and said peripheral wall, said peripheral wall projecting from and surrounding said flat surface portion;

a layer of resin mortor formed on at least said flat surface portion defining said coolant receiving portion, wherein said bed body further comprises a peripheral wall and wherein said coolant receiving portion further comprises a trough shaped portion and a flat surface portion formed between said support portions and recessed from said support portions and said peripheral wall, said peripheral wall projecting from and surrounding said flat surface and said coolant receiving portion including an exhaust hole formed therein for exhausting coolant, said flat surface portion being sloped downwardly toward said exhaust hole and wherein said bed body has an air gap formed therein;

a coolant exhaust conduit communicating with a top surface portion of said exhaust hole for conducting coolant; and

a coolant shoe mounted in said bed body extending into said air gap and connected to said coolant exhaust conduit for exhausting coolant outside said bed body.

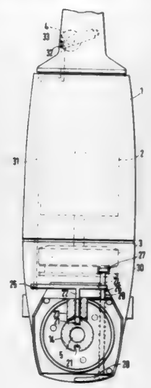
4,434,586

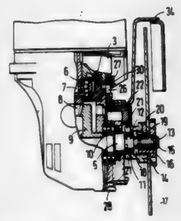
MACHINE TOOL, ESPECIALLY A HAND-HELD POWER TOOL WITH A TURNABLE CLAMPING ELEMENT FOR CLAMPING A TOOL ON THE TOOL SPINDLE

Thomas Müller, Erlangen; Fritz Schädlich, and Manfred Stäbler, both of Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,681
Int. Cl.³ B24B *23/02*
U.S. Cl. 51—170 PT **18 Claims**

1. In a machine tool, especially a hand-held power tool, a combination comprising a housing; a tool spindle mounted in the housing for rotation about its axis; means on the tool spindle including a clamping element turnably mounted on said spindle for clamping a tool on the latter for rotation therewith; manually operated means for turning said spindle about its axis; arresting means movable between a rest position and an arresting position for holding said clamping element against rotation during turning of said spindle for clamping or for releasing a tool, said manually operated turning means being movable between an inactive position and an active position turning said tool spindle and means cooperating with said manually operated turning means and said arresting means for moving said turning means to said active position during movement of said





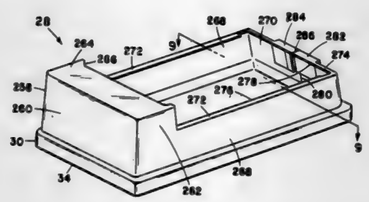
arresting means to said arresting position and vice versa; a drive motor operatively connected to said spindle; a switch for switching said drive motor on sand off; and connecting means connecting said switch with said manually operable turning means and said arresting means for switching said drive motor off when said turning means is moved to the active and said arresting means to said arresting position.

4,434,587

DUST SHROUD FOR AN ABRADING TOOL

Robert J. McDougall, Brockville, Canada, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 1, 1981, Ser. No. 298,312
Int. Cl.³ B24B *23/06, 55/06*
U.S. Cl. 51—170 MT **7 Claims**



1. A dust shroud for a sanding tool having a housing, comprising:

(a) a one-piece resilient skirt having a wall extending about the periphery of the housing;

(b) said skirt wall being split into two end portions terminating in transverse edges in opposing end-to-end abutting alignment defining a joint;

(c) the wall further having an upper edge; and

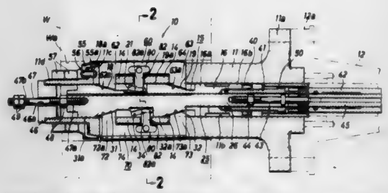
(d) the joint including connecting means integrally formed on said end portions adjacent said transverse edges for aligning said end portions during their connection and for enabling rapid disconnection by their counterrotation in a single plane outwardly from each other about a point defined by the intersection of said joint with said wall upper edge.

4,434,588

HONING HEAD FOR HIGH-SPEED OPERATION

Minoru Wada; Isao Arai; Takeshi Okubo, all of Saitama, and Yoshiaki Mori, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 299,207
Claims priority, application Japan, Sep. 10, 1980, 55-125521
Int. Cl.³ B24B *33/08, 33/02*
U.S. Cl. 51—344 **4 Claims**



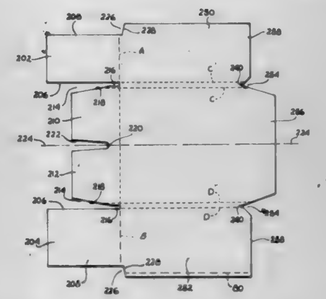
1. A honing head for high-speed operation comprising a hollow holder having a plurality of guide slots angularly spaced from each other in the circumferential direction thereof, at least one cone shaft axially slidably mounted in said hollow holder and having at least one radially outward tapered portion extending axially thereof, and a plurality of honing stone supports radially movably disposed respectively in said guide slots, each of said honing stone supports having at least one radially inward cam surface held in contact with said tapered portion of said cone shaft, whereby said honing stone supports are radially movable in response to axial movement of said cone shaft, characterized in that each of said honing stone supports is connected to said cone shaft by at least one connector having one end connected to said honing stone support and the other end slidably received in a groove defined in said cone shaft, said groove being inclined in the same direction and at the same angle as said tapered portion of said cone shaft, said at least one cone shaft comprising a rough-finishing cone shaft and a finishing cone shaft which are independently axially movable in said hollow holder and have tapered portions, said honing stone supports comprising rough-finishing honing stone supports and finishing honing stone supports which are inserted alternately in said guide slots, said rough-finishing honing stone supports having cam surfaces held in contact with said tapered portions of said rough-finishing cone shaft, and said finishing honing stone supports having cam surfaces held in contact with said tapered portions of said finishing cone shaft.

4,434,589

ASPHALT COMPOSITION HIP AND RIDGE COVER

Bennie Freiborg, Champion Roof Company, 11764 Sheldon St., Sun Valley, Calif. 91352

Filed Sep. 19, 1980, Ser. No. 188,876
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—57 **40 Claims**



1. An asphalt composition ridge cover having a longitudinal centerline and comprising:

a generally rectangular center body portion having a first end, a second end, a first edge, and a second edge;

a first pair of foldable tabs integrally formed with said first end, each such tab having a width extending from proximate said longitudinal centerline to approximately midway between said longitudinal centerline and said respective first and second edge, each such tab having a length extending perpendicular to said first end and being separated from the other such tab by a notch extending from the free end of said first pair of foldable tabs to a point just short of a line coincident with said first end;

a first edge tab defined by that portion of said central body portion which lies between said first edge and a first fold locating means lying parallel to said longitudinal centerline and lying proximate the midpoint between said first edge and said longitudinal centerline;

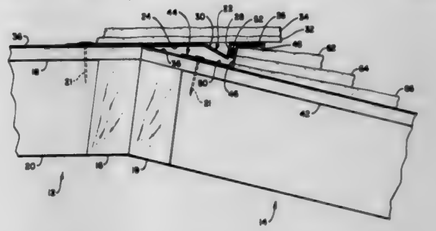
a second edge tab defined by that portion of said central body portion which lies between said second edge and a second fold locating means lying parallel to said longitudinal centerline and lying proximate the midpoint between said second edge and said longitudinal centerline.

4,434,590

FLASHING STRUCTURE FOR GEODESIC DOME STRUCTURES

Roger B. Wheeler, 2604 N. 4th St., Clinton, Iowa 52732

Filed Jan. 16, 1981, Ser. No. 225,856
Int. Cl.³ E04D *1/38*
U.S. Cl. 52—58 **7 Claims**



1. A building construction which includes:

a first member having a generally planar first side;

a second member having a generally planar side dimen-

sioned and configured for engagement with said first side in abutting planar contact, said first and second members are generally planar and are disposed in oblique relationship;

a first flashing element disposed on said first member and extending along said first side, said first flashing element having a laterally extending step disposed intermediate first and second generally planar sections, said first generally planar section being fixed to said first element and said laterally extending step being disposed in generally parallel relationship to said first side, said first generally planar section of said first flashing element being disposed in oblique relationship to at least a part of said step shaped portion of said first flashing element;

a second flashing element disposed on said second member, said second flashing element including first and second generally planar surfaces disposed proximate to a step shaped section thereof, said step shaped portion thereof extending in generally parallel relationship to said second side, said step being disposed spaced away from said second side and above a portion of said second member; and

said step shaped surface of said first flashing element is disposed in substantially nested relationship to said step shaped surface of said second flashing element.

4,434,591

COMPONENT USEFUL IN PRODUCING A COOLING TOWER

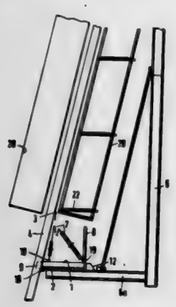
Wolfgang Zerna, Hattingen; Wilfried Krabbe, Buchschlag, and Hans Schäfer, Darmstadt, all of Fed. Rep. of Germany, assignors to Philipp Holzmann AG, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 974,047, Dec. 28, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,659

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759087

Int. Cl.³ E04B *1/54*

U.S. Cl. 52—73 **7 Claims**



1. A pre-cast reinforcing element a cooling tower, in which a plurality of such reinforcing elements serve as forms for receiving a suitable reinforcing material that is bonded to the reinforcing elements and to the cooling tower at spaced points on the tower, said reinforcing element comprising a plate-like element having a middle solid region and trough-like ends each open at the top and a side thereof, in which an open top central channel is provided through said middle solid region communicating with said trough-like ends for receiving said reinforcing material such as concrete.

4,434,592

HEAT AND SOUND INSULATING STRUCTURE FOR BOARDING OR OTHER NON-LOADBEARING WALL

Patrick Renault, Garches, and Francis Ovaert, Paris, both of France, assignors to SMAC Acieroid, Paris, France

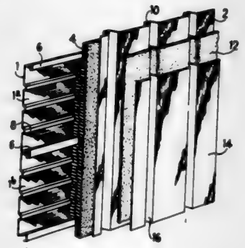
Filed Dec. 12, 1980, Ser. No. 215,923

Claims priority, application France, Dec. 24, 1979, 79 31583

The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.

Int. Cl.³ E04B *1/82*

U.S. Cl. 52—145 **9 Claims**



1. A heat and sound insulating structure for boarding or other non-loadbearing wall of a premises, comprising in combination an inner first metal sheet for facing toward the interior of said premises and a second metal sheet, a heat insulating panel, said sheets having ribs projecting into the panel and intermediate portions between the ribs, the ribs of the first and second sheets being perpendicular to one another, a substantially 2–4 mm thick core of sound insulating material and a solid and thin third metal sheet, one of said second and third metal sheets being an interposed metal sheet interposed between the core and the heat insulating panel, the heat insulating panel, the core and the interposed metal sheet being in adjoining relation to one another in a sandwich assembly, the heat insulating panel being in adjoining relation to one of said first and second metal sheets, the first and second metal sheets, the core, the third sheet and the heat insulating panel being held assembled, the heat insulating panel substantially filling any space between the interposed metal sheet and the adjoining one of the first and second sheets, the intermediate portions of each of the first and second sheets having a given width and the ribs of each of the first and second sheets having a width and a depth which are each a minor fraction of the given width of the intermediate portions thereof, the core of sound insulating material being in fully adjoining relation to at least one of said metal sheets without empty spaces therebetween, and the heat insulating panel being in fully adjoining relation to at least one of said metal sheets without empty spaces therebetween.

4,434,593

WINDOW STRUCTURE OF A VEHICLE BODY

Masayoshi Horike; Haruo Yamamoto; Yukio Yamane, all of Yokosuka; Kazuhiko Yoshiyuki, Yokohama, and Toshiaki Endo, Chigasaki, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 27, 1981, Ser. No. 257,606

Claims priority, application Japan, May 6, 1980, 55-58579

Int. Cl.³ B60J *1/02*

U.S. Cl. 52—208 **5 Claims**

1. A window structure of a vehicle body, comprising:

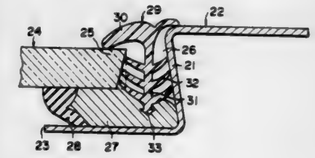
a wall portion forming part of said vehicle body and defining an opening therein;

a window panel closing said opening and having at least one edge portion extending along and spaced apart inwardly from said wall portion for forming a gap between said wall portion and the edge portion;

a body of adhesive intervening between said vehicle body

adjacent said gap and the edge portion of said window panel and securing the window panel to the vehicle body;

a resilient molding having a decorative trim portion bridging said window panel and said vehicle body for covering said gap, a stem portion integral with said decorative trim portion and extending in said gap, said edge portion and said wall portion forming therebetween said gap, said gap having an outer end adjacent said decorative trim portion and an inner end remote from said decorative trim portion, the stem portion of said resilient molding extending between said outer end and said inner end, the stem portion having adjacent said inner end of the gap a bead which is generally arrow-shaped in cross section and which is embedded in said body of adhesive, and a plurality of retrorse fins extending outwardly from both sides of said stem portion and angled toward said decorative trim portion for engagement with said edge portion of said window panel and said wall portion of said vehicle body; and



retaining means constituted by said edge portion of said window panel and said wall portion of said vehicle body, the width of said gap at said outer end being smaller than that of the gap at said inner end.

4,434,594

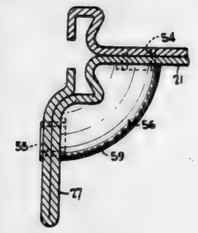
WINDOW FRAME OR DOOR FRAME SECTION

Robert H. Bliss, Monroe, La., assignor to Bliss Steel Products Corp., East Syracuse, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,825

Int. Cl.³ E04C *3/30*; E06B *7/14*

U.S. Cl. 52—209 **4 Claims**



1. A frame section for a window frame or door frame structure, comprising a first roll-formed frame member of substantially L-shape in cross-section having a flat web portion, first and second flanges respectively at opposite ends of said web extending from one side thereof and converging toward one another at acute angles to the plane of said web, said flanges defining an open dovetail shape channel capable of receiving a glass molding means, a first end wall portion extending outwardly of the free end of said first flange and lying parallel to said web portion in spaced relation, a first lip extending from the free end of said first end wall portion toward and substantially perpendicular to said web portion and terminating in spaced relation from an opposite side thereof, a second end wall portion extending outwardly of the free end of said second flange and lying parallel to said web portion in spaced relation, a first abutment wall capable of supporting one side of a window pane and extending from the free end of said second end wall portion away from and substantially perpendicular to said web portion, a second lip extending from said abutment wall toward and substantially perpendicular to said web portion and terminating in spaced relation from said opposite side thereof, a second roll-formed frame member of substantially L-shape in cross-section having a flat web portion interconnected with said web portion of said first frame member and forming together with said first member a body of substantially T-shape in cross-section, third and fourth flanges respectively at opposite ends of said web of said second frame member extending from one side thereof and converging toward one another at acute angles to the plane of said another member web, said third and fourth flanges lying respectively opposite said first and second flanges and defining a dovetail shape channel capable of receiving a glass molding means, a third end wall portion extending outwardly of the free end of said third flange and lying parallel to said web portion of said second member in spaced relation, a third lip extending from the free end of said third end wall portion toward and substantially perpendicular to said web portion of said second member and terminating in spaced relation from an opposite side thereof, said first and third lips extending toward one another and having terminal ends spaced apart for defining a first groove therebetween, a first elastomeric sealing member disposed in said groove and extending outwardly of outer sides of said first and third lips and abutting against said first and third flanges to thereby define a combined weather strip and thermal strip, said first sealing member engaging said terminal ends of said first and third lips so as to be thereby retained in said first groove, a fourth end wall portion extending outwardly of the free end of said fourth flange and lying parallel to said web portion of said another member in spaced relation, a second abutment wall capable of supporting one side of a window pane and extending from the free end of said fourth end wall portion away from and substantially perpendicular to said web portion of said second member, and a fourth lip extending from said second abutment wall toward and substantially perpendicular to said web portion of said second member and terminating in spaced relation from said opposite side thereof, said second and fourth lips extending toward one another and having terminal ends spaced apart for defining a second groove, a second elastomeric sealing member disposed in said second groove and abutting against said second and fourth flanges to thereby define a thermal strip, said second sealing member engaging said terminal ends of said second and fourth flanges so as to be thereby retained in said second groove.

4,434,595

BUILDING STRUCTURE

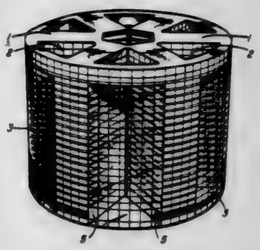
Jean de Brabant, 465 Saint-Jean, Suite 1005, Montreal, Quebec H2Y 2R6, Canada

Filed May 21, 1982, Ser. No. 380,879

Claims priority, application Canada, Jul. 23, 1981, 382360

Int. Cl.³ E04H *1/00*

U.S. Cl. 52—236.2 **16 Claims**



1. A multi-story exterior atrium building comprising:

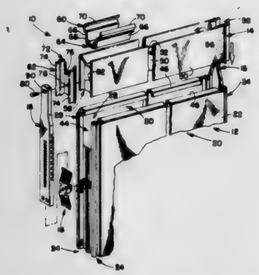
a multi-story habitable space which in horizontal section includes at each story,
a central core, and
a plurality of habitable spokes extending radially outwardly from said central core,
a substantially transparent peripheral wall means connecting the outer ends of adjacent habitable spokes to form a plurality of enclosed exterior atria, each of said exterior atria being disposed between an associated pair of said habitable spokes, said plurality of atria being circumferentially disposed around said central core and vertically extending substantially throughout the height of said multi-story building, and
an outwardly extending side of each of said habitable spokes includes a facade bordering on an associated one of said atria and containing at least one transparent portion wherein as associated exterior atria and space external to the building may be viewed from within the spokes and wherein the exterior surface area of said habitable spokes substantially exceeds the exterior surface area of said exterior atrium building.

4,434,596

PARTITION HEAD ASSEMBLY FOR PARTITION WALL PANELS

John E. McAteer, Maple Heights; Kenneth E. Bisler, North Royalton; Jerry Ptacnik, Garfield Heights, and Richard D. Kish, Lorain, all of Ohio, assignors to Hauserman, Inc., Cleveland, Ohio

Filed Oct. 6, 1978, Ser. No. 949,133
Int. Cl.³ E04B *2/76*
U.S. Cl. 52—243.1 **29 Claims**



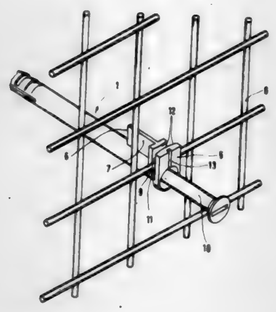
1. The combination of a partition panel, a telescoping head in the top thereof and strut means at at least one end of the head adjustably vertically secured to the partition at all vertical positions thereof, said strut means comprising a strut having an upper portion connected to said head and a lower channel-shape portion, clip means slidingly received in said lower channel-shape portion, said clip means including means for securing the same to said partition panel, said clip means further comprising resilient means for frictionally engaging said clip means with said lower channel-shape portion of said strut, said clip means comprising a body and said resilient means including a pair of resilient wings extending longitudinally from said body in opposite directions and laterally in the same direction, said lower channel-shape portion of said strut being substantially C-shape in transverse section having a web portion, leg portions extending from each vertical edge of said web portion, and inwardly extending terminal portions at the ends of said leg portions substantially parallel with said web portion and spaced apart therefrom, and said wings extending laterally from said body a distance greater than the spacing between said web portion and terminal portions whereby when received in said channel-shape portion of said strut, said wings resiliently urge said body into frictional engagement with said web portion of said lower channel-shape portion.

4,434,597

FASTENING DEVICE

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3/Tumlingen, Fed. Rep. of Germany

Filed Oct. 22, 1981, Ser. No. 313,754
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041697
Int. Cl.³ E05C *5/20*
U.S. Cl. 52—681 **6 Claims**



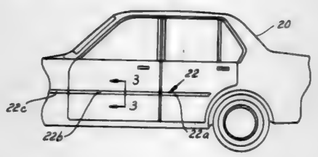
1. A fastening device for use with brickwork comprising: a dowel having a dowel front end, a prolonged neck which projects from said brickwork and anchoring means for fastening said dowel to said brickwork; a holding device arranged at said dowel front end for fastening a wire grating serving as a base for plastering, said holding device being a radially projecting cam having a slot at right angle to the longitudinal dowel axis and said slot opening corresponding to the wire thickness of said wire grating wherein said slot is comprised of a pair of surfaces, at right angle to the longitudinal dowel axis, each having a convex shape.

4,434,598

DECORATIVE MOLDINGS

Robert Adell, Novi, Mich., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Nov. 23, 1981, Ser. No. 323,511
Int. Cl.³ E04F *19/02*; B60R *13/02*
U.S. Cl. 52—716 **12 Claims**



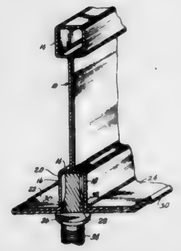
1. In combination with a vehicle body panel, a decorative molding disposed against said vehicle body panel comprising a metal strip containing insulating layer on one side including the longitudinal margins and being formed into a cross-sectional shape having a main body between the longitudinal margins and in which the longitudinal margins are formed into longitudinally extending insulated beads by the margins being turned onto the side of the metal strip opposite the side containing the insulating layer and with the insulated beads being set inwardly in relation to the main body, said insulated beads having insulated faces disposed against said vehicle body panel with said main body being set outwardly from said vehicle body panel to provide a void being said main body and said vehicle body panel, said insulated faces being disposed in a common plane when viewed in cross-section through the molding, and means for attaching said molding to said vehicle body panel via said beads such that the metal of said strip remains insulated from said vehicle body panel.

4,434,599

DROP CEILING FRAME CONSTRUCTION

Francis L. McCall, Hacienda Heights, Calif., assignor to Specified Ceiling Systems, Alhambra, Calif.

Filed Mar. 30, 1982, Ser. No. 363,603
Int. Cl.³ E04B *5/52*; E04C *3/30*
U.S. Cl. 52—729 **3 Claims**



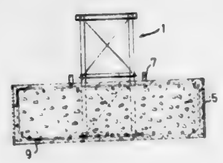
1. A rolled sheet metal longitudinal T-frame member for a drop ceiling to support ceiling tiles or the like comprising:
a web section formed of two sheet metal layers joined along a longitudinal edge, a channel section having two parallel side walls joined by a transverse wall, the sheet metal layers of web section being joined along a longitudinal edge to the side walls of the channel section by respective sheet metal sections forming the transverse wall, the side walls of the channel section extending parallel to and away from the web section, a pair of flange sections lying in a common plane extending perpendicular to the plane of the web section, each flange section being formed of two layers of sheet metal joined along the outer edge of the flange section, one layer of each flange section being joined along one longitudinal edge to the outer edge of a respective one of the side walls of the channel section, the flange sections projecting outwardly away from the respective side walls and forming a flat supporting surface on either side of the channel section for supporting ceiling tiles, the other layer of each of the flange sections including a lip extending into the space between the parallel side walls of the channel section, each lip terminating in an edge extending inwardly toward the transverse wall of the channel, the lips having a gap between the inwardly extending edges.

4,434,600

METHOD FOR FIXING THE ENDS OF CONCRETE COLUMNS IN CONCRETE BASES AND DEVICE FOR CARRYING OUT SAID METHOD

Henrik A. Backman, Bovägen 6, S-18143 Lidingö, Sweden

Filed Apr. 6, 1981, Ser. No. 251,318
Claims priority, application Sweden, Apr. 10, 1980, 8002718
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—741 **6 Claims**



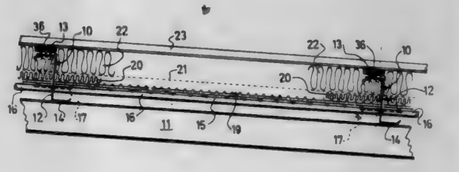
1. A method of fixing the end of a concrete column in a footing base of concrete which comprises the steps of positioning a steel basket into a first form for casting the footing base; pouring concrete into said first form to cast such base with a portion of the steel basket extending thereabove and a portion of the steel basket extending therebelow and embedded in the concrete of said base; positioning the end of the concrete column into the portion of the steel basket extending above said base; positioning a second form about said portion of the steel basket above the base; and pouring concrete into said second form to cast a concrete sheath around said portion of the steel basket and end of the column above the base, said concrete sheath being thereby integrally bonded to the end of the concrete column and to said base.

4,434,601

HEAT INSULATED ROOF STRUCTURE

Hans Zellmer, Ryetvägen 17, Hovås, Sweden 430 80

Filed Feb. 4, 1981, Ser. No. 231,431
Claims priority, application Sweden, Feb. 26, 1980, 8001473; Jul. 2, 1980, 8004896
Int. Cl.³ E04G *21/14*
U.S. Cl. 52—745 **3 Claims**



1. A method of erecting a roof structure including a number of parallel beams carrying heat insulating material covered by a watertight sheeting, each beam having a web portion and at least one flange, comprising the steps of:
(a) locating a number of rafters in spaced-apart, parallel relationship upon the flooring to be covered by said roof structure,
(b) providing spaced-apart holes in the web portions of said beams,
(c) arranging a group of said beams in spaced-apart, parallel relationship upon said rafters perpendicularly thereto and securing them to said rafters,
(d) inserting rods in said holes in the webs of said beams,
(e) fitting rigid channel members of equal length transversely between any two parallel beams upon said rods,
(f) lifting the entity of said rafters, beams and channel members to and incorporating the same in its proper positions in the roof structure, and
(g) finishing the heat insulation and the watertight sheeting thereat.

4,434,602

TRAY LOADING MACHINE

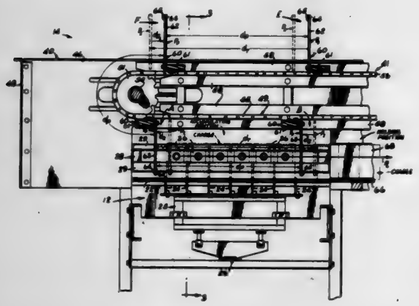
Will L. Culpepper, Tucker, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Aug. 7, 1981, Ser. No. 291,020
Int. Cl.³ B65B *5/06*
U.S. Cl. 53—473 **16 Claims**

1. A tray loading mechanism for moving accumulated charges of containers from an accumulating position into trays at a loading position through the unclosed end flaps of the trays to load the trays comprising:
loading conveyor means including a plurality of pusher means movable between the accumulating and loading positions along an endless path, each of said pusher means adapted to move a charge of containers from the accumulating position into a tray at the loading position as said

pusher means moves in a first direction along the endless path;

drive means for moving said plurality of pusher means along the endless path in successive increments of movement so that all of said pusher means are first simultaneously moved along the endless path in the first direction for a first prescribed distance and then simultaneously moved along the endless path in the opposite direction for a second prescribed distance less than the first prescribed distance during each increment of movement so that said plurality of pusher means moves between the accumulating and loading positions in the first direction along the



endless path, said first prescribed distance selected to cause one of said pusher means to move a charge of containers out of the accumulating position toward the loading position and to cause one of said pusher means to load a charge of containers into the tray at the loading position during each movement of said plurality of pusher means in the first direction, and said second prescribed distance selected to cause that pusher means loading a charge of containers into the tray at the loading position to move out of interference with the unclosed end flaps on the tray during movement of said pusher means in the second direction.

4,434,603

PLANT FOR PRODUCING PALLETLESS STACKS OF PIECE GOODS, PARTICULARLY SACKS AROUND WHICH IS SHRUNK A SHEET

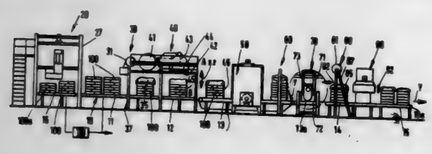
Bernhard Beumer, Beckum, Fed. Rep. of Germany, assignor to Bernhard Beumer Maschinenfabrik KG, Beckum/Westfalen, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,555

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120215

Int. Cl.³ B65B *55/06, 35/50*

U.S. Cl. 53—557 **8 Claims**



1. A plant for producing pallet-less stacks of bundles, particularly sacks, around which is shrunk a sheet, with free spaces formed in the vicinity of the stack base for inserting conveying and lifting mechanisms, such as the arms of the fork of a fork lift truck or the like, using a stacking conveyor belt, by the combination of the following means arranged along the conveyor belt:

(a) a first means for forming individual bundles into layered stacks with a base surface at the top and with free spaces parallel to the stack feed direction on the conveyor disposed on either side of the bundle layer forming the stack base surface, said first means including a bundle row storage means, a horizontally and vertically adjustable packing table to which are supplied the individual bundle rows by means of a transfer mechanism for forming bundle layers on the packing table, and a bundle layer holdback ledge in the horizontal movement area of the packing table for transferring the individual bundle layers from the packing table to the conveyor belt or onto the uppermost bundle layer of a partial stack already formed on the conveyor belt;

(b) a second means for applying a top sheet onto said bundle layer forming the base surface of the stack;

(c) a third means for covering the stack with a dome-shaped sheet of heat shrinkable plastic material, said third means including a welding and cutting means for sealing the top end of a sheet web portion for forming the dome-shaped sheet covering and for cutting the in each case necessary length of a sheet web portion for a stack from a hose-like sheet web, folded in concertina-like manner in the longitudinal side area, provided by a sheet delivery reel located above the stack movement path along said conveyor, wedge plates for opening the sheet web, a gripping device for gripping the open lower edge of the sheet web and for covering the stack with the sheet, said gripping device being movable by means of a drive mechanism from an upper gripping position to a lower spreading or expanding position laterally of the stack, and a lateral edge control device for guiding the sheet web from the reel to the vicinity of the stack to be wrapped;

(d) a fourth means for shrinking the dome-shaped sheet covering drawn over the stack;

(e) a fifth means for pressing the portion of the sheet covering located in the vicinity of said free spaces of the stack onto the wall surfaces bounding the latter, said fifth means comprising pressure rollers movable laterally into the area of the free spaces of the stack;

(f) a sixth means for rotating the stack with the shrunken sheet covering by 180° in the direction of the stack movement path and having supporting devices engaging the stack in the free spaces of the stack;

(g) a seventh means for placing a top sheet of shrinkable plastic material having a larger area than that formed by the upper bundle layer of the rotated stack onto the latter, said seventh means including a sheet delivery reel and a cutting device;

(h) a eighth means for shrinking said top sheet by local heating thereof and having pressing devices for pressing the laterally projecting portion of the top sheet onto the shrunken dome-shaped sheet covering the stack and a following air cooler for the heated top sheet;

(i) supporting means, disposed on the portion of said conveyor following said stack rotating sixth means, said supporting means extending into the free spaces of the stack for engaging and supporting the lower surface of the stack extending laterally from said bundle layer forming the stack base surface; and wherein the end portion of the conveyor belt is constructed as an accumulation belt.

4,434,604

STRAP

Elizabeth A. Bird, Mill House, Mill La., Wychbold, Droitwich, West Midlands, England

Filed Mar. 18, 1982, Ser. No. 359,383

Claims priority, application United Kingdom, Mar. 19, 1981, 8108618

Int. Cl.³ B68C *1/00, 1/14*

U.S. Cl. 54—23 **8 Claims**

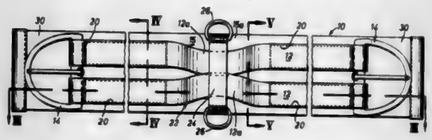
1. A strap, for example, a cinch strap, having:

(a) a first strap portion comprising at least one tensile band or strip;

(b) means for fastening said strap to a support, for example, a saddle, said means being at opposite ends of said strap;

(c) a second strap portion comprising a band or strip arranged in co-extensive longitudinal overlapping superimposed relationship with said first strap portion and attached thereto, said second strap portion being a support portion for the body of an animal such as a horse and being resiliently compressible in a direction at right angles to its length to provide cushioning characteristics for said strap against the body of an animal such as a horse;

(d) at least one closed loop region disposed intermediate the ends of said strap and comprising a length of said first strap portion, a length of said second strap portion, and means securing together said lengths at their opposite extremities to form said at least one loop region and so that



said lengths are non-slidable relative to one another longitudinally of said strap;

(e) said length of said second strap portion being less than said length of said first strap portion when said strap is in a relaxed condition without longitudinal tensile load, the arrangement being effective in the relaxed condition to cause said length of said first strap portion to lie in a slack bight spanned by said second strap portion loop region whereby, in use of the strap under an increasing longitudinal tensile load, said load is transmitted through said length of said second strap portion which stretches and extends longitudinally until the slack of said bight of said first strap portion is taken up, any further increase in said tensil load then being shared between both of said lengths thereby providing an abrupt increase in resistance to stretching of said strap when said slack is taken up.

4,434,605

MOWER-CONDITIONER

Alfred J. Bailey, Coventry, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/GB81/00069, § 371 Date Dec. 21, 1981, § 102(e) Date Dec. 21, 1981, PCT Pub. No. WO81/02966, PCT Pub. Date Oct. 29, 1981

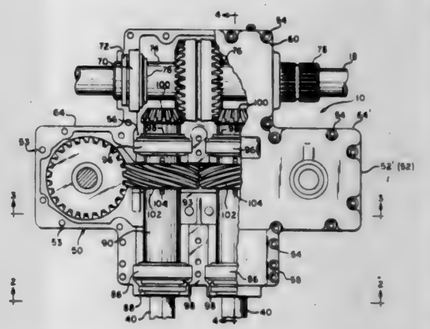
PCT Filed Apr. 15, 1981, Ser. No. 339,458

Claims priority, application United Kingdom, Apr. 22, 1980, 8013131

Int. Cl.³ A01D *47/00*

U.S. Cl. 56—16.4 **10 Claims**

1. A mower conditioner having a conditioning rotor which is supported at its ends in bearing units that are secured to side support walls characterized in that said bearing units (51) are secured to said side support walls (24) by releasable fastening means including a pair of coaxial fasteners (56) defining an axis (68) parallel to that of the rotor axis (23), about which the bearing units (51) and rotor (22) can swing downwards until



the rotor (22) contacts the ground, thereby facilitating removal and re-attachment of the conditioning rotor (22).

4,434,606

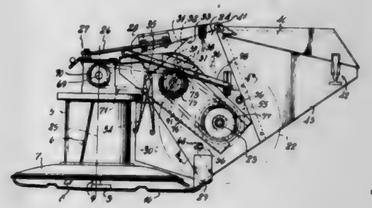
GEAR BOX FOR CORN HARVESTING UNIT

Lawrence G. Rhodes, and John W. Carter, both of Stockton, Mo., assignors to Superior Gear Box Company, Stockton, Mo.

Filed May 4, 1982, Ser. No. 374,705

Int. Cl.³ A01D *47/00;* **F16H** *37/06*

U.S. Cl. 56—106 **12 Claims**



1. A compact gear box for a corn harvesting unit of the type having a pair of longitudinally extending harvesting rolls and a pair of gathering chain assemblies, the gear box comprising:

(a) a gear case including front and rear end portions and opposed side portions,

(b) a drive shaft having an axis of rotation transversely disposed to the axes of the harvesting rolls, said drive shaft being rotatively mounted in the rear end portion of the gear case and having bevel gear means mounted thereon for rotation therewith,

(c) a first pair of shafts rotatively mounted in spaced parallel relation within the gear case, said first shafts having axes of rotation longitudinally aligned with associated axes of the harvesting rolls, each of said first shafts including:

1. a rear end provided with bevel gear means drivingly engageable with the bevel gear means of the drive shaft,

2. a front end, and

3. an intermediate portion having worm a gear means mounted thereon for rotation therewith,

(d) means connecting the harvesting rolls to the first shafts, and

(e) a second pair of shafts mounted in spaced parallel relation within the gear case, said second shafts having axes of rotation transversely disposed to the axes of rotation of the harvesting rolls, each of said second shafts being mounted in one of said gear case side portion and including:

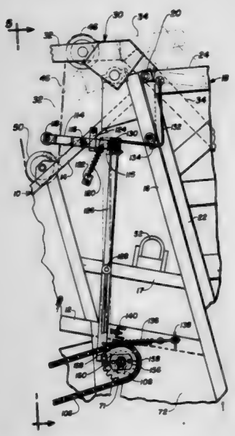
1. a lower end supported by the gear case in thrust bearing relation,
2. an upper end extending outwardly of the gear casing and connected to the gathering chain assembly, and
3. an intermediate portion having a worm wheel means mounted thereon and engageable with the associated worm gear means of one of said first pair of shafts.

4,434,607

OVERFILL PROTECTION APPARATUS FOR ROLL BALING MACHINE

Willis R. Campbell, Ephrata, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 6, 1982, Ser. No. 405,780
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **17 Claims**



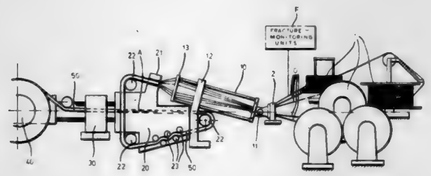
1. A roll baling machine comprising:
(a) a frame;
(b) bale forming means movably supported on said frame defining a bale chamber for forming roll bales of crop material;
(c) pickup means movably supported on said frame for picking up crop material and delivering it to said bale chamber;
(d) drive means for driving said pickup means;
(e) a trip lever rotatably supported on said frame;
(f) an actuating lever rotatably supported on said frame;
(g) said trip lever being movable between a first position where said actuating lever is prevented from interrupting the driving of said pickup means and a second position where said actuating lever is moved to interrupt the driving of said pickup means; and
(h) said trip lever moving from said first position to said second position when said bale chamber is filled with crop material to a predetermined level.

4,434,608

METHOD AND AN APPARATUS FOR MANUFACTURING STRANDS FROM WIRES OR ROPES FROM STRANDS

Helmut Hartmann, Cologne, Fed. Rep. of Germany, assignor to Trefilarbed Drahtwerk Köln GmbH, Cologne, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,103
Claims priority, application Luxembourg, Jan. 15, 1981, 83064
Int. Cl.³ D07B *3/10*
U.S. Cl. 57—58.52 **8 Claims**



1. A method of laying up a multiplicity of elongate, flexible elements into a continuous member in a twist formation, comprising the steps of:
(a) feeding said elongate elements from respective supplies thereof at a fixed location to a common assembly point;
(b) passing said elongate elements from said assembly point through respective passages in a cluster array having a center point in an outwardly fanning pattern;
(c) passing said elongate elements from said array to a closing point where said elements are brought together;
(d) rotating said closing point about an axis while swinging said array around said axis without rotating, thereby forming said member, said points lying substantially along a straight line including an acute angle with said axis whereby said array is displaced along a hollow cycloidal path about said axis; and
(e) taking up said member.

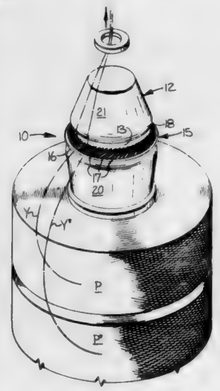
4. An apparatus for laying up a multiplicity of elongate flexible elements into an elongated member having a twist configuration, comprising:
(a) a plurality of supply reels disposed at fixed locations and carrying respective elongate elements;
(b) an assembly point formed with a perforated plate traversed by said elements;
(c) a hollow shaft connected at one end to said assembly point and formed at an opposite end with a distributor plate having a cluster array of passages traversed by said elements whereby said elements fan out to said distributor plate from said assembly point, said hollow shaft being connected to said assembly by a hollow universal joint traversed by said elements and enabling said shaft to swing while preventing rotation of said shaft, said array having a center point;
(d) a flyer rotatable about an axis and formed with an eye receiving said elements from said distributor plate, said eye being spaced outwardly from said axis and disposed along a line connecting said center point and said assembly point and including an acute angle with said axis whereby said elements are laid up in said eye to form said member in a twist pattern; and
(e) means rotatable with said flyer for taking up said member.

4,434,609

YARN BRAKE AND PROCESS FOR TENSIONING AT LEAST TWO YARNS IN A TEXTILE YARN PROCESSING MACHINE

Dieter Schacht, Kempen, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,807
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124482
Int. Cl.³ D01H *7/86, 13/10*; B65H *59/06, 59/36*
U.S. Cl. 57—58.86 **5 Claims**



1. In a textile yarn processing machine including at least two, separate, cross-wound, supply packages of yarn, and means mounting said supply packages in said machine for simultaneous withdrawal of the yarns from said supply packages in a common circumferential direction of movement with respect to said supply packages and in a common linear direction of movement from said supply packages for processing in said machine; the combination therewith of a yarn brake mechanism for applying substantially uniform tension to the at least two yarns moving from said supply packages, said yarn brake mechanism comprising:

a member mounted in said machine and positioned in the linear path of movement of the at least two yarns and defining an outer, frusto-conical shaped, yarn braking surface tapered inwardly in the linear direction of movement of the yarns;

a comb-like, braking, ring member slidably positioned around said braking surface and dimensioned for receiving the at least two moving yarns in braking engagement between said braking surface and said ring member, said ring member having slightly spaced-apart teeth of pliantly elastic, springy material positioned therearound and extending therefrom generally in the linear direction of movement of the yarns, said teeth being inclined with respect to said ring both inwardly such that at least the tips of said teeth contact said braking surface and circumferentially in the circumferential direction of movement of the yarns, so that at least two of said teeth overlap each other along each directrix of said braking surface and frictionally engage each of the at least two yarns regardless of the position of the individual yarns or the position of said ring member on said braking surface; and

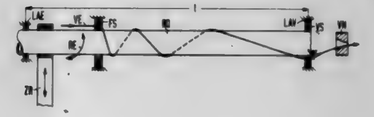
means including an annular shoulder formed on said member at a location normally spaced from the tips of said teeth in the direction of yarn movement for limiting sliding movement of said braking ring member along said braking surface in the linear direction of movement of the yarns, and while permitting limited floating movement of said ring along the braking surface under the influence of the moving yarns and until said tips of said teeth engage said annular shoulder.

4,434,610

PIPE STORE FOR SZ STRANDING

Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 474,160
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210611
Int. Cl.³ D07B *3/00, 7/00*
U.S. Cl. 57—294 **14 Claims**



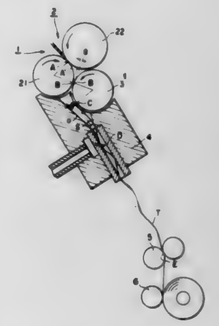
1. In stranding apparatus of the type for SZ stranding of stranding elements in which an elongate pipe store is mounted and driven for rotation through a fixed input apertured guide disc which feeds stranding elements onto the pipe store and with a mutually rotating output apertured stranding disc which feeds the stranding elements in common to an aperture of a stranding nipple, the improvement wherein:
said pipe store comprises fiber material
and cured, hard resin bonding the fiber material.

4,434,611

PNEUMATIC TWISTING SPINNING APPARATUS

Junzo Hasegawa, Obu; Susumu Kawabata, Aichi, and Hiroshi Niimi, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

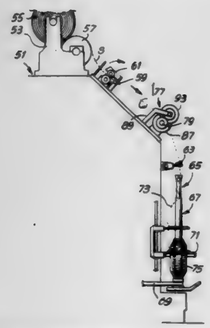
Filed Jan. 20, 1982, Ser. No. 341,113
Claims priority, application Japan, Jan. 31, 1981, 56-13319
Int. Cl.³ D01H *5/28, 5/18*
U.S. Cl. 57—328 **11 Claims**



1. A pneumatic twisting spinning apparatus comprising:
a drafting device having a front roller and back roller, each of said front and back rollers having a peripheral wall for opening fibers and forming bundled fibers having a predetermined thickness;
a deflection means, disposed adjacent to said front roller and spaced from said front roller by a predetermined distance, for varying the direction of fleece travel and supplying the fleece along an outer peripheral wall of said front roller, said deflection means having a contact surface and being positioned and constructed such that fleece which has been supplied along said outer peripheral wall of said front

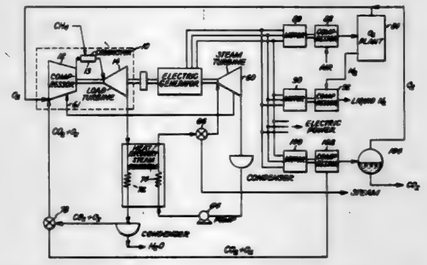
roller subsequently contacts a predetermined length of said contact surface;
a pheumatic twisting nozzle for injecting air under pressure into a twisting tube to form a swirling air stream having an axial component of force, so that the fleece supplied from said deflection means can be twisted into a yarn by the swirling air stream revolving at a high speed;
a take-up roller for withdrawing the yarn from said pneumatic twisting nozzle; and
a winding roller for winding the yarn as it is withdrawn by said withdrawal roller,
whereby ends of the peripheral fibers are separated from said fleece on said outer peripheral wall of said front roller and said contact surface of said deflection means, said peripheral fibers being twisted by said pneumatic twisting nozzle so as to be wound around central main fibers and forming a bundled yarn.

4,434,612
FALSE TWIST DRAFTING DEVICE FOR CONTINUOUS WORKING OF SLUBBINGS OF TEXTILE MATERIALS
Ida Petracchi, Via Palasaccio 6; Antonietta Assirelli, Via C. Abba 69, both of Prato, Florence; Carlo Pacini, Via Paisiello 4, Calenzano, Florence, and Cesare Pacini, Borgo Valsugana 28, Prato, Florence, all of Italy
Filed May 14, 1982, Ser. No. 378,325
Claims priority, application Italy, May 18, 1981, 9420 A/81; Dec. 9, 1981, 9584 A/81
Int. Cl.³ D01H *5/28, 5/18*; D02G *1/04*
U.S. Cl. 57—331 **10 Claims**



1. A false twist drafting device for slubbings of textile material, comprising:
a frame support;
a first shaft rotatably mounted to said frame support;
at least two spaced apart first rotating members each having a first radially extending frontal surface and mounted for rotating with with said first shaft;
at least two second shafts rotatably mounted to said frame support, being parallel to said shaft and axially offset from said first shaft, each of said second shafts having a free end;
a second rotatable member having a second radially extending frontal surface and mounted for rotation with each of said second shafts at each free end to expose at least a portion of each second frontal surface and so that each second member overhangs each free end;
said first and second frontal surfaces of one of said first and second members and said first and second frontal surfaces of the other of said first and second members facing and partly overlapping each other at a contact area for receiving textile to be drafted therebetween, each of said first and second frontal surfaces having a conical annular shoulder, with said conical annular shoulders of said overlapping first and second frontal surfaces approaching each other near a center of said contact area and extending tangentially to each other at said center of said contact area, each of said frontal surfaces having a toothed crown area surrounding and extending outwardly of each conical annular shoulder respectively for drafting textile in said contact area;
transmission means for transmitting rotation of one of said first and second shafts to the other of said first and second shafts so that said first shaft rotates in a direction opposite to said second shafts; and
biasing means for axially moving one of said first and second members with respect to the other of said first and second members to bias said first and second frontal surfaces together in said contact area.

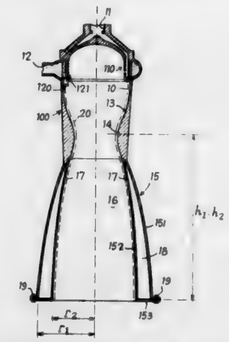
4,434,613
CLOSED CYCLE GAS TURBINE FOR GASEOUS PRODUCTION
Charles R. Stahl, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sep. 2, 1981, Ser. No. 298,571
Int. Cl.³ F02C *6/18*
U.S. Cl. 60—39.07 **6 Claims**



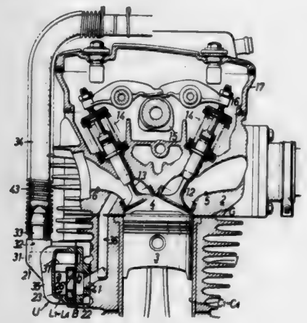
1. An apparatus for producing fluids including at least carbon dioxide comprising:
a gas turbine having a gas compressor and a load turbine driven by combustion of gases introduced into a combustor, said combustor receiving gases at least partially from said compressor;
means for supplying hydrocarbon fuel to said combustor;
means for supplying a stoichiometric excess of oxidant to said combustor to effect complete combustion;
means for feeding back at least some gaseous exhuast including carbon dioxide to said compressor from the output of said load turbine;
means to at least partially divert from said compressor the feedback flow thereto; and
means to remove carbon dioxide from said diverted feedback flow.

4,434,614
COMBUSTION CHAMBER IN A ROCKET PROPULSION SYSTEM WITH MULTIPLE DIVERGENT PORTION
George Gill, 4662 Green Canyon Dr., Las Vegas, Nev. 89103; Alain Souchier, Le Chenet de Blaru, Bonnieres S/Seine, France 78270, and Georges Dorville, Mezieres en Vexin, Tourny, France 27510
Filed Apr. 9, 1982, Ser. No. 366,985
Claims priority, application France, Apr. 13, 1981, 81 07366
Int. Cl.³ F02K *1/08*
U.S. Cl. 60—271 **14 Claims**

1. In a combustion chamber in a rocket propulsion system with multiple divergent portions, comprising a combustion enclosure in which propellants are introduced and a nozzle for ejection of the gases produced in the combustion enclosure, the divergent part of the nozzle and at least one inner divergent portion whose exit section is smaller than that of the outer divergent portion and which is fitted in the outer divergent portion and connected thereto by connecting means associated with means for selectively destroying said connecting means to allow separation and ejection of the inner divergent portion at a predetermined instant of the functioning of the combustion chamber corresponding to a predetermined altitude of the rocket propulsion system, the inner divergent portion is retained in position inside the outer divergent portion by said connecting means which themselves are fixed to the lower part of the inner divergent portion, on the one hand, and to the lower part of the outer divergent portion on the other hand, whilst the upper part of the inner divergent portion is fitted laterally against the upper part of the outer divergent portion, at the exit of the nozzle throat, and pressure balancing ports are arranged in the inner divergent portion.

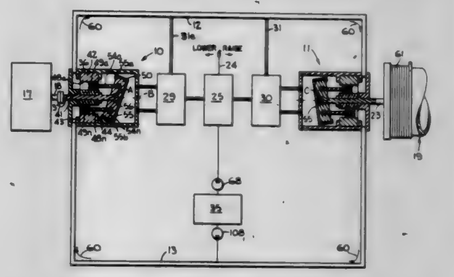


4,434,615
EXHAUST GAS CLEANING DEVICE OF INTERNAL COMBUSTION ENGINES
Yasuo Ikenoya, Kawagoe, and Yoichi Ishida, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1982, Ser. No. 342,429
Claims priority, application Japan, Jan. 23, 1981, 56-9378
Int. Cl.³ F01N *3/30*
U.S. Cl. 60—293 **10 Claims**



1. An exhaust gas cleaning device for an internal combusion engine, said engine having intake and exhaust ports, a cylinder block, a cylinder head and a valve operating mechanism mounted on an upper portion of said cylinder head, said exhaust port opening at the front surface of said cylinder head and an exhaust pipe connected to the opening of said exhaust port and extending downwardly in front of the engine,
said exhaust gas cleaning device comprising:
a secondary-air supply system connected to said exhaust port for supplying secondary air thereto for purifying the exhaust gas;
reed valve means connected in the secondary-air supply system, said reed valve means being adapted to be opened and closed by the pulsation of exhaust gas generated in said exhaust port during engine operation, wherein said reed valve means is mounted on the front side surface of said cylinder block, below said exhaust port and said valve operating mechanism, said reed valve means having an inlet passage and an outlet passage;
a secondary-air intake pipe connecting said inlet passage to the atmosphere; and
a secondary-air supply passage formed in said cylinder block and in said cylinder head for connecting said outlet passage to said exhaust port.

4,434,616
HYDRAULIC WINCH SPEED CONTROL WITH PRESSURE-RESPONSIVE OVERRIDE
Terry M. Christopher, and Randolph J. Nelson, both of Cedar Rapids, Iowa, assignors to FMC Corporation, Chicago, Ill.
Filed Oct. 23, 1981, Ser. No. 314,268
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—451 **10 Claims**

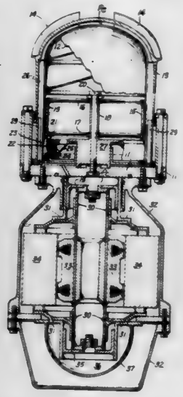


1. A system for controlling the speed of a rotatable load and for preventing the load from stalling when an operator tries to move the load at too fast a rate, said system comprising:
a variable displacement hydraulic motor coupled to said load;
a variable displacement hydraulic pump;
means for connecting said pump to said motor;
power means for operating said pump;
a pump control for controlling the displacement of said pump to control the fluid supplied to said motor;
a motor control for adjusting the displacement of said motor to control the speed of said motor; and
an override circuit for sensing the motor operation and for overriding said motor control in controlling the displacement of said motor to prevent said motor from stalling.

4,434,617
START-UP AND CONTROL METHOD AND APPARATUS FOR RESONANT FREE PISTON STIRLING ENGINE
Michael M. Walsh, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.
Filed Jul. 27, 1982, Ser. No. 402,303
Int. Cl.³ F02G *1/06*
U.S. Cl. 60—520 **10 Claims**

1. A resonant free-piston Stirling engine of the type having a displacer reciprocally movable within an engine housing and at least partially driven by a working gas pressure wave periodically produced within the engine to drive a working member from which work is derived from the engine, the improvement including in combination, displacer linear electrodynamic machine means operatively associated with said displacer, said displacer linear electrodynamic machine means being a general purpose machine capable of selective operation

either as a linear electric motor to partially driven said displacer in conjunction with the periodic working gas pressure



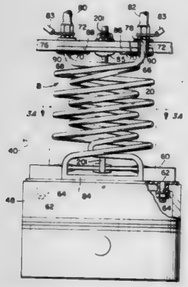
wave or as a linear electric generator providing a load on said displacer.

4,434,618

ENGINE CONSTRUCTION

Corbett L. Dillon, R.R. 4, Box 176, Olive Hill, Ky. 41164

Filed Jul. 19, 1982, Ser. No. 399,663
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—528 **6 Claims**



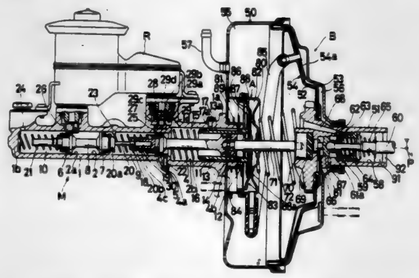
1. An improved engine with at least two cooperating piston-cylinder assemblies wherein each of said assemblies comprises a cylinder formed in an engine block with a cylinder head and a piston in sliding relationship in said cylinder toward and away from said head, a piston rod operatively connected to one side of said piston and to a crankshaft, motion producing means of shape-memory material having a transformation temperature range, such as nickel-titanium or the like, secured to said cylinder head and the side of said piston opposite from said connecting rod, said motion producing means having a heat treated high temperature extended shape memory position and a low temperature low energy compressed position, said motion producing means being of hollow tubular form and having pressure and return hoses connected to said motion producing means for supplying and removing temperature reducing fluid into and from said motion producing means, and electrical heating means connected to said motion producing means, whereby said motion producing means is readily compressed with relatively little force from the extended shape memory position to the compressed position when temperature reducing fluid is supplied to said motion producing means through said pressure hose to redue the temperature of the motion producing means to or below the lower limit of the transformation temperature range and said motion producing means is autmoatically extended with relatively great force from the compressed position to the shape memory position when heated by said heating means to or above the upper limit of the transformation temperature range.

4,434,619

BRAKE MASTER CYLINDER ASSEMBLY

Hideyuki Kobayashi, Toyota, Japan, assignor to Aisen Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 23, 1981, Ser. No. 246,176
Claims priority, application Japan, Mar. 24, 1980, 55-38015
Int. Cl.³ B60T *13/00*
U.S. Cl. 60—547.1 **5 Claims**



1. A brake master cylinder assembly responsive to motion of a brake pedal, comprising:

(a) a cylinder body having a stepped axial bore including a large diameter portion at one end and a small diameter portion at the other end;

(b) a tubular piston having an axial bore slidably disposed in said large diameter portion;

(c) a primary piston having axially opposed end portions, one said end portion being slidably disposed in said small diameter portion and the other said end portion being slidably disposed in the bore of said tubular piston for axial movement relative to said tubular piston in response to an axial force without transmitting the axial force to said tubular piston, said primary piston being operatively connected to said brake pedal at the other end portion thereof;

(d) a pressure chamber in said small diameter portion defined by the one end portion of said primary piston, said pressure chamber being in fluid communication with an outlet in said cylinder body;

(e) an annular pressure chamber defined by said primary piston and said tubular piston in restricted fluid communication with said pressure chamber for supplying fluid at low pressure in said pressure chamber;

(f) a vacuum brake booster operatively interconnecting said brake pedal and said primary piston, said brake booster comprising a power piston operatively connected to said primary piston, said power piston separating said booster into first and second chambers normally in fluid communication with each other, said first chamber being positioned between said cylinder body and said power piston and being in fluid communication with a substantial vacuum and valve means operatively connected to said brake pedal for selectively interrupting fluid communication between said chambers and connecting said second chamber to atmospheric pressure;

(g) a vacuum actuator disposed in said brake booster and comprising a diaphragm piston operatively connected to said tubular piston, said diaphragm piston separating said actuator into first and second actuator chambers normally in fluid communication with each other, said first actuator chamber being positioned between said cylinder body and said diaphragm piston and being in fluid communication with said first chamber, and means for selectively interrupting fluid communication between said actuator chambers and connecting said second actuator chamber to atmospheric pressure, said vacuum actuator being responsive to movement of said brake pedal for moving said tubular piston relative to said primary piston toward the other end of said cylinder body to create low pressure in said annular pressure chamber and for preventing said brake pedal from receiving the reaction force on said tubular piston generated by said low pressure;

(h) first return spring means for axially urging said primary piston toward said one end of said cylinder body to normally hold said primary piston in its return position; and

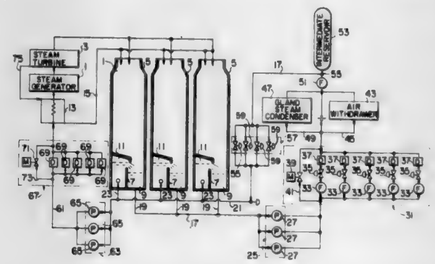
(i) second return spring means independent of said first return spring means for axially urging said tubular piston toward said one end of said cylinder body to normally hold said tubular piston in its return position.

4,434,620

CONDENSATION SYSTEM FOR POWER PLANT

Hitoshi Ishimaru; Yoji Nagai, and Toyohiko Masuda, all of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,335
Claims priority, application Japan, Jul. 8, 1981, 56-105545
Int. Cl.³ F01K *19/00*
U.S. Cl. 60—657 **12 Claims**



1. A condensation system for use in a power plant including a steam generator and a steam turbine, comprising:

at least one side stream condenser defining therein first and second hot wells, said first hot well receiving therein condensate produced by condensing steam exhausted from said steam turbine;

a condensate feed line having one end thereof connected to said first hot well and the other end communicating with said second hot well;

condensate pump means provided in said condensate feed line for forcibly delivering the condensate through said condensate feed line from said first hot well;

first purification means provided in said condensate feed line for removing impurities from the condensate flowing through said condensate feed line;

a main condensate feed line having one end thereof communicating with said condensate feed line and the other end connected to said steam generator;

main condensate pump means provided in said main condensate feed line for forcibly delivering the condensate through said main condensate feed line; and

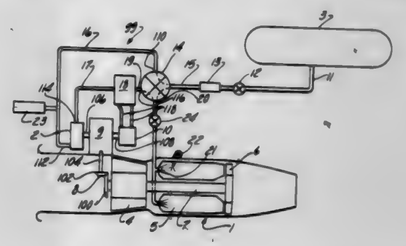
second purification means provided in said main condensate feed line downstream of said main condensate pump means for removing impurities from the condensate flowing through said main condensate feed line.

4,434,621

ENGINE FUEL SYSTEM

Dennis E. Barbeau, Lambertville, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 4, 1981, Ser. No. 299,393
Int. Cl.³ F02C *7/232*
U.S. Cl. 60—734 **8 Claims**



1. A fuel system for an engine having a fuel port comprising:

a fuel inlet conduit having one end adapted for connection with a source of fuel,

a fuel outlet conduit having one end adapted for connection with the engine fuel port,

a valve means, the other ends of said fuel inlet conduit and fuel outlet conduit being fluidly connected to said valve means,

a third conduit having a first and second end fluidly connected to said valve means,

fuel pump means connected in series with and at a midpoint of said third conduit for pumping fuel through said third conduit from its first end and towards its second end,

said valve means being actuatable between a bypass position and an operating position, wherein in said bypass position said valve means fluidly connects said other ends of said fuel inlet and fuel outlet conduits and simultaneously sealingly closes said first and second ends of said third conduit, and wherein in said operating position said valve means fluidly connects said fuel inlet conduit with the first end of the third conduit and simultaneously fluidly connects said second end of the third conduit with the fuel outlet conduit.

4,434,622

REGENERATIVE CYCLIC PROCESS FOR REFRIGERATING MACHINES

Otto Winkler, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Jun. 4, 1982, Ser. No. 384,931
Claims priority, application Switzerland, Jun. 5, 1981, 3700/81
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **6 Claims**

1. A regenerative refrigerating machine comprising:

a housing defining a working space;

a displacer movable in said housing for changing the volume of said working space;

displacer drive means connected to said displacer for moving said displacer in said housing;

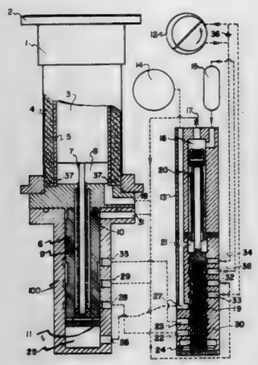
a compressor having a high pressure side and a low pressure side;

valve means connected between said compressor low and high pressure sides and said housing;

an intermediate vessel connected to said valve means for receiving a gaseous coolant at a medium pressure between a maximum and a minimum pressure of a cyclic cooling process for said refrigerating machine;

said valve means with compressor operable during an expansion phase of said process to directly pump gaseous coolant out of said working volume, to compress the gaseous

coolant to a pressure above a pressure thereof in said working volume and supply the coolant to said intermediate vessel;



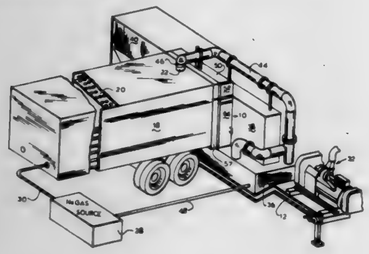
said valve means and compressor comparable during a compression phase of said process to pump coolant out of said intermediate vessel to said working volume.

4,434,623

HYDRO-COOLING AIR LOCK

George E. Wessel, Jr., Nhy-Temp, Inc., Hwy. 65, McClure, Ohio 43534

Filed Nov. 8, 1982, Ser. No. 439,919
Int. Cl.³ F25D 17/02
U.S. Cl. 62—64 14 Claims



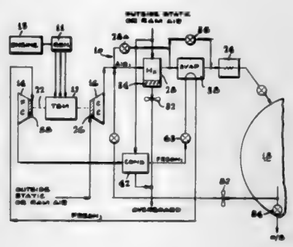
1. The process involving
a. vegetation in a
b. transport container having
(i) an opening in the walls thereof with
(ii) at least one door over the opening,
c. sprinkler means in the container for flushing chilled water over the vegetation therein,
wherein the improved method comprises:
d. moving the container against an alcove,
e. forming an air-tight seal between the alcove and the container,
f. opening the door into the alcove,
g. flushing the vegetation in the container by pumping chilled water into the sprinkler means within the container,
h. draining the water from the container into the alcove,
i. re-chilling the water from the alcove and pumping it again through the sprinkler means, then
j. ceasing the pumping of the water,
k. closing the doors within the alcove, and
l. moving the container away from the alcove.

4,434,624

ENERGY-EFFICIENT ALL-ELECTRIC ECS FOR AIRCRAFT

Michael J. Cronin, Sherman Oaks, and Gordon Seid, Los Angeles, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Mar. 27, 1981, Ser. No. 248,603
Int. Cl.³ F28B 9/00
U.S. Cl. 62—172 34 Claims



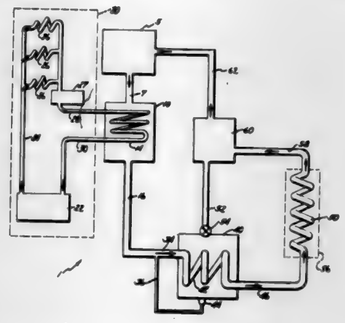
1. An environmental control system for an aircraft having at least one engine, at least one generator driven by said at least one engine, and a cabin, said environmental control system being adapted for providing conditioned air to said cabin, the improvement comprising:
an air circuit for providing said conditioned air to said cabin;
an evaporative heat exchanger located within said air circuit;
a coolant circuit for providing a fluid coolant path through said environmental control system, said coolant circuit coupled to said evaporative heat exchanger;
a coolant compressor located within said coolant circuit;
expansion valve means located within said coolant circuit for evaporating said fluid coolant;
a cabin compressor located within said air circuit;
electric motor means adapted to be powered by said at least one generator; and
means associated with said electric motor whereby said motor is adapted to drive both said coolant compressor and said cabin compressor.

4,434,625

COMPUTER COOLING SYSTEM

Roger W. Cree, Stillwater, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 20, 1983, Ser. No. 488,320
Int. Cl.³ F25B 5/00
U.S. Cl. 62—199 6 Claims



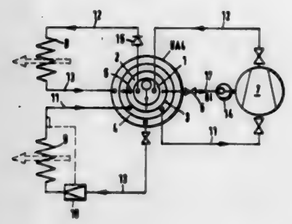
1. A cooling system for a computer, comprising:
a compressor for compressing lower pressure, lower temperature gaseous refrigerant of said cooling system into higher pressure, higher temperature gaseous refrigerant;
a first stage condenser for condensing said higher pressure, higher temperature gaseous refrigerant into lower temperature, partially liquid refrigerant, said first stage condenser including a heat exchange conduit which carries liquid coolant from a building heating system comprised of a boiler, supply conduits from said boiler to a plurality of heat exchangers, return conduits from said heat exchangers to a heating system condenser, and conduits from said heating system condenser to said boiler, said heat exchange conduits of said condenser being supplied liquid coolant from said heating system condenser, said coolant passing through said heat exchange conduits of said first stage condenser before returning to said boiler, said higher pressure, higher temperature gaseous refrigerant of said cooling system giving up heat to said coolant in said heat exchange conduits before leaving said condenser as lower temperature, partially liquid refrigerant;
a second stage condenser for condensing said partially liquid refrigerant to fully condensed liquid refrigerant, comprising a diversion conduit for directing a portion of said partially liquid refrigerant to an expansion valve of said second stage condenser, a heat exchange conduit for carrying the nondiverted portion of said partially liquid refrigerant through said second stage condenser, the diverted portion of said partially liquid refrigerant being flushed into said second stage condenser through said expansion valve to reduce the temperature of said nondiverted portion of said partially liquid refrigerant in said heat exchange conduit so that fully condensed refrigerant leaves said second stage condenser from said heat exchange conduits; and
cooling coils for cooling said computer, said fully condensed refrigerant passing through said cooling coils to draw heat from and cool said computer whereby used refrigerant is discharged from said cooling coils and returned to said compressor.

4,434,626

MAINTENANCE AND PROTECTION DEVICES FOR COOLING PLANTS

Manfred Schmidt, Berlin, Fed. Rep. of Germany, assignor to Erich Schultze KG, Berlin, Fed. Rep. of Germany

Division of Ser. No. 171,186, Jul. 22, 1980, Pat. No. 4,329,854.
This application Apr. 12, 1982, Ser. No. 367,787
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930404
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ F25B 43/02
U.S. Cl. 62—470 2 Claims



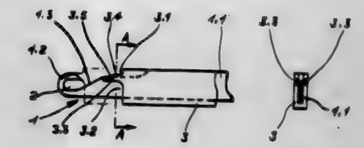
1. In a single circuit refrigeration plant in which a gas stream, while flowing in the circuit, is compressed by a compressor which injects oil into the gas stream while compressing the gas stream, circulated from the pressure side of the compressor and through a condensor, then through an evaporator and finally back to the suction side of the compressor,
an apparatus improvement, comprising:
a housing having wall means defining two concentrically located contiguous compartments, each being interposed in said single circuit at a respectively different relative location as follows:
(a) a first compartment being interposed between the pressure side of the compressor and the condenser;
(b) a second compartment being interposed between the first compartment and the suction side of the compressor;
there being further provided in said circuit a degassing valve between the second compartment and the suction side of the compressor, a non-return valve between the first compartment and the condenser, and a fluid collector between the condenser and the suction side of the compressor;
there being further provided a gas pressure-operated means connecting said first compartment with said second compartment for delivering pressurized oil separating from said compressed gas stream in said first compartment to said second compartment with some gas dissolved therein; and conduit means for delivering degassified oil collecting in the second compartment back to the compressor;
the first compartment being axially centrally located and directly ringed by the second compartment,
so that, in operation:
as the compressed gas stream enters the first compartment the pressurized oil therein separates therefrom and the resultingly de-oiled compressed gas stream flows to and through the condenser, to and through the evaporator, is combined with the gas that is degassed from the oil in the second compartment, and the resulting gas stream is returned to the suction side of the compressor, meanwhile, the oil degassed and collected in the second compartment is cooled at least in part by indirect heat transfer with the atmosphere exteriorly of the apparatus and is returned to the compressor,
so that the two compartments serve the following principal functions:
oil is separated from compressed gas in the first compartment and
separated oil is degassed in the second compartment.

4,434,627

STITCH FORMING DEVICE FOR KNITTING MACHINES

Bruno Pfrommer, Emmetten, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland

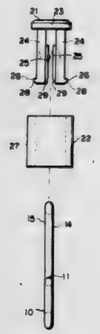
Filed Apr. 19, 1982, Ser. No. 369,645
Claims priority, application Switzerland, May 14, 1981, 3135/81
Int. Cl.³ D04B 35/04
U.S. Cl. 66—120 13 Claims



1. A stitch forming device for knitting machines or the like, comprising:
a hook element having a body member and a hook arranged at one end of the body member and defining a hook opening;
said body member having a bevelled portion forming a hollow throat with said hook opening;
a closure element cooperating with said hook element;
said closure element being constructed over at least a portion of its length by a closed hollow body member;
said closed hollow body member slidingly guiding said hook element;
said closed hollow body member possessing a nose-shaped

portion forming an inner surface and an end surface at the end thereof confronting said hook opening;
said end surface of said nose-shaped portion being bevelled in the same direction as said bevelled portion of said body member of said hook element; and
said closure element and said hook element being displaceable relative to each other to define a closed position and an opened position with respect to said hook in which said nose-shaped portion of said closed hollow body member bears upon said hook and upon said body member, respectively.

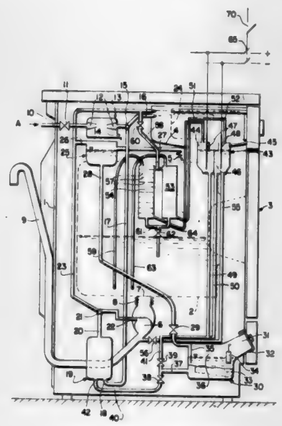
4,434,628
KNITTING NEEDLE ASSEMBLY
Takashi Tsuzuki, Kodaira, Japan, assignor to Silver Seiko Ltd., Kodaira, Japan
Filed Apr. 13, 1982, Ser. No. 367,935
Int. Cl.³ D04B 35/04
U.S. Cl. 66—123 **9 Claims**



1. A knitting needle assembly comprising:
a knitting needle made of a metal material and having a laterally extending butt formed thereon, said butt defining a groove which extends on a side along the length thereof from a base end near to a free end thereof; and
an attachment made of a plastic material and comprising a substantially cylindrical outer member and an inner member, said outer member defining an inner bore in which said inner member is retained, wherein said inner and outer members define a recess for receiving the free end of said butt therein to allow said members to be mounted on the free end of said butt, said inner member having formed on an inside surface thereof, which partially defines said recess, a projection adapted to fit in said groove of said butt thereby to prevent said members from being inadvertently removed from said butt.

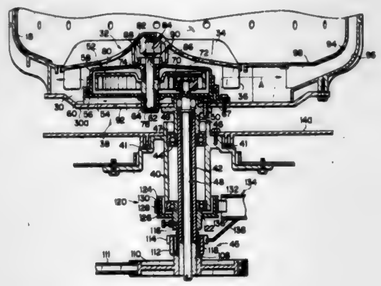
4,434,629
WASHING MACHINE WITH ELECTROCHEMICAL CELL
Giuseppe Bianchi, Milan, and Roberto Sburlino, Udine, both of Italy, assignors to Industrie Zanussi S.p.A., Pordenone, Italy
Filed Sep. 30, 1982, Ser. No. 431,077
Claims priority, application Italy, Dec. 14, 1981, 45738 A/81
Int. Cl.³ D06F 35/00
U.S. Cl. 68—13 A **9 Claims**

1. A laundry washing machine comprising:
a washing tub;
water supply means;
decalcifying means for receiving water from said water supply means and for discharging softened water;
a metering tank at an upper position in the machine for receiving softened water from said decalcifying means;
brine tank means at a lower position in the machine for receiving softened water from said metering tank and for generating brine;
an electrochemical cell for generating chlorine gas;
first means for selectively supplying brine from said brine tank means to said electrochemical cell;
second means for selectively supplying brine from said brine tank means to said decalcifying means during a stage of regeneration thereof;
a discharge extending from a lower portion of said washing tub;



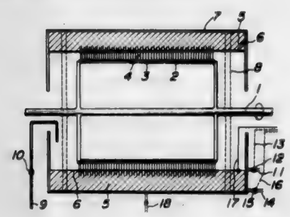
third means connecting said electrochemical cell to said discharge;
absorption means connected to said decalcifying means to receive therefrom softened water and connected to said electrochemical cell to receive therefrom said chlorine gas, for absorbing said chlorine gas in said softened water; and
means for selectively supplying said softened water and absorbed chlorine gas into said washing tub, thereby to perform a bleaching operation.

4,434,630
WASHER-DEHYDRATOR
Yoshio Ikeda, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 1, 1982, Ser. No. 353,382
Claims priority, application Japan, Mar. 15, 1981, 56-31744
Int. Cl.³ D06F 17/06, 23/04
U.S. Cl. 68—18 F **7 Claims**



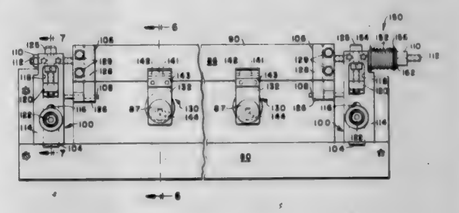
1. A washer-dehydrator which comprises:
a water tank;
a rotary tub which is rotatably held in the water tank and which has a depression eccentrically positioned therein and at least one communication hole for communicating the water tank therewith;
a pulsator rotatably fitted into the depression;
a pulsator shaft concentrically fitted to the pulsator;
a washing shaft concentrically fitted to the rotary tub;
a rotation moment-transmitting mechanism provided between the washing shaft and pulsator shaft to transmit the rotation moment of the washing shaft to the pulsator shaft;
a sealed case for covering the rotation moment-transmitting mechanism in a watertight state which is set below the pulsator in the depression at a point raised above the base of the depression at a prescribed distance, said base of the depression having a penetrated hole therein to let said depression communicate with a space defined between the rotary tub and water tank;
a water-circulation path which is provided in the rotary tub, one end of which is opened to the depression, and the other end of which is positioned above the highest level of water received in the rotary tub;
a filter mechanism which includes an inlet connected to said other end of the water-circulation path and an outlet opened to the inside of the rotary tub, and which filters water running therethrough;
a plurality of pumping blades fitted to the underside of the pulsator around the sealed case, which, when the pulsator is rotated, draws the water held in the rotary tub into the depression through the communication hole and penetrated hole, and sends forth the water held in the depression to the filter mechanism through the water-circulation path; and
guide means provided between the sealed case and the base plate of the depression to conduct the water sucked through the penetrating hole to the outer peripheral wall of the sealed case.

4,434,631
APPARATUS FOR TREATING PILE ARTICLES
Masao Matsui, Takatsuki; Kazuo Okamoto, and Takao Osagawa, both of Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers Ltd., Osaka, both of, Japan
Filed Jan. 25, 1982, Ser. No. 342,557
Claims priority, application Japan, Jan. 26, 1981, 56-10364
Int. Cl.³ D06B 1/10
U.S. Cl. 68—171 **6 Claims**



1. An apparatus for treating a pile article or articles, comprising:
an elongated, rotatable, hollow container, an elongated, rotatable body substantially coaxially disposed inside said container, said container and said body being mounted for rotation at substantially the same speed about a common, longitudinally extending, axis of rotation, said container having a longitudinally extending inner wall surface and said body having longitudinally extending outer wall surface means opposed to and spaced radially inwardly from said inner wall surface of said container, said inner wall surface and said outer wall surface means defining a treatment zone therebetween, the pile article or articles being fixed on said outer wall surface means of said body so that rotation of said body applies centrifugal force on the piles so that they extend radially outwardly in said treatment zone, said container retaining at least one treating liquid in said treatment zone so that rotation of said container applies centrifugal force on said treating liquid to form same into at least one layer on said inner wall surface in said treatment zone and with at least one interface of said treating liquid contacting the piles on the pile article or articles; feeding means for feeding treating liquid into said container and discharging means for discharging treating liquid from said container.

4,434,632
APPARATUS FOR THE APPLICATION OF LIQUIDS TO MOVING MATERIALS
John K. McCollough, Jr., and John H. O'Neill, Jr., both of Spartanburg, assignors to Milliken Research Corporation, Spartanburg, S.C.
Filed Nov. 25, 1981, Ser. No. 324,789
Int. Cl.³ D06B 1/02
U.S. Cl. 68—205 R **5 Claims**



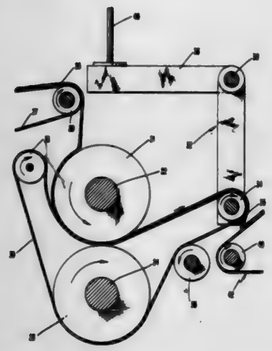
1. In an apparatus for applying liquids to moving material having means for conveying the material in a pre-determined path of travel, liquid applicator means hving a row of outlets positioned above the path of travel of the material for continuously discharging a row of generally parallel streams of liquid downwardly toward the path of travel of the material, fluid discharge means positioned on one side of said row of outlets so that the discharge axes of said fluid discharge means intersect the discharge axes of said outlets, a liquid collection chamber mounted on the other side of said row of outlets, a thin liquid deflector blade extending across said path of travel, mounting means for mounting said liquid deflector blade in the path of travel of the liquid deflected by said fluid discharge means to said liquid collection chamber, said mounting means including tensioning means associated with the ends of said blade and including a threaded shaft extending beyond said blade end to apply outward tension to the ends of said deflector blade, said tensioning means further including tension measuring means for determining the tension applied by said tensioning means along the axis of said blade, said measuring means comprising a cylindrical array of at least two spring washers under compression, arranged in linear fashion along said shaft, said shaft being aligned generally parallel to the axis of said blade, and means for supplying fluid to said fluid discharge means to direct liquid from said liquid application means into said liquid collection chamber.

4,434,633

HIGH EXPRESSION SQUEEZE ROLL LIQUOR EXTRACTION OF NONWOVEN BATTS

Allen R. Winch, Westfield, N.J., and William A. Rearick, Simpsonville, S.C., assignors to Cotton Incorporated, New York, N.Y.

Division of Ser. No. 259,567, May 1, 1981. This application Sep. 30, 1982, Ser. No. 428,802
Int. Cl.³ D06B *15/02*
U.S. Cl. 68—267 **20 Claims**



20. A squeeze roll arrangement for extracting liquor from a nonwoven textile fiber batt comprising:

high expression, squeeze roll means for providing a nip to express liquor from a batt including an upper squeeze roll and a lower squeeze roll;

first primary conveyor means for conveying the batt to the upper squeeze roll means;

second primary converyor means for conveying the batt away from the squeeze roll means; and

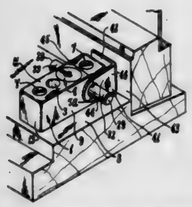
auxiliary conveyor means defining a nip with said upper squeeze roll means for progressively conveying and squeezing said batt through said nip of said auxiliary conveyor means and said upper squeeze roll means and then through said nip of said squeeze roll means.

4,434,634

LOCK

Gerald F. Dunphy, and Lance E. Best, both of Melbourne, Australia, assignors to Ogden Industries Pty. Limited, Victoria, Australia

Filed Dec. 1, 1981, Ser. No. 327,254
Claims priority, application Australia, Dec. 2, 1980, PE6720
Int. Cl.³ E05B *65/00*; E05C *1/04*
U.S. Cl. 70—89 **10 Claims**



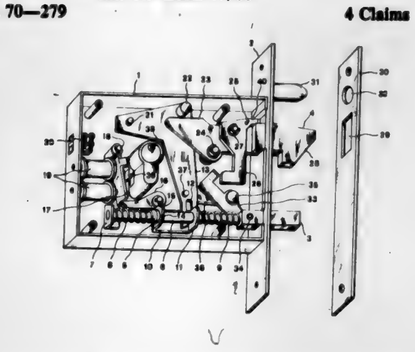
1. A lock including a six sided body adapted to be secured to a support, two passages extending completely through said body, one of said passages extending between an opposite two of said sides and the other said passage extending between another two said sides, a locking bar slidably receivable in either of said passages to be slidable therein for longitudinal movement relative to said body between an operative position and an inoperative position, said bar being insertable into either end of one of said passages and having a locking end portion which protrudes from an end of a selected said passage at least in said operative position, a recess in said locking bar intermediate the ends thereof, a primary locking member movably mounted on said body for movement between a locking position and an unlocking position, said primary locking member protruding into said recess and thereby holding said bar against said longitudinal movement when said bar is located in said one passage and is in said operative position and said primary locking member is in said locking position, and an intermediate locking member movably mounted on said body and being responsive to movement of said primary locking member into said locking position to protrude into said recess when said locking bar is in said other passage and is in said operative position.

4,434,635

MANUALLY AND ELECTRICALLY COMMANDED AUTOMATIC HOOKLOCK

Augusto Borgato, Rovigo, Italy, assignor to F.A.M.A. di Sandra Borgato & C., S.n.c., Italy

Filed Mar. 10, 1981, Ser. No. 242,507
Claims priority, application Italy, Mar. 11, 1980, 64503 A/80; May 7, 1980, 64504 A/80
Int. Cl.³ E05B *47/00*
U.S. Cl. 70—279 **4 Claims**



1. An electrically and manually operable lock mechanism for a sliding gate comprising:

a casing adapted for attachment to a sliding gate and including a bearing flange having an opening therethrough adapted to be aligned with a similar opening in a lock plate on a gate post as a gate having said lock mechanism attached thereto is closed against the gatepost;

a hook member pivotably mounted within said casing and extending through the bearing flange opening, with an inclined surface adapted to act upon an edge of the lock plate opening to pivotably raise said hook member as the sliding gate is closing against the gate post and to lower said hook member when the gate is fully closed, with said hook member then being hooked on the lock plate;

a first lever pivotably mounted within said casing and including a portion engaging said hook member to pivot said first lever in a first direction as said hook member is raised;

means for pivotably biasing said first lever in a second direction opposite the first direction to retain said first lever engaging portion in engagement with said hook member;

a rod member slidably mounted within said casing;

first moving means responsive to the closing of said lock mechanism against the lock plate as the sliding gate is closing against the gate post for moving said slidably mounted rod member to a first position;

latching means responsive to said slidably mounted rod assuming its first position for latching said first lever in a latched position with said engaging portion acting against said hook member to prevent raising of said hook member;

a blocking plate member movably mounted within said casing for movement between a first position and a second position;

means for biasing said blocking plate member to its first position;

electrical actuation means for moving said blocking plate member to its second position;

key operated manual actuation means for moving said blocking plate member to its second position;

second moving means responsive to movement of said blocking plate member to its second position for moving said latching means to release said first lever from the latched position and for pivotably raising said hook member to permit withdrawal of said hook member from the locking plate opening and sliding opening of the sliding gate; and

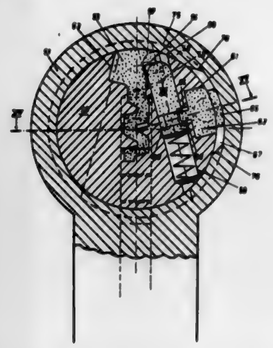
third moving means responsive to movement of said lock mechanism away from the lock plate as the sliding gate is opening for moving said slidably mounted rod member to a second position and for releasing said hook member to permit said hook member to be freely raised and lowered.

4,434,636

LOCK HAVING A CYLINDER CORE AND A HOUSING

Kurt Prunbauer, Herzogenburg, Austria, assignor to EVVA-Werk Spezialerzeugung von Zylinder-und Sicherheitsschlössern GmbH & Co. KG, Vienna, Austria

Filed Nov. 21, 1980, Ser. No. 209,286
Claims priority, application Austria, Nov. 28, 1979, 7553/79
Int. Cl.³ E05B *15/14, 27/06*
U.S. Cl. 70—358 **4 Claims**



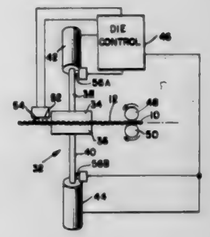
1. A cylinder lock comprising a core provided with a keyway defining an elongated center plane and being adapted for receiving and guiding a key, said key having a key bit formed with a rear bit portion and a front bit portion, at least one side of respective rear and front bit portions being provided with control projections and recesses and the at least one side of the front bit portion being provided with guiding grooves and ribs, a cylinder housing for said core, first tumbler means arranged in said housing and said core and being controlled by the control projections and recesses on the front bit portion, auxiliary tumbler means arranged in said core at locations which are spaced apart from said first tumbler means and cooperating with corresponding recesses in said housing, feeler elements arranged for reciprocating movement in said core between said auxiliary tumbler means and said keyway, said feeler elements forming an oblique angle with the center plane of said keyway and being controllable by the control projections and recesses on said rear bit portion to control the movement of said auxiliary tumbler means, said auxiliary tumbler means including an axial groove formed in the periphery of said core, a continuous bar movable in axial direction in said groove, said continuous bar being formed with inner extensions engageable with said feeler elements, and with opposite outer extensions projecting towards said housing, said housing including an axial recess for accommodating said outer extension and being also formed with a series of radial grooves for guiding said outer extensions in one axial position of said continuous bar while the walls of said axial groove in said housing act as stop surfaces for said outer extensions in another position of said bar.

4,434,637

METHOD AND APPARATUS FOR FLATTENING CORRUGATED HEAT EXCHANGER PLATE

John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 165,831, filed as a PCT US80/00082, Jan. 28, 1980, published as WO81/02121, Aug. 6, 1981, § 102(e) dated Jan. 28, 1980. Pat. No. 4,346,582
This application Mar. 3, 1982, Ser. No. 354,212
Int. Cl.³ B21D *53/04*
U.S. Cl. 72—17 **11 Claims**



1. An apparatus (32) for crushing the ridges (12) in a corrugated electrically conductive sheet (10) comprising die set means (34, 36, 38, 40, 42, 44) for receiving said sheet (10) and moving into and away from engagement therewith, control means (46) for initiating the movement of said die set means (34, 36, 38, 40, 42, 44), and sensing means (52,54) for sensing the position of said sheet (10) relative to said die set means (34, 36, 38, 40, 42, 44) and operating to cause said control means (46) to initiate movement of said die set means (34, 36, 38, 40, 42, 44) into engagement with said sheet (10) when the sheet (10) reaches predetermined positions, said sensing means (52, 54) including switch means (52, 54) in contact with said sheet (10), said switch means (52,54) including a bridging member (104) of sufficient size to span the distance between two adjacent ridges (12) in said corrugated electrically conductive sheet (10), said bridging member (104) including two sections of electrically conductive material (108, 110) and insulating means (112) electrically separating said sections (108,110), and electrical connector means (114,116) extending from each of said electrically conductive sections (108,110) to said control means.

4,434,638

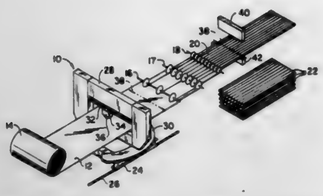
METHOD AND APPARATUS FOR SEVERING CORRUGATED METAL PRODUCTS

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001

Division of Ser. No. 167,942, Jul. 14, 1980, Pat. No. 4,346,576. This application Jul. 30, 1982, Ser. No. 403,909
Int. Cl.³ B21F *11/00*
U.S. Cl. 72—130 **14 Claims**

1. A method for producing from flat metal sheet a corrugated product having a predetermined length comprising the steps of: feeding an elongated flat metal sheet in a longitudinal direction of the sheet towards a corrugator; forming a score line in the flat metal sheet across a width thereof, the score line extending from one face towards another, opposite face of the sheet; thereafter passing the sheet through the corrugator to transform the sheet into a corrugated plate having longitudinally extending, parallel side-by-side corrugations; and severing the corrugated project from the corrugated plate by apply-

ing a force to the plate in a direction transverse to a surface of the plate, the force being applied in the vicinity of the score



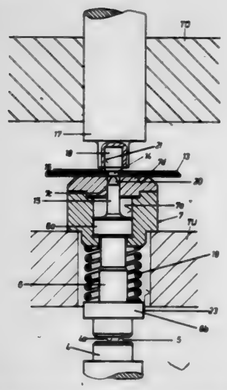
line; whereby the product snaps off a remainder of the corrugated plate along the score line.

4,434,639

ARRANGEMENT FOR PRODUCING DRAWN FORMATIONS ON WORKPIECES, PARTICULARLY IN A CUTTING AND PRESSING MACHINE

Walter Bredow, Alfeld, Fed. Rep. of Germany, assignor to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,296
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042158
Int. Cl.³ B11D *45/00*
U.S. Cl. 72—344 9 Claims



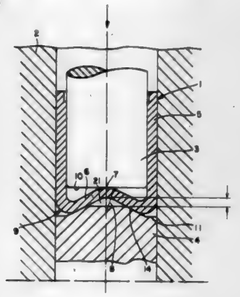
1. A drawing arrangement, particularly for use in a cutting and pressing machine having a numerically controlled coordinate table, for producing drawn formations on substantially sheet-shaped workpieces having respective bottom surfaces that travel along a predetermined plane during relative movement between the workpieces and the arrangement, comprising a support; a first tool mounted on said support below said predetermined plane and having an upper supporting surface for supporting the workpieces, permanently arranged in the predetermined plane, and a recess which opens onto said supporting surface; a second tool mounted on said support above the predetermined plane for movement in opposite directions toward and away from said first tool upto area contact with the respective workpiece supported on said supporting surface, and including a female drawing die aligned in said opposite directions with said recess of said first tool; and a drawing punch mounted on said first tool within said recess for movement between an extended position in which it extends beyond said supporting surface toward said female drawing die to deform a portion of the workpiece into the latter and a retracted position in which it is fully retracted into said recess of said first tool and is at most flush with said supporting surface of said first tool in order not to interfere with the movement of the workpiece along the predetermined plane.

4,434,640

PROCESS FOR THE PRODUCTION OF A BEARING BUSHING WITHOUT MACHINING

Lothar Walter, Schweinfurt; Manfred Brandenstein, Eussenheim, and Armin Olschewski, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,657
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034951
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—348 7 Claims



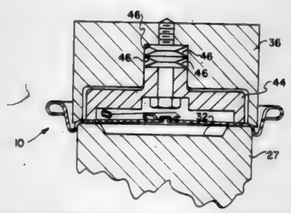
1. A method for making a bearing bushing for the support of the trunnion in universal joints comprising a cylindrical sleeve section, a bottom section at one axial end of the cylindrical sleeve section, the peripheral edge joining the sleeve section and bottom section being of small cross-sectional radius, consisting of the steps of shaping a blank to form the sleeve section and bottom section which uniformly projects axially from the juncture of the sleeve section and bottom section to a central dome-shaped tip and thereafter flattening from the inside at least in the area of the central dome-shaped tip of the bottom section while supporting the bottom section, said dome-shaped tip being spaced from said bottom support prior to said flattening step and correspondingly forging the outside surfaces of the bottom section in the area of the peripheral edge between the surface of the sleeve section and the outside surface of the bottom section.

4,434,641

BUCKLE RESISTANCE FOR METAL CONTAINER CLOSURES

Tuan A. Nguyen, Broomfield, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Mar. 11, 1982, Ser. No. 357,032
Int. Cl.³ B26D *22/00*
U.S. Cl. 72—354 29 Claims



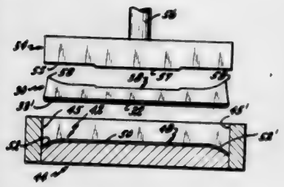
1. A method of further forming a metal closure having an initial configuration defined by a circular panel, a sidewall, and an intermediate section joining the sidewall to the panel, comprising restraining the panel against lateral movement, and while said panel is so restrained flowing metal radially inwardly about the periphery of said panel in an amount sufficient to cause compression doming.

4,434,642

REVERSE FORGING OR REPLACEMENT GROUSER BARS

Robert Rasmussen, Rancho Palos Verdes, Calif., assignor to Industrial Parts Depot, Torrance, Calif.

Filed Jun. 1, 1981, Ser. No. 268,906
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—356 7 Claims



1. A method of making a replacement grouser bar having a straight upper edge and a curved lower edge with end portions wider than the center comprising the steps of:

forming a blank having a concavely curved upper edge and a straight lower edge with the ends wider than the central portion;

beveling said straight lower edge;

supporting said blank in a die defining a die cavity having a bottom, said bottom having a straight horizontal central portion and downwardly curving side portions, said bottom further being V-shaped in width to preserve said bevel on said lower edge;

applying downward force to said upper concavely curved edge along a horizontal plane parallel to said straight lower edge whereby said curved upper edge is substantially straightened and said beveled straight lower edge is curved to conform to the downward curvature of said die bottom.

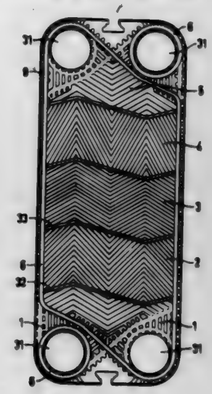
4,434,643

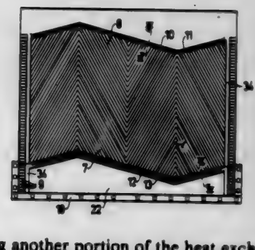
METHOD AND A DEVICE FOR EMBOSSING HEAT EXCHANGER PLATES

Christer Almqvist, Täby, and Lars Lindahl, Handen, both of Sweden, assignors to ReHeat AB, Taby, Sweden

Continuation of Ser. No. 90,495, Nov. 1, 1979, abandoned. This application Dec. 31, 1981, Ser. No. 336,315
Claims priority, application Sweden, Nov. 8, 1978, 7811539
Int. Cl.³ B21D *53/02*
U.S. Cl. 72—379 3 Claims

1. A method of producing a heat exchanger plate of the kind having opposite end portions each having apertures therethrough for passage of heat exchanger fluids, the plate also having at least one intermediate portion between the end portions, the intermediate portion and each end portion having a gasket-receiving groove along each edge extending longitudinally of the plate, said method comprising: pressing the whole of each portion simultaneously between parts of a pressing tool and pressing each portion sequentially with respect to other portions, the step of pressing the intermediate portion including simultaneously pressing (a) a non-linear aligning groove extending generally traversely of the plate at one end of said intermediate portion to provide for linear and transverse alignment of the plate during a subsequent pressing operation, (b) a plurality of parallel non-linear corrugations over the remainder of the longitudinal dimension of said intermediate portion with said non-linear corrugations having a different pattern than said non-linear aligning groove and (c) a first gasket-receiving groove extending longitudinally along each edge of said intermediate portion; and thereafter moving the plate blank longitudinally of itself relative to the pressing tool, adjusting the position of the plate blank relative to the parts of the pressing tool by fitting said non-linear aligning groove in the blank to a complementary contour of the pressing tool thereby aligning the plate blank linearly and transversely relative to the pressing





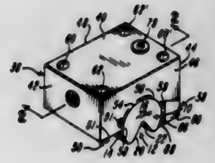
tool; and pressing another portion of the heat exchanger plate with the pressing tool thereby providing a second gasket-receiving groove extending longitudinally along each edge of said intermediate portion connecting with said first gasket-receiving groove.

4,434,644

ROTARY BENDING AND FORMING DEVICES

Robert J. Gargrave, Kettering; John K. Thompson, West Carrollton, and James F. Comstock, Kettering, all of Ohio, assignors to READY Tools, Inc., Dayton, Ohio

Filed Jan. 13, 1982, Ser. No. 339,133
Int. Cl.³ B21D *5/04*
U.S. Cl. 72—387 9 Claims



1. A bending and forming device comprising an operating head and a holder for said head wherein said operating head is a generally cylindrical body including a longitudinally extending groove in its outer peripheral surface, said head mounting for rotation on and relative to said holder and presenting the groove therein to the materials to be worked in its bending and forming function, said holder including means defining a sad-

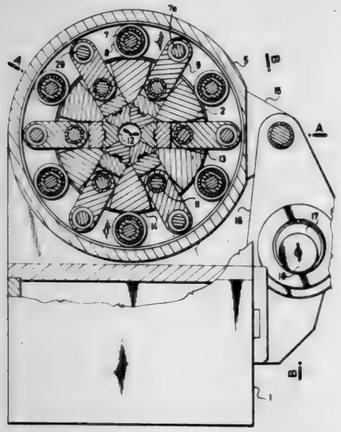
dle for seating said head, said saddle comprising a body having a base, a longitudinally extended substantially hemi-cylindrical groove in a surface thereof remote from its base, a wall surface bounding said groove which incorporates two longitudinally extending bearing portions bounding a strip-like, relatively recessed, portion of said wall surface therebetween and affording a load accommodating seat for said cylindrical body, means defining a retention device mounted on said saddle, in releasable connection therewith and to one side of said groove therein, constructed and arranged to have only a limited surface portion thereof overlie and bear on a portion of said operating head to hold said head to and for a balanced rocking or rotative movement on said seat, said wall surface bounding said groove including therein a longitudinally extending recess partially nesting a cord-like segment of material which is impregnated with lubricant the projected portion of which bears on said cylindrical body in the course of its rocking or rotative movement on and with reference to said seat.

4,434,645

APPARATUS FOR THE RADIAL SHAPING OF TUBULAR ARTICLES

Josef Svercl, Olomouc; Jan Novak, Trebcin, and Zdenek Kalab, Uretice, all of Czechoslovakia, assignors to SIGMANKoncern, Olomouc, Czechoslovakia

Filed Jul. 29, 1981, Ser. No. 288,167
Claims priority, application Czechoslovakia, Aug. 1, 1980, 5372-80; Dec. 2, 1980, 8350-80
Int. Cl.³ B21D *41/00*
U.S. Cl. 72—402 **14 Claims**



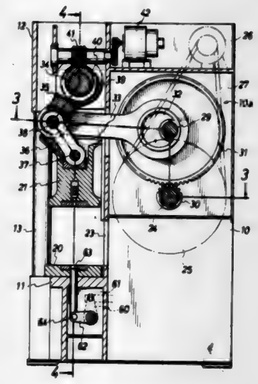
1. Appparatus for the radial shaping of rotors, spindles, shafts and the like comprising a frame having at least two guiding segments situated between a left side wall and a right side wall, said guiding segments being provided with an outer rolling surface, a freely rotatable supporting ring encompassing said guiding segments, at least two rollers rotatably supported on eccentric pins fixed on the supporting ring to engage respective ones of said segments, rods interposed between said rollers, sliding shoes bearing forming jaws connected to the inner end of said rods, the outer end of said rods being pivotally connected on supporting pins fixed to the supporting ring so that the sliding shoes with the associated forming jaws are adapted to perform a radial movement between said guiding segments on movement of said supporting ring, the supporting ring being provided on its external circumference with at least one eyelet for a connection with a connecting rod, the other end of which is supported by an eccentric sleeve, which in turn is supported by an eccentric pin connected to a driving shaft.

4,434,646

C-FRAME PRESS

Nobuyoshi Maeda; Hideo Itakura, and Takashi Yagi, all of Sagamihara, Japan, assignors to Aida Engineering, Ltd., Sagamihara, Japan

Filed Jun. 21, 1982, Ser. No. 390,625
Claims priority, application Japan, Dec. 17, 1981, 56-202535
Int. Cl.³ B21J *9/18*
U.S. Cl. 72—451 **1 Claim**



1. A C-frame press comprising:
a C-shaped frame having a crown part and a bed part defining an opening therebetween, a slide reciprocal between said crown part and said bed part, a main shaft having a flywheel thereon and positioned laterally of said slide within said frame, eccentric discs rotatably mounted within said frame and driven from said main shaft, connecting rods extending substantially horizontally from said eccentric discs towards the upper portion of said slide and reciprocated by said eccentric discs, and a toggle mechanism mounted between said slide and said crown part and having a central shaft portion to which said connecting rods are connected, said frame having a machine chamber within said frame adjacent said toggle mechanism and in which said main shaft, eccentric discs and connecting rods are located, said space within said frame adjacent the bed part being clear for receiving part of the workpiece being acted on by said press; and
spacers positioned in said opening in said C-shaped frame and being sufficiently long for urging said crown part and said bed part apart in the vertical direction a distance sufficient to cause said frame to exert on said spacers a load which is at least a substantial part of the normal maximum press load exerted by said press on a workpiece.

4,434,647

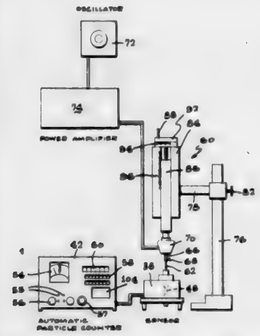
DYNAMIC SPOT CALIBRATION FOR AUTOMATIC PARTICLE COUNTERS

William T. Whitcomb, Glendale, and John V. Butler, Newhall, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Jul. 27, 1981, Ser. No. 287,238
Int. Cl.³ G01N *15/02*
U.S. Cl. 73—1 R **28 Claims**

1. A dynamic calibration system for calibrating an automatic particle counter having a sensor unit including a sensor window defining a fluid passage, said sensor unit including means to sense the size of particles contained in a fluid passing through said window and being adapted to generate signals representative thereof, comprising:
at least one probe having a portion adapted to be inserted into and out of said sensor window fluid passage, said at least one probe constructed of transparent material;

means associated with said probe portion for simulating particles of a preselected size, said simulating means comprising an opaque spot located along said probe portion;
means for gripping said probe;
means connected to said gripping means for reciprocally driving said probe portion within said sensor fluid passage;



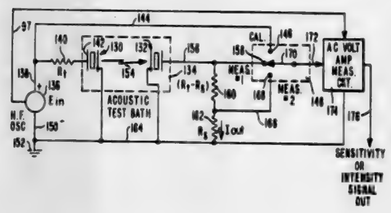
means associated with said driving means for providing power to said driving means; and
means connected to said driving means for precisely positioning said at least one probe portion relative to said sensor window fluid passage.

4,434,648

ELECTROACOUSTIC TRANSDUCER CALIBRATION METHOD AND APPARATUS

Cornelis J. Drost, and G. Jan Milanowski, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 238,319, Feb. 26, 1981, Pat. No. 4,391,124.
This application Feb. 25, 1983, Ser. No. 469,861
Int. Cl.³ H04B *11/00*; H04R *29/00*
U.S. Cl. 73—1 DV **11 Claims**



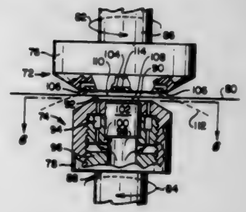
1. A calibration method for a set of three terminated ultrasonic transducers, comprising:
selecting three different pairs of transducers from said set of three, a first pair including a first and a second transducer, a second pair including said first and a third transducer, and a third pair including said second and said third transducers, said second transducer being reciprocal, said first transducer being suitable as a transmitter, said third transducer being suitable as a receiver;
selecting for each of said first, second and third transducers corresponding terminating impedances;
mounting in a predetermined spaced relationship said first pair of transducers to be calibrated;
continuously supplying from a drive signal source a driving signal to said first transducer to cause emission of ultrasonic waves, said driving signal being supplied through the corresponding terminating impedance of the transmit transducer;
causing said second transducer to receive said emitted ultrasonic waves and to produce a transducer output signal through the corresponding terminating impedance of the receive transducer;
measuring said output signal;
mounting in said spaced relationship said second pair of transducers to be calibrated;
supplying said driving signal to said first transducer through its corresponding terminating impedance;
measuring through the corresponding terminating impedance of said third transducer the output signal produced thereby;
mounting in said spaced relationship said third pair of transducers to be calibrated;
supplying said driving signal to said second transducer through its corresponding terminating impedance;
measuring through the corresponding terminating impedance of said third transducer the output signal produced thereby;
measuring the ideal source value of said transducer driving signal source; and
deriving from said measures of transducer driving signal and transducer output signals transducer performance calibration values for at least one of said three transducers.

4,434,649

GAUGE HAVING A SURFACE FOLLOWER WITH PERIPHERAL VENT

Paul Williams, Columbus, Ohio, assignor to AccuRay Corporation, Columbus, Ohio

Filed Apr. 20, 1981, Ser. No. 255,424
Int. Cl.³ G01B *13/06, 13/04*
U.S. Cl. 73—37.7 **20 Claims**



1. Apparatus to be utilized in performing a measurement of a traveling sheet or the like, comprising
a surface follower body adapted to be constrained during the measurement for movement along a surface follower path intersecting the path of the sheet and urged by a force toward one surface of the sheet,
the body having a gas confining wall, the wall having at least an edge portion adapted to be located next to the sheet surface, the edge portion having thereat uniformly distributed pressurized gas supply means with an outer periphery for pressurizing a gas bearing region that is contiguous to the sheet surface and bounded at the sheet surface substantially by the orthographic projection of the periphery on the sheet suface,
the pressurization producing sufficient pressure against the sheet and the wall to levitate the body against the urging force,
the gas supply means having gas retaining wall means with substantially only knife edge thickness next to the periphery and the sheet surface so as to minimize the area of the sheet surface over which high velocity gas flows in escaping from the gas supply means and the gas bearing region,
the body being so shaped that the flow of gas from the gas supply means is substantially unconfined in the region of the sheet surface outside the gas retaining wall means in order to terminate the gas bearing region substantially at the periphery and so that the pressurization is effective without producing substantial amounts of high velocity gas flow over a substantial area of the surface of the sheet

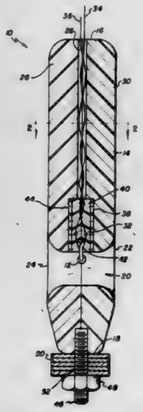
within the gas bearing region, whereby the body is maintained at a distance from the sheet surface that is substantially constant and relatively unaffected by variations in the roughness of the surface.

4,434,650

HYDROCARBON SENSOR FLOAT

Ralph A. Perry, Indianapolis, and Raymond J. Andrejasich, Carmel, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed May 5, 1982, Ser. No. 374,999
Int. Cl.³ G01N *25/18*
U.S. Cl. 73—61.1 R **6 Claims**



1. A sensor float for use in detecting the presence of foreign substances in a liquid comprising:

(a) an elongated floatation member having top and bottom ends, a cavity extending across said elongated member near said bottom end and opening to sides thereof to permit the passage of liquid therethrough, and a centrally disposed elongated passageway extending from said top end to said cavity, said passageway including an enlarged section exposed to said cavity,

(b) a sensor carried in said cavity including insulation means electrically insulating same from said liquid, electrical conductors extending through said passageway, connecting means interconnecting said sensor to said electrical conductors within said enlarged portion, and electrically insulative material carried within said enlarged portion and sealing said connecting means from the environment, and

(c) means for attaching a variable amount of weight to said bottom end of said floatation member.

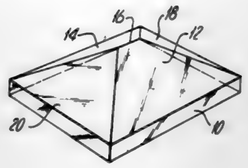
4,434,651

HARDNESS TEST INDENTERS

Jill E. G. Wood, Hampton, England, assignor to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 28, 1982, Ser. No. 372,608
Claims priority, application United Kingdom, May 6, 1981, 8113740
Int. Cl.³ G01N *3/40*
U.S. Cl. 73—85 **5 Claims**

5. A hardness test indenter having a rectangular base and four operative plane faces, a first pair of said faces meeting each other in a straight ridge; and a second pair of said faces making substantially equal angles with said straight ridge and so disposed in relation to one another and to said ridge that the first pair of faces have edges substantially symmetrically disposed in relation to said straight ridge; the included angle between said first pair of faces and between said second pair of



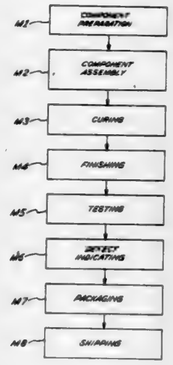
faces being 111°±0.1°; and the said straight ridge having a length not more than about 0.5 millimeter and not less than about 0.05 millimeter.

4,434,652

AUTOMATED TIRE MEASUREMENT TECHNIQUES

William C. Christie, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 18, 1982, Ser. No. 339,876
Int. Cl.³ B60C *19/10*
U.S. Cl. 73—146 **14 Claims**



9. In a tire manufacturing process including assembling and curing components of the tire and testing the cured tire by detecting tire data from at least a first sensor means and a second sensor means and analyzing the data by at least a first testing algorithm and a second testing algorithm, an improved method for enabling an operator to select combinations of said sensor means and said testing algorithms in order to analyze the tire based on the selected combination, said method comprising the steps of:

generating signals representative of at least one combination of sensor means and a testing algorithm, each said combination comprising at least one of said first and second sensor means and at least one of said first and second testing algorithms;

storing data obtained from the represented sensor means;

analyzing the data according to the represented testing algorithm; and

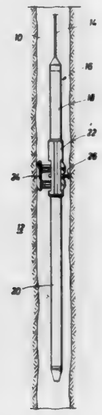
indicating the condition of the tire in response to the analysis of the data.

4,434,653

APPARATUS FOR TESTING EARTH FORMATIONS

Marshall N. Montgomery, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 15, 1982, Ser. No. 398,477
Int. Cl.³ E21B *49/10*
U.S. Cl. 73—151 **16 Claims**



1. Fluid sampling apparatus for obtaining samples of connate fluids from subsurface earth formations traversed by a borehole comprising:

a body member adapted for suspension in a borehole;

a fluid sampling probe cooperatively arranged on and extensible from said body member;

a sample collection means cooperatively arranged on said body member for receiving and retaining a sample of connate fluids;

a fluid passage coupled between said fluid sampling probe and said sample collection means; and

control means located in said fluid passage intermediate said fluid sampling probe and said sample collection means for maintaining the pressure within at least a portion of said fluid passage at minimum level, said level proportionally related to formation pressure, and

wherein said pressure control means comprises:

means for receiving and retaining a sample of said connate fluids; and

pressure responsive means for restricting said fluid passage in proportional response to the pressure of said connate fluids sample retained in said receiving and retaining means.

4,434,654

BOREHOLE ORIENTATION DETECTION SYSTEM EMPLOYING POLARIZED RADIATION

Rand H. Huising, II, Redmond; Rex B. Peters, Woodinville, and Kurt E. Steinke, Bellevue, all of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

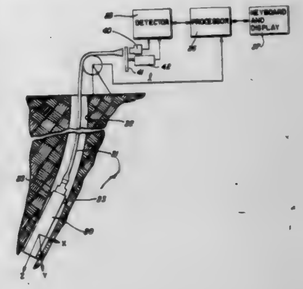
Filed Aug. 9, 1982, Ser. No. 406,431
Int. Cl.³ E21B *47/022*
U.S. Cl. 73—151 **11 Claims**

5. A borehole survey probe comprising:

a housing to traverse the borehole, the housing having a longitudinal axis and being randomly rotatable about said longitudinal axis as the housing traverses the borehole;

an inclinometer in said housing; and

a source of polarized electromagnetic radiation fixed to said housing generating a polarized signal having an axis of polarization orthogonal to the longitudinal axis of the housing, the axis polarization of the signal providing a



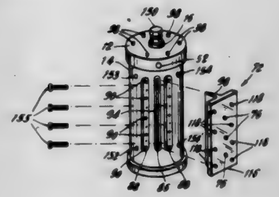
measure of the orientation of the housing as a reference for said inclinometer.

4,434,655

BLACK POWDER FLAMESPREAD TESTER

Martin Summerfield, Princeton; Neale A. Messina, Pennington, and Larry S. Ingram, Cranbury, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 8, 1982, Ser. No. 355,816
Int. Cl.³ G01L *5/14*
U.S. Cl. 73—167 **21 Claims**



1. A black powder flamespread tester, said tester comprising:

sample holding means for holding a sample of black powder to be tested;

ignition means for igniting a sample contained in said sample holder means, said ignition means including;

an electrically actuated pyrotechnic squib;

an ignition head having a first bore formed therein, said squib being received in said first bore, a transition chamber defined in said ignition head, said squib emitting hot gases into said transition chamber upon actuation, and a void volume operatively disposed in said ignition head, said gases from said squib passing from said transition chamber via said void volume into said sample holding means to ignite a sample contained in said sample holding means, passage of said gases through said void volume serving to smooth the flow of said gases;

said ignition means further including an orifice plate disposed between said transition chamber and said void volume, said orifice plate having a plurality of orifices formed therein for metering said gases from said transition chamber to said void volume; and

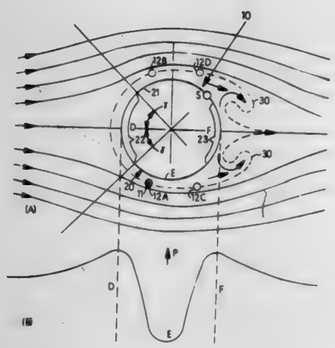
said tester further comprising optical monitoring means for measuring the rate at which a flame front propagates through a sample contained in said sample holding means when the sample is ignited by said ignition means.

4,434,656

MASS AIR FLOW SENSOR

Chester J. Blechinger, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/00434, § 371 Date Apr. 8, 1982, § 102(e) Date Apr. 8, 1982, PCT Pub. No. WO83/03669, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 8, 1982, Ser. No. 380,841
Int. Cl.³ G01F 1/68
U.S. Cl. 73—204 3 Claims



1. A heated element mass air flow meter for measuring mass air flow including:

an elongated element means positioned in the air flow having a temperature responsive resistance for conducting an electric current, an electrical parameter of said element means being indicative of the mass of air flowing past said element means;

an elongated bluff body means positioned generally parallel to and spaced from said element means, said bluff body means providing sufficient resistance to air flow so as to create an area of stagnation upstream of said bluff body means for separating air born dirt from the air stream said bluff body means having a relatively large cylindrical cross section area in comparison to the cross section area of said elongated element means;

said element means being positioned downstream of said area of stagnation so as to be in a relatively dirt free area in comparison to the remainder of the stream and said element means being positioned adjacent said bluff body means at a distance substantially less than the longest cross section dimension of said bluff body means; and

said element means being positioned downstream of an angular segment on the upstream side of said bluff body means and centered about the centerline of said bluff body means, the angular segment extending about 40 degrees to each side of said centerline.

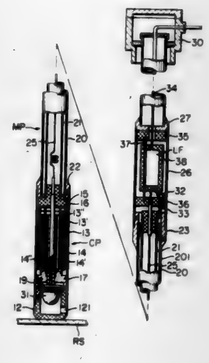
4,434,657

LIQUID QUANTITY MEASURING APPARATUS

Hiroshi Matsumura, Kamakura; Yasuto Ohta, Yokohama; Tetsuo Nozaki, Zushi; Makoto Shimizu, Chigasaki, and Shigeru Sugizaki, Hiratsuka, all of Japan, assignors to Tokyo Tatsuno Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,509
Claims priority, application Japan, Sep. 25, 1981, 56-150565
Int. Cl.³ G01F 23/26
U.S. Cl. 73—304 C 13 Claims

1. An apparatus for measuring the quantity of liquid in at least one tank, which comprises means for detecting a liquid level in the tank and having positive and negative electrodes arranged to allow a flow-in and out of the liquid therebetween for generating a capacitive value, capacitive means arranged below said liquid level detecting means and dipped always in the liquid to measure a dielectric constant of the liquid, a capacitive reference means that is not responsive to the dielectric constant of the liquid, a LC oscillator means converting each capacitive value measured by said liquid level detecting means, liquid dielectric constant measuring means and reference means into a frequency signal, said reference means compensating a capacitive variation of said LC oscillator means due to ambient temperature change and aging thereof, said LC oscillator means being connected to each of said liquid level detecting means, liquid dielectric constant measuring means and reference means through a switching means, and a control box with an indicator means to calculate the quantity of liquid in the tank based on the frequency information from said LC oscillator means and indicate the same on the indicator means.



4,434,658

ULTRASONIC WAVE TOMOGRAPHIC IMAGING SYSTEM

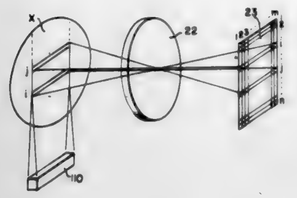
Junji Miyazaki, Yokohama; Hirohide Miwa, Kawasaki, and Takaki Shimura, Machida, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

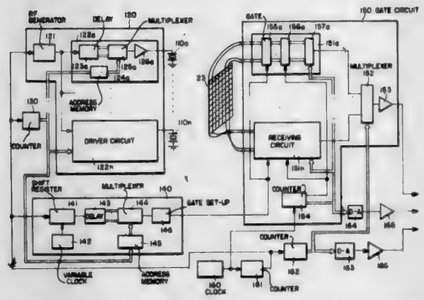
PCT No. PCT/JP80/00164, § 371 Date Mar. 25, 1981, § 102(e) Date Mar. 11, 1981, PCT Pub. No. WO81/00198, PCT Pub. Date Feb. 5, 1981
PCT Filed Jul. 21, 1980, Ser. No. 253,936
Claims priority, application Japan, Jul. 25, 1979, 54-94532
Int. Cl.³ G01N 29/04
U.S. Cl. 73—618 10 Claims

1. An ultrasonic wave tomographic imaging system wherein an acoustic image of a desired tomographic plane in an object is focused on an ultrasonic wave receiving means by an ultrasonic wave lens, said system comprising

generating means for generating focused ultrasonic waves from along a direction that is contained in a plane in space that includes said tomographic plane in said object, and for sequentially scanning said tomographic plane in said object with said focused ultrasonic waves, said direction being oriented essentially transversely to the axis of said lens, and

a gate means for allowing said ultrasonic wave receiving means to selectively receive the ultrasonic waves of said acoustic image that are focused by said lens, in correspondence with said scanning of said tomographic plane in said object by said generating means.



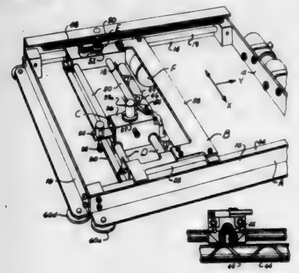


4,434,659

TWO-DIMENSIONAL SCANNER APPARATUS

George W. Kurtz, and Ben F. Bankston, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 350,474
Int. Cl.³ G01N 29/04
U.S. Cl. 73—620 6 Claims



1. A two-dimensional scanner apparatus for scanning a surface in two-dimensions consisting of an X-direction and a Y-direction, said apparatus comprising:

a frame;

a carriage means slidably carried by said frame for movement in said Y-direction;

scanner means carried by said carriage means adapted for carrying a detector probe for detecting a condition on said surface;

support means supporting said scanner means on said carriage means for movement of said scanner means in said X-direction;

drive means for moving said scanner means across said surface in said X-direction;

mechanical indexing means for indexing and incrementally moving said carriage means in said Y-direction in a predetermined increment in response to a complete movement of said scanner means in said X-direction;

said drive means including a shaft rotatably carried by said carriage means having a closed-loop helix groove formed therein;

follower means engaging within said groove causing said scanner means to travel along said shaft as said shaft rotates and reverses said direction of travel when said follower means reaches the end of said helix;

a drive motor operatively connected for rotating said shaft; and

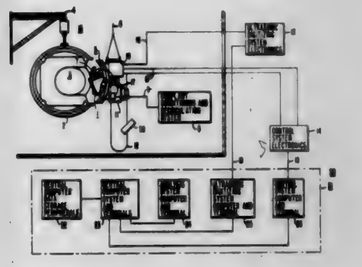
an actuating means carried by said scanner means which mechanically engages said mechanical indexing means and actuates said mechanical indexing means upon said scanner means traveling said complete movement in said X-direction for indexing said indexing means and thereby effecting said predetermined increment in said Y-direction.

4,434,660

ULTRASONIC INSPECTION AND DEPLOYMENT APPARATUS

Jennifer E. Michaels; Thomas E. Michaels, both of Ithaca, N.Y., and Stephen J. Mech, Jr., Pasco, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 19, 1981, Ser. No. 245,304
Int. Cl.³ G01N 29/04
U.S. Cl. 73—622 4 Claims



1. An ultrasonic deployment apparatus for performing a task upon a specimen which apparatus comprises:

(A) a scanning head having an ultrasonic profiling element and task performing means for performing a task on a specimen,

(B) mechanical support means, for support, positioning and aligning said scanning head, and

(C) computer means for the control of said mechanical support means, said computer means adapted to repeatably locate specific locations on said specimen using a reference system established by said computer means by observation by said profiling element of surface reference marks on a surface of said specimen.

2. An ultrasonic deployment apparatus for the inspection of specimens which comprises:

(A) couplant supply means;

(B) a scanning head having fluid communication with said couplant supply means, a profiling ultrasonic element for mapping the surface of the specimen, an acoustical velocity measuring ultrasonic element for measuring the velocity of sound in the couplant, at least one specimen inspection element for inspection of the specimen, and having a

bellows for forming a couplant filled volume above a surface of the specimen thereby providing an acoustical communication path between the specimen and said scanning head thereby accommodating passage of ultrasonic waves therebetween;

(C) mechanical support means for supporting, aligning and positioning said scanning head in proximity to the specimen; and

(D) control means for said mechanical support means for controllably aligning and positioning said scanning head, which control means comprises a computer system which is programmed to control a specimen inspection traveling scan of the scanning head and moreover to automatically control the position and alignment of the scanning head in response to data obtained by previous and concurrent profiling scans to achieve and maintain desirable position and alignment of said scanning head with respect to said specimen and to use specimen surface features to identify a computer coordinate system and to use said coordinate system to identify and interpret inspection data, said computer moreover programmed to continuously interpret data received from specimen inspection scans and profiling scans using concurrently monitored couplant acoustical velocity measurements.

4,434,661

ULTRASONIC DIAGNOSTIC SYSTEM

Hirohide Miwa, Kawasaki, and Takaki Shimura, Machida, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

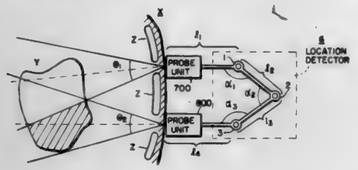
PCT No. PCT/JP80/00015, § 371 Date Oct. 3, 1980, § 102(e) Date Sep. 22, 1980, PCT Pub. No. WO80/01537, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 30, 1980, Ser. No. 209,403

Claims priority, application Japan, Feb. 3, 1979, 54-11587

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—625 **20 Claims**



1. An ultrasonic diagnostic system for obtaining an acoustic image of a measured object comprising:

(a) a plurality of probe units being separated mutually, each probe unit being selectively and separately positionable in any direction and having an electric-acoustic transducer for both transmitting said ultrasonic waves and receiving said acoustic echo waves;

(b) a transmitting circuit for causing said probe units to transmit ultrasonic waves having different characteristics almost simultaneously; and

(c) a receiving circuit containing filters for isolating and extracting signals received from said transducers, said signals having properties respectively corresponding to acoustic echo waves resulting from said transmitted ultrasonic waves; whereby said system obtains the acoustic image of the measured object corresponding to a plurality of scanning lines formed by scanning of each of said probe units.

4,434,662

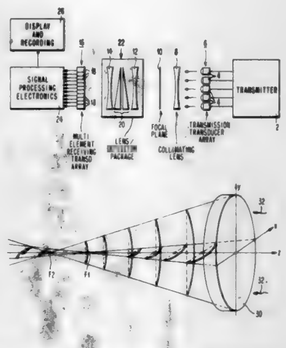
ULTRASONIC IMAGE GENERATING APPARATUS

Philip S. Green, Atherton, Calif., assignor to Siemens Corporation, Iselin, N.J.

Filed Jun. 16, 1981, Ser. No. 274,282

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—641 **8 Claims**



1. In an ultrasound apparatus comprising focusing means for focusing ultrasound waves and an ultrasound detector for receiving said focused ultrasound waves, said detector having a plurality of elongated piezoelectric electric detector elements, the improvement

(a) wherein said focusing means are astigmatic focusing means having a first and a second focal plane,

(b) wherein the longitudinal axes of said elongated detector elements are curved, and

(c) wherein said ultrasound detector is positioned in one of said focal planes.

4,434,663

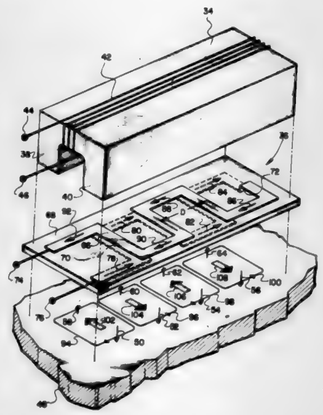
ELECTROMAGNETIC ACOUSTIC TRANSDUCER

William E. Peterson, Thousand Oaks, Calif., and Robert B. Thompson, Ames, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 11, 1982, Ser. No. 338,776

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—643 **14 Claims**



1. An electromagnetic acoustic transducer for use with an electrically conductive object, comprising:

a source of magnetic flux for establishing a static magnetic field in the object and

a meandor coil for inducing eddy currents in the object when an alternating current is applied to the coil, said coil including:

a first serpentine element positioned within said magnetic field in a first plane perpendicular to said field and

a second serpentine element positioned within said magnetic field adjacent to said first element and in a second plane parallel to said first plane,

said elements being connected in series and so oriented that the current direction in said first element is opposite to the current direction in said second element at any instant,

said source and said coil being so oriented that the vector product of said field and said eddy currents produces an instantaneous force field in the object which is periodically alternately oriented.

4,434,664

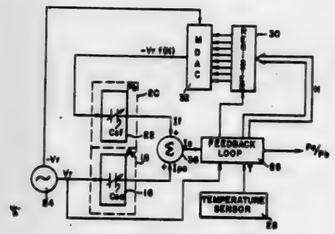
PRESSURE RATIO MEASUREMENT SYSTEM

Frank J. Antonazzi, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 6, 1981, Ser. No. 280,578

Int. Cl.³ G01L *9/12*

U.S. Cl. 73—701 **8 Claims**



1. A pressure ratio measuring system comprising:

means for generating first and second alternating reference signals having a predetermined phase relationship therebetween;

a first pressure sensitive impedance, responsive to a first pressure and driven by said first reference signal, for generating a first signal proportional to the change in the first pressure;

a second pressure sensitive impedance, responsive to a second pressure and driven by an alternating feedback signal for generating a second signal proportional to the change in the second pressure;

means, electrically connected to said first and second impedances, for generating an error signal as the difference between said first and second signals; and

means for converting said error signal into a digital number including means for integrating said error signal and generating a digital output number therefrom representative of the ratio of said first and second pressures, digital-to-analog converter means for converting said digital number to an analog signal, and means for multiplying said analog signal by said second reference signal to generate said feedback signal, wherein said feedback signal is fed to said second impedance means to generate said second signal and null said error signal.

4,434,665

INTEGRATED CAPACITIVE TRANSDUCER

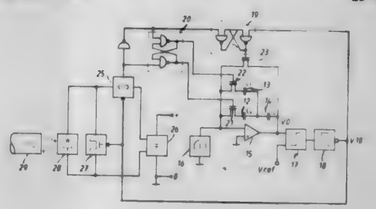
Morgan Adolfsson; Sture Göransson, and Bertil Hök, all of Västeras, Sweden, assignors to ASEA Aktieboing, Västeras, Sweden

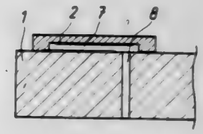
Filed Jan. 27, 1982, Ser. No. 343,105

Claims priority, application Sweden, Jan. 29, 1981, 8100638

Int. Cl.³ G01L *9/12*

U.S. Cl. 73—724 **19 Claims**





1. A transducer for indicating the value of a physical quantity to be measured, comprising:

a transducer capacitor having two spaced electrically conducting plates movable relative to one another in response to a mechanical signal representative of the physical quantity to be measured and for generating an electrical signal in response thereto;

capacitive means for trimming said transducer capacitor;

means for actuating and de-actuating said transducer capacitor to be respectively responsive and non-responsive to said mechanical signal in accordance with pre-designated time intervals;

means for integrating an electrical signal in accordance with the capacitance of said transducer capacitor and providing an output signal when the integrated signal exceeds a reference value; and

means for receiving control signals for controlling said means for actuating and for transmitting said output signal

---

4,434,666

ELECTROMAGNETIC FLOWMETERS AND METHODS FOR MEASURING FLOW

John Hemp, Cranfield, England, and Yousif A. H. Al-Khazraji, Baghdad, Iraq, assignors to National Research Development Corporation, London, England

Filed Apr. 4, 1980, Ser. No. 137,463

Claims priority, application United Kingdom, Apr. 5, 1979, 7911895

Int. Cl.³ G01F *1/58*

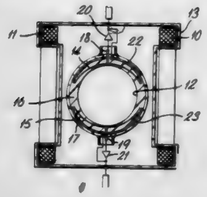
U.S. Cl. 73—861.12 **18 Claims**

17. A magnetic flowmeter for measuring the flow rate of a fluid conducted through a pipe having a longitudinal axis Z, the fluid intercepting a magnetic field whose lines of flux are essentially parallel to a transverse axis X, which is normal both to axis Z and a diametric axis Y, said flowmeter further comprising:

A. a pair of electrode assemblies mounted on the pipe on opposite sides of the X axis in the region of the magnetic field; and

B. a converter whose input terminals are connected to the

electrode assemblies to produce a signal which is proportional to flow rate and is substantially immune to the influence of a non-axisymmetric flow profile, said electrode assemblies being out of contact with the fluid and



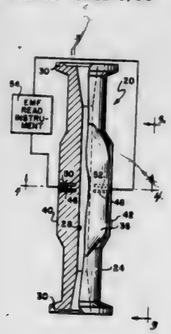
being capacitively coupled thereto to detect a potential present on the fluid surface, the effective coupling capacitance of the assemblies decreasing in a manner substantially proportional to the cosine of an angle defined with respect to the Y axis.

4,434,667

PERMANENT MAGNET FLOWMETER HAVING IMPROVED OUTPUT TERMINAL MEANS

Charles August, Darien, and Harry J. Myers, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 26, 1981, Ser. No. 314,917
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 6 Claims



1. A magnetic flowmeter for measuring flow of a high temperature, high pressure potentially hazardous electrically conductive medium therethrough, comprising:

an elongated body of nonmagnetic material having a longitudinal passageway extending therethrough, said body defining a wall surrounding said passageway for containing a longitudinal flow of conductive medium therein, said wall having a first thickness extending in a first direction perpendicular to the direction of flow of the medium, said wall further having a second substantially greater thickness extending in a second direction perpendicular to both the direction of flow of the medium and said first direction;

magnetic means for passing a magnetic field through said passageway in said first direction; and

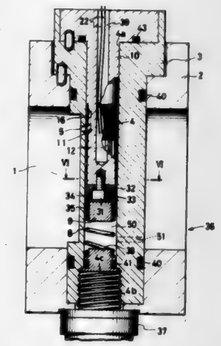
elongated terminal means extending in said second direction and integrally formed with said wall of said body, said terminal means formed by trepanning said wall in said second direction to form an inwardly extending cylindrical channel having a bottom, the bottom of said channel spaced from said passageway by a distance approximately equal to said first thickness whereby an electromotive force, generated in said flowing medium and proportional to the rate of flow of said medium through said flowmeter, is transmitted through said terminal means.

4,434,668

DETECTOR FOR USE IN MEASUREMENT OF FLOW SPEED OR FLOW RATE OF A FLUID

Kazuichi Shinoda, and Masayoshi Katayama, both of Yokohama, Japan, assignors to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 284,113, Jul. 16, 1981. This application Apr. 29, 1983, Ser. No. 487,719
Claims priority, application Japan, Jul. 18, 1980, 55-101442[U]
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 18 Claims



1. A detector comprising a generator for shedding vortex streets in a fluid, the generator having a hollow portion, a member inserted in the hollow portion in close contact with the generator and having a recess at a circumferential surface thereof, a through-hole for the introduction of fluid provided in the generator and opened to the hollow portion at the position of the recess, a through-hole for the exit of fluid provided in the generator and opened to the hollow portion at the position of the recess on the downstream of the through-hole for the introduction of fluid, an element for detecting the vortex, the element being provided on the member and disposed in the recess between the through-hole for the introduction of fluid and the through-hole for the exit of fluid, and a filter disposed between the through-hole for the introduction of fluid and the recess.

4,434,669

APPARATUS FOR TRANSMITTING AND RECEIVING SOUND

Victor C. Roberts, London, England, and Antonio J. Sainz, Caracas, Venezuela, assignors to National Research Development Corporation, London, England

Filed Oct. 8, 1981, Ser. No. 309,810
Claims priority, application United Kingdom, Oct. 8, 1980, 8032438
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.25 12 Claims

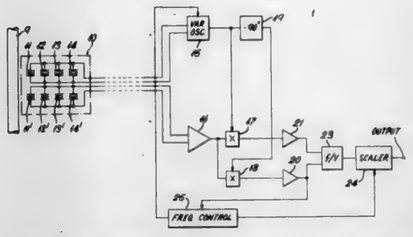
1. Apparatus for transmitting and receiving ultrasound, comprising:

electrical signal generating means for providing output signals at predetermined selectable frequencies;

probe means coupled to the generating means for transmitting ultrasound at any said selectable frequency, and for receiving ultrasound signals at a frequency relatively close to the transmitted frequency; and

frequency controlling means for automatically selecting at least one of said output signals including:

means for comparing the powers of doppler-shifted ultrasound signals received by said probe means at said predetermined frequencies, and



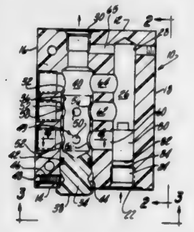
means for selecting the one of said output signals which results in most doppler-shifted ultrasound signal power being received.

4,434,670

FLUID FLOW METER

Borje O. Rossen, 4031 Thornoaks Dr., Ann Arbor, Mich. 48104

Filed Sep. 4, 1981, Ser. No. 299,394
Int. Cl.³ G01F *1/22*
U.S. Cl. 73—861.54 14 Claims



1. A fluid flow meter comprising:

a housing having a fluid inlet and a fluid outlet,

an elongated inlet chamber formed in said housing, said inlet chamber open at one end to said fluid inlet,

an outlet chamber formed in said housing, said outlet chamber open to said fluid outlet,

at least two cross passageways formed in said housing for fluidly connecting said inlet chamber to said outlet chamber, said cross passageways intersecting said inlet chamber at longitudinally spaced positions,

means contained within the inlet chamber for establishing direct fluid communication between only one cross passageways and said inlet chamber when the fluid flow rate into said housing inlet is within a first flow rate range and for establishing direct fluid communication between both of said cross passageways and said inlet chamber when the fluid flow rate into said housing inlet is within a second flow rate range,

means for indicating the flow rate range exteriorly of said housing,

means for varying said flow rate ranges, and

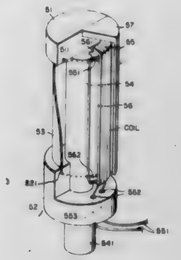
wherein said varying means comprises means for variably restricting said cross passageways.

4,434,671

TENSION SENSOR

Ichiro Yamashita, Yawata, and Yukihiko Ise, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 18, 1981, Ser. No. 293,982
Claims priority, application Japan, Aug. 18, 1980, 55-113899
Int. Cl.³ G01L *5/10*
U.S. Cl. 73—862.48 4 Claims



1. A tension sensor for measuring the tension of a tape-like or string-like object and having a magnetic core composed of a resilient and magnetostrictive amorphous alloy sheet forming a magnetic circuit and having an exciting coil wound around said magnetic core, wherein:

said magnetic core is tubular shaped and supported by supporting means at both end portions thereof such that at least a part of said magnetic core is fixed to said support means; and

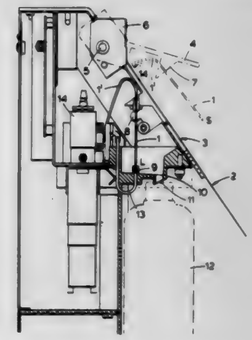
said exciting coil is arranged such that magnetic flux generated therefrom is passed circumferentially through said magnetic core and a part of a peripheral surface of said magnetic core is exposed so that said tape-like or string-like object is in contact therewith.

4,434,672

SAMPLING DEVICE

Vivien R. Williamson, 3 Colchester Rd., White Colne, Essex, and Peter C. Deeks, 24 Nunns Meadow, Gosfield, Essex, both of England

Filed Nov. 9, 1981, Ser. No. 319,276
Claims priority, application United Kingdom, Nov. 14, 1980, 8036703
Int. Cl.³ G01N *35/08*
U.S. Cl. 73—864.22 12 Claims



1. A sampling device comprising a source of suction, a probe having a passage connected to the suction source whereby a first solution comprising liquid sample can be aspirated into said passage by suction from said source, said probe being

movable so that its tip can be located at a first position in which said passage can receive said sample and a second position, the means for delivering a second solution to said probe while it is in said second position, said means comprising a vertically arranged tube which is substantially coaxial with said probe when said probe is in said second position, the upper end of said tube being beneath but sufficiently close to the tip of said probe in said second position that the tip of said probe extends into a meniscus that forms at the top of said tube when said second solution overflows said tube, solution supply means connected with the lower end of said tube for supplying solution to the top of the tube, and solution drain means arranged beneath the top of the tube for collection and removal of excess solution overflowing the top of the tube.

4,434,673

CROSS ARM STRUCTURE FOR USE IN A PUSHBUTTON TUNER

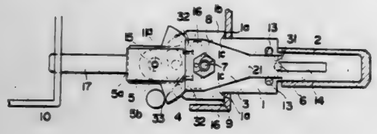
Takao Chaki, Saitama, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272,618

Claims priority, application Japan, Jun. 11, 1980, 55-80262[U]; Jun. 11, 1980, 55-70265[U]; Jun. 11, 1980, 55-80266[U]; Jun. 11, 1980, 55-80267[U]; Jun. 11, 1980, 55-80268[U]

Int. Cl.³ H03J 5/12; G05G 1/02

U.S. Cl. 74—10.33 **8 Claims**



1. A cross arm structure for use in a pushbutton tuner, comprising:

a cross arm member;

a frequency setting member pivotally supported on said cross arm member;

a pushbutton slidably supported on said cross arm member for movement between locked and unlocked positions;

a movably supported pressing member responsive to movement of said pushbutton and adapted to apply pressure to said frequency setting member in response to movement of said pushbutton to said locked position so as to releasably lock said frequency setting member in a predetermined angular position; and

early lock preventing means which includes an early lock preventing member cooperable with said pressing member for preventing said pressing member from releasably locking said frequency setting member before said pushbutton is substantially in said locked position;

wherein said pressing member has a pedal portion at each side of an end thereof which can engage said frequency setting member and has a concave portion between said pedal portions which receives an end portion of said early lock preventing member.

4,434,674

PISTON AND CYLINDER MECHANISM

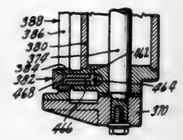
Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 179,381, Aug. 18, 1980, Pat. No. 4,399,264. This application May 7, 1982, Ser. No. 375,846

Int. Cl.³ F01B 3/00; F16H 25/18

U.S. Cl. 74—99 A **2 Claims**

1. In a piston and cylinder mechanism wherein said cylinder moves relative to said piston and said cylinder has a cam follower extending outwardly therefrom for engaging a cam track, said cylinder having some lubricant therein, the improvement comprising a cam follower shaft mounted in the base of said cylinder and extending radially outwardly from said cylinder, a cam follower roller mounted on said shaft, and



conduit means in said base and said shaft providing communication between the interior of the cylinder and the inner surface of the cam follower roller contacting said cam follower shaft.

4,434,675

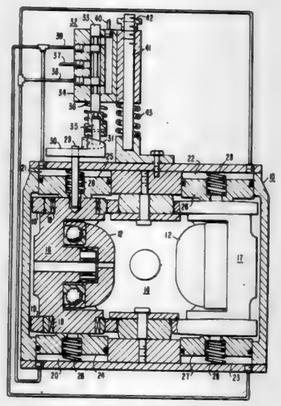
TRANSMISSION RATIO CONTROL ARRANGEMENT FOR A PRECESS CAM CONTROLLED INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Sep. 11, 1981, Ser. No. 301,442

Int. Cl.³ F16H 15/08

U.S. Cl. 74—200 **7 Claims**



1. A transmission ratio control arrangement for an infinitely variable traction roller transmission comprising: a housing; coaxial input and output shafts rotatably supported in said housing; toroidal discs mounted opposite each other on said input and output shafts such that a toric cavity is formed therebetween; motion transmitting traction rollers disposed in said toric cavity in radial symmetry with respect to the axis of said input and output shafts; means for forcing said toric discs and said traction roller into firm engagement with each other for transmitting motion therebetween; a pivotal support structure for each of said traction rollers, each said support structure being movable in a direction of its pivot axis; at least one hydraulic operating structure disposed adjacent each traction roller support structure and operatively associated therewith for transmitting precess motion thereto; at least one of said traction roller support structures having a cam disc mounted thereon for axial and pivotal movement therewith; a master control valve arranged adjacent the cam surface of said cam disc, said control valve having a control member and a cam follower in contact with said cam surface, said cam follower having a predetermined position with respect to said cam surface for each transmission ratio of said transmission, said master control valve being connected to a pressurized fluid source and to each of said hydraulic operating structures for supplying pressurized fluid to said hydraulic operating structures or, respectively releasing hydraulic fluid therefrom when said cam follower is not in its respective predetermined position.

4,434,676

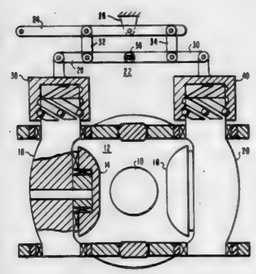
TRACTION ROLLER TRANSMISSION WITH MECHANICAL TRANSMISSION RATIO CONTROL

Paul L. Horton, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Mar. 22, 1982, Ser. No. 360,597

Int. Cl.³ F16H 15/40, 15/08

U.S. Cl. 74—200 **5 Claims**



1. An infinitely variable traction roller transmission comprising: coaxial input and output shafts; toric traction discs mounted opposite each other, one on each of said shafts; two motion transmitting traction rollers arranged between, and in firm engagement with, said toric discs for the transmission of motion therebetween; a pivotal support trunnion for each of said traction rollers each rotatably supporting one of the rollers and being supported pivotally about an axis which extends normal to a plane including the axis of said input and output shafts; and a trunnion operating lever arrangement adapted to apply axial precess motion to said trunnions, said lever arrangement including two arms of equal length, one being pivotally connected to one and the other to the other trunnion and both being linked to each other at a central pivot axis and a control lever linked to said arms at locations having equal distances from said central pivot axis and being itself pivotally supported at the center between its points of linkage to said arms.

4,434,677

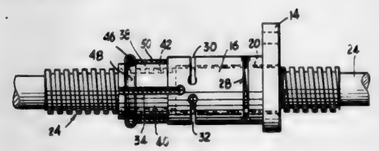
ANTI-BACKLASH SPRING-MOUNTED NUT

Francis M. Linley, Jr., Easton, Conn., assignor to Universal Thread Grinding Company, Fairfield, Conn.

Filed Apr. 22, 1981, Ser. No. 256,500

Int. Cl.³ F16H 55/18, 1/18, 27/02

U.S. Cl. 74—409 **14 Claims**



1. A simplified anti-backlash nut construction having relatively few slots, comprising in combination:

(a) a base portion adapted to be carried by a supporting part and having a bore through which a screw can pass,

(b) a one-piece threaded portion connected to said base portion and characterized by a bore aligned with the bore of the base portion,

(c) said threaded portion having a pair of longitudinal slots in it by which it is divided into elements having internal surfaces at the bore thereof,

(d) said elements having thread formations on said internal surfaces, adapted for engagement with the external threads of a screw extending through said bores,

(e) said threaded portion having a cut-out configuration comprising a pair of circumferential slots characterized by two pairs of slot ends which are respectively located adjacent the ends of the said longitudinal slots, said cut-out configuration facilitating the limited movement of the said divided elements toward and away from each other, thereby to enable the thread formations thereof to engage a screw with no clearance and looseness,

(f) said pairs of slot ends and the respective ends of the said pair of longitudinal slots of the threaded portion being triangularly disposed, and the slot ends of said pair of circumferential slots being separated from each other by an uninterrupted solid wall of the threaded portion, which uninterrupted solid wall extends directly and in a straight line between the slot ends of the pair of circumferential slots so as to provide increased body strength at such location, and

(g) yieldable means carried by said divided elements, biasing the same in directions toward each other so as to maintain them closely engaged with the said screw.

4,434,678

CONTROL MECHANISM FOR A WINDOW OR DOOR

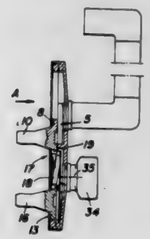
Julius Maus, Stuttgart, Fed. Rep. of Germany, assignor to Gretsch-Unitas GmbH, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 285,933

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027810

Int. Cl.³ G05G 9/00

U.S. Cl. 74—471 R **18 Claims**



1. A control device for selectively displacing two drive rod drivers comprising:

a housing having means defining a guide path therein;

a handle member rotatably mounted to said housing;

two drivers movable in said housing along said guide path;

means engaging said handle member with one of said drivers for movement of said one driver with rotation of said handle member;

a clutch in said housing for engaging the other of said drivers with said handle member for movement of said other driver with rotation of said handle member; and

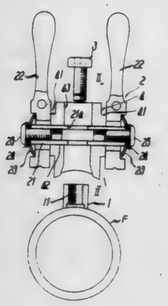
said clutch including a coupling element connected to one of said drivers movable into a first position engaged with the other of said drivers and into a second position out of engagement with the other of said drivers.

4,434,679

SPEED-CHANGE OPERATING DEVICE FOR A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 19, 1981, Ser. No. 275,397
Claims priority, application Japan, Jun. 27, 1980, 55-91242[U]
Int. Cl.³ G05G *5/16, 13/00*
U.S. Cl. 74—491 **9 Claims**



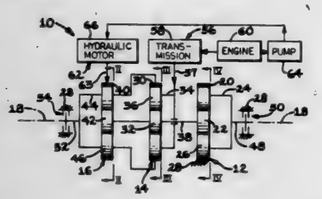
1. A speed-change operating device mounted directly on a frame of a bicycle comprising a bed fixed directly to said frame by a fixing means, a lever unit, and a screw member for mounting said lever unit on said frame in cooperation with said bed, said bed having only a screw thread screwable with said screw member, said lever unit comprising a lever shaft, a control lever having a boss, and a holding means for holding said control lever in position at said lever shaft, said holding means assembling said control lever on said lever shaft and including a restraining means contacting with the lateral surface of said boss at said control lever and restraining said control lever from axially moving and a biasing means for biasing said control lever to said restraining means with a given frictional force, said screw member being screwable with said bed to mount said lever unit on said frame.

4,434,680

PLANETARY STEERING DIFFERENTIAL

Craig W. Riediger, Pekin, and James E. Winzeler, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01126, § 371 Date Sep. 2, 1980, § 102(e) Date Sep. 2, 1980, PCT Pub. No. WO82/00867, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 2, 1980, Ser. No. 262,054
Int. Cl.³ F16H *37/06, 1/42*
U.S. Cl. 74—682 **41 Claims**



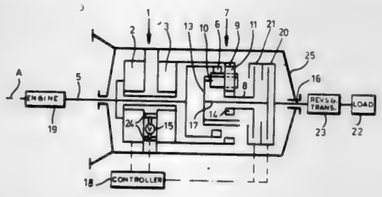
1. A planetary steering differential (10) adapted to be driven in use by a transmission (58) and a steering motor (66), comprising:
- a first input member (57) adapted to be driven by the transmission (58);
- a second input member (63) adapted to be driven by the steering motor (66);
- first and second output members (48,52);
- planetary means (12,14,16) for rotating said first and second output members (48,52) in the same direction and at the same speed in response to rotation solely of said first input member (57) and holding said second input member (63) stationary with the speed of the first and second output members (48,52) being reduced from the speed of the first input member (57), and for rotating said first and second output members (48,52) in opposite directions at the same speed in response to rotation solely of said second input member (63) through a single steering input power path and holding said first input member (57) stationary, said planetary means (12,14,16) including first, second and third interconnected planetary mechanisms (12,14,16) individually having single ring gear, sun gear and planet carrier elements (20,22,24,30,32, 34,40,42,44), one of said elements (30,32,34,40,42,44) of said second and third planetary mechanisms (14,16) being connected to said first input member (57) and another one being connected to said second input member (63), said planetary mechanisms (12,14,16) being arranged on and interconnected solely along a common central axis (18).

4,434,681

HYDROMECHANICAL DRIVE

Ehrlinger Friedrich, Freidrichshafen, and Michael Meyerle, Meckenbeuren, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 103,437, Dec. 14, 1979, abandoned.
This application Dec. 4, 1981, Ser. No. 327,690
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854375
Int. Cl.³ F16H *47/04*
U.S. Cl. 74—687 **5 Claims**



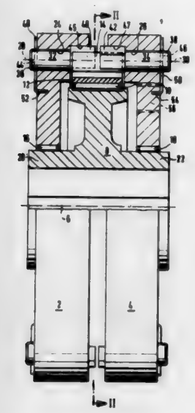
1. A hydromechanical transmission comprising:
- a power shaft driven by a prime mover;
- a hydrostatic unit with a driving element and a driven element fluidically coupled to each other for joint rotation at a speed ratio variable between predetermined negative and positive limits, said driving element being positively coupled to said power shaft for rotation thereby;
- a planetary-gear train with a first and a second input gear and one output gear centered on a common axis, a planet carrier rotatable about said axis, a first pinion on said planet carrier in mesh with said first input gear and a second pinion on said planet carrier in meah with said first pinion, with said second input gear and with said output gear, said first input gear being positively coupled with said power shaft, said second input gear being positively coupled with said driven element;
- an output shaft coupled to a load;
- a first clutch operable to couple said output shaft with said planet carrier in a range of low speeds of said output shaft relative to said power shaft;
- a second clutch operable to couple said output shaft with said output gear in a range of high speeds of said output shaft relative to said power shaft; and
- control means coupled with said hydrostatic unit and with said clutches for varying said speed ratio between said negative and positive limits in each of said ranges and for alternately operating said clutches, with a switchover from one clutch to the other at a point where said speed ratio is at said positive limit with said planet carrier, said input gears and said output gear all co-rotating at the same speed.

4,434,682

PLANETARY GEAR

Kurt G. Fickelscher, Frankenthal, Fed. Rep. of Germany, assignor to Balcke-Duerr AG, Fed. Rep. of Germany

Filed Sep. 3, 1981, Ser. No. 299,124
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034133
Int. Cl.³ F16H *1/28, 55/14*
U.S. Cl. 74—805 **14 Claims**



1. In a planetary gear having two adjacent identical central wheels with teeth of different pitch and a planet wheel whose pitch is equal to that of a virtual tooth row formed by the central wheel teeth and whose teeth extend into tooth gaps in the virtual tooth row, the planet wheel being arranged fro guided slaving by a rotary disk, at least two of said three mentioned wheels having pivotable teeth, the teeth of both the central wheels and the planet wheel being of substantially triangular cross section with plane tooth profiles, the improvement wherein the pivotable teeth of at least one of said central wheels are arranged on journals.

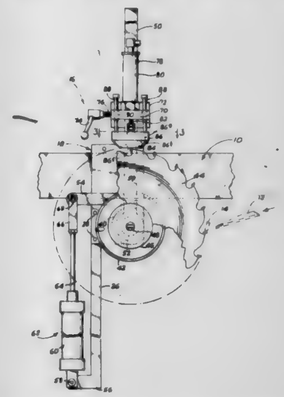
4,434,683

SAW-ADVANCING MEANS WITH EDGE ENGAGING PAD

Peter D. Kaye, Monroe, Oreg., assignor to Bell Industries, Inc., Los Angeles, Calif.

Filed Apr. 5, 1982, Ser. No. 365,621
Int. Cl.³ B23D *63/14*
U.S. Cl. 76—37 **10 Claims**

1. In apparatus for grinding the teeth in a circular saw:
- saw-mounted means for mounting the saw with said saw being rotatable about its axis,
- a compressible pad disposed radially outwardly of the periphery of a saw mounted on said saw-mounting means, and
- power-operated means for moving said pad radially inwardly against the periphery of said saw and in a path extending about the axis of the saw whereby the saw is rotated about its axis by said pad.

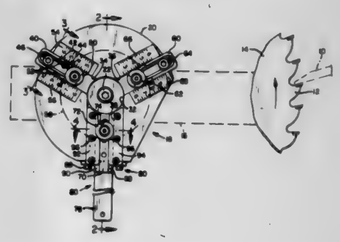


4,434,684

SELF-CENTERING SAW MOUNT

Keith L. Nixon, Pleasant Hill, Oreg., assignor to Bell Industries, Inc., Los Angeles, Calif.

Filed Apr. 12, 1982, Ser. No. 367,583
Int. Cl.³ B23D *63/14*
U.S. Cl. 76—37 **8 Claims**



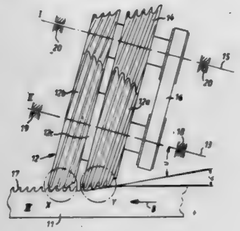
1. In a grinding machine, including a power-driven grinding wheel,
- means for rotatably mounting a circular saw with the edge of the saw moveable with rotation of the saw to place successive teeth in a position to be ground by the grinding wheel comprising:
- a mounting plate,
- first, second and third guide mounts mounted on said mounting plate for movement in paths which diverge from each other extending outwardly from substantially a common center, each guide mount mounting a guide adapted to engage the edge in a saw which defines the eye of the saw,
- means for securing a pair of said guide mounts in selected adjusted positions in their said paths, and
- biasing means yieldably urging the third guide mount outwardly in its path.

4,434,685

APPARATUS FOR CUTTING SAW TEETH INTO SAW BLADES OR SAW BANDS

Erwin Junker, Talstrasse 78, D 7611 Nordrach-Baden, Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,120
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022292
Int. Cl.³ B23D *63/12*
U.S. Cl. 76—38 1 Claim



1. An apparatus for forming a saw blade or a saw band by forming saw teeth in a solid stock moving continuously in a longitudinal direction, said apparatus comprising:

grinding wheel means for grinding away portions of the stock to form saw teeth therein;

said grinding wheel means being mounted for rotation about an axis which is inclined at an acute angle to and which diverges from the direction of movement of the stock;

said grinding wheel means having a generally frustoconical configuration and an outer periphery defined by first and second axially distinct helical grinding ribs having different contours; and

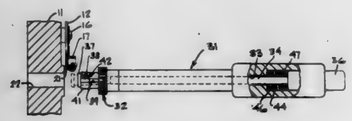
said grinding wheel means comprising first and second separate grinding wheels mounted on a common shaft in axially spaced relationship, and said first and second grinding ribs being formed on said first and second grinding wheels, respectively.

4,434,686

ADJUSTING APPARATUS

Dennis M. Ryan, San Mateo, Calif., assignor to AMPEX Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,726
Int. Cl.³ B25B *25/00*
U.S. Cl. 81—3 R 10 Claims



1. Apparatus for the relative positional adjustment of a pair of elements having freedom of relative motion in a first direction, characterized in that:

a first of said elements is relieved to define a reference bore adjacent an edge of the other and second element, said bore having an axis lying in a plane normal to said first direction;

an adjusting element is provided fitting for snug rotation in said bore;

said adjusting element having a portion engaging said second element in substantially non-slip engagement for causing said relative motion of said first and second elements upon rotation of said adjusting element in said bore; and

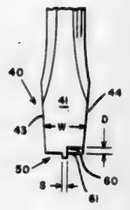
means are provided for securing said adjusting element against rotation in said bore when a desired adjustment has been completed.

4,434,687

DAMAGED SCREW REMOVER

Anthony N. Vickio, Montour Falls, N.Y., assignor to Vi-Tek Designs, Inc., Montour Falls, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,174
Int. Cl.³ B25B *15/00*
U.S. Cl. 81—441 10 Claims



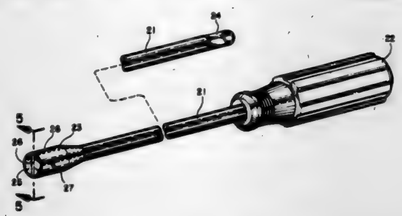
1. A damaged screw remover comprising a shank having a longitudinal axis of rotation, a handle mounted to said shank, and a blade integral with the shank opposite the handle, the blade having two generally opposed faces joined together by sides and a working end, the working end including an axially-disposed projecting tip for driving into a damaged screw slot and setting the same therein by cutting into the damaged screw slot and radially-disposed end surfaces flanking the tip, each end surface deployed at an acute angle with respect to one of the opposed faces, wherein the end surfaces join the faces at sharp edges which are the leading edges when the damaged screw remover is rotated couterclockwise.

4,434,688

SCREWDRIVER

Corwin Bowles, 795 E. 980 South, Salt Lake County, Utah 84107

Filed Dec. 7, 1981, Ser. No. 328,371
Int. Cl.³ B25B *15/00*
U.S. Cl. 81—451 5 Claims



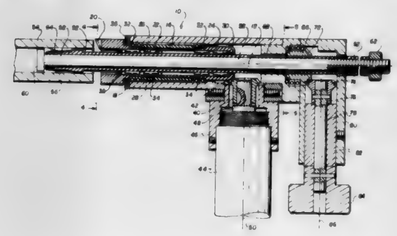
1. An improved screwdriver comprising a shank, one end of said shank having a screw head receiving means including a screw head receiving cavity adapted to receive at least a portion of the head of a screw to be driven to thereby prevent lateral motion of the shank with respect to the screw head, the other end of the shank being adapted to have drive means secured thereto; a blade means receiving slot in said screw head receiving means extending beyond the screw head receiving cavity; blade means adapted to removably slip into the blade means receiving slot and be held therein against rotational movement relative to the shank and in position so that a portion of the blade extends across the screw head receiving cavity to thereby mate with the slot of a screw head inserted into the cavity; a hole extending through the screw head receiving means and the blade means perpendicular to the blade means receiving slot, the ends of such hole being visable on opposite sides of the screw head receiving means and visable to a user of the screwdriver so as to show the orientation of the blade means within the screw head receiving cavity; and pin means removably secured in said hole to hold said blade means in position.

4,434,689

CUTTER HEAD DRIVE SHAFT FOR PORTABLE TUBE END PREPARATION TOOL

Lawson H. Nail, Folsom, and Richard Miller, Citrus Heights, both of Calif., assignors to Tri Tool Inc., Rancho Cordova, Calif.

Filed Aug. 9, 1982, Ser. No. 406,541
Int. Cl.³ B23B *27/00, 5/16*
U.S. Cl. 82—4 C 3 Claims



1. In a portable tube end preparation tool including a housing extending along a longitudinal axis; a cutter head mounted at one end of the housing for rotation about said longitudinal axis; a cutter head drive shaft means connected to said cutter head for transmitting rotational drive force thereto and including a drive shaft means within the housing, the improvement comprising: said drive shaft means comprising a three-piece assembly including a first cylindrical shaft portion connected directly to the cutter head and extending along said longitudinal axis; a second cylindrical shaft portion axially aligned and concentrically disposed with respect to said first shaft portion, said first and second shaft portions including external threads adjacent their adjoining ends; an internally threaded coupling sleeve bridging the adjoining ends of said first and second shaft portions and threadedly connected thereto for joining the assembly together; and axially spaced rolling bearing means within the housing disposed along said longitudinal axis at opposite ends of said coupling sleeve, said bearings respectively engaging said first and second shaft portions; said coupling sleeve, in cooperation with said bearings, restraining longitudinal and radial motion of said first and second drive shaft portions with respect to said housing.

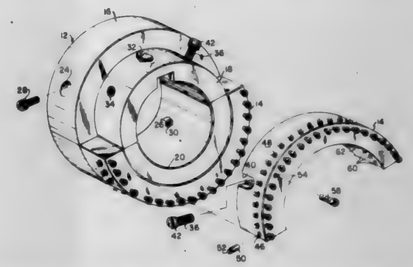
4,434,690

ROTARY PRESS PUNCH RING AND METHOD OF CHANGING PUNCHES CARRIED THEREBY

Richard L. Mauer, Fort Lee, N.J., assignor to Rapid Ring Co., Inc., East Hanover, N.J.

Filed Jan. 15, 1982, Ser. No. 339,749
Int. Cl.³ B26F *1/00*
U.S. Cl. 83—13 17 Claims

13. A method of changing punches carried by a rotary press punch ring which includes a collar mounted on a shaft of a rotary press for rotation therewith, a plurality of punch ring segments, each punch ring segment having an outer circumferential surface which forms at least a part of an outer circumferential surface of said rotary press punch ring, attaching means provided in said outer circumferential surface of each of said punch ring segments for removably and interchangeably attaching each of said punch ring segments to said collar independently of the other punch ring segment or segments, said attaching means including at least one fastener for each punch ring segment, each fastener extending through its corresponding punch ring segment into engagement with said collar, and receiving means provided in said outer circumferential surface of each of said punch ring segments for releaseably receiving several punches per punch ring segment, said method comprising the steps of disengaging said fastener or fasteners of one of said punch ring segments from said collar by moving said fastener or fasteners away from said outer circumferential surface of said one punch ring segment in a generally radial direction relative to said shaft of said press, removing said one punch ring segment from said collar by moving said one punch ring segment away from said collar in a generally radial direction relative to said shaft of said press without removing or otherwise disturbing the other punch ring segment or segments, whereby the several punches on said one punch ring segment may be collectively removed from said press as a group, and then replacing said one punch ring segment with an identical punch ring segment equipped with several new punches.

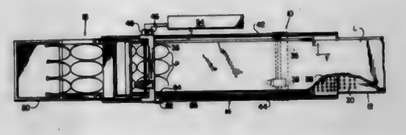


4,434,691

METHOD AND APPARATUS FOR SEALING CUT SHEET MATERIAL

Claude W. LeBlond, Enfield, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Apr. 12, 1982, Ser. No. 367,429
Int. Cl.³ B26D *3/00, 7/02*
U.S. Cl. 83—56 16 Claims



1. An automatically controlled cutting machine for cutting layups of limp sheet material comprising:

a cutting table defining a support surface on which a multiply layup of limp sheet material is spread for cutting;

a tool carriage movable back and forth over the cutting table and having a cutting tool movable with the carriage to perform cutting operations on the material;

vacuum generating means connectable with the layup of sheet material on the support surface for generating a vacuum within the layup and compressing the sheet material on the support surface;

a first roller rotatably mounted to the tool carriage for movement with the carriage and cutting tool relative to the cutting table and a layup of sheet material on the support surface;

a second roller rotatably mounted to the cutting table in parallel and generally aligned relationship with the first roller;

an elongated strip of air-impermeable overlay material having opposite ends wound on the first and second rollers respectively with a portion of the strip extending between the rollers for sealing cut sheet material in a layup on the support surface of the cutting table;

first retracting means connected with the first roller for

winding the strip of air-impermeable overlay material onto the first roller; and

second retracting means connected with the second roller for winding the strip of air-impermeable overlay material onto the second roller.

4,434,692

GRID-TYPE BREAD-SLICING MACHINE

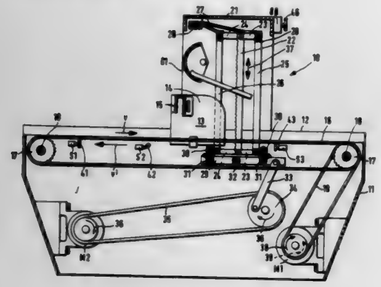
Jean-Marie G. Desert, Rue des Chataigniers 32, B 4480 Oupeye, and Franciskus J. Walrave, Rue Lieutenant Albert Dressen 6, B 4860 Pepinster, both of Belgium

Filed Jun. 8, 1981, Ser. No. 271,697

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021284

Int. Cl.³ B26D *1/11*

U.S. Cl. 83—62 **7 Claims**



1. A grid-type bread-slicing machine comprising a chain-driven loaf carriage and a knife grid each driven by an electric drive motor, wherein the rate of feed of said loaf carriage is controlled automatically by a control system for the drive motor thereof according to the cutting effort required by the knife grid at any particular cutting point in the bread, there being no movement between the carriage and the bread during cutting thereof, characterised in that the electrical supply circuit for the drive motor for the loaf carriage chain drive system includes a solid state current-limiting element for its power requirement which limits the current to the drive motor and progressively reduces the rotary speed thereof as the power requirement increases as a result of increasing resistance to the loaf carriage during the slicing operation, and an interruptor, said interruptor being responsive when said current limiting element is operative to reduce the speed of said drive motor.

4,434,693

PLATE POSITIONING APPARATUS

Kinji Hosoi, Machida; Hiroyuki Takeda, Yokohama; Hisao Kobayashi, Yamanashi, and Daijiro Kosaka, Zama, all of Japan, assignors to Nihon Early Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 359,081

Claims priority, application Japan, Aug. 14, 1979, 54-111253

Int. Cl.³ B21D *28/04, 26/28, 43/00*

U.S. Cl. 83—71 **4 Claims**

1. A plate positioning apparatus for use with a punch machine having a punch, comprising:

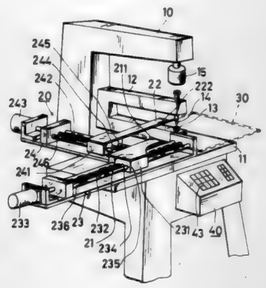
a number one workpiece stopper movable back and forth along an X axis and having its leading edge perpendicular to the axis of motion and further having a cutout space on the inner corner of its leading edge,

(b) a number one motor for moving said number one workpiece stopper back and forth along the X axis and controlling said number one workpiece stopper so that its leading edge at its forwardmost position is in front of the punch of the punch machine,

(c) a number two workpiece stopper movable along a Y axis perpendicular to the X axis, having its leading edge perpendicular to the axis of motion, and having a cutout section in its leading edge adequate to allow the passage of the punch,

(d) a number two motor for moving said number two workpiece stopper to and fro along the Y axis and controlling said number two workpiece stopper so that the cutout section in its leading edge at its forwardmost position is directly under the punch, and

(e) a control apparatus for independently operating said number one and number two motors.



4,434,694

FOOD MATERIAL SLICING MACHINE

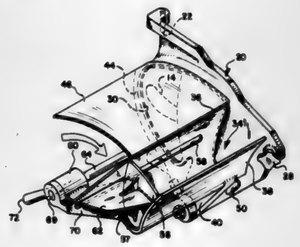
Hans-Hermann Scharsig, Offenburg, Fed. Rep. of Germany, assignor to Hobart Corporation, Troy, Ohio

Filed Mar. 10, 1982, Ser. No. 356,871

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113638

Int. Cl.³ B26D *7/06*

U.S. Cl. 83—411 R **7 Claims**



1. A food material slicing machine having a housing with an open bottom, a vertical cutter mounted in the housing for rotation on a horizontal axis, a stationary cutter cover lying in a vertical plane parallel to and closely adjacent said cutter and having an opening therein exposing a portion of said cutter to enable passage through the opening of food such as fruits and vegetables to be cut, characterized in that:

a hopper extending horizontally outwardly from the cutter cover is pivotally mounted on the cover on an axis below and parallel to the axis of rotation of the cutter, the hopper having a bottom and side walls but being open throughout its length on the top side thereof for receiving food material to be cut and further having an open discharge end adjacent said cutter cover, the pivotal axis for the hopper enabling the hopper to be moved laterally between a first position in which the discharge end of the hopper is remote from the opening in the cover and a second position wherein the discharge end of the hopper aligns with the opening so that food material in the hopper can be pushed through the opening toward the cutter, a cutter cover plate mounted for movement with the hopper to cover the opening when the hopper is in the first position, a pusher plate mounted in the hopper for horizontal movement between a first position at the end of the hopper remote from the cutter and a second position at the discharge end of the hopper to urge food material through the opening, and a hopper cover plate extending the full length of the hopper and mounted on the cutter cover in a position to expose the top open side of the hopper when the hopper is in the first position and to cover the open side of the hopper when it is in its second position.

4,434,695

HOLDER FOR A ROLLER SLITTING KNIFE

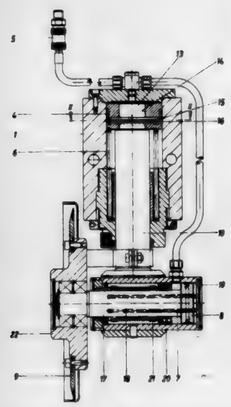
Peter Wingen, Hauptstrabe, Fed. Rep. of Germany, assignor to Dienes Werke fur Maschinenteile GmbH & Co. KG, Hauptstrabe, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 329,804

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047980

Int. Cl.³ B26D *7/26*

U.S. Cl. 83—482 **12 Claims**



1. A holder for a roller slitting knife comprising:

a first selectively-operable piston assembly including a first piston rod and a first cylinder housing, said first piston rod having a reduced diameter end portion to which a non-circular, cross-sectional portion is selectively secured, said non-circular portion being received in a mating bore of said housing to prevent rotation of said first piston rod in said housing;

a second selectively-operable piston assembly including a second piston rod and a second piston cylinder housing mounted to said first assembly and disposed for operation in a direction transverse to operation of said first piston assembly; and,

a roller slitting knife mounted to said second piston assembly whereby said knife is selectively positioned for operation upon selective operation of said first and second piston assemblies wherein said non-circular cross-sectional portion is selectively disassociable from a remainder of said first piston rod whereby said first piston rod can be rotated by approximately 180° to enable said knife to be converted from a right-handed attack to a left-handed attack.

4,434,696

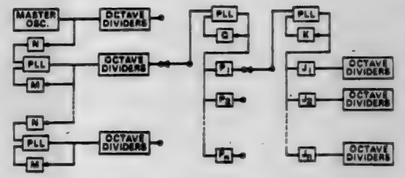
INSTRUMENT FOR COMPARING EQUAL TEMPERAMENT AND JUST INTONATION

Harry Conviser, 1335 Woodruff Ave., Los Angeles, Calif. 90024

Filed Nov. 20, 1981, Ser. No. 323,682

Int. Cl.³ G10H *5/07*

U.S. Cl. 84—1.01 **12 Claims**



8. In an electronic musical instrument having a single master oscillator for generating frequencies of predetermined scales through a series of stages, each stage multiplying the input thereto by a selected numerical ratio M/N, the combination further having an Exclusive-OR gate with one input connected to receive a signal whose frequency is multiplied by said M/N ratio, and the other input connected to receive said signal through a frequency counter having a dividing factor of n, where n is an integer, thereby generating an effective ratio of $n-1/n$ at the Exclusive-OR gate output for a frequency applied to a subsequent stage from the output of said Exclusive-OR gate, said master oscillator and each subsequent stage having octave divider means to provide an extended range of said predetermined scales.

4,434,697

INDICATOR APPARATUS FOR INDICATING NOTES EMITTED BY MEANS OF A MUSICAL INSTRUMENT

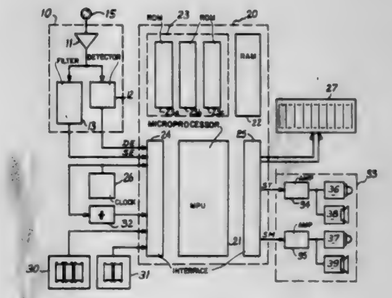
Henri Roses, 11 rue Mably, 21000-Dijon, France

PCT No. PCT/FR80/00189, § 371 Date Aug. 24, 1981, § 102(e) Date Aug. 24, 1981, PCT Pub. No. WO81/01898, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 24, 1980, Ser. No. 296,413

Int. Cl.³ G04F *5/02*; G09B *15/02*; G10G *7/02*

U.S. Cl. 84—454 **11 Claims**



1. Apparatus for indicating the presence of musical notes and for identifying the musical notes detected comprising:

means for amplifying input signals corresponding to musical notes to be identified;

filter means connected to said means for amplifying for eliminating harmonics from said input signals;

energy detecting means connected to said means for amplifying for detecting input signals exceeding a predetermined threshhold;

memory means including at least one memory for storing items of information representing a table of musical notes;

means for calculating the frequency and octive of said input

signal, said means for calculating including microprocessor means and being connected to said filter means, said energy detecting means and said memory means, said means for calculating being responsive to input signals received from said filter means exceeding said predetermined threshhold determined by said energy detecting means to calculate the frequency thereof, said frequency calculated being employed to read from said memory for storing items of information representing a table of musical notes items of information representing the closest corresponding musical note for said frequency calculated; and

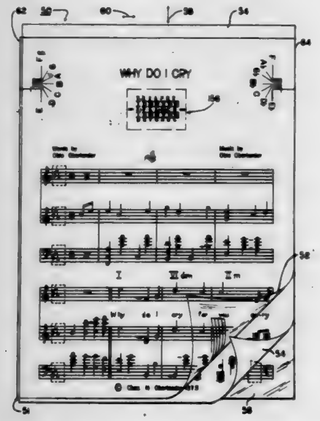
means for displaying, in alphanumeric form, said musical note read closest to each successive musical note in said input signals to be indentified and the octive in which said musical note resides.

4,434,698

TRANSPOSABLE SHEET MUSIC

Charles N. Oberlander, El Paso, Tex., assignor to Ronald H. Mishkin, Lake Hopatcong; James T. Pappas, Chatham and W. Patrick Quast, Waldwick, all of, N.J., part interest to each

Filed May 4, 1981, Ser. No. 259,808
Int. Cl.³ G10G *1/04*
U.S. Cl. 84—483 A **15 Claims**



1. A system for devising a sheet of music and for transposing the music from one key to another comprising:

a first layer comprising transparent material having first indicia disposed thereon including staff lines, a first set of predetermined music notations, and opaque areas; a second layer comprising opaque material having second indicia disposed thereon including notes, and a second set of predetermined music notations; said first layer overlaying said second layer, said first and second layers relatively movable to each other; said opaque areas of said first indicia including a key signature area having windows substantially configured as sharps and flats and wherein said second indicia on said layer of opaque material includes a key signature area having a plurality of sharps and flats, substantially configured as such, and means for aligning said first layer and said second layer,

whereby a desired key for the music can be selected, such that upon alignment of the sharp or flat windows of the selected key permit corresponding sharps or flats in the key signature area on said layer of opaque material to be visible therethrough; and whereby various ones of said second indicia on said second layer are obscured by corresponding opaque areas on said first layer.

2. A system for devising a sheet of music and for transposing the music from one key to another comprising:

first and second overlays of transparent material, having first indicia disposed thereon including staff lines, respective sets of predetermined music notations, and opaque areas;

a layer of opaque material movably interposed between said first and second overlays, said layer having second indicia disposed on at least one side thereof, including notes, and a second set of predetermined music notations; said opaque areas of said first indicia including a key signature area having windows substantially configured as sharps and flats and wherein said second indicia on said layer of opaque material includes a key signature area having a plurality of sharps and flats, substantially configured as such, and

means for aligning said layer of opaque material with at least one of said overlays having said first and second printings thereon,

whereby a desired key for the music can be selected, such that upon alignment of the sharp or flat windows of the selected key permit corresponding sharps or flats in the key signature area on said layer of opaque material to be visible therethrough; and, various ones of said second indicia on said layer of opaque material are obscured by corresponding opaque areas on said transparent overlays.

14. A system for devising a sheet of music and for transposing the music from one key to another comprising:

a first layer comprising transparent material having first indicia disposed thereon including staff lines, a first set of predetermined music notations, and opaque areas; a second layer comprising opaque material having second indicia disposed thereon including notes, and a second set of predetermined music notations;

said first layer overlaying said second layer, said first and second layers relatively movable to each other;

said opaque areas of said first indicia, including a key signature area having a plurality of vertical lines printed therein at predetermined locations on said staff lines, a first set of said vertical lines corresponding to the sharps and a second set of said vertical lines corresponding to the flats, said key signature area of said opaque area of said first indicia further including window areas configured to represent the cross members of the sharps and the remaining body portion of the flats, and wherein said second indicia on said layer of opaque material includes a key signature area having a plurality of cross members of sharps and body portion of flats in predetermined locations, and means for aligning said first layer and said second layer, whereby a desired key for the music can be selected and whereby upon alignment the windows in the key signature area for the selected key permit corresponding indicia representing sharps and flats to be visible therethrough, and

whereby the vertical lines associated with the selected key signature cooperate with the indicia viewed through the windows to present to the observer the desired notation for the selected key and whereby various ones of said second indicia on said second layer are obscured by corresponding opaque areas on said first layer.

4,434,699

AMMUNITION FEEDER

Douglas P. Tassie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

Continuation of Ser. No. 91,329, Nov. 5, 1979, abandoned. This application Oct. 15, 1981, Ser. No. 311,585
Int. Cl.³ F41D *10/30, 10/32*
U.S. Cl. 89—12 **16 Claims**

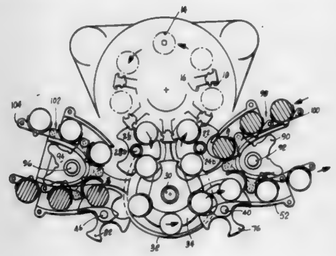
1. A dual feeder for a gun having a housing and a rotor with a plurality of gun barrels and a like plurality of gun bolts, comprising:

a source of positive drive;

a first endless conveyor means, adapted to be driven positively by said positive drive source, for in-feeding a first train of rounds of ammunition;

a second endless conveyor means, adapted to be driven positively by said positive drive source, for in-feeding a second train of rounds of ammunition;

a third means including a sprocket having cutouts for receiving rounds passing towards the gun bolts and for receiving rounds passing from the gun bolts, driven positively by said positive drive source, for receiving and for placing onto the gun bolts rounds of ammunition in sequence;



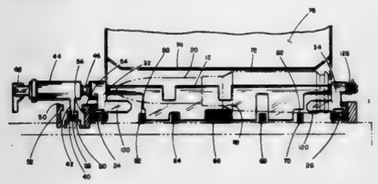
a fourth means for coupling said first conveyor means to said positive drive source and to said third means for the positive feeding of rounds to said third means and for concurrently decoupling said second endless conveyor means, and for coupling said second endless conveyor means to said positive drive source and to said third means for the positve feeding of rounds to said third means and for concurrently decoupling said first endless conveyor means.

4,434,700

AUTOMATED AMMUNITION MIXER

Anthony J. Aloi, Richmond; George D. Brooks, South Burlington, and Ronald E. Prince, Colchester, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Jan. 4, 1982, Ser. No. 336,791
Int. Cl.³ F41F *9/02*; F42B *39/10*; B65G *47/10*
U.S. Cl. 89—34 **8 Claims**



1. An ammunition sorting system comprising:

a plurality of storage means, each adapted to releasably store a different type of ammunition;

a conveyor system including in sequence a plurality of rungs,

each rung movable between two alternative positions,

one position wherein said rung provides a passageway in the conveyor adapted to receive therein a round of ammunition from one of said plurality of storage means,

the other position wherein said rung precludes entry of a round into said passageway; and

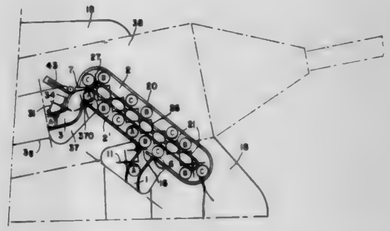
means for selecting the position of each rung as it passes each of said plurality of storage means.

4,434,701

APPARATUS FOR CONVEYING CYLINDRICAL OBJECTS SUCH AS AMMUNITION

Herve Voillot, Sartrouville, France, assignor to Creusot-Loire, Paris, France

Filed May 26, 1981, Ser. No. 267,303
Claims priority, application France, May 23, 1980, 80 11622; Jul. 4, 1980, 80 14977
Int. Cl.³ F41H *7/06*; F41F *9/02*
U.S. Cl. 89—36 K **12 Claims**



1. Apparatus for conveying a succession of cylindrical objects such as ammunition by means of a series of rotary drive members each constituted by at least two separate seating plates fixed on a shaft, said shafts being driven to rotate in synchronism and disposed parallel and equidistant from each other along a cylindrical surface parallel to inner and outer members spaced by a distance at least equal to the diameter of said objects, the inner guiding member being positioned along a surface enveloping the bottoms of the seats of said plates, the whole forming a guideway for advancing objects by successive displacements, said guideway being constituted by three successive parts respectively forming an upstream guideway (1), an intermediate guideway (2) and a downstream guideway (3), said intermediate guideway (2) being constituted by one part of a magazine (20) the other part of which is constituted by an additional guideway (2') which is closed at its two ends on said intermediate guideway (2) so as to form a closed guideway bounded by inner (23') and outer (22') guiding members disposed as extensions of the guiding members (23, 22) of the intermediate guideway (2) and associated with a series (21) of seating plates forming a closed chain of seats with the plates of said intermediate guideway, said outer guiding member (22') being interrupted at the entry and exit of said intermediate guideway (2), respectively, for the passage of objects coming from said upstream guideway (1) and going to said downstream guideway (3), said magazine being associated with two switches (6, 7) respectively positioned at the ends of said intermediate guideway (2) and with individual means for orienting the upstream (6) and downstream (7) switches alternately into a first position assuring continuity of said intermediate guideway (2) respectively with said upstream guideway (1) and with said downstream guideway (3) and a second position assuring continuity of said intermediate guideway (2) with said additional guideway (2') forming the other part of said magazine.

4,434,702

TELESCOPING PERISCOPE

Marvin J. Rosner, Ventura, and Arthur S. Chapman, Santa Barbara County, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

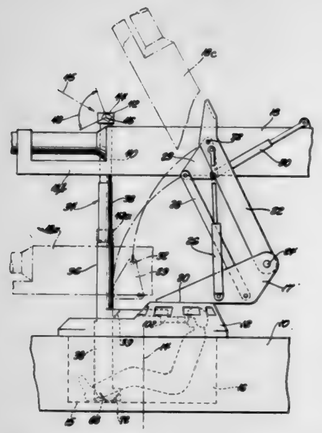
Filed Mar. 8, 1982, Ser. No. 356,002
Int. Cl.³ F41G *1/40*
U.S. Cl. 89—36 L **2 Claims**

1. In a military vehicle having a turret rotatable in the azimuth plane, a main gun externally mounted on the roof of the turret, first power means for moving the gun bodily between a lowered prone position adjacent the turret roof and a raised

prone position remote from the turret roof, and second power means for swinging the gun around a first horizontal axis to vary the elevational firing angle of the gun: the improvement comprising a periscope extending upwardly from the turret in the space alongside the gun;

said periscope including a first stationary support tube extending upwardly from the turret roof to a point near the upper surface of the gun when the gun is in its lowered prone position, a second tube telescopically slidably extendable from the stationary support tube, a third tube slidably telescopically extendable from the second tube, a first head carried on the upper end of the third tube for three hundred sixty degree movement in the azimuth plane, the second and third tubes being movable between lowered positions wherein the first head is slightly above the gun in its lowered prone position to raised positions wherein the first head is slightly above the gun in its raised prone position;

said periscope further including a second head carried on the first head for angular motion around a second horizontal axis normal to the tube axis, optical elements within the first and second heads for transmitting an image from the second head along the second horizontal axis and thence



downwardly along the tube axis, and mirror means at the lower end of the second tube for receiving the image from the first head and reflecting said image upward parallel to the tube axis;

a stationary reflector arranged to receive the upwardly directed beam from the mirror means;

and power means for simultaneously moving said second and third tubes at different speeds such that the first head and mirror means move away from each during the raise motion of the periscope and toward each other during lowering motion of the periscope, the movement speed of the third tube being one half the movement speed of the inner tube so that the optical path from the second head to the stationary reflector has a constant length in all adjusted positions of the second and third tubes;

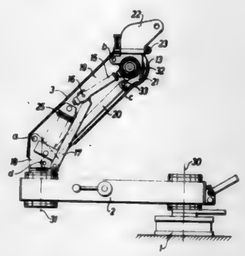
said power means comprising a first sprocket mounted on the second tube near its lower end, a second sprocket mounted on the second tube near its upper end, a first chain extending from a fixed anchorage downwardly around the first sprocket and thence upwardly to an anchorage on the third tube, and a second chain extending from an anchorage on the third tube upwardly around the second sprocket and thence downwardly to an anchorage on the stationary support tube.

4,434,703

GUN-MOUNT FOR A MACHINE GUN SUPPORTED BY A FORK OR FOR A WEAPON OF A SIMILAR KIND WITH MEANS FOR CONTINUOUSLY VARIABLE ADJUSTMENT OF THE ELEVATION OF THE UPPER SWIVEL ARM

Jorgen L. Fog, Skovlunde, and Jorgen Nielsen, Farum, both of Denmark, assignors to Disa A/S (Dansk Industri Syndikat A/S), Herlev, Denmark

Filed Jun. 4, 1981, Ser. No. 270,331
Int. Cl.³ F41F *23/00*
U.S. Cl. 89—37 B **3 Claims**



1. Gun mounting apparatus, comprising:

a pair of swivel arms including an upper arm and a lower arm pivotally connected together at one end thereof for rotation of the upper arm about an axis, said upper swivel arm being in the form of a parallelogram including an upper long side in the shape of a hollow box which surrounds the lower long side and the upper and lower short sides of said parallelogram;

a gun mount attached to the free end of said upper arm; and

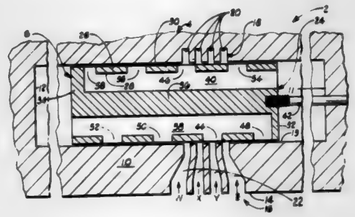
height adjustment means for adjusting the height of said free end of said upper arm, including a connecting rod means of variable length connected between two sides of the parallelogram and geared control means for changing the length of said connecting rod means.

4,434,704

HYDRAULIC DIGITAL STEPPER ACTUATOR

Jim B. Surjaatmadja, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 14, 1980, Ser. No. 140,126
Int. Cl.³ F15B *15/22*
U.S. Cl. 91—25 **8 Claims**



1. An apparatus for converting pressure, exerted by a pressurizing substance between a pressure source and a pressure sink, into increments of displacement, each increment having a length S, said apparatus comprising:

a housing including a wall having four grooves defined in spaced relationship to each other on an interior surface of said wall and said wall further having four holes defined therethrough so that each hole extends from a respective one of the grooves to an exterior surface of said wall, said

grooves and holes thereby defining four ports of said housing, each of said grooves being 0.5 S wide and being spaced from each adjacent groove on centers spaced 1.0 S; and

a double-acting piston disposed for movement in said housing in response to the pressurizing substance, said piston including:

a side wall having an inner surface and an outer surface and further having a first plurality of apertures and a second plurality of apertures defined in said side wall so that each of said apertures extends from the inner surface to the outer surface, each of said apertures having a diameter of 1.5 S with each aperture of said first plurality of apertures being spaced on a center separated a distance of 4.0 S from a center of each adjacent aperture of said first plurality of apertures and with each aperture of said second plurality of apertures being spaced on a center separated a distance of 4.0 S from a center of each adjacent aperture of said second plurality of apertures, said first plurality of apertures including a first aperture and a second aperture and said second plurality of apertures including a third aperture, wherein:

said third aperture is defined in said side wall so that said third aperture registers with a first one of said ports when said first aperture registers with a second one of said ports and further so that said third aperture registers with said second one of said ports when said first aperture overshoots in a first direction said second one of said ports; and

said second aperture is defined in said side wall so that said second aperture registers with said first one of said ports when said first aperture overshoots in said first direction said second one of said ports, said first, second and third apertures thereby providing feedback means for precisely positioning said piston relative to said housing;

a first end wall closing a first portion of a first end of said side wall and leaving a second portion of said first end open;

a second end wall closing a first portion of a second end of said side wall and leaving a second portion of said second end open; and

a central wall extending from said first end wall to said second end wall and from a first region of the inner surface of said side wall to a second region of the inner surface of said side wall so that a first chamber extending from the first end wall to the open portion of the second end of said side wall and a second chamber extending from said second end wall to the open portion of the first end of said side wall are formed, wherein said first plurality of apertures communicates with said first chamber and wherein said second plurality of apertures communicates with said second chamber.

4,434,705

INTRODUCED IN THE HYDRAULIC ACTUATION FOR THE ALTERNATIVE MOVEMENTS OF THE SWINGING ARMS OF PETROLEUM EXTRACTOR MACHINES

Pedro Roquet Jorda, Antonio Figueras, St. No. 83, Tona (Barcelona), Spain

Continuation of Ser. No. 91,856, Nov. 6, 1979, abandoned. This application Oct. 30, 1981, Ser. No. 315,590
Int. Cl.³ F01L *25/06*
U.S. Cl. 91—50 **1 Claim**

1. A single-stroke hydraulically-powered reciprocating drive mechanism comprising:

(i) a source of fluid under pressure

(ii) a hydraulic ram including a cylinder, and a piston reciprocable in the cylinder and defining therein a a chamber of variable volume,

(iii) a spool valve having first and second positions

(iv) valve striker means moving with the hydraulic ram and changing the spool valve from one position to another at each end of the stroke of the hydraulic ram,

(v) a resiliently-loaded two-way valve having an inlet connected in a first position to a first outlet, said valve being arranged upon decrease of back pressure in the first outlet to move to a second position in which the inlet is also connected to a second outlet,

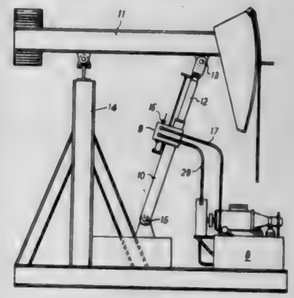
(vi) a resiliently-loaded braking valve having conditions of lesser and greater opening,

(vii) first conduit means connecting the source of fluid under pressure to the inlet of said two-way valve and to said braking valve,

(viii) second conduit means connecting the second outlet of said two-way valve and said spool valve to exhaust to said source of fluid under pressure,

(ix) third conduit means connecting said braking valve to said chamber of variable volume, and

(x) fourth conduit means connecting the first outlet of said



two-way valve to said spool valve, the arrangement being such that in said first position of said spool valve corresponding to a powered stroke of said hydraulic ram, the spool valve closes the fourth conduit means and the resultant higher differential pressure maintains the two-way valve in its first position so that fluid under pressure in the first conduit means maintains the braking valve in its condition of greater opening so that fluid passes through the third conduit to the chamber of variable volume to actuate the ram, whereas at the end of the powered stroke the spool valve is moved to its second position in which it provides a communication between the fourth and second conduit means and as a result the differential pressure reduces and permits the two-way valve to move to its second position to connect the first and second conduit means, thereby permitting exhausting of fluid from said chamber of variable volume through said third conduit means, said braking valve in its condition of lesser opening, and said first and second conduit means.

4,434,706

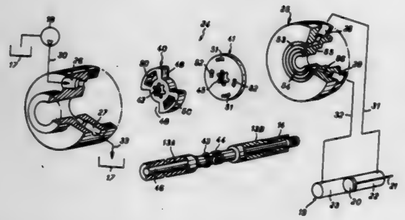
POWER-ASSISTED STEERING DEVICE FOR A VEHICLE

Patrice Bertin, Paris, France, assignor to Valeo, Societe Anonyme, Paris, France

Filed Jul. 14, 1981, Ser. No. 283,155
Claims priority, application France, Jul. 17, 1980, 80 15790; Jun. 29, 1981, 81 12714
Int. Cl.³ F15B *9/08*
U.S. Cl. 91—375 A **7 Claims**

1. In a power-assisted steering device for a vehicle, comprising control means operable to act on steering means, said control means having a transmission element in two parts which parts are capable of limited relative angular displacement under the action of said control means, and power-assistance means responsive to relative angular displacement of said parts to act on said steering means in the same sense as the control means, said power-assistance means comprising a hy-

draulic unit having fluid-pressure means and a fluid reservoir, an actuator acting on the steering means, and a hydraulic distributor interposed between the hydraulic unit and the actuator, said distributor comprising a stator having a pressure orifice connected to the fluid-pressure means, a return orifice connected to the fluid reservoir, and two service orifices connected to the actuator, and two adjacent rotors, located within the stator and which are respectively operable to rotate integrally with said two parts of the transmission element, a first of said rotors having distribution passages interacting with said pressure and return orifices, whilst the second rotor is provided with distribution passages which interact both with the



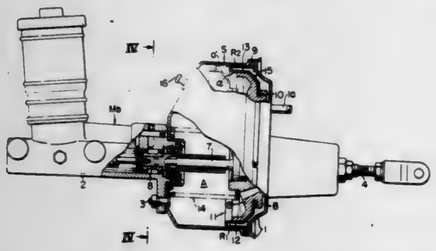
distribution passages of the first rotor **40** and with the service orifices of the stator the improvement in which the pressure orifice and return orifice of the stator communicate respectively with two chambers, one of these chambers being a peripheral chamber and communicating directly with distribution passages of the first rotor, which passages comprise apertures located along the outer periphery of the first rotor, whilst the other chamber is a central chamber and communicates directly with other distribution passages of the first rotor, which passages comprise apertures located adjacent the inner periphery of the first rotor, said first rotor being located within the axial dimension of both of said chambers.

4,434,707

VACUUM TYPE BRAKE BOOSTER DEVICE FOR VEHICULAR USE

Hiroo Takeuchi, Asashina; Nobuaki Hachiro, and Yoshihisa Miyazaki, both of Ueda, all of Japan, assignors to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Nov. 2, 1981, Ser. No. 317,011
Claims priority, application Japan, Nov. 19, 1980, 55-162832; Apr. 4, 1981, 56-50816
Int. Cl.³ F15B *9/10*; F16J *3/02*
U.S. Cl. 91—376 R **2 Claims**



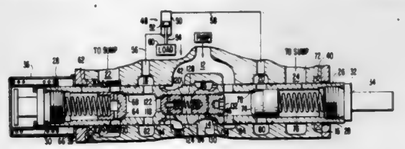
1. A vacuum type brake booster device for vehicular use comprising a booster shell of substantially elliptical shape in transverse cross-section, a booster piston corresponding in shape to the booster shell and accommodated therein for axial reciprocating movement, and a diaphragm having outer and inner peripheral portions sealingly secured, respectively, to the booster shell and the booster piston so as to divide the interior space of the booster shell into a first working chamber in communication with a vacuum source and a second working chamber adapted to be selectively placed in communication with the first working chamber and the external atmosphere by switching valve means, said diaphragm being of substantially elliptical shape in transverse cross-section and including a pair of opposite straight peripheral wall sections and a pair of opposite arcuate peripheral wall sections interconnecting said straight peripheral wall sections, said arcuate peripheral wall sections having a greater thickness than that of said straight peripheral wall sections, said arcuate peripheral wall sections of said diaphragm each having a rear surface including a raised arcuate rib for abutting engagement with a rear wall of the booster shell.

4,434,708

CONTROL VALVE FOR DOUBLE-ACTING PISTON AND VALVE ASSEMBLIES

Charles J. Bowden, Battle Creek, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 5, 1982, Ser. No. 355,006
Int. Cl.³ F15B *11/08*
U.S. Cl. 91—436 **17 Claims**



1. An improved control valve for use with a double-acting piston and cylinder assembly, said valve comprising:

a valve body having a cylindrical bore therein;

at least one inlet chamber in said body with said cylindrical bore for receiving fluid from an external supply;

at least one outlet chamber in said body communicating with said cylindrical bore for discharging fluid to an external reservoir;

a first cylinder chamber in said body communicating with said cylindrical bore for delivering fluid to and receiving fluid from one side of an external double-acting piston and cylinder assembly;

a second cylinder chamber in said body communicating with said cylindrical bore for delivering fluid to and receiving fluid from the other side of the same external double-acting piston and cylinder assembly;

a valve plunger positioned to slide within said bore, said plunger comprising in operative association with said inlet and outlet chambers and with said first and second cylinder chambers, first means for selectively delivering fluid from said inlet chamber to one of said first and second cylinder chambers, second means for selectively delivering fluid from the other of said first and second cylinder chambers to said outlet chamber and third means responsive to a predetermined pressure differential between said first and second cylinder chambers for directing fluid from the one of said cylinder chambers receiving high pressure fluid from the contracting side of the double-acting piston and cylinder assembly, to the other of said cylinder chambers delivering relatively lower pressure fluid to the expanding side of the double-acting piston and cylinder assembly; and

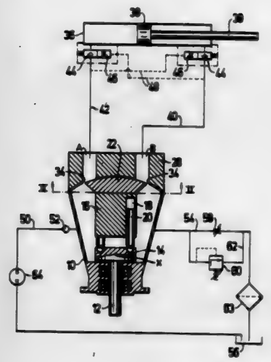
pressure responsive valve means connected in series with said second means for controlling the pressure of fluid flowing from the contracting side of the double-acting piston and cylinder assembly, via said second means, to said at least one outlet chamber.

4,434,709

AXIAL PISTON PUMP

Bo L. Greisson, Kantarellvägen 5, S-860 21 Sundsbruk, Sweden

PCT No. PCT/SE80/00050, § 371 Date Oct. 23, 1980, § 102(e) Date Oct. 10, 1980, PCT Pub. No. WO80/01822, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 22, 1980, Ser. No. 197,095
Claims priority, application Sweden, Feb. 23, 1979, 7901669
Int. Cl.³ F01B *13/04*
U.S. Cl. 91—506 **15 Claims**



1. In an axial piston pump comprising:

(a) a drive plate

(b) a rotatable cylinder block tiltable relative to said drive plate in at least one direction

(c) at least one piston mounted slidably in a cylinder of said cylinder block, said piston having a reciprocating movement imparted thereto upon rotation of said cylinder block when said cylinder block is tilted, relative to said drive plate, out of a neutral position in which no pumping is effected,

(d) a distribution plate adjustable jointly with said cylinder block and including two slots which act as inlet and outlet slots respectively, depending upon the direction of tilting of the cylinder block,

(e) a stationary port plate comprising exhaust and reflux ports respectively for the outflow of pumped fluid from the pump to an hydraulic system and for reflux of the used fluid from said hydraulic system to a hydraulic reservoir,

one of said slots of said distribution plate, acting as an outlet slot by the adjustment of the distribution plate, being brought into gradually increasing communication with that said port of the said port plate which is serving as an exhaust port as a consequence of the tilting of said distribution plate out of neutral position, the improvement which comprises, in combination:

(i) said port plate has at least one additional and separate feed opening located in said port plate for each tilting direction for supply of fluid to the pump,

(ii) the positioning of said exhaust and reflux ports and said feed opening of said port plate is such that said outlet and inlet slots of said distribution plate, as a result of said tilting of said distribution plate out of neutral position, are brought into gradually increasing communication with said feed opening and said exhaust port for outflow of fluid from the pump,

(iii) the reflux port for reflux of fluid to the hydraulic reservoir is gradually opened by said distribution plate, and

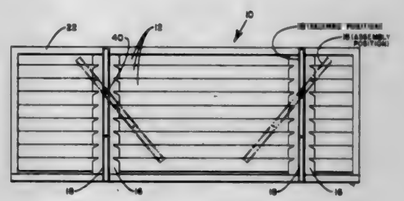
(iv) said reflux port and said feed opening are placed in communication with a housing for the pump serving as a hydraulic reservoir for the pump.

4,434,710

GRILLE MOUNTING MEANS AND METHOD

Theodore S. Bolton, Liverpool; Brad G. Leech, Fayetteville, and Richard D. Lang, Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 259,869, May 4, 1981, abandoned. This application Nov. 1, 1982, Ser. No. 437,919
Int. Cl.³ F24F *1/02*
U.S. Cl. 98—94 AC **10 Claims**



1. Apparatus for mounting spaced louvers to cover an opening in a building while allowing air flow therethrough which comprises:

a wall sleeve defining the opening, said wall sleeve including inwardly extending sleeve flanges and member support means associated with at least one sleeve flange; and

a grille assembly adapted to be mounted to the wall sleeve from the interior of the building to form a portion of the exterior of the building including

louver support means for maintaining the spaced louvers in a predetermined position, said louver support means engaging and extending inwardly from the louvers;

a grille frame defining a grille opening across which the spaced louvers are maintained, said frame including inwardly extending grille flanges which abut against the sleeve flanges upon assembly; and

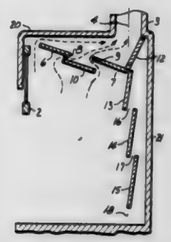
a pair of mounting members rotatably secured to the louver support means and spaced from the louvers, said mounting members serving as a handle for manually manipulating the grille assembly from the interior of the building and further engaging the member support means to secure the grille assembly to the wall sleeve when rotated to the appropriate position.

4,434,711

FUME HOOD WITH DAMPER CONTROLLED BAFFLES AND METHOD

Jon A. Zboralski, Manitowoc, and Harry N. Grow, Two Rivers, both of Wis., assignors to Hamilton Industries, Inc., Two Rivers, Wis.

Filed Dec. 24, 1980, Ser. No. 219,676
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—116 LH **10 Claims**



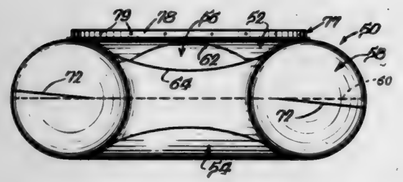
1. A fume handling enclosure comprising a housing having top and rear walls meeting at an upper rear portion of said housing and having an exhaust opening located at said upper

rear portion; a top baffle within said housing extending along and spaced below said top wall to define a generally horizontal fume passage therebetween; said top baffle having a rear end spaced forwardly from said rear wall and being provided with a plurality of openings for receiving lighter-than-air gases into said horizontal fume passage for directing the same towards said exhaust opening; a rear baffle within said housing spaced forwardly from said rear wall for defining a generally vertical fume passage therebetween; said rear baffle having an upper end spaced below said top wall and disposed adjacent the rear end of said top baffle; said rear baffle having at least one opening for receiving gases into said vertical fume passage; a movable damper disposed within said housing adjacent said exhaust opening; means pivotally supporting said damper for movement about a generally horizontal pivot line disposed adjacent the rear end of said upper baffle and the upper end of said rear baffle; said damper being pivotal between first and second positions for controlling the flow of fumes through said passages to said exhaust opening; said damper when in said first position substantially closing said vertical fume passage and opening said horizontal fume passage to said exhaust opening, and when in said second position substantially closing said horizontal fume passage and opening said vertical fume passage to said exhaust opening; and activating means connected to said damper and extending externally of said housing for controlling the position of said damper from the exterior of said housing.

4,434,712
SILO BREATHER BAG

Ashley M. Ross, Highland Park, and James A. McKee, Elmhurst, both of Ill., assignors to Fabrico Manufacturing Corp., Chicago, Ill.

Filed Feb. 26, 1982, Ser. No. 352,788
Int. Cl.³ A01F *25/22*; B65D *30/10*
U.S. Cl. 99—646 S **5 Claims**

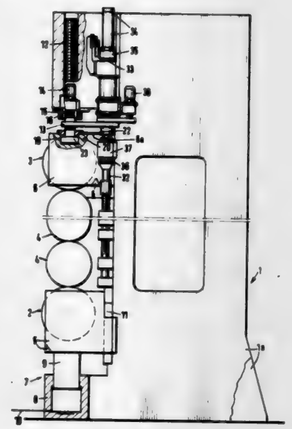


1. A tubluar silo breather bag adapted to be inflated to a generally partial torus or weiner-like configuration; said bag comprising when inflated a flexible top panel and a flexible bottom panel sealed together with a seam along overlapping edges on the outer convex side surface, a flexible transition panel sealed to said top panel with a seam along overlapping edges, and a flexible side panel extending from one end of the bag to the other end along the inner concave curvature of the bag, said side panel defining at each end of the bag a generally convex end surface extending from said inner curvature to said outer convex side surface with only one dart seam in said convex end surface and being sealed with a seam along its peripheral edges to said top, bottom and transition panels.

4,434,713
CALENDER

Gerhard Hartwick; Josef Pav, both of Krefeld, and Dieter Preuss, Kaarst, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Nov. 19, 1981, Ser. No. 323,095
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 3043901
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—168 **17 Claims**



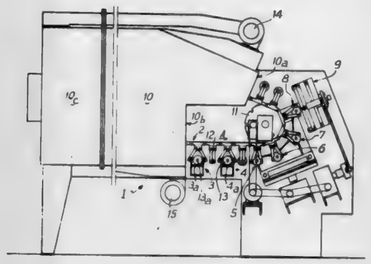
1. A calender comprising a support; a plurality of superjacent rolls having first and second end portions, adjacent to said support and including a lowermost and an uppermost roll; first and second bearings for the respective end portions of said rolls; guide means provided for said bearings on said support; means for normally maintaining the bearings for said lowermost roll at a predetermined level; first and second displacing means for moving the respective bearings for said uppermost roll downwardly through a first range of distances; and first and second pressure transducer means interposed between the respective bearings for said uppermost roll and the respective displacing means and operative to move said uppermost roll downwardly, while said displacing means is idle, through a second range of distances which is a small fraction of said first range.

4,434,714
APPARATUS FOR SCREEN PRINTING BOTTLES

Guy Combeau, Le Moulin de la Mie, Saint-Priest sous Aixe, 87700 Aixe sur Vienne, France

Filed Mar. 4, 1982, Ser. No. 354,624
Claims priority, application France, Mar. 4, 1981, 81 04370; Mar. 4, 1981, 81 04371
Int. Cl.³ B41F *17/22*
U.S. Cl. 101—38 A **16 Claims**

1. A container printing assembly comprising:
a frame;
conveyor means movably mounted on said frame for conveying a plurality of containers in step-by-step fashion;
a drying station connected to said frame for receiving a rear portion of said conveyor means and formed of an enclosure having an adjustable selected length adapted to a speed of said conveyor for permitting drying of ink applied to the containers, said drying station having an entrance and an exit for said conveyor means;
a discharge station associated with said frame adjacent said drying station enclosure outlet at which containers are discharge from said conveyor means;
a pick-up station associated with said frame adjacent said discharge station at which containers are picked up by conveyor means;
a treatment station associated with said frame adjacent said pick-up station for treatment of containers; and
a printing station including a printing head associated with said frame and positioned adjacent a forward end of said conveyor means and adjacent said treatment station and drying station enclosure entrance;
said conveyor means lying in a vertical plane and adapted to hold containers with longitudinal axes of the containers extending substantially horizontally and moving in parallel on said conveyor means;
said conveyor means comprising an endless chain with clamping members for holding each container by cooperation with a neck of each container during transport from one station to another, said endless chain moving entirely in said vertical plane, said conveyor means including a forward chain winding member around which said endless chain is wound at a forward end of said conveyor means;
each of said clamping members comprising a pair of arms each pivotally mounted to a base plate forming a link of said endless chain, a pinion connected to each arm adjacent a pivotal mounting thereof to said base plate and meashed with a pinion of the other arm in each clamping member, a wheel connected to one of said arms for pivoting said one of said arms for opening said clamping members;
a control chain movably mounted on said frame adjacent at least the forward portion of said conveyor means and engageable with each wheel for selectively opening and closing each of said clamping members; and
driving means engaged with said control chain for establishing equal and differential movements between said control chain and said conveyor means for opening and closing each of said clamping members.

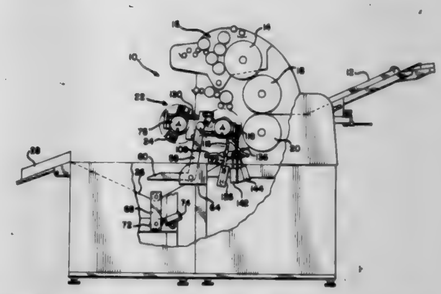


4,434,715
PRINTING APPARATUS INCLUDING SERIAL PRINTING MEANS

Max D. McHeary, Fremont, Calif., assignor to A. B. Dick Company, Chicago, Ill.

Filed Dec. 17, 1981, Ser. No. 331,630
Int. Cl.³ B41L *45/00*
U.S. Cl. 101—76 **18 Claims**

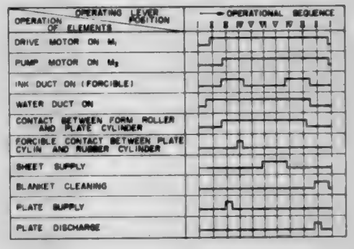
1. In a printing apparatus for serially printing characters on print stock being transported through the apparatus including separate serial printing heads, a movable mounting means for supporting the respective heads on opposite sides of the mounting means, and means for moving said mounting means between first and second positions for selectively locating one or the other of said heads in position for printing on said stock, the improvement comprising a support for said mounting means, said support and mounting means being fixed in an assembled relationship, means defined by said support for rotatably supporting said mounting means, means for moving said support back and forth generally along the path of movement of the stock, the movement of the support being between an operating position where one of the printing heads on the mounting means is in position for printing, and a non-operating position where neither of the heads is in position for printing, means for locking the assembly of the support and mounting means in place in the apparatus when said support is moved to the operating position to thereby locate a printing head in said position for printing, said mounting means, when the support is in non-operating position, being rotatable on the support to reverse the positions of said heads on said support, said mounting means being releasably fixed on said support whereby the mounting means can be lifted off said support when the support is in non-operating position and removed from the apparatus with a new assembly of mounting means and heads being substituted into the apparatus, and wherein a printing head not in the printing position is accessible to an operator of the apparatus when the support is located in operating position so that the printing head not in printing position can be reset while the apparatus is operating.



4,434,716
OPERATING LEVER DEVICE FOR PRINTING MACHINE

Koji Ishii, and Yoshinori Honkawa, both of Hiroshima, Japan, assignors to Ryobi Ltd., Fuchu, Japan

Filed May 20, 1981, Ser. No. 265,497
Claims priority, application Japan, May 27, 1980, 55-71148
Int. Cl.³ B41F *7/06*
U.S. Cl. 101—142 **13 Claims**



1. A printing machine having an operating lever device, comprising:
a plate cylinder;
means for loading plates onto said plate cylinder;
means for unloading said plates;
a blanket cylinder;
means for cleaning said blanket cylinder;
form rollers;
a form roller control mechanism;
a plate cylinder control mechanism;
a sheet feed;
a sheet feed control mechanism;

a water duct roller;
a water duct roller control mechanism;
a rubber cylinder;
an ink duct roller;
an ink duct roller control mechanism;
an operating lever device;
said operating lever device comprising an operating lever adapted to be set at any of a plurality of positions stepwise and a set cam secured to an operating shaft which is fixedly secured to said operating lever, said set cam holding said operating lever in such a manner that said operating lever can be held at more than one of said plurality of positions;
a plurality of cams and arms coupled to said operating shaft for controlling said plate loading means, plate unloading means, blanket cylinder cleaning means, form roller control mechanism, plate cylinder control mechanism, sheet feed control mechanism, water duct roller control mechanism and ink duct roller control mechanism in accordance with an angular position of said operating lever;
said plate loading means comprising a switch mechanism having a memory circuit adapted to be set to open and closed positions in accordance with a plate loading operation and to store a plate loaded state during an additional plate loading operation which is carried out upon completion of a first plate loading operation;
an automatic returning mechanism for returning said operating lever to at least one of said plurality of positions, said automatic returning mechanism comprising at least one solenoid, said automatic returning mechanism being operated by said solenoid according to a rotational position of said rubber cylinder, said automatic returning mechanism being operatively coupled to said operating lever, said solenoid being coupled to be energized upon completion of a printing operation to successively return said operating lever to at least one of said plurality of positions;
at least said water duct roller control mechanism and said form roller control mechanism being operatively coupled to said operating lever to be operated before a plate loading operation of said plate loading means by setting said operating lever stepwise to cause said form rollers to contact said plate cylinder; and
said ink duct roller control mechanism being coupled to said operating shaft in such a manner that ink is supplied in a step in which said form rollers contact the surface of said plate and the surface of said plate contacts said rubber cylinder after said plate has been loaded on said plate cylinder.

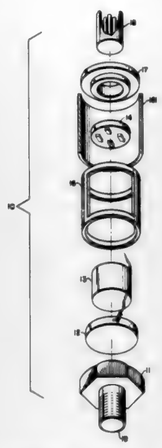
4,434,717

HYBRID FUSE TRIGGERING DEVICE

Lawrence F. Erickson, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1981, Ser. No. 295,175
Int. Cl.³ F42C *11/02*
U.S. Cl. 102—210 **12 Claims**

1. A fuze triggering device, for fuze detonated weapons, comprising:
a base;
means for mounting said device attached to said base;
means for insulating the upper surface of said base attached thereto;
means for generating an electrical signal from "g" loading, mounted on said insulating means;
an electronics wafer, having a preprinted circuit therein, electrically connected to said signal generating means;
means for enclosing said insulating means, said generating means and said wafer, hermetically sealed to said base;
an apertured cover for said enclosing means, hermetically sealed thereto; and



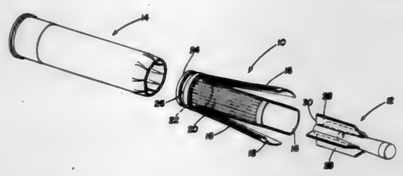
means for connecting extended electric leads to said wafer through said apertured cover, hermetically sealed to said cover.

4,434,718

SABOT AND PROJECTILE

Paul J. Kopsch, 710 Cooper Foster Park Rd., Lorain, Ohio 44053; Donald F. Ward, 48264 Telegraph Rd., South Amherst, Ohio 44001; Jay Graber, 7370 Amity Pike, Plain City, Ohio 43064, and Omer Nichols, R.D. 8, Box 175, Greensburg, Pa. 15651

Filed Sep. 11, 1981, Ser. No. 301,444
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—522 **2 Claims**



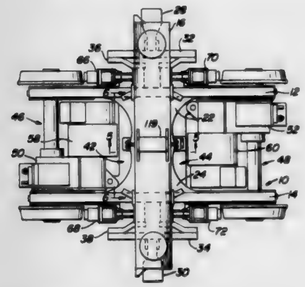
1. A self-separating sabot for use in combination with a projectile for firing through a shotgun bore, comprising:
(a) An elongated cylindrical sabot body having a base portion at the aft end thereof and a plurality of longitudinally extending segments open at the forward end thereof, said sabot body having a metallic disc positioned on the inside surface of said base defined by the closed end of said segments, and wherein said base portion is thicker than said longitudinally extending segments, and wherein said longitudinally extending segments have inscribed thereon, a plurality of longitudinally extending grooves for reducing friction between said sabot and said shotgun bore: and
(b) a projectile adapted for insertion in said sabot body, said projectile having a plurality of eccentrically placed fins at the aft end thereof, said fins being supported by said metallic disc, said projectile being further defined in that the greater portion of its weight is positioned in the forward third of said projectile; and
(c) means for propelling said sabot body and projectile through and out said barrel; and
(d) said longitudinally segmented ends being responsive to air forces such that said segments open in a radially outwardly direction thereby separating from said projectile.

4,434,719

STEERING MOTORIZED TRUCK

George Mekosh, Jr., Warrington, Pa., assignor to The Budd Company, Troy, Mich.

Filed Sep. 28, 1981, Ser. No. 306,156
Int. Cl.³ B61F *3/04, 5/38, 5/52*
U.S. Cl. 105—168 **6 Claims**



1. A forced steerable truck for a railway car body comprising:
(a) a main frame secured to said car body;
(b) said main frame including a pair of side frames and a bolster secured to said side frames;
(c) a pair of "C" shaped steerable sub-frames each having two arm portions extending from a connecting portion;
(d) means for interconnecting the connecting portions of said sub-frames to each other,
(e) menas for pivotally connecting said connecting portions of said main frame;
(f) said means for pivotally connecting comprising a vertical hanger member connected between each of said arm portions and said main frame;
(g) a wheel axle assembly secured between each of said two arm portions of said sub-frames;
(h) means for connecting the two arm portions of each of said sub-frames to the ends of said side frames;
(i) a steering link member connected between said main frame and one of said steering sub-frames;
(j) said steering link member being adapted to be connected at different locations on said main frame to provide understeering or oversteering;
(k) a vertical pivot member extending from said bolster;
(l) a bracket connected to one of said steering sub-frames; and
(m) said steering link member being pivotally mounted to said vertical pivot member at one end and resiliently mounted to said bracket at the other end;
whereby said steering sub-frames are forced to move in accordance with the movement of said car body with respect to said sub-frames.

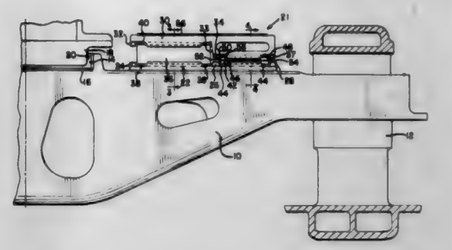
4,434,720

MULTI-RATE SIDE BEARING FOR A RAILWAY TRUCK

Harry W. Mulcahy, Griffith, Ind., and Horst T. Kaufhold, Chicago, Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Feb. 18, 1982, Ser. No. 349,717
Int. Cl.³ B61F *5/14*
U.S. Cl. 105—199 CB **9 Claims**

1. A railway truck comprising a truck bolster, a center plate opening in the truck bolster adapted to receive a center plate therein,
two side bearing assemblies on the top surface of the truck bolster with one of said side bearing assemblies located on each side of the center plate opening,
each side bearing assembly comprising a base plate affixed to the truck bolster and an upper plate, a first resilient device located between the base plate and the upper plate, and a



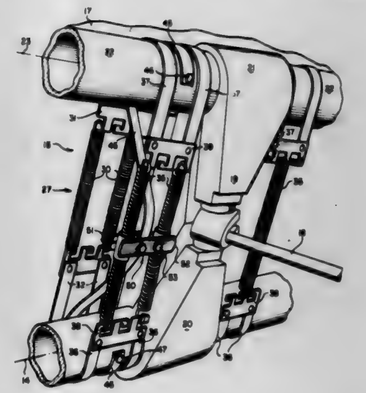
second resilient device located between the base plate and the upper plate and outboard in relation to said center plate opening from the first resilient device, said first resilient device having a lower compression rate than the second resilient device, and said first resilient device having a lower shear rate than the second resilient device.

4,434,721

ANTI-SNAP DEVICE FOR DRAFTING BOARD TILTING MECHANISM

Huey G. Shelton, Winnetka, and Leonard N. Zack, Mount Prospect, both of Ill., assignors to Huey Company, Franklin Park, Ill.

Filed Apr. 5, 1982, Ser. No. 365,663
Int. Cl.³ A47F *5/12*; A47B *9/02*
U.S. Cl. 108—4 **6 Claims**



1. In a spring balancing system for an adjustable drafting table, said table including first and second horizontally-extending members fixed respectively to a table stand and to a table surface, said system using a tilt spring means partly wrapped in first and second directions about said members for statically balancing said table surface at any tilt position in a 90 degree arc between the horizontal and the vertical, an anti-snap device for resisting and slowing table surface movement to the vertical, said anti-snap device comprising:
a flexible, non-extensible strap means connected at its ends to and extending between the first and second horizontally extending members and wrapped partly about said members in directions opposite to said first and second directions for preventing the table surface from moving beyond a vertical position; and

connecting means for connecting a center portion of said flexible strap means to said tilt spring means;

the flexible strap means and the tilt spring means being normally spaced apart from one another when the flexible strap means is tightened in the absence of the connection via the connecting means,

wherein tightening of the flexible strap means between the horizontally extending members as the table surface moves to the vertical is controllably resisted by a partly sidewards extension of the tilt spring means caused by the flexible strap means via the connecting means,

whereby such resistance to movement of the table surface to the vertical position slows the table surface movement and prevents the table surface from snpping into the fully vertical upright position.

4,434,722

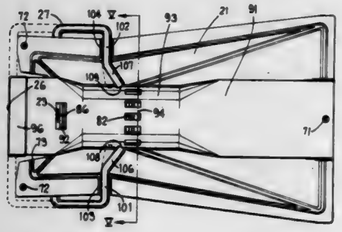
TILT SUPPORT FOR OVERBED TABLE TOP AND VERTICAL LOCK ASSEMBLY THEREFOR

Robert A. Solomon, Kalamazoo, and John J. Dellinger, Portage, both of Mich., assignors to Am Fab, Inc., Kalamazoo, Mich.

Filed May 22, 1981, Ser. No. 267,092

Int. Cl.³ A47B *23/00, 27/18*

U.S. Cl. 108—8 **18 Claims**



7. A table, comprising:

a base;

a table top pivotally supported on said base for movement about a substantially horizontal first pivot axis;

means for releasably securing said table top in a selected pivotal position with respect to said base, including:

first locking means provided on one of said table top and said base and fixed against movement relative thereto about said first pivot axis;

an elongate member movably supported on the other of said table top and said base and having second locking means thereon, said second locking means being movable in a direction substantially radially of said first pivot axis between positions spaced from and operatively engaged with said first locking means by moving said elongate member;

first means for resiliently urging said second locking means toward one of said engaged and spaced positions;

second means for resisting movement of said elongate member about said first pivot axis relative to said other of said table top and said base; and

selectively actuable disabling means cooperable with said elongate member when said second locking means is in said engaged position for preventing movement of said second locking means away from said engaged position.

4,434,723

FLUIDIZED-BED COMBUSTION APPARATUS

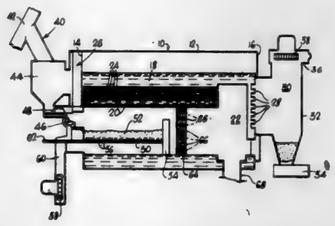
Leslie Bresley; John H. Wilson, and Niyazi Demircan, all of Derby, England, assignors to Northern Engineering Industries, Plc., England

Filed Nov. 27, 1981, Ser. No. 325,598

Claims priority, application United Kingdom, Nov. 28, 1980, 8038370

Int. Cl.³ F23D *19/02*

U.S. Cl. 110—245 **1 Claim**



1. Fluidised bed combustion apparatus comprising:

(a) a horizontal furnace duct,

(b) bed containment means within said duct,

(c) particulate non-combustable inert fluidisable bed material forming a fluidisable bed in said containment means,

(d) first means operable to feed particulate solid fuel to said bed in said containment means through an upstream end of said duct,

(e) second means operable to feed air into said bed to fluidise the same,

(f) said containment means comprising at a downstream end of said bed a bed-retaining wall extending upwardly above said fluidised bed when slumped and having an upper edge spaced from the duct thereabove forming an opening,

(g) said first and second means being operable during combustion of fuel in said bed so as to cause generation of flue gases at velocities leaving said bed which results in inert bed material being elutriated in said flue gases and being carried thereby out of the containment toward a downstream end of the bed and through the opening between the duct and the bed-retaining wall,

(h) a combustion chamber into which said duct opens located downstream of the bed-retaining wall,

(i) horizontal firetubes located outside of said duct and connected downstream of and to the combustion chamber for receiving flue gases therefrom,

(j) the maximum gas velocity of the flue gases passing through the opening over the said bed-retaining wall being considerably higher than the terminal velocity of elutriated bed materials carried therein with the result that, in the absence of other means, bed material would be undesirably conveyed by the flue gases into the said firetubes and thus be unrecoverable,

(k) and means located downstream of the said containment means and in the flue gas path for reducing the maximum velocity of the flue gases downstream of the said containment means below the terminal velocity of the said bed materials to cause most of the elutriated bed material to be removed in the combustion chamber and thus to prevent substantial deposit of elutriated bed material in the firetubes, said velocity-reducing means comprising baffle means in said duct intermediate said bed-retaining wall and said combustion chamber, said baffle means comprising gas impermeable means spaced from said bed-retaining wall and having plural, spaced gas flow passages therein sized and distributed over the baffle means so as to reduce the flue gas flow velocity downstream of the baffle means below the maximum terminal velocity of the said bed materials so as to cause most of the elutriated bed materials to deposit in said combustion chamber and thus be recoverable therefrom, said gas flow passages comprising a plurality of identical flow passages extending through said baffle means in which each said flow passage diverges in the direction of gas flow therethrough, and said baffle means comprising a wall of bricks at least some of which each defines one said flow passage therethrough.

4,434,724

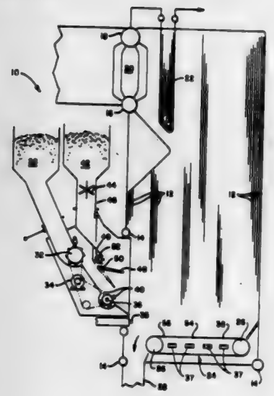
OVERBED DISTRIBUTOR FOR FEEDING DUAL SOLID FUELS TO A STOKER FURNACE

Robert C. Kunkel, Jr., Feeding Hills, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 1, 1983, Ser. No. 481,214

Int. Cl.³ F23H *11/00*; F23K *3/16*

U.S. Cl. 110—269 **4 Claims**



1. In combination, a furnace for burning coal and cellulose fuel therein, a traveling grate in the furnace bottom having an upper run and a lower run, and also having a first end positioned adjacent a first wall of the furnace, and a second end located adjacent a second opposite wall of the furnace, a discharge shute located beneath the second end of the traveling grate through which ashes fall, means for continuously moving the upper run of the grate towards the second wall, first introduction means for introducing coal onto the grate near the first end, second introduction means for introducing cellulose fuel onto the grate at a central location, said second introduction means including a plate positioned above the second end of the grate, and a plurality of nozzle means supplied with pressurized air, which nozzle means are positioned such that they blow cellulose fuel supplied to the plate off of it onto the grate, and adjustable means for the second introduction means, by means of which the location at which the cellulose fuel is introduced onto the grate can be varied, said adjustable means including means for pivoting the plate so that it can be made to lie at a greater or lesser angle to the horizontal, and said adjustble means also including means for pivoting the nozzle means, so that they direct air jets directly at the cellulose fuel on the plate, or slightly above the fuel.

4,434,725

MASS BURNING SELF-CLEANING INCINERATOR

Samuel Forestn, 243 Willis Ave., Mineola, N.Y. 11501

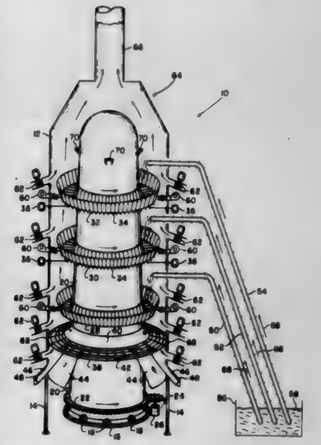
Division of Ser. No. 348,977, Feb. 16, 1982, Pat. No. 4,366,759. This application Aug. 13, 1982, Ser. No. 407,813

Int. Cl.³ F23G *5/04*

U.S. Cl. 110—346 **6 Claims**

1. The method of burning mass amounts of refuse in an incinerator comprising conveying refuse to a plurality of rotating refuse burning grates arranged spaced one above the other while applying a fire to the refuse on the grates to burn and consume the same,

rotating the tiers on which refuse is deposited to subject the refuse thereon continuously to the fire created at the tiers to burn the same subsequently evenly, spacing the tiers relative to each other such that the flames of the refuse on a lower tier cause ignition of refuse on the next higher tier,



providing openings in the grates to enable the heat and fire from refuse burning on grates below to ignite and burn refuse on grates above and permitting the burned refuse that is consumed and reduced in size to fall to lower grates for burning and consumption thereat,

and providing for exhaust of the waste gases of combustion of the refuse from the incinerator to the atmosphere by a chimney.

4,434,726

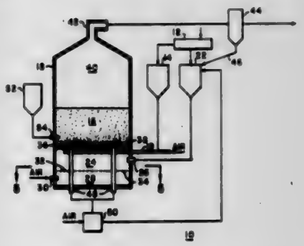
FINE PARTICULATE FEED SYSTEM FOR FLUIDIZED BED FURNACE

Brian C. Jones, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 27, 1982, Ser. No. 453,543

Int. Cl.³ F22B *1/00*

U.S. Cl. 110—347 **14 Claims**



1. In a fluidized bed furnace of the type having a furnace chamber with an air distributor plate extending transversely across the chamber dividing the chamber into a combustion zone in which the fluidized bed, once established, is confined above the air distributor plate and an air inlet zone below the air distributor plate, a method of introducing particulate feed solids including both a coarse fraction and a fine fraction into the fluidized bed furnace, comprising the steps of:

(a) passing the coarse fraction directly to the combustion zone;
(b) establishing a flow of fluidizing air up through the air distributor plate and combustion zone;
(c) passing the fine fraction to the air inlet zone;
(d) mixing the fine fraction with the fluidizing air in the air inlet zone; and
(e) passing the mixture of the fine fraction and fluidizing air up through the air distributor plate thence up through the the fluidized bed.

8. In a fluidized bed furnace of the type having a furnace chamber with an air distributor plate extending transversely across the chamber dividing the chamber into a combustion zone in which the fluidized bed, once established, is confined above the air distributor plate and an air inlet zone below the air distributor plate a method of introducing particulate feed solids into the fluidized bed furnace, comprising the steps of:
(a) separating the feed solids into a fine fraction and a coarse fraction;
(b) passing the coarse fraction directly to the combustion zone;
(c) establishing a flow of fluidizing air up through the air distributor plate and combustion zone;
(d) passing the fine fraction to the air inlet zone;
(e) mixing the fine fraction with the fluidizing air in the air inlet zone; and
(f) passing the mixture of the fine fraction and fluidizing air up through the air distributor plate thence up through the fluidized bed.

4,434,727

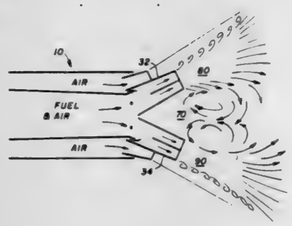
METHOD FOR LOW LOAD OPERATION OF A COAL-FIRED FURNACE

Michael S. McCartney, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 270,687, Jun. 4, 1981, abandoned, which is a continuation of Ser. No. 175,093, Aug. 4, 1980, abandoned, which is a division of Ser. No. 29,605, Apr. 13, 1979, Pat. No. 4,252,069. This application Jun. 13, 1983, Ser. No. 503,079

Int. Cl.³ F23K *3/02*

U.S. Cl. 110—347 **1 Claim**



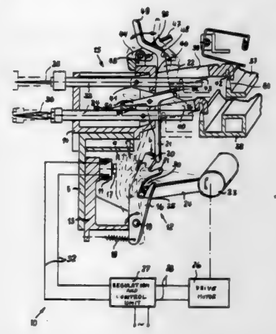
1. In a pulverized coal-fired furnace equipped with a plurality of individual burners wherein each of the burners provide a passageway through which a mixture of pulverized coal and primary air passes into the furnace, a method of operating at least one of said burners, comprising:
a. during operation of the furnace at normal loads, discharging the mixture of pulverized coal and primary air passing through said burner into the furnace as a single stream coal-air stream;
b. during operation of the furnace at low loads, splitting the mixture of pulverized coal and primary air discharging from said burner into a first and second coal-air substream;
c. turning at least one of said substreams away from the other so as to establish a divergent angular relationship between said first and second coal-air substreams; and
d. directing said first and second coal-air substreams into the furnace in said divergent angular relationship to each other.

4,434,728

ELECTROMAGNETIC PATTERN SELECTOR FOR AN EMBROIDERY MACHINE

Georg Compiol, Bludenz, Austria; Roland Heimgartner, Arbon, Switzerland; Artur Loacker, Goetzis, Austria; Kurt Huber, Arbon, and Hans Wallimann, Goldach, both of Switzerland, assignors to Aktiengesellschaft Adolf Saurer, Arbon, Switzerland

Filed Feb. 2, 1982, Ser. No. 345,080
Claims priority, application Switzerland, Feb. 4, 1981, 731/81
Int. Cl.³ D05C *11/06*
U.S. Cl. 112—84 **9 Claims**



1. A positioning device for a mechanical switching lever arrangement, especially for an embroidery machine, comprising:
a mechanical switching lever arrangement;
a pawl lever selectively movable stepwise between a first end position, an intermediate position and a second end position;
said pawl lever serving for actuating said switching lever arrangement;
electromagnetic means for liberating said pawl lever in order to move between said first end position and said intermediate position; and
mechanical amplifier means for displacing said pawl lever between said intermediate position and said second end position.

4,434,729

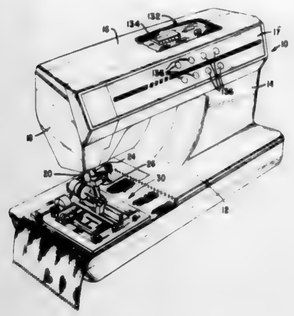
CONTINUOUS MONOGRAMMER

Donald R. Davidson, Berkeley Heights, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 29, 1980, Ser. No. 221,098
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **5 Claims**

1. A work manipulating mechanism for use with a sewing machine having a frame supporting a presser bar, a needle bar, a sewing needle supported on the end of said needle bar, means for supporting said needle bar for endwise reciprocation, actuating means for implementing endwise reciprocation of said needle bar, said frame including a work supporting bed; and an electronic control means for storing signals related to positional coordinates for patterns and monograms, said mechanism comprising:
first means responsive to said signals from said electronic control means for selectively feeding work material in unlimited amount along one axis intermittent generation of stitches; and,

second means responsive to said signals from said electronic control means for selectively moving said first means



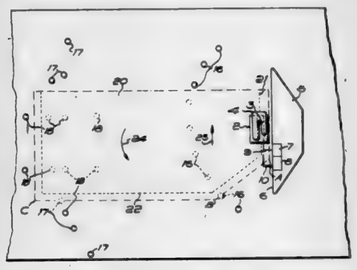
along an axis substantially orthogonal to said one axis intermittent generation of said stiches.

4,434,730

MACHINE FOR TOP STITCHING

John A. Rose, Knaresborough, and Keith Dyer, Leeds, both of England, assignors to AMF Incorporated, White Plains, N.Y.

Division of Ser. No. 187,396, Sep. 15, 1980, Pat. No. 4,362,115. This application Jan. 7, 1982, Ser. No. 337,568
Claims priority, application United Kingdom, Sep. 14, 1979, 7931892
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **6 Claims**



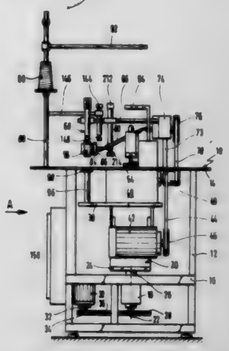
1. Apparatus for the production in a sheet material of a line of machine stitching having a change of direction therein comprising a sewing machine, means for moving the material through the machine to produce a first portion of stitching line therein, means for sensing and controlling the production of the line of stitching, means for reducing the rate of movement of material through the machine and means for effecting an action on the underside of the material thereby turning the material substantially in its own plane and reducing the friction of the turning material until it is sensed to have reached the change of direction of the stitch line, and means for increasing the rate of movement of material through the machine to the original rate of movement to produce a second portion of stitching line along the changed direction.

4,434,731

ARRANGEMENT FOR SEWING SEPARATE SUCCESSIVE SEAMS ALONG DIFFERENT DIRECTIONS IN A FABRIC MATERIAL

Alfons Beisler, Goldbach, Fed. Rep. of Germany, assignor to Beisler Gesellschaft mit beschrankter Haftung, Goldbach, Fed. Rep. of Germany

Continuation of Ser. No. 190,237, Sep. 24, 1980, Pat. No. 4,318,356. This application Jan. 22, 1982, Ser. No. 341,704
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939238
Int. Cl.³ D05B *3/00*
U.S. Cl. 112—121.14 **30 Claims**



1. An arrangement for sewing seams along n successive edges of a material which extend in different directions, n being an integer not less than two, the arrangement comprising:
a fixedly positioned sewing table defining an opening for supporting the material thereon;
sewing means including first means extending below said table and second means extending above said table, said second means including a sewing needle;
rotatable support means for supporting said sewing means and responsive to a rotation command signal for rotating said sewing means from one selected position to another about a vertical axis of rotation through which said needle extends;
drive means for activating said sewing means to sew a seam in said material with said needle; and
control means for controlling the sewing of said seams along said n successive edges by deactivating said drive means when one seam is finished and thereafter supplying said rotation command signal to cause said sewing means to be rotated until a subsequent edge is aligned with respect to said needle and for reactivating said drive means to cause said sewing means to sew a subsequent seam.

4,434,732

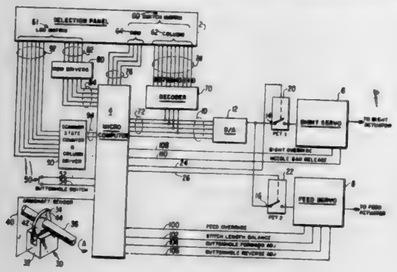
OPERATION CONTROLLER FOR AN ELECTRONIC SEWING MACHINE

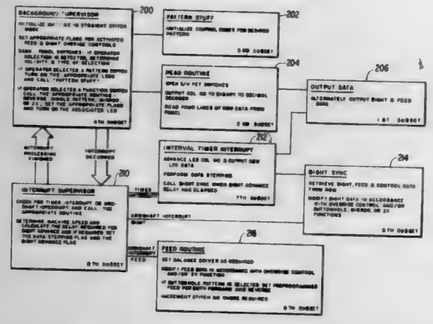
Edward A. Salge, Parlin, and Leonard I. Horey, West Orange, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 15, 1981, Ser. No. 302,290
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **13 Claims**

1. In an electronically controlled sewing machine having sewing instrumentalities for sewing a plurality of different stitch patterns, said sewing machine including a rotatable armshaft, signal means associated with said rotatable armshaft for providing a bight signal and a feed signal in timed relation to said sewing instrumentalities, panel selection means responsive to operator influence for selecting a pattern from said plurality of stitch patterns, and a microcomputer including a memory:

control means including a set of coded instructions that are stored in said memory and executable by said microcomputer for controlling the operation of said sewing machine, said controlling occurring in a first mode of execution of said microcomputer and in a second mode of execution of said microcomputer wherein said first mode of execution is effective continuously except for predetermined interruptions and said second mode of execution is effective only during said predetermined interruptions, said interruptions being effected in response to said bight signal and said feed signal.



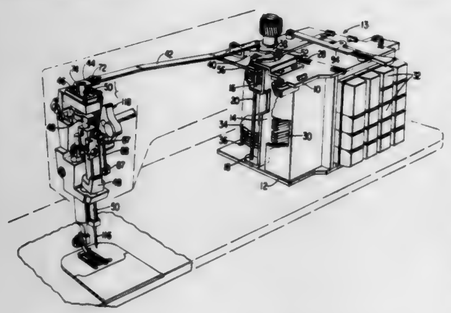


4,434,733

BIGHT AND NEEDLE POSITIONING CONTROL FOR SEWING MACHINES

William Weisz, Tenafly, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jan. 28, 1983, Ser. No. 461,826
Int. Cl.[3] D05B *3/02*
U.S. Cl. 112—158 A 9 Claims



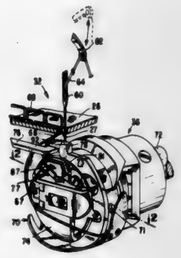
1. Bight controlling and needle positioning mechanism for a sewing machine including a pivoted member; means for predetermining pivotal movement of said member according to a desired pattern to be produced on the machine; linkage means operably connected to the pivoted member for imparting side to side movement to a needle bar; the operable connection between the linkage means and said pivoted member including a pin, and including a slot wherein the pin is adjustable for changing the amplitude of side to side movement of the needle bar in response to movement of the pivoted member, the slot including an enlarged one end portion where the pin may be disposed to disengage the linkage means and pivoted member; means for confining the pin in said enlarged one end portion of the slot to thereby define a particular side position of the needle bar; and means movable by an operator for positioning the pin in said slot.

4,434,734

ANTI-SPILL DEVICE FOR SEWING MACHINE BOBBIN

Angus R. T. Russell, Englishtown, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 18, 1981, Ser. No. 235,467
Int. Cl.[3] D05B *57/26*
U.S. Cl. 112—181 4 Claims



1. A bobbin case device for a looptaker of a sewing machine, said sewing machine supporting an endwise reciprocating needle bar carrying a needle in the end thereof for cooperation with said looptaker in the formation of stitches, said bobbin case device comprising a bobbin case for receiving a thread carrying bobbin with at least one circular flange having a outer face; means support on said bobbin case for tensioning of bobbin thread; means on said bobbin case for establishing a direct bobbin thread patch extending substantially from said tensioning means across said bobbin case device spaced from said outer face of said circular flange of said thread carrying bobbin; said bobbin case further supporting thereon a leaf spring having a first end connected thereto and a second end disposed adjacent said bobbin thread path in pressure engagement with said outer face of said flange of said thread carrying bobbin; and means carried by said second end of said leaf spring for receiving said bobbin thread to form with said establishing means an indirect bobbin thread path responsive to bobbin thread demand for removing pressure from said pressure engagement of said second end with said outer face of said flange whereby bobbin rotation is uninhibited and responsive to absence of bobbin thread demand to release said second end into pressure engagement with said outer face of said flange to inhibit rotation of said bobbin.

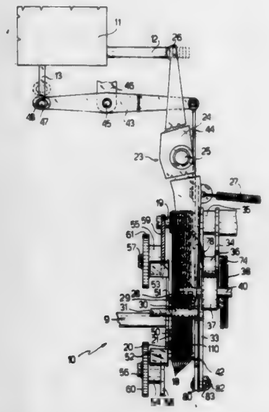
4,434,735

MOTION CONVERSION MECHANISM FOR EFFECTING SEWING MACHINE FEED DOG CONTROL

Nicolo Giolitti, Ivrea, Italy, assignor to Vigorelli Genova S.p.A., Genova-Sestri, Italy

Filed Nov. 12, 1981, Ser. No. 320,658
Claims priority, application Italy, Dec. 9, 1980, 68868 A/80
Int. Cl.[3] D05B *69/02*
U.S. Cl. 112—220 17 Claims

1. A sewing machine (1) comprising a motion conversion mechanism (10) which receives movement signals generated by a decoder unit (11) situated in said machine (1), and is provided with a first element (12) arranged to assume a plurality of working positions, and a second element (13) arranged to assume a first or a second working position, said mechanism (10) being arranged to convert said movement signals into movement of a dog (7) for feeding the fabric (130) in such a manner as to cause said fabric (130) to undergo a movement, the extent of which depends on which position has been assumed by said first element (12), and which is in either a forward or backward direction depending upon whether said first or second working position has been assumed by said second element (13), characterized in that said motion conversion mechanism (10) comprises:



a plurality of levers (18) equal in number to the number of said plurality of working positions which can be assumed by said first element (12), each lever (18) being arranged to assume a rest position or a working position;

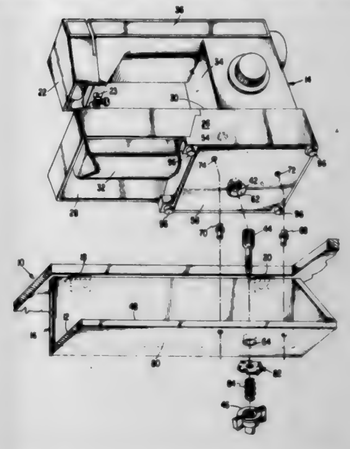
a selector unit (23) controlled by said first element (12) and arranged to select one of said levers (18) and to move said selected lever (18) into said working position;

a member (50) angularly coupled to a control shaft (9) for said dog (7) and arranged to be prepositioned in a predetermined angular position by said selected lever (18); and

a dragging element (42) controlled by said second element (13) of said decoder unit (11) and arranged to engage said member (50) in such a manner as to move this latter from said predetermined angular position towards an angular reference position.

---

ing, the washer also including downwardly extending prongs engageable with the wing nut for limiting the extent to which the wing nut can be tightened on the second stud as the wing nut is turned to affix the sewing machine to the platform.



4,434,736

STRAIN CONTROLLED SEWING MACHINE MOUNT

Jan Szostak, Lincroft, and Albert L. Newman, West Orange, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jan. 17, 1983, Ser. No. 458,425
Int. Cl.[3] D05B *75/00*
U.S. Cl. 112—258 7 Claims

1. In combination, a sewing machine including a frame with a depending threaded stud attached thereto; a platform with a top surface upon which the machine is supportable in a sewing machine cabinet; a second stud detachably secured to the first mentioned stud and extending through a hole in the platform, said second stud including a threaded portion which projects beyond the bottom surface of the platform; a wing nut on the threaded portion of the second stud; a coil spring on the second stud compressed by the wing nut; and a washer on the second stud forced against the bottom surface of the platform by the spring, the washer including upwardly extending prongs which dig into the platform to prevent the washer from turning, the washer also including downwardly extending prongs engageable with the wing nut for limiting the extent to which the wing nut can be tightened on the second stud as the wing nut is turned to affix the sewing machine to the platform.

4,434,737

DISPLACEMENT, PLANING SAILBOARD

John Weiss, West Babylon, N.Y., assignor to Wind Innovations, Inc., Cutchogue, N.Y.

Filed Sep. 16, 1981, Ser. No. 302,830
Int. Cl.[3] B63B *1/16, 1/04*
U.S. Cl. 114—39 5 Claims



1. A hull for a sailboard, of a length exceeding 6 times its maximum beam, equipped with mast sockets, centerboard slot, and skeg and having an improved shape for use as a displacement-type hull in light winds and as a planing-type hull in strong winds, comprising:

a forward portion having a deep forefoot, a fine entry and a shape suitable for easy forward movement through water at low speed;

a middle portion of substantially round underwater cross-section;

an aft portion of flat bottom terminating at a wide stern and merging into said middle portion;

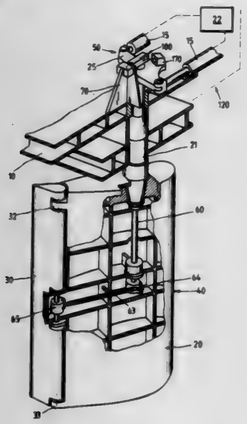
a longitudinal profile having not more than a small rise between said middle portion and the forefoot profile curve and having a substantial rise, between said midportion and said stern, which is at least four times the rise between said middle portion and said forefoot profile curve, so that a long substantially flat bottom area is provided for said aft portion which comes closer to the deck surface towards the stern,

whereby a forward weight shift of the sailor enables selection of an efficient displacement-type behavior of the hull and, in the event of sufficient wind force, an aft weight shift of the sailor enables selection of an efficient planing behavior.

4,434,738
RUDDER FOR WATERCRAFT

Wolfgang K. W. Barkemeyer, Reinbek, Fed. Rep. of Germany, assignor to Jastram-Werke GmbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 12, 1982, Ser. No. 338,924
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101042; Nov. 20, 1981, 8133822[U]
Int. Cl.³ B63H *25/06*
U.S. Cl. 114—162 5 Claims



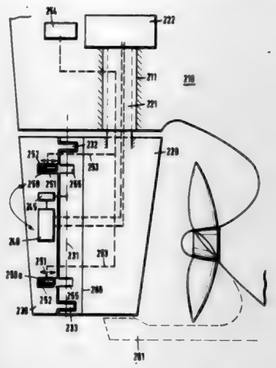
1. A rudder for a watercraft comprising a main rudder member; a hollow rudder shaft adapted to attach said main rudder member to a watercraft for pivotal movement of said main rudder member about a vertical axis with respect to the watercraft; a fin member; means for attaching said fin member to said main rudder member for pivotal movement of said fin member about a vertical axis with respect to said main rudder member; a pivotal yoke member attached to said hollow rudder shaft; means for pivoting said yoke member with respect to the watercraft; a torsion bar passing through said hollow rudder shaft and having a first end and a second end; means coupling said torsion bar first end to said fin member for pivoting of said fin member in response to twisting of said torsion bar; means coupled to said torsion bar second end for twisting said torsion bar; a first blocking member adapted for attachment to the watercraft; a second blocking member attached to said yoke member; and a locking member movable between a first locking position, in which said torsion bar is locked to said first blocking member permitting pivoting of said fin member with respect to said main rudder member, and a second locking position, in which said torsion bar is locked to said second blocking member preventing pivoting of said fin member with respect to said main rudder member.

4,434,739
FIN RUDDER FOR SHIPS

Joachim Brix, Hamburg, and Friedrich Weiss, Ahrensburg, both of Fed. Rep. of Germany, assignors to Jastram-Werke GmbH KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 100,545, Dec. 5, 1979, Pat. No. 4,342,275, which is a continuation of Ser. No. 860,605, Dec. 14, 1977, abandoned. This application Mar. 30, 1982, Ser. No. 363,489
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656738; Nov. 11, 1977, 2750437
Int. Cl.³ B63H *25/06*
U.S. Cl. 114—162 7 Claims

1. A rudder assembly for marine craft comprising: a main rudder member pivotally coupled to said marine craft for deflection relative thereto; a fin member pivotally coupled to said main rudder member for deflection relative thereto; and an actuating and control system comprising first control means operative to effect deflection of said main rudder member relative to said marine craft and second control means operative to effect deflection of said fin member relative to said main rudder member; said first control means being capable of effecting deflection of said main rudder member relative to said marine craft independently of said second control means; said

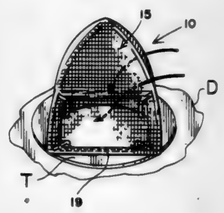


second control means being effective to effect deflection of said fin member relative to said main rudder member independently of said first control means, said first and second control means being operative, respectively, to effect deflection of said main rudder member and said fin member simultaneously to enable simultaneous and independent control of said main rudder member and said fin member during normal operation of said rudder assembly.

4,434,740
WIND-SCOOP FOR SMALL BOATS

John M. Childs, 13031 Deva St., Coral Gables, Fla. 33156

Filed May 5, 1983, Ser. No. 491,802
Int. Cl.³ B63B *19/06*; B63J *2/02*
U.S. Cl. 114—211 4 Claims

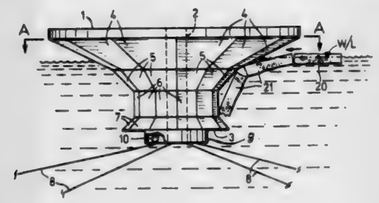


1. A collapsible wind-scoop for releasable attachment over a through opening in the deck of a small boat comprising, in combination, a resilient framework of symmetrical dome-shaped configuration, said framework having an apex at the upper end thereof and a base portion at the lower end thereof, a flexible cover member shaped to fit over and confirm with said resilient framework, between said upper and lower ends thereof, one half-section of said cover member defined by a plane including the axis of symmetry of said resilient framework and being not air permeable and the other half-section being air permeable, and means at the lower end of said dome-shaped framework for releasable attachment with respect to marginal edge portions of a boat deck opening, said resilient framework comprising a pair of bent wire members substantially symmetrical about an axis of generation and crossing at their apices, and means for releasably inter-securing said bent wire members at their apices, said releasable attachment means comprising radially outwardly open hook portions bent in the ends of said wire members.

4,434,741
ARCTIC BARGE DRILLING UNIT

Brian D. Wright; Raymond A. McBeth, both of Calgary, Canada, and Egon Wessels, Hamburg, Fed. Rep. of Germany, assignors to Gulf Canada Limited, Toronto

Filed Mar. 22, 1982, Ser. No. 360,252
Int. Cl.³ B63B *35/08*; E02B *15/02*
U.S. Cl. 114—264 4 Claims



1. In a marine drilling unit of the floating barge type, with draft no greater than 20 meters for operation in ice-covered water, having a working deck to accommodate drilling equipment, a marine hull to support said deck, a central moonpool penetrating the deck and hull to accommodate a marine drill-pipe, and mooring lines attached at their top to said unit via the bottom of said hull and at their bottoms to anchors surrounding said unit at some distance, the improvements which comprise:

(i) a hull having

(a) a substantially circular polygonal perimeter in plan view,

(b) a matching first polygonal wall substantially in the form of an apexdown truncated cone extending from below the deck, at an angle to the horizontal of from substantially 20 degrees to substantially 55 degrees, to a level at least below the normal bottom level of ice impinging against the hull,

(c) a second matching polygonal wall substantially in the form of an apexdown truncated cone extending from and below said first wall, at an angle to the horizontal from at least as great as the angle of the first polygonal wall to substantially 65 degrees, to a level below the bottom of the first by a distance at least as great as the thickness of ice impinging against the hull,

(d) a matching third polygonal wall substantially in the form of a cylinder extending substantially vertically from and below said second wall for a distance at least as great as the normal thickness of ice impinging against the hull,

(e) a matching polygonal deflector wall substantially in the form of an apex-up truncated cone extending from and below said third wall, at an angle to the horizontal of from substantially 20 degrees to substantially 65 degrees, to a level below the bottom of said third wall by a distance at least as great as the normal thickness of ice impinging against the hull, and

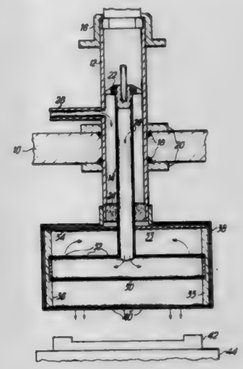
(f) a substantially flat annular bottom closing said deflector wall surrounding said moonpool; and

(ii) a substantially circular guard member secured to the flat bottom of said hull, surrounding the points at which the mooring lines achieve their closest proximity to the bottom of the hull, and extending below the flat bottom of the hull for a distance to place the lowest edge of said member at a depth below the water surface at least five times the normal thickness of ice impinging against the hull and not greater than 20 meters.

4,434,742
INSTALLATION FOR DEPOSITING THIN LAYERS IN THE REACTIVE VAPOR PHASE

Louis Henaff; Michel Morel, both of Pen an Alle, and Jean L. Favennec, 16, cite du Vallon - St. Quay Perrot, all of 22700 Perros-Guirec, France

Filed Sep. 22, 1982, Ser. No. 421,434
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—723 3 Claims

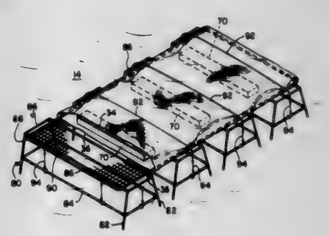


1. An installation for the deposition of thin layers in reactive vapour phase, comprising a tightly sealed enclosure, means for introducing into the enclosure a gas having an appropriate composition, means for introducing into the same enclosure a high frequency field able to form a plasma, and a sample holder, the gas and high frequency introduction means being brought together in a head comprising a coaxial conductor able to propagate the high frequency field, said conductor entering the enclosure by a tight passage and being constituted by an outer sheath and a hollow inner core connected to gas supply means, further comprising a chamber constituted by a cylinder having openings along one generatrix, said cylinder being closed by two end covers, the core being linked with the chamber by a gas distribution tube located within the cylinder, the outer sheath of the conductor being connected to a metal skirt surrounding the chamber, whilst the sample holder is positioned beneath the row of openings, and wherein means are provided to permit a relative displacement of the sample holder with respect to the head in a direction perpendicular to the row of openings.

4,434,743
SHELLFISH MARICULTURE APPARATUS

William F. Nickel, R.F.D. 1 Box 262, Melfa, Va. 23410

Continuation-in-part of Ser. No. 208,464, Nov. 19, 1980, Pat. No. 4,328,764. This application May 10, 1982, Ser. No. 376,652
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—4 12 Claims



1. A shellfish mariculture apparatus for nurturing clams,

oysters, scallops and the like from an infantile seed stage to commercial maturity, said apparatus comprising:

frame means operable to be positioned within an aquatic environment;

envelope means positioned upon said frame means and being generally coextensive therewith for enhousing shellfish during a nurturing period, said envelope means including

a sleeve of open mesh material operable to be laid laterally upon said frame means and having a lower portion supported by said frame means,

said sleeve being operably closed at the ends thereof and the interstices of said open mesh material being smaller than the infantile shellfish to be nurtured within said envelope means;

means operably contacting an upper portion of said sleeve means for elevating the upper portion of said sleeve means above a lower portion thereof; and

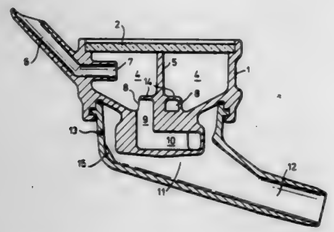
means positionable upon the bed of a body of water and being operable to receive said frame means and support said frame means and envelope means above the bed of the body of water.

4,434,744

METHODS OF AND/OR APPARATUS FOR MILKING ANIMALS

Thomas D. Millar, Hamilton, New Zealand, assignor to AHI Operations Limited, Manukau, New Zealand

Filed Apr. 19, 1982, Ser. No. 369,570
Int. Cl.³ A01J 5/04
U.S. Cl. 119—14.02 16 Claims



15. A method for minimizing backflow of fluid in a milking claw having a claw body including a common chamber for receiving milk from a cluster of teat cups and a plurality of milk-receiving chambers interposed between said teat cups and said common chamber for receiving milk from said teat cups and distributing received milk to said common chamber, said method comprising creating a vortex in the fluid within said common chamber sufficient to counteract back pressure on the fluid within the common chamber exerted by the presence of a pressure differential between the claw body and at least one of the teat cups.

4,434,745

BIRD FEEDING DEVICE

Noel Perkins, R.F.D. #1, Northwood, N.H. 03261, and Thomas Perkins, 5 Tucker St., Gloucester, Mass. 01930

Filed Sep. 30, 1982, Ser. No. 431,315
Int. Cl.³ A01K 5/00
U.S. Cl. 119—51 R 11 Claims

8. An apparatus for holding bird food, such as seed, which can be accessed by birds, and not by squirrels, said apparatus comprising:

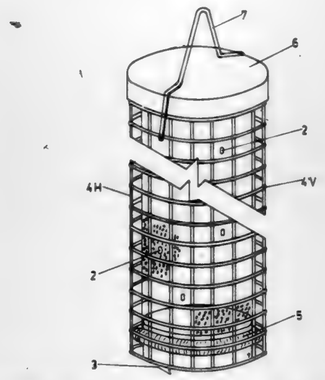
(a) a cylindrical container for holding birds food having a plurality of spaced apart openings therein through which birds may access the bird food;

(b) a wire mesh enclosing said container, said meah

(i) preventing access of the container by squirrels,

(ii) permitting the birds to access the opening in the container, and

(iii) providing a perch for the birds accessing the openings in the container; and



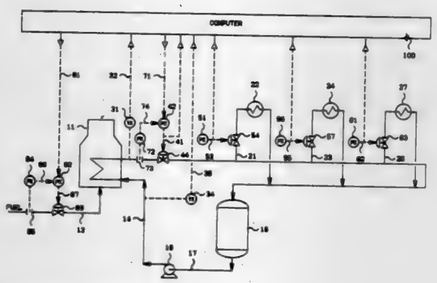
(c) means for supporting said container within said wire mesh and for spacing said wire mesh away from said container such that said wire mesh is not directly in contact with the container whereby squirrels are prevented from accessing the container.

4,434,746

CONTROL OF A SYSTEM FOR SUPPLYING HEAT

William S. Stewart, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 4, 1983, Ser. No. 472,398
Int. Cl.³ F22B 37/42
U.S. Cl. 122—448 R 16 Claims



1. Apparatus comprising:

a heater;

means for passing a fluid stream through said heater;

means for supplying a fuel to said heater, wherein the combustion of said fuel in a combustion zone in said heater supplies heat to said fluid stream;

a first control valve operably located so as to manipulate the total flow of the effluent stream from said heater;

a second control valve operably located so as to manipulate the flow of a first portion of said effluent stream to a first process, wherein said first portion of said effluent stream flowing through said second control valve supplies heat to said first process;

a third control valve operably located so as to manipulate the flow of a second portion of said effluent stream to a second process, wherein said second portion of said effluent stream flowing through said third control valve supplies heat to said second process;

means for establishing a first signal representative of the position of said first control valve;

means for establishing a second signal representative of the position of said second control valve;

means for establishing a third signal representative of the position of said third control valve;

a first high select means;

means for providing said first signal, said second signal and said third signal to said first high select means, wherein said first high select means establishes a fourth signal representative of the one of said first, second and third signals which is representative of the most open valve position;

means for establishing a fifth signal representative of the maximum desired open position for any one of said first, second and third control valves;

means for comparing said fourth signal and said fifth signal and for establishing a sixth signal which is responsive to the difference between said fourth signal and said fifth signal;

means for establishing a seventh signal, representative of the flow rate of said fuel required to maintain the position of at least one of said first, second and third control valves substantially equal to the maximum desired valve opening represented by said fifth signal, in response to said sixth signal;

means for manipulating the flow rate of said fuel to said heater in response to said seventh signal;

means for establishing an eighth signal representative of the total heat required by said first and second processes plus any desired reserve heat;

means for establishing a ninth signal, representative of the flow rate of said effluent stream through said first control valve required to provide the total heat represented by said eighth signal, in response to said eighth signal; and

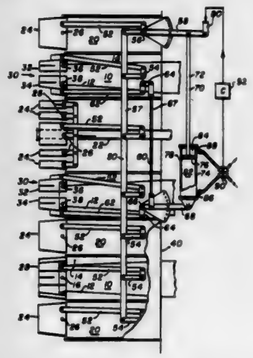
means for manipulating said first control valve in response to said ninth signal.

4,434,747

BURNER-TILT DRIVE APPARATUS FOR A PULVERIZED COAL FIRED STEAM GENERATOR

Roman Chadshay, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 1, 1982, Ser. No. 393,288
Int. Cl.³ F22B 37/42; F22D 5/00
U.S. Cl. 122—449 1 Claim



1. In a pulverized coal-fired steam generator having a generally vertical furnace and a plurality of fuel-air admission assemblies arrayed in a vertical windbox in at least one wall of the furnace for introducing coal and air into the furnace, at least one of said fuel-air admission assemblies being a low load fuel-air admission assembly having a split coal bucket having vertically adjustable upper and lower coal nozzles, the remaining fuel-air admission assemblies having vertically adjustable single nozzle coal buckets; an apparatus for adjusting the vertical orientation of the upper and lower coal nozzles of said low load fuel-air admission assembly and the single nozzle coal buckets of the remaining fuel-air admission assemblies comprising:

a. first tilt linkage means interconnecting the upper coal nozzles of each low load fuel-air admission assembly disposed in said windbox and each single nozzle coal bucket disposed in said windbox;

b. second tilt linkage means interconnecting the lower coal nozzles of each low load fuel-air admission assembly disposed in said windbox;

c. link bar means interconnected between said first tilt linkage means and said second tilt linkage means, said link bar means being of selectively adjustable length;

d. a pneumatic cylinder having an axially movable piston enclosed in an axially elongated cylindrical housing interdisposed in said link bar means between said first and second tilt linkage means, the piston dividing the interior of said cylindrical housing into a first chamber on one side of the piston and a second chamber on the opposite side of the piston;

e. first conduit means in fluid communication with the first chamber through which pneumatic fluid may be supplied to and vented from the first chamber; and

f. second conduit means in fluid communication with the second chamber through which pneumatic fluid may be supplied to and vented from the second chamber;

g. a first tilt actuation means for actuating said first tilt linkage means so as to tilt the upper coal nozzle of said low load fuel-air admission assemblies in unison with the single nozzle coal buckets of the remaining fuel-air admission assemblies; and

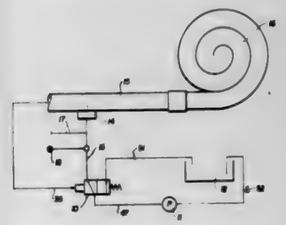
h. a second tilt actuation means comprising control valve means operatively associated with said first and second conduit means for selectively controlling the piston pneumatic fluid flow between the first and second chambers so as to cause the piston to be displaced axially within said cylindrical housing thereby lengthening or shortening said link bar means interconnecting said first tilt linkage means with said second tilt linkage means.

4,434,748

WATER INJECTION CONTROL VALVE

Bernard C. Smelser, 12812 New Windsor Rd., Union Bridge, Md. 21791

Filed Apr. 27, 1982, Ser. No. 372,303
Int. Cl.³ F02M 25/02; F02D 19/00
U.S. Cl. 123—25 L 5 Claims



1. In a water admission system for a combustion engine having a fuel charge induction passage subject to pressure variations as a result of engine demand variations, a water delivery valve means including a driver connected with said induction passage, and cooperative water delivery means coupled to the valve means and including a connection with the induction passage and operable to deliver varying amounts of water from a reservoir to the induction passage in response to varying engine demand for fuel through the induction passage,

said valve means further comprising a three-way valve including a water inlet passage, a bypass passage, and a water delivery passage communicating with said water delivery means, a biased shiftable valve element normally blocking communication between the water inlet and delivery passages and establishing communication between the water inlet and bypass passages, said water delivery means including delivery nozzle means connected in said induction passage, the water delivery passage being in communication with said delivery nozzle, and said driver comprising a pressure responsive element in a chamber of said valve connected with said induction passage and acting directly on the shiftable valve element to move it against a biasing force for such element varying distances as engine demand varies.

4,434,749

COOLING SYSTEM FOR LIQUID-COOLED INTERNAL COMBUSTION ENGINES

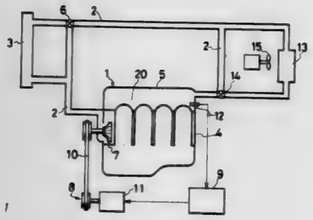
Yasuyuki Morita; Katsuhiko Yokooku; Hideo Shiraishi, and Masahiko Matsuura, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 24, 1982, Ser. No. 361,340

Claims priority, application Japan, Mar. 25, 1981, 56-44471; Mar. 27, 1981, 56-45740

Int. Cl.³ F01P 7/16

U.S. Cl. 123—41.02 **6 Claims**



1. A cooling system for a liquid-cooled internal combustion engine comprising cooling liquid passage means having cooling liquid jacket means provided in the engine for passing cooling liquid therethrough, cooling liquid pump means provided in said passage means for circulating the cooling liquid through said passage means and said jacket means, electrically operated driving motor means for driving said pump means so that the total amount of the cooling liquid circulated through the passage means and the jacket means is pumped by said pump means, engine temperature sensing means for sensing engine temperature and producing an engine temperature signal, control means adapted to receive the engine temperature signal and control said driving means so that the operating speed of the pump means is decreased, when the engine temperature is below a first predetermined value, to a predetermined low speed which is lower than a normal operating speed.

4,434,750

THERMOSTAT HOUSING ASSEMBLY

Karl R. Edelmann, 1468 Chestnut La., Rochester, Mich. 48063

Filed Aug. 2, 1982, Ser. No. 404,463

Int. Cl.³ F01P 7/16

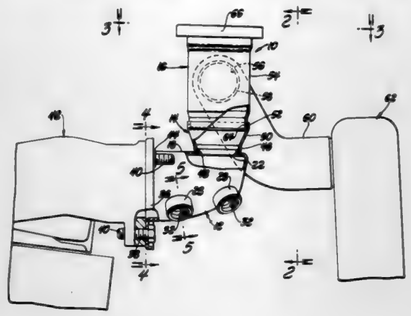
U.S. Cl. 123—41.02 **13 Claims**

1. A thermostat housing assembly comprising:

a base member including a hollow tubular portion having a longitudinal axis and a first end opening disposed substantially on said axis and a second end opening offset from said axis at a predetermined angle;

an intermediate member including a body portion and a first end portion in mating engagement with and connected to said second opening so that said intermediate member is disposed at said predetermined angle in relation to said longitudinal axis of said base member, said intermediate member further including a second end portion; and

a top stack member including a hollow cylindrical portion having a port therethrough between the ends thereof and a cylindrical extension secured thereto about said port,



said top stack member including a first tapered end portion seated within and connected to said second end portion of said intermediate member so that said cylindrical extension extends from said top stack member at a second predetermined angle in relation to said axis of said base member.

4,434,751

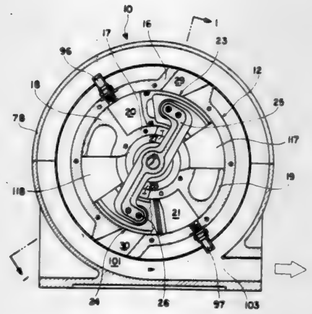
ROTARY PISTON ENGINE

Ivan Pavincic, 28 Glenn Ct., East Rutherford, N.J. 07073

Filed Dec. 23, 1981, Ser. No. 333,801

Int. Cl.³ F02B 57/06

U.S. Cl. 123—43 B **10 Claims**



1. A rotary piston engine comprising:

a rotatable annular cylinder coupled to a first shaft for rotation about the longitudinal axis of the engine, said annular cylinder having at least two combustion chambers with inlet and exit ports respectively;

at least two piston elements, each being slidably mounted in a separate one of said combustion chambers;

a connecting rod mounted upon a second shaft coaxial to said first shaft for concentric rotation about said longitudinal axis, said connecting rod having opposite ends affixed to each of said piston elements for rotating the piston elements conjointly with rotation of said second shaft;

a third shaft supported for rotation about a main axis eccentrically displaced a predetermined distance from the longitudinal axis of the engine; and

linkage means for controlling oscillatory motion between said piston elements and said rotating annular cylinder, said linkage means comprising:

a cross connecting arm transversely mounted upon said third shaft;

a first cross arm integral with said first shaft;

a second cross arm integral with said second shaft, with said first and second cross arms being mounted in common on one side of said cross connecting arm; and

means for linking one end of said cross connecting arm to said first cross arm and the opposite end of said cross connecting arm to said second cross arms such that said first and second cross arm will angularly rotate relative to one another during each revolution of the annular cylinder with a maximum angular displacement therebetween of less than 180 degrees.

4,434,752

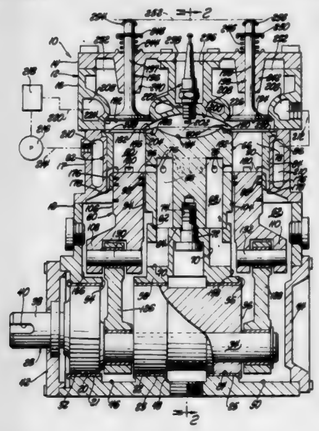
INTERNAL COMBUSTION ENGINE

William V. Bachmann, 22517 Ten Mile Rd., St. Clair Shores, Mich. 48080

Filed Jul. 6, 1981, Ser. No. 280,340

Int. Cl.³ F02B 75/18

U.S. Cl. 123—50 B **75 Claims**



1. An internal combustion engine, comprising an engine housing, an annular cylinder formed in said housing, said annular cylinder comprising a first radially inner annular wall and a second radially outer annular wall, a stationary axial end surface means operatively joined to said first radially inner annular wall, a ring-like piston received in said annular cylinder for reciprocating movement therein, motion transmitting means operatively connected to said ring-like piston for transmitting the reciprocating movement of said ring-like piston to associated power output means, work combustion chamber means, said work combustion chamber means comprising a first ring-like work combustion chamber defined generally and cooperatively by said inner and outer annular walls and said piston, said work combustion chamber means further comprising a second work combustion chamber situated generally axially of said first ring-like work combustion chamber, said first and second work combustion chambers being in continuous open communication with each other and effective for receiving a combustible mixture therein, said ring-like piston when moving in a direction toward its top-dead-center position being effective for simultaneously compressing said combustible mixture within both of said first and second work combustion chambers, said second work combustion chamber being of unexpandable volume and in part defined by said stationary axial end surface means, means for initiating ignition of said combustible mixture first within said second work combustion chamber and only thereafter causing ignition of said combustible mixture to travel from said second work combustion chamber to within said first work combustion chamber to thereby through such combustion and expansion of said combustible mixture collectively within both said first and second work combustion chambers produce a work pressure against said ring-like piston in order to move said ring-like piston toward its bottom-dead-center, and annular passage means generally peripherally about said second work combustion chamber for completing said continuous communication, wherein said annular passage means is peripherally continuous about said second work combustion chamber, wherein said radially inner annular wall is fixedly supported by a bearing riser portion to said engine housing.

4,434,753

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

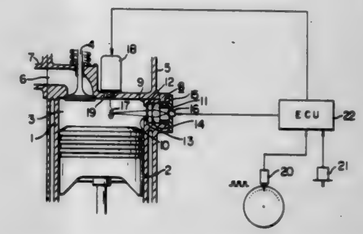
Shinichi Mukainakano; Tadashi Hattori; Minoru Nishida, all of Okazaki; Toru Mizuno, Aichi, and Tukasa Goto, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed May 17, 1982, Ser. No. 378,717

Claims priority, application Japan, May 18, 1981, 56-75325; Oct. 29, 1981, 56-173934

Int. Cl.³ F02B 45/08, 23/00; F02P 23/04, 1/00

U.S. Cl. 123—143 B **13 Claims**



1. An ignition apparatus for an internal combustion engine having a combustion chamber, comprising:

means for supplying a mixture of air and fuel into said combustion chamber,

means having an end thereof opening into said combustion chamber for supplying minute particles of a material which is not the fuel and has a high light absorption factor, and

means for radiating a light beam toward a suitably selected position in the internal space of said combustion chamber so that the light beam can strike said minute particles of high light absorption factor supplied from said particle supplying means.

4,434,754

METHOD OF ON SITE CHARGING OF DISTRIBUTOR MAGNET

David H. Fox, Ann Arbor; Charles C. Kostan, Canton Township, Plymouth County, and Frank B. Cassell, Mt. Clemens, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01168, § 371 Date Aug. 27, 1982, § 102(e) Date Aug. 27, 1982

PCT Filed Aug. 27, 1982, Ser. No. 432,887

Int. Cl.³ F02P 7/00; H02K 11/00

U.S. Cl. 123—146.5 A **8 Claims**

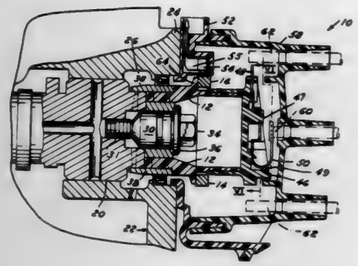
1. A method for orienting a distributor on an internal combustion engine so as to produce an electrical signal in synchronism with the periodic movement of an engine part, said method comprising the steep of:

coupling a magnetizable material to the camshaft of the internal combustion engine;

establishing a sensor reference point on the engine, said

reference point being stationary with respect to the engine block;

positioning the pistons of the engine and the coupled magnetizable material in a known position, with respect to said reference point; and



inducing magnetic poles in said magnetizable material so that said magnetic poles have a known rotational relationship to said reference point.

4,434,755

MOTORCYCLE WITH CLOSEABLE ENGINE INTAKE AND EXHAUST PASSAGES

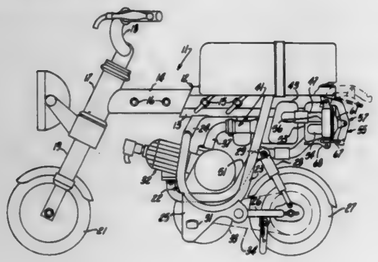
Hisashi Kazuta, Iwata; Yasunari Kawai, Hamamatsu, and Naoki Tsuchida, Iwata, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 17, 1981, Ser. No. 331,634

Claims priority, application Japan, Dec. 26, 1980, 55-189084

Int. Cl.³ F02B 77/00

U.S. Cl. 123—195 C **6 Claims**



1. In a motorcycle or the like having an internal combustion engine having a combustion chamber, an induction system for said engine having a charge forming device for delivering a fuel air charge to said combustion chamber and an air inlet upstream of said charge forming device, and an exhaust system leading from said combustion chamber and terminating in an outlet that communicates with the atmosphere, the improvement comprising valve means contiguous to said inlet and said outlet for closing the communication of said induction system and said exhaust system with the atmosphere.

4,434,756

ARRANGEMENT FOR BEARING OF A CRANKSHAFT

Ralph L. Nilsson, Hisdas, and Bo R. Rangert, Mölnlycke, both of Sweden, assignors to EMAB Electrolux Motor Aktiebolag, Huskvarna, Sweden

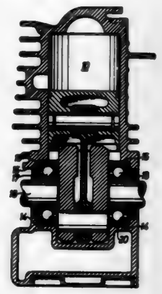
Filed May 24, 1982, Ser. No. 381,737

Claims priority, application Sweden, Jun. 16, 1981, 8103766

Int. Cl.³ F16C 27/00

U.S. Cl. 123—195 R **9 Claims**

1. An engine having a cylinder defining the upper portion of a crankcase, a piston reciprocably positioned in the cylinder and coupled to a crankshaft, a separate plastic crankcase lower portion, means for mounting said lower portion below said upper portion, and bearings for the crankshaft held between the upper and lower portions of the crankcase, and sleeve members of high temperature resistant plastic material over said bearings, sandwiched between said bearings and said



upper and lower portions and separating said bearings from said upper and lower portions, said upper and lower crankcase portions having bearing seats for receiving said sleeve members, said mounting means pressing said sleeve members into said bearing seats, said sleeve members extending from said bearings to completely separate said crankcase portions.

4,434,757

ROTARY PISTON INTERNAL COMBUSTION ENGINE

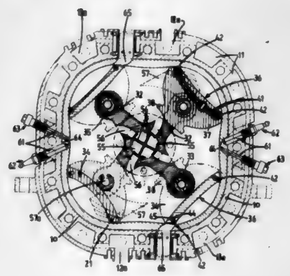
Hamilton Walker, 46 Whytehead Crescent, Kohimarama, Auckland, New Zealand

Filed Sep. 9, 1980, Ser. No. 185,408

Claims priority, application New Zealand, Sep. 12, 1979, 191548

Int. Cl.³ F02B 53/00

U.S. Cl. 123—241 **20 Claims**



1. A rotary internal combustion engine comprising a stator having an enclosed chamber, said chamber being defined by a pair of opposing side walls and a peripheral wall extending therebetween, a rotor disposed within the chamber and mounted for rotation by a shaft extending between said side walls, said rotor including at least one arm projecting radially from said shaft and a rotator member pivotally mounted on the end of said arm by a pivot pin, said rotator member having a working surface which spans between said side walls and has leading and trailing surfaces in contact with said peripheral wall thereby defining a combustion chamber, an air inlet for introducing air into said chamber, the pivot pin being hollow, and air ducting means communicating between the interior of the chamber outside the rotator member, and the hollow interior of the pivot pin, to permit air supplied to said chamber from said inlet to be ducted to the hollow interior of the pivot pin.

4,434,758

DIESEL ENGINE

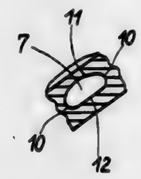
Gerhard Grammes, Meddersheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 31, 1983, Ser. No. 480,714

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 8209819[U]

Int. Cl.³ F02B 3/00

U.S. Cl. 123—286 **4 Claims**



1. A diesel engine having a cylinder with a closed end defining a plane, a piston in the cylinder having a portion facing the closed end and defining therewith a main combustion chamber, a turbulence chamber having a closest side adjacent but spaced longitudinally beyond the cylinder, a transfer port connecting the main combustion chamber with said closest side of the turbulence chamber through the cylinder closed end and forming an acute port entry angle with said plane, said transfer port having a lens-like cross section, as in a plano-convex lens having opposite convex and flat sides with rounded-off edges, characterized in that the convex side is disposed inwardly toward the center of the cylinder and the flat side is disposed outwardly away from the center of the cylinder, the transfer port has a cross-sectional area of not more than 1% nor less than 0.7% of the cross-sectional area of the cylinder and said port entry angle has a value of not less than 37° nor more than 44°.

4,434,759

FUEL SUPPLY CUT CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

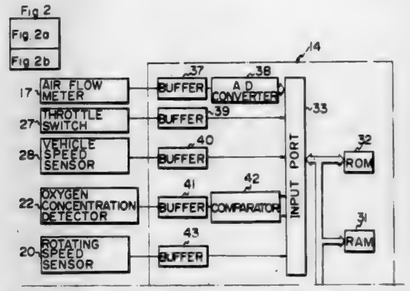
Isamu Iezuka, and Kazuo Nakano, both of Okazaki, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 29, 1982, Ser. No. 427,297

Claims priority, application Japan, Mar. 24, 1982, 57-45534

Int. Cl.³ F02D 5/00

U.S. Cl. 123—325 **5 Claims**



1. A fuel supply cut control device for use in an internal combustion engine of a vehicle, said engine having an intake passage, a throttle valve arranged in the intake passage, and fuel supply means for feeding fuel into the intake passage, said device comprising:

first means actuated in response to a change in the degree of opening of the throttle valve and producing an output signal indicating that the throttle valve is in the idling position;

second means detecting the engine speed and producing an output signal indicating the engine speed;

third means detecting the vehicle speed and producing an output signal indicating the vehicle speed; and

control means actuating said fuel supply means in response to the output signals of said first means, said second means and said third means for stopping the supply of fuel from said fuel supply means when the throttle valve is closed to the idling position under an operating state where the engine speed is higher than a predetermined cut speed and for starting the supply of fuel from said fuel supply means when the engine speed is reduced below a predetermined resume speed, said cut speed and said resume speed being changed in accordance with the vehicle speed.

4,434,760

APPARATUS FOR CONTROLLING THE IDLING SPEED OF AN ENGINE

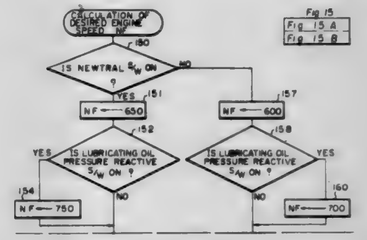
Nobuyuki Kobayashi, Toyota, and Hiroshi Itoh, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 292,534, Aug. 13, 1981, Pat. No. 4,364,350. This application Nov. 10, 1982, Ser. No. 440,523

Claims priority, application Japan, Jan. 23, 1981, 56-8142; Jan. 26, 1981, 56-8143; Jan. 26, 1981, 56-8937

Int. Cl.³ F02D 11/10

U.S. Cl. 123—339 **12 Claims**



1. Apparatus for controlling the idling speed of an engine including a main intake passage and a throttle valve arranged in said main intake passage, said apparatus comprising:

a bypass passage having a first end connected to said main intake passage upstream of said throttle valve and a second end connected to said main intake passage downstream of said throttle valve;

a control valve arranged in said bypass passage;

a step motor actuating said control valve for controlling air flowing within said bypass passage;

means for detecting the speed of said engine during idling;

means for detecting the pressure of lubricating oil in said engine;

means for detecting the temperature of coolant in said engine; and

control means, responsive to said speed detecting means, said pressure detecting means and said temperature detecting means, for: (1) controlling the position of said step motor so that the idling speed of said engine becomes equal to a predetermined base speed when said lubricating oil pressure is higher than a predetermined pressure and when said coolant temperature is lower than a first predetermined temperature, (2) rotating said step motor so that control valve increases the flow area of said bypass passage to cause the idling speed of said engine to approach a predetermined pressure control speed which is higher than said predetermined base speed when said lubricating oil pressure becomes lower than said predetermined pressure, and (3) rotating said step motor so that the idling speed of said engine approaches a predetermined tempera-

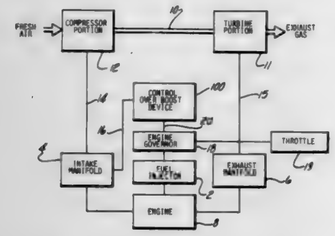
ture control speed when said coolant temperature becomes higher than said first predetermined temperature.

4,434,761

FUEL FLOW REGULATOR CONTROL FOR A DIESEL ENGINE WITH EXHAUST GAS DRIVEN TURBOCHARGER

George C. Ludwig, Marion, S.C., assignor to Tom McGuane Industries, Inc., Madison Heights, Mich.

Filed Jan. 2, 1981, Ser. No. 222,098
Int. Cl.³ F02D 1/06
U.S. Cl. 123—383 8 Claims



1. A fuel flow regulating device for internal combustion engines having intake manifold means, turbocharging means, connected to said intake manifold means, for increasing pressure in said intake manifold means, fuel control means, mounted adjacent to said intake manifold means and operatively connected to internal combustion engine, for regulating fuel flow to said internal combustion engine, governor means, connected to said fuel control means in response to a signal responsive to engine speed and engine power and operator actuating means, connected to said fuel control means, for controlling said fuel control means from first fuel flow rate to a second fuel flow rate in response to an operator signal and intake manifold pressure, said fuel flow regulating device comprising:

a housing having first cylindrical body portion and second body portion mounted to said first cylindrical body portion, said first cylindrical body portion having one end, an opposite end and portions defining a cylindrical passage extending from said one end toward said opposite end, said opposite end having a web portion extending across said cylindrical passage, said web portion having a portion defining an opening centrally disposed with said cylindrical passage for flow communication therebetween, said second body portion having one end, an opposite end and portions defining a first passage extending from said one end towards said opposite end, said first passage including a first opening through said opposite end, a first counterbore adjacent to said first opening and centrally disposed therewith, a second counterbore adjacent to said first counterbore and centrally disposed therewith, said first counterbore further being larger than said first opening and interposed said first opening and said second counterbore, said second counterbore further being larger than said first counterbore and extending from said one end to said second counterbore, said housing further having portions defining a first channel extending from said cylindrical passage in said first cylindrical body portion to said second counterbore in said second body portion for flow communication therebetween, and a second channel extending from said cylindrical passage in said first cylindrical body portion to said first counterbore in said second body portion;

a conduit connecting said intake manifold means to said first counterbore for flow communication therebetween;

slide valve means, slidably mounted in said passage in said second body portion, for translating axially in said passage from a first predetermined axial position to a second predetermined axial position in response to increasing intake manifold pressure such that above a second predetermined intake manifold pressure, said slide valve means translates axially to said second predetermined axial position to connect said first channel with said intake manifold pressure means and such that at and below said second predetermined intake manifold pressure, said slide valve means translates axially to said first predetermined axial positions to connect said second channel with said intake manifold pressure means;

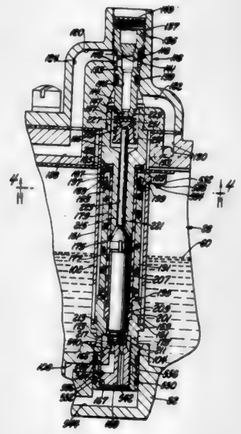
fuel flow controlling means, slidably mounted in said first cylindrical passage, for controlling the maximum fuel flow rate from said fuel control means to said internal combustion engine in response to intake manifold pressure such that when said slide valve means is in said first predetermined axial position, said fuel flow controlling means increases maximum fuel flow in response to increasing intake manifold pressure from a first predetermined maximum fuel flow rate when said intake manifold is at a first predetermined intake manifold pressure, to a second predetermined maximum fuel flow rate when said intake manifold pressure is at said second predetermined intake manifold pressure and such that when said slide valve means is in said second predetermined axial position, said fuel flow controlling means decreases the fuel flow to a third predetermined maximum fuel flow rate in response to increasing manifold pressure when said intake manifold pressure above said second predetermined intake manifold pressure so as to override said governor means and to override said operator actuating means to protect said internal combustion engine from overboost of said engine by said turbocharger means.

4,434,762

APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Ralph P. McCabe, Troy, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 8, 1981, Ser. No. 309,585
Int. Cl.³ F02B 33/00; F02M 7/00
U.S. Cl. 123—438 10 Claims



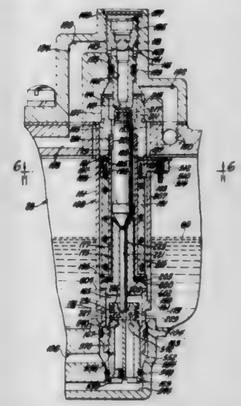
1. A fuel metering system for a combustion engine having engine exhaust conduit means, comprising fuel carbureting means for supplying metered fuel flow to said engine, said carbureting means comprising first and second induction passage means for supplying motive fluid to said engine, a source of fuel, primary main fuel metering system means communicating generally between said source of fuel and said first induction passage means, idle fuel metering system means communicating generally between said source of fuel and said first induction passage means, secondary main fuel metering system means communicating generally between said source of fuel and said second induction passage means, controlled modulating valving means effective to controllably increase and decrease the rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means, oxygen sensor means effective for sensing the relative amount of oxygen present in engine exhaust gases flowing through said exhaust conduit means and producing in accordance therewith a first output, said modulating valving means comprising solenoid winding means for actuation of said modulating valving means, electrical logic control means effective for receiving said first output signal and in response thereto producing a second output and effectively applying said second output to said solenoid winding means to thereby cause said modulating valve means to alter said rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means as to provide for rates of metered fuel flow therethrough ranging from a preselected "lean" fuel-air mixture ratio supplied to said engine to a preselected "rich" fuel-air mixture ratio supplied to the engine, said modulating valving means being effective upon occurrence of an electrical failure in said electrical logic control or said solenoid winding means to thereafter permit only that rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means as will result in said preselected "lean" fuel-air mixture ratio being supplied to said engine, wherein said idle fuel metering system means comprises idle air bleed means, wherein said primary main fuel metering system means comprises first fuel flow orifice means, wherein said secondary main fuel metering system means comprises second fuel flow orifice means, wherein said idle air bleed means is spaced from both of said first and second fuel flow orifice means, said modulating valving means comprising housing means, said housing means comprising a first end portion, a second end portion, said first end portion being adapted for operative connection to said carbureting means, said second end portion being adapted for operative connection to said carbureting means, solenoid motor means, said solenoid motor means comprising axially extending spool means, said spool means comprising a generally centrally disposed tubular portion, said solenoid winding means being carried by said spool means, axially extending armature means situated in said tubular portion for reciprocating movement therein, motion transmitting means operatively connected to a first end of said armature means and generally axially aligned therewith, a first opening formed through said first end portion for permitting the free axial movement of said armature means therein, a second opening formed through said second end portion for permitting the free movement of said motion transmitting means therein, a first valve member operatively connected to a second end of said armature means opposite to said first end, said first valve member being effectively juxtaposed to both of said first and second fuel flow orifice means, a second valve member operatively connected to said motion transmitting means, said second valve member being effectively juxtaposed to said air bleed means, said first and second valve members moving in unison with said armature means so that when said first valve member moved toward both said first and second fuel flow orifice means said second valve member moves away from said air bleed means and when said first valve member moves away from both of said first and second fuel flow orifice means said second valve member moves toward said air bleed means, and resilient means effective for continually resiliently urging said armature means in a direction whereby said first valve member is moved toward both of said first and second fuel flow orifice means and said second valve member is moved away from said air bleed means.

4,434,763

APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Ralph P. McCabe, Troy, and Keith D. Marsh, St. Clair Shores, both of Mich., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 17, 1981, Ser. No. 331,670
Int. Cl.³ F02M 11/00
U.S. Cl. 123—440 8 Claims



1. A fuel metering system for a combustion engine having engine exhaust conduit means, comprising fuel carbureting means for supplying metered fuel flow to said engine, said carbureting means comprising first and second induction passage means for supplying motive fluid to said engine, a source of fuel, primary main fuel metering system means communicating generally between said source of fuel and said first induction passage means, idle fuel metering system means communicating generally between said source of fuel and said first induction passage means, secondary main fuel metering system means communicating generally between said source of fuel and said second induction passage means, controlled modulating valving means effective to controllably increase and decrease the rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means, oxygen sensor means effective for sensing the relative amount of oxygen present in engine exhaust gases flowing through said exhaust conduit means and producing in accordance therewith a first output, said modulating valving means comprising solenoid winding means for actuation of said modulating valving means, and electrical logic control means effective for receiving said first output signal and in response thereto producing a second output and effectively applying said second output to said solenoid winding means to thereby cause said modulating valving means to alter said rate of metered fuel flow through each of said primary and secondary main fuel metering system means and said idle fuel metering system means as to provide for rates of metered fuel flow therethrough ranging from a preselected "lean" fuel-air mixture ratio supplied to said engine to a preselected "rich" fuel-air mixture supplied to said engine, wherein said modulating valving means further comprises first and second valve means positionable by said solenoid winding means, wherein said idle fuel metering system means comprises idle air bleed means, said first valve means being effective to vary the effective rate of flow of bleed air through said air bleed means in order to thereby alter said rate of material fuel flow through said idle fuel metering system means, wherein said primary main fuel metering system means comprises first fuel flow orifice means, wherein said secondary main fuel metering system means comprises second fuel flow orifice means, said second valve means being effective to vary the

effective rate of flow of fuel through both of said first and second fuel flow orifice means to thereby alter said rate of metered fuel flow through each of said primary and secondary fuel metering system means, said first and second fuel flow orifice means comprising a valve orifice body, said valve orifice body comprising a first threaded portion for operative threadable engagement with associated support structure, and pilot diameter means for pilot-like reception of said valve orifice body by said associated support structure, said idle air bleed means spaced from both of said first and second fuel flow orifice means, said modulating valving means comprising housing means, said housing means comprising a first end portion, a second end portion, said first end portion being adapted for operative connection to said carbureting means, said second end portion being adapted for operative connection to said carbureting means, solenoid motor means, said solenoid motor means comprising axially extending spool means, said spool means comprising a generally centrally disposed tubular portion, said solenoid winding means being carried by said spool means, axially extending armature means situated in said tubular portion for reciprocating movement therein, motion transmitting means operatively connected to a first end of said armature means and generally axially aligned therewith, a first opening formed through said first end portion for permitting the free axial movement of said armature means therein, a second opening formed through said second end portion for permitting the free movement of said motion transmitting means therein, said second valve means operatively connected to said motion transmitting means, said second valve means being effectively juxtaposed to both of said first and second fuel flow orifice means, said first valve means being operatively connected to a second end of said armature means opposite to said first end, said first valve means being effectively juxtaposed to said air bleed means, said first and second valve means moving in unison with said armature means so that when said second valve means moves toward both said first and second fuel flow orifice means said first valve means moves away from said air bleed means and when said second valve means moves away from both of said first and second fuel flow orifice means said first valve means moves toward said air bleed means, and resilient means effective for continually resiliently urging said armature means in a direction whereby said second valve means is moved away from both of said first and second fuel flow orifice means and said first valve means is moved toward said air bleed means.

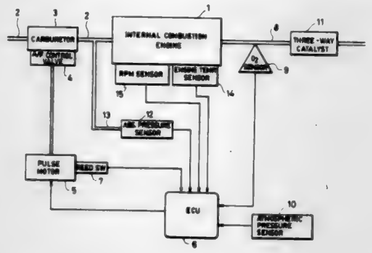
2. A valving assembly for variably restricting fluid flow through first and second spaced flow orifice means, comprising housing means, said housing means comprising a generally tubular housing portion, solenoid motor means, said solenoid motor means comprising axially extending spool means, said spool means comprising a generally centrally disposed spool tubular portion, a solenoid field winding carried by said spool means, axially extending armature means reciprocatingly situated in said spool tubular portion, a first valve member operatively connected to a first axial end of said armature means as to be effective to be juxtaposed to said first flow orifice means, a second valve member operatively connected to a second axial end of said armature means opposite to said first axial end as to be effective to be juxtaposed to said second flow orifice means, said second flow orifice means comprising first and second passage means, said first and second passage means leading to diverse areas, and valve seat body means, said valve seat body means having said first and second passage means formed therethrough, said valve seat body means further comprising an externally threaded portion for threadable engagement with said tubular housing portion, said valve seat body means when operatively threadably engaged with said tubular housing portion extending beyond said tubular housing portion to at least in part define annulus means for fluid flow thereinto from said first passage means, and said first and second valve members moving in unison with said armature means.

4,434,764

AIR/FUEL RATIO FEEDBACK CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING ATMOSPHERIC PRESSURE-DEPENDENT FAIL SAFE FUNCTION FOR O_2 SENSOR

Shumpei Hasegawa, Niiza; Shin Narasaka, Yono, and Kazuo Otsuka, Higashikurume, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,658
Claims priority, application Japan, Aug. 13, 1981, 56-128313
Int. Cl.³ F02M 7/18
U.S. Cl. 123—440 **5 Claims**



1. An air/fuel ratio feedback control system for combination with an internal combustion engine, comprising: first sensor means for detecting the concentration of oxygen present in exhaust gases emitted from said engine; valve means having a valve body disposed to determine the air/fuel ratio of an air/fuel mixture being supplied to said engine; electronic control means operable in response to an output signal of said first sensor means to drive said valve means, whereby the air/fuel ratio of said mixture is controlled to a predetermined value in a feedback manner responsive to changes in the concentration of oxygen present in exhaust gases emitted from said engine; means adapted to generate a first signal as long as a predetermined condition for effecting said feedback control of the air/fuel ratio of said mixture is fulfilled; means adapted to generate a second signal as long as said first sensor means is activated; means adapted to determine an actual air/fuel ratio of said mixture from the value of said output signal of said first sensor means and to generate a third signal having a binary value invertible depending upon whether the air/fuel ratio thus determined is larger or smaller than said predetermined value; safety means arranged to be supplied with said first, second and third signals for performing a predetermined safety action when no inversion ocurs in said third signal inputted thereto for a predetermined period of time while simultaneously said first and second signals are both inputted thereto; second sensor means for detecting ambient atmospheric pressure ; and means adapted to render said safety means inoperative when a value of ambient atmospheric pressure detected by said second sensor means is lower than a predetermined value.

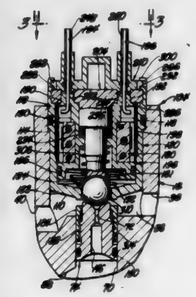
4,434,765

FUEL INJECTION APPARATUS AND SYSTEM

Philip V. Eshelman, Troy, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,899
Int. Cl.³ F02M 51/02, 51/08
U.S. Cl. 123—472 **41 Claims**

1. In combination, a combustion engine, fuel metering apparatus for supplying metered rates of fuel flow to said engine, said fuel metering apparatus comprising body means, induction passage means formed through said body means for supplying motive fluid to said engine, throttle valve means situated in said induction passage means for variably controlling the rate of flow of air through said induction passage means, fuel-air mixture discharge means situated in said induction passage means downstream of said throttle valve means, air passage means communicating between a source of air and said fuel-air mixture discharge means, said air passage means comprising flow restriction means, said flow restriction means being calibrated as to provide for sonic flow therethrough at conditions of idle engine operation, fuel metering means for metering liquid fuel in response to engine demands and indicia of engine operation, said liquid fuel when metered by said fuel metering means being discharged into said air passage means at an area thereof downstream of said source of air and upstream of said flow restriction means, said flow restriction means comprising sonic venturi type restriction means, said fuel metering means for metering liquid fuel comprising a duty-cycle type fuel metering solenoid assembly, said fuel metering solenoid assembly comprising bobbin means, a ball armature means, and a field winding carried by said bobbin means, said bobbin means and said field winding being selectively adjustably positionable with respect to said ball armature means, said field winding being intermittently energizable during metering of said liquid fuel as to cause said ball armature means to move toward and



away from a closed position with respect to an associated valve seat member and thereby result in an average rate of flow of fuel past said ball armature means which constitutes the then metered rate of liquid fuel flow, unmetered fuel passage means for supplying unmetered fuel to said fuel metering means upstream of said fuel metering means, pressure regulator means operatively communicating with said unmetered fuel for regulating the pressure thereof to a preselected superatmospheric magnitude, said fuel-air mixture discharge means comprising generally annular means defining generally annular passage means, said air-passage means in communicating with said fuel-air mixture discharge means communicates with said generally annular passage means, and discharge port means communicating between said generally annular passage means and said induction passage means for directing the flow of the fuel-air mixture within said generally annular passage means to said induction passage means, said discharge port means comprising a plurality of discharge ports spaced from each other and directed generally radially inwardly of said induction passage means.

4,434,766

AIR ASSIST DEVICE OF FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

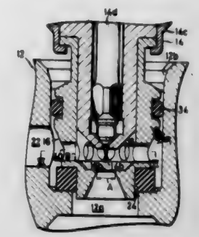
Hiroki Matsuoka; Yuichi Kato, and Minoru Iwata, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 23, 1982, Ser. No. 410,843
Claims priority, application Japan, May 7, 1982, 57-76969
Int. Cl.³ F02M 23/00
U.S. Cl. 123—472 **9 Claims**

1. An air assist device of a fuel injection type internal combustion engine, comprising:

an air assisted injector for blowing out assist air together with fuel to facilitate the atomization of fuel; and

an adapter having an annular peripheral wall containing a plurality of assist air intake ports constituting an assist air introducing portion close to a nozzle of said air assisted injector and having at the bottom of said wall an assist air jet opening,



wherein the diameter of each opening of the assist air intake ports is smaller than the diameter of the assist air jet opening,

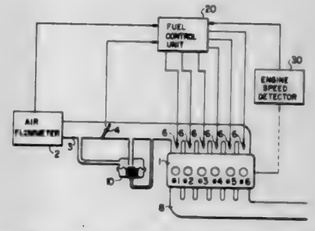
the total opening area of the assist air intake ports being larger than the area of the assist air jet opening.

4,434,767

OUTPUT CONTROL SYSTEM FOR MULTICYLINDER INTERNAL COMBUSTION ENGINE

Tokio Kohama, Nishio; Seizi Huzino; Hideki Obayashi, both of Okazaki; Hisasi Kawai, Toyohashi, and Tsuneyuki Egami, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 23, 1981, Ser. No. 333,781
Claims priority, application Japan, Dec. 24, 1980, 55-183058
Int. Cl.³ F02D 17/02
U.S. Cl. 123—481 **6 Claims**

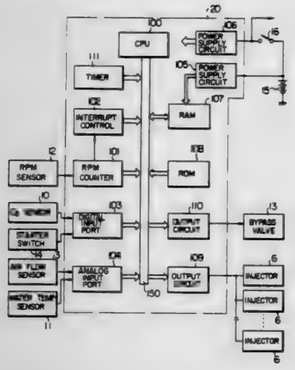


1. An output control system for a multicylinder internal combustion engine having an intake pipe comprising an engine speed detector for detecting the speed of the engine, signal output means for producing a signal corresponding to an output required of the engine, first control means for receiving signals of said engine speed detector and said signal output means, said first control means controlling the number of combinations during predetermined combustion cycles in all cylinders by periodically stopping fuel injection to a specific cylinder to periodically stop the fuel combustion during the cycles in accordance with the signals of said engine speed detector and said signal output means and supplying fuel to the engine intermittently thereby to subject the engine to a partial cylinder operation, and second control means including a constant pressure valve for controlling the pressure in the intake pipe at a constant level at the time of partial load operation of the engine.

4,434,768
AIR-FUEL RATIO CONTROL FOR INTERNAL COMBUSTION ENGINE

Masakazu Ninomiya, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 13, 1982, Ser. No. 397,874
Claims priority, application Japan, Jul. 15, 1981, 56-110386
Int. Cl.³ F02M 51/00, 23/04
U.S. Cl. 123—489 11 Claims



1. A method for controlling an air-fuel ratio comprising the steps of:

detecting whether a predetermined engine operating condition exists;

detecting a relationship between an acutal air-fuel ratio and a predetermined air-fuel ratio different from an air-fuel ratio providing optimum fuel consumption with an oxygen sensor exposed to exhaust gases;

maintaining, when said predetermined operating condition of said engine is detected, the air-fuel ratio at said predetermined air-fuel ratio at least during said predetermined operating condition;

changing gradually, during a steady-state operating condition after the termination of said predetermined operating condition, the air-fuel ratio from said predetermined air-fuel ratio to said air-fuel ratio providing an optimum fuel consumption; and

maintaining said optimum fuel consumption providing air-fuel ratio until said predetermined operating condition is detected again.

7. An apparatus for controlling an air-fuel ratio comprising:

air supply means for suppying air to an engine;

sensor means for detecting whether at least a predetermined engine condition exists;

oxygen sensing means, exposed to exhaust gases, for detecting a relationship between an actual air-fuel ratio and a predetermined air-fuel ratio different from an air-fuel ratio providing optimum fuel consumption to generate an output signal corresponding to said detected relationship;

processor means responsive to said sensor means for determining whether said engine is at said specified operating condition or a steady-state operating condition and for performing a computation for maintaining the air-fuel ratio of the mixture at said predetermined air-fuel ratio in accordance with the output signal from said oxygen sensing means when it is determined that said engine is at said predetermined operating condition, a computation for gradually changing the air-fuel ratio of the mixture from said predetermined air-fuel ratio to said air-fuel ratio providing an optimum fuel consumption when it is determined that said engine is at said steady-state operating condition and a computation for maintaining said optimum fuel consumption providing air-fuel ratio until it is determined that said engine is again at said predetermined operating condition;

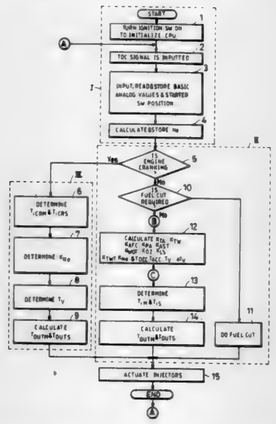
a read/write memory for storing the results of the computations of said processor means at respective addressable locations thereof; and

fuel supply means for supplying fuel to be mixed with air supplied by said air supply means in accordance with the results of the computations of said processor means.

4,434,769
DECELERATION FUEL CUT DEVICE FOR INTERNAL COMBUSTION ENGINES

Yutaka Otobe, Shiki; Akihiro Yamato, Sayama, and Shigeo Umesaki, Iruma, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,187
Claims priority, application Japan, May 20, 1981, 56-75847
Int. Cl.³ F02B 3/00
U.S. Cl. 123—493 5 Claims



1. In a fuel supply control system including a fuel injection device for injecting fuel into an internal combustion engine having an intake pipe, at least one throttle valve arranged in the intake pipe, an exhasust pipe, and a catalytic device arranged in the exhaust pipe for purifying exhaust gases, said catalytic device being of the type increasing in temperature with an increase in the amount of exhaust gases flowing into said catalytic device, said fuel supply control system being operable to electronically control said fuel injection device for control of the amount of fuel being supplied to said engine, a deceleration fuel cut device comprising:

means for detecting operating conditions of said engine, said detecting means including a first sensor for detecting the rotational speed of said engine and a second sensor arranged in the intake pipe of the engine at a location downstream of the throttle valve for detecting the pressure in said intake pipe of said engine;

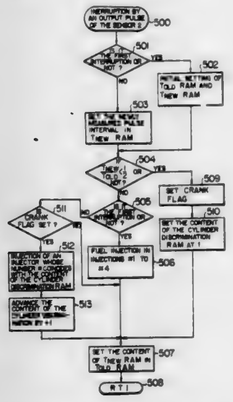
means responsive to the outputs of said detecting means for determining a predetermined fuel cut condition, said fuel cut condition determining means being adapted to determine that said engine is in a condition requiring interruption of the supply of fuel to said engine when the engine rotational speed detected by said first sensor has a value higher than a predetermined value and simultaneously the intake pipe pressure detected by said second sensor has a value lower than a predetermined value above which the temperature of the catalytic device becomes excessively high, said predetermined intake pipe pressure value being set to higher values with an increase in the value of the engine rotational speed detected by said first sensor; and

fuel cut means responsive to the result of said determination of said fuel cut condition determining means for causing said fuel injection device to cut off the supply of fuel to said engine.

4,434,770
FUEL INJECTION TIMING SIGNAL AND CRANK ANGLE SIGNAL GENERATING APPARATUS

Hiroyuki Nishimura, Konosu; Shumpei Hasegawa, Niiza; Masahiro Watanabe, Sagamihara, and Haruo Furuya, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan and Honda Giken Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,427
Claims priority, application Japan, Feb. 17, 1981, 56-22580
Int. Cl.³ F02D 5/02; F02B 3/00
U.S. Cl. 123—494 3 Claims



1. A fuel injection timing signal and crank angle signal generating apparatus for an electronic fuel injection control system for vehicle engines comprising:

a rotation sensor for generating a first pulse at every cycle of fuel injection of an engine and a second series of pulses in said every cycle of fuel injection, said second series of pulses having equal intervals at given engine revolutions each corresponding to a fuel injection interval (θ_{TT}) represented by a crank angle, said first pulse being delayed from a predetermined one of said second pulses by a predetermined crank angle (θ_{TC}) and satisfying a relation given by, $\theta_{TC} \leqq \theta_{TT}/3$, said first pulse and said second series of pulses being substantially of the same pulse width; and

discriminating means for discriminating between a crank angle pulse and fuel injection timing pulses as to said first pulse and said second series of pulses generated by said rotation sensor,

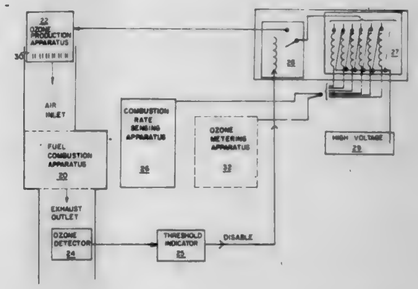
said discriminating means measuring an interval between an instant pulse and a previous pulse every time each of said first and second pulses are received sequentially in the order of generation and indiscriminately between said first and second pulses,

said discriminating means comparing a last measured interval (T_{NEW}) with a first previously measured interval (T_{OLD}) and determining that an instant pulse is a said crank angle pulse if a ratio T_{NEW}/T_{OLD} is less than or equal to a predetermined value, and otherwise determining that said instant pulse is one of said fuel injection timing pulses.

4,434,771
OZONE PRODUCTION SYSTEM

Israel Slomnicki, Rehovot Hess St. N=14, Rehovot, Israel

Continuation-in-part of Ser. No. 198,769, Oct. 20, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 349,364
Int. Cl.³ F02M 27/04
U.S. Cl. 123—539 10 Claims



1. An ozone production system for use with hydrocarbon fuel combustion apparatus having an air inlet and an exhaust outlet, said system comprising:

a plurality of electrode pairs arranged in association with said air inlet;

radiation absorption sensing means associated with said exhaust outlet and arranged to detect and indicate the presence of ozone;

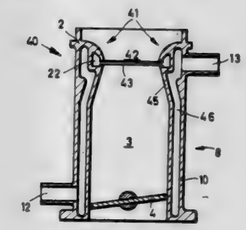
distributor means for sensing the rate of combustion of said combustion apparatus and providing a plurality of sequenced pulsed outputs; and

control means operative in response to said sequenced pulsed outputs and to an output of said radiation absorption sensing means for governing the supply of electricity to said electrode means for producing ozone at a controlled rate so as to limit the ozone emissions at said exhaust outlet.

4,434,772
COMBUSTION MIXTURE GENERATOR FOR INTERNAL COMBUSTION ENGINES

Günter Härtel; Werner Schiele, both of Neuss; Armin Schürfeld, Meerbusch; Valerio Bianchi, Neuss-Holsten, and Anwar Abidin, Meerbusch, all of Fed. Rep. of Germany, assignors to Bosch & Pierburg System OHG, Neuss, Fed. Rep. of Germany

Continuation of Ser. No. 178,823, Aug. 18, 1980, abandoned. This application Jul. 8, 1983, Ser. No. 512,313
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949096
Int. Cl.³ F02M 31/00
U.S. Cl. 123—549 28 Claims



1. In a combustible mixture generator for an internal combustion engine, said generator comprising an axially extending

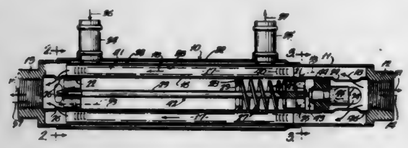
upwardly arranged tubular wall having an upper end and a lower end and defining a mixture chamber therein, means for heating said tubular wall over at least part of the axial length thereof between the upper end and lower end, a flap-shaped throttle member, means mounting said throttle member at the lower end of said tubular wall and fuel metering means for directing fuel into said mixture chamber at the upper end thereof, said tubular wall comprising a double wall heat exchanger jacket defining an annular chamber within said double wall, means for conducting heating fluid through said annular chamber, the improvement wherein said double wall extending axially from adjacent said fuel metering means substantially to said throttle member with the throttle member located between the upper and lowr ends of said annular chamber, said fuel metering means is located between upper and lower ends of said tubular wall and is operative to direct substantially all of said fuel onto the inner surface of said double wall defining the mixture chamber between said fuel metering means and said throttle member, said double wall comprising an inner and an outer wall and said means for heating said double wall comprises electrical resistance heating material located within the inner wall of said double wall.

4,434,773

VALVE CONTROLLED FUEL HEATER WITH SELF-ADJUSTING VALVE

Dennis C. Granetzke, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Aug. 27, 1981, Ser. No. 296,899
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **8 Claims**



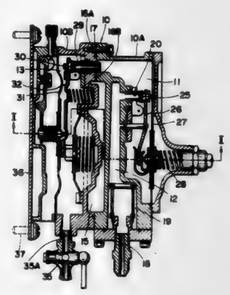
1. A fuel heater, comprising:
a source of fuel passage means for said fuel through said heater;
heated means;
a temperature responsive valve body movable between a first extreme position for directing said fuel through a path in heat receiving relationship to said heated means when the fuel temperature is cold, and a second extreme position that directs the fuel to bypass the heat means when the fuel is hot;
movable temperature responsive means responsive to the temperature of said fuel in said heater for moving said temperature responsive valve body between said first and second extreme positions;
an elongated, laterally distortable valve stem extending between said temperature responsive means and said valve body and thereby subjected to varying temperatures in said fuel heater for thereby moving said valve body; and
hinge means operatively connecting said elongated valve stem and valve body for permitting relative lateral movement therebetween, thereby tending to prevent binding of said valve body in misalignment of said stem and valve body due to said varying temperatures.

4,434,774

VAPORIZER FOR A LIQUEFIED PETROLEUM GAS ENGINE

Tomofusa Horiuchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 30, 1982, Ser. No. 393,791
Claims priority, application Japan, Sep. 25, 1981, 56-151545
Int. Cl.³ F02G *5/00*; F02M *31/02*
U.S. Cl. 123—557 **6 Claims**



1. A vaporizer for a liquefied petroleum gas engine having a cooling system employing coolant, the vaporizer comprising:
(a) a housing having first, second, third, and fourth chambers;
(b) the housing having a fuel inlet port connected to a lower portion of the first chamber to supply liquid fuel to the first chamber;
(c) a first port disposed at an upper portion of the first chamber for communicating with the second chamber to supply fuel to the latter;
(d) said fuel inlet port having a cross-sectional area smaller than that of the first chamber whereby fuel flow through the first chamber will be at a lower speed than that of fuel flow through the fuel inlet port;
(e) a second port for communicating between the second chamber and the fourth chamber;
(f) an outlet for connecting the fourth chamber to the engine to supply fuel to the latter;
(g) mans for controlling flow through said first port for regulating pressure in the second chamber to a level whereby liquid fuel will vaporize; and
(h) means for controlling flow through said second port;
(i) the third chamber being connected to the cooling system to be supplied with the coolant, the third chamber being located adjacent to the first and second chambers and at least partially surrounding the first chamber so that the coolant in the third chamber will heat both liquid fuel in the first chamber and fuel vapor in the second chamber.

4,434,775

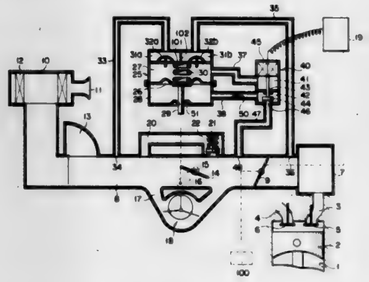
APPARATUS FOR CONTROLLING PRESSURIZED AIR SUPPLY TO ENGINES

Junjiro Yoshimura, Okazaki; Kenji Yamada, Aichi, and Haruyuki Obata, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 19, 1982, Ser. No. 399,956
Claims priority, application Japan, Jul. 21, 1981, 56-112952; Aug. 5, 1981, 56-116510; Sep. 14, 1981, 56-136601; Sep. 16, 1981, 56-137449; Sep. 16, 1981, 56-137450
Int. Cl.³ F02D *23/00*
U.S. Cl. 123—564 **18 Claims**

1. An apparatus for controlling pressurized air supply to an engine, comprising:
an intake passage connected to the engine at a downstream end thereof;

a throttle valve disposed at a downstream side of said intake passage;
a supercharger control valve disposed at an upstream side of said throttle valve in said intake passage;
a supercharging passage connected to said intake passage at both upstream and downstream sides of said supercharger control valve;
a supercharger disposed in said supercharging passage;
an actuator which has an actuating body provided in said actuator for dividing said actuator into first and second pressure chambers and operatively connected to said supercharger control valve to close said supercharger control valve when said actuating body is moved in a first direction to decrease the volume of said first pressure chamber and to open said supercharger control valve when said actuating body is moved in a second direction to increase the volume of said first pressure chamber, and which has urging means for urging said actuating body in said second direction;



a change-over valve which has a first pressure-receiving chamber communicating with said first pressure chamber, a second pressure-receiving chamber communicating with said second pressure chamber and a portion of said intake passage between said throttle valve and said supercharger control valve, and a valve body selectively positioned between a first position where said valve body allows said first pressure-receiving chamber to communicate with said second pressure-receiving chamber and also blocks said second pressure-receiving chamber from said intake passage and a second position where said valve body blocks said first pressure-receiving chamber from said second pressure-receiving chamber and allows said second pressure-receiving chamber to communicate with said intake passage; and
a pressure introducing passage having one end connected to the downstream of said throttle valve in said intake passage and the other end communicating with said first pressure chamber.

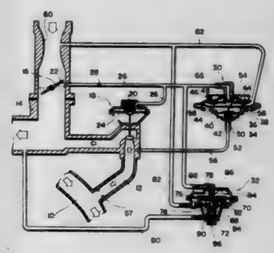
4,434,776

EGR CONTROL SYSTEM

Haruya Shirase, Kawasaki, and Takehisa Kondo, Kanagawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 17, 1981, Ser. No. 244,344
Claims priority, application Japan, Mar. 18, 1980, 55-35526[U]
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **4 Claims**

1. In an internal combustion engine having an exhaust conduit and an induction manifold including a venturi portion, the combination of:
an EGR conduit fluidly interconnecting said exhaust conduit and said induction manifold;
an EGR flow control valve disposed in said EGR conduit for controlling the flow of exhaust gas therethrough, said EGR flow control valve having a vacuum motor including a vacuum chamber, said vacuum chamber being fluidly communicated with a source of vacuum;
a first vacuum modulation valve for modulating the vacuum prevailing in said vacuum chamber, said first vacuum modulation valve being responsive to a venturi vacuum signal which originates in said venturi portion and a pressure signal which originates in a zone of said EGR conduit



upstream of said EGR flow control valve and downstream of a flow restriction disposed in said EGR conduit; and
a second vacuum modulation valve for modulating the vacuum prevailing in said vacuum chamber, said second vacuum modulation valve being responsive to said venturi vacuum signal and an induction vacuum prevailing in said induction manifold.

4,434,777

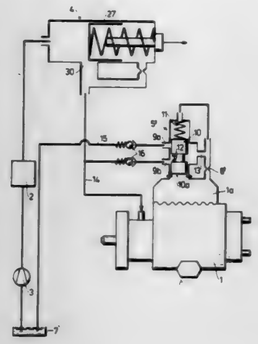
FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINES

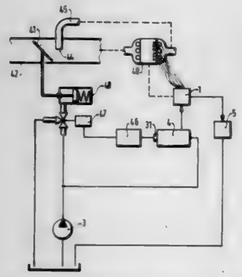
Max Straubel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,486
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127419
Int. Cl.³ F02B *47/08*
U.S. Cl. 123—568 **9 Claims**

1. A fuel injection apparatus for internal combustion engines having a fuel injection pump which includes a predetermined interior pressure for supplying a regulatable fuel injection quantity, a ventilation apparatus for the fuel injection pump and an exhaust gas recirculation means controlled by said fuel quantity, characterized in that a spring-loaded piston-type fuel quantity meter of a mixture regulator is disposed in an inlet to the fuel injection pump, said mixture regulator having a piston the position of which, determined by the fuel quantity at a particular time, is ascertained by a travel receptor, said travel receptor arranged to determine the exhaust gas quantity recirculated to an intake tube, further that disposed in a discharge of said injection pump is a pressure-controlled ventilation valve, which communicates with a heat exchanger, said valve ar-

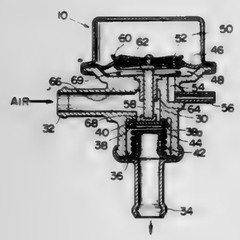
ranged to be controlled by pump interior pressure (p_{pi}) and adjusted such that its pressure effecting the opening (p_{δ}) is





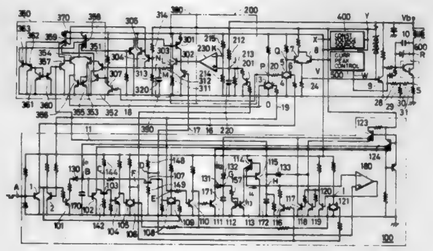
greater than the maximum interior pressure of said injection pump in an exhaust gas test range.

4,434,778
AIR INDUCTION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE
Hideo Morita, Yokohama, and Yoshio Iwase, Nagareyama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Continuation of Ser. No. 126,099, Feb. 29, 1980. This application Jan. 13, 1983, Ser. No. 457,560
Claims priority, application Japan, Mar. 6, 1979, 54-25763; May 8, 1979, 54-61528
Int. Cl.³ F02M *7/12*
U.S. Cl. 123—587 **14 Claims**



1. An air induction control device for an internal combustion engine having an intake passageway in which a throttle valve is disposed, comprising:
means defining an air passage for communicating upstream and downstream sides of the throttle valve in said intake passageway when opened;
a valve member disposed in said air passage and movable toward the downstream side thereof to open said air passage in response to pressure differential between the upstream and downstream sides of the throttle valve in the intake passageway; and
a diaphragm member mechanically connectable to and separable from said valve member and movable to move said valve member so as to open said air passage in response to vacuum prevailing in the intake passageway downstream of the throttle valve.

4,434,779
CIRCUIT FOR CONTROLLING THE PRIMARY DWELL TIME OF IGNITION TRANSFORMER
Norboru Yamamoto, Kariya; Tomoatsu Makino, Okazaki, and Ryoichi Okuda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Feb. 25, 1982, Ser. No. 352,454
Claims priority, application Japan, Feb. 27, 1981, 56-28901
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—609 **9 Claims**



1. A circuit arrangement for controlling the dwell time of current flowing in the primary winding of an ignition transformer in response to the ignition timing of an internal combustion engine, comprising:
first means responsive to said ignition timing for generating a ramp voltage having a constant peak value and a variable rate of increase in voltage as a function of the speed of said engine;
second means for successively generating a pulse having a pulse height substantially equal to the peak value of said ramp voltage and a pulse duration variable inversely as a function of the speed of said engine;
third means coupled to said second means for integrating said pulses supplied thereto to generate an integrated output; and
fourth means for comparing the instantaneous value of said ramp voltage with said integrated output to detect a difference therebetween and causing an ignition current to flow in said primary winding for a period corresponding to said difference.

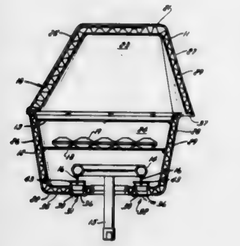
4,434,780
EXTENDIBLE GRILL
Glen L. Hepner, P.O. Box 120, Trenton, Utah 84338
Filed Jan. 31, 1983, Ser. No. 462,709
Int. Cl.³ F24C *1/16*; F24B *3/00*
U.S. Cl. 126—9 B **11 Claims**

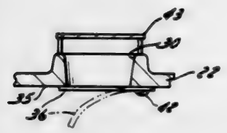
1. An expandible, portable grill, comprising:
a rigid, annular frame;
a plurality of parallel bars extending across the frame, each fastened at one end to one side of the frame, and at its other end to the opposite side of the frame; and
a pair of opposing extension members, each being substantially U-shaped, having two parallel legs, and slidably attached at each of its ends to one of a pair of said parallel bars so that it is capable of being moved inwardly and outwardly along said bars relative to the center of the grill, and whereby said frame functions as a stop means for limiting the movement of the extension members out-



wardly from the center of the grill, said extension members being formed for remaining substantially in the plane of the grill, when a load is impressed on its upper side and the extension members are resting on other structures, as in cooking.

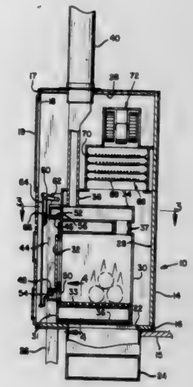
4,434,781
THERMALLY EFFICIENT BARBECUE GRILL
Walter Koziol, 18845 State Line Rd., Antioch, Ill. 60002
Filed Feb. 4, 1982, Ser. No. 345,703
Int. Cl.³ A47J *37/00*
U.S. Cl. 126—25 R **15 Claims**





10. A fuel efficient gas barbecue grill apparatus comprising:
an insulated base member constructed and arranged to receive a gas inside intake conduit and a burner element with a grill member positioned above said burner element and noncombustible briquettes positioned between said burner element and said grill member;
an insulated cover member dimensioned to enclose the top of said base member;
vent means operatively associated with said base and cover members; and
a thermally actuated vent means operatively positioned in conjunction with said vent means in said base and cover member so that upon the temperature in said base member increasing, said thermally actuated vent means will proportionately permit more air to enter said base member through said vent means in said base member and upon said temperature in said base member decreasing, said thermally actuated vent means will proportionately limit the amount of air entering said base member.

4,434,782
HEATING FURNACE
Joseph P. Traeger, 250 S. Oak, Mt. Angel, Oreg. 97362
Filed Jan. 7, 1982, Ser. No. 337,689
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—77 **3 Claims**



1. A furnace comprising:
an upstanding casing,
a combustion chamber mounted within and adjacent the base of the casing,
a heat exchanger disposed over said combustion chamber and a duct connecting the combustion chamber and the heat exchanger,
a flue connecting with the exchanger extending out of the casing,
insulation on the inside of the casing surrounding the combustion chamber and heat exchanger,
a fresh air supply duct for supplying combustion air extending into the base of the casing,
a first duct connection connecting the fresh air supply duct and the combustion chamber whereby combustion air is supplied the combustion chamber,
a second duct connection connecting the fresh air supply duct and the heat exchanger,
a first damper for said first duct connection and a second damper for said second duct connection, and damper control means for effectuating opening of said first damper with closing of the second and closing of the first damper with opening of the second.

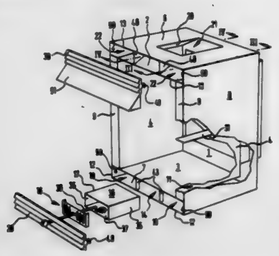
4,434,783
CONTROLLED FIREPLACES FOR CONCURRENTLY VARYING COMBUSTION AIR AND CONVECTED AIR
Michael C. O'Gorman, 16 The Lane, Fritwell nr. Bicester, England
PCT No. PCT/GB81/00080, § 371 Date Dec. 16, 1981, § 102(e) Date Dec. 16, 1981, PCT Pub. No. WO81/03218, PCT Pub. Date Nov. 12, 1981
PCT Filed May 1, 1981, Ser. No. 333,864
Claims priority, application United Kingdom, May 2, 1980, 8014804
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **7 Claims**

1. A fireplace constructed for concurrently controlling the flow of combustion air for a fire in the fireplace and convected air for room heating, comprising:
an open-fronted inner casing, for accommodating a fire,

having a rear side panel, an open top panel, a bottom panel, and two lateral side panels;

outer casing means disposed about the inner casing, means for forming separate first and second air spaces within said outer casing means and below the inner casing and means for forming passage means within said outer casing means communicating with the first air space and disposed for providing flow of convected air upwardly from the first air space along at least one of the side panels of the inner casing, the first and second air spaces being adapted for communication therebetween;

first air inlet means communicating with the first air space at the front of the fireplace;



second air inlet means communicating with the second air space for introducing thereto air external to the room to be heated;

air outlet means communicating with the passage means at the front of the fireplace, above the level of the first air inlet means;

valve means operable to vary the extent of communication between the first and second air spaces for varying the flow of air from the second air inlet means, through the second air space, into the first air space; and

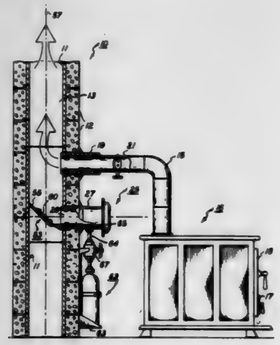
means for providing communication between said second air space and said inner casing for supplying air from the second air space into the inner casing and having control vent means for controlling the supply of air into the inner casing.

4,434,784

VIEWING APPARATUS FOR A CHIMNEY

Frederic D. Van Patten, R.D. 1. Stock Rd., Hannibal, N.Y. 13074

Filed May 23, 1983, Ser. No. 497,038
Int. Cl.³ F23J *11/00*
U.S. Cl. 126—312 **5 Claims**



1. Apparatus for visually monitoring the vent chamber of a chimney while the chimney is drawing exhaust gases through the flue of a stove that includes

a hollow member sealed in one wall of the chimney below the flue entrance of the stove, said hollow member having an inside end face passing into the vent chamber of the chimney and an outer end face protruding beyond said one wall of the chimney,

a bracket means angularly disposed within the vent chamber adjacent to the inside end face of said hollow member,

a mirror means supported upon the said bracket within the vent chamber to permit the chamber to be viewed through the hollow member,

an observation door having a transparent window therein, said door being removably mounted over said outside end face of said hollow member, and

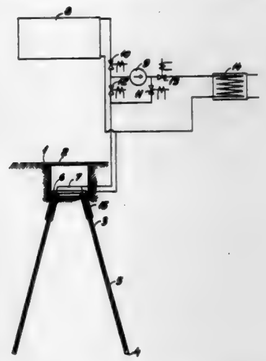
sealing means acting between said door and said hollow member to provide an airtight joint therebetween when the door is in a closed position whereby said hollow member provides an airtight passage communicating with the vent chamber.

4,434,785

HEAT ACCUMULATOR

Niels K. Knudsen, Rolighedsvej 13, DK-8722 Hedensted, Denmark

Continuation of Ser. No. 261,207, May 6, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 431,725
Claims priority, application Denmark, Sep. 6, 1979, 3720/79
Int. Cl.³ F24H *7/00*; F28D *00/00*
U.S. Cl. 126—400 **2 Claims**



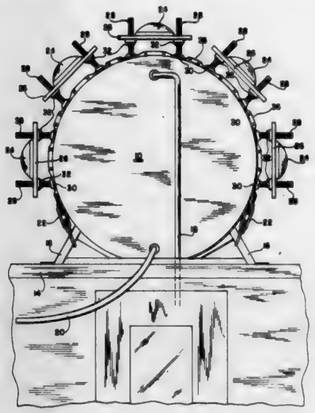
1. An underground heat accumulator of the low temperature type for storing solar energy from a solar collector, comprising a plurality of buried double pipe assemblies, each including an inner pipe and an outer pipe connected in parallel and each extending at an upper end thereof from a double, annular pipe connection at the bottom of a central well having a cover, energy from said collector being passed through the inner pipe to the bottom of each double pipe assembly and from there to the outer pipe thereof, the heat stored in the heat accumulator being given off from the bottom of each outer pipe through the respective inner pipe and supplied to an evaporator of a heat pump by means of a pump, wherein the improvement comprises that at least the upper ends of the pipes are vertically, conically inclined with a common geometric vortex near the surface of the ground and that each outer pipe is formed with a tubular insulating jacket extending from the bottom of the central well to a depth where soil is substantially unaffected by annual thermal fluctuations.

4,434,786

ADJUSTABLE SOLAR HEAT COLLECTOR

Joseph A. Lanciault, 18 Blossom St., Apt. 2, Fitchburg, Mass. 01402

Filed Sep. 23, 1982, Ser. No. 421,965
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **4 Claims**



1. An adjustable solar heat collector comprising a tank for holding a fluid, a chain of separate light condensing members on the tank at the exterior thereof, each member including a lens, a separate frame holding each lens, a plurality of support rods for each frame, each rod being adjustably mounted relative to its frame, a rod base for each rod, means connecting the rod bases to form the chain,

means to adjust the frames and lenses on the rods to cause the respective frames to approach or move away from the tank, said means also being selectively operable to tilt the frames with respect to the tank.

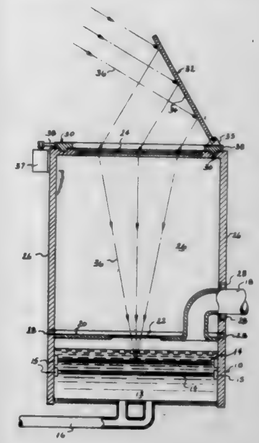
4,434,787

SOLAR POWERED REACTOR

Ronald R. Young, II, Box 336XA, Woodville Cir., Sumter, S.C. 29150

Continuation-in-part of Ser. No. 87,380, Oct. 23, 1979, abandoned, which is a continuation of Ser. No. 870,349, Jan. 18, 1978, abandoned. This application Sep. 10, 1981, Ser. No. 301,007
Int. Cl.³ F24J *3/02*; G02B *5/12*
U.S. Cl. 126—438 **5 Claims**

1. A solar powered reactor for collecting both direct and reflected sunlight and converting solar energy contained therein into heat energy of a heat transfer fluid, comprising a reactor vessel defining a compartment for containing a heat transfer fluid, an inlet in said vessel for introducing a heat transfer fluid into said compartment, and an outlet in said vessel for discharging heated fluid from said compartment, said vessel containing an upper light transmitting wall portion for passage of sunlight into said compartment, at least one heat conducting metal element located in said compartment adjacent said light transmitting wall portion and in communication with a heat transfer fluid in said compartment for receiving sunlight thereon, a large concentrating lens positioned in spaced relation above said vessel and light transmitting wall portion for receiving and concentrating sunlight through said light transmitting wall portion and onto said at least one metal element in said compartment, solar reflector means supportably mounted adjacent said lens for movement thereabout and including a light reflecting surface pivotally adjustable to



reflect sunlight onto said concentrating lens for concentrated direction thereby into said reactor vessel.

4,434,788

ENHANCER OF ANTI-TUMOR EFFECT

Shigekazu Nakatsugawa, Kyoto, Japan, assignor to Yamasa Shoyu Kabushiki Kaisha, Japan

Filed Jul. 27, 1981, Ser. No. 286,753
Claims priority, application Japan, Aug. 11, 1980, 55-109320
Int. Cl.³ A61K *31/505*
U.S. Cl. 128—1.1 **12 Claims**

1. A method of enhancement of anti-tumor effect which comprises administering to a tumor-bearing animal under an anti-tumor treatment an enhancer or the anti-tumor effect selected from the group consisting of 3'-deoxyguanosine and 3'-deoxyuridine.

4,434,789

APPARATUS FOR TREATING CARCINOMA OF THE UTERINE CERVIX

Pullatikurthi P. Kumar, Omaha, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Division of Ser. No. 104,358, Dec. 17, 1979, Pat. No. 4,331,131. This application Jun. 29, 1981, Ser. No. 278,738
Int. Cl.³ A61N *5/00*
U.S. Cl. 128—1.2 **21 Claims**

1. Applicator apparatus for radioactive therapy of uterine cervix carcinoma and comprising:

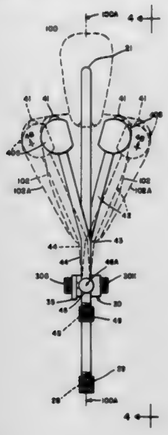
A. a tubular tandem having a longitudinally extending finite tandem-length defined by a closed lead-end for insertion through the uterine cervix and a closeable trail-end permitting charging of radioactive material into the tandem leadward portion, the tandem trailward length portion lying substantially parallel to a sagittal-plane;

B. an adapter member slidably surrounding the tandem trailward portion and including releasable arresting means for establishing the adapter member at an empirically selected position between the tandem lead-end and the trail-end;

C. two ovoidal assemblies each comprising an elongate tubular arm having a directionally longitudinal finite arm-length less than said tandem-length and defined by a closed leading-end and a closeable trailing-end permitting charging of radioactive material into the arm lead-length portion, each ovoidal assembly also comprising an ovoid type spacer means removably surrounding the arm lead-

length substantially at its leading-end, each ovoidal assembly at the arm trail-length portion being removably pivotably attachable to the adapter member whereby the leading-end of the respective arms is free to move laterally away from the tandem leadward length portion;

D. septa protection means for restraining the laterally movable arms leading-ends within a mid-plane perpendicular to the sagittal-plane and located substantially midway the vasicovaginal and rectovaginal anatomical septa; and



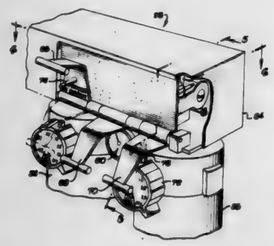
E. the septa protection means comprising arm trail-length portions spaced on opposite transverse sides from the tandem trail-length portion and lying substantially parallel to the sagittal-plane and further comprising pivot means extending directionally transversely between the adapter member and arm trail-length portions of the two ovoidal assemblies.

4,434,790

VAPORIZER SUBSYSTEM FOR AN ANESTHESIA MACHINE

Russell Olesen, Huntington, N.Y., assignor to Puritan-Bennett Corporation, Kansas City, Mo.

Filed Aug. 18, 1981, Ser. No. 293,994
Int. Cl.[3] A61M *11/00*
U.S. Cl. 128—200.14 11 Claims



1. A vaporizer subsystem for use with a gas anesthesia machine providing a diluent flow of oxygen and anesthesia gas for selective diversion through one of a plurality of direct reading vaporizers, and providing an independent oxygen flow for selective diversion through at least one universal type vaporizer, said vaporizer subsystem comprising:

at least three isolation valves, operable independently of controls on the vaporizers, and each movable between an on position in which gas flow is diverted through a corresponding vaporizer and an off position in which the corresponding vaporizer is isolated; and

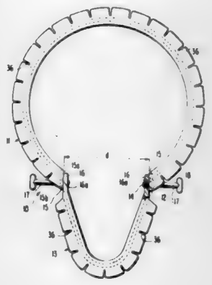
interlock means for preventing more than one of said isolation valves from being switched to the one position at any particular time, wherein only a selected one of the vaporizers, whether of the direct-reading or the universal type, may be coupled to the anesthesia system at any time, and wherein said interlock means functions automatically to move a previously selected isolation value from its on position to its off position by selecting and actuating a different one of said isolation valves.

4,434,791

SURGICAL RETRACTOR ARRAY SYSTEM

W. Dale Darnell, Caledonia, Miss., assignor to Humboldt Products Corp., Columbus, Miss.

Filed Mar. 15, 1982, Ser. No. 358,082
Int. Cl.[3] A61B *17/02*
U.S. Cl. 128—20 21 Claims



1. A universal, surgical retractor frame array system assemblable into a plurality of annular, hinged retractor frame units of various different annular shapes adaptable to conform to the surface contours of different body portions of surgical patients for retaining elastic tubing stay members inserted into notches spaced apart around each retractor frame unit periphery, said system comprising a plurality of rigid, planar frame sections of various outline shapes in the plane of the frame section, each frame section having a first straight end portion with a hole therethrough and a second straight end portion with a threaded hole therethrough, each frame section having a uniform transverse cross-section with contoured notches spaced apart and extending inwardly from a common side forming each retractor unit outer periphery when hingedly joined to other frame sections of said array system; and threaded connecting means for insertion through said end portion holes to releasably and hingedly connect the two end portions of each said frame section to the end portions of other frame sections of said array system to permit said frame sections to be releasably connected together to alternatively form any of various differently shaped, annular retractor frame units.

4,434,792

ADJUSTABLE ABDUCTION DEVICE FOR TREATMENT OF METATARSUS ADDUCTUS

Steven L. Rosenberg, 2901 Wilshire Blvd., Ste. 345, Santa Monica, Calif. 90403

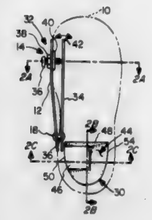
Filed Mar. 19, 1982, Ser. No. 359,724
Int. Cl.[3] A61F *3/00*
U.S. Cl. 128—80 R 4 Claims

1. A therapeutic device for treatment of metatarsus adductus comprising:

a shoe with a sole, an innersole, a heel end, a toe end, a medial side, a lateral side and a medial vamp/quarter last seam;

a support bracket rigidly secured to said medial side;

means attached to said support bracket at a position anterior of said last seam, adjacent said toe end, and laterally of said medial side, for abducting a foot at the first metatarsal-phalangeal joint, said abducting means being laterally adjustable from the external medial side of said shoe, wherein said abducting means comprises a rigid resilient plate and an adjusting screw, said plate being secured to said bracket at a position posterior of said last seam, said adjusting screw being threadably attached to said bracket



anterior of said last seam, said plate abutting to said screw and being laterally movable at its unsecured end in response to advancement of said adjusting screw; and

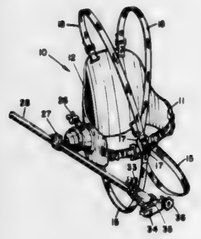
means disposed to said heel end for supporting a heel of said foot in a manner to prevent the metatarsal foot joint from collapsing as the forefoot is abducted, wherein said heel supporting means comprises a pad, said pad having a top face, said top face having a region of maximum thickness closest to anterior and medial edges of said pad and having regions of minimum thickness along lateral and posterior edges of said pad thereby to form a varus wedge.

4,434,793

PELVIC STABILIZER

Charles A. Willits, 9791 La Cresta Cir., Huntington Beach, Calif. 92646

Filed Aug. 21, 1981, Ser. No. 294,906
Int. Cl.[3] A61F *13/00*; A61B *19/00*
U.S. Cl. 128—134 12 Claims



1. A device usable in diverse environments for positioning a worker adjacent to a structure in such a fashion that said worker can perform useful tasks, said device comprising:

a shaped, rigid reaction surface adapted to generally conform to the back of said worker; said surface having extensions adapted to overlie the hip areas of said worker;

fastening means for securing said surface to said worker;

a single stabilizer arm having a proximal end, a proximal portion, and a distal end;

at least one of said extensions having an adjustable connector attached thereto which is releasably connectable to said proximal portion;

clamp means at said distal end for providing attachment to said adjacent structure,

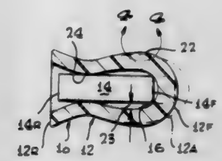
whereby, the orientation of the worker is adjustably securable by said worker with respect to said structure.

4,434,794

DISPOSABLE EAR PLUG

Howard S. Leight, 3945 Ridgemont Dr., Malibu, Calif. 90265

Filed Jun. 15, 1981, Ser. No. 273,367
Int. Cl.[3] A61F *11/02*
U.S. Cl. 128—152 6 Claims



3. An ear plug comprising:

a resilient plug body which is hollow to form a cavity, said plug body having a closed front end and an open rear end opening to said cavity enabling its reception in the ear and having outside walls adapted to directly contact the surface of the ear canal;

said plug body is constructed of dip-molded closed cell foam material, with said outside walls of the body defining a multiplicity of small bumps formed solely by closed cells of said form material which lie at the surface of said body;

a stem lying in said hollow body, said stem having a front end lying at the front of said cavity, and said stem having a rearward end extending rearwardly substantially no further than the rear of said plug body;

said stem being freely slideable within at least the rearward portion of said cavity.

4,434,795

INSTRUMENT FOR APPLYING LIGATING CLIPS

Robert W. Mericle, Bridgewater, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 49,379, Jun. 18, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,180
Int. Cl.[3] A61B *17/00, 17/12*
U.S. Cl. 128—303 R 3 Claims



1. An instrument for applying a ligating clip, said clip having first and second leg members joined at their proximal ends by a resilient hinge means and terminating at their distal ends in latch means, said instrument comprising a pair of handles pivoted about a hinge point, said handles crossing at said hinge point and extending beyond the hinge point to form a pair of clip closing jaws having opposed inner faces, each of said jaws having a recessed clip receiving channel in the substantially planar inner face thereof, each said channel having a base composed of two stepped substantially planar segments, which segments are generally parallel to the hinge line of said hinge point and a pair of side walls extending perpendicularly from said base segments, said channel extending from the tip of said

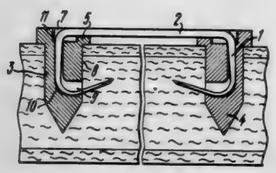
jaw furtherest from said hinge point rearwardly towards said hinge point, said channel having a length at least equal to the length of the clip to be applied by said instrument, each channel having an opposed cylindrical recess disposed at the step in the base of the channel and extending between said side walls and being spaced from the tip of said jaw, the said walls extending from the base segment in each channel furtherest from said hinge point being greater than those on the other side of said step whereby the jaws do not interfere with the closing and latching of the clip.

4,434,796

SURGICAL STAPLE, A METHOD OF AND FORCEPS FOR ITS REMOVAL

Igor S. Karapetian; Ivan A. Koroikov; Nikolai N. Kapitanov; Boris A. Smirnov, and Tatyana L. Ivanova, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki, Moscow, U.S.S.R.

Filed Feb. 19, 1982, Ser. No. 350,398
Claims priority, application U.S.S.R., Apr. 7, 1981, 3275314
Int. Cl.³ A61B *17/08*
U.S. Cl. 128—335 **4 Claims**



1. A surgical staple, comprising two legs, a web interconnecting said two legs, pointed-end rods adapted to be fitted on each of the staple legs, each of said rods having a head with a slot for said web to pass, a through hole or passage in said rod for the respective staple leg to pass, said hole being open at said slot in said head and at the side surface of said rod, while the rigidity of said staple legs decreases from the zone of their interconnection with the web towards their end.

4,434,797

CATHETER

Torsten Silander, Stockholm, Sweden, assignor to AB Tesi, Stockholm, Sweden

Continuation of Ser. No. 202,439, Aug. 19, 1980, abandoned. This application Nov. 22, 1982, Ser. No. 443,753
Claims priority, application Sweden, Jan. 12, 1979, 7900282
Int. Cl.³ A61M *29/00*
U.S. Cl. 128—343 **7 Claims**



1. A catheter, intended to be inserted into a body duct to maintain the passageway therethrough, comprising:

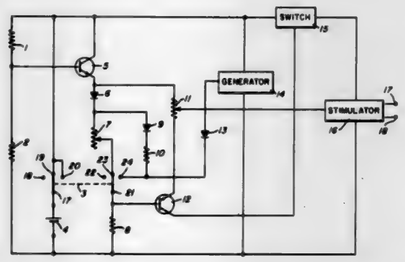
a tubular shell of a plastic material which is provided with retaining means in the form of multiple noncontiguous beads on the outer surface of said shell; said beads being constrained to encircle and at least partially cover said shell and being characterized by consisting of a dehydrated hydrophilic plastic substance which swells upon absorbing body fluids such that said beads are of a substantially greater diameter when in the swollen state and thereby function to enlarge adjacent portions of said body duct after becoming swollen therein and act thereby to retain said shell within said duct.

4,434,798

CONTROL CIRCUIT OF A FUNCTIONAL AND THERAPEUTIC STIMULATOR

Amadej Trakoczy; Miha Stopar; Dusan Filipic, all of Ljubljana, and Joze Opeka, Vrhika, all of Yugoslavia, assignors to Gorenje Tovarna Gospodinjske Opreme N.Sol.O. Velenj, Velenje, Yugoslavia

Filed Oct. 23, 1981, Ser. No. 314,463
Claims priority, application Yugoslavia, Oct. 23, 1980, 2724/80
Int. Cl.³ A61N *1/30*
U.S. Cl. 128—421 **3 Claims**



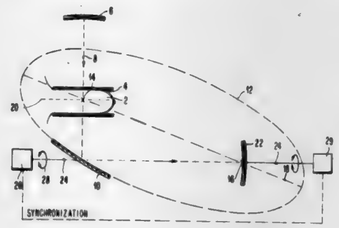
1. A control circuit for a functional and therapeutic stimulator that produces output pulses, which control circuit comprises a battery, switching means for connecting said battery to the circuit and for selecting between proportional and cyclic modes of operation of the stimulator, a first control means for adjusting the relative amplitude of the output pulse of the stimulator, a second control means for adjusting the absolute amplitude of the output pulse of the stimulator, a pulse group generator for defining the length of pulse groups of the stimulator in the cyclic mode of operation, and an electronic switching means for switching on the stimulator.

4,434,799

ULTRASOUND APPARATUS FOR MEDICAL EXAMINATIONS

Jon C. Taenzer, Palo Alto, Calif., assignor to Siemens AG, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 354,011
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **22 Claims**



1. An ultrasound apparatus for medical examinations of a patient, comprising in combination:

(a) an ultrasonic wave-generating transducer for providing ultrasonic waves;

(b) a first ultrasound window;

(c) first guiding means containing a fluid medium for guiding said ultrasonic waves to said first ultrasound window;

(d) a second ultrasound window;

(e) said first and said second ultrasound windows defining an examination gap for introducing and insonifying a portion of a patient positioned therein, said gap having a main insonification direction;

(f) an ultrasonic receiving transducer for converting at least a portion of an acoustic image field received from said gap into electrical signals;

(g) second guiding means containing a fluid medium for guiding ultrasound transmitted through said gap from said second ultrasound window to said ultrasound receiving transducer;

(h) mirror means associated with said second guiding means and having a curved surface for focusing ultrasound waves passing through said gap at said ultrasonic receiving transducer, thereby forming said acoustic image field and forming an image of said organ of the patient on said receiving transducer; and

(i) means for oscillating said curved mirror means, said curved mirror means thereby sweeping said acoustic image field across said receiving transducer;

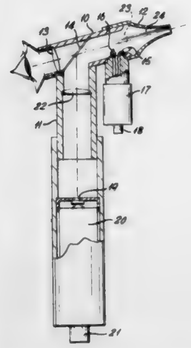
wherein said mirror means comprise a single concave mirror, having an ellipsoidal surface for reflecting said ultrasound waves passing through said gap, and wherein said ellipsoidal surface is a portion of an ellipsoid having a first and a second focus, and wherein said mirror is positioned such that said first focus is located within said gap and said second focus is located on said ultrasonic receiving transducer.

4,434,800

TYMPANOMETRIC APPARATUS

Michael Anson, London; Andrew C. Pinder, Barnet, and Alan R. Palmer, St. Albans, all of England, assignors to National Research Development Corporation; London, England

Filed Jun. 4, 1982, Ser. No. 385,265
Claims priority, application United Kingdom, Jun. 10, 1981, 8117847
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—665 **10 Claims**



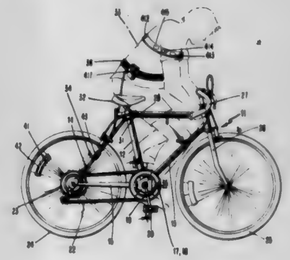
1. Tympanometric apparatus comprising a housing including first and second mutually transversely communicated portions of generally tubular form, said first housing portion having a speculum at one end thereof, viewing means at the other end thereof, first optical means located between said speculum and viewing means, and a light source and a sound source both located between said speculum and first optical means and respectively operable to project a light beam and sound through said speculum, and said second housing portion communicating with said first housing portion adjacent to said first optical means, having a photodetector extending across a small area thereof spaced from said first optical means, and second optical means located between said photodetector and said first optical means, said speculum affording application of said beam and sound towards the tympanum of a subject to be examined with the apparatus, said first optical means partially transmitting and reflecting reflection of said beam from said tympanum respectively towards said viewing means and photodetector, said viewing means facilitating direction of said speculum relative to said tympanum, said second optical means focusing said beam of reflection in the plane of said photodetector, and said sound causing oscillation of said tympanum with consequent variation in the optical path of said reflection and the output of said photodetector.

4,434,801

APPARATUS FOR TESTING PHYSICAL CONDITION OF A SELF-PROPELLED VEHICLE RIDER

Oscar Jiminez, Miami, and Frank J. Bianco, Pembroke Pines, both of Fla., assignors to Biotechnology, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 145,765, Apr. 30, 1980, Pat. No. 4,367,752. This application Mar. 8, 1982, Ser. No. 355,329
The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—689 **30 Claims**



5. Apparatus for testing the physical condition of a cyclist comprising means adapted to be mounted on the subject for monitoring and deriving a first signal indicative of heart activity of the subject, means adapted to be mounted on a cycle for deriving a second signal indicative of distance traversed by the cycle during testing, input means for deriving at least one signal indicative of a predetermined physiological parameter of the subject, a clock source for deriving a timing signal during testing of the cyclist, computer means responsive to the first, second, predetermined physiological parameter and timing signals for calculating deriving a signal indicative of physical activity of the cyclist being tested, and indicator means responsive to the physical activity signal.

4,434,802

BLOOD COLLECTION UNIT

Francois Rilliet, Geneva, Switzerland, assignor to Dematex Development & Investment Establishment, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 233,168, Feb. 10, 1981, abandoned. This application Jul. 22, 1982, Ser. No. 400,711
Claims priority, application European Pat. Off., Jan. 21, 1982, 82200074
Int. Cl.³ A61B *5/14*
U.S. Cl. 128—764 **17 Claims**

1. A blood-collection unit for use in connection with a tubular needle-holder carrying a double-ended hollow needle extending coaxially within the holder, the unit comprising:

a transparent primary tube having first and second open ends and a narrow bore having a diameter larger than the outside diameter of the needle, said needle extending into said bore;

a transparent secondary tube of considerably larger diameter than the primary tube and considerably greater volumetric capacity than the primary tube, the secondary tube having at least one open end;

the narrow bore of the primary tube having a diameter which is significantly closer to the diameter of the needle bore than to the inner diameter of the secondary tube, the difference of the primary tube narrow bore diameter and the needle bore diameter being such that when blood enters the primary tube from the needle a peripheral lateral attraction is produced on the blood flux which comes to fully occupy the primary tube narrow bore, the length



of the primary tube being at least 2D+l where D is the inner diameter of the secondary tube and l is the length of the needle which is penetrable in the primary tube;

a stopper having a skirt sealably fitting over and around an open end of one of the two tubes and sealing membrane closing the end of the tube;

means concentrically connecting the primary and secondary tubes whereby at least one open end of the primary tube is enclosed in the secondary tube, the unit forming a closed communicating space for the collection of blood and said open end of the primary tube having a free passageway such that a complete blood suspension including liquid and solid phases can pass from one tube to the other.

4,434,803

DEVICE FOR FOETAL BLOOD SAMPLING IN UTERO

Philippe Jeanty, Ecaussinnes, Belgium, assignor to Laboratoires Biotrol S.A., Paris, France

Filed Aug. 5, 1981, Ser. No. 290,321
Claims priority, application France, Aug. 6, 1980, 80 17416
Int. Cl.³ A61B *6/00, 10/00*
U.S. Cl. 128—770 **4 Claims**



1. A device for sampling blood from the umbilical cord of a foetus in utero, said device comprising:

(a) two cannula-forming tubes fixed to each other along their lengths, said cannula-forming tubes having outer dimensions suitable for passing through a mother's uterus to reach a foetus in the uterus and having proximal ends which, in use, are adjacent to the user and distal ends which, in use, are adjacent the umbilical cord;

(b) a stem sized and shaped to fit slidably in one of said cannula-forming tubes, said stem having a distal end terminating in a resilient hook which is sized and shaped to catch the umbilical cord of a foetus in utero, said stem being sized and shaped so that, when it is inserted in said one of said cannula-forming tubes in use, the proximal end of said stem extends outwardly of the proximal end of said one of said cannula-forming tubes for manipulation by the user and the distal end of said stem extends outwardly of the distal end of said one of said cannula-forming tubes in position to hold the umbilical cord in position for sampling;

(c) a hollow needle sized and shaped to fit slidably in the other of said cannula-forming tubes, said hollow needle having a sharp distal end and being sized and shaped so that, when it is inserted in said other of said cannula-forming tubes in use, the proximal end of said hollow needle extends outwardly of the proximal end of said other of said cannula-forming tubes for manipulation by the user and the distal end of said hollow needle extends outwardly from the distal end of said other of said cannula-forming tubes in position to puncture an umbilical cord being held by the resilient hook at the distal end of said stem;

(d) a trocar sized and shaped to fit slidably in said one of said cannula-forming tubes, said trocar having a sharp distal end; and

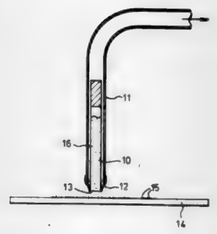
(e) means to secure said trocar in said one of said cannula-forming tubes with the distal end of said trocar extending forwardly of the distal end of said one of said cannula-forming tubes.

4,434,804

SMOKING ARTICLE

Anthony J. N. Bolt, and Brian C. Chard, both of Bristol, England, assignors to Imperial Group Limited, Bristol, England

Filed Jun. 9, 1981, Ser. No. 271,986
Claims priority, application United Kingdom, Jun. 21, 1980, 8020405
Int. Cl.³ A24B *3/12*
U.S. Cl. 131—309 **6 Claims**



1. A method of introducing a quantity of solid particulate flavor material having a particle size in the range 3–25 micron into the tobacco rod of a ready-made cigarette or cigar, the method comprising entraining the particulate material in a stream of air to form a cloud of the particulate material, and causing the cloud of particles to enter and pass along the tobacco rod from the light-up end to the mouth end so as to provide a concentration of particulate material in the tobacco rod that is greater at either end of said rod than between its ends.

4,434,805

APPLICATOR FOR APPLYING GLUE TO A TRAVELLING STREAM OF TIPPING PAPER

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

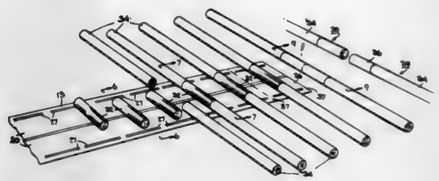
Division of Ser. No. 163,065, Jun. 26, 1980, Pat. No. 4,361,156. This application Jun. 30, 1982, Ser. No. 393,537
Int. Cl.³ A24D *1/04, 3/00, 3/04*
U.S. Cl. 131—362 **7 Claims**

1. A filter cigarette construction comprising

a tobacco column;

a filter at one end of said tobacco column; and

a strip of tipping paper circumferentially disposed about said tobacco column and said filter, said strip having a layer of glue thereon for securing said strip to said tobacco column



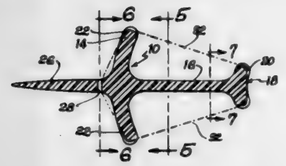
and said filter and auxiliary means within said layer for securing said strip to said tobacco column.

4,434,806

DENTAL FLOSS HOLDER

James M. Givens, 4929 Collwood Blvd., C-5, San Diego, Calif. 92115

Filed Jun. 7, 1982, Ser. No. 385,988
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—91 **1 Claim**



1. A dental floss holder comprising:

(a) a crossbar defining a pair of oppositely directed lateral arms;

(b) a central stem extending generally orthogonally from generally centrally of said crossbar to a terminus;

(c) a corridor defined in the end of each of said arms and another corridor defined in said terminus for entraining a length of dental floss therethrough such that two lengths span between respective lateral arms and said terminus;

(d) a tie-down integral with and proximate to said crossbar to tie the ends of length of floss the intermediate portions of which are passed tautly through said corridors;

(e) said lateral arms extending out well beyond the lateral extent of said terminus such that said two lengths of floss converge together in one direction such that when said strands are engaged between teeth and the respective upper and lower jaws and said holder is reciprocated in a direction axial of said stem, said two strands saw up and down between the teeth;

(f) said lateral arms, stem, terminus, and tiedown being unitary such that said holder is a one-piece unit;

(g) said tie-down comprising an apertured spindle extended from the crossbar opposite the direction of said stem to permit tying down floss through the aperture in said spindle, such that said apertured spindle defines said tie-down;

(h) said spindle being tapered to a point to define a toothpick-projection, and

(i) said entire holder being symmetrically extended about the axis of said spindle whereby said holder is easily spinnable to encourage the nervous twiddling thereof by the owner; and,

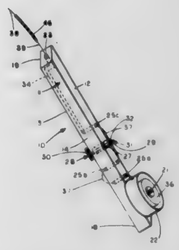
(j) said lateral arms being resilient and bowed toward said terminal to impart a positive elasticity into said holder and positively tension said two lengths.

4,434,807

DENTAL FLOSSING AID

Joseph E. Huskey, P.O. Box 476, Copperhill, Tenn. 37317

Filed Sep. 21, 1981, Ser. No. 304,116
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 R **7 Claims**



1. A dental flossing device, comprising:

a floss mounting assembly including means for holding a supply of dental floss;

an elongated extension member attached to and protruding from said mounting assembly;

tensioning means associated with said extension member for developing tension in a length of dental floss drawn from the floss supply held at said mounting assembly when the floss is drawn along a floss path from the floss supply through said tensioning means along the length of said extension member toward the outermost end of said extension member, said tensioning means including a plurality of floss accepting bores formed in said extension member and spaced apart from one another along said extension member, each said floss accepting bore extending through said extension member at an angle to the longitudinal axis of the extension member;

floss advancing means for overcoming the tension of said tensioning means to facilitate withdrawing additional lengths of dental floss from the supply of dental floss held at said floss mounting assembly, said floss advancing means including a first floss engaging member movably mounted on said extension member to engage the length of floss at a point in the floss path between adjacent one of said floss accepting bores, whereby movement of said floss engaging member increases the length of the floss path to be followed by the length of floss.

4,434,808

ANTI-SKID DEVICE FOR A CANE, CRUTCH, OR THE LIKE

Mark G. Burak, 6045 Fifth Ave. South, Minneapolis, Minn. 55419

Filed Jun. 18, 1982, Ser. No. 389,646
Int. Cl.³ A45B *9/04*; A61H *3/02*
U.S. Cl. 135—80 **13 Claims**

1. Anti-skid device for a cane, crutch, or the like having a bottom end and a hand hold member, comprising, in combination: a non-skid member; means for movably mounting the non-skid member between a first, raised non-engaged position and a second, lowered surface engaging position and allowing the non-skid member to rotate about a vertical axis generally parallel to but spaced from the cane, with the non-skid member having a removed portion for partially surrounding the lower portion of the cane and defining a first abutment portion and a second abutment portion located on opposite sides of the lower end portion of the cane; means formed on the non-skid member for contacting the surface in a non-skid manner, with the non-skid member being rotatable about the vertical axis between a first position wherein the first abutment portion abuts with a side of the lower end portion of the cane and a second position wherein the second abutment portion abuts with the opposite

side of the lower end portion of the cane to insure that the surface contacting means engages with the surface even though the cane is at an angle to the surface and to aid in knocking off any surface residue such as snow or ice from the



non-skid member; means for biasing the non-skid member in one of the first or second raised or lowered positions; and means for moving the non-skid member against the bias of the biasing means to the other of its first and second raised or lowered positions.

4,434,809

PIPE COUPLING

John I. F. Rogstadius, Sidensvansvägen 6, Älvsjö, Sweden

PCT No. PCT/SE80/00308, § 371 Date Jul. 15, 1981, § 102(e) Date Jul. 15, 1981, PCT Pub. No. WO81/01737, PCT Pub. Date Jun. 25, 1981

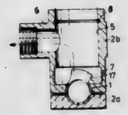
PCT Filed Dec. 1, 1980, Ser. No. 285,103

Claims priority, application Sweden, Dec. 6, 1979, 7910060

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—318 **7 Claims**





1. A pipe coupling for connecting a branch pipe to a feed-pipe, comprising coupling parts sealingly embracing the feed-pipe, a cylindrical guide passageway in one of the coupling parts having an axis radial to said feed-pipe, a piston sealingly inserted in the guide passageway for rotation about said axis and provided at its inner end with a knife-shaped cutting-up member and formed with a passageway for flow connection between the feed-pipe and the branch pipe connected to the coupling part, so that in assembled position of the coupling parts a portion of the feed-pipe radially intersects the guide passageway, characterized in that the knife-shaped member of the piston is offset to one side of the axis and is located within said passageway alongside said intersecting portion of the feed-pipe, and the cutting edge of the knife-shaped member extends in one direction longitudinally of said piston from a point alongside said pipe to at least to the same level as the shell surface of said feed-pipe portion located fartherest inwardly in the guide passageway, so that upon rotation of the piston without any axial translation, said knife-shaped member passes from one side of the feed-pipe to the other and cuts up at least a first hole in the feed pipe.

4,434,810

BI-DIRECTIONAL PRESSURE RELIEF VALVE

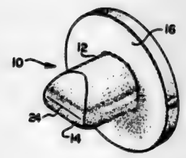
Gordon E. Atkinson, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

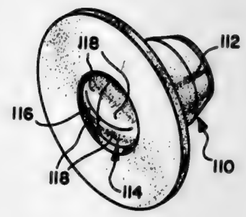
Continuation-in-part of Ser. No. 168,981, Jul. 14, 1980, Pat. No. 4,341,239. This application May 24, 1982, Ser. No. 380,971

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ F16K *17/18*

U.S. Cl. 137—493 **14 Claims**





1. A bi-directional pressure relief valve comprising:

a substantially cylindrical main body portion having a central longitudinal axis and defining a flow path through said valve;

said cylindrical main body portion terminating at one end thereof in a lip portion;

said lip portion having a curved contour about an axis of curvature extending substantially perpendicularly to and intersecting said central longitudinal axis;

said lip portion having a linear contour perpendicular to said central longitudinal axis such that said lip portion is radially asymmetrical about said central longitudinal axis;

at least one normally closed slit formed in said lip portion; and

said main body and lip portions being formed of elastomeric material such that said slit opens to permit flow through said lip portion in a forward direction at or above a first predetermined pressure level, closes to check flow through said lip portion at pressures between said first pressure level and a second predetermined pressure level, and said lip portion collapses, thereby opening said slit and permitting reverse flow through said lip portion at reverse flow pressures greater than said second pressure level.

4,434,811

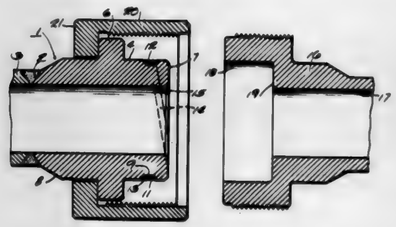
COUPLING SEAL AND METHOD OF ASSEMBLY

Ian G. Murdoch, Longview, Tex., assignor to The Oilgear Company, Milwaukee, Wis.

Filed Jul. 28, 1982, Ser. No. 402,561

Int. Cl.³ F16J *9/12*

U.S. Cl. 137—515 **6 Claims**



1. An assembly of operatively flow-through members detachably secured together comprising a body member having a bore and a pin member having a cylindrical shaped lead end fitted in said bore;

said pin member having an annular slot in the cylindrical surface of said lead end, a spiral groove in the cylindrical surface of said lead end that extends from an end of said lead end to said annular slot, said spiral groove having a depth approximating but not greater than the depth of said annular slot; and said spiral groove makes an angle of not more than 10 degrees with said annular slot;

sealing means between said body member and said pin disposed in said annular slot, said sealing means comprising a pair of back up rings and an O-ring, one of said backup rings is made of very rigid material, said one of said back up rings is cut through transversely thereof to provide an end for introducing said one of said back up rings into said spiral groove and threading it into said annular slot, said other of said back up rings abutting said one of said back up rings and said O-ring.

4,434,812

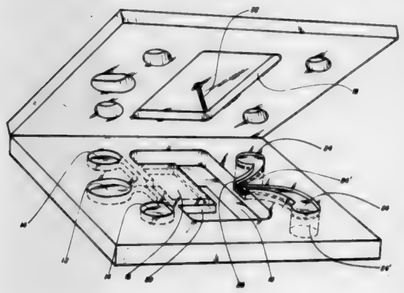
FLUIDIC GAIN CHANGER

Robert L. Woods, Arlington, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1983, Ser. No. 486,134

Int. Cl.³ F15C *3/00, 1/08*

U.S. Cl. 137—829 **6 Claims**



1. A fluidic gain changer comprising:

a planar fluidic amplifier, having a power jet and means for deflecting within a plane the fluidic jet from said power jet;

a pair of complementary fluidic receivers downstream from said planar fluidic amplifier, each of said pair of complementary fluidic receivers being offset symmetrically above and below said plane; and

means for deflecting the fluidic jet from said planar fluidic amplifier in a direction perpendicular to said plane to linearly vary the gain between said pair of complementary fluidic receivers in a complementary manner.

4,434,813

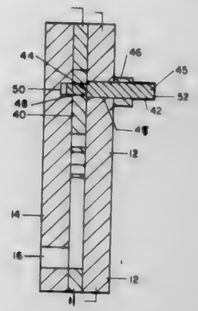
LAMINAR PROPORTIONAL AMPLIFIER AND LAMINAR JET ANGULAR RATE SENSOR WITH ROTATING SPLITTER FOR NULL ADJUSTMENT

George Mon, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 19, 1981, Ser. No. 323,146

Int. Cl.³ F15C *3/00*

U.S. Cl. 137—829 **8 Claims**



1. An apparatus comprising:

input means having a fluid supply means;

a fluid supply nozzle to supply fluid to a laminar flow proportional amplifier;

a plurality of fluid outputs;

control nozzle means to control fluid flow through said amplifier from said fluid supply nozzle to said fluid outputs, wherein said control nozzle means acts directly on said fluid to proportionally control said fluid output;

a flow splitter means to proportionally divide the fluid flow flowing from said fluid supply nozzle to said fluid outputs, said flow splitter being positioned rotatable and externally adjustable to split the flow between said outputs in order to apportion the fluid flow between the outputs; and

means to externally rotate said flow splitter means to effect a null offset.

4,434,814

THROUGH FAULT PRESSURE FILTER FOR FAULT PRESSURE RELAY

Gerald O. Usry, Rome, Ga., assignor to General Electric Company, N.Y.

Division of Ser. No. 858,966, Dec. 9, 1977, Pat. No. 4,338,969. This application Mar. 8, 1982, Ser. No. 355,940

Int. Cl.³ F15D *1/02*

U.S. Cl. 138—44 **4 Claims**

1. A through-fault pressure filter for attenuating sinusoidal pressure variations in liquid-filled electrical apparatus comprising:

a disc-shaped member of liquid impervious material having a pair of first and second opposing surfaces and a plurality of periodic pressure attenuating passages through said

disc, said passages having a cumulative cross-sectional area and cumulative length corresponding to a single



theoretical passage having a ratio of length to diameter of from 10 to 1 to 40 to 1.

4,434,815

PIPEWORK

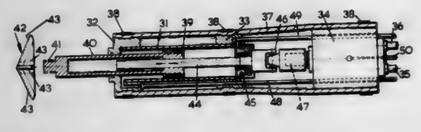
Thomas Flaherty, Altrincham, and Richard H. Price, Sale, both of England, assignors to John Kennedy (Civil Engineering) Limited, Manchester, England

Filed Apr. 22, 1982, Ser. No. 370,750

Claims priority, application United Kingdom, Apr. 23, 1981, 8112547; Jul. 1, 1981, 8120319

Int. Cl.³ F16L *55/18*

U.S. Cl. 138—97 **6 Claims**



1. A cutting apparatus for insertion into a branch pipe to cut an aperture in a liner located within a main pipe with which the branch pipe communicates, the apparatus comprising:

a body;

a cutting device supported by the body;

rotating means for rotating said cutting device, said rotating means being mounted with said body thereby preventing relative axial motion between said rotating means and said body;

a clamping member mounted with said body, said clamping member substantially surrounding said body and extending over the substantial length of said body;

means for actuating said clamping member so that it presses against the inside of the branch pipe in order to hold said body and said rotating means locked with respect to such branch pipe;

means for advancing said cutting device relative to said body; and

said rotating means including a motor which is articulated to said body.

4,434,816

SERVICE LINE INTERIOR BY-PASS FITTING

Bernard A. Di Giovanni, 96 Davis Ave., Hauppauge, N.Y. 11787, and Francisco J. Ciminiello, 21 Victor La., Woodbury, L.I., N.Y. 11797

Division of Ser. No. 955,990, Oct. 30, 1978, abandoned. This application Aug. 27, 1980, Ser. No. 181,671

Int. Cl.³ F16L *55/18*

U.S. Cl. 138—109 **6 Claims**

1. A fitting for a blind liner assembly for service pipes, with the fitting having fixed attachment to one end of the liner wherein the improvement comprises:

(a) a hollow adapter having an externally threaded boss extending axially from one side thereof and of a diameter less than said adapter,

(b) an annular shoulder extending between the different diameters of said adapter and said boss and facing away from said boss,

(c) a first sealing gasket mounted on said adapter adjacent to said shoulder,

(d) a hollow compression head having one end of a diameter equal to said adapter and internally threaded so as to be threaded upon said boss to radially expand the same about said shoulder,

(e) said compression head having its opposite end provided



with an externally threaded boss of a diameter equal to said threaded boss provided by said adapter,

(f) said compression head providing a second annular shoulder extending between the different diameters of its ends,

(g) a second gasket mounted on said annular shoulder provided by said compression head, and

(h) a compression nut internally threaded so as to be threaded upon said threaded boss of said compression head to radially expand the same about said shoulder provided by said compression head.

4,434,817

EDGE YARN CLAMP FOR A WEAVING MACHINE

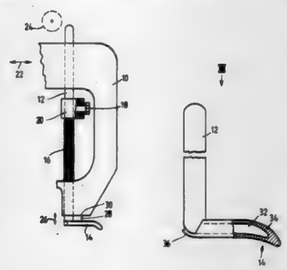
Walter Gruber, Constance, Fed. Rep. of Germany, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 29, 1981, Ser. No. 335,453

Claims priority, application Switzerland, Feb. 12, 1981, 149/81

Int. Cl.³ D03D *47/00*

U.S. Cl. 139—429 **4 Claims**



1. An edge yarn clamp for a weaving machine comprising

at least one spring-biased reciprocally mounted clamping jaw having a foot, and

a push-on resilient shoe slidably mounted on said foot and having a clamping cap engaged against a rearward part of said foot.

4,434,818

WIRE FEEDING AND WIRE FORMING DEVICE FOR PAPER CLIP MAKING MACHINE

Jaw S. Yeh, Taipei, Taiwan, assignor to Shu-Chang Chen, Taipei Hsieng, Taiwan

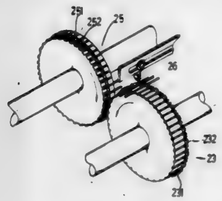
Filed Aug. 27, 1982, Ser. No. 412,181

Int. Cl.³ B21F *45/16*

U.S. Cl. 140—82 **5 Claims**

5. An apparatus used for making paper clips downstream of a cutting machine, comprising, continuous belt means for receiving and advancing cut wires provided with pieces of

magnet at regular intervals for attracting and arraying cut wires, continuous chain means provided downstream of said belt means with one end of the conveying path thereof overlapping said belt means, said chain means including regularly spaced apart catching projections thereon for taking the cut wires from said belt means, first wheel means overlappingly provided downstream of said chain means and having regularly spaced catching teeth and first grooves at the same spaced apart intervals as said catching teeth, idler wheel means cooperative with said chain means to provide elevation in the path of said chain means to allow the cut wires to coincide with said catching teeth and said first grooves, said chain means leaving the cut wires with said first grooves after passing over said idler wheel means, second wheel means in contact with said first means, having second grooves at the same spaced apart intervals as said first grooves and a piece of second magnet in each said second groove, said first and second grooves coinciding each other and said second magnet elements attracting the cut wires from said first wheel at the points of coinciding, said second wheel means feeding the cut wires with a proper orientation of the cut wires, three annular members which are spaced apart and mounted for rotation on the same axis provided downstream of said second wheel means, each of said annular members having a plurality of forming die member on the rim thereof for receiving cut wires from said second wheel means, each of said die member having magnet elements for attracting the cut wires, each of said die members of each said annular member being axially aligned with each of said die members of other said annular members for simultaneously receiving a cut wire, three segmented ring members of different lengths provided, in a fixed position relative to said annular member, along the circumferences of corresonding said annular members with clearances provided therebetween similar to the diameter of the cut wire, ramming means provided at two sides of said annular member assembly adapted to exert bending forces on cut wires in the direction parallel to the axis of said annular member, said die members intermittently rising from the rim of said annular member to cooperate with said ramming means to bend the cut wires about said segmented ring members.





4,434,819

COIL FORMING MACHINE

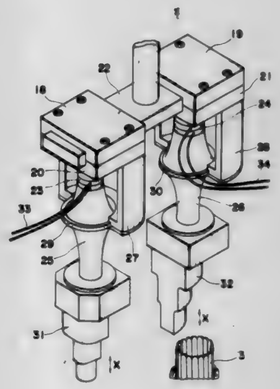
Tadashi Kubota, Katano; Tokuhito Hamane, Hirakata, and Masaaki Tasai, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

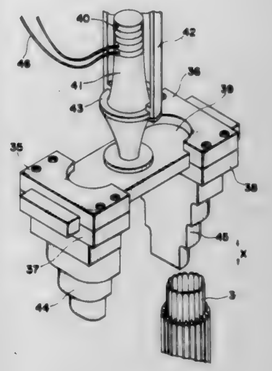
Filed Nov. 27, 1981, Ser. No. 325,119

Claims priority, application Japan, Dec. 3, 1980, 55-171228

Int. Cl.³ B21F *3/00*

U.S. Cl. 140—92.1 **3 Claims**





1. A coil forming machine which comprises:

a carrier means;

a high frequency energy generator means mounted on said carrier means for generating a high frequency vibration;

an amplitude transducer means connected to said generator for increasing the mechanical vibrations generated by the high frequency energy generator means;

a former assembly connected to said transducer means and around which a wire is to be wound to form a coil;

a flier mounted adjacent said former assembly for winding the wire around the former assembly to form the coil thereon; and

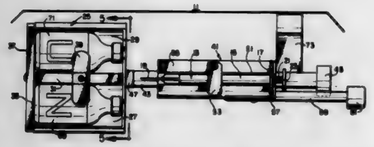
a coil receiving jig located adjacent said former assembly for supporting the coil thereon after such coil has been transferred from the former assembly.

4,434,820

SYRINGE LOADER AND METHOD

John P. Glass, Cava Industries, 79 La Grange Ave., Essington, Pa. 19029

Filed May 5, 1982, Ser. No. 374,946
Int. Cl.³ B65B *3/12*
U.S. Cl. 141—2 **11 Claims**



10. A method of loading a syringe with a correct dosage, comprising

opening the forward end of a bottle cradle by turning a forward bottle retainer into vertical position on a bottle cradle having left and right-hand seats for two bottles,

opening the top of a bottle cradle by turning an upper bottle retainer into a position parallel to a separator between the two bottle seats,

inserting a bottle into the left-hand seat and inserting another bottle into the right-hand seat,

closing the forward end of the bottle cradle by turning the forward bottle retainer into horizontal position in contact with the bottom of the bottles,

closing the top of the bottle cradle by turning the upper bottle retainer transversely into contact with the side wall of the bottles,

taking a syringe having a barrel with a collar at its rear end and a needle extending from its front end and having a plunger inside the barrel with a flange at the rear end of the plunger,

placing the syringe in a syringe groove in a syringe carriage and seating the syringe barrel collar in a collar slot in the syringe carriage,

holding the syringe in the groove by rotating a syringe retainer across the top of the groove,

filling the syringe with an amount of air equal to a desired total dosage by pulling the syringe plunger back to contact the dosage stop,

inserting the syringe needle into the left-hand bottle by turning the syringe carriage counterclockwise and moving the carriage forwardly as far as it will go into contact with a needle spacer mounted on the bottom cradle and inserting a carriage aligner pin in a right-hand aligner hole of the bottle cradle,

rotating the dosage gage across the syringe plunger, injecting into the left-hand bottle an amount of air equal to the required left-hand bottle ingredient dosage by pushing the syringe plunger forwardly to bring the bottom flange of the syringe plunger into contact with the dosage gage,

withdrawing the syringe needle from the left-hand bottle by pulling the carriage back into contact with the carriage stop,

inserting the needle into the right-hand bottle by turning the carriage clockwise and moving it forwardly as far as it will go into contact with the bottle cradle needle spacer and inserting the carriage aligner pin into the left-hand aligner hole of the bottle cradle,

freeing the syringe plunger to move forwardly by removing the dosage gage from across the plunger by rotating the dosage gage clockwise,

injecting into the right-hand bottle an amount of air equal to the required dosage of right-hand bottle ingredients by pushing the plunger forwardly as far as it will go,

loading the syringe with slightly more right-hand bottle ingredients than required by holding the carriage against the cradle and pulling the plunger back so that its bottom flange clears the dosage gage,

moving the dosage gage across the plunger by rotating it counterclockwise,

obtaining the correct dosage of right-hand bottle ingredients by injecting back into the right-hand bottle the overdosage amount of right-hand bottle ingredients by pushing the plunger forwardly so that its bottom flange contacts the dosage gage,

withdrawing the needle from the right-hand bottle by pulling the carriage back away from the bottle cradle until the carriage contacts the carriage stop,

inserting the needle into the left-hand bottle by turning the carriage counterclockwise and moving the carriage forwardly as far as it will go into contact with the needle spacer and inserting the syringe carrier aligner pin in the right-hand aligner hole of the bottle cradle,

removing the dosage gage from across the plunger by rotating the dosage gage clockwise,

loading the syringe with the correct dosage of left-hand bottle ingredients by holding the syringe carriage in place and pulling the plunger back into contact with the dosage stop,

removing the needle from the left-hand bottle by pulling the syringe carriage back to the carriage stop,

whereby the syringe has been loaded with the proper dosages of left and right-hand bottle ingredients,

freeing the syringe from the carriage by moving the syringe retainer from across the syringe barrel,

and carefully removing the syringe from the carriage without changing the setting of the plunger or touching the needle,

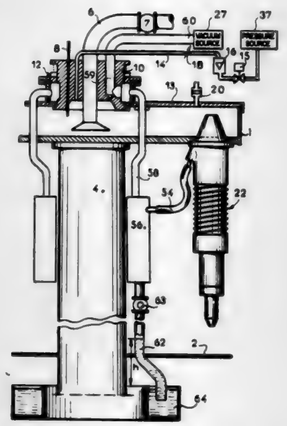
whereby the syringe is ready for injecting the correct dosage.

4,434,821

DEVICE FOR THE AUTOMATIC FILLING OF BOTTLES AND INSTALLATION CONTAINING SAME

Marcel A. Bacroix, Chalon sur Saone, France, assignor to Service de Propriete Indust. Centre de Recherches de Pont a Mousson, Paris, France

Filed Nov. 3, 1981, Ser. No. 317,731
Claims Priority, application France, Nov. 6, 1980, 8023699
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—44 **11 Claims**



1. A device for automatically filling bottles, comprising:

A. a vat for holding a supply of a liquid to be filled into said bottles;

B. a liquid reservoir;

C. a vacuum source; and

D. at least one filling device, each said filling device comprising:

(1) a filling tube having an upper end in communication with the interior of said vat, said tube filling being vertically movable with respect to said vat;

(2) a vent tube axially traversing said filling tube and having a lower end below a lower end of said filling tube;

(3) a valve for opening and closing said filling tube in response to a position of a bottle to be filled;

(4) an air-liquid separator reservoir disposed below said vat and above said liquid reservoir, an upper end of said separator reservoir being communicated with an upper end of said vent tube and with said vacuum source; and

(5) a pipe connecting a lower end of said separator reservoir to said liquid reservoir, wherein:

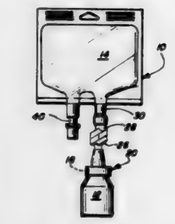
a lowered pressure created by said vacuum source in said air-liquid separator reservoir pulls liquid from said liquid reservoir into said pipe for a predetermined height.

4,434,822

SYSTEM FOR THE STERILE MIXING OF MATERIALS

David Bellamy, Kenilworth, and Dale A. Smith, Barrington, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 91,688, Nov. 5, 1979, abandoned. This application Oct. 27, 1981, Ser. No. 315,399
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—98 **3 Claims**



1. In a fluid transfer assembly usable to interconnect and establish a fluid path between two locations,

the transfer assembly being of the type having a first fluid conduit including at one end thereof a first connector member having first meltable wall means for normally sealing said first connector member, and thus said associated conduit end, from the exterior,

a second fluid conduit including at one end thereof a second connector member having second meltable wall means for normally sealing said second connector, and thus said associated conduit end from the exterior, and

means for coupling said first and second connector means together with said first wall means held in facing contact with said second wall means while the coupled assembly is exposed to a source of radiant energy, the improvement comprising

one of said wall means includes a material which absorbs a sufficient quantity of the radiant energy so that, solely in response to its exposure to the radiant energy source, said one wall means is heated to its melting point to open said associated connector member, and

the other one of said wall means consists essentially of a material which, while said one wall means is being heated to its melting point by exposure to the radiant energy source, does not absorb a sufficient quantity of the radiant energy to melt said other wall means but which does conduct a sufficient quantity of heat energy from said one wall means during melting thereof to concurrently heat said other wall means to its melting point to also open said associated connector member,

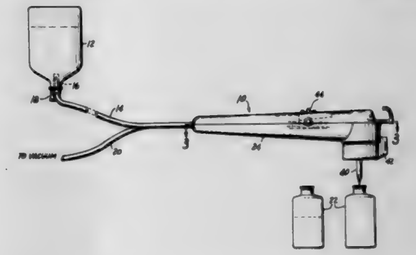
whereby, during exposure of the coupled assembly to the radiant energy source, both of said wall means are opened by melting, one in response to thermal radiation and the other in response to thermal conduction, to open a fluid path between said fluid conduits.

4,434,823

LIQUID TRANSFER DEVICE

Sydney Hudspith, La Crescenta, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 29, 1981, Ser. No. 278,549
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—329 **16 Claims**



10. A liquid transfer device comprising:

a body having a wall defining and enclosing a cavity within the body;

two hollow conduits extending from the cavity through the wall with at least a portion of each conduit projecting outwardly from the body;

two lengths of resilient tubing wherein the proximal end of each tubing extends through the body and is attached in fluid flow communication to one of the hollow conduits within the cavity of the body;

two inclined planes commonly inclined, spaced apart and fastened within the cavity of the body;

two compression blocks secured to the body within the cavity, spaced apart and spaced from the inclined planes;

a roller clamp having at least a portion thereof extending through the wall of the body, which roller clamp is adapted to travel between the inclined planes and compression blocks having two cams which engage the inclined planes and the two resilient tubes extending through the body such that travel of the roller along the inclined planes exerts a compressive force simultaneously against the resilient tubes; and

a double lumen needle releasably attached to the body and engaging the outwardly projecting portions of the two hollow conduits such that each lumen within the needle is in fluid flow communication with a resilient tube extending through the body.

4,434,824

ROUTER GUIDE

Patrick D. Bussey, R.R. 2, Fremont, Nebr. 68025

Filed Apr. 16, 1982, Ser. No. 369,147
Int. Cl.³ B27C *5/10*
U.S. Cl. 144—134 D **1 Claim**

1. A router guide for a router including a flat base portion, having a power shaft extending downwardly therefrom, comprising,

first and second spaced-apart elongated supports adapted to be removably positioned on spaced-apart supporting surfaces, said supports having opposite ends, each of said supports having upstanding posts at the opposite ends thereof,

a collar selectively vertically adjustably mounted on each of said posts and having horizontally disposed openings formed therein adjacent the upper ends thereof,

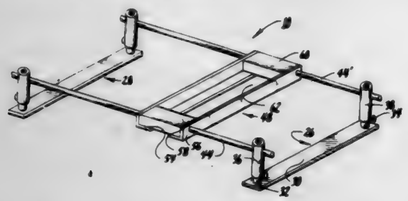
a first elongated support member having its opposite ends

selectively longitudinally adjustably received in the openings in the collars at one end of said first support and one end of said second support and extending therebetween,

a second elongated support member having its opposite ends selectively longitudinally adjustably received in the openings in the collars at the other end of said first support and the other end of said second support and extending therebetween,

means for removably maintaining said support members in said collars,

an elongated router track slidably mounted on said first and second support members and extending therebetween whereby said track may be selectively moved between said first and second supports,



said outer track comprising elongated spaced-apart angle members having a horizontal portion and a vertical portion,

said horizontal portions of said angle members being spaced from each other to define an elongated opening therebetween adapted to receive the router power shaft extending downwardly therethrough,

said vertical portions of said angle members being spaced apart approximately the width of the router base to limit lateral movement of the router with respect to the router track,

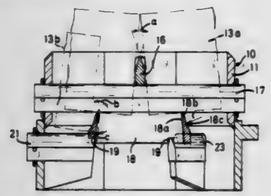
said angle members adapted to receive and support the router base thereon whereby the router may be slidably supported thereon for movement between the ends thereof.

4,434,825

FIREWOOD CLEAVING APPARATUS

Thomas H. Blomqvist, Sälgvägen 5, S-59300 Västervik, and Thorbjörn G. Lidström, Ramnegärde PL 521, S-59400 Gamleby, both of Sweden

Filed Dec. 1, 1981, Ser. No. 326,394
Claims priority, application Sweden, Dec. 12, 1980, 8008770
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **5 Claims**



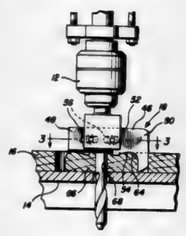
1. In a firewood cleaving apparatus having a number of cleaving irons and a ram for pushing a wood block against the cleaving irons in order to divide the block into billets, the cleaving irons being arranged with their sharp edges in a number of axially spaced planes disposed at right angles to the direction of motion of the ram, a first cleaving iron having its sharp edge disposed in a first plane to begin the division of the block into two parts or halves and a second cleaving iron having its sharp edge disposed in a second plane to begin the division of the respective part of the two parts into further two parts or quarter parts so as to obtain four parts of the block; the improvement in which there is disposed in a third plane the sharp edge of an annular cleaving iron concentric with the central axis of the apparatus and adapted to begin the division of each quarter part into a radially inner part and a radially outer part, and there are disposed in a fourth plane the sharp edges of four radially directed cleaving irons adapted to begin division of each of only the radially outer parts but not the radially inner parts, into two further halves, whereby the block of wood thus is subdivided into twelve billets during its passage through the apparatus.

4,434,826

WOOD WHEEL CUTTER

Floyd J. Whitaker, 310 Arbolado Dr., Frankfort, Ky. 40601

Filed Mar. 16, 1982, Ser. No. 358,716
Int. Cl.³ B27G *13/00*
U.S. Cl. 144—219 **6 Claims**



1. A tool for cutting a wheel from a thick panel of stock material, said tool including a head having structure for support of said head from a driven rotary support assembly for rotation therewith about an axis in predetermined position relative to said head, said head including an outwardly opening bit receiving bore formed therein coaxial with said axis, a slot formed through said head and opening laterally outwardly thereof in the direction in which said bore opens with the slot intersecting said bore and one side of said slot disposed substantially on a diameter of said bore, a drill bit having opposite base and work engaging ends and its base end snugley receivable in said bore, said base end including a flat thereon positionable substantially coplanar with said one side of said slot and with the remaining portion of said base end disposed to said one side of said slot, an elongated cutting plate snugly lengthwise slidably received in said slot with one end portion of said plate projecting outwardly of a corresponding end of said slot, one longitudinal edge of said plate being substantially seated in said slot and the other longitudinal edge portion of said one end portion of said plate including a beveled cutting edge extending therealong and contoured according to the desired radial cross-sectional shape of one side of the wheel to be cut and also the outer peripheral contour of said wheel, and clamp means clamping the portions of said head disposed on opposite sides of said slot against said plate and the flat equipped base end of said drill bit between the opposing side surface of said plate and the remote portions of said bore, the end portion of said beveled cutting edge remote from said slot including a terminal end portion generally paralleling said axis and extending outwardly of said other longitudinal edge portion of said plate.

4,434,827

TREE FELLER-BUNCHER

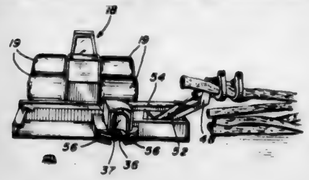
Gordon S. Franklin, 88 17th Ave., Deux Montagnes, Quebec, Canada J7R 3Z2

Filed Jun. 7, 1982, Ser. No. 385,724
Int. Cl.³ A01G *23/08*; B27B *5/02*
U.S. Cl. 144—336 **5 Claims**

1. A tree feller-buncher comprising a support means, means

to mount said support means on a vehicle, a carriage mounted on said support means for movement back and forth on said support means in a substantially horizontal direction substantially perpendicular to the direction of movement of said vehicle to and from one end of said support means, means to fell a tree moveably mounted on said carriage for movement between an inactive position and a cutoff position, an arm support means pivotally mounted on said carriage, grapple means mounted on said arm support means, for movement of said grapple means between a first engaging and clamping position for receiving a tree in said direction of movement of said vehicle, said tree being in its normally vertical attitude, and for clamping said tree to be cut by said means to fell, and a second position for depositing outwardly of said carriage to release a cut tree in a substantially horizontal attitude and at about a right angle to the side of a path along which said vehicle moves, and thereby to lay said cut tree on said side of said path and at about right angle thereof.

5. A method of felling and bunching trees with a vehicle having mounted on its front end a support means extending substantially horizontally, and substantially perpendicular to the direction of advance of said vehicle and a carriage mounted on said support means for movement back and forth along said support means perpendicular to said direction, said carriage



having means to fell a tree, moveably mounted thereon for movement between an inactive and a cutoff position as well as an arm support means pivotally mounted thereon, grapple means mounted on said arm support means for movement of said grapple means for engaging in said direction of advance of said vehicle, a tree in its normally vertical attitude position to a depositing position, to release a cut tree in a substantially horizontal attitude, said method comprising laterally positioning said carriage means on said support means and advancing said vehicle into a position wherein said means to fell can cut a tree and said grapple means by said direction of advance of said vehicle can engage said tree, clamping said tree in its normally vertical attitude, with said grapple means, and cutting said tree, maintaining said clamping of said cut tree in said grapple means while moving said carriage to one end of said support means and moving said arm support means and thereby displacing said grapple means outwardly of said carriage in the direction of said one end, supporting said tree, to said depositing position and thereby displacing said cut tree from its normally vertical attitude to a substantially horizontal attitude, and when said carriage is at said one end and said support means is outwardly of said carriage releasing said grapple means to deposit said tree, at about a right angle to the side of a path along which said vehicle moves and repeating said operations to fell further trees.

4,434,828

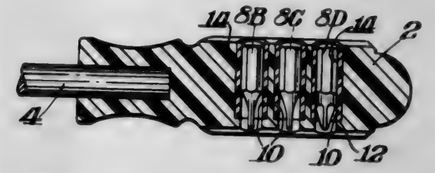
SCREWDRIVER WITH HANDLE FOR STORING BITS

Richard Trincia, 149 Dunsinane Rd., New Castle, Del. 19720

Filed Dec. 20, 1982, Ser. No. 450,985
Int. Cl.³ B25G *1/08*
U.S. Cl. 145—62 **5 Claims**

1. A screwdriver having a shaft and a handle and magnetic holding means mounted at the work end of said shaft for removably holding metal screwdriver bits, and storage means in said handle for storing a plurality of bits, said storage means comprising:

a plurality of through-going bores in said handle transversely oriented with respect to the longitudinal axis of said screwdriver, in which bores resilient sleeves are affixed which, when affixed in said handle bores, have internal diameters slightly smaller than the bits stored therein, said bits being stored within said sleeves such that the longitudinal axes of the bits are also transversely oriented with respect to the longitudinal axis of the screwdriver, i.e. the long axes of the stored bits correspond to the long axes of the through-going bores and sleeves,



the handle of said screwdriver having a width substantially equal to the length of said bits,

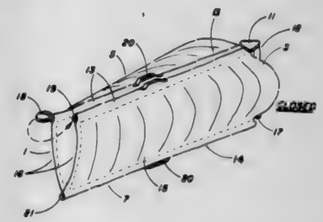
whereby, when one of the stored bits is desired for use, the user removes the bit previously used from said magnetic holding means and presses said bit into the opening of the sleeve holding the desired bit, thereby freeing the desired bit and, at the same time, storing the bit previously used, following which the desired bit is affixed to said magnetic means.

4,434,829

COLLAPSIBLE YARD PAN

Robert L. Barnard, 8924 Cheltonham Pl., Annandale, Va. 22003

Filed Aug. 26, 1981, Ser. No. 296,567
Int. Cl.³ B65B *67/12*; B65D *77/00*
U.S. Cl. 150—49 **4 Claims**



1. A collapsible, portable yard pan container comprising a filling end and a closed end opposite and spaced apart from the filling end; a filling side extending from the filling end to the closed end and a closed side opposite and spaced apart from the filling side; pliable sheet enclosure means secured to frame means, the sheet enclosure means of a strength sufficient for holding material to be contained and extending about the closed end and about the closed side and adapted to form a pocket-like enclosure, the frame means comprising a plurality of elongated, relatively rigid, rod-like primary filling side frame means extending along the filling side and defining a filling side opening, the primary side frame means being of sufficient rigidity to prevent unwanted casual closing of the container; the primary side frame means converging at a mutual hinge point at the closed end and adapted to allow the container to open completely along the filling side and to close along the filling side and to open and to close along the filling end, and adapted to allow the container to be held in a vertical position with the filling side closed and the filling end open for loading or emptying material therein; the filling end, when in an open position with the filling side also open, lying in a substantially flat plane to facilitate loading and when in a

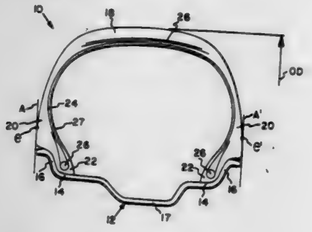
closed position securably containing any material therein and additionally comprising a plurality of elongated open end frame means converging at a second hinge point and adapted to facilitate filling of the yard pan and at least one elongated bottom frame member extending between the second hinge point and a third hinge point at the closed end.

4,434,830

PNEUMATIC TIRE

Samuel P. Landers, Uniontown, and William E. Egan, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 9, 1983, Ser. No. 473,840
Int. Cl.³ B60C *11/00, 13/00, 15/00*
U.S. Cl. 152—209 R **15 Claims**



1. A pneumatic tire that is mountable upon a correspondingly sized rim having retaining flanges at each axial end, thereof, said tire comprising a circumferentially extending tread portion with a sidewall extending radially inwardly from each axial edge of the tread portion to an annular bead portion that is disposed adjacent to a retaining flange when the tire is mounted upon said rim; a radial cross section of said tire having an external contour on each side of its mid-circumferential plane, when the tire is mounted upon said rim and inflated to its design inflation pressure but not subjected to a load, exclusive of indicia on the sidewalls or traction elements of the tread, that extends continuously axially outwardly and radially inwardly from said mid-circumferential plane to the point of intersection of an external surface of each sidewall with a radially extending line that is tangent to the axially outer edge of the respective retaining flange of said rim, said tread portion having a first radius of curvature and a portion of the external contour of each sidewall at least approximating the curvature of an ellipse, and no point on the external surface of either sidewall is disposed axially outwardly of the axially outer edge of the respective retaining flange of said rim a distance greater than two percent of the axial distance between the axially outer edges of the retaining flanges of said rim.

2. A pneumatic tire suitable for mounting upon a rim having a pair of axially spaced apart annular mounting surfaces, with a predetermined nominal diameter, and a retaining flange adjacent to each mounting surface, said tire comprising a circumferentially extending tread portion having a maximum outside diameter at the mid-circumferential plane of the tire and a sidewall extending radially inwardly from each axial edge of the tread portion, a radial cross-section of the portion of said tire that is disposed radially outwardly of the retaining flanges of said rim when said tire is mounted upon said rim and inflated to its design inflation pressure, but not subjected to a load, having an external contour on each side of said mid-circumferential plane, exclusive of indicia on the sidewalls or traction elements of said tread portion, from said maximum outside diameter to the intersection of an external surface of each sidewall with a radially extending line that is tangent to the axially outer edge of the respective retaining flange that is substantially determined by the steps of:

(a) drawing a first pair of straight lines, A and A^1, both of which are perpendicular to the axis of rotation of said tire, line A being tangent to the axially outer extent of one of the retaining flanges of said rim and line A^1 being tangent to the axially outer extent of the other retaining flange of said rim;

(b) drawing a straight line B which is perpendicular to the axis of rotation of said tire and is located midway between lines A and A^1;

(c) striking a circle arc having a predetermined radius r with its center located on line B radially inwardly of the mounting surfaces of said rim, said circle arc being symmetrical with respect to line B and intersecting line B at a point located radially outwardly of said mounting surfaces a distance equal to one-half of the difference between the maximum outside diameter of the tread portion of the tire and the nominal diameter of said mounting surfaces, the end of said circle are located on the same side of line B as line A being point c, and the end of said circle are located on the same side of line B as line A^1 being point c^1, the axial distance between points c and c^1 being no more than one-half of the axial distance between lines A and A^1; and

(d) locating a pair of points e,e^1, one of the points e of said pair being located on line A and the other point e^1 of said pair being located on line A^1, said pair of points e,e^1 being located radially outwardly of the radially outermost extent of said retaining flanges a distance no greater than one-half of the difference between the maximum outside diameter of the tread portion of the tire and the nominal diameter of mounting surfaces of the rim; and

(e) drawing a pair of curved lines each of which at least approximates the curvature of an ellipse, one of said curved lines being tangent to the circle arc at point c and intersecting line A at point e, and the other curved line being tangent to the circle arc at point c^1 and intersecting line A^1 at point e^1;

and no point on the external surface of either sidewall is disposed axially outwardly of the axially outer extent of the respective retaining flange of said rim a distance greater than two percent of the axial distance between the axially outer extents of the retaining flanges of said rim.

4,434,831

TUBELESS TIRES FOR TRUCKS AND BUSES

Yukihisa Uemura, Nara, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 170,873, Jul. 21, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 344,075
Claims priority, application Japan, Jul. 19, 1979, 54-91941
Int. Cl.³ B60C *9/08, 15/00, 15/06*
U.S. Cl. 152—356 R **3 Claims**



1. A tubeless tire for mounting on a wheel rim of a large vehicle such as a truck or a bus, said tire comprising:

a carcass structure including a plurality of radial carcass plies of polyester cords having a fineness of no less than 4500 denier and rubber material surrounding said plies;

said carcass structure including circumferentially extending beads adapted to abut a wheel rim to mount thereon said carcass structure;

each said bead including a radially inner bead base for sealingly contacting the wheel rim when said carcass structure is mounted thereon, a bead core at a position radially outwardly of said bead base, and an inner-bead portion extending radially from said bead core to said bead base;

all of said plies except one said ply having end portions turned up around said bead core and extending through said inner-bead portion, and said one ply having an end portion terminating adjacent said bead core without being turned up around said bead core and without extending through said inner-bead portion; and

said inner-bead portion having a compressibility, between an unmounted condition and a condition mounted on a wheel rim, of 15 to 20% of the total thickness of said inner-bead portion including said ply end portions and rubber material therearound and of 30 to 35% of the thickness of said rubber material only.

4,434,832

ROOM TEMPERATURE CURABLE TIRE PATCH

Russell W. Koch, Hartville, and William W. Barbin, Massillon, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 21, 1983, Ser. No. 477,452
Int. Cl.³ B60C *21/00*
U.S. Cl. 152—370 **19 Claims**



1. A repaired elastomer article, comprising:

the elastomer article, said article having a hollow therein;

a cured gum rubber disposed within the said hollow and filling it thereby;

a treating agent applied to the inner surface of said article immediately surrounding said filled hollow, said treating agent selected from the group consisting of: N-halohydantoins, N-haloamides, N-haloimides, and combinations thereof;

an amine curable polymer or prepolymer applied over the treated surface of said article; and

an elastomeric patch positioned over said polymer or prepolymer;

wherein said polymer of prepolymer is cured in situ at room temperature wherein said patch has a coating of the treating agent on its inner surface; and

wherein said elastomer article is cured and unsaturated.

10. A process for repairing an elastomer article having a hollow therein, comprising:

filling the hollow with a gum rubber;

curing said gum rubber;

applying a treating agent to the inner surface of the article immediately surrounding the filled hollow;

applying a quantity of amine curable polymer or prepolymer over the treated surface of said article;

applying a treating agent to the surface of an elastomeric patch and positioning said patch over said polymer or prepolymer; and

curing said polymer or prepolymer at room temperature;

wherein said treating agent is selected from the group consisting of: N-halohydantoins, N-haloamines, N-haloimides, and combinations thereof.

4,434,833

AXLE WHEEL END ASSEMBLY

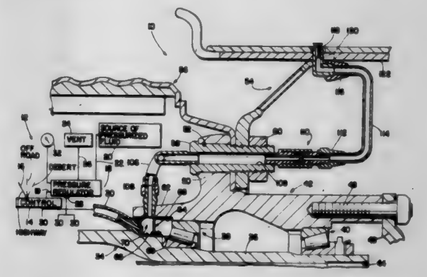
Glen E. Swanson, Euclid, and Larry A. Garstick, Chardon, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 21, 1982, Ser. No. 370,656
Int. Cl.³ B60C *29/00*
U.S. Cl. 152—417 **10 Claims**

1. An axle wheel end assembly for vehicles having an on-board tire inflation system, said wheel end assembly comprising:

an axle housing having an outboard generally annular spindle end,

a wheel hub surrounding said spindle end and rotatably supported thereon by bearing means, said hub including a radially outwardly extending flange portion adapted to mount a wheel assembly including a tire rim, said hub including an annular sleeve portion extending axially inboardly from said bearing means and having an annular inner diameter surface concentric with and spaced radially from the axially aligned outer diameter surface of said spindle to define an inboardly opening annular space therebetween,



a rotary seal assembly received entirely in said inboardly opening annular space, said rotary seal assembly defining a sealed annular fluid chamber located entirely in said annular space,

inlet means to said chamber for fluidly connecting said chamber to said inflation system,

outlet means from said chamber for connection to a fluid conduit,

fluid conduit means connected at one end to said outlet means and at the other end thereof to an aperture in said tire rim located outboard of said hub flange portion, said conduit extending generally axially through said hub flange portion, and

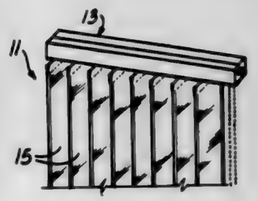
a manually operable open/close valve located in said conduit outboard of said hub flange portion for selectively isolating the interior of said tire rim from said chamber.

4,434,834

VERTICAL LOUVER SYSTEM

John P. Ennes, 43761 Mandarin Dr., Hemet, Calif. 92343

Filed Aug. 17, 1981, Ser. No. 293,447
Int. Cl.³ E06B *9/26*
U.S. Cl. 160—166 A **9 Claims**



1. A vertical louver system comprising:

a plurality of vertical louvers;

means for mounting said vertical louvers on said vertical louver supporting system;

at least one of said vertical louvers including a channel and a panel-like insert;

said channel including first and second flanges and a web

joining said flanges, said first flange and said web defining a first elongated receiving zone and said second flange and said web defining a second elongated receiving zone;

said insert being curved in transverse cross section when the insert is in an unrestrained condition;

said insert being resilient and having sufficient rigidity such that it has a tendency to bend into a relatively sharp curve about a transverse axis with snap action in response to bending loads about such axis and said channel tending to bend about a tranverse axis into a more gradual curve in response to bending loads about such axis whereby said insert and said channel have different bending characteristics when bent separately about a transverse axis;

said insert being received in said first and second receiving zones; and

means for attaching said insert to said channel.

4,434,835

METHOD OF MAKING A BLADE AEROFOIL FOR A GAS TURBINE ENGINE

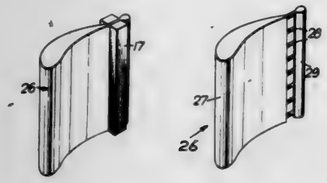
Kenneth Willgoose, Findern, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 9, 1982, Ser. No. 356,506

Claims priority, application United Kingdom, Mar. 25, 1981, 8109314

Int. Cl.³ B22C *7/02, 9/04*

U.S. Cl. 164—34 **7 Claims**



1. A method of making a blade aerofoil for a gas turbine engine, the aerofoil having cooling air exit passages therein, including the steps of forming a disposable piece having holes therein of the same form as the exit passages, locating the disposable piece in a die having a first internal cavity portion of the shape of the cavity within the blade aerofoil with which the passages will communicate, a second cavity portion in which fits the disposable piece, and a third cavity portion providing a channel interconnecting the free ends of the holes in the disposable piece, injecting ceramic slurry to fill the three cavity portions, hardening or allowing the ceramic to harden, separating the parts of the die, removing the ceramic core thus formed from the die, removing the disposable piece from the ceramic, placing the ceramic core thus formed in a further multi-part die having a main cavity whose form is substantially that of the external surface of the blade aerofoil and a secondary cavity within which the ceramic form from said channel portions fits, injecting wax to fill the main cavity within the die, allowing the wax to solidify, removing the wax pattern thus formed from the die, forming a shell of ceramic on the outer surface of the pattern, the ceramic shell engaging with the channel portion of the ceramic core, removing the wax from the ceramic shell, pouring molten metal into the shell mould thus formed, allowing the metal to solidify and removing the ceramic mould and the core from the cast blade aerofoil.

4,434,836

CONTINUOUS CASTING APPARATUS

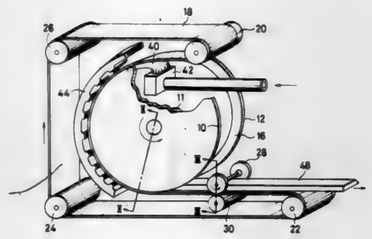
Eisuke Niiyama, and Hideyo Kodama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,916

Claims priority, application Japan, Jun. 4, 1980, 55-74347

Int. Cl.³ B22D *11/00*

U.S. Cl. 164—429 **23 Claims**



1. Continuous casting apparatus for the production of cast metal strip comprising:

a pair of casting wheels mounted for coaxially rotating around a horizontal axis with a certain distance between respective opposing faces of said wheels;

an endless metallic belt which is trained semi-annularly around circumferential surfaces of respective wheels and mounted for moving synchronously with said wheels to define a mold space therebetween;

cooling means for spraying cooling fluid around said belt from a side opposite to said wheels; and

nozzle means arranged to inject molten metal upwardly into an upper portion of the mold space, thereby the molten metal injected is continuously solidified while radially pressed against the bottom of the mold space by centrifugal force and withdrawn from the mold space as a cast metal strip with the rotational movement of said wheels and belt.

4,434,837

PROCESS AND APPARATUS FOR MAKING THIXOTROPIC METAL SLURRIES

Joseph Winter, New Haven; Jonathan A. Dantzig, Hamden, and Derek E. Tyler, Cheshire, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 15,250, Feb. 26, 1979, abandoned. This application Feb. 24, 1983, Ser. No. 469,486

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—468 **23 Claims**

1. In an apparatus for continuously or semi-continuously forming a semi-solid thixotropic alloy slurry, said slurry comprising throughout its cross section degenerate dendrite primary solid particles in a surrounding matrix of molten metal, said apparatus comprising:

means for containing molten metal, said containing means having a desired cross section;

means for controllably cooling said molten metal in said containing means; and

means for mixing said molten metal for shearing dendrites formed in a solidification zone as said molten metal is cooled for forming said slurry;

the improvement wherein said mixing means comprises:

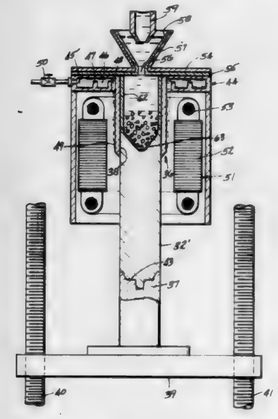
a single two pole stator for generating a non-zero rotating magnetic field which moves transversely of a longitudinal axis of said containing means across the entirety of said cross section of said containing means and over said entire solidification zone, said moving magnetic field providing a magnetomotive stirring force directed tangentially of said containing means for causing said molten metal and slurry to rotate in said containing means, said magnetomotive force being of sufficient magnitude to provide said shearing of said dendrites, said magnetomotive force providing a shear rate of at least 500 sec.$^{-1}$.

14. In a process for continuously or semi-continuously forming a semi-solid thixotropic alloy slurry, said slurry comprising throughout its cross section degenerate dendrite primary solid particles in a surrounding matrix of molten metal, said process comprising:

providing a means for containing molten metal having a desired cross section;

controllably cooling said molten metal in said containing means; and

mixing said contained molten metal for shearing dendrites

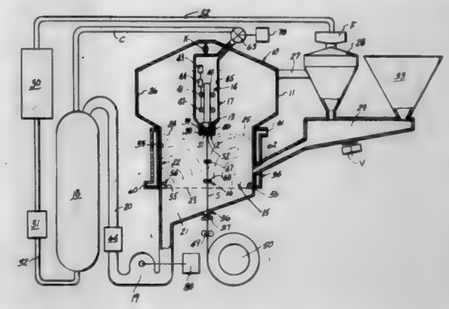


formed in a solidification zone as said molten metal is cooled for forming said slurry;

the improvement wherein said mixing step comprises:

generating solely with a two pole stator a non-zero rotating magnetic field which moves transversely of a longitudinal axis of said containing means across the entirety of said cross section of said containing means and over said entire solidification zone, said moving magnetic field providing a magnetomotive stirring force directed tangentially of said containing means for causing said molten metal and slurry to rotate in said containing means, said magnetomotive force being of sufficient magnitude to provide said shearing of said dendrites, said magnetomotive force providing a shear rate of at least 500 sec.$^{-1}$.

enhancing a flow of said fluidized bed particles toward said casting zone, said flow enhancing step comprising generating sound waves moving toward said casting zone which act on said particles to enhance said flow.



4,434,839

PROCESS FOR PRODUCING METALLIC SLURRIES

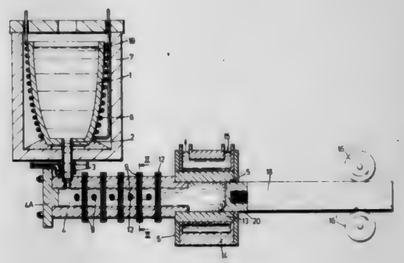
Alfredo Vogel, Malvern, England, assignor to Secretary of State in her Brtannic Majesty's Government of the United Kingdom, London, England

Continuation of Ser. No. 96,414, Nov. 21, 1979, abandoned. This application Aug. 12, 1982, Ser. No. 407,481

Claims priority, application United Kingdom, Nov. 27, 1978, 46197/78

Int. Cl.³ B22D *11/124, 11/10, 1/00*

U.S. Cl. 164—485 **5 Claims**



1. A process for forming shaped articles from a metallic material comprising flowing molten metallic material as a confined stream; heat insulating the external surface of the confined stream; abstracting heat evenly from within and across the body of the heat insulated stream by interrupting the flow of the stream by a plurality of static stirring elements positioned transverse to the stream to produce turbulent flow within the stream, at least one of said stirring elements being a thermal conductor for cooling the interrupted flow such that a solid phase is precipitated from said stream in the form of particles having a fine equiaxed grain structure; and casting the stream outflowing from said static stirring elements such that it solidifies with a substantially non-dendritic microstructure.

4,434,838

APPARATUS AND PROCESS FOR COOLING AND SOLIDIFYING CONTINUOUS OR SEMI-CONTINUOUSLY CAST MATERIAL

Peter E. Sevier, Woodbridge, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jun. 10, 1981, Ser. No. 272,132

Int. Cl.³ B22D *11/124*

U.S. Cl. 164—485 **26 Claims**

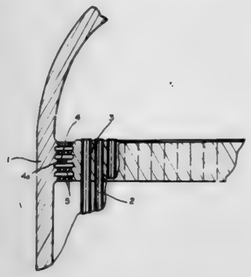
1. A process for casting material comprising: pouring said material into a casting means defining a casting zone, and applying a fluidized bed of particles to cool said material; the improvement comprising:

4,434,840

EXPANSION JOINT FOR REACTOR OR HEAT EXCHANGER

Janek S. Porowski, Pittsburgh; William J. O'Donnell, Bethel Park; and Ray G. Fasiczka, Mckeesport, all of Pa., assignors to O'Donnell & Associates Inc., Pittsburgh, Pa.

Filed Jul. 24, 1981, Ser. No. 286,687
Int. Cl.³ F28F *7/00*
U.S. Cl. 165—82 **2 Claims**



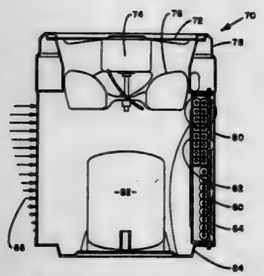
1. Apparatus for use as a heat exchanger, reactor, or steam boiler, comprising a substantially cylindrical metallic shell, a metallic tube sheet inside of and at right angles to said shell and supporting the end portion of a plurality of tubes extending in parallel with the axis of said shell, and a multi-ply expansion joint of thin straight metallic layers extending entirely within said shell and in the plane of said tube sheet at right angles to said shell in closely spaced parallel relationship and connecting the perimeter of said tube sheet to said shell by welds, whereby the layers of said joint may bend only substantially parallel to accommodate only axial displacements between the shell and tubes without excessive stresses in the tube sheet.

4,434,841

VARIABLY SPACED WRAPPED FIN HEAT EXCHANGER

Dale Jackson, Clay, and John R. McManus, Marcellus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,378
Int. Cl.³ F24B *1/06*
U.S. Cl. 165—125 **11 Claims**



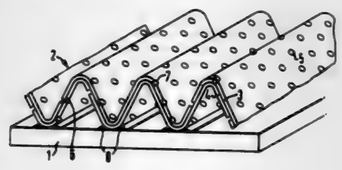
1. A wrapped fin heat exchanger made from wrapped fin tubing including a tubular fluid conducting portion and a fin portion wrapped about the tubular portion to promote heat transfer to a gas flowing thereover, said heat exchanger having the gas forced through the heat exchanger by a fan mounted adjacent one end of the heat exchanger, said fan acting to draw varying volumes of air through the heat exchanger at different locations depending upon the distance between the location and the fan, which comprises a plurality of loops of tubing arranged to form the heat exchanger, a first portion of said loops being spaced closely to impede the flow of the gas therethrough and a second portion of said loops being sped less closely than the first portion, said portions being located with the first portion being in a higher gas volume location and the second portion being in a lower gas volume location.

4,434,842

PLATE FIN HEAT EXCHANGER

Edward J. Gregory, Wolverhampton, England, assignor to IMI Marston Limited, Wolverhampton, England

Filed Nov. 24, 1981, Ser. No. 324,568
Claims priority, application United Kingdom, Dec. 2, 1980, 8038639
Int. Cl.³ F28F *3/06, 13/00*
U.S. Cl. 165—133 **16 Claims**



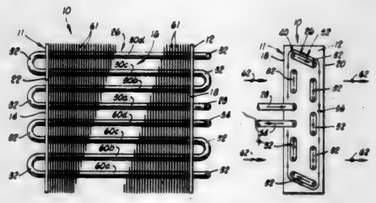
1. A plate fin heat exchanger for boiling a liquid, the heat exchanger having a plurality of stacked spaced plates of fluid impervious material adapted and arranged to be heated in use on the first side and to have a liquid to be vaporized on the second side, the second sides of adjacent plates facing each other, there being located between adjacent second sides at least one fin extending, in use, into the liquid to be vaporized, the fin being a separate item formed separately from the plates, wherein the improvement comprises the fin being of at least two layers at least in part having a small gap therebetween, one at least of the outer layers having a plurality of holes therein.

4,434,843

HEAT EXCHANGER APPARATUS

Arthur L. Alford, Oklahoma City, Okla., assignor to International Environmental Manufacturing Co., Oklahoma City, Okla.

Filed Apr. 17, 1978, Ser. No. 896,708
Int. Cl.³ F28F *1/32*
U.S. Cl. 165—150 **3 Claims**



1. In a heat pump apparatus in which a refrigerant is selectively passed in one direction and in an opposite direction through a heat exchanger having air passed therethrough, an improved heat exchanger comprising:

a frame having an air flow channel through which the air is passed; and

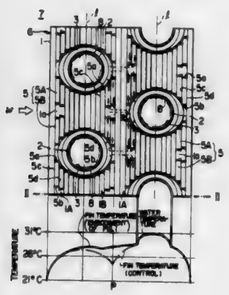
a heat exchange coil supported by the frame and forming a first coil row and at least one other coil row subsequent to the first coil row, the coil rows disposed in the air flow channel such that entering air first contacts the first coil row and then the subsequent coil row, the coil characterized as having a first end portion, a medial portion, and a second end portion, the first end portion and the second end portion substantially disposed in the first coil row such that the first end portion and the second end portion are each in a heat exchange relationship with air entering the air flow channel, and the medial portion substantially disposed in at least one coil row subsequent to the first coil row, one of the first and second end portions serving as the entering portion for the refrigerant flow, and the other one of the first and second end portions serving as a final heat conditioning stage for the exiting refrigerant.

4,434,844

CROSS-FIN COIL TYPE HEAT EXCHANGER

Katsumi Sakitani, Kawachinagano; Shigehiro Uemura, and Ryuzaburo Yajima, both of Sakai, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 4, 1981, Ser. No. 289,978
Claims priority, application Japan, May 15, 1981, 56-70724[U]; May 29, 1981, 56-82986; Jul. 16, 1981, 56-111770; Jul. 16, 1981, 56-111771
Int. Cl.³ F28F *1/32*
U.S. Cl. 165—151 **7 Claims**



1. A heat exchanger comprising:

fin units (6) each comprising a convoluted fin base plate (1) which is formed with a multiplicity of apertures (3) arranged parallel to the ridges of the convolutions in a plurality of rows with the apertures (3) of the adjacent rows being staggered, a multiplicity of slits (4) of a small width arranged parallel to a straight line l interconnecting the centers of the apertures (3) of the same row and substantially parallel to one another in a manner to surround the aperture (3) with no slits being formed in the vicinity of each aperture (3), and a multiplicity of louver type raised fins (5) formed by raising the material adjacent to one slit in such a manner that in each raised fin (5) two shorter sides (5*a* and 5*b*) on the side of the apertures (3) are connected to the fin base plate (1) and one of longer sides (5*c* and 5*d*) is held on the surface of the fin base plate (1); and

a multiplicity of heat exchange medium tubes (2) each inserted in the surfaces of apertures (3) of a plurality of said fin units (6) to provide a cross-fin coil;

wherein said raised fins (5) are successively formed without a base plate portion between the adjacent raised fins (5) and with each fin having a planar surface inclined with respect to the surface of the fin base plate (1);

wherein a current of air (w) is caused to flow between the fin units (6) of the cross-fin coil (7) in a direction substantially perpendicular to the slits (4), and the convolutions of each said fin base plate (1) are inclined with respect to the direction of flow of the air current (w) while said raised fins (5) are raised and inclined in a direction opposite to the direction of inclination of the convolutions of the fin base plate (1); and

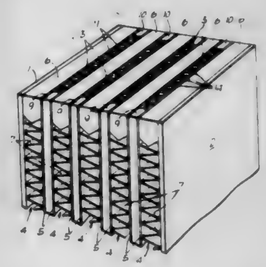
wherein said raised fins (5) except the raised fins (5) formed in each portion between the adjacent apertures (3) of each said row are each split into two raised fin members through a fin base plate portion (1*a*) in a direction perpendicular to the direction of flow of the air current (w), and no slits (4) are formed in the side portion (1*b*) of the adjacent heat exchanger medium tube (2) juxtaposed against the fin base plate portion (1*a*).

4,434,845

STACKED-PLATE HEAT EXCHANGER

Dieter C. Stoeb, Im Schönenbühl, CH-9050 Steinegg-Appenzell, Switzerland

Filed Feb. 8, 1982, Ser. No. 347,068
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3107010
Int. Cl.³ F28D *9/02*; F28F *3/06*
U.S. Cl. 165—153 **7 Claims**



3. A heat-exchanger sandwich construction for accommodating two fluids separately flowing in different directions, said construction comprising a plurality of like flat rectangular metal plates providing heat-exchange surfaces, and spacer means between adjacent plates and retaining said plates in spaced parallel relation; the spacer means between first and second successive plates of said plurality comprising a pair of parallel rail members along a first pair of opposed parallel edges of said first and second plates, thereby establishing a first-passage flow direction through said construction; the spacer means between said second and the third successive plates of said plurality comprising a longitudinally extruded metal plate that is characterized on both sides by spaced parallel grooves between longitudinal ridges, the longitudinal direction of the grooves and ridges being orthogonal to the first-passage flow direction, thereby establishing a second direction of flow orthogonal to said first direction and through said construction; the spacer means between similarly successive plates comprising further of said parallel rail members and further of said extruded metal plates in alternating succession, thereby establishing flows in said first and second directions in interlaced layers through said construction, so that each plate serves the respective fluid flows in their orthogonally related directions, and all rail members and ridges having bonded direct supporting contact with both of the adjacent plates which they space.

4,434,846

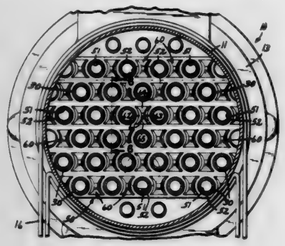
PATTERNED HEAT EXCHANGER FIN

James W. B. Lu, Greendale, Wis., assignor to McQuay Inc., Minneapolis, Minn.

Filed Apr. 6, 1981, Ser. No. 251,382
Int. Cl.³ F28D *7/00*; F28F *9/22*
U.S. Cl. 165—161 **6 Claims**

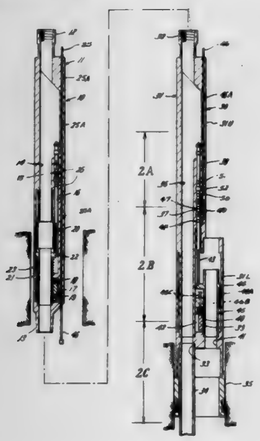
1. A heat exchanger, comprising:

a plurality of heat exchange tubes having a generally circular cross-section;
a shell;
means supporting the tubes in generally parallel relationship to one another within the shell to form a heat exchanger with a flow path for a first fluid within the tubes and a flow path for a second fluid within the shell around the tubes;
a plurality of fins positioned on the tubes to define flow paths therebetween for the second fluid, each fin comprising a member having a generally planar surface, the member



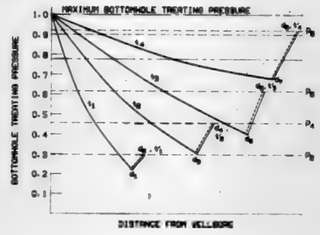
extending transversely of a plurality of tubes and having apertures through which the tubes pass, and having a plurality of patterns between adjacent tube apertures; and
said patterns each having a crest portion raised from the planar surface, a first pair of surfaces that slope from the crest portion, on opposite sides thereof, to the planar surface, said first pair of surfaces having arcuately shaped edges with an arc conforming to the arc of adjacent tube apertures, and a second pair of surfaces arcuately sloping downward from the crest portion and the edges of the first pair of surfaces to the planar surface adjacent tube apertures on either side of the pattern.

4,434,847
FLOW CONTROLLING APPARATUS
Gonzalo Vazquez, and Neil H. Akkerman, both of Houston, Tex., assignors to AVA International Corporation, Houston, Tex.
Filed Mar. 17, 1982, Ser. No. 358,127
Int. Cl.³ E21B *23/03, 34.14*
U.S. Cl. 166—117.5 **25 Claims**



1. Apparatus for use in controlling flow within a well bore, comprising a mandrel having a first bore therethrough adapted to be connected as part of a well tubing string, whereby it may be lowered with the string into the well bore, and a second bore therethrough parallel to the first bore for connection at its upper and lower ends with the space within the well bore about the tubing string, a closure member mounted on the mandrel for movement between positions opening and closing the second bore, means yieldably urging said closure member to closed position, said mandrel having a pocket therein to one side of the first bore and having one end opening to the first bore, a tool adapted to be run on a wire line through said tubing string and first bore into and out of the pocket, and means including fluid responsive means within said tool for moving the closure member from closed to open position.

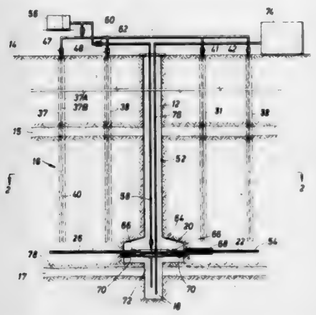
4,434,848
MAXIMIZING FRACTURE EXTENSION IN MASSIVE HYDRAULIC FRACTURING
Michael B. Smith, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.
Continuation of Ser. No. 168,829, Jul. 10, 1980, abandoned. This application Dec. 18, 1981, Ser. No. 332,026
Int. Cl.³ E21B *43/26, 47/06*
U.S. Cl. 166—250 **9 Claims**



1. A method for fracturing a subterranean formation, comprising:
(a) injecting a fracturing fluid into said formation under fracture extending conditions until the bottomhole treating pressure approaches a maximum bottomhole treating pressure for said formation;
(b) discontinuing said injection of said fracturing fluid for a period of time (t) to allow the bottomhole treating pressure and the pressure along the created fracture to equalize; and
(c) sequentially repeating steps (a) and (b) until the bottomhole treating pressure very nearly equals the maximum bottomhole treating pressure.

4,434,849
METHOD AND APPARATUS FOR RECOVERING HIGH VISCOSITY OILS
Joseph C. Allen, Bellaire, Tex., assignor to Heavy Oil Process, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 108,815, Dec. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 940,390, Sep., 1978, Pat. No. 4,257,650. This application Feb. 9, 1981, Ser. No. 232,987
Int. Cl.³ E21B *43/24, 47/00*
U.S. Cl. 166—252 **15 Claims**

1. A method of recovering oil from a subsurface earth formation in which formation a steam cap can form comprising:
establishing a shaft hole extending from the surface to said subsurface earth formation;
drilling a first plurality of boreholes radially from said shaft hole in a substantially horizontal plane within a lower portion of said formation, said first plurality of boreholes defining a blanketed zone;
drilling a second plurality of boreholes within the blanketed zone substantially vertically from said surface into said formation, said second plurality of boreholes extending to a depth above said first plurality of boreholes;
heating oil in said formation by injecting a heating fluid into one of said plurality of boreholes;
injecting steam into said second plurality of boreholes to form a gas cap; and



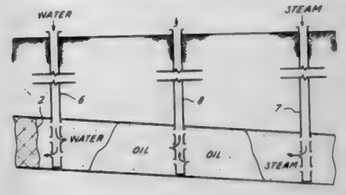
thereafter discontinuing injection of steam through said plurality of boreholes and injecting water such that said water is converted to steam to further provide for drive of oil by said gas cap towards said first plurality of boreholes.

4,434,850
METHOD FOR DEMULSIFICATION OF BITUMEN EMULSIONS USING POLYALKYLENE POLYAMINE SALTS
David R. McCoy, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Dec. 2, 1981, Ser. No. 326,456
Int. Cl.³ C10G *33/04;* E21B *43/24, 43/40*
U.S. Cl. 166—267 **4 Claims**

1. A process for recovering petroleum from O/W bitumen emulsions by demulsifying said emulsions by adding thereto demulsifiers comprising water soluble polyamine salts prepared by contacting poly(ethyleneimines) with organic or inorganic acids wherein the polyamine salts have a molecular weight from at least about 1,000 to the water solubility limit.
4. A process for recovering bitumen from a tar sand formation comprising
injecting into the tar sand a fluid containing hot water and/or steam in order to emulsify the bitumen in the tar sand,
recovering the emulsified bitumen,
demulsifying said emulsion by adding thereto demulsifiers comprising water soluble polyamine salts prepared by contacting polyamines with organic or inorganic acids wherein the polyamine salts have a molecular weight of at least 1,000,
converting the salts of the water soluble polyamines into inactive materials by adjustment of the pH of the aqueous phase of the broken emulsion,
reinjecting the aqeuous phase into a bitumen containing formation to recover additional bitumen.

4,434,851
METHOD FOR STEAM INJECTION IN STEEPLY DIPPING FORMATIONS
Stewart Haynes, Jr., and Donald S. Mims, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Continuation-in-part of Ser. No. 166,658, Jul. 7, 1980, abandoned. This application May 6, 1982, Ser. No. 375,515
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 **6 Claims**

1. A method for recovering petroleum from an inclined reservoir containing high viscosity petroleum comprising:
(a) injecting a thermal recovery fluid comprising steam vapor into a steam injection zone in the lower portion of the reservoir through a thermal recovery fluid injection well;
(b) injection cold water whose temperature is at least 75° F. (41.8° C.) below the temperature at which steam vapor



condenses to water liquid at formation pressure into a zone within the reservoir immediately adjacent the updip limit of the reservoir via a fluid injection well; and
(c) recovering petroleum from the formation via a production well located in a zone intermediate the wells of steps (a) and (b).

4,434,852
METHOD OF ENHANCED OIL RECOVERY EMPLOYING NITROGEN INJECTION
Thomas J. Morel; Stewart Haynes, Jr., and Jack H. Park, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Aug. 31, 1981, Ser. No. 297,805
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 **8 Claims**

1. A method for the recovery of oil from a subterranean oil reservoir having a dip of at least 10 degrees and penetrated by spaced injection and production systems, comprising:
(a) injecting into said reservoir via said injection system at a location up dip from said production system, a first fluid comprising a mixture of nitrogen and from 2.0 to 20.0 percent by volume light hydrocarbon at rate sufficient to produce a flow velocity in said reservoir which is less than a critical velocity, V_c, as defined by the relationship:

$$V_c = \frac{2.741\ \kappa\Delta\rho\ \text{Sin}\alpha}{\phi\Delta\mu}$$

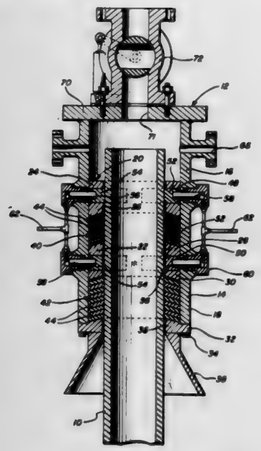
wherein:
V_c is the critical velocity in feet per day,
κ is the permeability of the reservoir in darcies,
ϕ is the fractional porosity of the reservoir $=\phi r(1-S_{wr}-S_{or})$,
ϕr is the porosity of the reservoir,
S_{wr} is the residual water saturation,
S_{or} is the residual oil saturation,
α is the dip angle of the reservoir in degrees,
$\Delta\rho$ is the density differential between the displaced, fluid and the displacing fluid in grams per cubic centimeter, and
$\Delta\mu$ is the viscosity differential between the displaced fluid and the displacing fluid in centipoises;
(b) thereafter, injecting into said reservoir via said injection system a predominantly nitrogen containing gas at a rate to produce a flow velocity which is also less than said critical velocity defined above and in an amount sufficient to strip previously injected light hydrocarbon from said reservoir oil to form a transition zone of conditional miscibility; and thereafter
(c) injecting a driving fluid into said reservoir via said injection system to drive said transition zone through said reservoir and displace oil to said production system and,
(d) recovering oil from said production system.

4,434,853

OIL WELL BLOW OUT CONTROL VALVE

Dale M. Bourgeois, Houma, La., assignor to Wayne Bourgeois and LeRoy Hebert, both of Houma, La., part interest to each

Filed Jun. 11, 1982, Ser. No. 387,510
Int. Cl.³ E21B 33/068
U.S. Cl. 166—285 13 Claims



10. The method of forming a fluid-tight seal between the upper end of a production tubing and the inner surfaces of a blow out control valve assembly cylindrical housing portion downwardly loosely telescoped over the upper end portion of the production tubing and wherein the cylindrical housing portion includes three axially spaced circumferential and radially inwardly projecting annular abutments sealingly and rigidly mounted therein, providing an annular axially compressible and radially expandable seal assembly between each pair of adjacent annular abutments, and introducing a fluent hardenable seal material under pressure into said cylindrical housing portion in an area thereof disposed intermediate said seal assemblies, whereby to pressurize said seal assemblies from adjacent sides thereof.

4,434,854

PRESSURE ACTUATED VENT ASSEMBLY FOR SLANTED WELLBORES

Roy R. Vann; George W. Ribble, and Flint R. George, all of Houston, Tex., assignors to Geo Vann, Inc., Houston, Tex.

Continuation of Ser. No. 166,547, Jul. 7, 1980, Pat. No. 4,330,039. This application May 14, 1982, Ser. No. 378,155
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ E21B 34/10, 43/117, 43/12
U.S. Cl. 166—386 10 Claims

1. A vent assembly in combination with a packer and perforating gun suspended on a tubing string into a cased borehole with an open axial passageway extending from the perforating gun to the surface for the lowering of a bar to detonate the perforating gun and for the flow of production fluids through the vent assembly to the surface, comprising:

a tubular body series connected in the tubing string and having a portion of the axial passageway extending therethrough;

a sleeve disposed on said body forming an annular chamber;

piston means received within said annular chamber;

ports through said body and piston means,

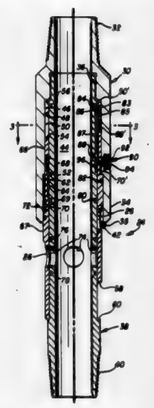
said piston means being movable between an open position where said ports allow fluid flow between said axial passageway and borehole and a closed position where fluid flow is prevented;

guide means disposed on said piston means for bringing said ports into registry in said open position; and

means communicating one portion of said piston means with said axial passageway and another portion of said piston means with the borehole whereby a sufficient pressure differential between said axial passageway and borehole will cause said piston means to move from said closed position to said open position.

7. In a cased borehole having a tubing string suspended therein, a packer located along the tubing string for closing the casing annulus, and a vent assembly series connected in the tubing string below the packer, the method comprising the steps of:

(1) providing the vent assembly with a ported tubular body, forming an annular chamber within the said body and



slidably mounting a ported sleeve within the annular chamber;

(2) closing the port through the body and thus the axial passageway of the tubular string to the flow of fluids from the casing annulus by sliding the ported sleeve to a closed position where the ports are nonaligned;

(3) lowering the tubing string, packer and vent assembly into the cased borehole in the closed position;

(4) effecting a pressure differential between the axial passageway of the tubing string and the casing annulus by elevating the pressure within the axial passageway; and

(5) using the pressure differential of step (4) to force the sleeve to slide into the open position where the ports are aligned to immediately open a flow path allowing the flow of fluids from the casing annulus, through the ports and axial passageway, and up to the surface.

4,434,855

SPRINKLER VALVE

George R. Given, Jr., Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1982, Ser. No. 363,692
Int. Cl.³ A62C 37/08
U.S. Cl. 169—37 3 Claims

1. A sensor controlled valve for a pressurized sprinkler system which allows the valve to be tested for flow without activating the sprinkler system, comprising:

a valve body;

an inlet in the body, said inlet introducing pressurized fluid to the valve;

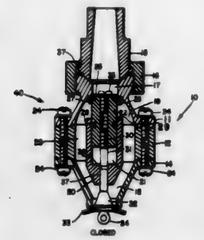
an outlet in the body;

a flow passage connecting the inlet and the outlet;

a cylinder mounted in the flow passage;

a piston mounted in the cylinder so as to form a fluid pressure chamber with the cylinder, the chamber adapted to receive a control fluid, and the pressure within said chamber being sensor controlled to allow the piston to open and close the inlet;

a stem mounted in the outlet extending through the cylinder and pressure chamber and connected to the piston for withdrawing the piston from the inlet;



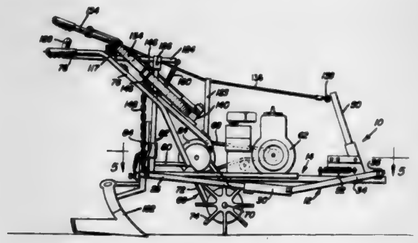
a stem extension provided to the stem such that the stem extension projects from the outlet outside of the valve body to allow the piston to be withdrawn from the inlet from a position external to the valve.

4,434,856

GARDEN PLOW WITH SUPPORT MEANS OPERATIVE TO INVERSELY ANGULARLY DISPLACE EARTHWORKING TOOL

John H. Crane, deceased, late of Heflin, Ala., and Foy Aline Crane, executrix, Rte. 3, Heflin, Ala. 36264

Filed Sep. 9, 1981, Ser. No. 300,492
Int. Cl.³ A01B 3/50; B62D 51/04
U.S. Cl. 172—256 2 Claims



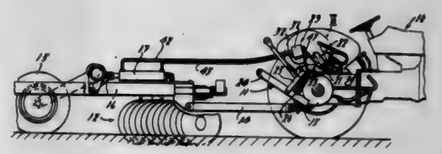
2. A garden plow including a longitudinal main frame and a longitudinal motor and drive frame, mounting means mounting said main frame from said motor and drive frame for oscillation about an upstanding axis spaced intermediate the opposite ends of said main frame, said motor and drive frame including motor driven ground-engageable support and drive means mounted thereon, means operative to releasably retain said main frame in predetermined angularly displaced position about said upstanding axis relative to said motor and drive frame, said main frame including support means for supporting earthworking tool means therefrom, said mounting means also including means for supporting said main frame from said motor and drive frame for oscillation about a horizontal central axis extending longitudinally of said motor and drive frame and angularly displaceable about said upstanding axis with said main frame relative to said motor and drive frame, said motor and drive frame including means operative to releasably retain said main frame in predetermined adjusted angularly displaced positions about said horizontal axis relative to said motor and drive frame, said support means for supporting earthworking tool means from said main frame including means for mounting said tool means from said main frame for angular displacement about a horizontal axis extending longitudinally of said main frame, and means operatively connected between said motor and drive frame and said earthworking tool means support means operative to inversely angularly displace said earthworking tool means support means relative to said main frame in response to angular displacement of said main frame relative to said motor and drive frame.

4,434,857

TRACTOR AND IMPLEMENT COUPLED THERETO WITH HYDRAULIC LIFT SYSTEM INCLUDING PHASING VALVE

Habil S. Basral, Port Huron, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 2, 1981, Ser. No. 317,353
Int. Cl.³ A01B 63/22
U.S. Cl. 172—328 4 Claims



2. In combination, a tractor and a soil working implement coupled thereto;

the tractor having at its rear end an implement hitch and a lift means including lift arm means carried on the tractor and operatively connected for raising and lowering said hitch;

the implement being coupled at one end to said hitch and at its other end being supported on height adjusting means;

the lift means and the height controlling means each including a hydraulic cylinder means to raise or lower, respectively, the hitch and the rear end of the implement;

a source of fluid under pressure;

a valve system comprising a plurality of valve means in communication with one another;

one of said valve means including an auxiliary services valve having a valve spool positionable in a first position for directing fluid from a fluid input passageway connected to the source of fluid to a first output passageway connected to a lift valve for controlling fluid flow to the lift means hydraulic cylinder;

a second one of said valve means including a phasing valve having a valve body and a valve spool including an actuating stem portion extending out of said valve body for automatically causing both cylinders to be restored to a predetermined initial position upon a full raise signal to the hydraulic lift means being initiated by the tractor operator; and

a lever member mounted adjacent the phasing valve spool for engagement therewith and operatively connected to linkage means mounted for engagement with a portion of said lift arm, movement of said lift arm to said full raise position causing said lift arm to engage said linkage means, which causes said lever member to engage said phasing valve spool stem portion, thus effecting movement of said phasing valve spool to a position permitting said cylinder restoration.

4,434,858

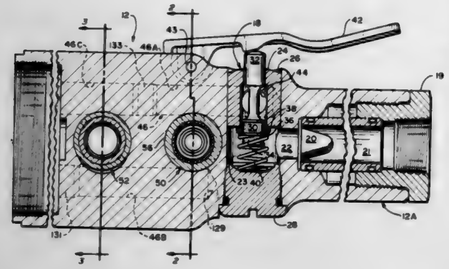
AIR TOOL WITH STALL TORQUE REGULATOR AND AIR BIASING MECHANISM

Hugh L. Whitehouse, Lyndhurst, Ohio, assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 18, 1982, Ser. No. 340,266
Int. Cl.³ B25B 23/14, 21/00; B23P 19/06
U.S. Cl. 173—12 13 Claims

1. An air tool comprising a housing having an air supply line

including a motor inlet passage and a valve chamber formed in the motor inlet passage, an air operated rotary motor in the housing having a normal free running no-load speed at a predetermined line pressure which decreases in speed as torque loading on the motor increases, a shut-off valve movable in the valve chamber between a normally open position and a closed position for shutting off air to the motor, a compartment being formed in the chamber at one end of the valve and directly communicating with an inlet to the motor for directing air under motor operating pressure against the valve for moving it toward said closed position, an air bias compartment being formed in th chamber at the opposite end of the shut-off valve and communicating with the air supply line upstream of the



shut-off valve chamber, the air bias compartment being connected to an air bleed passage to atmosphere, and adjustable valve means in the air bleed passage for selectively reducing the pressure in the air bias compartment, relative to a predetermined line pressure of the air supplied, for selective shut-off of air flow to the motor at a predetermined level of motor output as determined by the air pressure acting on the motor, and stall torqure regulator means in the air supply line upstream of the shut-off valve chamber, the stall torque regulator means being operable in response to fluid pressure acting on the motor for establishing said predetermined line pressure of the air supplied to the motor and to the air bias compartment of the shut-off valve chamber.

4,434,859

HAMMER DRILL FOR PERFORMING ROTARY DRILLING OR PERCUSSIVE DRILLING

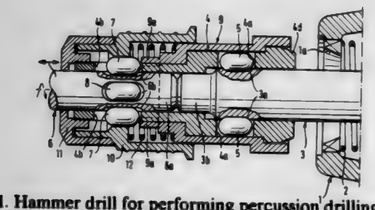
Gerhard Rumpp, Inning; Dieter Scholz, Unterpfaffenhofen, and Manfred Spieth, Martinsried, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jun. 25, 1982, Ser. No. 392,121

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1981, 3125454

Int. Cl.³ E02D *7/02*

U.S. Cl. 173—48 **9 Claims**



1. Hammer drill for performing percussion drilling or rotary drilling comprising a housing having a front end, a tool holder axially displaceably mounted relative to the front end of said housing and said tool holder having a front end and a rear end with the rear end disposed in supported contact with the front end of said housing when the hammer drill is arranged to perform rotary drilling, said tool holder including an axially extending retainer sleeve arranged to hold a tool shank, said retainer sleeve includes locking members engageable in axially extending closed ended recesses in the tool shank for holding the tool shank with axial play, wherein the improvement comprises centering means on the front end of said housing and on the rear end of said retainer sleeve for centering said tool holder with the rear end thereof disposed in supported contact with the front end of said housing, said locking members being uniformly angularly spaced apart around the axis of said retainer sleeve, stop means located within said tool holder for engagement with said locking members for holding said locking members against axial displacement in the recesses in the tool shank, said stop means being axially displaceable relative to said locking member and including a first stop and a second stop with said first stop being formed on said retainer sleeve, said second stop is axially displaceable relative to said retainer sleeve and can be fixed in position for securing one of said locking members between said first stop and the end of one of the recesses in the tool shank and another of said locking members between said second stop and the end of another one of the recesses in the tool shank.

4,434,860

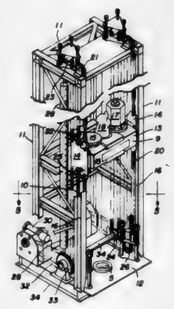
HOIST PULL DOWN SYSTEM FOR BLAST HOLE DRILL

Bruce Deyo, Columbus, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 2, 1981, Ser. No. 326,470

Int. Cl.³ E21B *15/00, 19/08*

U.S. Cl. 173—147 **12 Claims**



1. A chain-type hoist pull down system for a blast hole drill having a mast extending angularly upward from an integral drill table and a drill pipe engaging head mounted for travel along the mast, said system comprising:

a continuous chain connected at one end to the drill head to pull upward thereon and connected at its other end to the drill head to pull downward thereon, said chain being reeved intermediate its ends around idler sprockets and a drive sprocket connected to said mast, at least one of said idler sprockets being resiliently connected to said mast and effective to provide tension in said chain;

means suspended between said one idler sprocket and its resilient mounting which is selectively actuable to increase the tension in said chain; and

means mounted on said drill for rotating said drive sprocket in either direction.

4,434,861

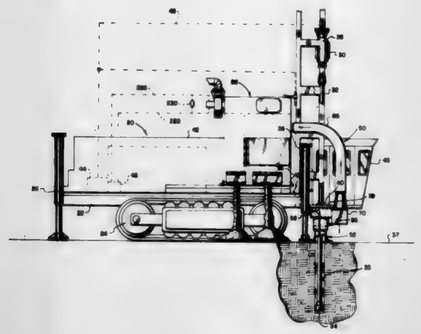
DUST CONVEYING AND COLLECTING SYSTEM AND METHOD

D. Franklin Howeth, 233 Chuck Wagon Trail, Fort Worth, Tex. 76108

Filed Jan. 7, 1981, Ser. No. 223,036

Int. Cl.³ E21B *21/06*; E21C *7/02*

U.S. Cl. 175—66 **54 Claims**



32. A method for separating particulate material from an air flow stream emanating from a drillhole comprising:

providing means for receiving said flow stream and conducting said flow stream to a point removed from the vicinity of said drillhole,

providing mechanical conveying means in said receiving means;

providing means for collecting finer material from said flow stream and being in flow communication with said receiving means;

passing said flow stream through said receiving means and separating relatively coarse material from said flow stream at a point removed from the vicinity of said drillhole utilizing the inertia of said coarse material as provided by said flow stream emanating from said drillhole; and

mechanically conveying said coarse material away from said drillhole after separation from said flow stream.

33. Apparatus for conveying and collecting particulate material entrained in a moving air stream emanating from a drillhole comprising:

means for receiving said air stream and for separating relatively coarse material from finer material at a point removed from the vicinity of said drillhole utilizing the inertia of said coarse material and the velocity of said air stream entering said receiving means, said receiving means including a head member adapted to be disposed around the mouth of said drillhole and forming passage and means for directing the flow of said air stream and said particulate material without materially reducing the momentum of said coarse material;

means for collecting said finer material from said air stream without materially interfering with the separation of said coarse material; and

means forming an enclosure in flow receiving communication with said passage means in said head member and defining a chamber for separating said coarse material from said air stream by at least partially utilizing gravitational forces acting on said coarse material, said chamber including a material receiving hopper portion and a flow stream discharge portion, and means for discharging said material from said hopper portion in response to a change in the pressure within said hopper portion with respect to ambient atmospheric pressure.

4,434,862

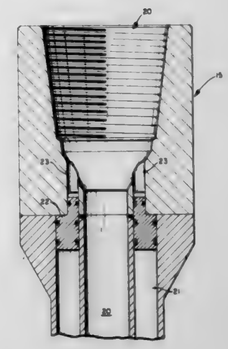
DOWNHOLE TURBINE ROTARY DRILLING DEVICE

William C. Lyons, P.O. Box 2457, Santa Fe, N. Mex. 87501

Filed Jun. 4, 1981, Ser. No. 270,584

Int. Cl.³ E21B *4/02*

U.S. Cl. 175—103 **5 Claims**



1. In a gas turbine drilling device for use in a borehole forming operation wherein means are provided for compressing and injecting gas into a drill string with drill collars attached to the downhole portion thereof, the improvement comprising:

a heat exchanger comprising an oil reservoir, said heat exchanger is housed in a collar and adapted to be removably attached to the downhole portion of the drill collars;

a gas turbine connected in underlying relationship respective to said heat exchanger;

a reduction gear means operably connected to the gas actuated turbine to thereby achieve a reduction in revolutions per minute between the output of the gas turbine and the final output of the gear reduction system, said gear reduction system being housed within a drill collar configuration and adapted to be attached to the output portion of the gas turbine;

a bit sub means removably attached to the output of said gear reduction system for operably connecting the output of said gear reduction system to a standard drill bit;

a gas passage means provided through said oil reservoir in said heat exchanger, said gas turbine engine, said gear reduction system, and said bit sub means to provide passage for gases through the system when all parts are operably connected together;

said oil reservoir in said heat exchanger contains lubricating oil and includes means for urging lubricating oil retained within said oil reservoir to flow to the working parts of the gas turbine engine and the reduction gearing system when the drilling system is operably connected;

means for returning the lubricating oil from the gas turbine and the reduction gearing system to the oil reservoir so as to provide continuous circulation of lubricating oil throughout the gas turbine and reduction gearing system; and

valve means responsive to gas pressure for precluding flow of oil until the pressure at said gas passage means reaches a predetermined magnitude.

4,434,863

DRILL STRING SPLINED RESILIENT TUBULAR TELESCOPIC JOINT FOR BALANCED LOAD DRILLING OF DEEP HOLES

William R. Garrett, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 38,674, May 14, 1979, Pat. No. 4,281,726. This application Dec. 16, 1980, Ser. No. 216,832
Int. Cl.³ E21B *17/00*
U.S. Cl. 175—321 57 Claims



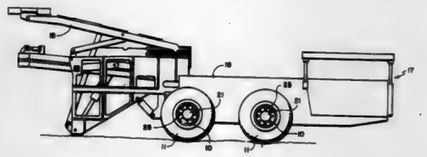
1. Well tool comprising
a tubular barrel,
a tubular mandrel axially slideably disposed in the barrel,
spline means to transfer torque between the barrel and mandrel,
means on the barrel at one end of the tool adapted for connection to a rotary drilling member,
means on the mandrel at the other end of the tool adapted for connection to a rotary drilling member,
stop means on the barrel and mandrel limiting relative axial movement thereof,
first double anchored seal means between the barrel and mandrel sealing against flow of fluid between the interior of the tool and the annular clearance between the barrel and mandrel, while allowing relative axial motion between said barrel and mandrel,
second double anchored seal means between the barrel and mandrel sealing against the flow of fluid between the exterior of the tool and said annular clearance between the barrel and mandrel while allowing relative axial motion between said barrel and mandrel, and
sliding pressure seal means between said first and second double anchored seal means sealing against the flow of fluid axially through said annular clearance between the barrel and mandrel while allowing relative axial motion between said barrel and mandrel,
said double anchored seal means each being annular and including a first annular periphery coaxial with and affixed to the barrel preventing relative axial and rotational movement between said first periphery and barrel, and a second annular periphery coaxial with and affixed to the mandrel preventing relative axial and rotational movement between said second periphery and mandrel, and an annular flexible portion coaxial with said first and second peripheries and flexibly interconnecting said peripheries and flexing upon relative axial motion of said peripheries while sealing therebetween,
said double anchored seal means isolating said sliding pressure seal means and preventing contamination of the sliding seal means by fluid outside the barrel and preventing contamination of the sliding seal means by fluid inside the barrel.

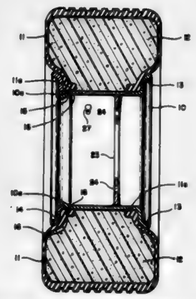
4,434,864

ROOF BOLTER VEHICLE AND WHEELS THEREFOR

Frank V. Lupo, 790 W. Price River Dr., Price, Utah 84501

Filed Feb. 16, 1982, Ser. No. 348,747
Int. Cl.³ B60B *15/00*; B60C *7/24*; B62D *11/00*
U.S. Cl. 180—6.2 7 Claims





1. In combination with a roof-bolter vehicle for use in underground mines, which vehicle has an elongate chassis frame, front and rear sets of stub axles extending transversely of and substantially amidships the frame and providing wheel-mounting hubs laterally of the frame, and sprocket wheel and chain drive means for said axles, whereby steering of the vehicle is accomplished by driving one of the front wheels faster than the other, the features of unusually wide, rubber-tired wheels mounted on the axle hubs, respectively, each of said wheels comprising a wider than normal, circular, tire-mounting rim having overall width of substantially twelve inches and an integral peripheral flange at one side thereof; means securing a removable mounting ring as a peripheral flange at the other side thereof; a circular groove for receiving an O-ring adjacent to the mounting-ring-securing-means so as to be directly covered by the corresponding bead of a mounted, oversize tire; an axle-hub-attachment plate secured within the rim off-center inwardly thereof toward the inside peripheral flange of the rim, so as to be at substantially the normal spacing from the inside, peripheral flange of the rim; an O-ring positioned in said groove; a 14.50×15 tubeless tire, oversize for said rim, mounted on said rim and bearing unusually tightly against said rim flanges, with the bead thereof that corresponds to the O-ring directly covering and bearing against said O-ring; a plastic foam inflating said tires; and fastening means fixedly securing the axle-hub-attachment plate of each wheel to the hub of its corresponding axle of the vehicle.

4,434,865

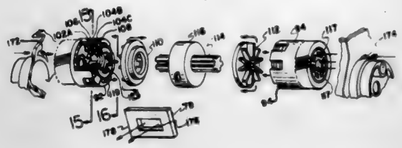
POWER TRANSMISSION FOR A CLEANER

Donald B. Tschudy, Canton, and Charles R. Morrow, Alliance, both of Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed Aug. 31, 1981, Ser. No. 298,190
Int. Cl.³ B62D *51/04*
U.S. Cl. 180—19 H 11 Claims

11. A cooling system for a clutching arrangement including;
(a) a hubbed gear,
(b) a plurality of clutch disks in said hubbed gear,

(c) cooling vanes in said hubbed gear,
(d) slots through said gear permitting said cooling vanes to circulate air to said clutch disks,



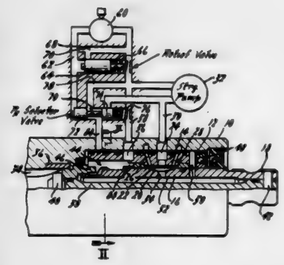
(e) said cooling vanes disposed totally within said hubbed gear, and
(f) said cooling vanes disposed adjacent said slots.

4,434,866

SPEED-SENSITIVE POWER STEERING SYSTEM

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 19, 1982, Ser. No. 396,982
Int. Cl.³ B62D *5/08*
U.S. Cl. 180—143 3 Claims



1. A power steering gear mechanism for a vehicle for providing a power assist as steering torque is delivered to a steerable member from a steering shaft;
a valve mechanism having a first valve element connected to the steering shaft and a second valve element connected drivably to the steerable member;
a yieldable torsion element for transferring torque directly to the steerable member from the steering shaft;
a power steering pressure source including a pump that is adapted to be driven at a speed proportional to vehicle speed and having a pressure delivery passage and a flow return passage;
reaction pressure chambers in proximity to said valve mechanism;
pressure responsive pistons in said reaction chambers; and
valve means responsive to the pressure in said pressure delivery passage for distributing pressure from said pressure delivery passage to said reaction cylinders at high pump speeds and for connecting the flow return passage of said pump to said reaction chambers at lower pump speeds.

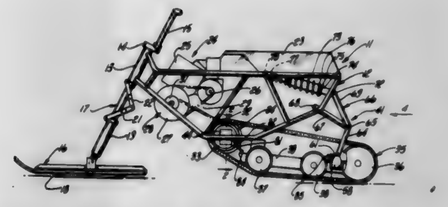
4,434,867

DRIVE BELT FOR SNOW VEHICLE AND SUSPENSION THEREFOR

James E. Grinde, Anoka, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 8, 1982, Ser. No. 347,005
Int. Cl.³ B62M *27/02*
U.S. Cl. 180—190 11 Claims

1. A snow vehicle having a frame, front ski means supported by said frame for steering movement, an endless drive belt, drive means for driving said drive belt, and suspension means for supporting said drive belt for suspension movement relative to said frame, said suspension means comprising a lever supported for pivotal movement about a first pivot axis on said frame, a suspension element, means including a pivotal connection between said lever and said suspension element for loading



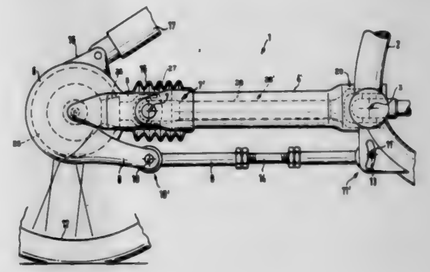
said suspension element by the pivotal movement of said lever, a link, means providing a relative pivotal connection by the one end of said link and said drive belt, and means pivotally connecting the other end of said link to said lever for pivoting said lever upon movement of said drive belt relative to said frame for loading the suspension element upon such relative movement.

4,434,868

REAR WHEEL CONTROL UNIT FOR TWO-WHEELED VEHICLES WITH UNIVERSAL DRIVE MECHANISM

Horst Brenner, Gunding, and Rene Hinsberg, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

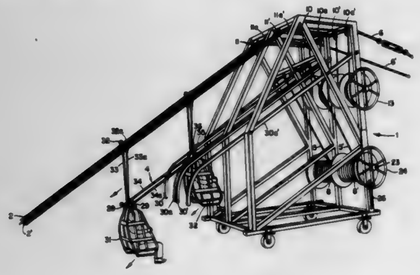
Filed Jun. 30, 1981, Ser. No. 279,067
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 8017869[U]
Int. Cl.³ B62K *25/20*; B62M *17/00*
U.S. Cl. 180—226 6 Claims



1. A rear-wheel control for two-wheel vehicles, especially a motorcycle, comprising
a driven wheel controlled by a one-armed oscillating lever pivoted at the frame and connected to a gear wheel and pinion of a ring/gear pinion gearing so that the driven wheel is fixed with respect to rotation,
the gear wheel and the pinion being disposed in an axle housing relative to the one-armed oscillating lever by means of an arm and a moment support flexibly connected to said arm and the frame,
said housing adapted to be pivoted,
the pinion being disposed so that said pinion is aligned with the one-armed oscillating lever at the connecting member of the housing,
said pinion being connected to a universal shaft arranged in said lever,
said universal shaft, in the area of the pivot point of said

lever at the frame, being provided universal joint means and the lever is also flexibly connected to the housing.

4,434,869
RESCUE APPARATUS
Michael R. Roop, 4525 Tartan Dr., Baton Rouge, La. 70816, and Russell P. Cook, Sr., 2918 Little Farms Dr., Zachary, La. 70791
Filed Jun. 7, 1982, Ser. No. 386,206
Int. Cl.³ A62B *1/08*
U.S. Cl. 182—10 **18 Claims**



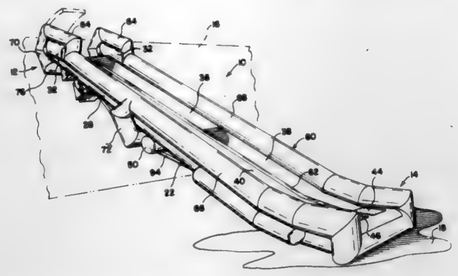
1. An apparatus for transporting personnel or other cargo between higher and lower elevations comprising:

(1) a support frame anchorable at the higher elevation in which frame is mounted: a right guideline means spool to which are attached the proximal ends of a right guideline means and a left guideline means and respectively, the distal ends of said guideline means being anchorable to the lower elevation, said guideline means spools having a means for tensioning said guideline means; a towline spool means having a right towline and a left towline which towlines are wound around said towline spool means in opposite directions, and

(2) carrier means suspendable from each guideline means by a pulley means, said carrier means being attachable to the distal end of each towline and positioned such that the carrier means suspended from one guideline means is near or at the higher elevation while the carrier means suspended from the other guideline means is near or at the lower elevation, said carrier means comprising a transverse member whose ends can fit on inclined anti-sag guides attached to the right and left sides of the support frame, said guides being placed such that they support the carrier means as it traverses the length of the guides, said guides extending downward and beyond the front of said support frame.

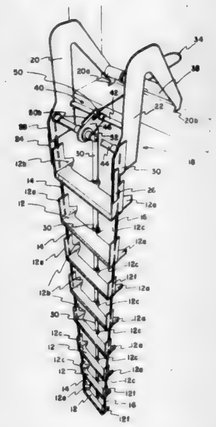
4,434,870
EVACUATION SLIDE DEVICE
John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 22, 1982, Ser. No. 443,424
Int. Cl.³ A62B *1/20*; B65G *11/10*
U.S. Cl. 182—48 **9 Claims**

1. An inflatable slide device for emergency evacuation having a flexible panel defining a slide surface extending from a head end of the inflatable slide device to a foot end of the inflatable side device and a first plurality of interconnected tubular members defining a first inflatable chamber, a second plurality of interconnected tubular members defining a second inflatable chamber fluidly independent of said first chamber, each of said chambers including tubular rail means along portions of each lateral margin of said panel, said rail means being raised from said flexible panel along the slide and contoured



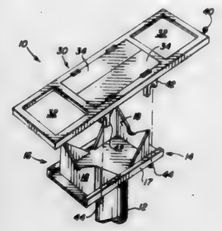
for being raised even higher from the slide panel adjacent the head end of the slide device.

4,434,871
EMERGENCY ESCAPE LADDER
Johannes F. Niedworok, Rte. 4, Box 300, Sanford, N.C. 27330
Filed Mar. 3, 1983, Ser. No. 471,878
Int. Cl.³ E06C *1/36, 1/56, 1/58*
U.S. Cl. 182—198 **17 Claims**



1. An emergency escape ladder adapted to assume a folded inoperative position and a rigid operative position wherein in said operative rigid position the ladder is functional to allow an individual to escape from a multi-story building structure by descending downwardly a selected distance and then repositioning the emergency escape ladder in order that the individual may further descend from the structure, and so forth and so on until the individual has moved to an area of safety, said emergency escape ladder comprising in combination: a plurality of treads; flexible tie means operatively interconnected between respective treads for maintaining said treads together in a ladder assembly even when said ladder assumes said folded inoperative position; retaining means formed about an upper end of said ladder for attaching the same to a structure for supporting the emergency escape ladder while an individual is descending downwardly thereon; and a plurality of rigid stabilizing bar means for operatively interconnecting respective treads together to form an elongated rigid ladder structure for enabling the emergency escape ladder to be raised, lowered, or repositioned by an individual escaping from said multi-story structure.

4,434,872
VEHICLE LIFT
Llewellyn R. Daniels, Jr., 437 W. 5th Ave., Apache Junction, Ariz. 85220
Filed Mar. 8, 1982, Ser. No. 356,179
Int. Cl.³ B60S *13/00*
U.S. Cl. 187—8.74 **18 Claims**



1. In an apparatus for hydraulically lifting a motor vehicle having:

a hydraulically operated, generally vertical ram;

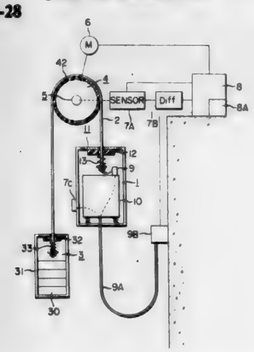
axle fork means operatively coupled to said ram proximate the top distal end portion thereof;

a pair of spaced apart wheel saddle means for operatively engaging two parallel opposing tires of a motor vehicle at a time;

a yoke mechanism operatively secured to the lower surface of said wheel saddle means for lifting same to selectively permit the hydraulically operated ram to lift both the axle fork means and the wheel saddle means; and

the improvement comprising: yoke tang means for raising the lifting point in the vertically upward stroke of said hydraulically operated ram so that operative lifting engagement with the yoke mechanism of said wheel saddle means occurs earlier in said vertically upward stroke so that said axle fork means avoids the underside of said vehicle and the damage resulting therefrom.

4,434,873
ELECTRIC ELEVATOR CAR DRIVING DEVICE
Kazutoshi Ohta, Nagoya, and Eiki Watanabe, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 2, 1982, Ser. No. 353,969
Claims priority, application Japan, Apr. 9, 1981, 56-53535
Int. Cl.³ B66B *1/00*
U.S. Cl. 187—28 **10 Claims**



7. An electric elevator car driving means for driving an elevator car, which is suspended from a cable, between floors in a building structure, said driving means comprising:

a metal sheave having at least one circular groove in the peripheral surface thereof and having a plurality of metallic projections projecting into said groove;

a layer of material disposed in said groove and covering said projections and forming a cable race;

said cable reeved along said cable race, the material of said layer having a coefficient of friction relative to said cable which is greater than that between said cable and the metal of said sheave, said projections have dimensions for causing them to come into secure engagement with said cable;

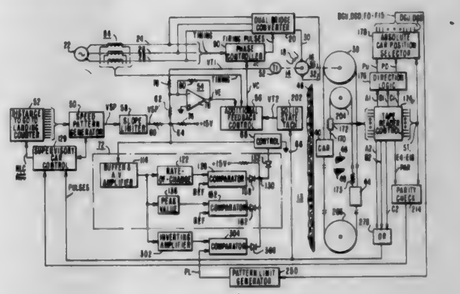
driving means connected to said sheave for driving said sheave for driving said cable;

detector means for detecting the occurrence of damage to said layer; and

controller means to which said detector means is connected and which is in turn connected to said drive means, said controller means being responsive to said detector means for controlling said drive means for stopping the elevator car before it reaches the floor at the limit of movement of the elevator car in the vertical direction;

wherein said controller means comprises means for controlling the drive means for causing the elevator car to stop at the nearest floor at which the elevator car can be stopped when the deceleration and jerking of the elevator car are kept at the respective normal maximal values of deceleration and jerking capable of being withstood by the elevator car.

4,434,874
ELEVATOR SYSTEM
William R. Caputo, Wyckoff, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 10, 1982, Ser. No. 356,684
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **12 Claims**



1. An elevator system, comprising:

an elevator car,

motive means for moving said elevator car in a predetermined travel path having upper and lower terminal zones and an intermediate zone,

car position means providing a car position signal responsive to the absolute position of said elevator car, at least in the upper and lower terminal zones,

means providing a reference signal responsive to said car position signal,

speed pattern means providing a speed pattern signal indicative of the desired speed of said elevator car,

limit means for providing a limiting signal responsive to said reference signal, at least when said elevator car is in one of said terminal zones,

means having inputs responsive to said speed pattern signal and to said limiting signal for providing an auxiliary speed pattern signal which is responsive to the input signal of lesser magnitude at any instant,

means providing a velocity signal responsive to the actual speed of said elevator car,

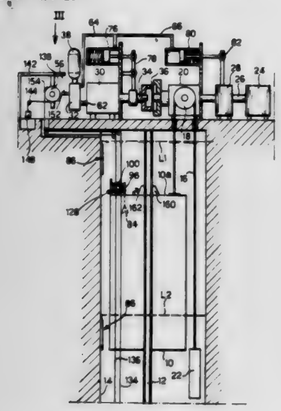
and means for controlling said motive means in response to said velocity signal and said auxiliary speed pattern signal.

4,434,875

EMERGENCY LEVELLING DEVICE FOR A LIFT CAR

Sergio Scarzella, Corso Taranto 130/A, Torino, Italy

Filed May 10, 1982, Ser. No. 376,980
Claims priority, application Italy, May 12, 1981, 67635 A/81
Int. Cl.³ B66B 5/02
U.S. Cl. 187—29 R 16 Claims



1. Emergency levelling device for a lift car (10) operated by a winch (20) driven by an electric motor (24) and having an associated emergency brake (28), including an auxiliary motor having an output shaft, means for coupling the output shaft of the auxiliary motor to the winch (20), means for releasing the brake (28), and means for controlling the operation of the release means of the brake (28) and the auxiliary motor in the event of an unwanted stoppage of the lift car (10) in a position different from the normal stop levels (L_n), to bring the lift car (10) to one of said levels (L_n),

characterised in that the auxiliary motor is a hydraulic motor (30) having a shaft (34) with a reversible sense of rotaion and the means for controlling the operation of hydraulic motor (30) include:

an hydraulic control circuit (32) including a hydraulic accumulator (38) for operating the hydraulic motor (30), valve means (54) for controlling the communication between the hydraulic accumulator (38) and the hydraulic motor (30), and selector means (69) interposed between the valve means (54) and the hydraulic motor (30) for controlling the sense of rotation of the shaft (34) of the hydraulic motor (30);

actuator means (56, 152; 184) for controlling the opening of the valve means, and

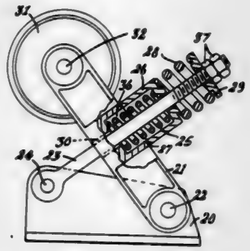
means (85; 164) for indicating of the position of the lift car (10) and position sensor means (128; 176) cooperating with each other and displaceable relative to each other in synchronism with the movement of the lift car (10), the position sensor means (128; 176) being operatively connected to the selector means (69) to control automatically the sense of rotation of the shaft (34) of the hydraulic motor (32) and the resulting movement of the lift car in the more convenient direction to reach one of said normal stop positions (L_n).

4,434,876

GUIDE ROLLER FOR SKIP OR CAGE

Ronald M. K. McKechnie, Vaal Reefs, South Africa, assignor to Vaal Reefs Exploration and Mining Company Limited, Johannesburg, South Africa

Continuation of Ser. No. 221,449, Dec. 30, 1980, abandoned.
This application Jul. 11, 1983, Ser. No. 512,572
Claims priority, application South Africa, Jan. 4, 1980, 80/0058
Int. Cl.³ B66B 7/02
U.S. Cl. 187—95 23 Claims



1. A guide roller assembly suitable for a skip, cage, lift or the like, comprising:

guide engaging roller means for engaging a guide of said skip, cage, lift or the like;

first and second biasing means operatively connected to said roller means for urging said roller means into rolling contact with said guide;

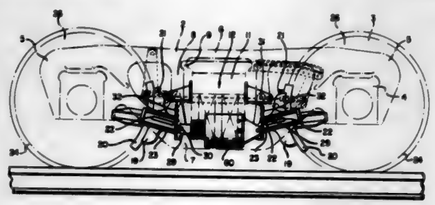
said first biasing means having a lower load bearing capacity than said second biasing means, said first and second biasing means cooperating such that when the guide roller assembly moves towards said guide, said roller means is deflected against the action of said first biasing means by a predetermined distance, whereupon said first biasing means is rendered inoperative and said second biasing means is simultaneously brought into action to resist said load, and when said guide roller assembly moves away from said guide, said first biasing means undergoes extension to maintain said roller means in contact with said guide, there being no coupling of said first and second biasing means and no extension of said second biasing means during said extension of said first biasing means.

4,434,877

TRUCK-MOUNTED BRAKE SYSTEM FOR RAILWAY CARS

Kenneth D. Swander, Lansing, Ill., assignor to Hadady Corp., Lansing, Ill.

Continuation of Ser. No. 236,139, Feb. 20, 1981, abandoned.
This application Sep. 30, 1982, Ser. No. 429,122
Int. Cl.³ B61H 13/28; F16J 15/16
U.S. Cl. 188—52 9 Claims



1. A single-acting power cylinder unit adapted for use in truck-mounted, self-aligning railway freight car tread brakes adapted to be used with brake levers pivotally suspended from a railway car bolster, which levers move brake beams toward respective wheel and axle assemblies, said power cylinder unit adapted to be pivotally connected to the lower ends of said brake levers, said power cylinders comprising:

a one-piece housing, which includes a cylinder with one closed end;

a bulkhead sealing the other end of said housing;

a rigid but movable piston head positioned within the cylinder of said housing, said piston head rigidly affixed to a piston rod;

spring means, within said housing, adapted to urge said piston head toward said bulkhead;

an annular bearing mounted in the closed end of said housing adapted to provide lateral support for said piston rod, the combination of said housing, said bulkhead and said piston head defining a gas-tight space;

said piston head comprising a skirt having three circumferential grooves on the exterior surface, said grooves adapted to receive a bearing ring, a fluid sealing ring and a lubricating ring, in that order sequentially starting from said gas-tight space; and

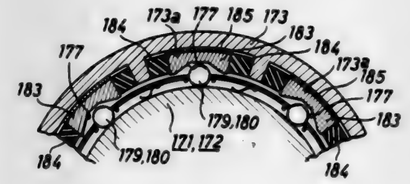
a compressed gas port adapted to pass compressed gas into said gas-tight space.

4,434,878

CLUTCH MECHANISM FOR POWER TRANSMISSION SYSTEM

Kiyokazu Okubo, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 208,416, Nov. 19, 1980, Pat. No. 4,373,407.
This application May 3, 1982, Ser. No. 373,856
Int. Cl.³ F16D 47/04, 41/06; F16H 35/04
U.S. Cl. 192—48.92 5 Claims



1. A clutch mechanism for a power transmission system having one drive member and two driven members, comprising:

at least one pair of roller clutch members interposed between said drive member and said two driven members so as to transmit the rotational power of said drive member to said driven members independently of each other when said drive member rotates;

said pair of roller clutch members operatively cooperating with said drive member and said driven members such that one of said driven members, which is rotating at a higher speed than said drive member due to external force, is set free from said drive member while said power from said drive member is transmitted to the other driven member;

said drive member being rotatably fitted on outer circumferential portions of said two driven members;

said drive member including an inner circumferential portion provided with recessed cam surface means for loosely receiving said rollers and for locking said rollers at a front position and a rear position in the rotational direction of said drive member to thereby connect said drive member and said two driven members;

said roller clutch members being loosely held by retaining means so as to be movable in the rotational direction of said drive member;

said drive member having an inner circumferential portion formed with a recessed portion;

at least one cam member having said recessed cam surface means provided thereon being disposed in said recessed portion; and

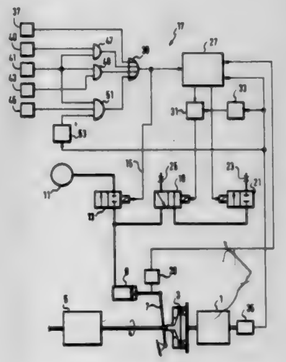
elastic members disposed in said recessed portion at the front and rear of said cam member in the rotational direction of said drive member.

4,434,879

SYSTEM FOR AUTOMATIC ACTUATION OF A MOTOR VEHICLE CLUTCH

Dieter Lutz, Schweinfurt; Franz Nagler, Gochsheim; Wolfgang Thieler, Hassfurt-Uchenhofen, and Rudy Tellert, Schweinfurt, all of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 285,011
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028251
Int. Cl.³ B60K 41/28
U.S. Cl. 192—0.052 8 Claims



1. A system for automatic actuation of the clutch means of a motor vehicle provided with a multiple gear transmission and with means for shifting said transmission including a motor comprising pneumatic cylinder means for effecting engagement and disengagement of said clutch means in accordance with fluid pressure in said cylinder means; connecting means operatively joining said pneumatic cylinder means with said clutch means; fluid pressure source means from which fluid pressure may be supplied to said cylinder means; vent means through which fluid pressure may be vented from said cylinder means; valve means for controlling delivery of fluid pressure to said cylinder means from said fluid pressure source means and for venting of fluid pressure from said cylinder means through said vent means; and control means for controlling operation of said valve means in dependence upon the position of said connecting means and the speed of said motor, said control means including switching contact means responsive to the operating condition of said transmission to effect engagement or disengagement of said clutch; said switching contact means including a first switching contact operable at initiation of gear change of said transmission, a second switching contact operable when said transmission is engaged in one of a first gear or a reverse gear, a third switching contact operable when higher gears of said transmission are engaged and a fourth switching contact operable in an undepressed position of an accelerator pedal of said motor vehicle, with a manually operable fifth switching contact being provided, said control means including means for switching said valve means into a position assigned to disengagement operation when either of said first switching contact or said second switching contact and said fourth switching contact are operated together or when said fourth switching contact and said fifth switching contact are

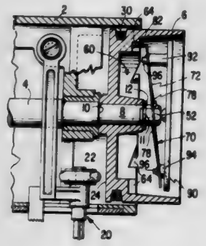
operated together or when said third switching contact and said fourth switching contact are together and at the same time the rotational speed of said motor is below a set value.

4,434,880

HANDWHEEL CLUTCH FOR SEWING MACHINES

Boleslaw Kornatowski, Elizabeth, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 11, 1981, Ser. No. 329,637
Int. Cl.³ F16D *11/00*; D05B *59/00*
U.S. Cl. 192—67 R **4 Claims**



1. In a sewing machine having an arm shaft, a handwheel, and a drive means for rotating said handwheel, a clutch means for drivingly coupling said handwheel to said arm shaft comprising a drive notch formed in said handwheel and a driving element supported on said arm shaft for rotation therewith and arranged to tilt between each of two bistable positions, a first of said bistable positions in which said driving element is in driving engagement with said drive notch and a second of said bistable positions in which said driving element is out of driving engagement with said drive notch, wherein said driving element comprises:

a. a substantially planar yoke having a pair of flexible members each joined at one extremity to said yoke and arranged with their free extremities facing each other and spaced apart a predetermined distance;

b. diametrically opposed reception seat surfaces formed on said arm shaft spaced apart a distance which is greater than said predetermined distance between said free extremities of said flexible members;

c. said yoke being assembled on said arm shaft with said free extremities of said flexible members arranged each in engagement with a respective one of the diametrically opposed reception seat surfaces on said arm shaft and with said flexible members being flexed each to a position on an opposite side of the plane of said yoke; and

d. means for interlocking said yoke with said arm shaft for rotation therewith when said free extremities of said flexible members are in engagement with said reception seat surfaces.

4,434,881

HIGH SPEED ACCESSORY DISCONNECT APPARATUS AND METHODS

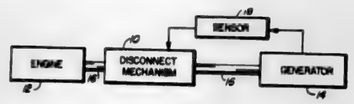
Jpeeph Denk, Manhattan Beach, and William B. Martin, Redondo Beach, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 19, 1981, Ser. No. 245,419
Int. Cl.³ F16D *43/25, 11/04*
U.S. Cl. 192—89 A **27 Claims**

1. High speed apparatus for disconnecting a driving mechanism from a driven mechanism rotationally coupled thereto by shaft means, at least a portion of the shaft means being axially movable out of coupling engagement with one of the mechanisms, said apparatus comprising:

(a) cam means mounted coaxially on the shaft means for rotation and axial movement therewith, said cam means having axially spiraling groove means thereon; and

(b) cam follower means, selectively movable generally radially into said groove means during rotation of said cam means for interacting with a surface of said groove means to axially drive at least a portion of the shaft means relative to said cam follower means and out of engagement with one of the mechanisms, said groove means being configured to permit unimpeded entry of said cam follower means thereinto regardless of the rotational orientation of said cam means relative to said cam follower means.

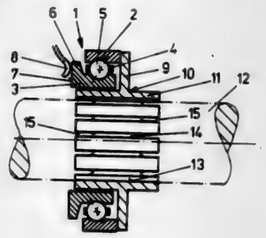


4,434,882

CLUTCH RELEASE BEARING

Armin Olschewski; Lothar Walter, both of Schweinfurt; Manfred Brandenstein, Eussenheim, and Leo Müller, Esleben, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 280,120
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 8017878[U]
Int. Cl.³ F16D *23/14*
U.S. Cl. 192—98 **5 Claims**



1. In a release bearing, particularly for automotive-vehicle clutches, with a sliding sleeve made of a vibration damping and noise-insulating material, the sleeve being mounted with small clearance on a guiding element, in a manner that allows axial back and forth movement; the improvement wherein the sliding sleeve is provided with recesses that extend in an axial direction and are distributed around the circumference and has slits in the regions thereof adjacent its axial ends that originate at its axial ends.

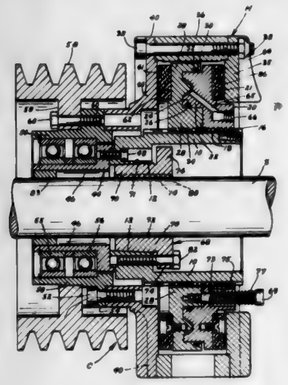
4,434,883

DEVICE FOR SHAFT ALIGNMENT IN A CLUTCH OR BRAKE ASSEMBLY

Charles D. Raines, Bethel, Minn., assignor to Horton Manufacturing Co., Inc., Minneapolis, Minn.

Continuation of Ser. No. 141,965, Apr. 21, 1980, abandoned.
This application Feb. 28, 1982, Ser. No. 352,914
Int. Cl.³ F16D *1/08, 25/063*
U.S. Cl. 192—110 R **1 Claim**

1. Device for centering and aligning a shaft in a clutch or brake assembly having an assembly housing, comprising, in combination: a quick demount bushing having a collar portion including an axial bore, with the diameter of the axial bore of the quick demount bushing being generally equal to the diameter of and for receipt onto the shaft; means for locking the quick demount bushing from relative rotation with the shaft; the quick demount bushing further including a tapered outer surface; the assembly housing including a hub having an axial bore being of greater diameter than the diameter of the shaft; the hub including an inner tapered bore having a shape complementary to and for receipt of the tapered outer surface of the quick demount bushing to form a wedge fit therebetween; means for holding the quick demount bushing in the inner tapered bore of the hub; and a shaft mount in the assembly housing in the form of a one piece bushing having a fixed thickness dimension in a radial direction and in the axial direction and having an outside diameter substantially euqal to the diameter of and for receipt into the axial bore of the hub and having an inside diameter substantially equal to the diameter of and for receipt onto the shaft for holding the shaft in axial alignment with the hub as the quick demount bushing is being inserted and drawn into the inner tapered bore of the hub, with the shaft mount being removable from the axial bore of the hub and from the shaft after the quick demount bushing is held by the holding means in the inner tapered bore of the hub with the shaft in axial alignment with the hub, the bushing allowing use of the same assembly housing with differing size shafts.

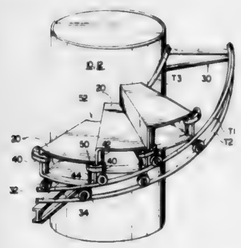


4,434,884

SPIRAL ESCALATOR

John L. Kettle, Vernon, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 294,087, Aug. 19, 1981, abandoned.
This application Jul. 1, 1983, Ser. No. 509,982
Int. Cl.³ B65B *9/12*
U.S. Cl. 198—328 **1 Claim**



1. A system for moving people between two or more floors, characterized by:

coupled steps that move in a closed pattern, having inner and outer perimeters between the floors,

a biaxis linkage for coupling adjacent steps to enable them to pivot about a rotation axis that is perpendicular to either the inner or outer perimeter,

a track system for guiding the steps in the pattern,

a pair of vertical supports that extend between the floors for supporting the tracks,

means for propelling the steps along the tracks,

said closed pattern having sections that spiral around the supports between the floors, in which the steps form a staircase, and substantially straight, horizontal sections which extend between the spiral sections and which are located below each floor,

said track system comprising a single track along the inner perimeter of the pattern and two tracks along the outer perimeter, said two tracks being vertically disposed in the staircase and the higher of the two being horizontally disposed outward from the outer perimeter relative to the other, each step having a guide roller riding on said higher track, which roller is on an arm which extends over the lower track,

a biaxis linkage for connecting said steps along the outer perimeter, said linkage being the only connection between adjacent steps and comprising a vertical pin on each step, the pins being located between the corners of adjacent steps at the outer perimeter, and an arm connected to the pins of adjacent steps which can rotate about and slide vertically on said pins, and

each step having a generally triangular shape like a pie slice to provide a generally triangular space between adjacent steps in said horizontal sections of the pattern.

4,434,885

OVERCAP ORIENTING APPARATUS

Martin Brugman, and Herman Van Schaik, both of Amsterdam, Netherlands, assignors to S. C. Johnson & Sons, Inc., Racine, Wis.

Filed Jan. 29, 1982, Ser. No. 344,160
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—388 **1 Claim**



1. Apparatus for arranging in like orientation overcaps of the type having open bottoms, comprising;

a bin for holding jumbled overcaps, said bin having a cylindrical wall with an opening on one side;

a chute beside said bin, having a horizontal upper edge along said opening;

a cylindrical array of horizontal flight bars within said bin, each of said bars pivotable about a horizontal axis and having a multiplicity of pickup sites spaced therealong;

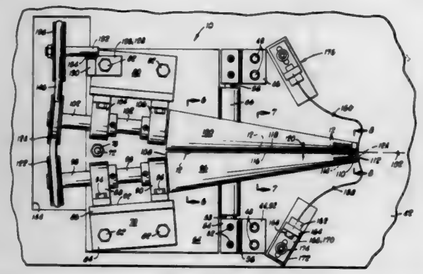
means to rotate said array such that said bars pass said edge seriatim along a downward arc;

each pickup site having an overcap support surface parallel to and spaced from said axis, lateral walls extending from said support surface toward said axis and forming with said support surface an overcap-receiving cavity, and a pickup pin extending from said support surface toward said axis; and

means to pivot said bars to different orientations at different positions within said bin, thereby to: (1) capture overcaps in said cavities with their bottoms spaced from said support surfaces and facing said pins, (2) invert said overcaps

such that they slide over said pins, (3) deposit said overcaps bottom down onto said chute, and (4) withdraw said pins to free said overcaps to slide down said chute in like orientation.

4,434,886
APPARATUS AND METHODS FOR POSITIONING ELECTRICAL COMPONENTS
John Fajt, Wynnewood, Okla., assignor to Xenell Corporation, Wynnewood, Okla.
Filed Sep. 12, 1980, Ser. No. 186,446
Int. Cl.³ B65G *39/10, 47/24*
U.S. Cl. 198—389 **1 Claim**



1. An automated method of handling electrical components, comprising:

mechanically positioning in sequence at a predetermined position a plurality of electrical components of the type including:

a body;

a lower body portion extending from said body in a direction parallel to a first axis of said body, said lower body portion having a width in a direction parallel to a second axis of said body, and a thickness less than said width in a direction parallel to a third axis of said body, said first, second and third body axes being mutually perpendicular; and

first and second lead wires extending from said lower body portion substantially parallel to said first body axis and spaced apart in a direction parallel to said second axis;

said positioning step including the steps of:

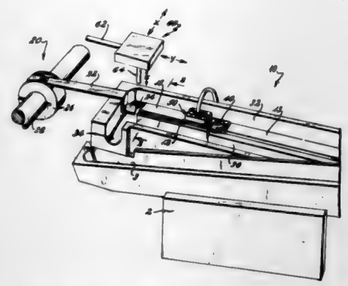
placing each of said electrical components between a pair of rotating rollers so that said body of each of said electrical components is engaged by both of said rollers and thereby orienting each of said electrical components so that said first body axis thereof is vertical, with said lead wires extending downward from said body, and so that said second body axis is parallel to a predetermined horizontal line, said rollers rotating in opposite directions and inwardly from above toward each other; and

gravity feeding said oriented electrical components sequentially along a predetermined path between said rotating rollers toward small ends of said rotating rollers to a predetermined location in space, said rotating rollers being continuously conically tapered between a location thereon where said electrical components are initially placed and said small ends; and

releasably retaining each of said electrical components at said predetermined position;

said predetermined position of said electrical components being defined by said predetermined location in space, said vertical orientation of said first body axes, and said orientation of said second body axes parallel to said predetermined horizontal line.

4,434,887
ISOLATED STOP FOR VIBRATING FEEDERS
Glen E. Yager, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.
Continuation of Ser. No. 222,677, Jan. 5, 1981, abandoned. This application Sep. 2, 1982, Ser. No. 414,061
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—391 **2 Claims**



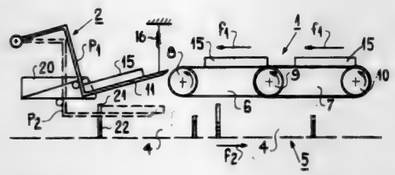
1. In an apparatus for vibratory feed of electrical components along a guide shelf of a vibrating feeder and into engagement with a stop means for halting said components at an unload station of said feeder and for pick-up of said parts on said feeder at said unload station by a pick-up head which is isolated from the vibrations of said feeder, said vibrating feeder comprising means for recirculating components which are misoriented and improperly positioned on said guide shelf, the improvement comprising:

support means for supporting said stop means, said support means being isolated from the vibrations of said feeder, whereby the vibrations of components at said unload station are minimized such that precise pick-up of said components on said feeder by said pick-up head is facilitated;

means for limiting the back-up of components on said guide shelf behind a component abutting said stop edge; and

said stop means being configured to extend into said feeder such that an edge of said stop is adjacent and aligned with said guide shelf at said unload station and is pivotal away from said feeder for repair and adjustment access to said feeder.

4,434,888
APPARATUS FOR SUPPLYING AN ARTICLE SORTING MACHINE CONVEYOR, A METHOD FOR USING THIS APPARATUS
Michel Divoux; Hubert Bonansea, and Bernard Constant, all of Paris, France, assignors to Hotchkiss-Brandt Sogeme H.B.S., Paris, France
Filed Jul. 20, 1981, Ser. No. 285,289
Claims priority, application France, Jul. 22, 1980, 80 16125
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—466 **8 Claims**



1. Apparatus for supplying articles to a conveyor, said apparatus comprising:

(a) a storage system comprising a plurality of endless belts in series, all but the last in the series being arranged to feed articles thereon to the next endless belt in the series;

(b) first means for independently driving each of said endless belts;

(c) a tilting support in the form of a notched plate having a plurality of teeth located at the downstream end of said series of endless belts, said tilting support being variable between a raised position in which it is in position to receive an article from the last in the series of endless belts and a lowered position in which it is in position to transfer an article to the conveyor;

(d) second means for moving said tilting support from its raised position to its lowered position;

(e) third means for detecting whether an article is carried by each of said endless belts;

(f) fourth means for detecting whether said tilting support is in its raised or lowered position; and

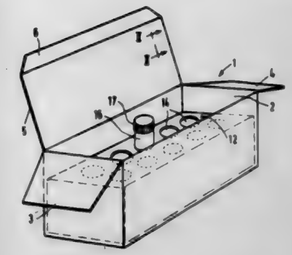
(g) a control device for actuating said first means associated with each of said endless belts prior to the last in the series when said third means associated with the next endless belt in the series detects that the next endless belt in the series is vacant, for actuating said first means associated with the last in the series of said endless belts when said third means associated with the preceding endless belt detects that said preceding endless belt is carrying an article and said fourth means detects that said tilting support is in its raised position, and for actuating said second means after an article has been desposited on said tilting support by the last in the series of said endless belts.

4,434,889
GREETING CARD CONSTRUCTION
Guy A. Fery, 117 E. 57th St., New York, N.Y. 10022
Filed Feb. 8, 1982, Ser. No. 346,441
Int. Cl.³ B65D *69/00, 27/06, 27/08*
U.S. Cl. 206—216 **11 Claims**



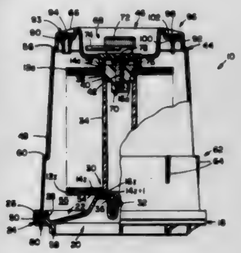
1. A greeting card construction comprising a first panel joined to a second panel by a first fold line, a third panel joined to said second panel by a second fold line, said first and second panels being adapted for the display of printed indicia thereon, and a collapsable receptacle having a base and upwardly projecting sides, said base being removably affixed to said third panel, said sides being foldable upon said base such that said third panel may be folded along said second fold line into a position overlying said second panel with said receptacle in its folded configuration lying therebetween.

4,434,890
PACKAGING CONTAINER FOR SENSITIVE PRODUCTS
Reinhard Sieck, Cologne, and Gerhard Brüsewitz, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Dr. Madaus & Co., Cologne, Fed. Rep. of Germany
Filed Dec. 16, 1981, Ser. No. 331,343
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 8033376[U]
Int. Cl.³ B65D *81/30, 85/62;* G01N *1/10*
U.S. Cl. 206—443 **18 Claims**



1. A temperature-stabilizing packaging container for condensation-sensitive, water-containing products in closed tubes, especially semi-solid test media such as immersion nutrient substrate carriers for the determination of micro-organisms or the like, comprising: a strip-like, heat-insulating material forming the packaging container; and metallic covering means on at least one of the surfaces of the packaging container for repelling heat-producing radiation.

4,434,891
DISC PACKAGE
James R. Skinner, Saratoga, and Robert G. Atwood, Redwood City, both of Calif., assignors to M.U. Engineering & Mfg., Inc., Mountain View, Calif.
Filed Mar. 18, 1983, Ser. No. 476,475
Int. Cl.³ G11B *1/02;* B65D *85/57, 81/18, 53/02*
U.S. Cl. 206—444 **18 Claims**



1. A disc package (10) for storing a plurality of discs (12*a*–12*z*) having central openings (16*a*–16*z*), comprising:

a generally circular base (18) having a bottom surface (20) adapted to be supported above a support surface and a top surface (22) having a peripheral portion (24) having a peripheral wall (26) extending generally upwardly a spaced distance from the top surface (22) and a central portion (30) having a core accepting structure (32);

a core (34) having a lower end portion (36) supported by said core accepting structure (32) and an upper end portion (38) extending generally upwardly away from said top surface (22);

a cover (44) having a generally circular top (46) and a peripheral skirt (48) extending downwardly therefrom to a lower rim portion (50) adjacent said wall (26);

means (68) for fastening said circular top (46) to said upper end portion (38); and

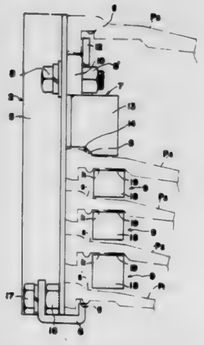
a resilient gasket (80) removably attached to a respective one of said lower rim portion (50) and said wall (26) and slidably sealingly bearing against a respective other of said lower rim portion (50) and said wall (26).

4,434,892

HOLDING DEVICE FOR NESTED PIPES

Tatsuo Kanazawa, Kamagaya, and Tsuneo Suyama, Narita, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jun. 25, 1982, Ser. No. 392,212
Claims priority, application Japan, Jul. 30, 1981, 56-120387
Int. Cl.³ B65D *85/20*
U.S. Cl. 206—446 **11 Claims**



1. A device for holding nested pipes including at least two adjacent pipes differing greatly in diameter, each nested pipe having a socket formed with an annular groove in its inner periphery and an annular shoulder on its outer periphery, the device comprising an abutting member adapted to contact the socket end faces of all the pipes, and at least one radial-axial retainer means removably mountable on the abutting member and adapted to be positioned between said two adjacent pipes, said radial-axial retainer means comprising a mount member having a bolt hole and removably mountable on the abutting member by a bolt insertable through the bolt hole thereof and through a slot formed in the abutting member and by a nut adapted to be screwed on the bolt, a first engaging member attached to one end of the mount member close to the diametrically larger of said two adjacent pipes and provided with an engaging projection adapted to engage in the annular groove of the diametrically larger of said two adjacent pipes, and a second engaging member disposed close to the diametrically smaller of said two adjacent pipes and provided with stepped engaging means adapted to engage with the annular shoulder of the diametrically smaller of said two pipes.

4,434,893

TAMPER EVIDENT PACKAGING

Gordon A. Barlow, Glenview, Ill., assignor to Gordon Barlow Design, Skokie, Ill.

Filed Jan. 14, 1983, Ser. No. 457,938
Int. Cl.³ B65D *81/20, 77/04*
U.S. Cl. 206—522 **8 Claims**

1. A tamper evident packaging for contaminateable products including:

inner and outer gas tight containers,

the inner container having at least one flexible wall,

the outer container having at least one flexible wall,



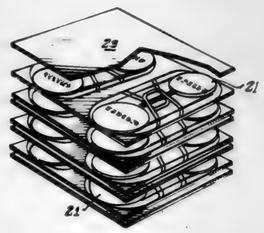
the inner and outer containers each being pressurized with gas above atmospheric pressure to inflate their flexible walls.

4,434,894

DUAL PURPOSE PALLET SHEET

Chong H. Lee, Lake Forest, Ill., assignor to Suh Won America, Inc., Waukegan, Ill.

Filed Nov. 4, 1982, Ser. No. 439,311
Int. Cl.³ B65D *19/20, 57/00*; A45C *13/02*
U.S. Cl. 206—526 **5 Claims**



1. A specialty package for shipping bags made of flexible material, which package comprises

an outer box having top, bottom and two side panels and havng end closure means for closing both ends thereof,

a plurality of flexible material bags having flexible handles for carrying same, said bags being each designed to have a generally cylindrical shape with a circular cross section and being each provided with quick opening means for gaining entry to the interior thereof,

said bags each being folded into a flattened condition and

a plurality of pieces of sheet material each having a shape that is substantially the same as the shape of said box top panel,

said folded flexible material bags being arranged in layers in stacked relationship between said top and bottom panels with at least one of said sheet material pieces being interposed between adjacent layers of folded bags,

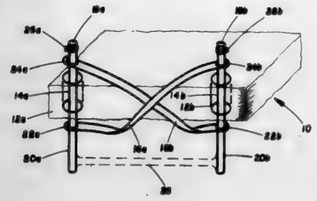
whereby upon removal of said bags and sheet material pieces from said outer box, each of said sheet material pieces is rolled into the shape of a tube and inserted through said quick-opening means into one of said bags so that the natural resiliency of said sheet material maintains said bag in unfolded expanded condition suitable for display for sale.

4,434,895

STRAPPED WICKETED BAGS PACKET

Philip T. Voso, Tryon, N.C.; Billy B. Hallmark, Duncan, S.C.; Richard D. Thomas, Mauldin, S.C., and Benjamin G. Wofford, Spartanburg, S.C., assignors to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Aug. 13, 1982, Ser. No. 408,093
Int. Cl.³ A45C *13/26, 13/30*
U.S. Cl. 206—554 **17 Claims**



1. A wicketed bags packet, comprising:

(a) a stack of flattened, flexible packaging bags having two wicket holes therethrough;

(b) wicket shanks extending through said wicket holes, respectively; and

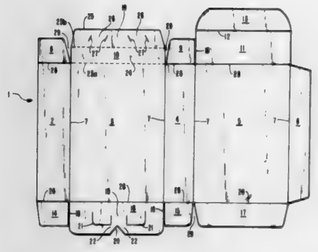
(c) elongate, flexible binding members crossed in an under-to-over pattern between said shanks and forming a handgrip for said packet, each said binding member being affixed to a shank, respectively, at the rear of said stack and extending to and being removably and reclosably affixed to the other of said shanks at the front of said stack, said binding members being adapted to be reclosed over said stack thereby to reform said handgrip during interruption in dispensing said bags from said stack.

4,434,896

TAMPER-RESISTANT RECLOSABLE PACKAGE

Mickey R. Beloate, Memphis; Harley E. Erb, Germantown, and Charles W. Shelton, Memphis, all of Tenn., assignors to Plough, Inc., Memphis, Tenn.

Filed May 2, 1983, Ser. No. 490,618
Int. Cl.³ B65D *5/54, 55/02*
U.S. Cl. 206—621 **8 Claims**



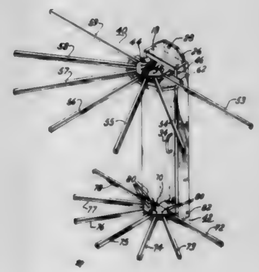
1. A package blank having top and bottom portions which is suitably cut and scored, comprising: (a) a series of generally rectangular package walls hinged at lateral edges by substantially parallel score lines, said package walls including front and rear panel walls, a pair of side panel walls, and a glue panel hinged to a lateral edge of one of said side walls, a first closure and panel at said top portion having first and second ends, said second end hinged to said rear panel wall and said first end removably engagable from said front panel wall; a second closure end panel at said top portion also having first and second ends, said first end hinged to said rear panel wall, a flap hinged to the second end of said second closure and end panel, said second closure end panel closing in an opposite direction to said first closure end panel, whereby said first closure end panel can be torn or damaged while maintaining the structural integrity of said second closure end panel, said first closure end panel having near its first end a generally longitudinally disposed line of weakness substantially extending the length thereof and substantially parallel to said first end which together with said hingedly connected and removably engagable first end defines a potential tear path therein; said first closure end panel also containing behind said weakening line, at least one cut or weakening score on a surface of said end closure panel adjacent to said second end, and which together with said second end defines a distortable bridge; and (b) tamper-resistant closure means for said bottom portion.

4,434,897

CLOTHES DRYING RACK

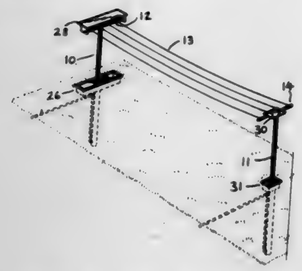
Ralph B. Gelhaus, 4293 Minster-Ft. Recovery Rd., St. Henry, Ohio 45883

Filed Nov. 19, 1981, Ser. No. 322,735
Int. Cl.³ A47B *53/00*
U.S. Cl. 211—1.3 **6 Claims**



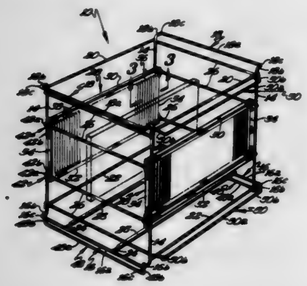
1. A clothes drying rack comprising two vertical side walls and top and bottom walls forming a cabinet, a door pivoted to one of said side walls and being spaced downwardly from said top wall and upwardly from said bottom wall, an upper rack set disposed in said cabinet in the upper part thereof and having a fixture pivoted between said side walls adjacent the upper edge of said door, said rack set having a plurality of clothes hanging arms extending radially outwardly from said fixture and pivoted at their inner ends to said fixture for moving angularly outwardly and inwardly with respect to one another, pivot means for pivoting said fixture and said arms from a vertical position in said cabinet to a horizontal position projecting outwardly from said cabinet with said rack set being supported by said door when said door is closed after said arms are lifted to horizontal position, a lower rack set disposed in said cabinet in the lower part thereof and having a fixture pivoted between said side walls, said lower rack set having a plurality of clothes hanging arms extending radially outwardly from said fixture and pivoted at their inner ends to said fixture for moving angularly outwardly and inwardly with respect to one another, and a pivot means for pivoting said fixture and said arms of said lower rack set from a vertical position in said cabinet to a horizontal position projecting outwardly from said cabinet with the lower side of said lower rack fixture being on substantially the same plane as the upper surface of said bottom wall when said lower rack set is in horizontal position, said pivot means of said lower rack set being spaced inwardly further from said door than said pivot means of said upper rack set so that said lower rack set is disposed behind said upper rack set when said rack sets are folded into said cabinet.

4,434,898
CLOTHESLINE MAST
Patrick J. McCarthy, P.O. Box 5053, Hamilton, New Zealand
Filed Dec. 7, 1981, Ser. No. 327,918
Claims priority, application New Zealand, Dec. 9, 1980, 195779
Int. Cl.³ A47F 5/00
U.S. Cl. 211—1.3 1 Claim



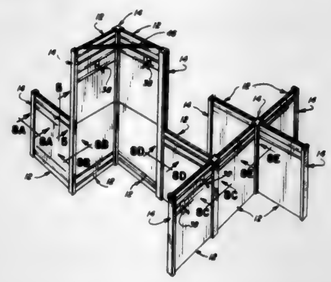
1. A clothes line system including a pair of spaced apart clothes line supports on one of which a plurality of clothes lines are storable and extendable therefrom in substantially parallel relationship for anchoring to the other of said supports, wherein at least one of the supports includes a clothes line mast having a column telescopically mounted within a casing, said casing being adapted to be sunken in situ, sealing means being mounted on the column adjacent the lower end thereof, a pressurized fluid connection means being located at the lower end of the casing, a hollow box member being attached to the upper end of said casing, said box member having an open top and an aperture in its base through which said column can protrude, a cover plate being attached to said column and capable of covering said box member, said mast further including means mounting a clothes line cross head to said column whereby said mounting means and/or said clothes line cross head can be contained within said box member when said column is retracted into said casing, said column being sunken into the ground so that when the mast is in its retracted position, it will be hidden by said cover plate.

4,434,899
ADJUSTABLE WIRE TOTE FOR PRINTED CIRCUIT BOARDS
Eric M. Rivkin, Minnetonka, Minn., assignor to Liberty Carton Co., Minneapolis, Minn.
Filed Nov. 17, 1980, Ser. No. 207,223
Int. Cl.³ B05C 13/02
U.S. Cl. 211—41 9 Claims



1. A wire frame tote for printed circuit boards, said tote comprising:
a frame comprising:
first and second sides;
first and second ends; and
at least first and second board holding means, each
said board holding means being continuously adjustably attached to said first and second sides, each said board holding means having a plurality of spaced parallel grooves for receiving the edge of a printed circuit board, each said groove comprising first and second opposing walls, said first and second walls being non-parallel, each said groove further comprising a bottom wall, said bottom wall connecting said first and second walls, said first and second walls diverging away from each other and away from said bottom wall, said board holding means being adjustable so as to vary the distance between said grooves on said first board holding means and said grooves on said second board holding means and accommodate opposite sides of a board.

4,434,900
FREE STANDING ARTICLE DISPLAY APPARATUS
Melvin W. Cook, Dover, Ohio, assignor to Masonite Corporation, Chicago, Ill.
Filed Jan. 25, 1983, Ser. No. 460,887
Int. Cl.³ A47B 47/00
U.S. Cl. 211—189 20 Claims

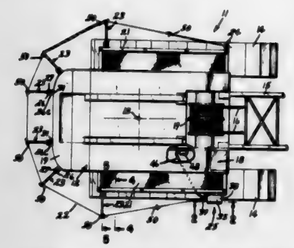


1. A free standing article display apparatus, comprising:
a display panel having an edge and means for securing an article for display adjacent a face of said panel;
an edge channel mounted along said edge of said panel including a web spaced outwardly apart from said panel edge and a pair of flanges engagable with opposite faces of said panel;
spacer means for providing an open space between said panel edge and said channel web, said web including at least one aperture therein for receiving a fastener;
an upstanding post having a longitudinally extending recess in one face thereof for receiving said edge channel on said display panel; and
at least one fastener extending between said recess of said post and said web of said channel for securing said post along said edge of said panel, said fastener including head means adapted to fit within said space and engage said channel web in interlocking relation.

4,434,901
SAFETY APPARATUS FOR CRANES
Paul O. Gehl, P.O. Box 303, Hilbert, Wis. 54129
Filed Jul. 15, 1981, Ser. No. 283,495
Int. Cl.³ B66C 15/00
U.S. Cl. 212—153 19 Claims

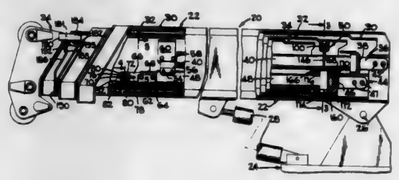
1. In a crane having a body defining opposite sides, a front end from which a crane boom is supported and extends forwardly, and a back end, the body being constructed for rotational swinging movement about a predetermined axis to position the crane boom in a desired location, the improvement which comprises:
cable means of predetermined length;

support means for supporting the cable means so that it extends around the opposite sides and back end of said crane body for movement therewith and in spaced relation thereto, said support means being constructed and arranged to resiliently support the cable means in a normal position under tension in such a way that the cable means may be deflected from its normal position to alter its



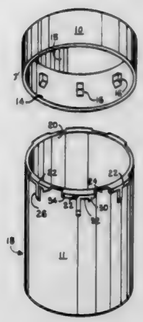
effective length as it engages or is engaged by an object, and is returned to its normal position after engagement with the object ceases;
control means operatively connected to the cable means for generating an alarm signal when the cable means is deflected and its effective length is altered;
and alarm means operably connected to the control means for generating an alarm in response to the alarm signal.

4,434,902
APPARATUS FOR EXTENDING AND RETRACTING A MANUAL BOOM SECTION
Frederick R. Goode, Lexington; John D. Evans, Nicholasville, and James W. Cox, Jr., Lexington, all of Ky., assignors to FMC Corporation, Chicago, Ill.
Filed Mar. 5, 1981, Ser. No. 240,727
Int. Cl.³ B66C 23/04
U.S. Cl. 212—268 9 Claims



1. In a multi-section extensible telescopic boom having at least three boom sections mounted for telescopic movement within each other, a multi-piece extensible and retractable power means having one piece connected to one of said telescopic sections; the improvement comprising first selectively operable coupling means solely supported by and disposed within a second boom section for selectively connecting and disconnecting another piece of said power means to the second boom section, second selectively operable coupling means operatively connecting said another piece of said power means to said third boom section for extending and retracting said third boom section relative to said second boom section in response to extension and retraction of said power means when said first coupling means is released, means for releasably locking said third boom section to said second section in extended position, and removable crank means engageable with said first coupling means for moving said first coupling means between said position connecting said another piece of said power means to said second boom section and said released position by operating said crank means in opposite directions.

4,434,903
SAFETY CLOSURE AND CONTAINER
Carl W. Cooke, 8146 Lt. William Clark Rd., Parker, Colo. 80134
Filed Nov. 22, 1982, Ser. No. 443,486
Int. Cl.³ B65D 55/02
U.S. Cl. 215—222 6 Claims

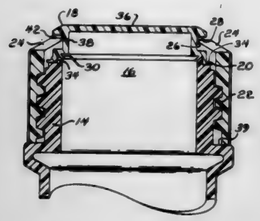


1. In the combination of a container having an open neck portion, a closure for said container comprising a top wall for sealing the mouth of said open neck portion and a cylindrical skirt portion adapted to receive the open neck portion of said container, resilient means carried on the inner wall of the top portion of said closure to urge said closure axially upwardly when said closure is drawn down into sealing position on the neck portion of said container and cooperating locking elements carried on the neck portion of said container and the inner wall of the skirt portion said portion, the improvement comprising:
the locking elements of said closure comprising lugs spaced about the periphery of the inner wall of the skirt portion;
bayonet lugs disposed about the open neck portion of said container, said bayonet lugs comprising an elongated portion adjacent the rim of the mouth of said container and extending axially on the neck portion and a leading end member extending normally to the elongated portion, the leading end member having an enlarged area spaced from the elongated portion of the bayonet lug to define an indented portion on the bayonet lug for receiving a lug of said closure when said closure is in the sealing position over the mouth of the open neck portion of said container.

4,434,904
BOTTLE CLOSURE
Richard D'Amico, Gurnee; Thomas A. Fowles, McHenry, both of Ill., and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Continuation of Ser. No. 157,438, Jun. 9, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,486
Int. Cl.³ B65D 41/32
U.S. Cl. 215—232 5 Claims

1. A three-piece quick-opening and reclosable container and closure system comprising:
a one-piece plastic container including an externally threaded neck portion defining a dispensing outlet, and an annular outwardly extending sealing surface above said threaded portion:
a separately formed plastic closure member covering said dispensing outlet and peripherally heat sealed to said neck portion along said sealing surface to define a frangible section therebetween, said closure member having a peripheral recess defined by a reduced diameter portion; and
a separately formed internally threaded jacking ring threadedly engaged on said neck, said jacking ring having a plurality of radially inwardly directed flexible fingers adapted to snap into said recess upon screw attachment of

said jacking ring to said container neck portion, and to break said frangible section by prying said closure member off when said jacking ring is removed by unscrewing from said container neck portion, the extension of said fingers



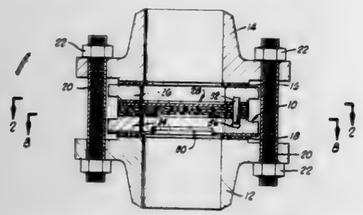
into said recess retaining said closure member in association with said jacking ring whereby upon reattachment of said jacking ring to said container, said closure member closes said dispensing outlet.

4,434,905

RUPTURABLE LOW PRESSURE RELIEF APPARATUS

Sam A. Ou, Bixby, and Charles E. Beair, Tulsa, both of Okla., assignors to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Mar. 31, 1982, Ser. No. 363,820
Int. Cl.³ B65B *25/00*
U.S. Cl. 220—89 A **19 Claims**



1. A rupturable pressure relief apparatus which ruptures at a low pressure differential adapted to be sealingly clamped between inlet and outlet annular support members comprising:

a first circular rupturable member formed of solid flexible material adapted to be positioned adjacent said inlet annular support member;

a second circular rupturable member formed of flexible material positioned adjacent said first rupturable member on the opposite side thereof from said inlet support member, said second rupturable member being of a size corresponding with said first rupturable member and including a solid annular flange portion and a plurality of arcuate slots circumscribing a substantially circular central portion with rupture tabs between said arcuate slots;

knife means having a cutting edge forming at least a portion of a circle positioned adjacent said second rupturable member on the side thereof opposite from said first rupturable member; and

an annular metal protection ring attached to the side of said second rupturable member facing said knife means, said protection ring being of a size such that when said second rupturable member flexes into contact with said cutting edge of said knife means, said protection ring prevents said second rupturable member from being cut by said cutting edge but when said second rupturable member ruptures, said protection ring passes through said knife means.

4,434,906

CONTAINER HAVING RESEALABLE OPENING MEANS

Rolf Florczyk, Pfingstmannstrasse 18, D-4350 Recklinghausen, and Reinhold Krischik, Cranger Strasse 200, D4660 Gelsenkirchen-Buer, both of Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 436,961
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142837
Int. Cl.³ B65D *17/32*
U.S. Cl. 220—268 **22 Claims**



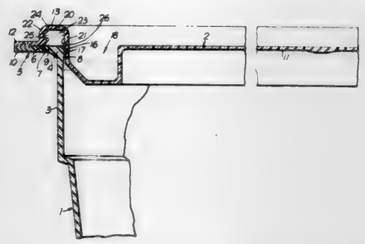
1. A wall structure for a container, comprising a container wall, an opening region in said wall surrounded by a break edge defined by a score line and connecting the opening region to a remaining portion of the wall, said opening region can be ruptured along said score line and separated from said remaining portion by external pressure applied toward an interior of the container to form in said wall an opening defined by said break edge; and an operating member connected to said opening region and located above said opening region so as to overlap said break edge, said opening region after being ruptured remaining in the interior of the container and being slidably displaced by said operating member relative to said opening, said operating member being a plug member formed with a peripheral closing edge region adapted to fluid-tightly close said opening when displaced to be positioned against said opening, said edge region having a configuration similar to the configuration of said break edge and that of said opening, said closing edge region including a form-and force-locking closing edge having a configuration similar to that of said breaking edge and extending parallel to said score line, and a pressure edge directed towards said opening region.

4,434,907

CONTAINER HAVING AN ORIGINALLY SEALED CONDITION WHICH CAN BE OPENED AND THEREAFTER CLOSED

Ole Ingemann, Ryslinge, Denmark, assignor to A/S Haustrup Plastic, Langeskov, Denmark

Filed Dec. 6, 1982, Ser. No. 446,879
Claims priority, application Sweden, Dec. 7, 1981, 8107310
Int. Cl.³ B65D *17/40*
U.S. Cl. 220—276 **64 Claims**



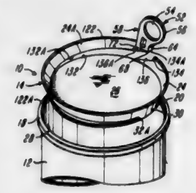
1. The combination of a container member and lid member in which the lid member is initially sealingly engaged with the container member and is removable from the container member to open the latter and is replaceable to close the container member, said container member including a body having a mouth, said mouth including a strip of annular extent secured to said lid member, a first of said members being provided with an annular weakening notch in the vicinity of said strip where the mouth of the container member is secured to the lid member, said combination being separable at said notch to separate a part of said mouth and the lid member together with said strip from said body, to provide two separated parts which can be reengaged by replacement of said lid member with the separated strip secured thereto onto said container member, said notch being positioned radially inwards of said strip and upon rupture of the notch forming a locating surface for replacement of the lid member on said container member, one of said members including a U-shaped portion extending at least partially around the periphery of said one member for insertion of a portion of the other of said members thereinto in the reengaged position of replacement of the lid member on said container member, the insertion of said portion of the other of said members into the U-shaped portion causing engagement of said members at respective surfaces one of which is said locating surface and the other of which includes means for providing snap engagement with said locating surface.

4,434,908

CONTAINER HAVING INTEGRAL OPENING MEANS

William L. French, Hillsboro, Ohio, assignor to Buckeye Molding Company, New Vienna, Ohio

Continuation of Ser. No. 273,333, Jun. 15, 1981, abandoned. This application Apr. 29, 1983, Ser. No. 487,599
Int. Cl.³ B65D *17/40, 17/34*
U.S. Cl. 220—276 **15 Claims**



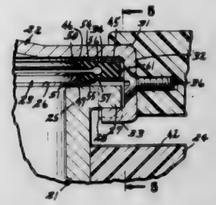
1. A one piece plastic container comprising a tubular container body, an easy-open end closure closing one end of said body, and a first weakened line of plastic extending completely around said end closure and connecting said end closure to said body, said end closure being removable by completely tearing said first weakened line, said end closure comprising a center panel, a sloping side wall surrounding said center panel and spanning the distance axially and diametrically of said body between said center panel and said first weakened line, a second arcuate weakened line of plastic located entirely within the boundry of said end closure and spaced from said first weakened line, said second weakened line having ends terminating in said end closure, a straight third weakened line extending perpendicularly from said first weakened line partway along said sloping side wall in the axial direction of said body, said third line having one end joining said first weakened line, a fourth weakened line extending between the other end of said third weakened line and one end of said second weakened line, said fourth weakened line joining to said other end of said third weakened line at an obtuse included angle, a pull tab connected to said side wall in spaced relation to said center panel said pull tab comprising a plate-like body having a bottom surface confronting a substantially parallel to said center panel and a top surface spaced from said bottom surface, said pull tab having a side edge surface extending along a diameter of said container aligned with said third line and having a height substantially equal to the length of said third line, an adjacent outer edge surface of said pull tab being integrally connected to said sloping wall so that one corner joining said edge surfaces is substantially diametrically aligned with the point of intersection of said third line and said fourth line.

4,434,909

PRESSURE COOKER INTERLOCK

Richrd B. Ott, Eau Claire, Wis., assignor to National Presto Industries, Inc., Eau Claire, Wis.

Continuation-in-part of Ser. No. 233,842, Feb. 12, 1981, abandoned. This application Oct. 30, 1981, Ser. No. 316,934
Int. Cl.³ B65P *45/00*
U.S. Cl. 220—316 **17 Claims**



1. In a pressure cooker including a receptacle and a cover, safety interlock apparatus comprising:

(a) said receptacle and said cover having annular sealing surfaces disposed in juxtaposition;

(b) interlocking lugs on said cover and receptacle, said cover being rotatable with respect to said receptacle in a first direction between a first position in which said lugs are disengaged and a second, fully locked position;

(c) a resilient gasket disposed between said sealing surfaces, said gasket having upper and lower faces and comprising upper and lower inwardly extending, diverging leg portions with inner peripheral sealing lip portions, and said gasket further having space, radially extending ribs formed on at least one of said upper and lower faces;

(d) said interlocking lugs being so constructed and arranged that in the second position of said cover, a first distance between said sealing surfaces is established such that pressure within said pressure cooker can force the leg portions apart with said sealing lip portions pressed into sealing engagement with said sealing surfaces to thereby permit pressure to build up within said cooker; and

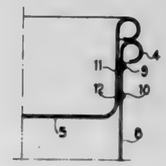
(e) means associated with at least selected ones of said lugs for reducing the distance between said sealing surfaces with the cover located between said first and second positions to a second distance at which at least one of said sealing surfaces engage said ribs of said gasket to compress said leg portions together and prevent a seal from forming between said lip portions and said sealing surfaces, and for preventing rotation of said cover toward said first position from said second position so long as the distance between said sealing surfaces is greater than said second distance.

4,434,910

SEALING DEVICE AND PROCESS FOR A METAL PACK

Jacques Groult, Verneuil, France, assignor to Safet-Embamet Lethias, Villeneuve-la-Garenne, France

Filed Dec. 10, 1982, Ser. No. 451,933
Claims priority, application France, Dec. 14, 1981, 81 23266
Int. Cl.³ B65D *53/00*
U.S. Cl. 220—358 **9 Claims**



1. A sealing device for a cylindrical metal pack having a

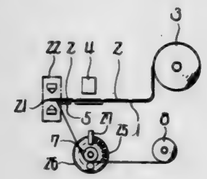
total opening and comprising a recipient, a pressed-out cover, the recipient having an inner peripheral surface devoid of an inner radial flange and defining the opening of the recipient, and the cover having an outer cylindrical surface which directly cooperates with the inner peripheral surface of the recipient when the cover is inserted in the recipient, said device comprising at least one annular groove formed in one of two elements consisting of the cover and the recipient, at least one sealing element of a partly O-section shape and composed of a copolymer resin formed and adhered in situ in said groove, said groove being located in a region of the recipient and cover in which region occurs a rubbing between cooperating portions of said outer surface of the cover and said inner surface of the recipient when the cover is placed in position in and removed from the opening of the recipient.

4,434,911

LABEL FEED CONTROL SYSTEM

Yasuhiro Sakura, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,307
Claims priority, application Japan, Aug. 14, 1980, 55-111980; Aug. 14, 1980, 55-111981; Aug. 15, 1980, 55-112441
Int. Cl.³ B65H *5/28, 7/02*
U.S. Cl. 221—2 **9 Claims**



9. A label feed control system comprising:
a driver means for driving a feed means which transports a paper base ribbon with labels stuck thereon;
a separator means for peeling said label off said base ribbon;
a label detector disposed in the vicinity of said separator means for detecting the front edge of said peeled-off label;
an incremental feed means for controlling the operation of said driver means such that said base ribbon is fed for a certain amount after said label detector has detected the front edge of said peeled-off label;
an excessive feed detection means provided with a setting of an excess detection feed amount which is larger than a length which said base ribbon travels after the ribbon feed has started until the front edge of said label is detected in normal operation, and adapted to count said excess detection feed amount on starting the ribbon transportation; and
a gate means for activating said incremental feed means on completion of the count operation if a front edge detection signal has not been issued by said label detector during the count operation of said excessive feed detection means.

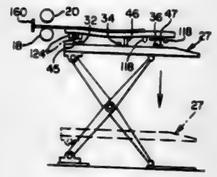
4,434,912

ACCUMULATOR FOR VENEER FEEDER

Charles L. Larson, deceased, late of Jackson County, Oreg., and by Rocket L. Larson, executor, 606 Benning Dr., Tampa, Fla. 32541

Filed Aug. 13, 1981, Ser. No. 292,716
Int. Cl.³ B65H *1/04, 1/14*
U.S. Cl. 221—227 **10 Claims**

5. Apparatus for feeding veneer sheets to a dryer comprising:
an elevated power-driven substantially horizontal pinch roll mechanism for feeding veneer sheets into the dryer,
an elevatable platform means on the feed side of such pinch roll mechanism having a support plane for supporting a stack of veneer sheets and having a set of opposite sides substantially paralleling the pinch roll mechanism, multiple elongate hoist bars extending in the direction of said sides of the platform means and spaced laterally over the expanse of said platform means, means mounting said hoist bars on said platform means, said mounting means for said bars including means for shifting under power each bar between a lowered position which is no higher than said support plane and a raised position disposed above said



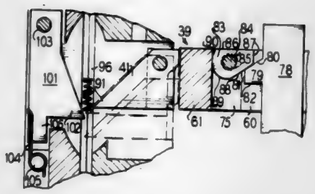
support plane, the hoist bars collectively in said raised position defining a plane located above said support plane,
a pair of holding bars disposed laterally outwardly of said opposite sides of said platform means, and means mounting said holding bars independently of said platform means, the mounting for said holding bars including means for shifting them from an inoperative position disposed remotely from the sides of the platform means to an operative position disposed closely adjacent the sides of said platform with the platform means in an elevated position.

4,434,913

CYCLICAL MECHANICAL DISPENSING MECHANISM

Lucien J. Wroblewski, 8438 N. Kedvale Ave., Skokie, Ill. 60076

Filed Oct. 1, 1981, Ser. No. 307,486
Int. Cl.³ B65G *59/00*
U.S. Cl. 221—267 **18 Claims**



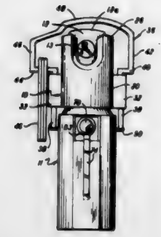
1. Apparatus for cyclically dispensing elements individually from a serial feed path comprising:
a finger means having a leading edge for engaging a lead element in said feed path,
a resiliently biased latch means having a gate edge for extending into said feed path to halt passage of said lead element from said feed path,
a drive means for cyclically stroking said finger means though a motion path, and
a cam means associated with said finger means, said cam means comprising a cam follower slidable over a fixed cam surface in one stroke direction of said finger means for passing said finger means whereby said leading edge passes from an initial position to engage said lead element and draw it past said gate edge against the bias of said latch means, and then said cam follower is rotatable relative to said cam surface and said finger means in another stroke direction of said finger means such that said leading edge releases said lead element and returns to said initial position during each stroke cycle.

4,434,914

PERSONAL DEFENSE ACTUATOR

Philip Meshberg, 2500 S. Ocean Blvd., Palm Beach, Fla. 33480

Filed Jun. 30, 1981, Ser. No. 279,202
Int. Cl.³ B67D *5/32*; B65D *83/00*
U.S. Cl. 222—153 **4 Claims**



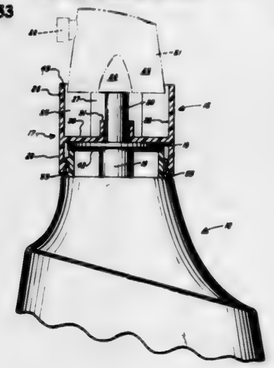
1. A directional applicator for a self-defense product comprising:
a. a container having a bottom, side walls and a top;
b. a valve mounted to the top of said container, an actuating stem, having an axial dispensing bore, for said valve, projecting outwardly from said container;
c. an actuator comprising a first part having therein a spray nozzle disposed on the stem of said valve with said nozzle in communication with said bore and a second actuator part fixedly mounted to said container; and
d. a key-ring mounted to said second part, which is fixed to said container, for axial sliding movement along the applicator between a position where it is adjacent to said actuator and a position where it is spaced from said actuator sufficiently to permit a thumb or finger to be inserted between said key-ring and actuator to operate said actuator thereby providing a safety feature to prevent accidental actuation.

4,434,915

CHILD-RESISTANT FINGER PUMP DISPENSER

Donald C. Kirk, Jr., Midlothian, Va., assignor to Ethyl Products Company, Richmond, Va.

Filed Dec. 24, 1981, Ser. No. 334,340
Int. Cl.³ B65D *83/41*
U.S. Cl. 222—153 **2 Claims**



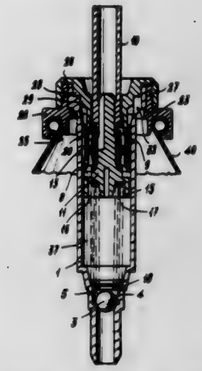
1. An assembly for dispensing fluids comprising:
(a) a generally elliptical container having a neck portion with at least two opposed thread members having undercut portions adjacent their terminal ends;
(b) a reciprocating pump including a pump housing having an annular flange at its upper end received in said container;
(c) a stem extending out of the upper end of said pump housing;
(d) a dispensing actuator member received on the upper end of said stem and having a spray nozzle projecting from the side thereof;
(e) a closure-guide member having a transverse wall portion which abuts said flange and a central opening receiving said stem, and a lower skirt portion provided with at least two thread members having harpoon-shaped portions at their leading ends on its inner wall which are received in said undercut portions of said container thread members, and an integrally formed upper guide collar portion which extends over the lower portion of said dispensing actuator member when said actuator member is in the uppermost position;
(f) said dispensing actuator member and said upper guide collar portion having opposed slidable, guiding surfaces that prevents rotation of said dispensing actuator member in said upper guide collar portion throughout the full reciprocating limits of said actuator member;
(g) said container thread members being so positioned on said neck and said closure guide member thread members being so positioned on said lower skirt portion that when they are interlocked said spray nozzle cannot be rotated and is oriented parallel with respect to the major axis of said elliptical container.

4,434,916

MANUALLY OPERATED LIQUID DISPENSING PUMP

Tomaso Ruscitti; Giovanni Albini; Roberto Torretta, and Andrea Incerti Baldi, all of Milan, Italy, assignors to S.A.R. S.p.A., Testino, Italy

Filed Dec. 31, 1981, Ser. No. 336,189
Claims priority, application Italy, Jan. 7, 1981, 19026 A/81
Int. Cl.³ G01F *11/36*
U.S. Cl. 222—321 **1 Claim**



1. A manually operated pump for the delivery of viscous liquid stored within a container upon which said pump is mounted, said pump comprising:
a ring nut mounted on a mouth of said container, said ring nut including a first annular shoulder and an annular seal extending into said container;
a pump body comprising a hollow cylinder having an axis and a ring at one end, said ring resting upon said first shoulder of said ring nut for supporting said pump body in the axial direction, said ring having a pressure equalization opening, said hollow cylinder having a second end extending into said container and including an annular internal valve seat and a product drawing tube coaxial with said cylinder and communicating with said cylinder via said valve seat;

a ball valve in said second end and engageable with said valve seat;

a closure ring mounted on said ring nut and having a center circular opening coaxial with said pump body;

a hollow delivery stem extending through said central opening of said closure ring, said hollow stem having a lower end positioned inside said pump body, said lower end of said stem including a first annular projection having a first annular downwardly extending lip, said lower end of said stem and said first lip together defining walls of a first annular concave seat;

a shaped body in said pump body, said shaped body having a cylindrical mid-portion and an upper end extending into said hollow stem, said upper end of said shaped body including a delivery passage whereby said liquid may be introduced into said hollow stem at said lower end thereof, said shaped body having a lower end including an annular guide portion having an outer diameter substantially equal to an inner diameter of said hollow cylinder of said pump body, whereby said hollow stem and shaped body are guided in the axial direction, said mid-portion of said shaped body including a second annular projection having a second annular upwardly extending lip, said cylindrical mid-portion and said second lip together defining walls of a second annular concave seat spaced from said first seat by a first distance;

conical spring means extending between said ball valve and said lower end of said shaped body for biasing said ball valve into engagement with said valve seat and for biasing said shaped body and said hollow stem in a direction away from said valve seat; and

a soft elastic seal positioned in said pump body between said first and second annular concave seats, said seal comprising:

(a) an inner cylindrical portion closely surrounding said mid-portion of said shaped body in a slidable manner, the axial height of said inner portion being less than said first distance, whereby said seal is axially movable between a first position in which an upper end of said inner portion is inserted into said first concave seat so as to open said delivery passage of said shaped body, and a second position in which a lower end of said inner portion is inserted into said second concave seat so as to seal said delivery passage of said shaped body,

(b) an outer cylindrical portion adjacent the inner cylindrical walls of said hollow cylinder of said pump body, said outer portion having axial ends bent into engagement with said inner cylindrical walls of said hollow cylinder of said pump body so as to form annular seals therewith, and

(c) an annular connecting portion connecting said inner and outer cylindrical portions.

4,434,917

TRIGGER-ACTUATED ATOMIZER

Tadao Saito; Takamitsu Nozawa; Shuzo Endo; Yoshiyuki Kakuta; Riichi Ogawa, and Tetsuro Kaneuchi, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

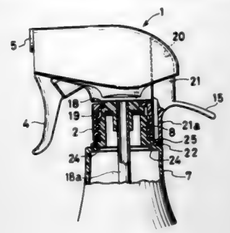
Filed May 26, 1981, Ser. No. 267,049
Int. Cl.³ B67D 5/40
U.S. Cl. 222—383 **8 Claims**

1. A trigger-actuated liquid dispenser comprising:

a liquid receiving container having a body and a neck extending from said body;

means received about said neck and coupled to said body in a predetermined position for forming an engagement member which includes a projection extending outwardly from said body; and

atomizer pump including a pump body, a means for coupling said pump body to said neck, means including a trigger for delivering fluid through said pump body from said container and producing an atomized fluid, and means formed in said pump body for receiving said engagement member such that said pump body is oriented in a predetermined position with respect to said container body and for preventing relative rotation between said pump body and said



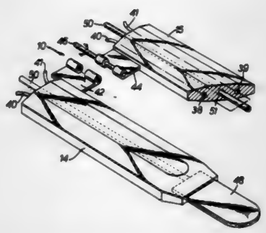
container body, said projection being positioned to abut against an operator's hand when gripped about said container body to operate said trigger.

4,434,918

BOARDING APPARATUS AND METHOD

Michael J. Hodges, High Wycombe, England, assignor to Detexomat Machinery Limited, England

Filed Jan. 22, 1982, Ser. No. 341,638
Int. Cl.³ D06C 5/00
U.S. Cl. 223—75 **23 Claims**



1. Hosiery boarding apparatus comprising a pair of flat, elongated boarding forms onto which hosiery legs are to be stretched, said forms extending lengthwise parallel to one another, hinge means located remote from free, hose-receiving ends of said forms interconnecting said forms, means for effecting a hinging movement about an axis parallel to said forms whereby said forms can be selectively brought into and out of a contiguous, superposed hose-discharge relationship, and said forms at their free ends including outwardly ejectable tongues, said ejectable tongues being telescopically mounted at the said free ends and operable when said forms are superposed for advancing toe ends of hosiery mounted on said forms forwardly, said apparatus further including hosiery dispensing means operable when said toe ends are introduced into a nip thereof to draw said hosiery from the forms with the hosiery legs lying one on the other.

4,434,919

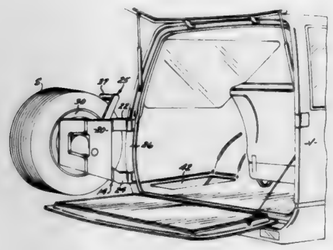
MULTIPLE-POSITION SPARE TIRE MOUNT

Allan L. Flowers, Del Mar, Calif., assignor to Nissan Design International, Inc., La Jolla, Calif.

Filed Sep. 24, 1982, Ser. No. 422,708
Int. Cl.³ B62D 43/02
U.S. Cl. 224—42.21 **6 Claims**

1. In an automotive vehicle having a rear door, a multiple-position mount for a spare tire, comprising:

a tire support member secured alongside one edge of the rear door frame to swing on a generally vertical axis from an inside-stored position generally parallel with a tire well, the tire well being of the type for holding a tire in its upright position parallel and adjacent to a sidewall of a vehicle and inside said vehicle, a tire-removing position exterior of the vehicle and to one side of the door opening, and an outside-stored position outwardly of the closed rear door and generally parallel thereto;



anchoring means for retaining said tire in its inside-stored position; and

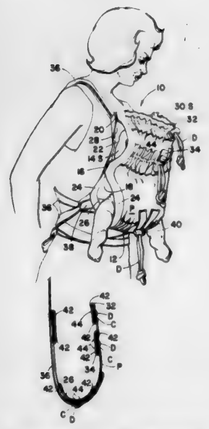
lock means interposed between said tire support and said vehicle for retaining said tire in its outside-stored position whereby said tire may be selectively retained in either its inside-stored or outside-stored position.

4,434,920

SOFT ORTHOPEDIC POUCH-TYPE INFANT CARRIER

Ann A. Moore, Evergreen, Colo., assignor to Snugli, Inc., Evergreen, Colo.

Filed Feb. 22, 1982, Ser. No. 350,877
Int. Cl.³ A47D 13/02
U.S. Cl. 224—160 **9 Claims**



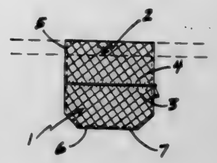
1. In an infant carrier of the type having front and rear soft fabric panels connected along the bottom and at spaced points on both sides to define an open-topped pouch with a seat in the bottom, leg openings at the sides of the seat and armholes above the leg openings; and, supporting means connected to one of the panels for carrying said pouch on the chest or back, the improvement which comprises: adjustment means arranged transversely of the seat operative upon actuation to narrow the distance separating the leg openings, and belt-forming means connectable alongside each leg opening operative upon actuation to maintain the maximum spread relation therebetween permitted by said seat width adjustment means.

4,434,921

HANDBAG AND BELT CARRIER

Rose G. Santhoff, 8144 Jefferson, Kansas City, Mo. 64114

Filed Dec. 14, 1981, Ser. No. 330,709
Int. Cl.³ A45C 11/10
U.S. Cl. 224—253 **6 Claims**



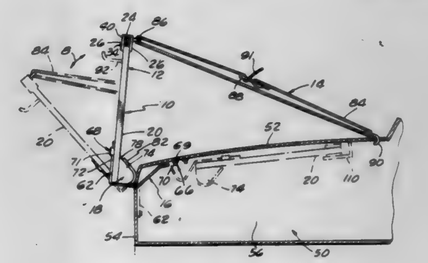
1. A receptacle comprising a combined handbag and belt pouch having concealed support means attached to an inner surface and located within said receptacle, said support means being adapted to the insertion of a carrying strap and being located at a position, measured from the uppermost portion of said receptacle, which is between one-half and one-quarter of the vertical distance between the uppermost portion of said receptacle and the lowest portion of said receptacle.

4,434,922

FLEXIBLY-SUPPORTED, PIVOTABLE LOAD CARRIER FOR VEHICLES

Donald H. Brandsen, 11401 Culver Blvd., Los Angeles, Calif. 90066, and Griffith L. Hoerner, 2211 Montana Ave., Santa Monica, Calif. 90403

Filed May 18, 1983, Ser. No. 495,748
Int. Cl.³ B60R 9/06
U.S. Cl. 224—314 **24 Claims**



12. A load carrier for use with a vehicle having a cavity defined by vehicle interior surfaces, said load carrier comprising:

a frame for supporting a load thereon when in a load-supporting position, said frame comprising

a pair of legs having first and second ends,

a cross-member, and

means for pivotally connecting said second end of each said leg to a different end of said cross-member to permit said legs to pivot into a folded position in juxtaposition with said cross-member for storage and to permit said legs to pivot into position to support said cross-member in said load-carrying position;

a pair of cams, each said cam being attached to a different frame leg adjacent to said first end thereof;

a pair of straps;

adjustable connector means associated with each of said straps for varying the effective length of said straps, for connecting one end of each said strap to a different one of said legs adjacent its first end or of said cams and for connecting the other end of each said strap to at least one

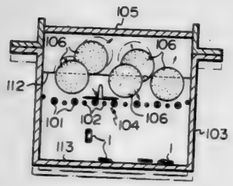
of said cavity-defining, interior surfaces, said straps being in contact and aligned with said cams to permit rotation of said cams along said straps, each member of each associated leg, cam and strap lying in a plane substantially perpendicular to that of said frame.

4,434,923

APPARATUS FOR SEPARATING CASTINGS INTO NECESSARY AND UNNECESSARY PIECES

Kazuo Nagata, and Susumu Ishii, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,985
Claims priority, application Japan, Jun. 20, 1981, 56-95756
Int. Cl.³ B26F *3/00*
U.S. Cl. 225—97 **4 Claims**



1. An apparatus for separating castings into necessary and unnecessary portions, which comprises:

a conveyance frame providing a conveyance mechanism including a plurality of bar members juxtaposed in parallel and extending in the direction in which the castings are conveyed;

at least one downwardly open cover member disposed above said conveyance mechanism and spaced away therefrom by a distance great enough to permit the passage of the castings conveyed along said conveyance mechanism;

a plurality of freely movable masses confined between said conveyance mechanism and said cover mechanism; and

vibration means for vibrating said conveyance frame;

said castings being separated into necessary and unnecessary portions by impacting against said freely movable masses.

4,434,924

DUAL DRIVEN FEED ROLLS FOR A PUNCH PRESS

Mario Varisco, Allison Park, Pa., assignor to Vamco Machine & Tool, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1982, Ser. No. 363,079
Int. Cl.³ B65H *17/22, 17/26*
U.S. Cl. 226—120 **10 Claims**

1. Apparatus for intermittently feeding a workpiece comprising,

an input shaft supported for rotation at a continuous preselected speed,

an output shaft having a first end portion and a second end portion,

cam drive means drivingly connecting said output shaft first end portion to said input shaft for generating oscillating rotational movement of said output shaft through a preselected angle of rotation,

feed means for intermittently feeding a preselected length of the workpiece in a selected direction,

said feed means including a first feed roll and a second feed roll,

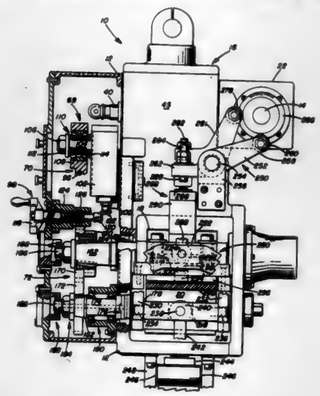
a frame for supporting said first and second feed rolls in overlying relation to engage the workpiece therebetween,

rotation transmission means drivingly connected at one end to said output shaft second end portion and at an opposite end to said first feed roll,

said rotation transmission means being operable to transmit the oscillating rotational movement of said output shaft to said first feed roll to oscillate said first feed roll through said preselected angle of rotation,

pivot means for supporting said second feed roll in said frame for movement toward and away from said first feed roll,

coupling means for drivingly connecting said rotation transmission means to said second feed roll to oscillate said



second feed roll through an angle of rotation corresponding to the angle of rotation of said first feed roll and thereby drive both said first and second feed rolls, and

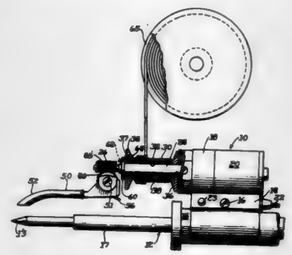
said coupling means drivingly connected to said second feed roll to facilitate movement of said second feed roll toward and away from said first feed roll as rotation is transmitted to said second feed roll.

4,434,925

STRIP SOLDER FEEDING AND RE-WINDING DEVICE

Joseph M. Jacobs, 212 Via LaCircula, Redono Beach, Calif. 90277

Filed Mar. 9, 1981, Ser. No. 241,602
Int. Cl.³ B23K *3/02*; B65H *17/26, 75/00*
U.S. Cl. 226—127 **6 Claims**



1. Apparatus for feeding strip solder to the heated tip of a soldering iron comprising:

a spool carrying a coiled supply of strip solder defining an opening along its longitudinal axis and having a front wall defining an aperture; a motor having a shaft extending through the spool opening and supporting said spool for free-wheeling rotation about said shaft;

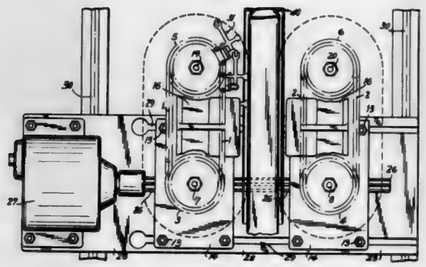
stop means secured to said shaft adjacent to the front wall and defining an aperture alignable with the spool wall aperture whereby a length of strip solder inserted through said aligned apertures mechanically connects the motor and the spool to wind a fresh coiled solder supply on to the spool.

4,434,926

TRANSPORTATION DEVICE, IN PARTICULAR FOR SHAPED, FLEXIBLE MATERIAL

Bruno Paoli, Fornacette-Pisa, Italy, assignor to International Paper Company, New York, N.Y.

Filed Sep. 15, 1981, Ser. No. 302,394
Int. Cl.³ B65H *17/34*
U.S. Cl. 226—172 **3 Claims**



1. A device for transporting along its length a continuous web, including rotary means for clamping, the rotary means having two separate, opposing clamp groups being substantially equal and symmetrical, the clamp groups grasping the opposite longitudinal edges of the web to be transported and wherein said rotary means for clamping comprises, for each one of said two groups of clamps, an endless chain, supported on a carrying reel and on a drive reel, the two carrying reels being powered by a motor system, and wherein each one of said clamps in said groups comprises two opposing and symmetrical levers, pivoting at one of their ends on strip elements carried by said endless chain, the other free end of each one of said levers carrying a roller, each one of said levers having a head between its ends the two heads of the two levers of each clamp forming a clamp for grasping the web material to be transported, cam guide elements which engage said roller which cause the rotation of the respective lever around said lever pivoting end, to thereby actuate said clamps.

4,434,927

PENETRATOR INTERFACE ADAPTER CONCEPT

John R. Butler; Gerald D. Shock, both of White Plains, and Norman J. Saunders, Nanjemoy, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1981, Ser. No. 276,856
Int. Cl.³ B21J *15/18*
U.S. Cl. 227—9 **5 Claims**

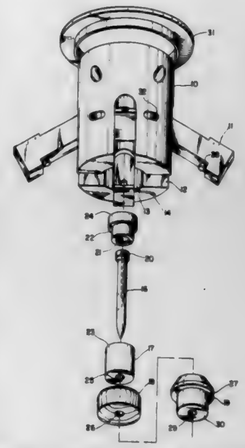
1. An assembly for use with a conventional percussion gun for guiding a driven hollow sampling penetrating needle to drive the needle a predetermined distance through the wall of a container to allow a sample to be extracted from the container comprising:

(1) a housing including a chamber adapted to be connected and firmly attached to the gun;

(2) guide carrier means to center the needle in the housing and

(3) shock absorber means adapted to be positioned at the forward end of the said housing, having an opening therethrough, and where the opening is aligned with the said needle and said opening is smaller than the diameter of the needle so that the outer wall of the needle engages the opening in the shock absorber so that the shock absorber determines the depth of penetration of the needle into the container,

where the housing is fitted with multiple pivoted means for clamping that functions to secure the shock absorber means to the housing and is adapted to hold the shock



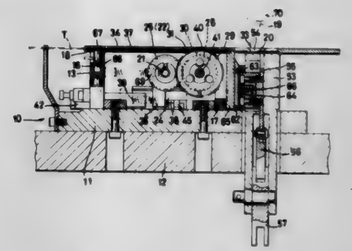
absorber means in position against the target piece during the shooting operation.

4,434,928

TAPE FEEDING DEVICE FOR STAPLING MACHINES

Fumio Seki, Toyama, Japan, assignor to Yoshida Kogyo K K, Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,613
Claims priority, application Japan, Dec. 9, 1980, 55-176346[U]
Int. Cl.³ B27F *7/19*
U.S. Cl. 227—16 **3 Claims**



1. In a stapling machine for applying a fastener part with projecting prongs with a fastener backing plate to a fabric, having means for applying a fastener part with a backing plate to the fabric a work station, and means for feeding a reinforcing tape into the work station in overlying relation to the backing plate, the improvement wherein the tape feed means comprises a roller means having means on its circumference for continuously engaging the tape, and means for rotating said roller means in one direction, said roller means, upon rotation, feeding a predetermined length of the reinforcing tape into the work station and wherein said rotating means comprises an air cylinder, a rack operatively connected to said air cylinder for reciprocating movement when said air cylinder is operated to rotate a bell crank connected to said rack, a pinion rotatable in its own axis and drivingly meshing with said rack, a drive gear coaxial with said pinion, a one-way clutch means in said pinion for transmitting motion of said pinion to said drive gear, a driven gear rotatable in its own axis and drivingly meshing with said drive gear, said roller means comprises a pair of feed

rollers coaxially connected to and disposed one on each side of said driven gear, and said means on said roller means comprises a pair of axially spaced rows of pointed projections extending radially outwardly from the respective circumferences of said feed rollers and spaced circumferentially apart from each other.

4,434,929

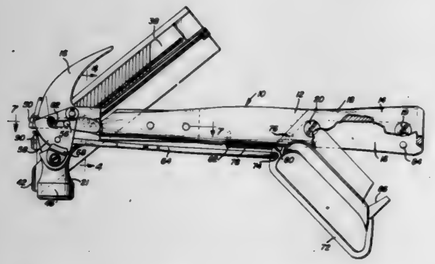
HAMMER WITH MAGAZINE NAIL FEED

Neil F. Keener, P.O. Box 573, Jemez Springs, N. Mex. 87025

Continuation-in-part of Ser. No. 221,911, Dec. 31, 1980. This application Nov. 27, 1981, Ser. No. 325,184

Int. Cl.³ B25C *1/02, 3/00*

U.S. Cl. 227—115 **14 Claims**



1. A hammer comprising an elongated handle including an elongated transverse head on one end defining an outwardly facing terminal end impact face on one end portion of said head, elongated generally straight magazine means carried by said hammer and inclined relative to said handle and head, said magazine means, head and handle being disposed in generally the same plan with said magazine means extending through the junction of said head and handle intermediate the opposite sides of said head and handle and with said magazine means including one discharge end opening outwardly of the side of said head remote from said handle, said magazine means slidingly receiving a row of side-by-side longitudinally staggered and transversely extending nails therein for successive lateral movement of said nails longitudinally of said magazine means to a first feed position at said discharge end wherein each nail in the feed position is oriented generally parallel with said head and with its tip end spaced from a plane normal to said nail and containing said impact fact and preparatory to subsequent longitudinal movement of said nail to a set position wherein the nail is oriented with its tip end extending through said plane normal to said nail and containing said impact face, feed means mounted on said hammer for movement between a first position behind and engaged with the head of a nail in the feed position and a second position displaced in the direction in which the feed position nail tip end faces for displacing the feed position nail from the feed position to the set position.

4,434,930

PROCESS FOR PRODUCING REINFORCED STRUCTURAL ARTICLES

George Trenkler, East Providence, R.I., and Richard G. Delagi, Sharon, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 15, 1981, Ser. No. 311,574

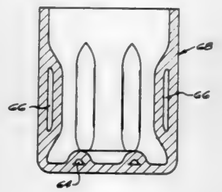
Int. Cl.³ B23K *19/00*

U.S. Cl. 228—118 **10 Claims**

1. A process for producing a reinforced structural member comprising the steps of

providing at least two flat sheets of malleable metal, the sheets of metal having a sintering temperature, disposing a selected pattern of stop-off material between at least two adjacent sheets, the stop-off material being thermally decomposable to generate a gas when raised above a given temperature, the stop-off material comprising first and second portions, the first portion generates gas at the sintering temperature and the second portion generates gas above a predetermined temperature higher than the sintering temperature,

squeezing and solid state green bonding the sheets one to another,



heating the sheets to a sintering temperature to improve the metallurgical bond therebetween and generate gas from decomposition of the first portion, and

heating the sheets above the predetermined temperature to cause gas generation from decomposition of the second portion and concomitant separation and deformation of the sheets contiguous to the stop-off material.

4,434,931

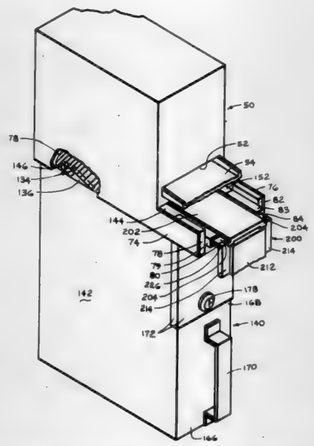
CASH BOX FOR PAPER CURRENCY

James W. Hunt, and Raymond A. Johnson, both of Hot Springs, Ark., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Nov. 12, 1981, Ser. No. 320,767

Int. Cl.³ G07F *9/06*

U.S. Cl. 232—15 **7 Claims**



1. Bill handling apparatus comprising a bill-accepting unit;

a bill-receiving container removably secured to the bottom of the bill-accepting unit having an opening at the top through which a bill entered in the bill-accepting unit may be pushed down for flatwise stacking of bills in the container,

the bill-accepting unit having means for pushing a bill entered in the unit down into the container,

the container having a closure for its top opening movable between a closed position in which it may be locked for precluding unauthorized access to the container and an open position for allowing bills to be pushed down into the container;

the closure in its open position extending outwardly from the container;

and means for releasably locking the container to the bill-accepting unit and precludng its removal from the bill-accepting unit unless the closure is closed including retaining means on the unit engageable by the opened closure where it extends outwardly from the container,

the container being applicable to the bottom of the bill-accepting unit with the closure closed, the closure then being adapted to be opened for delivery of bills to the container and for interlocking of the closure where it extends from the container with said retaining means on the bill-accepting unit for locking the container to the bottom of the bill-accepting unit, the container being removable from the bottom of the bill-accepting unit on closing the closure with attendant disengagement of the closure from said retaining means.

4,434,932

AIR-CONDITIONER CONTROL SYSTEM FOR AUTOMOBILES

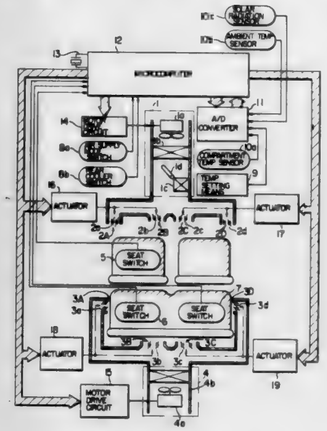
Kiyoshi Hara, Oobu; Yasufumi Kojima, Gifu, and Teiichi Nabeta, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 6, 1982, Ser. No. 395,340

Claims priority, application Japan, Jul. 7, 1981, 56-106571

Int. Cl.³ F24F *7/00;* **B60H** *1/00*

U.S. Cl. 236—49 **12 Claims**



1. An air-conditioner control system for an automobile which supplies a stream of air conditioned by an air-conditioner to a vehicle compartment of the automobile such that the temperature in the vehicle compartment approaches a desired temperature, said system comprising:

shifting means whereby the direction of flow of said conditioned air stream supplied to said vehicle compartment is gradually shifted continuously or, progressively between a first flow direction including the direction of at least one object occupant and a second flow direction excluding the direction of said object occupant;

compartment temperature sensor means for generating an electric signal indicative of an actual air temperature in said vehicle compartment;

temperature setting means for generating an electric signal to adjust a desired temperature of a vehicle compartment air temperature to be controlled;

signal generating means operable by said occupant to generate an electric signal indicative of a given control command; and

control means responsive to said electric signals from said compartment temperature sensor means, said temperature setting means and said signal generating means for determining a shift position of said shifting means in accordance with a control amount related to said compartment temperature and said desired temperature and said control command and applying an electric control signal indicative of said shift position to said shifting means thereby selecting the flow direction of said conditioned air stream between said first and second flow directions said control means maintaining said shift position at a given position in response to said control command irrespective of said control amount and determining said shift position in accordance with said control amount when said control command ceases to exist.

4,434,933

GAS FLOW RATE CONTROL SYSTEM

Akira Tamura, Aichi, Japan, assignor to CKD Controls Limited, Aichi, Japan

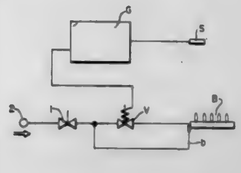
PCT No. PCT/JP81/00049, § 371 Date Nov. 2, 1981, § 102(e) Date Nov. 2, 1981, PCT Pub. No. WO81/02615, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 6, 1981, Ser. No. 320,975

Claims priority, application Japan, Mar. 8, 1980, 55-29631

Int. Cl.³ G05D *15/00;* **F16K** *51/00*

U.S. Cl. 236—75 **1 Claim**



1. A gas flow rate control system comprising:

a temperature sensing means for monitoring an environment to be controlled;

an electromagnetic-type flow rate control valve means including a return spring for urging a valve stem to its closing position, a plunger for driving the valve stem, and a pair of energizing coils for generating magnetic attractive forces so as to move the plunger against the force of the return spring;

an energizing-current control circuit means for applying energizing currents to said pair of energizing coils, said currents being in the form of pulse signals which are increased or decreased in response to temperature changes detected by said temperature sensing means, said currents controlling the opening and closing of said flow rate control valve;

said pulse signals being alternately applied to said pair of energizing coils so as to repeatedly reverse the directions of magnetization caused by said pair of energizing coils, wherein magnetic hysteresis is eliminated from said flow rate control valve; and

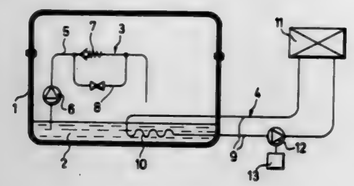
said pulse signals alternately applied to said pair of energizing coils being different in duration so as to unbalance said magnetic attractive forces generated by said respective energizing coils, and thereby causing said plunger to oscillate at the zero point of magnetic force which occurs at the moment of shifting from the magnetic force generated by one of said pair of energizing coils to the magnetic force generated by the other of said pair of energizing coils, wherein static friction of the plunger of said flow rate control valve is eliminated.

4,434,934

SYSTEM FOR HEATING THE OPERATORS CABIN OF A MACHINE POWERED BY AN INTERNAL COMBUSTION ENGINE

Gottfried Moser, Gladbach; Walter Nau, Cologne, and Ernst-Dieter Neumann, Aachen, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,372
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123633
Int. Cl.³ F22B *3/06*
U.S. Cl. 237—12.3 R **12 Claims**



1. A system for heating the operator's cabin of a machine powered by an internal combustion engine, comprising a first oil conduit system operating at a predetermined high pressure, the engine including an engine compartment having an enclosed oil pan, said oil conduit system being located wholly within said enclosed oil pan and including a high pressure hydraulic pump for feeding oil under heat and high pressure from the reservoir of oil in said pan and back into said oil reservoir, said oil conduit system further including a throttling element at the discharge side of said pump for heating the oil passing therethrough, and there being provided a closed, second oil conduit system operating at a pressure lower than said predetermined high pressure, said second oil conduit system including a first heat exchanger disposed within said enclosed oil pan in the engine compartment in heat exchange relationship with the oil heated by said first oil conduit system, a second heat exchanger located in the operator's cabin and a circulating pump for circulating oil through said closed oil conduit system, whereby the oil passing through said closed oil system is heated via said first heat exchanger for supplying heat to the operator's cabin via said second heat exchanger, and whereby any leakage of oil from said first oil conduit system operating at said predetermined high pressure, and any leakage of oil from said first heat exchanger, is completely confined within said oil pan to thereby avoid exposure of the engine to danger due to an uncontrolled loss of oil.

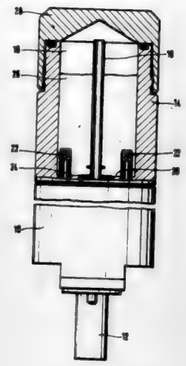
4,434,935

POWDER, ESPECIALLY METALLIC POWDER FOR MARKING WORKPIECES

Georg Roeder; Helmut Sachs, both of Frankfurt am Main, and Dieter Hajok, Hattersheim, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,357
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819091
Int. Cl.³ B05B *7/32*
U.S. Cl. 239—85 **7 Claims**

1. In combination therewith a marking torch, said marking torch having a nozzle, a container, powder in said container, a tube connecting said nozzle to said container, agitating means in said container, carrier gas means communicating with said container, said powder consisting of a blend of fine powder and of coarse powder, said coarse powder functioning to prevent said fine powder from agglomerating, said coarse powder having a particle size of 30–80μ, said fine powder having a particle size of 1–10μ, said fine powder being of a size and weight to be carried by the carrier gas from said container and through said nozzle for marking the workpiece to comprise the sole powder marking means of said torch, and said coarse powder being of a size and weight to be unaffected by the



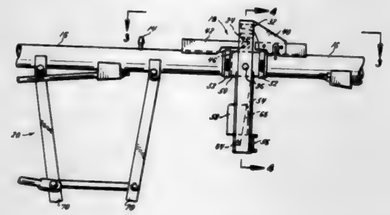
carrier gas and to remain in said container without being conveyed to said nozzle to function solely as a means for preventing agglomeration.

4,434,936

IRRIGATION SYSTEM

John A. Chapman, Wahoo, Nebr., and Owen W. Sherwin, Fort Wayne, Ind., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Sep. 22, 1981, Ser. No. 304,577
Int. Cl.³ B05B *3/18*
U.S. Cl. 239—178 **20 Claims**



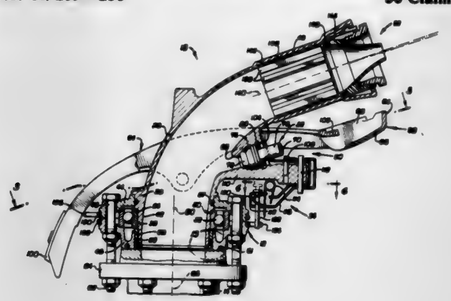
16. A coupling for joining conduit sections of an irrigation system for irrigating a field, said system having a conduit for extending over the field to be irrigated, said conduit including conduit sections joined end-to-end by said coupling, and said irrigation system further including support towers spaced along the length of the conduit for supporting and moving the conduit over the field to be irrigated, the conduit having a series of dispensers along its length for dispensing liquid fed through the conduit onto the field: said coupling comprising means responsive to a relative movement of said adjacent conduit sections under load for sensing said load within the system, said sensing means including a pair of pivotaly mounted yoke members, at least one of said yokes having an end extending substantially perpendicular to the conduit, and means responsive to said sensing means to initiate corrective action in the system to relieve said load, said yoke outer end having means to actuate said corrective means.

4,434,937

REACTION DRIVE SPRINKLER

Edward J. Pitchford, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed May 12, 1982, Ser. No. 377,552
Int. Cl.³ B05B *3/08*
U.S. Cl. 239—230 **36 Claims**



1. A rotatable water sprinkler, comprising:
a range tube having a flow path therethrough for receiving water from a water supply pipe and for discharge projection of the water generally in a lateral direction with respect to the supply pipe, said range tube further defining a relatively small bleed opening for bleed passage of a relatively small stream of the water from said flow path;
means for mounting said range tube at the end of a water supply pipe for rotation with respect thereto and for reception of water from the pipe into said flow path;
a drive nozzle mounted on said range tube in communication with the bleed passage and movable between first and second positions for discharge projection of the relatively small stream respectively in first and second generally lateral directions with respect to the supply pipe;
drive means pivoted with respect to said range tube and including a pair of oppositely oriented deflector spoons for respective interruption of the relatively small stream when said drive nozzle is in said first and second positions; and
a reversing mechanism responsive to the rotational position of said range tube for moving said drive nozzle between said first and second positions.

4,434,938

AROMA SYSTEM

Evelyn S. Rosenkrantz, and Edward Rosenkrantz, both of 4915 Tyrone Ave., Sherman Oaks, Calif. 91403

Filed Apr. 5, 1982, Ser. No. 365,214
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—274 **1 Claim**



1. An improved aroma emitting device for cooperative use with a toilet handle, compriaing in combination:
a housing consisting of,
a refillable fluid reservoir having
a cover detachably fastened to said reservoir, said cover having
a pump means depending from said cover and communicating with said fluid reservoir for generating
a mist proximate said cover;
activating means extending from said cover and having
a handle attached thereto for engagement with said toilet handle so as to generate said mist when said toilet handle is activated;
said housing having
a support bracket attached to said refillable reservoir portion thereof for adjustable engagement with
a hanger bracket attached to
a toilet tank wall and proximate said toilet handle, said support bracket being slidably detachably affixed to said hanger bracket by
a lock mechanism, said pump means comprised of
a valve member affixed to
a pump body, said valve member being remote from said cover and extending below the level of said fluid reservoir, said pump body having
a longitudinal bore there through and said bore having
a first diameter portion and a second diameter portion, said first diameter portion abuting said valve chamber and said second diameter portion abuting said cover, said longitudinal bore further having
a shoulder at the mid portion of said pump body, contained within said longitudinal bore is said activating means comprised of
a plunger having
a collar at its mid portion,
a third diameter portion extend from said cover, and
a fourth diameter housed within said longitudinal bore, and having
a pump seal attached to said fourth diameter, said pump seal being larger in diameter than said first diameter portion and slidingly engaged with said first diameter;
a spring coaxial with said fourth diameter and housed within said second diameter, abutting said shoulder and said collar so that when said activating means is operated said spring is compressed, a said valve chamber having
a first ball valve, and
a second, non biased ball valve,
an intake port in communication with said fluid reservoir, and
a common port in communication with said first diameter portion of said longitudinal bore said intake port having
a filter element therein for the removal of particulate matter from said fluid entering said pump means;
a first passageway serves to connect said intake port with said first ball valve, and
a second passageway serves to connect said first ball valve with said common port;
a third passageway serves to connect said second ball valve with said common port;
a fourth passageway in said pump body serves to connect said second ball valve with
a fifth passageway in said cover which commmunicates with
a spray nozzle affixed to said cover whereby activation of said toilet handle causes said fluid to be expelled from said spray nozzle.

4,434,939

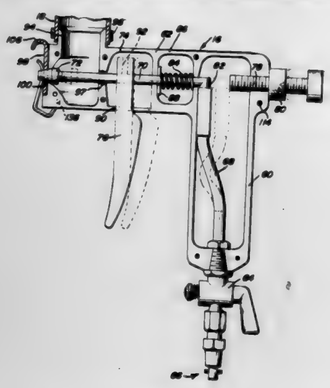
APPLICATOR GUN

James L. Stankowitz, 6946 Exline Rd., Jacksonville, Fla. 32222

Division of Ser. No. 174,591, Aug. 1, 1980, Pat. No. 4,364,521. This application Dec. 16, 1982, Ser. No. 450,389
Int. Cl.³ B05B *7/04*
U.S. Cl. 239—345 **2 Claims**

1. An applicator gun for the application of a fluent material to a surface and comprising a gun housing having a pressurized

fluid inlet connected to a supply tube, a rigid discharge tube extending longitudinally of the gun housing and connected to the inlet and having a free distal end with a pressurized fluid discharge nozzle connected thereto, trigger means for displacing the discharge tube longitudinally of the gun housing, a tip on the gun housing, said tip having a discharge orifice receiving the nozzle which forms a closure for the orifice, said gun housing including a fluent material discharge chamber surrounding a portion of said free end of said discharge tube and communicating with the orifice in the tip, the discharge chamber adapted to receive fluent material to be dispensed, said displacing means moving the discharge tube and nozzle away from the orifice to enable discharge of fluent material from the chamber through the orifice with the pressurized fluid discharging from the nozzle entraining said fluent material for depositing it onto a surface, said gun housing including a lateral recess removably mounting the tip, said tip including a plate having an opening therein forming said orifice and receiving a portion of said nozzle, said plate being slidably received in said recess, and spring clip means retaining the plate in said recess.



4,434,940

INSULATED FUEL INJECTION NOZZLE DEVICE AND METHOD FOR MANUFACTURING SAME

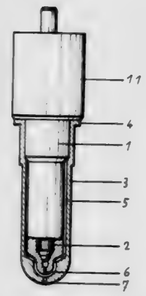
Heinz Kupper, Troisdorf-Sieglar, and Helmut Busch, Lohmar, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,673

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004033

Int. Cl.³ F02M *53/04*

U.S. Cl. 239—397.5 **9 Claims**



1. A fuel injection nozzle device which is constructed such that its nozzle spray hole temperature can be maintained at a reduced level during use, said device comprising

an injection nozzle body which includes at least one spray hole,

a hood which is disposed in a generally surrounding relationship with respect to said injection nozzle body, said hood being constructed to provide an annular gap between it and said injection nozzle body in the vicinity of each said spray hole, said hood including a separate spray orifice extending therethrough for alignment with a respective spray hole of said injection nozzle body, and

a quantity of solid heat insulating material in said annular gap adjacent each aligned spray hole and spray orifice, the solid heat insulating material providing an enclosed channel communicating between each spray hole and each spray orifice.

4,434,941

SEALING SYSTEM FOR THE AIR FEED OF A ROTATABLE AIR NOZZLE SYSTEM

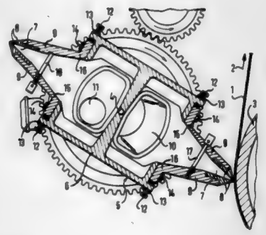
Gerhard Wohlfeil, Monheim, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 327,874

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048134

Int. Cl.³ B05B *15/08*

U.S. Cl. 239—587 **7 Claims**



1. In combination; a system for sealing and axially feeding air to an air nozzle system for the removal of excess liquid coating material from a moving web of material and for smoothing the coating, the air nozzle system comprising a housing rotatable about its longitudinal center including a pair of air slot nozzles disposed diametrically opposite one another and comprising two stationary air feed ducts sealed from one another by gaskets of resiliently compressible material with rectangular cross section and which are seated on thrusting surfaces perpendicular to the longitudinal center axis of the air nozzle system at the end of the stationary air feed ducts, the gaskets are overlapped with radial clearance by gasket retaining and pressing means, and the gasket retaining and pressing means are pressed against the gaskets of resiliently compressible material by pressure surfaces provided on a rotatable hollow journal of the air nozzle system perpendicular to the longitudinal center axis of the air nozzle system, the journal having two separate air ducts each leading to a slot nozzle and serving to connect one of the air feed ducts to one nozzle through one air channel, rotation of the journal connecting said one nozzle and its channel to the other nozzle.

4,434,942

PROCESS AND APPARATUS FOR ATTRITION CARRIED OUT IN A HUMID MEDIUM

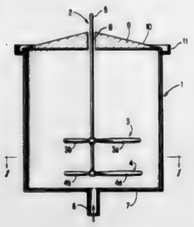
Jean-Louis Cardini, Paris, France, assignor to Societe Metallurgique Le Nickels-S.L.N., Paris, France

Continuation of Ser. No. 94,085, Nov. 14, 1979, abandoned. This application Dec. 23, 1981, Ser. No. 333,751

Claims priority, application France, Nov. 15, 1978, 78 32217

Int. Cl.³ B02C *17/16*

U.S. Cl. 241—21 **18 Claims**



1. A process of wet attrition of ore comprising:

(a) grinding the ores to a pulp having a particle size distribution such that 80% by weight of the particles have a diameter from about 30 to about 0.4 mm; and

(b) subjecting the pulp to wet attrition by agitating the pulp in a slightly turbulent medium, said agitation being conducted at an impeller Reynolds number of from about 1,000 to about 5,000, the impeller Reynolds number being defined as:

$$N_{ReImp}=(U\times d\times\rho)/\mu$$

wherein

U=rotational speed of the impeller, rpm;

ρ=density of the pulp being pumped, gm/cm³;

d=diameter of the impeller, cm; and

μ=viscosity of the pulp being pumped, centipoise;

the agitation of step (b) being carried out by stirring the pulp with at least two impellers mounted at a distance apart on a shaft, each of the impellers comprising at least two horizontally disposed blades, the blades having equal length and being so arranged that the impellers pump the preground ore towards the spaced defined between the impellers, the impellers having a carrying coefficient substantially constant throughout their length such that the voluminal flow rate per area element is constant whatever the position of this area element within the area produced by the rotation of each impeller.

4,434,943

PUMP INTAKE CUTTER HEAD

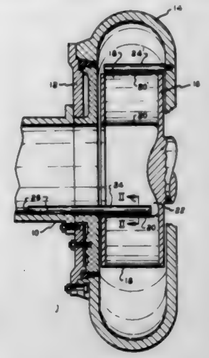
Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

Continuation of Ser. No. 168,145, Jul. 14, 1980, abandoned, which is a continuation of Ser. No. 18,105, Mar. 7, 1979, abandoned. This application Mar. 18, 1982, Ser. No. 359,432

Int. Cl.³ B02C *19/12, 23/36*

U.S. Cl. 241—46.08 **1 Claim**

1. In combination with a centrifugal liquid pump for transferring and comminuting a slurry including aquatic growths wherein the pump includes a rotatable impeller having structure defining radial passages and radial passage inlets, a suction pipe having a passage having upper and lower internal portions, connection means releasably attaching said suction pipe to said pump, said pump having its axis of impeller rotation aligned with said pipe, a cylindrical intake chamber defined by the radial passages of said pump aligned with said pipe passage, a static shear element in the form of an elongated cantilevered bar mounted at one end upon said pipe with its other end projecting substantially into said chamber adjacent the pump passage inlets in shear relation with the structure defining said passages and passages' inlets, said bar being located in the lower interior portion of said pipe and chamber wherein the density of said slurry due to the effect of gravity is the greatest.



4,434,944

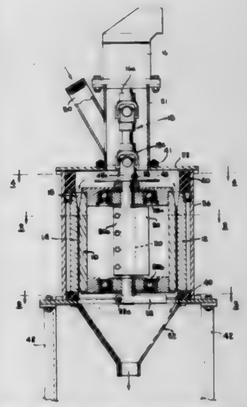
MASS (INDUCTIVE) REACTANCE VIBRATORY MILL OR CRUSHER EMPLOYING MECHANICAL DRIVE FORCE

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Oct. 28, 1981, Ser. No. 316,045

Int. Cl.³ B02C *2/06, 19/00*

U.S. Cl. 241—258 **13 Claims**



1. A vibratory mill for grinding material comprising

a driving member,

eccentrically weighted drive shaft means for supporting said driving member for freedom of motion rotationally about the longitudinal axis of the drive shaft means,

means for suspending said drive shaft means for freedom of motion laterally with respect to said longitudinal axis,

a slave member having an inside wall,

means for supporting said slave member in proximity to said driving member and said slave member,

means for rotatably driving said drive shaft means to generate cycloidal quadrature related vibratory force components therein, said force components causing said driving member to both roll around on and vibrate against the inside wall of said slave member, and

means for feeding said material into the gap formed between the driving and slave member,

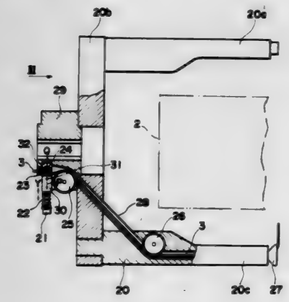
both shear and radial vibratory forces being applied to said material to effect the grinding thereof.

4,434,945

WINDING APPARATUS

Tokuhito Hamane, Hirakata, and Masaaki Tasai, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 9, 1982, Ser. No. 347,268
Claims priority, application Japan, Feb. 19, 1981, 56-24110
Int. Cl.³ B65H *59/00*; D01H *7/24*
U.S. Cl. 242—7.14 **3 Claims**



1. A winding apparatus for winding wires and the like around a winding form, said apparatus comprising:

a flyer member having a wire passage for passing a wire therethrough onto the winding form, rotatable about a rotational axis, said flyer member including a boss portion; and

means for applying tension to the wire by a centrifugal force during rotation of said flying member, said tension applying means including:

a slider member slidably supported on said flyer member for sliding movement in a radial direction with respect to said rotational axis,

a roller member, rotatably mounted on said slider for rotative contact with the wire and for radial movement with said slider,

a bracket member having radially extending openings therein,

a pin fixing said bracket member to said slider member for radial movement therewith,

bolt members fixed at one end to said boss portion, extending through said openings in said bracket member and having head portions opposite said one end, and

coil springs surrounding said bolts between said bracket member and said head portions so as to urge said roller member through said bracket member and slider member toward said rotational axis against said centrifugal force.

4,434,946

STRAND GUIDE FOR PACKAGING APPARATUS

David F. Lewin, Newark, Ohio; Louie J. Haynes, Amarillo, Tex., and Lynne B. Beach, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 1, 1983, Ser. No. 481,531
Int. Cl.³ B65H *54/08, 54/28, 57/04*
U.S. Cl. 242—18 G **4 Claims**

1. A strand guide movable back and forth longitudinally of a winding collet as part of a package builder, said strand guide comprising a block member having a face normally engaging a package being wound from a multifilament strand guided by the block member, said block member having a recess in said face whereby it is provided with a lower squeegee or strand-flattening portion below the recess and an upper strand-reciprocating portion above the recess, the strand-reciprocating portion having a generally vertically extending slot opening to said face, and the multifilament strand being wound into a package on the winding collet being received in said slot,



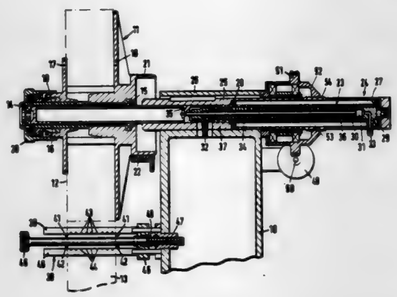
transversely moved back and forth along the winding collet by the strand-reciprocating portion, and flattened due to transverse displacement of the filaments by said strand-flattening portion as it is wound onto the package.

4,434,947

AXIALLY DISPLACEABLE REEL HOLDER FOR PACKING MACHINE WEBS

Heinz H. Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Continuation of Ser. No. 184,445, Sep. 5, 1980, Pat. No. 4,366,932. This application Jul. 29, 1982, Ser. No. 403,207
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937661
Int. Cl.³ B65H *19/12, 25/26*
U.S. Cl. 242—57.1 **6 Claims**



1. A reel holder mounting arrangement for a packaging apparatus, especially for wrapping groups of cigarettes into cigarette packs, comprising:

(a) a machine base (10),

(b) a reel holder (11) for receiving a replaceable web roll of packaging material,

(c) an axle (16) embodying means for removably mounting the reel holder at one end thereof,

(d) a hollow elongated bearing section (23) coaxial with and extending from the other end of the axle,

(e) fluid piston and cylinder means (30, 31) disposed within the bearing section and coupled between the axle and the machine base for implementing coarse axial extensions and retractions of the axle and a web roll carrying reel holder mounted thereon to enable safe web roll replacement,

(f) means including tubular outer housing (24) surrounding the bearing section for mounting the bearing section to the machine base, and

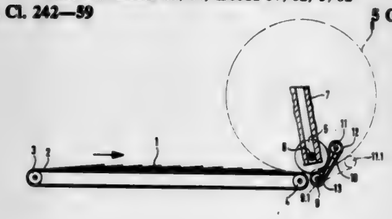
(g) precision gear drive means mounted directly between the outer housing and the machine base for bidirectionally axially displacing the outer housing to implement the fine-adjusting of the operating position of the reel holder relative to the machine base to ensure proper web feed.

4,434,948

APPARATUS FOR PRODUCING OVERLAPPING BAND ROLLS FROM SUPERPOSED OVERLAPPING FLAT WORKPIECES

Richard Feldkämper, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 15, 1981, Ser. No. 302,689
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3035114
Int. Cl.³ B65B *63/04*; B65H *17/02, 5/02*
U.S. Cl. 242—59 **5 Claims**



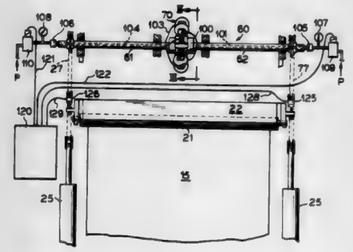
1. Apparatus for producing overlapping band rolls from superposed overlapping flat sacks, bags or like flat workpieces, comprising: a freely rotatable winding core, a conveyor means, a pivotable frame which carries rollers at least at opposite ends and is disposed downstream of the conveyor means for delivering the workpieces, and a driven endless conveyor belt which passes over the rollers and lies against the freely rotatable winding core or the overlapping band roll being formed thereon, characterised in that the frame is mounted on a pivot shaft that divides the frame into a longer and a shorter lever arm, and in that the ends of the winding core are held in parallel guides extending substantially along lines drawn through the axes of the winding core and the roller which is mounted at the end of the shorter lever arm and which supports the winding core or the overlapping band roll being formed.

4,434,949

WINDER RIDER ROLL CONTROL

Gerald W. Karr, South Beloit, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 10, 1982, Ser. No. 356,633
Int. Cl.³ B65H *17/12*
U.S. Cl. 242—66 **11 Claims**



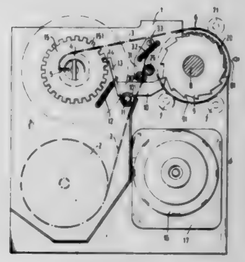
1. In a rider roll assembly including an elongated rider roll, flexible elongated support means for each end of the rider roll, and torsion cross shaft means with the support means engaging the cross shaft means and effective to rotate the cross shaft means in response to movement of the rider roll, the improvement of the cross shaft means comprising first and second rotatable shaft portions interconnected by torque transmitting means having means for adjusting the torque transmitted per unit of relative rotational displacement of the shaft portions, the torque transmitting means including variable pressurizable air bags, and first and second base portions affixed to the first and second shaft portions with the base portions rotatably interconnected by variable pressurizable air bags, the air bags including a first set which undergoes compression during a relative rotation of the first shaft portion with respect to the second shaft portion in the first direction and including a second set which undergoes compression during a relative rotation of the first shaft portion with respect to the second shaft portion in a second direction opposite the first direction and including means for varying the pressurization of at least one of the first and second sets, the means for varying pressurization including conduits connecting a pressure gas source to the first and second sets with variable pressure setting valves associated with the conduits whereby pressure transmitted from the pressure gas source to the first and second sets can be individually controlled and wherein the conduits include rotatable couplings and the sets can be variably pressurized during operation of the assembly.

4,434,950

WINDING-ON DEVICE FOR PAPER SHEETS AND LENGTHS OF TEXTILE

Wilhelm Nünnerich, 33, Kölner Grenzweg, D-4780 Lippstadt, and Peter Schmidt, 41, Ziethenweg, D-4790 Paderborn, both of Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,173
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 8109362[U]
Int. Cl.³ B65H *17/04, 17/22*
U.S. Cl. 242—67.2 **7 Claims**



1. Apparatus for winding-up of a continuous sheet material such as paper on a take-up roll comprising:

a supply of sheet material;

a take-up roll upon which the sheet material is to be discontinuously wound in relatively large increments;

a drive means comprising a rotatable drive element which rotates incrementally and discontinuously in relatively small increments;

an axially elastically stretchable belt connecting the drive element to the take-up roll to transfer rotational motion from the drive element to the take-up roll when the take-up roll rotates freely but to store energy in the form of elastic tension when the take-up roll is locked against rotation; and

locking means interconnecting the drive element and the take-up roll to normally lock the take-up roll against rotation but to release the take-up roll after the drive element has rotated a predetermined number of said small increments.

4,434,951

FISHING REEL HAVING A MAGNETIC BRAKE AND NON-MAGNETIZABLE BEARING

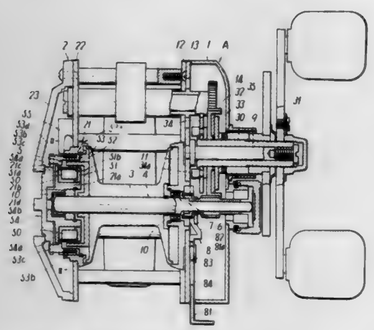
Hideki Nakajima, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 22, 1982, Ser. No. 443,690

Claims priority, application Japan, Nov. 26, 1981, 56-176133[U]

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—84.52 B **6 Claims**



1. A fishing reel comprising,

a reel body comprising a pair of first and second separated and opposing side frames which are provided with bearing housings each having a bearing,

a spool shaft having a spool disposed between said side frames at said reel body, said spool shaft being supported rotatably by said bearings to said reel body,

a drive mechanism for driving said spool shaft,

a clutch mechanism for enabling said spool shaft to become freely rotatable with respect to said drive mechanism, and

a brake mechanism for imparting a rotational resistance against free rotation of said spool shaft, said brake mechanism comprising a magnet ring having a plurality of magnets and an electric conductor which is cylindrical and rotatable together with said spool shaft, said magnet ring being fixed to said bearing housing at said second side frame, said electric conductor being disposed opposite to said magnet ring and rotatably within the magnetic field of said magnets, so that the magnetic force by said magnets exerts a braking action on said spool and spool shaft, said bearing at said second side frame being disposed within the magnetic field of said magnets at said brake mechanism and being formed of a metallic bearing comprising a non-magnetic material not magnetizable by said magnets.

4,434,952

POWER RETURNABLE COILABLE RULE CARTRIDGE AND COIL RULE ASSEMBLY EMPLOYING SAME

Frank G. Czerwinski, East Berlin, and Edward C. Rutty, Portland, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Sep. 7, 1982, Ser. No. 415,521

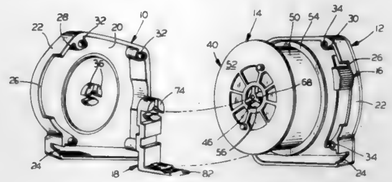
Int. Cl.³ B65H *75/48*; G01B *3/10*

U.S. Cl. 242—107 **11 Claims**

1. A cartridge for a coilable rule comprising:

A. a form-sustaining spool having a cylindrical core portion with an axially extending aperture therethrough and annular end walls of greater diameter than said core portion to provide an annular chamber thereabout, the central apertures of said end walls being aligned and of lesser diameter than said core portion;

B. a hub having an elongate post extending axially of said spool and a multiplicity of locking tabs extending outwardly from each end thereof and perpendicularly to the axis of said post, said tabs being adapted for interlocking with the housing in which said cartridge is placed to lock said hub against rotation therewithin, said tabs having lips extending along the inner surface of said end walls about said central aperture and thereby retaining said hub relative to said spool, said hub being freely rotatable within said spool;



C. a recoil spring coiled within said core portion having one end attached to said post; and

D. a measuring blade coiled about said core portion having its inner end secured to the outer end of said spring.

4,434,953

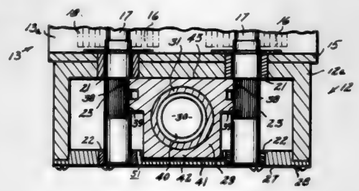
DUAL SPOOL PRETENSIONER

Charles Gemar, Mound, and Robert L. Meisch, Minneapolis, both of Minn., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 2, 1981, Ser. No. 238,070

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107 **4 Claims**



1. A pretensioner for turning the spools to tighten webbing thereon for dual spool safety belt retractors comprising:

a pair of shafts in spaced-apart parallel offset relation, each of said shafts each driving a webbing spool connected thereto and each having a knurled section intermediate the ends thereof;

a case supporting said shafts for operative journalling and location therein of said knurled sections, said case attachable to a dual spool retractor frame;

a chamber in said case;

a pyrotechnic means removably inserted in said chamber; and

deformable piston means operably engaged against said chamber and alignably journalled between said shafts and having an interference fit with said knurled sections whereby, upon linear movement of said piston, said piston means is deformed and said shafts are rotated, turning said spools and tensioning said webbing.

4,434,954

TAPE TENSIONING APPARATUS

Dennis M. Ryan, San Mateo, Calif., assignor to Ampex Corporation, Redwood City, Calif.

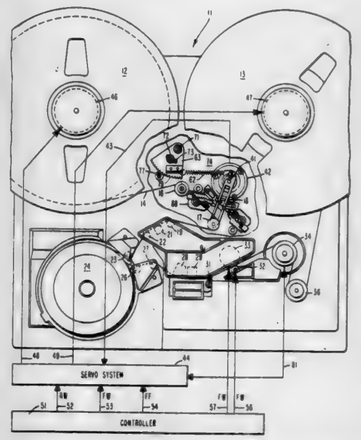
Filed Apr. 2, 1982, Ser. No. 364,732

Int. Cl.³ B65H *59/38, 63/02*; G03B *1/04*; G11B *15/32*

U.S. Cl. 242—189 **9 Claims**

1. A tape tensioning apparatus for a magnetic tape transport including a tape element; a pair of spaced tape moving and anchoring means engaging and anchoring said tape at spaced points thereon defining a tape segment of variable length, and tension loading means coupled to said tape moving and anchoring means and to said tape segment between said spaced points in first and second operating modes to alter the length of said segment between corresponding first and second predetermined length values and to apply corresponding first and second tensioning forces laterally to said segment, characterized in that:

said tension loading means is arranged to apply at least one of said tensioning forces at substantially the full value



thereof whenever the actual length value of said segment falls within a predetermined operating range of the corresponding predetermined median length value of the segment; and

said tension loading means includes a set including at least one force-transmitting element, said one thereof engaging said tape element and each element of said set engaging at least one other element of said set, each pair of engaged elements being arranged to move only conjointly and in substantially the same direction, so as to avoid frictional shearing motion therebetween.

4,434,955

MAGNETIC-TAPE CASSETTE

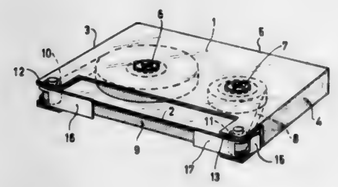
Johannes J. M. Schoenmakers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1982, Ser. No. 386,144

Claims priority, application Netherlands, Jun. 18, 1981, 8102932

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—199 **1 Claim**



1. A magnetic-tape cassette, comprising

a housing having first and second flat parallel major walls (1, 2), two side walls (3, 4), a rear wall (5), and a front side with a front opening between the major walls,

two rotatable reel hubs (6, 7) arranged adjacent each other between the major walls,

a magnetic tape (8) attached to the reel hubs (6, 7), a span (9) of said tape extending along said front opening in the magnetic-tape cassette for cooperation with parts of a magnetic-tape apparatus, said major walls having at least one opening permitting access by elements of the magnetic tape apparatus behind the tape, the span (9) of said magnetic tape which extends along the front opening of the magnetic-tape cassette being movable from an active position, in which it is disposed outside the housing of the magnetic-tape cassette, to an inactive position, in which it is disposed between the major walls (1, 2) of the housing,

at least one front cover (14, 15) near a corner point (12, 13) near the front of the magnetic-tape cassette, and

means for pivoting said cover about a pivotal axis perpendicular to the major walls (1, 2) between an open position and a closed position, in which closed position said cover at least partly covers the front opening of the magnetic-tape cassette, characterized in that

the front cover (14, 15) comprises a thrust portion (16, 17) which during the pivotal movement of the open position to the closed position presses against the span (9) of magnetic tape which extends along the front side and moves the tape from the active position to the inactive position, and

said major walls are arranged such that in the inactive position of said tape the tape is disposed interiorly of said at least one opening,

whereby the edges of said tape are fully covered when the tape is in the inactive position.

4,434,956

FLEXIBLE HELICOPTER ROTOR AND PITCH CONTROL MECHANISM

Gilbert R. Gonzales, 1314 N. Winstel Blvd., Tucson, Ariz. 85716

Filed Oct. 19, 1981, Ser. No. 312,497

Int. Cl.³ B64C *27/38*

U.S. Cl. 244—17.25 **13 Claims**



1. A flexible helicopter rotor comprising in combination:

a. a vertical rotor axle;

b. means for rotating said vertical rotor axle in a first rotational direction; and

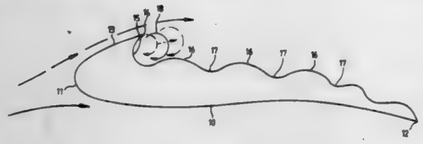
c. a plurality of flexible airfoils secured to and extending radially from said vertical rotor axle, each of said airfoils including a plurality of segments, each of said segments having a trailing edge relative to said first rotational direction, the trailing edge of each of said segments being capable of billowing upward to form an arc for allowing each segment of said airfoils to form a billowing, canopy-shaped surface as said vertical rotor axle is rotated in said first rotational direction, the amount by which any particular segment of an airfoil is allowed to billow being less than the amount by which segments located closer to said vertical rotor axle are allowed to billow.

4,434,957

LOW DRAG SURFACE

Robert R. Moritz, Conyers, Ga., assignor to Rolls-Royce Incorporated, New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,449
Int. Cl.³ B64C 3/14, 23/06
U.S. Cl. 244—35 R **4 Claims**



1. A low drag surface having an upstream edge and a downstream edge and having a flow of fluid across the same in a direction from the upstream edge toward the downstream edge, said low drag surface comprising an intermittent linear vortex producing means spaced downstream of the upstream edge and extending transverse to the direction of said flow of fluid across the surface for producing a succession of rolling vortices extending transverse to the flow of fluid, said intermittent linear vortex producing means including a re-entrant discontinuity in the surface, the discontinuity extending transverse to said flow and providing a sheltered leeward face against which each of said vortices may be successively formed; and

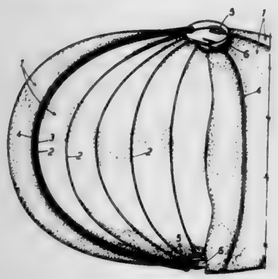
means spaced downstream from said discontinuity and defining a ramp parallel therewith, said ramp being inclined outwardly from the surface and causing each of said vortices, when formed against said sheltered leeward face, to be dislodged from the sheltered leeward face to permit another vortex to be formed, the successively formed vortices being allowed to roll in a downstream direction across the surface in succession to reduce the drag on the surface.

4,434,958

METHOD OF CONSTRUCTION FOR A CONTAINER WITH A SYMMETRICAL LOBED STRUCTURE AND CONTAINER CONSTRUCTED ACCORDING TO THE SAID PROCESS

Michel Rougeron, Toulouse, and Jacques Simon, Vigoulet-Auzil, both of France, assignors to Centre National d'Etudes Spatiales, Paris, France

Filed Sep. 5, 1980, Ser. No. 184,448
Claims priority, application France, Sep. 6, 1979, 79 22303
Int. Cl.³ B64B 1/58
U.S. Cl. 244—126 **10 Claims**



1. A container with an axially symmetrical sturcture adapted to support an overpressure, said container comprising:

(a) an airtight skin having two poles and being formed from gores assembled at connecting lines extending along meridians of the structure, and

(b) meridional unidirectional reinforcement means disposed along the meridian connecting lines and interconnected at either pole,

(c) the gores being made of a material with a low elastic modulus and a large capacity for the plastic elongation at least in the meridional direction thereof,

(d) the reinforcement means being made of a material with a high elastic modulus adapted to be plastically deformed outwrdly while maintaining their initial length,

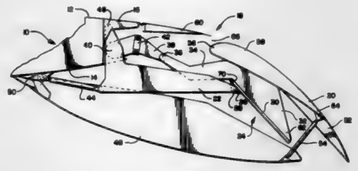
(e) the combination of the materials used to form the gores and reinforcements being effective that, when an overpressure is created inside the structure, the gore material, plastically deforms to cause bulging along the length of the connecting lines and the container is inflated in a lobed, symmetrical spheroid form along the length of the connecting lines and is flattened at either pole.

4,434,959

AIRFOIL FLAP ASSEMBLY WITH FLAP TRACK MEMBER

Peter K. C. Rudolph, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1981, Ser. No. 306,743
Int. Cl.³ B64C 3/50, 9/20
U.S. Cl. 244—215 **25 Claims**



1. A flap assembly for an airfoil having a forward end, a rear end, a longitudinal axis and a transverse axis, said flap assembly comprising:

(a) a mounting structure located at the rear end of the airfoil, said mounting structure having a track mounting portion at a track mounting location,

(b) a first flap member having a stowed first position at the rear end of the airfoil, and movable rearwardly through an intermediate second position to a fully extended third position,

(c) said flap member having mounted thereto a substantially longitudinally aligned track member operatively connected to said track mounting portion for longitudinal and rotational movement relative thereto, said track member having a forward end and a rear end, said track member being characterized in that with the flap member in the first position, the rear end of the track member is at the track mounting location, and with the flap member in its third position, the forward end of the track member is at the track mounting position,

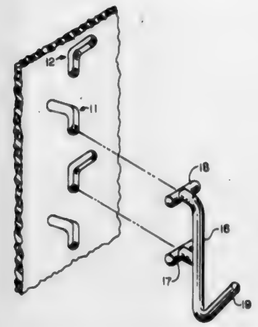
(d) actuating means operatively connected to said flap member at a connecting location spaced forwardly of the forward end of the track member and having a fixed location relative to the flap member, said actuating means being arranged to move said connecting location substantially longitudinally along a first path component generally aligned with the lengthwise axis of the track to move said flap between the stowed position and the intermediate position so as to cause substantial Fowler motion of the flap with relatively little rotation of the lengthwise axis of the track member relative to the mounting structure at the track mounting location, and to move the connecting location along a second path portion, having a substantial upward path component to move the flap between the intermediate position and the third position so as to cause relatively less Fowler motion with relatively greater rotation of the legthwise axis of the track member relative to the mounting structure at the track mounting location.

4,434,960

APERTURED DISPLAY BOARD AND HOOK

Buford E. Berry, 403 Carol Rd., Morgan City, La. 70380

Filed Mar. 25, 1982, Ser. No. 361,771
Int. Cl.³ E04G 3/00
U.S. Cl. 248—220.4 **16 Claims**



1. An article supporting apparatus comprising, in combination:

(A) a board having a plurality of apertures therein, said apertures being defined by a vertical portion and a transverse portion, said apertures being aligned in a series of rows and columns, the centerline of said vertical portions of said apertures in said rows being in alignment, said transverse portions of vertically adjacent apertures in said columns of apertures being on opposite sides of said vertical portions of said vertically adjacent apertures, and

(B) a hook member comprising

(a) a shank portion having a top end and a bottom end, said shank portion having stop means connected thereto, and

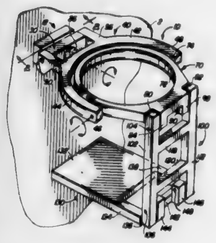
(b) a leg portion connected to said shank portion for receipt of articles to be suspended from said board.

4,434,961

UNIVERSAL PIVOTING AND FOLDING BEVERAGE HOLDER APPARATUS

Thomas M. Hoye, 6850 N. 86th St., Scottsdale, Ariz. 85253

Filed Apr. 25, 1983, Ser. No. 488,030
Int. Cl.³ A47K 1/09
U.S. Cl. 248—311.2 **20 Claims**



1. Holder apparatus for holding an element, comprising, in combination:

base means for securing the holder apparatus at a fixed location;

hinge plate means pivotally secured to the base means;

support ring means secured to the hinge plate means and pivotal therewith;

holder ring means, through which the element extends, pivotally secured to the support ring means;

support bracket means pivotally secured to the holder ring means remote from the support ring means; and

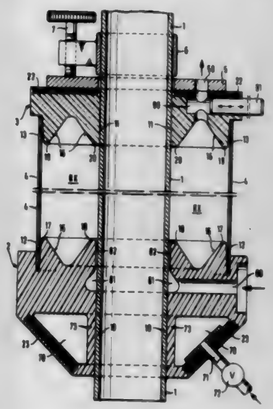
platform means for receiving the element to be held and disposed beneath the holder ring means and pivotally secured to the support bracket means remote from the holder ring means.

4,434,962

FLANGE HAVING AN OUTER AND AN INNER CIRCUMFERENTIAL SEALING FACE AND APPARATUS, COMPRISING SUCH FLANGE, FOR PRODUCING ENVELOPING CASTS ABOUT ELONGATED BODIES

Felix Bleuel, Basel, and Christian Bosshard, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,838
Claims priority, application Switzerland, Feb. 27, 1981, 1334/81; Jan. 5, 1982, 26/82
Int. Cl.³ B29C 1/00; B29D 3/00
U.S. Cl. 249—65 **14 Claims**



1. An annular flange of elastomeric material for mounting between two concentric tubular members to define a mold chamber therebetween, said flange having an annular recess near the outer perimeter thereof for receiving an end of the outer of said tubular members, said flange having a through aperture between radially separated inner and outer surfaces and having a radially relieved surface such as to define with an outer surface of the inner of said tubular members a flow gap therebetween, said gap communicating with said through aperture.

4,434,963

SLIDE CLAMP INCLUDING ELEVATION STABILIZER

Pat Russell, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 22, 1982, Ser. No. 452,258
Int. Cl.³ F16L 55/14
U.S. Cl. 251—7 **7 Claims**

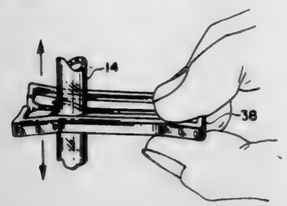
1. A slide clamp comprising:

(a) a platform including first and second ends;

(b) a defined slot through said platform, extending generally between said first and second ends of said platform, said slot including a defined tubing receiving portion near said first end, dimensioned so as not to significantly restrict the lumen of tubing disposed therein, thereby forming an on mode, said receiving portion narrowing to a defined tubing crimping portion dimensioned to severely restrict the lumen of tubing disposed therein, thereby forming an off

mode, wherein said clamp is manually adjustable on the tubing between said receiving and crimping portions; and

(c) a clamp stabilizer projecting from said platform into said receiving portion of said slot at a first end side of said receiving portion, said stabilizer including a base at said first end side and narrowing to a tip at its distal end, opposite said base;



(d) wherein the distance between said first and second ends is substantially greater than the thickness of said platform and further wherein the distance between said first end and said stabilizer tip is not greater than about one third the distance between said first and second ends;

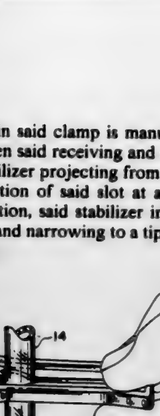
(e) such that said slide clamp is selectively positionable and maintainable at any elevation along the length of the tubing while said slide clamp is in the on mode.

4,434,964

SELF-CLOSING CYLINDRICAL GATE FOR HYDRAULIC TURBO-MACHINE

Paul Hudon, 9100 de Charente, Tracy, Quebec, Canada

Filed Feb. 16, 1982, Ser. No. 349,316
Claims priority, application Canada, Mar. 12, 1981, 372837
Int. Cl.³ F16K *31/145*
U.S. Cl. 251—62 **12 Claims**



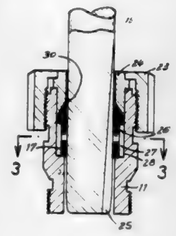
1. An operating device for a cylindrical gate as used to protect and seal a hydro-electric installation including hydraulic turbo-machines, comprising: a set of hydraulic servomotors installed above the circumference of the cylindrical gate; operating rods, each with one end connected to the gate and the other end associated with a servomotor; each servomotor including a closed chamber to contain a pressurized fluid, a piston capable of moving in translation in said chamber, and dividing said chamber into two compartments, the piston being moved by the operating rod; a minimum of three servomotors being interconnected; those of said servomotors, that are connectd to the synchronizing device, including a nut, thrust bearings and a threaded rod going through the nut and the thrust bearings being used to control the translation of the piston in the chamber, and to change said translation into a motion of rotation; said synchronizing device including mechanical transmission means allowing synchronization of said motion of rotation.

4,434,965

LOW FLOW CONTROL VALVE

Leo I. St. Martin, Jr., N. Hampton, N.H., assignor to H. D. Baumann Assoc., Ltd., Portsmouth, N.H.

Filed Jan. 22, 1982, Ser. No. 342,511
Int. Cl.³ F16K *47/00*; F16L *55/02*
U.S. Cl. 251—121 **4 Claims**



1. Low flow control valve comprising:

a. a housing having fluid communicating inlet and outlet ports and a central vertical passage interconnecting said inlet and outlet ports;

b. an orifice member suitably retained within said vertical passage of said housing and having a central longitudinal bore, sleeve-type sealing means tightly retained within said orifice member;

c. a valve plug slidingly engaged within said longitudinal bore of the orifice member and within said sleeve-type sealing means, said valve plug having a fluid conducting profile at its lower extremity extending exterior of said sealing means to conduct fluid flow when in the upper travel position and an upper solid cylindrical portion disposed to tightly fit within the sleeve-type sealing means when in the lower travel position to effect closure of said orifice member;

d. said sleeve-type sealing means having a reduced exterior diameter portion and a straight cylindrical central bore slidingly engaging said valve plug, one or more passages disposed perpendicularly to said central bore to provide fluid communication between said central bore and said reduced exterior diameter portion to enable fluid pressure to urge said sealing means against the valve plug when in the lowest travel position in order to enhance the sealing capabilities.

e. operating means attached to said valve plug.

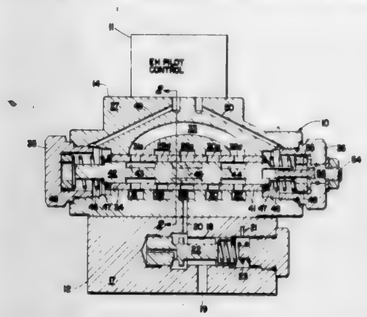
4,434,966

ELECTRO-HYDRAULIC PROPORTIONAL CONTROL VALVE

Theodore S. Zajac, Bay Village, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Mar. 31, 1981, Ser. No. 249,538
Int. Cl.³ F16K *3/26*; F15B *13/043*
U.S. Cl. 251—205 **6 Claims**

6. A control valve comprising a housing, said housing having a first port and a second port, a bore intersecting said first and second ports, a valve spool slidably disposed in said bore, said spool including a smooth cylindrical outer peripheral surface, said spool being axially movable in said bore between first and second positions, said spool having land means hydraulically isolating said first and second ports when said spool is in said first position, said spool having groove means establishing metered fluid pressure communication between said first and second ports through a metering area when said spool is in said second position, said groove means including an axially extending groove in said spool, the juncture of said groove and said outer peripheral surface defining metering edges on said spool, said metering edges on said spool defining said metering area, adjustment means adjustably changing said



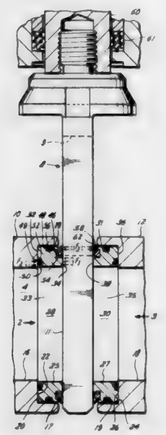
metering area independently of axial movement of said spool relative to said sleeve, said adjustment means including link means for rotatably adjusting said spool, and connector means between said link means and said spool restraining relative rotational movement between said spool and said link means and permitting relative axial movement between said spool and said link means.

4,434,967

VALVE SELF-RELIEVING SEATS

Ralph W. Vanderburg, Longview, Tex., assignor to Axelson, Inc., Longview, Tex.

Filed Aug. 23, 1982, Ser. No. 410,304
Int. Cl.³ F16K *3/00*
U.S. Cl. 251—328 **16 Claims**



1. A valve for use with fluids under pressure, comprising:

a valve body having an inlet and an outlet with a chamber therebetween;

a seat located in said valve body;

a closure member in said chamber having flow means for cooperating with said seat for preventing fluid flow in the closed position and for permitting fluid flow in the open position;

moving means for moving said closure member from said closed position of preventing fluid flow to said open position of permitting fluid flow, said moving means including means for permitting the fluid pressure to move said closure member to said closed position; and

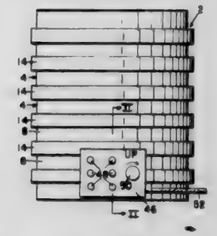
seal means for providing sealing engagement between said seat and said valve body and between said seat and said closure member, said seal means including leak means for permitting flow of fluid only in the direction from said inlet to said chamber between said closure member and said seat when said closure member is positioned near said closed position, whereby the fluid pressure urges said closure member to said closed position.

4,434,968

MAGNETIC JACK

Raymond H. Smith, Rte. 2 - 5AAA, Larned, Kans. 67550

Filed Sep. 28, 1981, Ser. No. 306,250
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—1 **1 Claim**



1. A magnetic jack comprising:

a. a body member consisting of a series of sections connected together for limited telescopic extension in a direction parallel to the lift axis of the jack,

b. A pair of electromagnets carried between each successive pair of body sections, the magnets of said pair being affixed respectively to said related pair of body sections, being coaxial and having a magnetic axis parallel to the jack lift axis, and having confronting poles which are of like polarity when electric current is supplied thereto,

c. means for furnishing electric current to said electromagnets, whereby the like polarity of said confronting poles generates a repulsion force tending to extend said related body sections telescopically, and

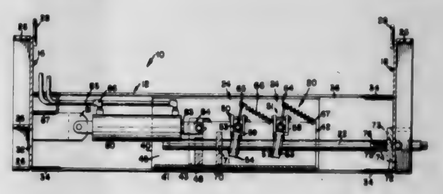
d. a dashpot device interconnecting each successive pair of body sections, whereby to cushion and retard the extension and retraction movements of that pair of body sections.

4,434,969

ROD AND PIPE PUSHER-PULLER APPARATUS

Dennis Von Ruden, Owatonna, Minn., assignor to General Equipment Co., Owatonna, Minn.

Filed Jul. 13, 1981, Ser. No. 282,428
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—29 R **6 Claims**



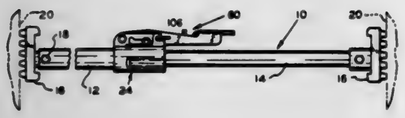
1. A rod and pipe pulling and pushing apparatus, comprising:

(a) an elongated frame having a front end and a back end;

(b) a carriage assembly moveably mounted to said frame;

(c) means for reversibly moving said carriage assembly relative to said frame;
(d) means mounted on said carriage assembly, for gripping said pipe, said pipe being movable in a longitudinal direction with respect to said frame; and
(e) means for guiding said pipe, said guide means including a longitudinally yieldable front guide plate attached near said front end, whereby said front guide plate yields thereby signaling impact by a bore enlarging cup commonly attached to a pipe being pulled to allow stopping of said moving means to prevent damage to said apparatus.

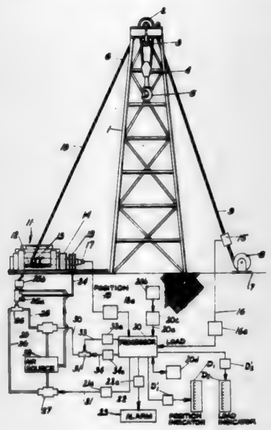
4,434,970
ADJUSTABLE LOAD BRACING BAR
John D. Boland, Jackson, and Fred C. Kresky, Richland, both of Mich., assignors to Aeroquip Corporation, Jackson, Mich.
Continuation of Ser. No. 255,650, Apr. 20, 1981, abandoned. This application Mar. 7, 1983, Ser. No. 471,069
Int. Cl.³ B66F *1/04*
U.S. Cl. 254—108 **8 Claims**



1. In an adjustable load bracing bar adapted to be supported between spaced partitions, in combination, an elongated bar having outer ends, said bar comprising first and second elongated portions each having inner ends telescopingly interconnected, a plurality of teeth defined on said first portion forming a tooth track substantially parallel to the length of said first portion, a lever support defined on said second portion adjacent the inner end thereof, a hand operated lever pivotally mounted upon said lever support pivotal between retract, engage and extend positions, a slot defined on said lever support extending parallel to said positions, a dog, a first pivot pivotally mounting said dog upon said lever, said dog having a second pivot slidably received within said slot, biasing means mounted on said lever biasing said dog toward said tooth track, said dog engaging said track at and between said lever engage and extend positions, and partition engaging means defined upon said bar outer ends, pivoting of said lever from said engage to said extend positions translating said second dog pivot within said slot and translating said dog in a direction telescopingly extending said first portion relative to said second portion.

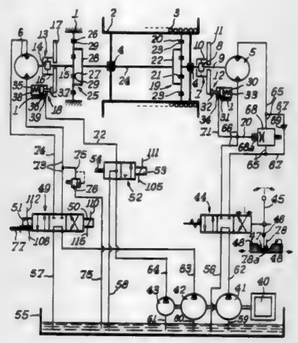
4,434,971
DRILLING RIG DRAWWORKS HOOK LOAD OVERSPEED PREVENTING SYSTEM
Richard N. Cordrey, Rancho Palos Verdes, Calif., assignor to Armco Inc., Middletown, Ohio
Filed Feb. 11, 1981, Ser. No. 233,561
Int. Cl.³ B66D *1/48*; E21B *19/00*
U.S. Cl. 254—273 **21 Claims**

1. In an oil drilling rig of the type having a traveling hook block mounted for vertical movement and means for raising and lowering said block, the improvement in combination therewith comprising means for preventing runaway lowering of said block including:
means producing a signal representative of the load carried by said block;
means producing a signal representative of the vertical position of said block;
brake means for slowing downward travel of said block; and
processor means including means for calculating from said position signal a signal representative of the downward speed of said block, and means utilizing said speed and load signals to produce an electrical signal for insuring safe stopping of block travel within the braking capability of said brake means, said processor means including means for continually calculating from said speed and load signals an energy value which must be dissipated during a



braking stop for that speed and load and means responsive to said electrical signal for activating said brake means for slowing downward travel of said block when the calculated energy value reaches a predetermined value representative of the maximum energy absorbing capability of said brake means.

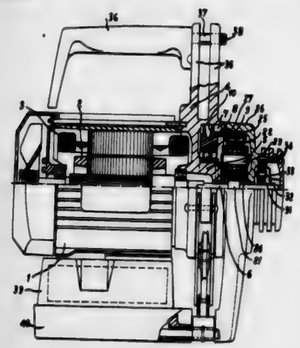
4,434,972
HOISTING WINCH
Georges M. Charles, Saint Vallier, France, assignor to Potain Poclain Materiel (P.P.M.), France
Filed Oct. 6, 1981, Ser. No. 309,111
Claims priority, application France, Oct. 8, 1980, 80 21502
Int. Cl.³ B66D *1/08, 1/22, 1/44*
U.S. Cl. 254—340 **2 Claims**



1. A hoisting winch comprising:
a drum mounted for rotation in two directions on a drum shaft for winding and unwinding a flexible cable on said drum;
a high-torque, low-speed hoisting motor having a hoisting shaft rotatable by said hoisting motor in two directions for rotating said drum in said winding and said unwinding directions;
a low-torque, high-speed compensation motor having a compensation shaft rotatable by said compensation motor

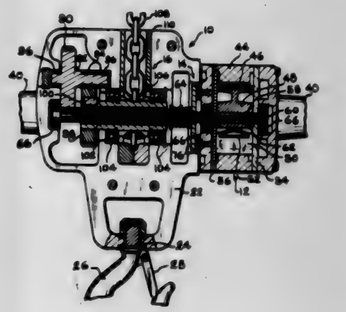
in two directions for rotating said drum in said winding and said unwinding directions;
an epicycloidal gear train including a ring gear mounted to said drum in driving relation therewith, at least one planet gear on a planet carrier mounted in driving relation to said compensation shaft and a sun gear mounted in driving relation to said hoisting shaft;
first uni-directional free wheel means mounted to said hoisting shaft between said gear train and said hoisting motor and including a first driving element mounted in driving relation to said hoisting shaft and a first driven element for driving by said first driving element only in the direction of rotation corresponding to the unwinding direction of rotation of said drum;
first brake means selectively appliable for resisting rotation of said first driven element by said first driving element;
second uni-directional free wheel means mounted to said compensation shaft between said gear train and said compensation motor and including a second driving element mounted in driving relation to said compensation shaft and a second driven element for driving by said second driving element only in the direction of rotation corresponding to the winding direction of rotation of said drum; and
second brake means selectively appliable for resisting rotation of said second driven element by said second driving element.

4,434,973
ELECTRIC HOIST
Andre Desplats, Boulogne Billancourt, France, assignor to Tractel, S.A., France
Filed Oct. 7, 1981, Ser. No. 309,363
Claims priority, application France, Oct. 9, 1980, 80 21593
Int. Cl.³ B66D *1/22, 1/12, 5/14*
U.S. Cl. 254—344 **5 Claims**



1. An electric hoist comprising:
a case within which an electric motor is disposed, said motor presenting an output shaft passing through said case,
a reduction gear providing a high speed reduction ratio with a reduced overall axial length, which comprises:
a sun wheel carried by said motor output shaft,
a planet gears carrying cage disposed within an extension of the case,
planet gears carried on bearings on said cage and meshing with said sun wheel,
a fixed first annulus rigid with the case and coaxial with the motor output shaft, said first annulus presenting internal teeth meshing with said planet gears,
a second annulus coaxial with the motor output shaft, meshing with said planet gears and of which the number of teeth is slightly different from the tooth number of said first annulus,
a wedging groove pulley for actuating a free-end traction or hoisting wire rope, said pulley being disposed in a space provided within the case, between said motor and said reduction gear, and being carried by a reinforced element coaxially with the motor output shaft,
flanges extending upwardly from said case and presenting openings for securing an anchoring pin, and
an upper handle rigid with said anchoring pin.

4,434,974
PNEUTMATIC HOIST BRAKE AND CONTROL
Kenneth H. LeCount, Green Bay, Wis., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Nov. 27, 1981, Ser. No. 325,239
Int. Cl.³ B66D *1/08, 3/20, 5/12, 5/26*
U.S. Cl. 254—360 **11 Claims**

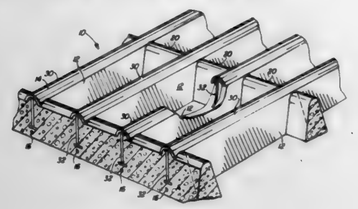


1. A pneumatic hoist comprising, in combination, a vane motor having a pair of inlet ports and and output shaft, a speed reduction mechanism driven by said output shaft of said vane motor, and a chain engaging sprocket operably coupled to said speed reducing mechanism, pneumatic brake means for selectively inhibiting rotation of said vane motor, said pneumatic brake means including a planar brake disk secured for rotation with said output shaft, a friction surface disposed generally parallel and adjacent said disk, means for biasing said brake disk into contact with said friction surface, valve means for controlling a flow of compressed air to said vane motor and said pneumatic brake means, and port plate means for directing compressed air to said vane motor and said brake means and exhaust air from said vane motor, said port plate means having a first pathway providing communication between said valve means and one of said inlet ports, a second pathway providing communication between said valve means and the other of said inlet ports, a pair of check valves providing unidirectional flow from a respective one of said first and said second pathways to a third pathway providing communication between said check valves and a region between said disk and said surface of said pneumatic brake means, whereby activation of said controlling means directs parallel flows of air to said vane motor to cause rotation thereof and to said pneumatic brake means to translate said brake disk away from said surface.

4,434,975
ARMORED CATTLE GUARD
John W. Tompkins, P.O. Box 8186, Phoenix, Ariz. 85066
Filed Sep. 30, 1982, Ser. No. 428,938
Int. Cl.³ A01K *3/00*
U.S. Cl. 256—17 **7 Claims**

1. A cattle guard comprising:
(a) a plurality of pre-cast longitudinally extending rails;
(b) a plurality of pre-cast concrete beams at longitudinally spaced-apart locations and extending transversely between said rails thereby forming an integral pre-cast unit of rails and beams; –

(c) a metal cap extending longitudinally along the top surface of one or more of said rails; and



(d) anchor means extending from said cap and embedded within said rails to secure said cap in place, said beams and rails being pre-cast in an inverted position in a mold with said cap and anchor in first position in said mold.

4,434,976

CONCENTRIC MULTI-TUBE-SYSTEM NOZZLE SITUATED BENEATH THE SURFACE OF THE MELT IN A REFINING VESSEL

Shozo Murakami; Hiroyuki Aoki; Saburo Matsuo; Eiji Ikezaki, and Kenji Yamaura, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,325
Claims priority, application Japan, Dec. 11, 1981, 56-199615
Int. Cl.³ C21B *7/16*
U.S. Cl. 266—268 **6 Claims**



1. A concentric multi-tube-system nozzle situated beneath the surface of the melt in a refining vessel, comprising:
an inner tube;
an outer tube positioned concentrically with respect to the inner tube and forming an annular clearance between the inner tube and the outer tube;
spacers for circumferentially dividing the annular clearance; and
a section defined by two adjacent spacers, said section comprising a contraction portion which is positioned essentially at the bottom of said section in the flow direction of cooling gas which is introduced into the section.

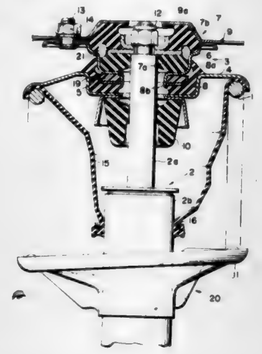
4,434,977

STRUT TYPE SUSPENSION FOR A VEHICLE

Kazuo Chiba, Tokyo, and Iwao Nakamura, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 140,944, Apr. 16, 1980, abandoned. This application Apr. 12, 1982, Ser. No. 367,712
Claims priority, application Japan, Apr. 18, 1979, 54-48142
Int. Cl.³ F16F *3/08, 9/54*
U.S. Cl. 267—33 **8 Claims**

1. A strut type suspension for a vehicle body, comprising:
a shock absorber having an outer casing;
said shock absorber having a piston rod extending from said outer casing;
a lower spring seat fixed to said outer casing;
an upper spring seat loosely and movably fitted about the periphery of said piston rod above and facing said lower spring seat;
a coil spring positioned between said upper and lower spring seats and encircling said piston rod;
a bumper rubber fitted on said piston rod between the upper end of said outer casing and the lower side of said upper spring seat;
an upwardly opening cup-shaped first bracket fixed adjacent its outer peripheral portion thereof to the vehicle body, said first bracket positioned between said upper spring seat and said vehicle body, said cup-shaped first bracket having an aperture in its bottom through which said piston rod extends;



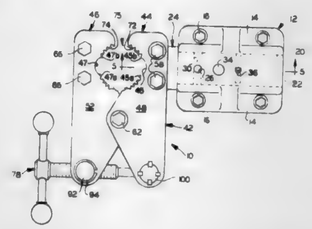
a first insulator rubber positioned at least partially within and generally between said cup-shaped first bracket and said vehicle body, an upper end portion of said piston rod including means for attaching said piston rod to said first insulator rubber such that said piston rod is resiliently supported relative to the vehicle body by said first insulator rubber; and
a second insulator rubber generally spaced from and coaxial with said piston rod and positioned between and in contact with the lower side of said first bracket and the upper side of said upper spring seat, said second insulator rubber having a greater rigidity than that of said first insulator rubber.

4,434,978

VISE

Kenneth D. Kloster, 6649 Millridge, Maumee, Ohio 43537

Continuation of Ser. No. 242,379, Mar. 10, 1981, abandoned. This application Jun. 16, 1983, Ser. No. 504,083
Int. Cl.³ B25B *1/04*
U.S. Cl. 269—69 **7 Claims**



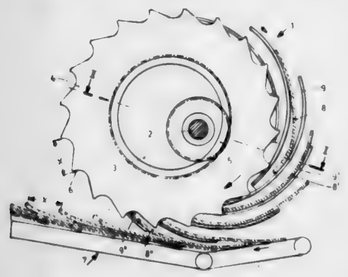
1. An apparatus for securely supporting a generally cylindrical workpiece relative to a fixed support comprising:
a base member;
means for securing said base member to the fixed support;
clamps means rotatably mounted on said base member including a pair of jaw members pivotally interconnected, each of said jaw members including a pair of spaced apart, generally parallel plates and means for maintaining said plates in a generally parallel spaced apart relationship, each of said plates having a workpiece engaging surface thereon with said engaging surfaces of one of said jaw members in facing relation to said engaging surfaces of the other one of said jaw members, each of said workpiece engaging surfaces having a generally arcuate portion interrupted at an intermediate area by a notched portion extending generally radially outwardly from said arcuate portion;
means for releasably securing said rotatable clamp means relative to said base member to militate against any relative rotative movement therebetween; and
means mounted on said clamp means for effecting pivotal movement of said jaw members relative to one another to move said workpiece engaging surfaces toward and away from one another whereby a workpiece positioned between said surfaces may be securely supported relative to the fixed support.

4,434,979

PRINTED GOODS REMOVAL APPARATUS

Ingo Köbler, Anhausen, and Hans-Jürgen Mische, Augsburg, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,234
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108681
Int. Cl.³ B65H *29/00*
U.S. Cl. 271—307 **11 Claims**



1. Printed goods removal and staggered, imbricated distribution apparatus having
at least one distribution wheel (1, 1') having circumferentially located distribution vanes or blades (9, 9', 9'', 9a) between which printed goods (8) to be distributed are inserted, and
a rotating shaft (2) to which said at least one distribution wheel (1, 1') is secured, and
comprising, in accordance with the invention,
at least one disc (3) secured in fixed position and located eccentrically with respect to the shaft (2) of the distribution wheel to permit rotation of the shaft, and hence of the distribution wheel with respect to at least one disc;
an abutment wheel (4) rotatable about the fixed disc (3) and having abutment surfaces (6, 6', 6'') on a circumference thereof uniformly spaced from each other by a predetermined distance (x);
means (5) rotating the abutment wheel (4) in the same direction as the distribution wheel (1, 1') and at a speed which is slower than the speed of the distribution wheel; and
removal means (7, 15) operating at a linear speed corresponding to the circumferential speed of the abutments (6) of the abutment wheel (4);
the eccentric position of the disc (3) being adjusted with respect to the distribution wheel such that printed goods (8) introduced in the space between said vanes or blades first engage an abutment (6) of the abutment wheel (4) and then, upon continued rotation of the distribution wheel, as well as continued rotation of the abutment wheel at said slower speed, the abutment wheel will push the printed goods (8'') out from between said space at the predetermined distance (x) from preceding printed goods (8, 8') in a preceding space for imbricated removal on the removal means with said predetermined spacing (x).

4,434,980

BOXING DEVICE THAT FIGHTS BACK

Bernard J. Babineaux, 139 A. B. Dugas Rd., Lafayette, La. 70503

Filed Feb. 11, 1982, Ser. No. 348,089
Int. Cl.³ A63B *69/34*
U.S. Cl. 272—78 **5 Claims**



1. A boxing device, comprising:
a coupling suspendable from a substantially fixed supporting structure;
a resilient boxing bag having on its surface an upper hook suspended from the coupling and also having a lower hook on its surface opposite the upper hook, the lower hook being attachable to a substantially fixed lower supporting structure; and
a pair of elongated, padded arms, each having a blunt, padded lower end and each arm being connected to the coupling and hanging from the coupling adjacent opposite sides of the boxing bag, so that each arm may move arcuately forward in response to an impact force applied to the boxing bag, each arm thereby thrusting its blunt, padded lower end forward and upward towards a source of the impact force.

4,434,981

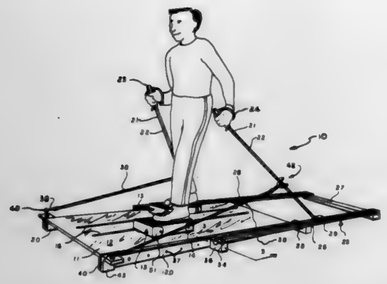
CROSS COUNTRY SKIING SIMULATING EXERCISER

Desmond H. Norton, 1122 Patterson St., Ogden, Utah 84403

Filed Nov. 12, 1981, Ser. No. 320,837
Int. Cl.³ A63B *69/18*
U.S. Cl. 272—97 **14 Claims**

1. An exercising apparatus adapted to simulate cross country skiing, comprising:
a base member, the upwardly facing surface thereof being generally planar;
a pair of foot supporting platforms each having rolling means for support thereof upon the upward facing surface of the base member;
means for guiding each of the foot platforms along generally parallel paths upon said surface;
means for restraining the foot platforms to oppositely directed reciprocatory movements;
a pair of simulated ski pole means;
means for guiding the lowermost end of each pole in reciprocatory motion generally parallel to the motion of the foot platforms; and

means for yieldably resisting motion of each one of the pair of poles directed backwardly with respect to the user of



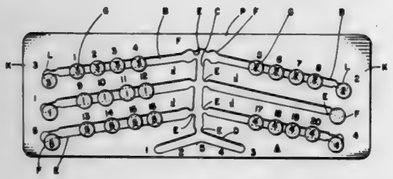
the apparatus, said means being functionally independent of the motions of the foot platforms.

4,434,982

PUZZLE-GAME UTILIZING MOVABLE DISCS TO ATTAIN SPECIFIED ARRANGEMENT

Beryl I. Bearint, 802 No. Delaware St.-No. 406, San Mateo, Calif. 94401

Filed Sep. 13, 1982, Ser. No. 416,913
Int. Cl.³ A63F 9/08
U.S. Cl. 273—153 S 7 Claims



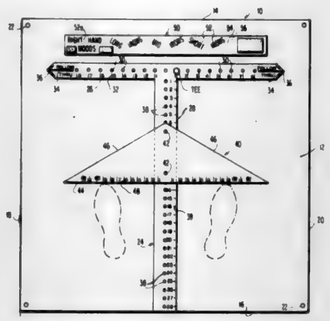
1. A puzzle-game comprising a flat board;
first and second pluralities of parallel slots through said board;
a first end of each of said parallel slots terminating in a closed end in said board;
second ends of said slots terminating in a central common connecting slot positioned across said parallel slots;
a plurality of movable spool-shaped discs having cylindrical ends joined by smaller cylindrical connecting members;
said connecting members being disposed to move in said slots;
said cylindrical ends being larger in diameter than the width of said slots;
one of the cylinders of each of said discs being of one of five different colors and having numbers 1 to 5 imprinted thereon;
said central connecting slot terminating in a Y-shaped slot termed a crib closed at its ends;
said parallel slots having an enlarged section at each end to accommodate said connecting members of said discs and a restricted section adjacent thereto to impede the motion of said discs in said slots;
whereby starting from a predetermined relative position of said discs in said slots a specified arrangement of said discs may be attained in a given number of moves.

4,434,983

GOLFER'S STANCE MAT

Franklin K. Taggart, P.O. Box 246, Hydeville, Vt. 05750

Filed Sep. 30, 1982, Ser. No. 430,311
Int. Cl.³ A63B 69/36
U.S. Cl. 273—187 R 2 Claims



1. A golf teaching device for driving ranges and the like, said device comprising in combination:
a rectangular base mat having front and rear edges generally at right angles to the flight path of a golf ball to be driven in conjunction therewith;
a tee bar mounted to the upper surface of the base mat and including a base strip defining the swing path for the head of a golf club being swung by a driver standing on said base mat and generally facing the base strip;
said tee bar further including an integral center strip extending at right angles to said base strip and outwardly to one side thereof from the center thereof generally parallel to the front and rear edges of the base mat;
a first scale carried by said base strip for indicating specific tee positions for tee placement on the base strip to the right and left of the center strip;
said center strip including a second scale extending the length of the same;
a feet placement guide adjustably mounted to the center strip at a longitudinal position therealong to effect a proper placement for the golfer's feet to opposite sides of the center strip and bearing a third scale along an edge thereof at right angles to the longitudinal axis of the center strip;
a tee position instruction strip reversibly face mounted to the upper surface of said base mat positioned adjacent to said base strip and to the side opposite the center strip and bearing indicia on each face thereof representing the desired proper tee positions for a set of golf clubs; and
wherein said center strip comprises a series of pin placement holes, said feet placement guide comprises a triangular planar member including a base edge remote from the base strip of the tee bar and bearing indicia to the right and left of a center line through the apex of the triangular planar member along said base edge to identify golfer's foot positions to the right and left of said center strip and behind the base edge on said rectangular base mat, and wherein said triangular planar member is detachably mounted to the tee bar strip by means of aligned pins projecting from the bottom surface for the foot placement guide at the center thereof and receivable within given pin placement holes formed within said center strip;
whereby, a golfer may readily take identical stance positions from time to time by way of said scales and tee placement positions for a given golf club, and wherein the assembly may be utilized both by right handed and left handed golfers by the simple expedient of assuming a position either fore or aft on the mat and face reversal of the instruction strip whose iron and wood tee positions are

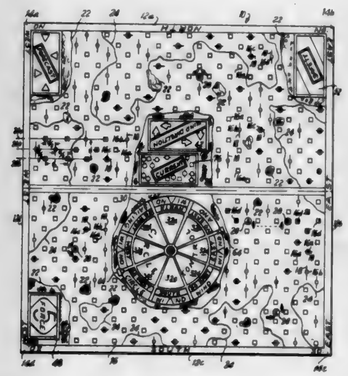
reversed relative to the base strip with respect to the direction of flight of the golf ball.

4,434,984

SAILBOAT RACE BOARD GAME APPARATUS

Carl D. Bergstrom, 506 Bread and Cheese Hollow Rd., Fort Salonga, N.Y. 11768

Filed Feb. 16, 1982, Ser. No. 348,983
Int. Cl.³ A63F 3/00
U.S. Cl. 273—246 16 Claims



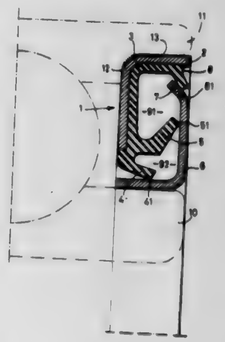
1. Sailboat race board game apparatus comprising:
a game board having a playing area on a major area of which a plurality of movement spaces are designated, said major area constituting a water area, said movement spaces being arranged in a plurality of rows, the movement spaces in each row being equally spaced from one another by a certain distance, and wheren adjacent rows are spaced from each other by one-half of said certain distance, and wherein the movement spaces of one row are displaced with respect to the movement spaces of an adjacent row by one-half of said certain distance, so that the movement spaces in alternate rows are aligned with each other to form a plurality of columns of said movement spaces, the movement spaces in each column being equally spaced from one another by said certain distance, whereby each row of movement spaces defines an east-west movement direction, each column of movement spaces defines a north-south movemet direction, and said rows and columns of movement spaces together define a plurality of northwest-southeast movement directions and a plurality of northeast-southwest movement directions,
said game board having a movement direction indicator provided thereon, said movement direction indicator defining eight areas for designatng, respectivly, northerly, southerly, easterly, westerly, northwesterly, northeasterly, southwesterly and southeasterly movement directions of a movement piece;
a plurality of movement pieces adapted to be moved over said game board playing area on said movement spaces in said movement directions, each of said movement pieces being provided with distinguishing indicia;
means adapted to cooperate with said movement direction indicator provided on said game board for indicating the direction of movement of each of said plurality of movement pieces; and
wherein said means for indicating the direction of movement of each of said movement pieces are constituted by a plurality of control markers, each of said control markers being provided with indicia corresonding to said indicia provided on a respective movement piece, said control markers being selectively situatable on any one of said movement direction indicator areas to designate the direction of movement of said corresponding movement pieces on said gameboard playing area.

4,434,985

GASKET WITH METAL MOUNTING ARMATURE ROTATING BETWEEN COAXIAL PARTS

Claude Sonnerat, Annecy-le-Vieux, France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed May 13, 1982, Ser. No. 377,838
Claims priority, application France, May 13, 1981, 81 09476
Int. Cl.³ F16J 15/32, 15/34
U.S. Cl. 277—37 1 Claim



1. A gasket for sealing between two relatively rotating parts, comprising:
a first ring having an axis and being connected to one of said rotating parts, said first ring having an L-shaped cross section including a first radial leg and a first axial leg;
a second ring coaxial with said first ring and being connected to the other of said rotating parts, said second ring having an L-shaped cross section including a second radial leg extending towards said first axial leg and a second axial leg extending axially towards said first radial leg, said second radial leg having a slanted distal end portion which deviates from the radial direction toward said first radial leg, said first and second rings enclosing a chamber;
a lining molded to the surface of said first ring which faces said second ring;
a first watertight lip extending from said lining and into contact with a first surface of said second axial leg;
a second watertight lip extending from said lining and into contact with a first surface of said second radial leg;
a third watertight lip extending from said lining and into contact with said slanted end portion at a second opposing surface of said second radial leg, whereby said third lip retains said second ring relative to said first ring and wherein said first, second and third lips, said lining and said rings together define two isolated sub-chambers of said chamber; and
a lubricant filling each of said sub-chambers.

4,434,986

SHAFT SEAL

Dale J. Warner, Palos Heights, Ill., assignor to Gits Brothers Mfg. Co., Bedford Park, Ill.

Filed Oct. 12, 1982, Ser. No. 433,838
Int. Cl.³ F16J 15/34
U.S. Cl. 277—42 13 Claims

1. A shaft seal for a rotatable shaft which extends through a wall of a machine, said shaft seal comprising:
a hollow housing for receiving the shaft therethrough and adapted for fluid-sealed connection to the machine wall, including an inner surface and a ledge;
a drive sleeve for connection to and receiving the shaft

therethrough for rotation therewith in a fluid-sealed relationship within said housing;

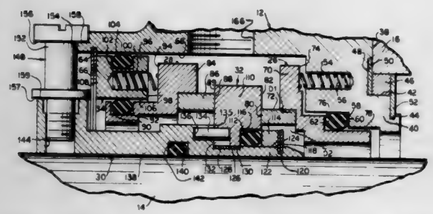
a ring-shaped first seal member about and coupled to said drive sleeve for rotation therewith and comprising first and second radially-extending seal faces on axially opposite sides thereof;

first sealing means for receiving the shaft therethrough, said first sealing means being fluid sealed to, axially movable within and fixed against rotation with respect to said housing,

said first sealing means comprising a second seal member including a radially-extending third seal face;

first bias means in said housing ledge urging said first sealing means axially towards said ring-shaped seal member to engage said first and third seal faces;

second sealing means receiving said drive sleeve therethrough, said second sealing means being fluid sealed to,



axially movable within and fixed against rotation with respect to said housing, said second sealing means comprising a third seal member including a radially extending fourth seal face; and

second bias means connected to said housing and fluid sealed to said housing and to said second seal means, said second bias means urging said second seal means axially towards said ring-shaped first seal member to engage said second and fourth seal faces,

said first sealing means comprising a first radially-extending surface, a second radially-extending surface, and an annular surface and an O-ring bearing against said second radially-extending surface and said annular surface, and

said housing ledge comprising an annular surface bearing against said O-ring and a radially-extending surface bearing against said O-ring and sealing said first sealing means to said housing.

4,434,987

SHAFT SEAL WITH MAGNETICALLY CONTROLLED GAP BETWEEN ROTATING RING AND SURROUNDING NON-ROTATING RING

Rolf Albers, Oberhausen; Emil Aschenbruck, Duisburg; Günter Neuhaus, and Joachim Kotzur, both of Oberhausen, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,349

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3223744

Int. Cl.³ F16J *15/54*

U.S. Cl. 277—80 **7 Claims**

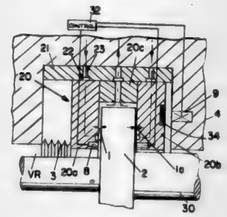
1. A seal device for a shaft rotating with respect to a housing, comprising:

a rotating seal ring having opposite radially extending side surfaces and a circumferentially extending end surface, said rotating seal ring connected to the shaft for co-rotation therewith;

a non-rotating seal ring non-rotatably associated with the housing, surrounding at least a portion of said rotating seal ring and defining a pair of radial plane sealing gaps with said side surfaces of said rotating seal ring and a circumferential gap with said end surface of said rotating seal ring, said non-rotating seal ring having a radially extending portion with magnetically attractable material connected thereto;

a packing element which is elastically yieldable in all directions, connected between said housing and said non-rotating seal ring for permitting relative motion therebetween to vary a width of each gap;

sealing fluid means for supplying a sealing fluid to the gaps, said sealing fluid means supplying sealing fluid over at least one supply bore communicating with each radial plane gap;



an electromagnet connected to the housing on a side of said radially extending portion and adjacent said magnetically attractable material for exerting a magnetic force on said non-rotating seal ring through said magnetically attractable material;

a sensor connected to said non-rotating seal ring for sensing a width of each radial plane gap; and

control means connected to each sensor and said electromagnet for activating said electromagnet in response to each sensor for applying a selected magnetic force to maintain a selected width for each radial plane gap.

4,434,988

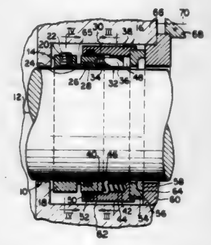
SHAFT SEAL

Dale J. Warner, Palos Heights, Ill., assignor to Gits Brothers Mfg. Co., Bedford Park, Ill.

Filed Oct. 28, 1982, Ser. No. 437,294

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—81 R **11 Claims**



1. In a shaft seal for a rotatable shaft which extends through the end wall of a machine, of the type in which a drive sleeve assembly is fixed to the shaft for rotation therewith and fluid sealed to the shaft, in which a ring seal assembly rotates against a fixed seal ring and is urged thereagainst in a fluid sealed manner via spring means between the drive sleeve assembly and the ring seal assembly and by internal fluid pressure and is thereby fluid sealed to the drive sleeve assembly, and in which a drive coupling is provided between the drive sleeve assembly and the ring seal assembly, the improvement comprising:

at least one drive lug fixed to the drive sleeve assembly and extending parallel to the axis of rotation of the shaft; and

at least one recess in the ring seal assembly receiving said at least one drive lug for axial movement therein.

4,434,989

SEALING GASKET

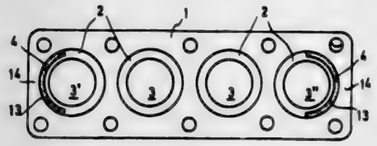
Horst Beyer; Klaus Lönne, both of Burscheid, and Klaus-Peter Majewski, Odenthal-Erberich, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,514

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101921

Int. Cl.³ F16J *15/06*

U.S. Cl. 277—235 B **9 Claims**



1. In a flat sealing gasket having sealing faces on reverse sides thereof; an opening defined in the sealing gasket; a cross-sectionally generally U-shaped armor framing the opening; said armor having legs straddling marginal edge zones of said gasket defining said opening; each armor leg having an inner face in engagement with the gasket and an outer face oriented away from said gasket; the improvement comprising a low-friction coating provided on the outer face of at least one of said armor legs; and wherein said sealing faces externally of said armor are substantially free from said low-friction coating.

4,434,990

FLUID-ACTUATED HOLLOW POWER CHUCK

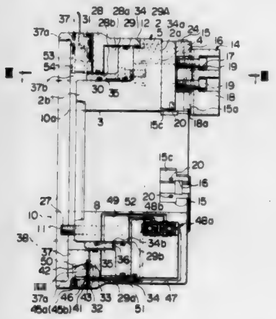
Takeo Kobayashi, Nagoya, Japan, assignor to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 17, 1981, Ser. No. 322,251

Claims priority, application Japan, Nov. 26, 1980, 55-166131

Int. Cl.³ B23B *31/30, 5/34*

U.S. Cl. 279—4 **6 Claims**



1. A fluid actuated type hollow power chuck comprising:

a chuck body having a central through bore therethrough of uniform diameter and adapted to be mounted on a hollow spindle of a machine tool, said chuck body having a large outer diameter front part facing away from the spindle and a small outer diameter rear part facing toward the hollow spindle, and having means extending through said front and rear parts for mounting the chuck body directly on the spindle;

chuck jaws mounted on a radial face of the large outer diameter front part of said chuck body for radial movement thereon;

a generally hollow cylinder body having a forward part secured to said large outer diameter front part of said chuck body and a rearward part spaced radially from said small outer diameter rear part of said chuck body, said chuck body and said cylinder body defining an annular cylinder chamber therebetween around the outer surface of said rear part of said chuck body;

an annular piston in said annular cylinder chamber and having an axial piston sleeve integral with and extending from the rear thereof and slidably and sealingly fitted between the rearward part of said chuck body and said cylinder body and projecting rearwardly of said cylinder body;

power transmitting means operatively connecting said piston to said jaws for operating said jaws in response to axial movement of said piston; and

detection means provided at a position rearward of said cylinder body for detecting axial displacement of the end of said piston sleeve which is outside of said cylinder body which is indirectly indicative of radial displacement of said jaws.

4,434,991

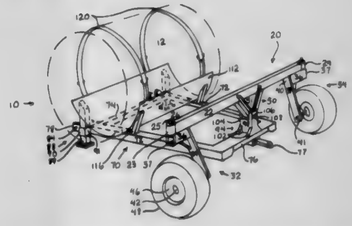
TANK CARRIER

Dean A. Winterton, R.R. 1, Paw Paw, Ill. 61353

Filed Aug. 23, 1982, Ser. No. 410,306

Int. Cl.³ B60P *3/22*

U.S. Cl. 280—5 R **22 Claims**



1. A tank carrier including a wheel frame and a tank frame, said tank frame being pivotally secured to said wheel frame, a tank for holding liquid agricultural material secured to said tank frame, wherein:

(a) a first castor wheel and a second castor wheel are secured to said wheel frame;

(b) said first castor wheel and said second castor wheel are oppositely disposed;

(c) a pivot means for pivotally connecting said wheel frame to said tank frame is situated between said first castor wheel and said second castor wheel;

(d) said tank frame has a pivot side connected to said wheel frame below said wheel frame;

(e) said tank frame has a tractor side oppositely disposed from said pivot side; and

(f) said tractor side includes means for connecting said tank carrier to a vehicle capable of pulling said tank carrier.

4,434,992

TROLLEY FOR USE IN TRANSPORTING A BOAT

Anthony W. Beach-Thomas, Ross-on-Wye, England, assignor to John Rhys Hughes, Surrey, England

Filed Apr. 21, 1981, Ser. No. 256,231

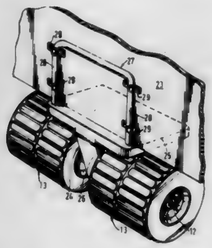
Claims priority, application United Kingdom, Nov. 28, 1980, 8038228

Int. Cl.³ B62B *1/26*

U.S. Cl. 280—47.13 B **3 Claims**

1. A trolley for use in transporting a boat, comprising a body element formed from a unitary block of resilient material shaped to engage a part of the boat at the bottom thereof, a

metal retaining element projecting from the block of resilient material and adapted for releasable engagement with said part of the boat, so as to secure the trolley to the boat, a spindle extending through the block of resilient material so as to project from opposite sides thereof, and a pair of wheels rotatably mounted on the spindle on opposite sides of the block of resilient material, the block being T-shaped and having a horizontal cross piece that overlies said wheels and a vertical stem through which said spindle extends, said metal retaining element being of inverted U-shape having two upright legs whose upper ends are interconnected and whose lower ends are embedded in opposite ends of said horizontal cross piece said U-shaped element being disposed in a plane parallel to the axes of said wheels.

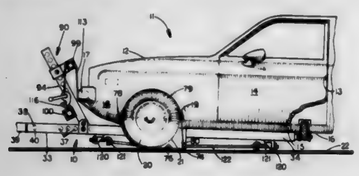


4,434,993

ASSEMBLY FOR ATTACHMENT TO A VEHICLE FOR PERFORMING A WORK OPERATION

Stanley F. Curtis, Exeter, Calif., assignor to Pollution Controls Industries, Inc., Tulare, Calif.

Filed Jan. 27, 1982, Ser. No. 343,170
Int. Cl.³ B60P 3/12
U.S. Cl. 280—402 4 Claims



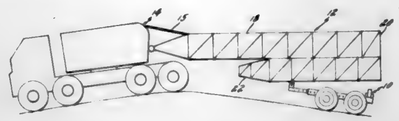
1. An assembly for adjusting the relationship of first and second portions of a vehicle relative to each other for transport, the first portion of the vehicle including a pair of ground engaging wheels, the assembly comprising a main frame; means mounted on the main frame for attachment to the first portion of the vehicle at a first point of reference, said attachment means including a pair of receptacles and members borne by the main frame individually to receive the wheels of said pair of wheels of the vehicle and being adjustable toward and from each other laterally of the frame in opposite directions to match the distance between said wheels, each member engageable with its respective wheel when received in the receptacle to capture said wheel therein; a subframe borne by the main frame extending to a second point of reference spaced from said first point of reference; and means mounted on the frame and extending to the second point of reference for engaging the second portion of the vehicle between said points of reference to adjust the first and second portions of the vehicle relative to each other.

4,434,994

BOOM AXLE

Julien H. Pepin, 460 Matthew St., Bristol, Conn. 06010

Filed Apr. 28, 1982, Ser. No. 372,619
Int. Cl.³ B62D 53/06
U.S. Cl. 280—404 11 Claims



1. Apparatus for providing support for an elongated crane boom during over-terrain movement thereof, the boom being attached at a first end to a vehicle, said apparatus comprising:

frame means, said frame means including a main body portion and an extendable forward portion;

at least a first wheel set, said wheel set being mounted from said frame means main body portion and including an axle, said first wheel set further including means resiliently coupling said axle to said frame means;

means affixed to said frame mean forward portion and defining a pivot axis which is parallel to and displaced from said wheel set axle; and

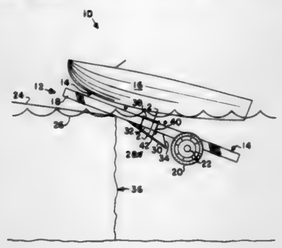
means for detachably and rotatably coupling the boom to said pivot axis defining means intermediate the length of said boom whereby relative motion between a portion of said boom and said axle may occur.

4,434,995

RETRIEVABLE BOAT TRAILER

Stanley A. Toy, 49 Cypress Dr., Palm Harbor, Fla. 33563

Filed Jul. 22, 1982, Ser. No. 400,897
Int. Cl.³ B60P 3/10
U.S. Cl. 280—414.1 6 Claims



1. A boat trailer, comprising,

a frame portion of generally rectangular configuration,

said frame portion having wheel members rotatably mounted thereto for transporting said frame portion,

said frame portion having a hitch means provided as a part thereof so that said frame portion can be towed by a motor driven vehicle,

a ramp means secured to said frame portion just forwardly of said wheel members,

said ramp means having a leading edge,

said leading edge forming a feather edge with said frame portion so that an obstacle will slide from said frame portion onto said ramp means unobstructed by said feather edge when said boat trailer is retrieved from a position where its wheel members have fallen from a precipice,

said frame portion further comprising a pair of longitudinally aligned, transversely interconnected side rail members disposed in parallellism with one another,

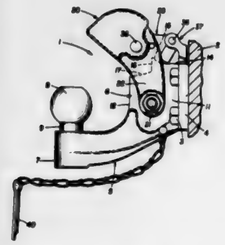
and wherein said ramp means are mounted in depending relation to said side rail members, in transverse alignment to one another.

4,434,996

TOWING HITCH CONSTRUCTION

Dean L. Wallace, 2899 Chaucer Dr., NE., North Canton, Stark County, Ohio 44721

Filed Apr. 23, 1982, Ser. No. 371,240
Int. Cl.³ B60D 1/04, 1/06
U.S. Cl. 280—504 8 Claims



1. A hitch construction including:

(a) a body having a mounting end an an outwardly projecting hook;

(b) a ball mounted on an extended end of the hook and projecting upwardly therefrom;

(c) a closure latch pivotally mounted on the mounting end of the body spaced from the ball; and

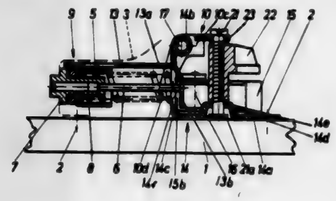
(d) lock means movably mounted on the closure latch and engageable with the mounting end of the body for locking the latch in a first closed position spaced above the ball a distance sufficient to engage a hood of a hooded-type coupler when mounted on the ball to prevent disengagement of the hood from the ball, and alternately for locking the latch in a second closed position against the ball to prevent disengagement of a lunette coupler from the ball, said lock means including first and second locking pawls alternately engageable with a projection formed on the body to lock the closure latch in the first and second closed positions, respectively.

4,434,997

SKI BINDING JAW

Theodor Nitschko, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Jul. 13, 1981, Ser. No. 282,766
Claims priority, application Austria, Jul. 24, 1980, 3822/80
Int. Cl.³ A63C 9/08
U.S. Cl. 280—625 8 Claims



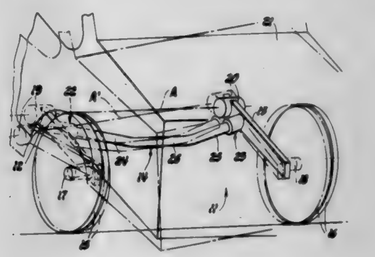
1. In a safety ski binding jaw which can releasably secure a ski boot on a ski and includes: a support member; two centering levers which are respectively supported on said support member for pivotal movement about generally vertical first and second axes, said first and second axes being spaced from each other and each said centering lever having a first leg and a second leg, said first legs each being arranged to engage the sole of said ski boot and said second legs projecting inwardly toward each other; resilient means cooperable with said second legs of said centering levers for yieldably urging pivotal movement of each said centering lever in a first direction in which said first leg thereon moves toward said ski boot; and a sole hold-down supported on a generally vertical bolt; the improvement comprising: means supporting said bolt for substantially vertical movement with respect to said support member; stop means for limiting upward movement of said bolt relative to said support member; and a compensating lever which is supported on said support member for pivotal movement about a generally horizontal axis and is operatively coupled to said bolt; said compensating lever being respectively pivoted in second and third directions in response to upward and downward movement of said bolt and being operatively coupled to said second leg of each said centering lever; upward movement of said sole hold-down and said bolt pivoting said compensating lever in said second direction and said compensating lever thereby pivoting said centering levers in a fourth direction opposite said first direction against the urging of said resilient means so that said first legs of said centering levers move away from said ski boot; wherein said stop means includes said support member having a support plate with an opening therethrough, said bolt extending through said opening; and wherein said stop means includes a disk which is supported on said bolt below said support plate and has a diameter which is larger than said opening which is provided in said support plate.

4,434,998

REAR AXLE FOR VEHICLES ESPECIALLY MOTOR VEHICLES

Helmut Kaltwasser, Eltville, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 10, 1981, Ser. No. 253,030
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016248
Int. Cl.³ B60G 11/20
U.S. Cl. 280—721 4 Claims



1. Rear wheel suspension for automotive vehicles of the type including a pair of longitudinal control arms pivoted at their foward ends on the vehicle body and rotatably mounting adjacent their rearward ends the respective vehicle wheels, and a transverse member adapted for connection at each end thereof to a respective control arm intermediate the ends of the latter in a substantially rigid fashion in the vehicle end view whereby such member controls wheel camber, the improvement which comprises constructing said transverse member with straight end portions and a midportion offset longitudinally of the vehicle body from the transverse plane through the points of connection between said member and the control arms, the axis of each end portion of said member being oriented at said points of connection with the respective control arm at an oblique angle, and means connecting each end of said member with a respective control arm for relative rotation on said axes.

4,434,999

LEG PROTECTOR OF AUTOMOTIVE VEHICLE

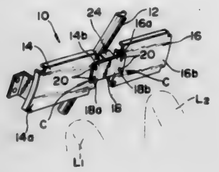
Yoshimi Sato, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Sep. 11, 1981, Ser. No. 301,121

Claims priority, application Japan, Sep. 12, 1980, 55-129986[U]; Sep. 19, 1980, 55-133502[U]

Int. Cl.³ B60R *21/02*

U.S. Cl. 280—752 **23 Claims**



23. A driver and passenger leg protector for use in an automotive vehicle having a steering column, comprising:

(a) first and second side plate members securely connected to a vehicle body and located between a steering column and legs of a driver, said first and second side plate members being in lateral alignment with and spaced apart from each other;

(b) a central plate member located facing the steering column and disposed contacting said first ans second side plate members, said central plate member having lateral side edges engaging corresponding inner edges of the first and second plates, said central plate being a rigid member; and

(c) means for fastening the side edges of said central plate member to the inner edges of each said first and second side plate member.

4,435,000

SEATBELT TIGHTENING DEVICE

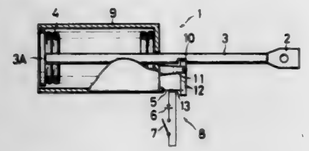
Masakazu Chiba, and Fumio Matsuoka, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 24, 1982, Ser. No. 391,714

Claims priority, application Japan, Aug. 31, 1981, 56-129422[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—806 **6 Claims**



1. A seatbelt tightening device for tightening a seatbelt and removing a sag therefrom in a collision of a motor vehicle, characterized by a rod connected thereto with one end of a seatbelt, a spring for biasing said rod in a direction of tightening said seatbelt, a locking wire for drawing and restraining said rod or spring to a stand-by position against the biasing force of said spring, and means including an electric power source and a collision sensor, for heating and fusion-cutting said locking wire by a current passage from said power source when said collision sensor is turned "ON".

4,435,001

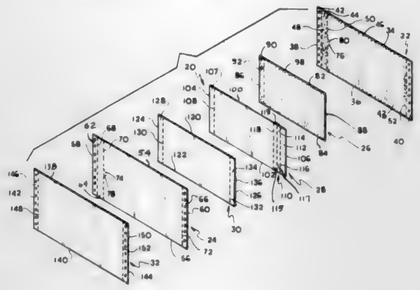
ENVELOPE ASSEMBLY

Larry E. Mills, Lynchburg, and Thomas D. Dove, Cincinnati, both of Ohio, assignors to American Standard Inc., New York, N.Y.

Filed Mar. 12, 1982, Ser. No. 357,378

Int. Cl.³ B41L *1/00, 1/04;* B42B *5/00*

U.S. Cl. 282—11.5 A **7 Claims**



1. An envelope assembly comprising:

an outside envelope including a rear ply and a front ply and each ply having a body portion and detachable inner and outer marginal edge portions;

the inner edge portion including a first part and a second part, the second part being between the first and the body portion of the outside envelope;

said rear and front plies of said outside envelope being interconnected along a line adjacent substantially the entire peripheral edge thereof;

a first line of weakening between the first part and the second part of the inner marginal edge portion of each ply of the outside envelope;

a second line of weakening between the second part and the body portion of the inner peripheral edge portion of each ply of the outside envelope;

a third line of weakening between the outer marginal edge portion and the body portion of each ply of the outer envelope;

a section of the line interconnection being located on the second part of the inner marginal edge portion so that detachment of the second part will open one end of the outside envelope to permit access to the interior thereof;

a return envelope smaller than the outside envelope enabling it to be positioned in the outside envelope and including a back ply and a forward ply each having a body portion and said forward ply having detachable inner and outer marginal edge portion and said back ply having an inner marginal edge portion;

said back and forward plies of said return envelope being interconnected along a line adjacent the peripheral edge thereof and interrupted at the outer edge to provide an access opening;

the outer marginal edge portion of the forward ply including a first part, a second part and a third part, the second part being between the first part and the third part of the forward ply, the third part being between the second part and the body;

a fourth line of weakening between the inner edge portion of the back ply and the forward ply and the body portion of the back and forward plies;

a fifth line of weakening between the first and second parts of the outer marginal edge of the forward ply of the return envelope;

a sixth line of weakening between the second part of the outer marginal edge portion of the forward ply and the third portion of the forward ply;

a seventh line of weakening between the third part of the outer marginal edge portion of the forward ply and the body portion of the forward ply;

the outer marginal edge portion of the forward ply being held to the outside envelope at the line of interconnection between the rear and front plies of the outside envelope adjacent the outer edge of the outside envelope;

the third part of the outer marginal edge portion of the forward ply adapted to be bent around the seventh line of weakening into overlying position with respect to the back ply and attachment means for fastening the folded third part to the back ply;

an information ply smaller than the outside envelope and having a body portion and an inner marginal edge portion connected to the return envelope at the line of interconnection between the inner marginal edge portion of the rear ply and the inner marginal edge portion of the front ply of the outside envelope;

the information ply having an outer marginal edge portion connected to the return envelope at a line of interconnection on the outer marginal edge portion of the forward ply;

the interconnected outside envelope, return envelope and information ply being maintained in registration during formation including placing of indicia thereon;

an eighth line of weakening between the inner marginal edge portion and the body portion of the information ply;

a ninth line of weakening between the outer marginal edge portion and the body portion of the information ply;

the fifth line of weakening weaker than the sixth, seventh and ninth lines of weakening; and

detachment of inner marginal edge portions of the rear and front plies of the outside envelope, the inner marginal edge portions of the back and forward plies of the return envelope, and the inner marginal edge portion of the information ply along the second, fourth and eighth lines of weakening provides access to the interior of the outside envelope through the inner end thereof permitting the return envelope and attached information ply to be withdrawn through the open inner end of the outside envelope by detachment along the fifth line of weakening, and separation of the information ply from the return envelope is accomplished by removing the outer marginal edge portion of the information ply and the second part of the outer marginal edge portion of the forward ply of the return envelope along the sixth and ninth lines of weakening which also enables the third part of the outer marginal edge portion to be bent about the seventh line of weakening to close the return envelope.

4,435,002

OXIME ETHERS OF 4,4'-BIS(N,N-DIETHYLAMINO)BENZHYDROL AND PRESSURE-SENSITIVE RECORDING SYSTEMS CONTAINING THEM

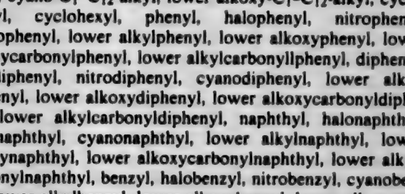
Frank F. Cesark, and Daniel W. Thomas, both of Bridgewater, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 297,802, Aug. 31, 1982, Pat. No. 4,351,956. This application Jun. 9, 1982, Ser. No. 386,561

Int. Cl.³ B41M *5/22*

U.S. Cl. 282—27.5 **5 Claims**

1. In a pressure-sensitive transfer copy set comprising a transfer sheet superimposed on an absorbent sheet, the transfer sheet having a coating on one surface thereof in contact with absorbent sheet, said coating comprising a color reactant compound represented by the formula:



wherein R and R' are alkyl groups of 1 to 4 carbon atoms which forms a colored marking when brought into contact with an electron acceptor, and a material normally insulating said color reactant compound in said coating to prevent contact with said absorbent sheet but being rupturable upon the application of localized pressure on said transfer sheet whereby said color reactant material is released and contacts said absorbent sheet; said absorbent sheet having a coating on one surface thereof in contact with said transfer sheet, said coating containing an said electron acceptor.

4,435,003

CHROMOGENIC QUINAZOLINES

Ian J. Fletcher, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

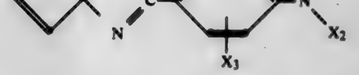
Division of Ser. No. 227,294, Jan. 22, 1981. This application Sep. 22, 1982, Ser. No. 421,205

Claims priority, application Switzerland, Jan. 31, 1980, 780/80; Jul. 15, 1980, 5411/80

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **6 Claims**

1. A pressure-sensitive or heat-sensitive recording sheet material which contains in its color reactive system, as color former, a quinazoline of the formula



wherein Z is hydrogen, R_1, $-OR_1'$, $-SR_1'$ or $-NR_2R_3$; R_1' but not R_1 is halo-C_2-C_6-alkyl or each of R_1' and R_1 is C_1-C_{12}-alkyl, cyano-C_1-C_{12}-alkyl, lower alkoxy-C_1-C_{12}-alkyl, cyclopentyl, cyclohexyl, phenyl, halophenyl, nitrophenyl, cyanophenyl, lower alkylphenyl, lower alkoxyphenyl, lower alkoxycarbonylphenyl, lower alkylcarbonyllphenyl, diphenyl, halodiphenyl, nitrodiphenyl, cyanodiphenyl, lower alkyldiphenyl, lower alkoxydiphenyl, lower alkoxycarbonyldiphenyl, lower alkylcarbonyldiphenyl, naphthyl, halonaphthyl, nitronaphthyl, cyanonaphthyl, lower alkylnaphthyl, lower alkoxynaphthyl, lower alkoxycarbonylnaphthyl, lower alkylcarbonylnaphthyl, benzyl, halobenzyl, nitrobenzyl, cyanobenzyl, lower alkylbenzyl, lower alkoxybenzyl, lower alkoxycarbonylbenzyl, lower alkylcarbonylbenzyl, phenylethyl, halophenylethyl, nitrophenylethyl, cyanophenylethyl, lower alkylphenylethyl, loweer alkoxyphenylethyl, lower alkoxy carbonylphenylethyl, lower alkylcarbonylphenylethyl, thienyl, halothienyl, cyanothienyl, nitrothienyl, lower alkylthienyl, lower alkoxythienyl, lower alkoxycarbonylthienyl, furyl, halofuryl, cyanofuryl, nitrofuryl, lower alkylfuryl, lower alkoxyfuryl, lower alkoxycarbonylfuryl, pyrrolyl, halopyrrolyl, cyanopyrrolyl, nitropyrrolyl, lower alkylpyrrolyl, lower alkoxypyrrolyl, lower alkoxycarbonylpyrrolyl, pyrazolyl, halopyrazolyl, cyanopyrazolyl, nitropyrazolyl, lower alkylpyrazolyl, lower alkoxypyrazolyl, lower alkoxycarbionyl-

pyrazolyl, imidazolyl, haloimidazolyl, cyanoimidazolyl, nitroimidazolyl, lower alkylimidazolyl, lower alkoxyimidazolyl, lower alkoxycarbonylimidazolyl, pyridyl, halopyridyl, cyanopyridyl, nitropyridyl, lower alkylpyridyl, lower alkoxypyridyl or lower alkoxycarbonylpyridyl; R_2 is formyl, lower alkylcarbonyl, lower alkylsulfonyl, benzoyl or phenylsulfonyl or each of R_2, R_3, X_1 and X_2 independently is hydrogen, C_1–C_{12}-alkyl, halo-C_1–C_{12}-alkyl, hydroxy-C_1–C_{12}-alkyl, cyano-C_1–C_{12}-alkyl, lower alkoxy-C_1–C_{12}-alkyl, cyclohexyl, phenyl, halophenyl, nitrophenyl, cyanophenyl, lower alkylphenyl, lower alkoxyphenyl, lower alkoxycarbonylphenyl, benzyl, halobenzyl, nitrobenzyl, cyanobenzyl, lower alkylbenzyl, lower alkoxybenzyl, lower alkoxycarbonylbenzyl, or $-NR_2R_3$ and $-NX_1X_2$ independently is pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino or piperazino; X_3 is hydrogen, halogen, nitro, lower alkyl or lower alkoxy; and ring A is unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy or lower alkoxycarbonyl.

4,435,004

RECORD MATERIAL CARRYING A COLOR DEVELOPER COMPOSITION

Kenneth J. Shanton, Beaconsfield, England, assignor to The Wiggins Teape Group Limited, Hampshire, England

Division of Ser. No. 272,719, Jun. 11, 1981, Pat. No. 4,391,850. This application Apr. 1, 1983, Ser. No. 481,472

Claims priority, application United Kingdom, Jun. 13, 1980, 8019369

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **4 Claims**

1. Record material carrying a colour developer composition comprising a particulate amorphous hydrated silica/hydrated alumina composite in which the hydrated silica and hydrated alumina are chemically bound in which hydrated silica predominates, and in which the mean alumina content of the composite on a dried weight basis is at least 7.5%, based on the total dry weight of silica and alumina wherein the hydrated alumina is proportionately greater in the surface region of the composite and wherein the surface area of the composite is less than 300 m^2g^{-1}.

4,435,005

JOINT FOR CONDUIT WITH SINGLE THREADED END

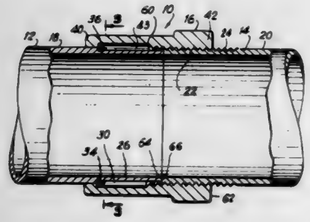
Sidney Berger, Great Neck; Salvatore Buda, East Hills, and Burton Weintraub, Old Bethpage, all of N.Y., assignors to Berger Industries, Inc., Maspeth, N.Y.

Continuation-in-part of Ser. No. 612,030, Sep. 10, 1975, abandoned, and Ser. No. 559,019, Mar. 17, 1975, Pat. No. 3,984,130. This application May 28, 1980, Ser. No. 153,893

The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.

Int. Cl.³ F16L *17/02*

U.S. Cl. 285—31 **16 Claims**



1. In combination, first and second two-ended metal conduit sections of 10 foot or 20 foot lengths and of weights and diameters ranging from 23.0 lbs. per section to 533.5 lbs. per section and from 2" to 8", and adapted to be connected end-to-end to each other in the field:

(a) said first conduit section having a circular cylindrical outer wall surface and an axial passage of constant cross-sectional dimensions and configuration, one end of said first conduit section having external thread means thereon and a flat substantially perpendicular end face and said other end of said first conduit section being non-threaded and having a flat substantially perpendicular end face;

(b) said second conduit section being identical to said first conduit section and having a circular cylindrical outer wall surface equal in diameter to said outer wall surface of said first conduit section and an axial passage of constant cross-sectional dimensions and configurations equal to said axial passage through said first conduit section, one end of said second conduit section having external thread means thereon with a flat substantially perpendicular end face matching and abutting said adjacent flat substantially perpendicular end face of said other non-threaded end of said first conduit section and said other end of said second conduit section being non-threaded and having a flat substantially perpendicular end face;

(c) a metal coupling sleeve having an end face, said coupling sleeve including female thread means extending from adjacent said end face and constructed and dimensioned to engage said external thread means on said one end of said conduit section;

(d) each of said conduit sections including in one piece therewith a length of reduced outside diameter extending axially inwardly from said flat substantially perpendicular end face at said other end of said conduit section to form a stop shoulder in said outer wall surface at said non-threaded end said shoulder being substantially perpendicular to the length of the conduit section;

(e) each of said conduit sections having means providing an annular lock ring groove in said outer wall surface near and spaced axially inwardly from said stop shoulder;

(f) resilient constrictable lock ring means of spring metal partly in said annular lock ring groove and projecting partially out of said groove; and

(g) abutment means extending radially inwardly on said metal coupling sleeve to define a periphery spaced from the outer diameter of the associated conduit section by a slight clearance adapted to cooperate with said stop shoulder and said projecting part of said lock ring means to permit free rotation of said coupling sleeve on said first conduit section and limited axially inward and axially outward movement of said coupling sleeve along said non-threaded end of said first conduit section so that said coupling sleeve can be threaded onto said externally threaded end of said second conduit section so as to force said end faces of said first and second conduit sections together without rotation of either section and may be backed off said externally threaded end of said second conduit section after said first and second conduit sections are assembled whereby said end face of said coupling sleeve is at least flush with said flat substantially perpendicular end face of said first conduit section to permit said first conduit section to be laterally displaced from said second conduit section without longitudinal movement of either conduit section, said abutment means and said lock ring means being constructed to prevent said lock ring means from being forced inwardly entirely into said annular lock ring groove when said end faces of said first and second conduit sections are forced together;

(h) the clearance between said periphery defined by said abutment means and the outer diameter of the associated conduit section, being in the order of 0.020" to 0.040" on the diameter sufficient to prevent sections connected by the metal coupling sleeve to be slightly out of axial alignment up to about 4° without interfering with the engagement between the female thread means and the coupling sleeve of the internal thread means engageable thereby with one end of a conduit section.

4,435,006

AUTOMATIC PRESSURIZED CONNECTING DEVICE

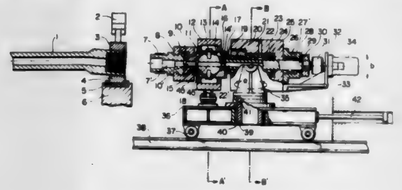
Katsumi Ishigaki; Kazuo Sasaki, and Takumi Fukumura, all of Osaka, Japan, assignors to Kabushiki Kaisha Yamamoto Suiatsu Kogyosho, Osaka, Japan

Filed May 1, 1981, Ser. No. 259,779

Claims priority, application Japan, May 12, 1980, 55-65268[U]; May 27, 1980, 55-71224

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—119 **4 Claims**



1. An automatic pressurized connecting device comprising:

a main frame with wheels adapted to run on rails;

a rotary shaft fitted in said main frame;

a first bracket mounted on said rotary shaft;

a body rockably coupled to said first bracket for balancing weights of front and rear parts of said bracket;

a main shaft inserted into a central portion of said body;

a high pressure water supplying rotary universal joint coupled to a front end portion of said main shaft;

a seal plug adapted to be screwed into a test pipe coupled to a front end portion of said high pressure water supplying rotary universal joint;

a motor mounted on a second bracket secured to said body, said motor being coupled through a coupling to a rear end portion of said main shaft;

said body having a high pressure water supplying port communicating with a water supplying port formed in a front portion of said main shaft;

a third bracket and at least a pair of fourth brackets mounted on said main frame, said third bracket being secured to a support holding said rotary universal joint; and

supporting cylinders secured to said fourth brackets and to said support.

4,435,007

LOCKING DEVICE FOR PIVOTING WINDOW

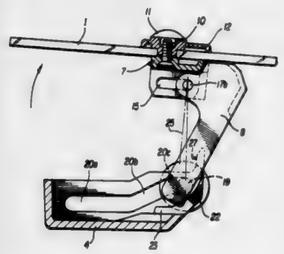
Jacques Bascou, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Apr. 16, 1981, Ser. No. 254,735

Claims priority, application France, May 8, 1980, 80 10260

Int. Cl.³ E05C *17/12*

U.S. Cl. 292—268 **8 Claims**



1. A device for locking a pivoting window of a motor vehicle in closed or ajar positions, comprising:

a strap fixed to said window; P1 a static body connected to said motor vehicle;

an embeddable link; and

means for slidably and pivotably interconnecting said link to said strap and said static body, wherein the static body includes a curvilinear ramp portion and a locking groove portion formed therein and wherein the link further comprises a cross rib engageable with said curvilinear ramp and said locking groove.

4,435,008

POLICE GRIPPER

William R. Black, Rte. 2, Halderson Rd., Bangor, Wis. 54614

Filed May 28, 1982, Ser. No. 383,000

Int. Cl.³ A47G *35/00*

U.S. Cl. 294—25 **2 Claims**



1. A device for improving the grip of a law enforcement officer to facilitate the handling of captives comprising a flexible strap which conforms to the hand of the officer, said strap having a loop at one end thereof to be received by the finger of the officer to anchor one end of said strap and a gripping portion containing a plurality of spaced gripping elements and a wrist band portion adapted to be trained around the wrist of the officer, and means for coupling the wrist band portion to said grip portion when said portions intersect over the palm of said user to secure the device in the officer's hand with the grip portion juxtaposed over the palm of the officer's hand, and the gripping elements projecting outwardly from the palm and with the gripping elements exposed for engagement and wherein said gripping elements comprise snap fasteners having protruding male members on one side of said strap and exposed female members on the opposite side of said strap, with said male members forming the gripping elements and the female counterparts of said male members joinable at said intersection with the protruding male members on said wrist band portion when said wrist portion and said grip portion are in intersecting and in overlapping relation on the palm of the user to form a strap loop around the wrist of the user to hold the strap in place.

4,435,009

SUN VISORS OF THE TYPE HAVING A CELL STRUCTURE PARTICULARLY FOR AUTOMOBILE VEHICLES

Giovanni Foggini, Turin, Italy, assignor to Lear S.n.c. di Foggini & C., Orbassano, Italy

Filed Jan. 11, 1982, Ser. No. 338,816

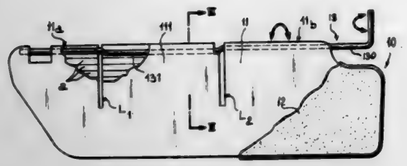
Claims priority, application Italy, Jan. 27, 1981, 67098 A/81

Int. Cl.³ B60J *3/00*

U.S. Cl. 296—97 H **6 Claims**

1. A sun visor of the type having a plate-like member made at least in part of a channel-like cell structure, particularly for motor vehicles, comprising a suspension and pivot rod for the plate-like member and driven into one of the channel-like cells of said structure, characterized in that said plate-like member has a load bearing portion and a movable portion resiliently yieldable with respect to said load bearing portion, said suspen-

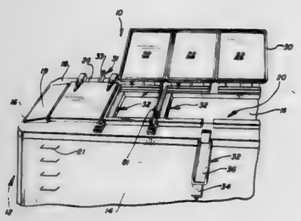
sion and pivot rod having at least one length thereof having an eccentric crank-like configuration in engagement with said movable portion, said movable portion and said load bearing



portion of the plate-like member being devided along boundary lines allowing relative movement between said movable portion and said load bearing portion.

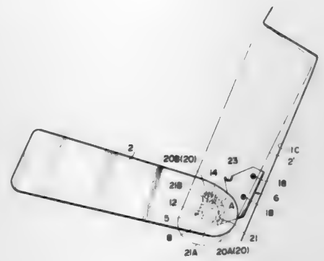


4,435,010
OVERHEAD ACCESS ASSEMBLY
Richard M. Mandel, 606 Glencoe Rd., Glencoe, Ill. 60022
Filed Jan. 11, 1982, Ser. No. 338,520
Int. Cl.³ B60P *7/02*
U.S. Cl. 296—100 **23 Claims**



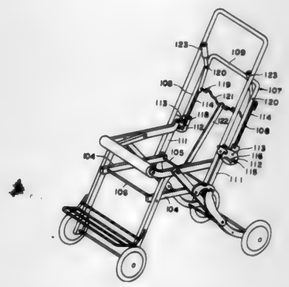
1. In a load carrying vehicle having a freight compartment formed cooperatively by a floor, laterally spaced sidewalls, opposed endwalls, and a roof member, the improvement comprising:
- a framed opening in the roof member through which access may be gained to said compartment to accomplish loading and unloading of freight;
- a plurality of hinged door panels for sealing said framed opening, each said door panel being selectively pivotable between an open and closed position;
- at least one cross-brace spanning the framed opening and serving as a seat for said door panels, said cross-brace being hingedly secured adjacent one edge to said roof member so as to be pivotable substantially away from said roof opening; and
- means for rigidly tying the ends of said cross-brace with said roof member, said means preventing shifting of the ends of the cross-brace relative to the roof member such that the cross-brace positively maintains the dimension of the roof opening as well as provides overall stability to the freight compartment;
- said door panels and cross-brace being selectively pivotable away from the opening to create a desired opening size and to gain access to different regions of the freight compartment.

4,435,011
SEAT WITH A DUAL-ADJUSTABLE ARMREST
Hitoshi Hakamata, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Mar. 22, 1982, Ser. No. 360,168
Claims priority, application Japan, Mar. 26, 1981, 56-44477
Int. Cl.³ A47C *7/54*
U.S. Cl. 297—113 **8 Claims**



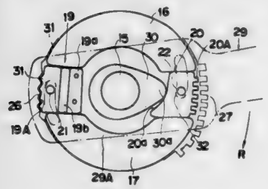
1. A seat having an arm rest and a seat back, comprising:
- (a) a first member fixedly attached to said seatback, said first member having a first stopper and a second stopper vertically spaced from said first stopper;
- (b) a second member rotatably supported at an upper end thereof by said first member, said second member being rotatably connected at the lower end thereof with said arm rest;
- (c) a projection protruding from said arm rest and being engaged with said first stopper when said arm rest is tilted to a first set position, said projection being engaged with said second stopper when said arm rest is placed in a second set position while said second member is rotated, said second set position being vertically spaced from being said first set position.

4,435,012
SEAT ASSEMBLY FOR BABY CARRIAGES
Kenzou Kasai, Osaka, Japan, assignor to Kasai Kabushikikaisha, Osaka, Japan
Filed Nov. 20, 1981, Ser. No. 323,447
Claims priority, application Japan, Dec. 2, 1980, 55-170452
Int. Cl.³ B60N *1/02*
U.S. Cl. 297—355 **5 Claims**



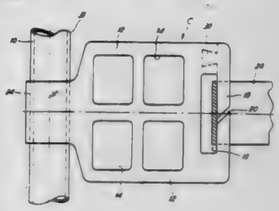
1. A seat assembly for baby carriages comprising:
- a seat,
- a backrest foldably connected to rear end edge of said seat and constructed with a hard core material incorporated therein,
- a hed guard holdably connected to the upper end edge of said backrest and constructed with a hard core material incorporated therein,
- a pair of backrest retaining members whose angle of inclination with a fixed member of the baby carriage main body can be changed,
- angle fixing means for fixing changed angles of inclination of said backrest retaining members at a plurality of adjusted positions,
- foldable lateral surface portions which, in cooperation with said head guard, define the lateral surfaces of a bag with the bottom surface thereof defined by said backrest, said lateral surface portions being connected to said backrest retaining members and formed of a foldable sheet material,
- a head guard retaining member extending widthwise and serving to connect the upper end of said head guard above said backrest retaining members,
- a seat shaping member including a portion extending in a U-shape, rotatably supported with respect to said backrest retaining members at opposite end of the U-shaped portion, with the widthwise extending portion of the U-shaped portion abutting against the back surface of said backrest, and
- operative connecting means operatively connected to said seat shaping member to change the attitude of the seat shaping member in operative association with changes in the angle of inclination of said backrest retaining members, whereby when said backrest retaining members are in their raised state, the widthwise extending portion of said seat shaping member is brought into abutment against the back surface of said backrest to align said backrest and said head guard substantially in a plane while involving the folding of said foldable lateral surface portions and when said backrest retaining members are in their relatively lowered state, the widthwise extending portion of said seat shaping member is displaced to be positioned on the back surface of the backrest forming the bottom of said bag in such a manner as to form said bag, with said foldable lateral surface portions being stretched, with said backrest and said head guard crossing each other and with said backrest forming the bottom and said head guard and said foldable lateral surface portions forming the lateral surfaces of said bag.

4,435,013
RECLINER-BACK TILTING MECHANISM
Takumi Arihara, Yokohama, Japan, assignor to Ikeda Bussan Co., Ltd., Yokohama, Japan
Filed Jun. 22, 1981, Ser. No. 276,281
Claims priority, application Japan, Jun. 21, 1980, 55-84239
Int. Cl.³ A47C *1/026*
U.S. Cl. 297—364 **14 Claims**



1. A mechanism for a recliner, comprising:
- (A) a base plate secured to a seat of the recliner;
- (B) an arm with one end pivotally mounted on said base plate and another end affixed to the recliner, said arm having a substantially circular opening concentric with the pivotal center of the arm;
- (C) a first set of teeth formed along a section of said opening;
- (D) a second set of teeth formed along a section of said opening substantially opposite said first set of teeth and substantially identical in pitch;
- (E) a first retaining member having a first set of outer teeth adapted to be forced toward said first set of teeth (C) to be in mesh with said first set of teeth (C);
- (F) a second retaining member having a second set of outer teeth for engaging at least a portion of said second set of teeth (D) to secure said arm (B) at a desired position; and
- (G) means for moving said second retaining member (E) to engage said respective second sets of teeth to prevent angular movement of said arm (B), and to release engagement between said respective second sets of teeth to permit angular movement of said arm (B), at least a portion of said means disposed within said substantially circular opening in said arm (B);
- said first and second retaining members (E) and (F) disposed in said substantially circular opening and adjustably supported in a plane including said opening; and
- said first retaining member (E) adjustably supported in a plane including said opening with said first respective sets of teeth remaining slidingly meshed, even when said second respective sets of teeth are disengaged, allowing said arm (B) to pivot.

4,435,014
ELASTIC INSERT FOR SEATS, IN PARTICULAR FOR MOTOR VEHICLE SEATS
Enrico Gilardi, Robbio, Italy, assignor to Gestioni Riunite Toscana Gomma S.p.A., Robbio, Italy
Filed Jun. 16, 1981, Ser. No. 274,081
Claims priority, application Italy, Jul. 18, 1980, 23561 A/80
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—452 **12 Claims**



1. A flexible insert for cushions of seats, the seats having a support frame, the insert comprising:
- a flexible plate (12) having an aperture (14) therein; a cross-bar (18) located at one end of said flexible plate and having an insertion slot (20,30) therein; and an elastic annular element (22) connected to said cross-bar of said flexible plate.

4,435,015
UNDERBODY CUSHIONING AND VENTILATING STRUCTURE AND GENERAL UTILITY FORMED PLASTIC SHEET
Helen H. Trotman, and Herbert H. Trotman, both of P.O. Box 807, Virginia Beach, Va. 23451
Continuation-in-part of Ser. No. 138,929, Apr. 10, 1980, abandoned. This application Aug. 26, 1980, Ser. No. 181,466
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—453 **9 Claims**

1. Underbody cushioning and ventilating structure comprising
- a resilient first sheet member originally of uniform thickness throughout having an outside surface and an inside surface,
- a foraminous second sheet member having an outside surface and an inside surface,
- means attaching the marginal portions of the first and second sheet members to one another with their inside surfaces

opposed to form an enclosed space between the sheet members,

protuberances integrally formed from the material of the first sheet member and spaced from one another along all dimensions of the first sheet member, each protuberance projecting inwardly from the inside surface of the first sheet member toward the inside surface of the second sheet member,

the protuberances being formed in the first sheet member by the application of heat and pressure to a planar piece of the material of the first sheet member,

the material of the first sheet member extending between the protuberances being formed by the application of heat and



pressure so as to form on the outside surface a continuous pattern of minor cavities and contiguous raised surfaces,

the thickness dimension of the portions of the formed sheet between protuberances being non-uniform and shaped to cause turbulence in air currents flowing in contact with the outside surface thereof,

the protuberances having a height and projecting toward the inside surface of the second sheet a distance such that the first and second sheet members are maintained in spaced ventilating relation by coaction of the protuberances and the inside surface of the second sheet member when the structure is supported by a supporting surface on the outside surface of one sheet member and is supporting a body on the outside surface of the other sheet member.

4,435,016

IN SITU RETORTING WITH FLAME FRONT-STABILIZING LAYER OF LEAN OIL SHALE PARTICLES

Herman Wissenberg, Wheatland Township, Willa County, Ill.; Earl D. York, and Darrell D. Porter, both of Englewood, Colo., assignors to Standard Oil Company (Indiana) and Gulf Oil Corp., both of Chicago, Ill.

Filed Jun. 15, 1982, Ser. No. 388,610

Int. Cl.³ E21B *43/247*; E21C *41/10*

U.S. Cl. 299—2 **19 Claims**

1. A process for retorting oil shale, comprising the steps of:

forming an underground retort of oil shale having at least one flame front-stabilizing layer of lean oil shale particles; and

moving a flame front substantially through said retort to liberate shale oil from said oil shale, including passing said flame front through said flame front-stabilizing layer to generally stabilize and enhance uniformity of said flame front and substantially minimize burning of said shale oil.

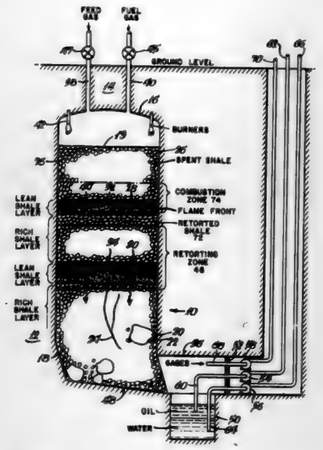
18. An underground retort, comprising:

an overburden defining a roof;

an elongated generally upright rubblized mass of oil shale particles in a subterranean formation spaced below said roof, said rubblized mass including alternate layers of rich oil shale particles and lean oil shale particles;

a flame front-stabilizing region of lean oil shale particles ranging in size from 0.01 inch to 0.1 inch extending generally across one of said layers;

burner means extending downwardly through said roof for igniting a flame front; and



feed gas means for feeding an oxygen-containing gas into said flame front.

4,435,017

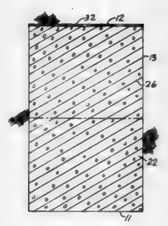
IN SITU OIL SHALE RETORT WITH DIFFERING UPPER AND LOWER VOID FRACTIONS

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Division of Ser. No. 133,409, Mar. 24, 1980, Pat. No. 4,326,752. This application Oct. 13, 1981, Ser. No. 310,441

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—19 **4 Claims**



1. An in situ oil shale retort in a subterranean formation containing oil shale, the retort having a top boundary, bottom boundary, and vertically extending side boundaries of unfragmented formation and containing a fragmented permeable mass of formation particles containing oil shale having an average void fraction up to 25%, the lower half of the fragmented mass having an average void fraction greater than 25% and the upper half of the fragmented mass having an average void fraction of at least 20% but less than 25% thereby resulting in the lower half of the fragmented mass having a higher average permeability than the average permeability of the upper half of the fragmented mass.

4,435,018

MINERAL WINNING MACHINE FOR "IN WEB" MINING SYSTEM

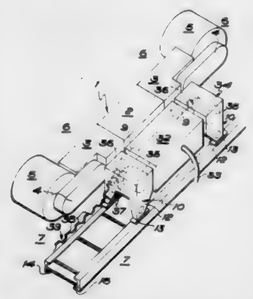
George A. Parrott, Wakefield, England, assignor to Dresser Europe S.A.

Filed Aug. 13, 1981, Ser. No. 292,532

Claims priority, application United Kingdom, Aug. 13, 1980, 8026378

Int. Cl.³ E21C *29/22*

U.S. Cl. 299—43 **12 Claims**



1. An "in-web" mineral winning machine for reciprocation along a mineral face, comprising an elongate machine body adapted, in use, to be located beyond a face side sidewall of an armoured conveyor extending in a predetermined direction along a mineral face, said machine body having a longitudinal axis extending in the predetermined direction, said conveyor also having a goaf side sidewall, a pick-carrying rotating cutting head carried by said machine body and rotatable about an axis extending transverse to the longitudinal axis of the machine body, power means housed within said machine body for rotating said pick-carrying cutting head, at least one bridge extending rearwardly from said machine body and adapted, in use, to overlie said conveyor, a trapping means located at said goaf side of said conveyor and being slidingly engaged by said at least one bridge, a machine haulage unit associated with said at least one bridge, and said at least one bridge being connected to said machine body by at least one joint providing for articulation of the machine body relative to said at least one bridge along an axis extending parallel to the longitudinal axis of said machine body.

4,435,019

BRAKE PRESSURE CONTROL VALVE

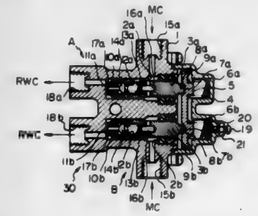
Yoshihiro Hayashida, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Aug. 13, 1981, Ser. No. 292,446

Claims priority, application Japan, Aug. 15, 1980, 55/115790[U]; Aug. 15, 1980, 55/115791[U]

Int. Cl.³ B60T *8/00*

U.S. Cl. 303—6 A **1 Claim**



1. A pressure control valve for limiting pressure supplied from a source of pressure to wheel brake cylinders, comprising:

a housing;

a pair of control valve units side by side in said housing, each valve unit having means to connect it to a respective source of pressure and to a respective wheel brake cylinder, and each having a piston valve member and a spring urging the piston valve member in the valve opening direction, each said valve unit transmitting pressure from the corresponding source of pressure directly to the wheel brake cylinder when the corresponding pressure is below a predetermined split pressure which is determined by the force of the respective spring and, when the pressure in the corresponding source of pressure exceeds the split pressure, the pressure transmitted to the respective wheel brake cylinder increases at a reduced rate as compared with the increase of pressure in the corresponding source of pressure;

a lever within said housing and extending across the ends of said pistons and being pivotally engaged only with said pistons, said springs being between said housing and the opposite side of said lever from the respective pivotal engagement points of said lever and said pistons;

stop means at each end of said lever between said lever and said housing for limiting the rocking movement of said lever relative to said pistons to a predetermined amount; and

adjustment means engaged with at least one of said springs for adjustment of the spring force for adjusting the split pressure in said control valve unit corresponding to said one spring.

4,435,020

DECELERATION DETECTING VALVE RESPONSIVE TO FAILURE IN FRONT BRAKE CIRCUIT

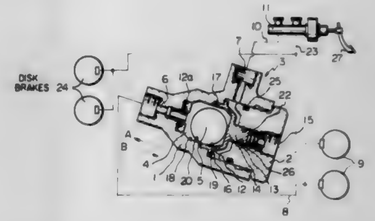
Masami Aono, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed May 19, 1982, Ser. No. 379,990

Claims priority, application Japan, May 20, 1981, 56-72841[U]

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **2 Claims**



1. A deceleration detecting valve for use in a vehicle hydraulic braking system including a master cylinder, a first circuit connecting the master cylinder with front wheel brakes, and a second circuit connecting the master cylinder with rear wheel brakes, said decelerating detecting valve comprising:

a valve body having a chamber with an inlet and an outlet for connecting said chamber in the second circuit;

a decelerating detecting ball received in said chamber, said valve body having a bore therein having one end opening out of said chamber and the other end adapted to be connected to the first circuit for receiving the hydraulic pressure of the first circuit;

a slidable member having a generally cup-shaped end located in and opening toward the interior of said chamber and a cylindrical end slidably and sealingly received in said bore, and said slidable member being slidable between a first position in which said cup-shaped end is remote

from said bore and a second position in which said cup-shaped end is adjacent said bore, the wall of said valve body defining said chamber having a ball guiding surface thereon for guiding movement of said ball to a position in said chamber for interrupting communication between said inlet and said outlet, and the inner circumferential surface of said cup-shaped end of said slidable member having a ball guiding surface thereon which, when said cup-shaped end is in said first position, forms a continuation of said ball guiding surface of said chamber and in said second position is spaced from said ball guiding surface of said chamber to leave a gap sufficient to prevent said ball from rolling from said cup-shaped end to said chamber wall guiding surface, and means for normally urging said slidable member toward said first position with a force less than the pressure produced on said slidable member by the hydraulic pressure in said second circuit, said ball normally abutting the bottom of the cup-shaped end of said slidable member and when the deceleration of the vehicle exceeds a predetermined amount, said ball rolls along the ball guiding surfaces to interrupt communication between the inlet and outlet, and when the pressure in the first circuit decreases relative to the pressure in the second circuit, said slidable member retracts to said second position and the gap is formed between the ball guiding surface on said cup-shaped member and the guiding surface on said chamber which prevents the movement of said ball from said guiding surface on said slidable member to the guiding surface on said chamber.

4,435,021

VEHICLE BRAKE ACTUATOR AND BRAKING SYSTEM

Hermann H. Hoenick, Immendorf, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

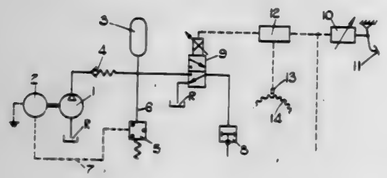
PCT No. PCT/GB80/00142, § 371 Date May 15, 1981, § 102(e) Date May 5, 1981, PCT Pub. No. WO81/00697, PCT Pub. Date Mar. 19, 1981

PCT Filed Sep. 15, 1980, Ser. No. 261,183

Claims priority, application United Kingdom, Sep. 15, 1979, 7932066

Int. Cl.³ B60T *8/04, 13/14;* **F16D** *55/224, 65/16*

U.S. Cl. 303—10 **18 Claims**



1. A vehicle brake actuator for urging at least one friction element into braking engagement with a cooperating element fixed to a member to be braked comprising pressure-applying means including a pressure cylinder and a piston slidable within the cylinder and operably associated with at least one said friction element to urge at least one said friction element into braking engagement with said cooperating element, a pressure accumulator, a supply of pressure fluid, a pump positioned within said cylinder operably connected to said supply of pressure fluid and said accumulator to charge the accumulator with said pressure fluid, valve means operably connected to said supply of pressure fluid and said accumulator to control the supply of pressure fluid from said accumulator to said pressure-applying means, brake control means, and an electrically-operated solenoid operably connected to said valve means and said brake control means to operate said valve means to control said pressure fluid supply in response to the action of said brake control means.

4,435,022

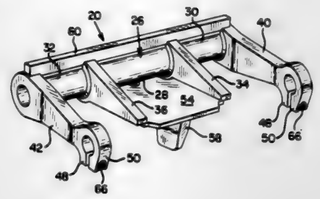
TRACK BLOCK

Brett A. Whitelaw, 2575 NE. Kathryn, Unit 28, Hillsboro, Oreg. 97123

Filed Jan. 25, 1982, Ser. No. 342,082

Int. Cl.³ B62D *55/20*

U.S. Cl. 305—53 **2 Claims**



1. A track block for a track-laying vehicle coupleable with other like blocks to form an endless track strand, said block comprising

a straddled-connection portion in the form of a unitary beam extending transversely relative to the block's intended travel axis,

a pair of straddling-connection link portions integral with and joined to opposite ends of said beam and extending therefrom in a common direction generally paralleling said travel axis, said link portions being adapted to receive and straddle such a beam in an adjacent block, and

platform-like road-wheel bearing means integral with and joined only to said beam, and extending therefrom in a cantilevered fashion generally in the same direction as said link portions, said bearing means being adapted to transmit received road-wheel bearing forces directly to said link portions solely through said beam.

4,435,023

INTERNALLY ACTUATED SPERICAL BEARING

Thomas E. Bolner, Fayetteville, Tenn., assignor to Thiokol Corporation, Chicago, Ill.

Filed May 6, 1981, Ser. No. 260,941

Int. Cl.³ F16C *11/06*

U.S. Cl. 308—2 R **13 Claims**

1. An internally actuated spherical bearing comprising

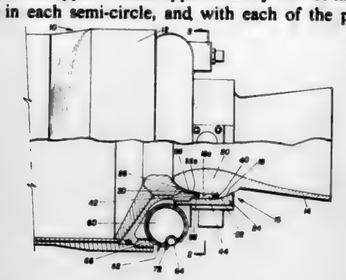
an outer race,

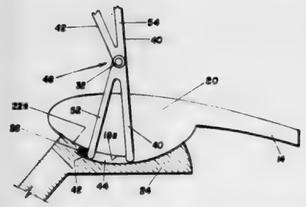
an inner race positioned for rotation, about an axis, within said outer race,

means for providing an annular chamber around said inner race, said chamber having opposed relatively movable edge walls which are fixedly attached, respectively, to said outer race and said inner race, and

first and second elongated expansible loop seal actuators, each of said actuators having a pair of ends and arranged in end-to-end relation within said chamber, with each

actuator wrapped around approximately 180° of the inner race in each semi-circle, and with each of the pairs of





adjacent ends of said actuators being positioned proximate the axis of said inner race.

4,435,024

BEARING CAGES FOR SUPPORTING AND RETAINING ROLLER ELEMENTS IN CYLINDRICAL ROLLER BEARINGS

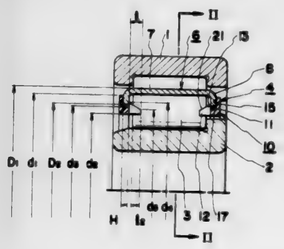
Kenichi Tagawa, and Takao Iguchi, both of Fujisawa, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1982, Ser. No. 392,539

Claims priority, application Japan, Jul. 24, 1981, 56-116141

Int. Cl.³ F16C *33/46*

U.S. Cl. 308—217 **9 Claims**



1. A cage assembly for retaining and supporting cylindrical, bearing rollers comprising:

(a) an annular cage member, the cage member including:

(1) a straight cylindrical portion having a plurality of pockets formed therein for receiving a plurality of bearing rollers,

(2) at least one flange provided on one axial end of the cylindrical portion, the flange having an axial outer side face, a radial inside edge face and a radial outer edge,

(b) at least one plastic retaining member, the roller retaining member comprising:

(1) an annular ring portion having an annular side face adapted to be contacted by the axial outer side face of the flange,

(2) an annular fitting face contiguous with the annular side face,

(3) a plurality of teeth having a radial outer face and a radial inner face, the teeth extending axially inwardly from the ring portion and positioned between adjacent rollers for preventing slipping down or out of any bearing roller, and

(4) a plurality of lips integrally formed with the ring portion for locking the roller retaining member to the flange,

each of the teeth having a face extending axially inward from a radial outer tip end and inclining radially inward such that the roller retaining member is coupled to the cage member by pushing the retaining member axially inward from outside the flange of cage member.

4,435,025

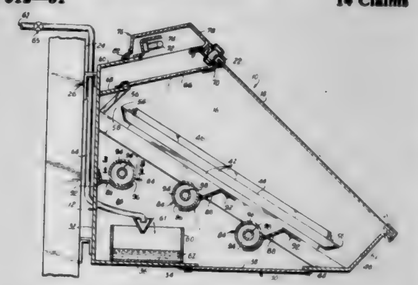
CLIMATE CONTROL SYSTEM

Steven A. Weintraub, 200 W. 86th St., New York, N.Y. 10024

Filed Nov. 27, 1981, Ser. No. 325,164

Int. Cl.³ B01F *3/06*

U.S. Cl. 312—31 **14 Claims**



1. A system for controlling the climate of a volume within which an art object or the like is situated, comprising, in combination: a general housing defining a first control volume and a second display volume, said second volume being contiguous to or a part of said first volume,

at least one smaller housing of predetermined size and shape disposed within said first control volume for housing a first control substance capable of removing moisture from or adding moisture to the confines of said general housing,

a container disposed within said first control volume for holding a second control substance capable of holding and giving up moisture to the confines of said general housing,

means for providing a fluid to said container, and

means for supporting said smaller housing, said container further comprising a trough disposed within said first control volume, said trough being positioned directly above the length of said container, said trough being capable of being rotated and transferring said fluid in said trough into the length of said container,

a tube for transferring said fluid from a source of fluid outside said general housing to said trough,

means for controlling the flow of said fluid in said tube, and

means for rotating said trough.

4,435,026

MODULAR STACKING TRAYS

Michael R. Johnson, 2725 Foxfire Ct., Clearwater, Fla. 33519

Filed Jun. 7, 1982, Ser. No. 385,694

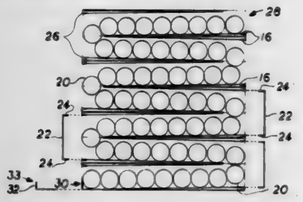
Int. Cl.³ A47F *1/00, 1/14, 1/12*

U.S. Cl. 312—45 **4 Claims**

1. A dispensing device, comprising,

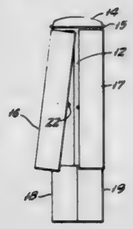
a plurality of tray members having a common configuration and dimenstion so as to be interchangeable with one another,

said tray members having a pair of substantially parallel, transversely spaced, upstanding, sidewalls,
a first and second ramp means disposed in interconnecting relation to said sidewalls,
said first and second ramp means having a common length, said common length equal to the length of said sidewalls less a length slightly greater than the outside diametr of a beverage can to be dispensed by said device,
said first and second ramp means extending from opposite ends of said sidewalls,
said tray members being open-ended,
a plurality of detachably secured end plate members for capping the open ends of said tray members,



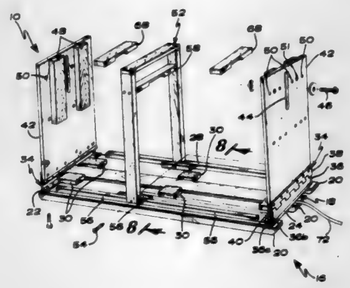
each of said end plate members of sufficient dimension to cap a pair of vertically adjacent open ends of said tray members when said tray members are stacked one atop the other,
opposing ones of said end plate members being disposed in overlapping relation relative to one another so that opposite ends of the uppermost and lowermost tray members are disposed in open communication to the space around said device so that items to be dispensed are loaded into the uppermost one of said plurality of tray members and unloaded from the lowermost one of said plurality of tray members, said charging and discharging accomplished at longitudinally opposite ends of said device.

4,435,027
SELF-LOCKING HINGED DOOR CABINET AND LATCH FOR THE SAME
Joseph E. Prather, Bernardsville; Ramzi A. Khalifa, Rutherford, and Peter B. Weazler, Long Valley, all of N.J., assignors to Edson Tool & Manufacturing Co., Inc., Belleville, N.J.
Filed Mar. 25, 1981, Ser. No. 247,601
Int. Cl.³ E05C 7/06
U.S. Cl. 312—222 **11 Claims**



1. An apparatus cabinet having a frame comprising parallel first and second side members each providing a portion of the outside surface of the cabinet, at least one spacing member between the side members, a cover member, base housing pieces attached to the side members to enclose the lower portion of the cabinet, and at least one door having lateral lips extending around cabinet corners to overlap said side members, being hinged to said first side member and further comprising:
a latch on the interior side of said second side member, said latch having an access slot for forcing said door and having an inclined surface guide at the bottom thereof and
a tongue on said door positioned for engagement in said latch through said access slot thereof;
said door having its middle bowed inwardly in the unstressed condition of the door with respect to said lips about a vertical axis of curvature, for facilitating clearance of the outer lip from the cabinet corner in closing the door,
said tongue having teeth on an edge thereof for engaging said latch and projecting upward at a small angle to the horizontal whereby the bottom edge of said tongue may automatically find said inclined surface guide of said access slot as said door is normally closed and the further sliding contact of said tongue on said guide will raise the door in further closing to the extent necessary for correcting sag,
said latch having a pivoted detent for catching said teeth of said tongue and spring means for pressing said detent against said tongue, said pivoted detent having an actuating arm,
said latch also having a freely rotatable cam finger, rotatably mounted in said latch, for engaging said actuating arm of said pivoted detent of said cam for release of said tongue, said cam finger having a shaft for rotating said cam, said shaft extending from said latch to the exterior of said cabinet through said second side member and having a shaped extremity for actuation by a suitable tool,
said door being made of sheet metal of such gauge and flexibility that the closing and locking of said door with insertion of said tongue in said latch substantially straightens out the bow of the middle portion of said door against adjacent portions of the cabinet overlapped respectively by the top and bottom edges of said door.

4,435,028
HINGED CONTAINER FOR RELAY RACKS
Eric M. Rivkin, Minnetonka, Minn., assignor to Liberty Carton Co., Minneapolis, Minn.
Filed Mar. 9, 1981, Ser. No. 241,575
Int. Cl.³ A47B 43/00; A47G 19/08
U.S. Cl. 312—258 **3 Claims**



1. A hinged container for a relay rack, said relay rack comprising first and second end walls, each said end wall comprising an inner surface and further comprising at least one hole therein, said container in combination with said rack comprising:
a base, said base comprising:
a platform member having first and second ends and first and second sides; and
pallet means for lifting said pallet above a surface, said pallet means comprising at least one opening therein for insertion of a lifting device, each said opening extending between said ends and parallel to said sides;
a first end panel;

a second end panel, said end panels being slightly longer than said end walls;
first and second hinges, each said hinge comprising:
a hinge base portion fixedly attached to said base at one of said ends;
a hinge side portion fixedly attached to one of said end panels, said hinge side portion being hinged to said hinge base portion, and wherein said hinge base portion is L-shaped in cross-section with a horizontal panel parallel and attached to said platform member and a vertical panel, said vertical panel being hinged to said hinge side portion, said vertical panel extending substantially above said platform member; and
means for securing said end panels to said rack end walls, the distance between said end panels being substantially equal to the distance between said rack end walls, said securing means cooperating with said inner surfaces and holes.

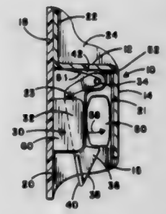
4,435,029
SLIDE LOCK HANDLE
Robert W. McKenzie, Lewisville, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jul. 6, 1981, Ser. No. 280,036
Int. Cl.³ A47B 88/00
U.S. Cl. 312—320 **7 Claims**



1. A locking handle for mounting a circuit card module to a card cage, comprising an elongated flexible member secured at its distal ends to the front facing edge of said module, with one end of said handle engaging said cage in a locked position and being pivoted and translated to an unlocked position in response to removal pulling force applied to said handle, flexing and bowing the latter, and wherein said handle is pivoted back to an unbowed position flat against said module edge in response to insertion pushing force applied against said handle, said member including means for causing said one end of said handle to remain in said unlocked position during insertion, and wherein after insertion said handle is translated to said locked position with one end thereof engaging said cage, said handle laying flat against said front edge of said module during said insertion such tht insertion force is applied against said handle, obviating user engagement of a raw circuit card module edge.

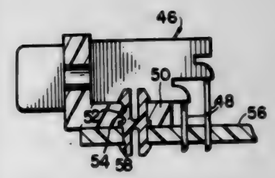
4,435,030
BAR SOAP HOLDER AND DISPENSER
James T. Haven, 537 N. Clark St., Orange, Calif. 92667
Filed Jul. 14, 1981, Ser. No. 283,206
Int. Cl.³ A47K 5/08
U.S. Cl. 312—351 **10 Claims**

1. A soap bar holding and dispensing device which comprises:
(a) a housing having a closed top, sidewalls and an open bottom;
(b) a soap bar rack within said housing having at least one vertical leg with a distal, lateral projecting foot to receive a bar of soap, pivotably mounted at its upper end to the upper portion of said housing contained completely within said sidewalls and projecting through said open bottom;
(c) at least one rib on a first inside sidewall of said housing in juxtaposition to said leg and projecting substantially to the leading edge of said foot when said rack is pivoted into an open position, towards said first wall to dislodge a bar of soap received on said foot for fall from said housing; and



(d) biasing means urging said soap bar rack to a closed position away from said rib; whereby said rack can be swung open to dispense a received soap bar or to receive a soap bar, and released to close with said foot beneath said soap bar, securing said bar in said device.

4,435,031
CONNECTOR BLOCK WITH SNAP LATCH
Richard W. Black; Erol M. Kirayoglu; Harold E. Leiter, and Richard C. Smith, all of Spartanburg, S.C., assignors to Holmberg Electronics Corporation, Inman, S.C.
Filed Jan. 7, 1982, Ser. No. 337,667
Int. Cl.³ H01R 9/09
U.S. Cl. 339—17 C **5 Claims**



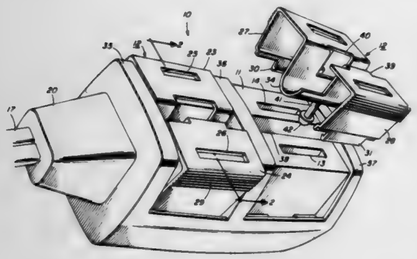
1. The combination of a circuit board having a first mounting hole and a plurality of circuit board holes adjacent to the mounting hole; and a connector block having an insulating body with a mounting surface engaging one side of the circuit board at the mounting hole, a first flexible snap latch unitary with and projecting outwardly of the body, and a series of contact terminals within the body with each terminal including a terminal tail extending outwardly of the body, past the mounting surface and into one of the circuit board holes, the snap latch being formed from a heat-shrink plastic material and including a pair of elongate and longitudinally shrunk tensile prongs and radially outwardly facing latches on the ends of the prongs, the prongs extending through the first mounting hole and the latches engaging the other side of the circuit board, whereby the snap latch secures the block tightly against the circuit board.

4,435,032

TERMINAL CONNECTOR WITH SAFETY DEVICE

Allen P. Abramson, Essex, and Theodore R. Stiles, Somerset, both of N.J., assignors to Challenger Circle F, Inc., Trenton, N.J.

Filed Jun. 14, 1982, Ser. No. 388,295
Int. Cl.³ H01R *13/447*
U.S. Cl. 339—36 **12 Claims**



1. A terminal connector for electrical extension cords comprised of:

(a) a connector body, of electrically insulating material, including a pair of prong receiving contacts internal to said connector body; and a pair of prong receiving passageways communicating with said contacts; and

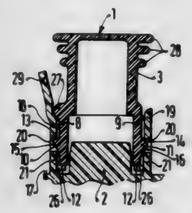
(b) a safety cover, of electrically insulating material, attached on said connector body, said safety cover including: two blocking plates, each blocking plate covering one of said passageways and having a prong receiving hole; biasing means for resiliently separating said blocking plates, normally causing corresponding prong receiving holes and passageways to be misaligned thereby preventing access to said prong receiving contacts; and gripping means for manually urging said blocking plates together thereby aligning corresponding prong receiving holes and passageways allowing access to said prong receiving contacts.

4,435,033

TWO-PART SEPARABLE ELECTRICAL CONNECTION ARRANGEMENT

Willi Gansert, Kornwestheim; Gert Jakob, Stuttgart; Lothar Ruttkowski, Ludwigsburg-Ossweil; Siegfried Goetzke, Bietigheim-Bissingen, and Kurt Stammler, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 283,357, Jul. 14, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,389
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031261
Int. Cl.³ H01R *13/635*
U.S. Cl. 339—45 M **6 Claims**



1. A two-part elongated separable electrical connection arrangement comprising

a first elongated molded plastic part (1) including two spaced longitudinal first-part sheet-like first side walls (8, 9) molded on said first part;

a second elongated molded plastic part (2) including a base, and two spaced resilient projecting longitudinal second-part second side walls (18, 19) molded on said second part, fitting over said first side walls, whereby said first side walls will form inner side walls of the connection arrangement, and said second side walls will form outer side walls, when the connection arrangement is in connected position;

end walls extending transversely to the side walls,

means (5, 7) separably, releasably connecting and locking said parts comprising

separable hinge means (5, 7) located transversely to the longitudinal direction of the side walls of said parts at an end portion adjacent the end walls, and separably, pivotally connecting said parts together to provide, upon engagement of the hinge means, a pivotal connection of said first and second parts (1,2) in advance of complete engagement of the parts, while permitting complete separation of said first and second parts about a hinge axis transverse to the longitudinal side walls (8, 9; 18, 19);

interengaging projection-and-recess means (10, 11; 20) formed on said first longitudinal side walls and on the second longitudinal side walls, respectively, at aligned locations remote from said hinge means including

a first projection (10) extending outwardly from one of the inner walls of said first part (1) and having a flat engagement surface (13) extending at approximately right angles with respect to engagement, or disengagement movement of said respective parts;

a second projection (11) formed on the other side wall (9) comprising a ridge or bump (11) having obtuse angles with respect to the other side wall of said one part;

an elongated opening in each of the outer walls of the second part having engagement surfaces (20) parallel to the flat engagement surface (13) on said projection,

whereby, upon hinging, pivotal movement about said transversely located hinge means (5, 7) and engagement of the first and second parts, with the side wall of the first part within the second part, said projection and said opening will lock said parts together;

an integral unlocking or release means including

a release cam or fulcrum projection (27) integral with the inner wall of said first part and located adjacent to, and upwardly—in removing direction of the second part—from the engagement surface (13) formed by the first projection (10) of the interengaging projection-and-recess means and extending outwardly from the inner wall of said first part;

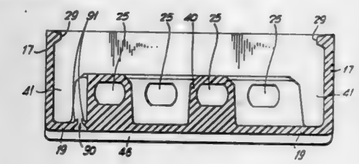
and an integral extension flap (29) formed on the immediately adjacent outer side wall (18) of the second part, extending upwardly and beyond said release cam or fulcrum projection (27) to provide a lever and gripping and operating surface for resilient outward deflection of the region or zone of the outer wall immediately adjacent the release cam or fulcrum upon compression of the outer side wall at a point upwardly from, and remote from the fulcrum projection towards the adjacent inner side wall, resulting in tilting movement of the portion of the outer side wall adjacent the projection with respect to the inner side wall and cause release of the projection-and-recess means and, outward bending of the portion of the outer wall adjacent the flat engagement surface (13) of the first projection releases the engagement of surface (20) in the outer wall from the engagement surface (13) of the projection on the inner wall by outward deflection of the zone of the outer wall adjacent said projection from the inner wall, and permits release of said second part by pivoting about said separable hinge means.

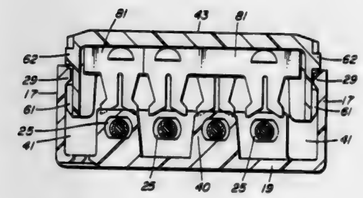
4,435,034

CONNECTORS WITH INSULATION-DISPLACING TERMINALS

Sharanjit S. Aujla, Kanata, and John D. Lee, Manotick, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 8, 1981, Ser. No. 309,606
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—98 **17 Claims**





1. A connector for connecting at least two conductors, comprising a body and a cap each of hollow box-like structure, the cap fitting into or over the body;

the body comprising;

a bottom web;

front and back walls and opposite end walls extending up from said bottom web;

a central body portion having front, central and rear ribs, the rear rib integral with the back wall;

four apertures extending through said front wall and said front, central and rear ribs, the apertures extending in spaced parallel array to form first, second, third and fourth apertures;

the front and central ribs connected by first spaced sections to define a first two aligned spaced apart channels one channel connecting with the first aperture and the other channel connecting with the third aperture;

the central and rear ribs connected by second spaced sections, to define a second two aligned spaced apart channels, one channel connecting with the second aperture and the other channel connecting with the fourth aperture;

the cap comprising;

a top web;

front and back walls and opposite side walls, extending down from said top web;

the front wall being of reduced height for at least a major part of its length, relative to said side walls, to define an open sided aperture in the front wall;

front and rear ribs extending down from said top web, spaced from and parallel to the front and back walls, and a central rib extending down from said top web intermediate the front and rear ribs, parallel to and spaced from the front and rear ribs, to define four parallel channels, the channels between said central rib and said front and rear ribs adapted to receive insulation displacing terminals;

a further channel extending along inside each side wall;

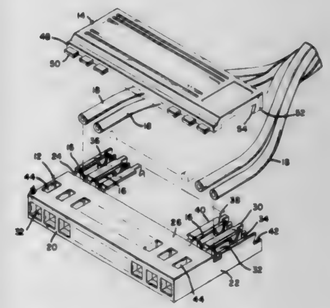
interengaging formations on the side walls of the cap and the end walls of the body, said formations interengaging to retain said cap and said body in a first initial assembled position with said terminals entered in the channels but clear of said apertures in said body, and also adopted to interengage to retain said cap and said body in a second, fully inserted position with said terminals extending across said apertures in said body and in electrical connection with the conductive cores of conductors positioned in said apertures in said body.

4,435,035

MASS TERMINATABLE SINGLE ROW CONNECTOR ASSEMBLY

Donald A. Berry, Elizabethtown; David J. Fabian, Harrisburg, and John E. Lucius, Enola, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1981, Ser. No. 249,541
Int. Cl.³ H01R *13/514*
U.S. Cl. 339—99 R **8 Claims**



1. An electrical connector assembly comprising:

an elongated housing of rigid insulative material having a plurality of terminal passages extending in a single row from a rear end through said housing to open on a front mating face, each said passage being fully enclosed at the mating face and outwardly open channel shaped at the rear end remote from said mating face, said rear end having a stepped profile;

a plurality of terminals each mounted in a respective one of said passages, each said terminal having a forwardly directed mating portion lying in said fully enclosed portion of said passage and an insulation displacing rear portion lying in and accessible from said rear channel-shaped portion; and

a cover having a forward end profiled to be received in said fully enclosed portions of said passages to hold said cover in assembly therewith and a plurality of depending rear legs each engageable with a respective portion of said rear stepped profile between each said passage and at both ends of said housing to hold said cover thereagainst while separating individual conductors leading thereto into alignment with respective passages, whereby terminals pre-loaded in said housing can be terminated by a low force insulation displacing movement and enclosed by application of said cover member.

4,435,036

OPTICAL FIBER CONNECTOR WITH MUTUALLY ENGAGING, OPPOSITELY TAPERED SURFACES

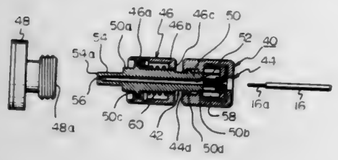
Tomio Sasakawa, Tokyo, Japan, assignor to Anritsu Electric Company Limited, Tokyo, Japan

Filed May 27, 1981, Ser. No. 267,966
Claims priority, application Japan, May 30, 1980, 55-71454
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **3 Claims**

1. A fiber optic cable connecting device for connecting a

fiber optic cable to a connector having a receptacle, comprising:

a fiber optic cable guide member including a fiber insertion portion having a first insertion bore for receiving said fiber optic cable, a fitting portion integral with said fiber insertion portion for being plugged into said receptacle, said fitting portion having a tip portion formed with a second insertion bore communicating with said first insertion bore for receiving a bare fiber of said fiber optic cable and a fiber fixing portion integral with said fiber insertion portion for fixing said fiber optic cable, said fiber fixing portion including a locking portion, with the outer surface of said locking portion being tapered along the direction of the axis of said fiber insertion guide member; and



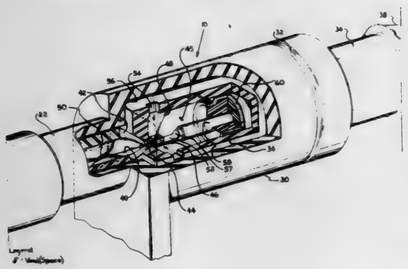
a pressuring member slidably disposed on said fiber insertion portion for movement within a restricted range in said axial direction, said pressuring member being provided with a locking portion having an aperture formed therein to receive said locking portion of said fiber insertion portion, said aperture having the inner surface thereof tapered in the opposite direction to that of said locking portion of said fiber insertion portion, said locking portions of said fiber insertion portion and pressuring member being disposed to mutually abut such as to cooperate in fixing said fiber optic cable within said locking portion of said fiber insertion portion when said pressuring member is moved to one end of said range of axial movement and to release said fiber optic cable when said pressuring member is moved to the other end of said range.

4,435,037

FIBER OPTIC CONNECTOR WITH DEFORMABLE MOUNTING POST

Edward A. Abramson, Newark, Del., and Peter K. Townsend, Camp Hill, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 6, 1981, Ser. No. 318,944
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **8 Claims**



1. An apparatus for coupling an optical fiber to a light emitting or injection laser diode comprising

a light source connector body at least partially retained within a first dielectric housing, said connector body containing an electrically conducting rod and a deformable post containing a plane surface extending from said rod,

said diode permanently mounted on said plane surface,

at least one aligning port through said connector body exposing said deformable mounting post,

an optical fiber firmly mounted within a second housing, said second housing connected to said first housing so that an end of said optical fiber is in juxtaposition to said diode,

means for moving said post until maximum light from said diode is coupled into said optical fiber and means for plastically deforming said post to a permanent position once said maximum light coupling is achieved.

4,435,038

CONNECTOR FOR USE IN BUTT SPLICING TWO OPTICAL FIBRES

Lucas Soes, Rosmalen, and Eduardus F. A. Ten Berge, Drunen, both of Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 13, 1982, Ser. No. 339,209
Claims priority, application United Kingdom, Jan. 14, 1981, 8101105
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **4 Claims**





1. A connector for use in butt splicing two optical fibres, comprising a tubular member of deformable material, and three elongate members receivable in the tubular member to define a central passage to receive end portions of the two optical fibres to be spliced, in which the tubular member is a right-circular cylindrical member, and the three elongate members are of similar transverse cross-section and are integrally formed in side-by-side relationship joined by two webs, the transverse cross-section of each elongate member being such that the three elongate members can be folded together by bending of the webs, to define a substantially circular overall cross-section support body receivable in the tubular member, the innermost parts of the three elongate members together defining the central passage, and such that there are radial spaces between the three elongate members throughout the length of the support body.

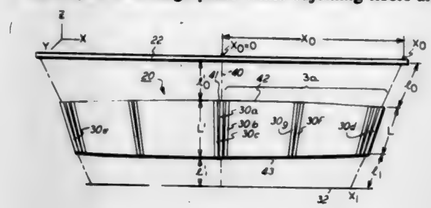
4,435,039

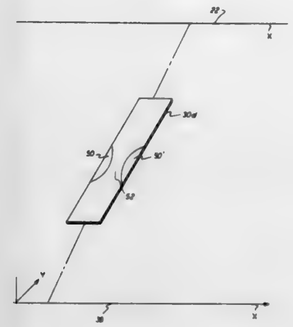
METHOD AND APPARATUS FOR IMPROVING IMAGE QUALITY OF A REDUCTION/ENLARGEMENT GRADIENT INDEX LENS ARRAY

William L. Lama, Webster, and James D. Rees, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,694
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.25 **5 Claims**

1. An optical system for transmitting an image of an object lying in an object plane onto an image plane at magnification other than unity, said system including a lens array comprising a plurality of gradient index optical fibers bound together in side by side relationship, the fibers arranged so that those in the center of the array have their axes substantially perpendicular to the object and image plane while adjoining fibers are progressively tilted in fan-like fashion towards the ends of the array so that their axes increasingly depart from said substantially perpendicular orientation, the array further including masking means adapted to permit maximum light transmittal through central areas of said array but to transmit increasingly less light through fibers extending in the array direction.





4,435,040

DOUBLE-CLAD OPTICAL FIBERGUIDE

Leonard G. Cohen, and Wanda L. Mammel, both of Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 3, 1981, Ser. No. 299,213
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.33 **18 Claims**



1. An optical communication system comprising a light source and a detector, further comprising silica-based single-mode optical fiberguide comprising

(a) a core region having an effective radius and a first effective refractive index,

(b) an inner cladding region concentrically surrounding the core, the inner cladding having an effective outer radius and a second effective refractive index, and

(c) an outer cladding region concentrically surrounding the inner cladding, having an effective thickness and a third effective refractive index,

CHARACTERIZED IN THAT

(d) the difference between the first and the third index is between about 0.1% and about 0.4% of the value of the third index, with the first index being larger than the third index,

(e) the difference between the third and the second index is between about 1 times and about 3 times the difference between the first and the third index, with the third index being larger than the second index,

(f) the effective core radius is between about 0.5 times and about 0.8 times the effective outer radius of the inner cladding region, and

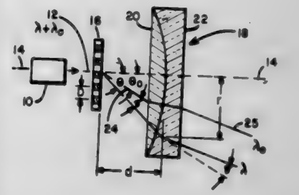
(g) the effective outer radius of the inner cladding region is at least about 5 μm.

4,435,041

CHROMATIC ABERRATION CORRECTION IN A MULTIWAVELENGTH LIGHT BEAM DEFLECTION SYSTEM

Ernest J. Torok, and William A. Harvey, both of Minneapolis, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 382,857
Int. Cl.³ G02B 5/18
U.S. Cl. 350—162.24 **7 Claims**



1. A light deflection system including chromatic correction comprising:

an alterable diffraction grating;

a source of a multiwavelength input light beam that is directed along an input optical axis that intersects said grating;

said diffraction grating generating a plurality of first order light beams from said input light beam, each different wavelength of said input light beam being deflected a correspondingly different angle from said optical axis for generating a corresponding first order light beam;

first and second lenses oriented with their optical axes coaxial with said input optical axis, said first lens spaced a focal length from said grating, said second lens spaced a distance from said first lens that is the sum of focal lengths of said first and second lenses;

first and second correction plates oriented with their optical axes coaxial with said input optical axis and intermediate said first and second lenses, said first plate positive, said second plate negative and spaced a distance apart such that their focal points coincide for at least three wavelengths of interest.

4,435,042

VEHICLE MIRROR AND SUPPORT ASSEMBLY

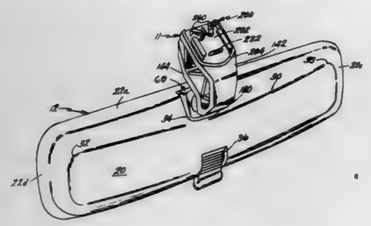
Denis Wood, Dublin, Ireland; John F. Thomas, Jr., Holland, Mich.; Barry Dipper, Cardiff, Wales; Philip D. Stegenga; John H. Veltkamp, both of West Olive; William L. Katsma, Jenison, Mich., and Robert L. Norton, Holland, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed Jun. 24, 1981, Ser. No. 276,838
Int. Cl.³ G02B 17/00
U.S. Cl. 350—281 **71 Claims**

1. A breakaway rearview mirror assembly adapted to be slidably mounted on a button secured to a vehicle windshield, said mirror assembly comprising:

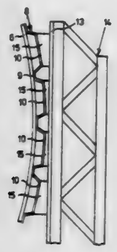
a breakaway rearview mirror bracket, said bracket including:

a one-piece body defining a front surface, a rear surface, a top end and a buttom end;
a pair of resilient, opposed, elongated clips which define grooves dimensioned to receive the button in a tongue and groove fashion;
a pivot and tension member positioned on said rear surface in between said clips, said pivot and tension member dimensioned to tension the clips after receipt of the button by engaging the button and urging it against said clips to



securely locate the bracket on the button, said member including means forming a breakaway pivot positioned closer to one end of said clips than the other for pivoting said bracket about the button when the mirror assembly sustains a predetermined impact;
a mirror head assembly including a mirror case having a rear surface and a mirror carried by said mirror case; and
mirror mounting means forming a part of said bracket and said head assembly for adjustably mounting said mirror case to said bracket.

4,435,043
COMPOSITE MIRROR PANELS
Guy Mertens, Namur, and Pierre Laroche, Ham-sur-Heure, both of Belgium, assignors to Glaverbel, Brussels, Belgium
Filed May 4, 1982, Ser. No. 374,908
Claims priority, application United Kingdom, Aug. 21, 1981, 8125665
Int. Cl.³ G02B *5/10*; B32B *3/28*
U.S. Cl. 350—288 **18 Claims**



1. A composite mirror panel comprising a front flexible vitreous sheet whose rear face is provided with a reflective coating to form a mirror, a flexible waterproof first backing sheet water-tightly bonded to the rear of said mirror so as to form a flexible laminate, and a corrugated backing sheet which is bonded to said first backing sheet along crests of the corrugations to form a said composite panel which is flexible about axes parallel to said corrugations.

4,435,044
REAR VIEW MIRROR ASSEMBLY
Elliott Hanin, Potomac, Md., assignor to IRV Hanin, Miami Beach, Fla.
Filed Mar. 17, 1982, Ser. No. 359,063
Int. Cl.³ G02B *5/08, 5/10*
U.S. Cl. 350—302 **8 Claims**



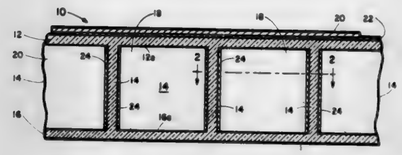
1. An assembly of mirrors for viewing an area extending longitudinally rearwardly from a central portion of the back of a vehicle, said mirror assembly comprising:
a first mirror positioned on a forward side portion of the vehicle so as to be directly viewable by a vehicle occupant;
a second mirror positioned on an upper rear side portion of the vehicle, the first and second mirrors cooperating with each other to define a first optical axis extending upwardly and rearwardly along the side of the vehicle; and
a third mirror positioned on the top of the vehicle and spaced forwardly of the second mirror, said third mirror being positioned such that said first optical axis is reflected from said second mirror onto said third mirror to thereby define a second optical axis, said second optical axis being reflected downwardly and rearwardly by said third mirror so as to permit viewing of an area extending longitudinally rearwardly from a central portion of the back of the vehicle.

8. A method of mounting mirrors so as to provide viewing of an area extending longitudinally rearwardly from a central portion of the rear of the vehicle, said method comprising:
positioning a first mirror on a forward side of the vehicle so as to be directly viewable by an occupant of the vehicle;
positioning a second mirror on an upper rear side of the vehicle so that the reflecting surfaces of the first and the second mirrors define a first axis extending upwardly and rearwardly along the side of the vehicle; and
positioning a third mirror on the top of the vehicle forwardly of the second mirror so that the first axis is reflected onto the reflecting surface of the third mirror thereby defining a second axis, the reflecting surface of the third mirror being positioned so as to reflect the second axis rearwardly from the back of the vehicle to thereby provide viewing of an area directly behind and extending rearwardly from the rear of the vehicle.

4,435,045
BUILT-UP MIRROR WITH REDUCED TEMPERATURE GRADIENT
Lawrence Fried, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 29, 1982, Ser. No. 372,877
Int. Cl.³ G02B *5/08, 522, 5/24*; B32B *3/00*
U.S. Cl. 350—310 **9 Claims**

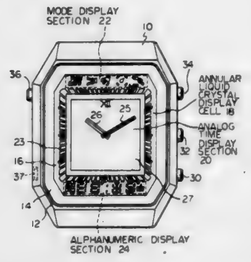
1. A frit bonded, built-up glass mirror for use in orbital space, said miror comprising:
a glass front wall;
a glass rear wall disposed in predetermined spaced relation to said front wall;
a plurality of glass spacer walls interconnecting said front and rear walls and arranged in a pattern defining a plurality of cells the cell ends of which are defined by the inner surfaces of said front and rear walls and the cell sides of which are defined by the surfaces of said spacer walls;

a reflective coating on the outer surface of said front wall;
said inner surfaces of said front and rear walls being characterized as relatively highly emissive and absorptive of radiant energy; and
said surfaces of said spacer walls being coated with a reflective layer of highly specular material, whereby radiant energy emitted from one of said end walls of a cell is reflected to and absorbed by the other of said end walls of said cell.



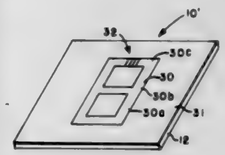
6. In a mirror built-up of frit bonded glass wall components to comprise a plurality of cells having front, back and side walls, the front walls of which carry an outwardly facing reflective surface adapted to be cyclically directed toward and from the sun, the improvement comprising a reflective coating on the surfaces of said side walls, so that energy radiated from the inner surface of said front walls of said cells is reflected by said reflective coating on said side walls and absorbed by the rear walls, whereby maximum temperature differences between said front and rear walls are reduced.

4,435,046
LIQUID CRYSTAL DISPLAY DEVICE
Katsuo Nishimura, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan
Filed Apr. 6, 1981, Ser. No. 251,452
Claims priority, application Japan, Apr. 8, 1980, 55-45240; Oct. 28, 1980, 55-151224
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—334 **10 Claims**



1. A liquid crystal display device for an electronic timepiece provided with time indicating hands, said liquid crystal display device having an annular configuration and comprising a plurality of display elements arranged in an annular arrangement, with said time indicating hands to be disposed within a central aperture of said liquid crystal display device, said liquid crystal display device comprising:
first and second annular transparent substrates;
an outer layer-of sealant material disposed between said first and second transparent substrates adjacent to the outer periphery thereof, and an inner layer of sealant material disposed between said first and second transparent substrates adjacent to the inner periphery thereof to thereby form an annular chamber between said first and second transparent substrates; a layer of liquid crystal material provided within said annular chamber between said first and second transparent substrates;
a plurality of segment electrodes formed on an inner surface of said first transparent substrate; and first and second common electrodes formed on an inner surface of said second transparent substrate, each of said common electrodes comprising a plurality of electrically interconnected common electrode portions, with the common electrode portions of said first and second common electrodes being arranged in a successively alternating manner around said second transparent substrate, said common electrodes being operable in conjunction with a first set of said segment electrodes for defining said plurality of display elements arranged in an annular configuration.

4,435,047
ENCAPSULATED LIQUID CRYSTAL AND METHOD
James L. Fergason, Kent, Ohio, assignor to Manchester R & D Partnership, Pepper Pike, Ohio
Filed Sep. 16, 1981, Ser. No. 302,780
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—334 **111 Claims**



1. A liquid crystal apparatus, comprising liquid crystal material having positive dielectric anisotropy, and surface means for affecting the natural structure of said liquid crystal material to induce a distorted alignment thereof in the absence of an electric field to reduce optical transmission independent of polarization, said liquid crystal material being responsive to the presence of an electric field to increase such optical transmission.

12. A method of making encapsulated nematic liquid crystals, comprising mixing at least an encapsulating medium and a nematic liquid crystal material, and further comprising selecting such liquid crystal material and such encapsulating medium such that the liquid crystal material has an ordinary index of refraction substantially the same as the index of refraction of the encapsulating medium.

29. Liquid crystal apparatus, comprising liquid crystal material, and containment means for inducing a distorted alignment of said liquid crystal material which in response to such alignment at least one of scatters and absorbs light and which in response to a prescribed input reduces the amount of such scattering or absorption.

60. Liquid crystal material and a medium for containing discrete quantities of said liquid crystal material, said liquid crystal material having positive dielectric anisotropy, and wherein when exposed to an electric field the electrical impedance of said medium and liquid crystal material exposed to such field along an electrical path through both said medium and liquid crystal material are related such that the electrical impedance of said medium is less than the electrical impedance of said liquid crystal material exposed to such field.

62. Liquid crystal material and a medium for containing discrete quantities of such liquid crystal material, said material having positive dielectric anisotropy, and mixed with the liquid crystal material a pleochroic dye that is soluble in the liquid crystal material.

4,435,048

ELECTRO-OPTICAL DEVICE AND ELECTRO-OPTICAL LIGHT CONTROLLING DEVICE

Tadatoshi Kamimori, Tokyo; Mamoru Mizuhashi, and Junichi Nagai, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 14, 1981, Ser. No. 254,104
Claims priority, application Japan, Apr. 15, 1980, 55-48657; Apr. 18, 1980, 55-50324; Nov. 6, 1980, 55-155213
Int. Cl.³ H01G 9/00; G02F 1/17
U.S. Cl. 350—357 **9 Claims**

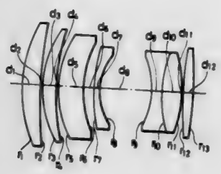
1. An electro-optical device comprising non-solid electrolyte layer held between a pair of electrodes and a solid electrochromic material placed on at least one of said electrodes, said electrolyte layer comprising an organic material and a chelating agent, wherein said electrolyte layer further comprises iodine or an iodine compound selected from the group consisting of metal or ammonium iodides, C_1-C_4 iodine-containing carboxylic acids, C_1-C_4 alkyl iodides and chromatic iodo compounds, in an amount of from 5×10^{-3} mole/liter up to saturation level.

4,435,049

TELEPHOTO LENS SYSTEM

Yoshiaki Horikawa, and Toshihiro Imai, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,393
Claims priority, application Japan, Dec. 8, 1980, 55-172099
Int. Cl.³ G02B 9/62, 13/02
U.S. Cl. 350—454 **8 Claims**



1. A telephoto lens system comprising: first, second and third positive meniscus lens components, each having the convex surface on the object side; a fourth negative meniscus lens component having the convex surface on the object side; a fifth positive cemented meniscus lens component having the convex surface on the image side; and, a sixth positive lens component; said lens system satisfying the following conditions

$$1.6<f_{1234}/f<2.3 \quad (1)$$

$$n_1>1.6,\ n_3>1.6 \quad (2)$$

$$\nu_2<60 \quad (3)$$

$$0.6<f_{B123}/r_6<1.0 \quad (4)$$

$$0.08f<d_5<0.12f \quad (5)$$

$$0.09f<d_9+d_{10}<0.15f \quad (6)$$

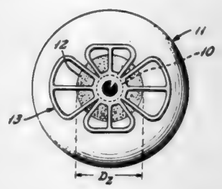
wherein the reference symbol f represents the focal length of the entire lens system, the reference symbol f_{1234} represents the composite focal length of the first lens component to the fourth lens component, the reference symbol f_{B123} represents the back focus of the first lens component to the third lens component, the reference symbols n_1 and n_3 respectively represent refractive indices of the first lens component and the third lens component, the reference symbol μ_2 represents the Abbe's number of the second lens component, the reference symbol r_6 represents the radius of curvature of the third lens component, and the reference symbols d_5, d_9 and d_{10} respectively represent thicknesses of respective lenses forming the third lens component and the fifth lens component.

4,435,050

CONTACT LENS ASSEMBLY WITH HAPTIC AND METHOD FOR MAKING THE SAME

Stanley Poler, 78 E. Second St., New York, N.Y. 10003

Continuation-in-part of Ser. No. 124,941, Feb. 26, 1980, Pat. No. 4,377,329. This application Jan. 15, 1981, Ser. No. 225,349
Int. Cl.³ A61F 1/16; G02C 7/04
U.S. Cl. 351—160 R **31 Claims**



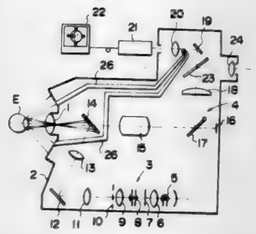
1. A contact lens assembly adapted for removable mounting to the cornea of an eye, comprising an optically finished lens element having a circular periphery characterized by a convex outer surface having a circumferentially continuous peripheral-edge rabbet formation in the outer-surface side of said element, and a single-piece haptic of flexible sheet material having a central circular opening at the rim of which said haptic has circumferentially continuous seated engagement with said rabbet formation and thereby mounts said lens element, said haptic being so axially compliant as to conform to the curvature of the cornea and to be self-adherent thereto via surface moisture of the cornea, whereby the self-adherent force upon haptic contact with the cornea is operative at the periphery of said lens element to axially inwardly retain the inner surface of the lens element in contact with the cornea.

4,435,051

WORKING DISTANCE DETECTING DEVICE FOR OPHTHALMIC APPARATUS

Kazuo Nunokawa, Itabashi, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Jun. 3, 1981, Ser. No. 269,670
Claims priority, application Japan, Jun. 10, 1980, 55-77935
Int. Cl.³ A61B 3/14; G03B 29/00
U.S. Cl. 351—208 **5 Claims**



1. An ophthlamic apparatus which comprises objective lens means adapted to be located opposite an eye to be examined with a working distance therebetween, an illuminating optical system having a ring-shaped aperture located substantially conjugate to the cornea of the eye with respect to the objective lens means so that a beam of illuminating light is projected on the eye through said aperture and said objective lens means, a working distance detecting device which comprises at least one light-shading opaque portion provided in said aperture and having a width in a circumferential direction and light-receiving means provided outside the perimeter of said objective lens means at a position capable of receiving a projection of said light-shading opaque portion of the ring-shaped aperture by the illuminating beam reflected at the cornea of the eye to be examined, whereby the working distance between the objective lens means and the cornea of the eye is detected based on the width of the projection of the light-shading opaque portion onto said light-receiving means.

4,435,052

OPHTHALMIC TEST APPARATUS HAVING MAGNIFICATION COMPENSATION

David L. Guyton, 307 Somerset Rd., Baltimore, Md. 21210

Filed Oct. 31, 1980, Ser. No. 202,521
Int. Cl.³ A61B 3/02
U.S. Cl. 351—239 **1 Claim**



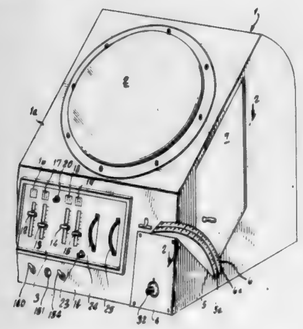
1. Ophthalmic test apparatus comprising a plurality of similar test targets presented simultaneously to a patient's eye, with at least one of said test targets having associated optical means for varying the trial refractive correction through which said one test target is viewed by said eye, whereby said patient may choose from a plurality of trial refractive corrections, wherein the improvement comprises two test targets simultaneously presented, each of said test targets having associated optical means to vary the respective trial refractive correction to produce opposite cross-cylinder effect for said two test targets, said test targets having meridional magnification difference which compensates for the astigmatic magnification difference produced by said optical means.

4,435,053

THREE-DIMENSIONAL PLURAL DISPLAY APPARATUS

Edward A. Woloshuk, New York, N.Y., and Gregory J. Walz, Pittsburgh, Pa., assignors to The Zyntrax Corporation, Montauk, N.Y.

PCT No. PCT/US82/01370, § 371 Date Jun. 16, 1982, § 102(e) Date Jun. 16, 1982, PCT Pub. No. WO82/01259, PCT Pub. Date Apr. 15, 1982
PCT Filed Oct. 8, 1980, Ser. No. 437,101
Int. Cl.³ G03B 21/32
U.S. Cl. 352—86 **14 Claims**



1. Apparatus for forming and sequentially displaying in the same space at least two different three-dimensional images, comprising:

a. intermittently operable illuminating means;

b. an optical system defining an optical path extending from said illuminating means;

c. means supporting an array of photographs and operable to move said photographs successively through said optical path at a rate sufficiently greater than the human persistence of vision so that the array moves through the path within the period of perisistence of vision;

d. means for operating said illuminating means only when one of the photographs is aligned with said path;

e. a projection screen circumscribing an axis about which the screen is rotatable, said screen being curved eccentrically with respect to the axis and intercepting said optical path, the curvature of the screen being effective to move the screen along the optical path toward and away from the photographs as the screen rotates;

f. means synchronizing the rotation of the screen with the operation of the illuminating means and the movement of the photograph supporting means to project on the screen a series of images which appear to an observer having persistence of vision to be a three-dimensional image;

wherein the improvement comprises:

g. at least two series of two-dimensional photographs in said array, each series showing successive sections of one of said images, the photographs of each series being arranged in said array in a predetermined order corresponding to the relationship that said successive sections bear to each other, the photographs of each series being located in said array in positions different from the locations of the photographs of the other series; and

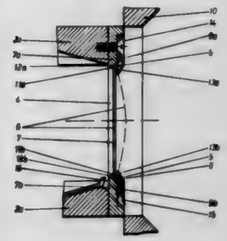
h. selection means for controlling said illuminating means to illuminate the photographs of only one of said series during one movement of said array through said optical path, and to illuminate the photographs of only another of said series during a subsequent movement of said array through said optical path.

4,435,054

FILM GUIDE ASSEMBLY

Hellmut Schrader, Am Hüttenkrug 12, D-3057 Neustadt 1, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,972
Int. Cl.³ G03B 21/16
U.S. Cl. 353—95 **8 Claims**



1. In a film guide assembly for a film viewing device which projects an image provided on a film having parallel edges, the assembly comprising means for defining a film transporting path having a window disposed therein for the delimitation of the edges of the image on the film and for defining the position of the film, the width of the opening of the window transverse to the direction of the film transporting path being smaller than the width of the film transporting path, and means disposed in the viewing device for directing light through the window, the improvement wherein said film guide assembly further comprises first and second frame members which are arranged one behind the other in the direction of the travel of light through said window and enclose between them said film transporting

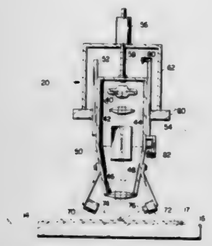
path, said first frame member being located to contact the edges of the film and defining a contact plane which comprises the window plane determinative for the sharpness of the projected image, said second frame member having first and second projecting parts each disposed to extend along a respective one of the edges of the film, delimiting the corresponding edges of said second frame member, projecting in the direction of said contact plane defined by said first frame member and located for pushing the film toward said contact plane across the entire extent of said window in the direction of said transporting path, said first and second frame members defining an opening having at least one dimension at least equal to the corresponding dimension of the film area utilized for projection of the image, and the opening width transverse to the direction of film transporting of said first frame member being greater than the corresponding opening width of said second frame member.

4,435,055

MULTIPLE FREQUENCY RANGING APPARATUS FOR FOCUS CONTROL

Henry F. Berdat, Manchester, and Kerry D. Baines, Vernon, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Aug. 12, 1981, Ser. No. 292,220
Int. Cl.³ G03B *13/20*
U.S. Cl. 354—4 **25 Claims**



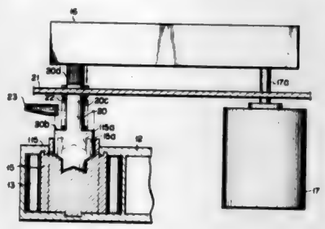
1. A multiple frequency ranging apparatus for measuring the distance between an object and a reference plane comprising:
- oscillator means for generating signals at first and second frequencies, the second frequency being higher than the first frequency;
- wave generating means connected with the oscillator means and associated with the objects and reference plane for producing energy waves characterized by the first and second frequencies and transmitting the waves between the object and the reference plane;
- wave receiving means associated with generating means for receiving the waves transmitted by the generating means between the object and the reference plane;
- detecting means having an input connected with the receiving means for detecting from the waves the distance between the object and the plane at the first frequency and the second frequency; and
- control means associated with the detecting means for switching the detection of the distance between the object and the plane from the first frequency for coarse detection to the second frequency for fine detection.

4,435,056

FILM FEEDING DEVICE

Kowji Tanikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,515
Claims priority, application Japan, Dec. 26, 1980, 55-185947
Int. Cl.³ G03B *7/00*
U.S. Cl. 354—21 **12 Claims**



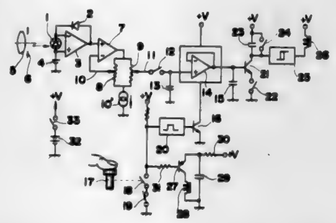
1. A film feeding device comprising:
- film wind driving means engaging a film wind shaft and rotating said film wind shaft to wind a film on said film wind shaft;
- shaft diameter information producing means for producing information representing the diameter of said film wind shaft with said film wound thereon;
- means for updating the shaft diameter information from said shaft diameter information producing means every time a given length of the film is wound on said film wind shaft;
- means for deciding the rotation angle of said film wind shaft and producing a rotation angle information in accordance with the shaft diameter information from said shaft diameter information producing means; and
- means for driving said film wind driving means in accordance with the rotation angle information from said rotation angle information producing means, whereby said film wind shaft is rotated through an angle corresponding to said rotation angle information.

4,435,057

EXPOSURE CONTROL DEVICE FOR CAMERAS

Masaaki Nakai, Osaka, and Masayoshi Sahara, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP81/00275, § 371 Date Jun. 14, 1982, § 102(e) Date Jun. 14, 1982, PCT Pub. No. WO82/01424, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 9, 1981, Ser. No. 395,079
Claims priority, application Japan, Oct. 13, 1980, 55-142565
Int. Cl.³ G03B *7/083*
U.S. Cl. 354—426 **5 Claims**



1. An exposure control device for a camera comprising:
- a light measuring circuit for measuring the brightness of an object to be photographed and producing an output signal

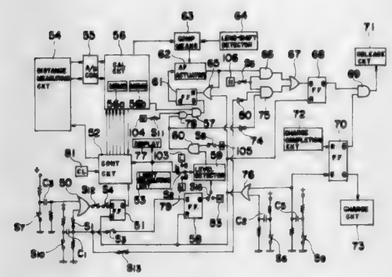
for the exposure control in accordance with the measured value;
- an AE-lock switch manually operable independently of the camera release operation;
- a first storage capacitor connected through the AE-lock switch to the light measuring circuit;
- a buffer circuit activated for a given period in conjunction with a camera shutter release operation and having high input and output impedances when the buffer circuit is deactivated;
- a second storage capacitor connected through the buffer circuit to the first storage capacitor; and
- a control circuit for controlling camera exposure in accordance with the charged voltage of the second storage capacitor, said buffer circuit charging the second storage capacitor to a potential equal to that of the first storage capacitor.

4,435,058

AUTO-FOCUS CONTROL CAMERA

Fumio Yoshida, Osaka; Yukio Miki, Sakai; Takeshi Egawa, and Akira Yoshizaki, both of Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 17, 1982, Ser. No. 349,469
Claims priority, application Japan, Feb. 27, 1981, 56-29110; Mar. 5, 1981, 56-32262; Mar. 5, 1981, 56-32263; Mar. 5, 1981, 56-32264; Mar. 5, 1981, 56-32265
Int. Cl.³ G03B *3/10, 1/00*
U.S. Cl. 354—403 **30 Claims**



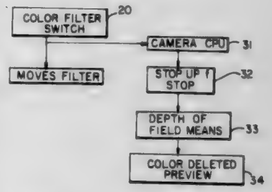
1. Auto-focus control camera comprising:
- means for photoelectrically obtaining information for auto-focus adjustment, said obtaining means being of a type in which the time taken to complete the information depends on the scene brightness;
- means for adjusting the focus of the camera in accordance with said information;
- means for effecting the film winding-up operation;
- means for detecting that the time taken for said obtaining means to complete the information is greater than a predetermined period, to disable the focus adjustment by said adjusting means; and
- means for causing the camera exposure in response to the completion of the focus adjustment and the completion of the film winding-up operation when the time greater than the predetermined period is not detected by said detecting means, and in response to the detection by said detecting means and the completion of the film winding-up operation when the time greater than the predetermined period is detected by said detecting means.

4,435,059

CAMERA WITH AUTOMATIC APERTURE SETTING AND PARTIALLY COLOR DELETED VIEWFINDER SELECTION

Jeremy Gerber, 7 Frog Rock Rd., Armonk, N.Y. 10504

Filed Sep. 30, 1982, Ser. No. 431,053
Int. Cl.³ G03B *7/095, 13/02*
U.S. Cl. 354—453 **6 Claims**



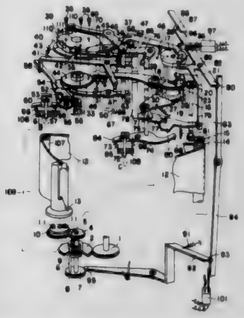
1. In a camera having a variable diaphragm and a shutter, means to automatically determine the proper taking aperture of said diaphrogm for photographing a scene, means to close down the diaphragm to the determined aperture without operation of the shutter, a taking lens and an eyepiece viewfinder viewing the scene through an optical path through the taking lens and the diaphragm; characterized in having a system to provide a partially color deleted view of the scene through the eyepiece viewfinder, said system including means, selectively under operator control, to position a color filter in the optical path of the viewfinder, means automatically upon said selection to determine the said taking aperture and compensate for said filter, the compensation permitting sufficient light to compensate for said filter, and means to close down said variable diaphragm to said compensated aperture without operating the shutter, to thereby present a partially color-deleted view to said viewfinder.

4,435,060

AUTOMATIC FILM WIND-UP CAMERA

Takumi Kobayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 346,768
Claims priority, application Japan, Feb. 6, 1981, 56-15619
Int. Cl.³ G03B *1//12*
U.S. Cl. 354—173.1 **5 Claims**



1. An automatic film wind-up having a camera body provided with a film wind-up mechanism, a shutter charging mechanism, a shutter front curtain and a shutter back curtain interlocked with the shutter charging mechanism to travel when the shutter is released, a wind-up signalling member which is actuated upon completion of travel of the shutter back curtain, a film frame indexing mechanism, a counter for count-

ing the number of exposed frames and an automatic film wind-up drive motor for driving said film wind-up mechanism and said shutter charging mechanism and capable of attaching removably three types of film backs formed with a means for signalling attachment of the respective films of roll film No. 120, roll film No. 220 and 70 mm film, characterized in that said camera body is provided with

a film take-up control member for controlling automatic leading end feed and automatic take-up corresponding to the number of respective exposed frames of said three types of films,

a ratchet wheel pivoting integrally with the take-up control member,

a first film controlling member interlocked with said take-up control member to control the roll film No. 120,

a second film controlling member interlocked with said take-up control member to control the roll film No. 220,

a holder member interlocked with said first and second film controlling members to maintain said automatic wind-up drive motor at wind-up condition,

a wind-up operative member regulated by the holder member and said film frame indexing mechanism,

a wind-up switch interlocked with the wind-up operative member to start and stop said automatic wind-up drive motor,

a film start signalling member which is actuated when the wind-up switch is turned on to start the wind-up of film,

a reset switch interlocked with the film start signalling member for allowing the exposure counter to count the exposed frames when the reset switch is held in a prescribed state,

a feed member interlocked with said film indexing mechahism to move intermittently said take-up control member,

first and second stop members interlocked with said feed member to block return of said take-up control member,

first, second and third signalling members for detecting the type of film from the film back when any one of said three types of film backs is attached to said camera body and

first, second and third releasing members interlocked with the signalling members to release said stop members.

4,435,061

ELECTRIC MOTOR DRIVE DEVICE FOR CAMERA

Hidehiko Fukahori, Kanagawa; Toshikazu Ichiyanagi; Tomonori Iwashita, both of Tokyo; Yukio Mashimo, Kanagawa; Akio Sunouchi, and Masahisa Fujino, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,339
Claims priority, application Japan, Jun. 11, 1981, 56-90031
Int. Cl.³ G03B *1/18*
U.S. Cl. 354—173.11 **8 Claims**



1. An electric motor driven camera comprising:

driving means for winding film inserted in the camera;

control means arranged to stop said driving means upon completion of winding and to allow the driving means to perform a driving action upon completion of an exposure action;

stopping means arranged to bring the driving action to a stop after completion of photographing of all film frames;

detection means for detecting completion of film rewinding, said detection means being arranged to generate a detection signal when completion of film rewinding is detected; and

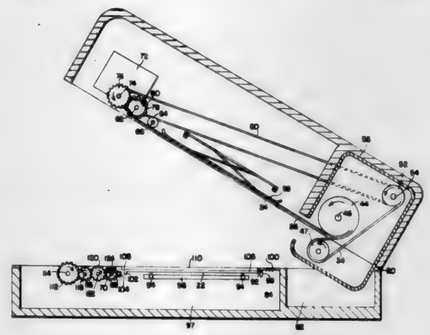
release means which releases said stopping means from the stopping action thereof in response to the detection signal from said detection means, said release means being arranged to operate the driving means until completion of winding by releasing the stopping means from the stopping action thereof.

4,435,062

FILM PROCESSING APPARATUS

Vincent L. Cocco, Wakefield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 27, 1982, Ser. No. 453,801
Int. Cl.³ G03D *5/06*
U.S. Cl. 354—303 **18 Claims**



1. A film processing apparatus for use with a liquid applicator packaging web of the type including an elongated flexible carrier sheet, a plurality of liquid applicator pads secured to one side of the carrier sheet in spaced-apart relation along its length and each yieldably holding a supply of a low viscosity processing liquid adapted to be applied to an outer surface of a sheet-like photosensitive film unit to initiate processing thereof, and an elongated flexible cover sheet superposed with the carrier sheet in covering relation to the applicator pads, the carrier and cover sheets being selectively releasably sealed together in facing areas thereof surrounding each of the applicator pads to form a plurality of serially connected containers on the web, each enclosing a corresponding one of the applicator pads therein, said film processing apparatus comprising:

means for supporting such a film unit;

means for supporting such a liquid applicator packaging web;

means for advancing the web relative to said web support means in predetermined increments to separate the cover sheet from the carrier sheet and successively unseal and open each of the containers and locate the corresponding uncovered applicator pad therein at a processing position; and

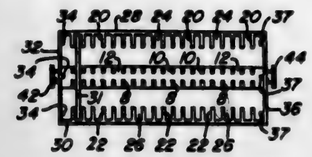
means for bringing an uncovered applicator pad located at said processing position into liquid-yielding contact with the outer surface of the film unit to apply the liquid thereto to initiate processing of the film unit.

4,435,063

AUTORADIOGRAPHY METHOD USING A SLIDE RACK

Nurten N. Gunduz, and Dincer H. Gunduz, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 15, 1980, Ser. No. 216,295
Int. Cl.³ G03D *13/08*
U.S. Cl. 354—315 **7 Claims**



1. A method of processing specimens comprising

securing said specimens to a plurality of slide members,

providing rack means having separators defining a plurality of slide-receiving slots,

introducing said slides into said slots,

immersing said slides while in said rack in a bath of photographic emulsion,

removing said rack from said bath,

exposing said emulsion-covered slides to radiation while said slides are in said rack,

developing said exposed slides, and

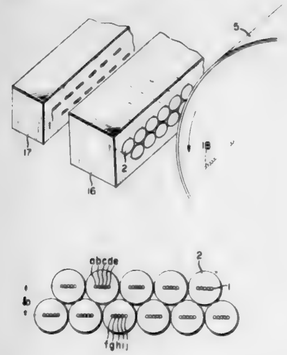
removing said developed slides from said rack, whereby said specimen-bearing slides will be coated with emulsion, exposed and developed without the need for individual handling of said slides after initial introduction of said slides into said rack.

4,435,064

OPTICAL EXPOSURE UNIT FOR ELECTROPHOTOGRAPHIC PRINTING DEVICE

Toshiji Tsukada, and Kazuo Morinaga, both of Kanagawa, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 277,040
Claims priority, application Japan, Jun. 28, 1980, 55-88371
Int. Cl.³ G03B *27/00*; G03G *15/00*
U.S. Cl. 355—1 **8 Claims**



8. In an electrophotographic printing device of the type in which electrostatic latent images of characters and the like are formed on the surface of a photosensitive medium, an exposure unit comprising:

a first assembly of a plurality of light-beam transmission-and-convergence means whose one ends are disposed in opposed relationships with said surface of said photosensitive medium;

a second assembly of a corresponding plurality of light-emitting diodes whose light-emitting apertures are disposed in opposed relationships with the other ends of the light-beam transmission-and-convergence means; and

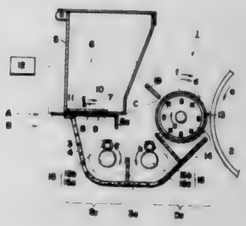
means for displacing at least one of said first and second assemblies toward or away from the surface of said photosensitive medium by an extremely small distance, said displacing means comprising at least one piezoelectric element interposed between a stationary assembly supporting means and said second assembly or between said second assembly and said first assembly.

4,435,065

ELECTROGRAPHIC DEVELOPING APPARATUS WITH TONER FLOW DIRECTOR

Kenichi Wada, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1982, Ser. No. 356,646
Claims priority, application Japan, Mar. 31, 1981, 56-48683
Int. Cl.³ G03G *15/08, 15/09*
U.S. Cl. 355—3 DD **8 Claims**



1. An electrographic developing apparatus which comprises:

a developer container having means dividing it into a toner supply section and a developing section and adapted to be normally substantially filled with a powder developer in the form of a mixture of a carrier and a toner;

means adjacent the developing section for developing latent electrostatic images on an image bearing member by the use of the developer contained in the developing section of the container;

a toner tank above said toner supply section and adapted to contain a supply of toner therein and having a bottom adapted to be contacted by the developer contained in the toner supply section of the container, said bottom having a toner passing aperture therein;

a movable member movable along said bottom for opening and closing the toner passing aperture;

means connected to said movable member for moving said movable member to open the toner passing aperture when toner is to be supplied and for holding the movable member in an aperture closing position when no toner is to be supplied; and

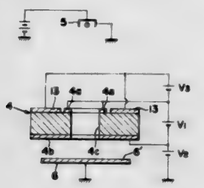
developer moving means for, when the level of said developer is sufficiently high, physically contacting and forcibly moving a portion of the developer from the developing section of the container into the toner supply section during a time at least when said movable member is moved to the position where the toner passing aperture is open and the toner is being supplied for raising the level of the top of the developer contained in the supply section of the container relative to the level of the top of the developer in the developing section.

4,435,066

ION MODULATING ELECTRODE WITH IMPROVED TRANSMISSION FACTOR

Noriyoshi Tarumi, Hachioji; Haruo Iwahashi, Fussa; Masahiko Matsunawa, and Hiroshi Tokunaga, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 355,878
Claims priority, application Japan, Mar. 16, 1981, 56-36489; Mar. 16, 1981, 56-36490; Mar. 16, 1981, 56-36491
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SC 4 Claims



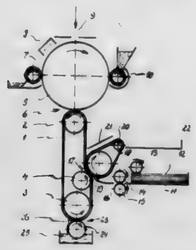
1. An electrostatic reproducing apparatus comprising an ion generator, an ion modulating electrode constructed of a continuous layer of conductive material and a segmented layer of conductive material with an insulating layer sandwiched in between, and having a plurality of apertures so that the flow rate of the ions which are generated by said ion generator and allowed to pass through said apertures may be controlled by a picture image signal to be recorded, recording means for receiving the ions which have passed through said apertures, and means for enhancing the ion transmission factor of said apertures, said enhancing means generating an electric field of at least 0.5 KV/mm between the segmented layer of conductive material of said ion modulating electrode and said recording means.

4,435,067

METHOD AND APPARATUS FOR TRANSFERRING AND FIXING POWDER IMAGES

Willem T. Draai, Blerick; Jozef J. A. Pleyers, Baarlo, and Nicolaas P. J. Kuin, Grubbenvorst, all of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

Filed Aug. 11, 1982, Ser. No. 407,127
Claims priority, application Netherlands, Aug. 19, 1981, 8103867
Int. Cl.³ G03G *15/16, 15/20*
U.S. Cl. 355—3 TR 8 Claims



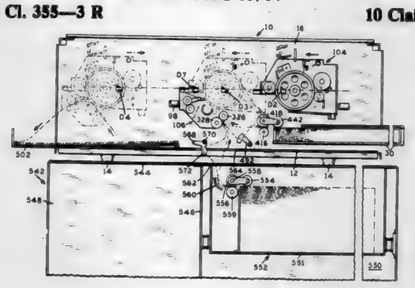
1. A method of transferring and fixing powder images onto receiving supports such as of paper, which comprises transporting through a treatment zone, on a moving, resiliently deformable, hydrophobic support surface, a powder image formed of water-absorbent particles that soften on absorbing water; in said zone covering the hydrophobic support surface and the powder image on said surface with water and directly afterward squeegeeing water from said surface and the image thereon; and thereafter contacting the moistened powder image on the support surface with a said receiving support under pressure, thereby transferring and fixing the powder image in moist and softened state onto the receiving support.

4,435,068

APPARATUS FOR ELECTROPHOTOGRAPHY

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Filed May 29, 1981, Ser. No. 268,261
Int. Cl.³ G03G *15/14*
U.S. Cl. 355—3 R 10 Claims



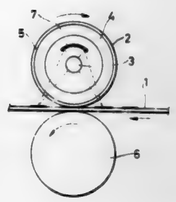
1. Electrophotographic apparatus for producing a copy of a document on a sheet from a sheet supply location and for delivering said copy at a location remote from said supply location including in combination, means for moving a sheet from said supply location to said delivery location, and electrophotographic means for producing the initial portion of said copy in the course of movement of said sheet from said supply location to said delivery location and the terminal portion of said copy with the leading edge of said sheet stopped at said delivery location.

4,435,069

FIXING APPARATUS FOR ELECTROPHOTOGRAPHY

Masamichi Sato, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Asaka, Japan

Filed Sep. 3, 1982, Ser. No. 414,723
Claims priority, application Japan, Sep. 4, 1981, 56-138378
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 FU 8 Claims



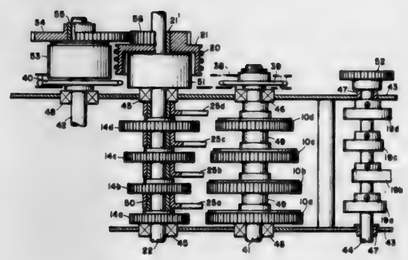
1. A fixing apparatus for use in electrophotography comprising; a fixing drum including an infrared radiation heat source in the interior thereof, said fixing drum being made of a transparent material permeable to infrared radiation and having an outer layer of a material which absorbs part of the infrared radiation.

4,435,070

VARIABLE MAGNIFICATION COPYING APPARATUS

Tadayuki Kitajima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 318,986, Nov. 6, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 428,271
Claims priority, application Japan, Nov. 10, 1980, 55-157953
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—8 23 Claims



1. A variable magnification copying apparatus capable of copying originals at least first and second different copying magnifications, including:

original scanning means for scanning an original to be copied;

a photosensitive medium on which is formed the optical image of the original scanned by said original scanning means;

means for changing the magnification of the optical image of the original formed on said photosensitive medium correspondingly to a selected copying magnification;

velocity ratio changing means for changing the ratio of the original scanning velocity of said scanning means to the movement velocity of said photosensitive medium correspondingly to the selected copying magnification, said velocity ratio changing means including:

a first shaft connected to a drive source;

a second shaft connected to one of said original scanning means and said photosensitive medium;

first and second gear means provided on said first shaft;

third and fourth gear means provided on said second shaft;

displaceable fifth gear means adapted, correspondingly to said first copying magnification, to mesh with both said first gear means and said third gear means to transmit the rotational force of said first shaft to said second shaft, and adapted, correspondingly to said second copying magnification, to be disengaged from at least one of said first gear means and said third gear means; and

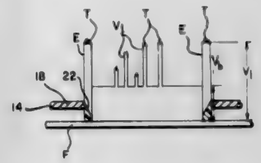
displaceable sixth gear means adapted, correspondingly to said second copying magnification, to mesh with both said second gear means and said fourth gear means to transmit the rotational force of said first shaft to said second shaft, and adapted, during the copying at said first copying magnification, to be disengaged from at least one of said second gear means and said fourth gear means.

4,435,071

METHOD AND MEANS FOR REDUCING FRAME EFFECT IN ELECTROGRAPHIC IMAGES ON MICROFICHE

Manfred R. Kuehnle, 6 Linmoor Ter., Lexington, Mass. 02173

Continuation of Ser. No. 941,658, Sep. 11, 1978, abandoned, which is a continuation of Ser. No. 716,591, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 646,004, Jan. 2, 1976, abandoned, which is a continuation of Ser. No. 481,133, Jun. 20, 1974, abandoned. This application Mar. 23, 1981, Ser. No. 246,811
Int. Cl.³ G03G *15/10*
U.S. Cl. 355—10 13 Claims



1. An electrographic recording system comprising:

A. means for impressing an electrostatic charge on the frame area of an electrographic storage medium;

B. means for exposing an image area within said frame area to a light image of an original so that the image area is smaller than the frame area, thereby forming a non-illuminated, charged boundary around the image area, said exposing means comprising a non-electrically conductive ring extending opposite said boundary, said ring

(1.) establishing the focal plane of the exposing means,

(2.) providing a seal against toner particles around the edge of the frame area, and

(3.) masking the storage medium along said boundary from incident light; and

C. means for directing toner particles along the surface of the medium with an appreciable velocity so that their momentums across the medium surface inhibit their tendency to be captured by the residual charge on fully exposed portions of the medium whereby they collect at the unexposed or only partially exposed portions of the image area and at said charged boundary so as to improve the quality of the image on the medium while simultaneously forming a sharp, distinct, uniform dark border around and touching the image area on the medium.

4,435,072

IMAGE RECORDING APPARATUS WITH LEAKAGE PREVENTING MICROWAVE FIXING DEVICE

Hiroyuki Adachi, Tokyo, and Nagao Hosono, Chofu, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,686
Claims priority, application Japan, Dec. 11, 1980, 55-174898; Dec. 11, 1980, 55-174899; Dec. 11, 1980, 55-174902
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU 48 Claims

1. An image recording apparatus comprising

an outer casing;

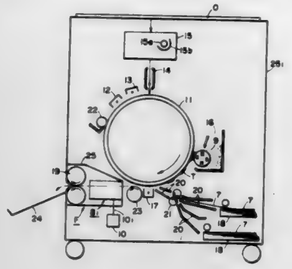
an image formation station for causing a recording medium to bear a visualized image;

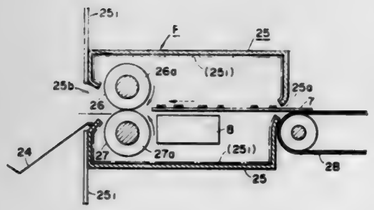
a fixing station for applying high-frequency waves to thereby fix the visualized image on the recording medium thereby to record the image;

means for conveying the recording medium along a conveyance path from said image formation station until the recording medium passes through said fixing station;

first means for preventing the high-frequency waves from

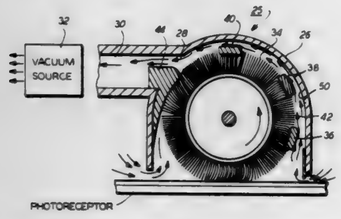
leaking out of said casing of said image recording apparatus; and





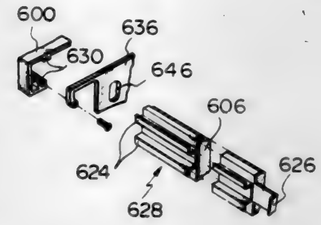
second means provided in said casing for preventing the high-frequency waves from leaking out of the fixing station into said image recording apparatus.

4,435,073
TONER REMOVAL APPARATUS
Richard L. Miller, Burnsville, Minn., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 16, 1982, Ser. No. 408,341
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—15 **11 Claims**



1. Apparatus for removing toner particles from a charge retentive surface, said apparatus comprising:
- a cylindrical brush adapted for rotation in contact with said surface;
- first means for interfering with the rotation of said brush to thereby cause fibers of said brush to flex and simultaneously electrostatically charge said brush to a first polarity;
- second means for interfering with the rotation of said brush to thereby cause fibers of said brush to flex and simultaneously electrostatically charge said brush to a second polarity; and
- means for creating an airstream across said first and second means whereby said the charge on said fibers is reversed while said fibers are in the airstream.

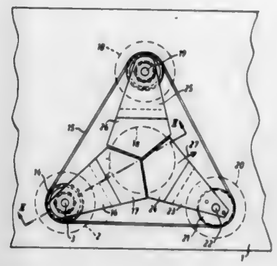
4,435,074
CLEANING APPARATUS FOR ELECTROPHOTOGRAPHY COMPRISING LUBRICANT FILM APPLICATOR MEANS
Akira Midorikawa; Kenji Kojima, and Kazuo Uchimura, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 17, 1981, Ser. No. 255,190
Claims priority, application Japan, Apr. 23, 1980, 55-53790
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **11 Claims**



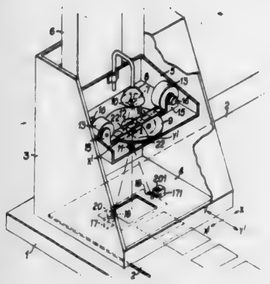
1. A cleaning apparatus for an electrophotographic copying machine including a photosensitive member, the cleaning apparatus removing residual toner particles from the photosensitive member and comprising;
- scraper blade means engaging with the photosensitive member to scrapingly remove residual toner particles therefrom:
- applicator means for applying a film-forming material onto the circumference of the photosensitive member; and
- drive means for moving the applicator means into and out of contact with the photosensitive member in dependence on a parameter indicating a varying operating condition of the photosensitive member;
- whereby a proper amount of the film-forming material is applied onto the circumference of the photosensitive member under a varying operating condition of the photosensitive member; and
- sensor means for sensing a coefficient of friction of the circumference of the photosensitive member, the parameter comprising the sensed coefficient of friction of the circumference of the photosensitive member.

4,435,075
COLOR COPIER
Bernd Payrhammer, Munich, and Volker Weinert, Taufkirchen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Feb. 18, 1982, Ser. No. 350,111
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106124
Int. Cl.³ G03B *27/72, 27/76*
U.S. Cl. 355—35 **14 Claims**

1. A color copier, particularly a photographic color copier, comprising:
- (a) a plurality of overlapping color filters for adjusting the color composition of the copying light, each of said filters including a plurality of filter sections, and the sections of each filter being rotatable to and from predetermined positions in which said sections project into the path of the copying light;
- (b) connecting means for each filter connecting the sections thereof for rotation in unison; and
- (c) drive means for each filter operative to rotate said sections to and from said predetermined positions, each of said drive means including a rotatable shaft, and one of the sections of one of said filters being mounted on the corresponding shaft for rotation therewith, said one filter having another section which is mounted on the shaft of another filter and is rotatable relative to such shaft.

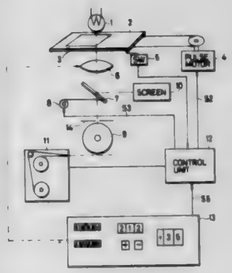


4,435,076
PROJECTED IMAGE POSITIONING METHOD AND APPARATUS FOR PHOTOGRAPHIC ENLARGER
Masuda Tatsunosuke, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan
Continuation of Ser. No. 142,220, Apr. 21, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,674
Claims priority, application Japan, May 10, 1979, 54-58305
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—41 **1 Claim**



1. Positioning apparatus for a photographic enlarger including a film holder, means for adjustably supporting said film holder in a selected position with respect to a sensitized material surface, said apparatus usable with a film containing at least one frame and having two register marks located at selected positions adjacent opposite sides of said frame and outside the image area of said frame, said enlarger having means for projecting said frame and said register marks toward said surface, comprising:
- at least two mirrors, each one positioned in the path of the projected image of one said mark, for diverting the projected image of said mark away from said surface;
- at least two sensors, one associated with each mirror, each comprising a receiver element having at least two electrically independent sections arranged symmetrically, and arranged to receive the respective diverted image of a register mark;
- means for mounting said sensors at the optical equivalent of the focal plane of the projected image of said register mark on said sensitized material surface when said film is in a position to project the image of said frame onto a desired frame location on said surface;
- means associated with said sensors for developing signals representative of the position of said projected register marks on said sensors and therefore of the position and orientation, relative to said sensitized material surface, of said enlarged projected image of said register marks; and
- means for adjusting the position and orientation of said holder comprising a feedback circuit connected to the sensors and adapted to activate at least one pulse motor for causing movement of the film holder rotationally about its center and rectilinearly in two perpendicular directions in the plane of the holder in response to said signals from said sensors to move said projected image to said desired frame location.

4,435,077
OPTICAL MAGNIFICATION ENLARGEMENT TYPE COPYING MACHINE
Kazuhiro Suzuki, and Toshikatsu Takahashi, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jul. 2, 1982, Ser. No. 394,961
Claims priority, application Japan, Jul. 8, 1981, 56-106398
Int. Cl.³ G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **9 Claims**



1. A magnification enlargement copying wherein an image of a picture on a film projected from observation and copying comprising:
- control means having an input section for receiving data on the size of said film, the size of a sheet on which an enlarged image will be copied and the amount of magnification of said image;
- positioning means receiving said film and moving it from an observation position to a film scanning start position;
- optical means for magnifying said film or a portion thereof and projecting it for observation and copying;
- arithmetic means associated with said control means for determining a distance between said observation position and a scanning start position from a size of a picture on said film and calculating film scanning speed from a magnification from said optical means to control said positioning means; and
- copying means responsive to an image projected by said optical means and controlled by said control means.

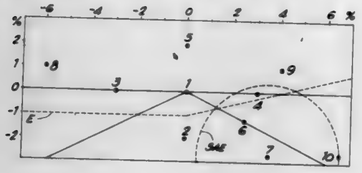
4,435,078
ELECTRONIC LIGHT BEAM TESTER
Louis F. de Brabander, Wezembeek-Oppem, and Luc K. Van Linthout, Leuven, both of Belgium, assignors to Fonds d'Etudes pour la Securite Routiere A.s.b.l., Brussels, Belgium
Filed Jun. 22, 1981, Ser. No. 276,183
Claims priority, application Belgium, Jun. 27, 1980, 201.209
Int. Cl.³ G01V *1/42*
U.S. Cl. 356—121 **10 Claims**

1. A device for checking the orientation and luminous intensities of a light beam comprising, in combination:
- a screen having a set of photocell transducers spaced apart from each other in selected lateral directions, the transducers arranged to produce individual output electrical signals representative of the intensity of light striking the

respective transucers, and including means for orienting the screen relative to a reference direction;

means for processing at least selected ones of said transducer signals to obtain a product signal representative of said selected transducer signals multiplied by a calibrated (constant) proportionality factor;

means for combining and processing at least selected sets of said transducer signals to produce sub-set signals;



means for comparing at least some of said product signals with said sub-set signals to produce comparator signals representative of the relative strength ratio (i.e., greater or lesser) between certain ones or sets of said product signals and certain ones or sets of said sub-set signals;

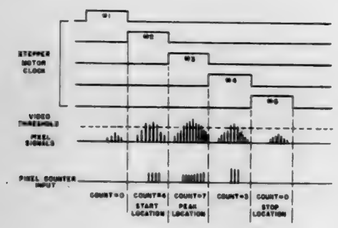
means for directing said comparator signals to an output utilization means; i.e., a visual display.

4,435,079

APPARATUS FOR TESTING LENSES BY DETERMINING BEST FOCUS

Robert P. Hennick, Dudley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 28, 1981, Ser. No. 297,183
Int. Cl.³ G01B 9/00; G01J 1/00
U.S. Cl. 356—123 **11 Claims**



1. A signal processing system for determining an optimum point in an operational cycle consisting of a plurality of sequential periods, comprising:

a signal source;

means responsive to said signal source for producing pulses during said plurality of sequential periods;

selecting means for selecting said pulses which are above a minimum threshold, and producing selected pulses;

counter logic means for counting said selected pulses during said plurality of sequential periods, and producing a pulse count for each respective period;

pulse count comparison means responsive to the pulse count for each respective period for detecting at least two data points at which the pulse count of said counter logic means reaches a predetermined level; and

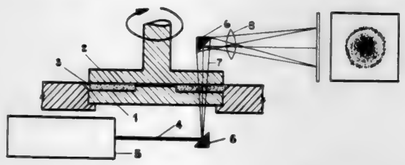
data computing means for providing an output corresponding to the optimum point located equally spaced between said two data points.

4,435,080

ARRANGEMENT FOR MEASUREMENT OF DYNAMIC PROPERTIES OF MICROPARTICLES

Zdenek Maly, Nationalstrasse 7, Kreuzlingen CH-8280, Switzerland, and Vladislav Blazek, Konradinstr. 2, Munich D-8000, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,983
Claims priority, application Switzerland, May 23, 1980, 4084/80
Int. Cl.³ G01N 21/85, 21/53
U.S. Cl. 356—426 **8 Claims**



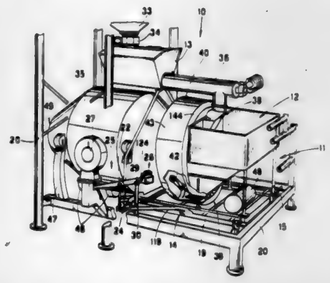
1. A device for measuring the dynamic properties of microparticles which comprises: at least two flat measuring bodies spaced from each other, with the distance therebetween being adjustable and the space therebetween being filled with a suspension of microparticles to be measured, wherein at least one of said bodies is movable so that a defined magnitude of fluid shear stress is generated in the suspension; means for passing a light beam through both bodies and said suspension so that during rotation and when rotation is stopped different diffraction patterns are generated; and means for measuring said diffraction patterns, thereby extracting useful data concerning the dynamic properties of the microparticles.

4,435,081

CONCRETE MIXING PLANTS WITH ELEVATOR WHEEL

Dino Del Fabbro, Basaldella di Campoformido, Italy, assignor to Officine Riunite Udine Spa, Italy

Filed Mar. 8, 1982, Ser. No. 355,371
Claims priority, application Italy, Mar. 20, 1981, 83345 A/81
Int. Cl.³ B01F 15/02
U.S. Cl. 366—18 **6 Claims**



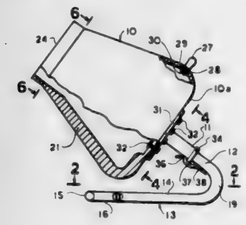
1. Concrete mixing plant for dosing and mixing aggregate materials and cement inside a concrete mixer or mixing machine, comprising a container to collect aggregate, a conveyor and chute means for delivering cement to said mixer, weighing and/or dosing means supporting said aggregate container and cement conveyor and chute means, a concrete mixer having a charging inlet, a plurality of legs and/or supports to uphold said aggregate container, cement conveyor and chute means and weighing means, and an elevator wheel for receiving and premixing the aggregates, said wheel being located between the container and the concrete mixer and connected frontally to the charging inlet, said cement chute means passing through the interior space of said elevator wheel, a portion of said container positioned within the interior space of said elevator wheel said elevator wheel delivering aggregate onto cement being delivered to said mixer.

4,435,082

ROTARY DRUM MIXING DEVICE

Robert J. Bishop, 1083 Bloomfield Ave., West Caldwell, N.J. 07006

Filed May 21, 1982, Ser. No. 380,530
Int. Cl.³ B28C 5/18, 5/20, 7/16
U.S. Cl. 366—47 **26 Claims**



1. A mixing device comprising a unitary frame extending front to rear of the device, said frame having a base portion with a transverse member forming the front end of said frame and providing a pivot fulcrum at said front end, a short connecting portion joined to said transverse member, said connecting portion terminating in an angularly, forwardly and upwardly extending portion providing a bearing portion at the rear end of said frame, the angularity of said bearing portion being about 35+ with respect to the plane of said base portion, a generally pear shaped mixing drum providing large and small ends, said drum being closed and substantially flat at the large end and open at the small end, said closed end having an elongated axial socket, said axial socket slidably engaging said bearing end of the frame to rotatably support said drum with its axis at said angle of approximately 35°, axially extending rib means on the inner surface of said drum for lifting contents in the rotation thereof, external means of said drum facilitating application of circumferential force to rotate the drum, the length of the connecting portion of said frame being such as to dispose said pivot fulcrum slightly forwardly of the center of gravity of the drum, readily engageable and disengageable means on said bearing portion and socket to support the drum against axial movement when the assemblage is tilted around said fulcrum to discharge drum contents, said bearing portion being the only support for said drum, and said drum being readily removable from said frame upon disengagement of said last named means.

4,435,083

SELF-CLAMPING ROTARY VIBRATOR AND MOUNT THEREFOR

Carl G. Matson, Little Rock, Ark., assignor to Hamilton Equipment Co., Inc., Fort Worth, Tex.

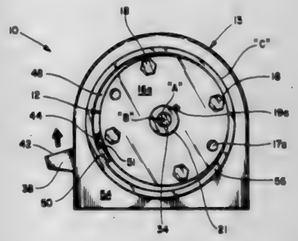
Filed Oct. 13, 1981, Ser. No. 310,500
Int. Cl.³ B01F 11/00
U.S. Cl. 366—114 **11 Claims**

1. A rotary vibrator energized by driving means coupled thereto and mounting assembly therefor comprising:

a rotor coupled to said driving means and displaced about an axis in response thereto;

a cylindrical housing having a circular cross-section encompassing and coupled to said rotor so as to rotate in a migratory manner about said axis in a direction opposite to that of said orbiting rotor, said housing including a first clamping strip thereon; and

a cylindrical casing having a circular cross-section and adapted to be affixed to a structure to be vibrated and axially positioned with respect to said housing and in close proximity thereto, said casing including a second clamping strip wherein the migratory rotation of said housing causes the wedging engagement of said first and second clamping strips with the adjacent inner surface of said casing and adjacent outer surface of said housing, respectively, so as to form first and second points of contact defined by said first clamping strip and the inner surface of said casing and said second clamping strip and the outer surface of said housing, respectively, and a third point of contact distally located with respect to said first and second points of contact between said housing and said casing.

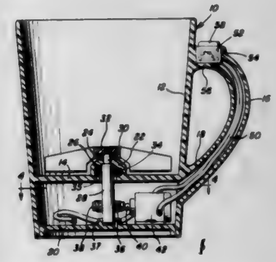


4,435,084

AUTOMATIC STIRRER FOR CUP

Tom L. Calhoun, and Bill L. Calhoun, both of P. O. Box 447, Buttonwillow, Calif. 93206

Filed Dec. 21, 1982, Ser. No. 452,019
Int. Cl.³ B01F 7/18
U.S. Cl. 366—130 **6 Claims**



1. A beverage cup defining an upwardly opening receptacle including upstanding peripherally extending sides and closed at its lower end portion by a false bottom wall extending between and sealed relative to said sides above the lower ends thereof, said receptacle sides extending downwardly below said false bottom wall and defining a downwardly opening recess therebelow bound by the lower end portions of said sides, said false bottom wall having a central upstanding bore formed therethrough, an upstanding shaft sealingly journaled through said bore and including blade means carried by the upper end thereof and closely overlying said false bottom wall, bearing means supported from the lower end portions of said sides below said false bottom wall and with which the lower portion of said shaft spaced below said false bottom wall is guidingly engaged, said lower portion of said shaft including means operative to allow rotary torque input to said shaft, said bearing means including a bottom wall secured between the lower end portions of said sides below said false bottom wall, a central portion of said bottom wall including a bearing journal in which said lower portion of said shaft is journaled, said means operative to allow rotary torque input to said shaft

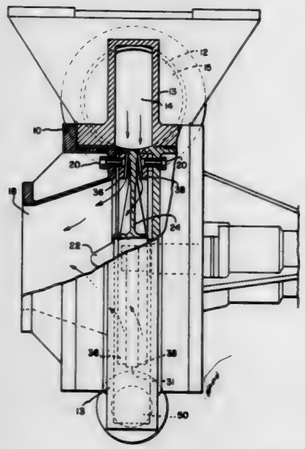
comprising a worm wheel mounted on said shaft, a miniature electric motor mounted on one of said walls between the latter and having a rotary output shaft equipped with a worm gear meshed with said worm wheel, a battery supported between said false bottom wall and said bottom wall and electrically connected to said motor by circuitry having a manually operable control switch serially connected therein, a laterally offset upstanding tubular handle having an upper end directed inwardly toward, formed integrally with and closed by one peripheral portion of an upper portion of the side wall of said cup and its lower end opening through a lower portion of said cup side wall between said bottom wall and said false bottom wall, said switch being recessed in said upper end of said handle and said circuitry including portions thereof electrically connecting said battery to said motor and extending through the hollow interior of said handle.

4,435,085

MIXER FOR USE IN PULP PROCESSES

Oscar Luthi, Nashua, and Lawrence A. Carlsmith, Amherst, both of N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 6, 1982, Ser. No. 406,112
Int. Cl.³ B01F *15/02, 5/14*
U.S. Cl. 366—155 **10 Claims**



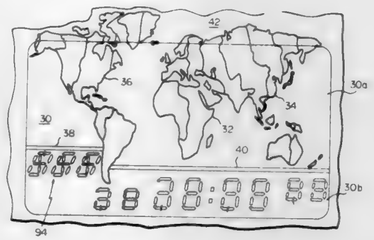
1. A mixer for mixing pulp with a bleaching agent comprising: a generally cylindrical housing; a pulp inlet adapted to feed pulp into the housing; a pulp outlet; a rotor coaxially mounted within the housing, said rotor having a wheel having radially extending grooves which are located in the pulp flow path between the pulp inlet and the pulp outlet, at least a part of the radial portion of the wheel with the radial grooves defining with a part of the housing an annular high intensity mixing zone; and at least one bleaching agent inlet located so that intensive mixing of the bleaching agent and pulp will occur in the high intensity mixing zone, whereby the pulp flows from the pulp inlet, through the annular high intensity mixing zone, and out the pulp outlet.

4,435,086

LIQUID CRYSTAL DISPLAY DEVICE FOR WORLD TIME WRISTWATCH

Yoshiaki Kato, Higashimurayama, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 22,496, Mar. 21, 1979, abandoned. This application Jul. 16, 1981, Ser. No. 283,985
Claims priority, application Japan, Mar. 25, 1978, 53-034563
Int. Cl.³ G04B *19/22*
U.S. Cl. 368—22 **12 Claims**



1. A liquid crystal display device for a world time display electronic wristwatch, comprising:
an upper glass substrate;
a plurality of time zone indicating segment electrodes formed on an inner surface of said upper glass substrate in such a manner that said plurality of time zone indicating segment electrodes provide a shape of a world map, each of said plurality of time zone indicating segment electrodes having an external electrode terminal to selectively turn on and off said each of said plurality of time zone indicating segment electrodes;
a lower glass substrate spaced from said upper glass substrate;
a common electrode formed on an inner surface of said lower glass substrate and having a shape corresponding to said world map, said common electrode facing said plurality of time zone indicating segment electrodes; and
a sealing member disposed between said upper and lower glass substrates to provide a hermetic sealing;
a liquid crystal material disposed in a space between said upper and lower glass substrate, by a partition member made of a sealing material;
a time display section; and
a location display section composed of a plurality of alphabetic letters indicating segment electrodes and a common electrode facing thereto, said location display section displaying the name of said selected location whose current time is displayed by said time display section.

4,435,087

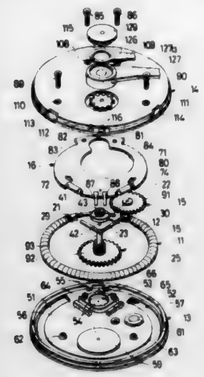
MOTOR-DRIVEN MOVEMENT FOR TIMEPIECE

Akio Matsumoto, Neyagawa, and Kazuhiro Araki, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 31, 1981, Ser. No. 336,056
Claims priority, application Japan, Jan. 14, 1981, 56-6230
Int. Cl.³ G04B *19/00*
U.S. Cl. 368—76 **4 Claims**

1. A motor-driven movement for time-pieces comprising a stator block in which a coil is wound on a core of a ring shape and formed of a round-sectioned and bar-shaped magnetic material and magnetic poles formed of respective end portions of said core are opposed in the radial direction of said ring shape of the core, one of said end portions of said core being positioned in the peripheral direction and the other end portion being bent to an L-shape, a rotor arranged between respective said magnetic poles, an output gear train including a minute hand wheel disposed as displaced in the radial direction from

the center of the ring shape, and a circuit block for controlling power supply to said coil to operate said output gear train stepwise, said stator block, rotor, output gear train and circuit block being arranged within a pair of mutually fitting lower



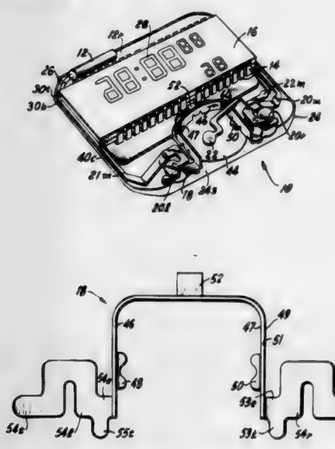
and upper casings slightly larger than said stator block, a sector base having an arcuate part disposed along one end portion of said core and two radial sides disposed along the other end portion is provided in one of said casings and a circular recess for receiving said rotor is formed in said sector base.

4,435,088

BATTERY SWITCH PLATE FOR A TIMEPIECE

Leonard M. Dorfman, Campbell, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 9, 1982, Ser. No. 406,656
Int. Cl.³ G04C *23/02*
U.S. Cl. 368—88 **8 Claims**



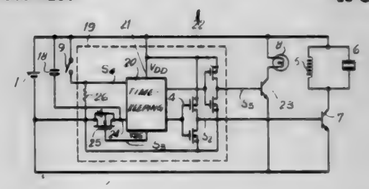
1. A timepiece module assembly including a rear pod having an aperture, a battery having first and second terminals, battery contact means electrically connected to said first battery terminal, a lead frame having a plurality of conducting members a number of which are electrically connected on one side to an integrated circuit chip and on the other side to an electrooptical display, at least two spaced resilient switch contacts connected to said conducting members, and a battery switch plate, said battery switch plate comprising:
(a) a substantially U-shaped electrically conductive frame removably received by said aperture and supported by said rear pod and removably electrically connected to at least one of said lead frame conducting members, said frame providing support for the battery and making electrical contact with said second battery terminal, and
(b) at least two switch plate members extending oppositely outward from the end portions of said substantially U-shaped frame in spaced apart underlying relation to said switch contacts for providing for correction and change of the timekeeping function of the timepiece when a predetermined switch contact is independently forced into electrical contact with a corresponding underlying switch plate member.

4,435,089

POWER CIRCUIT FOR AN ELECTRONIC TIMEPIECE

Hiroyuki Chihara, Suwa, and Masuo Kitano, Matsumoto, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shimauchi Seiki Kabushiki Kaisha, Nagano, both of, Japan

Filed May 17, 1982, Ser. No. 378,947
Claims priority, application Japan, May 18, 1981, 56-74535
Int. Cl.³ G04C *10/00*
U.S. Cl. 368—204 **10 Claims**



1. A power circuit for an electronic timepiece, comprising:
a power supply providing a voltage output;
a first load in series with first switch means, said first load and first switch means being connected in series across said power supply, said first load drawing a heavy current from said power supply when said first switch means is closed;
means for placing said first load in an ON state;
a second load and second switch means being connected in series across said power supply, said second load drawing a low current;
a circuit means for periodically opening and closing said first switch means while said first load is in said ON state;
circuit means for periodically opening and closing said second switch means, said second switch means being adapted to open when said first switch means is closed and vice versa;
a power capacitor connected in parallel with said second load, said power capacitor discharging through said second load when said second switch means is open and charging from said power supply through said second switch means when said second switch means is closed, said second load being isolated from said power supply when said first load is activated by closing said first switch means.

4,435,090

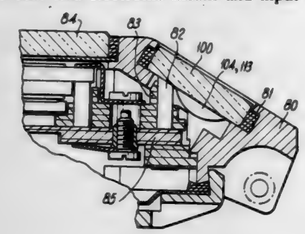
STATIC PICK-UP FOR TIMEPIECE

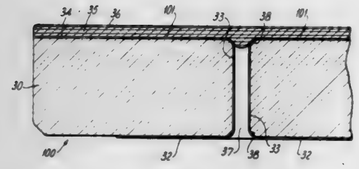
Pierre-Ernest Jaccard, Bienne, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Feb. 25, 1981, Ser. No. 238,291
Claims priority, application Switzerland, Mar. 7, 1980, 1796/80
Int. Cl.³ G04B *29/00*
U.S. Cl. 368—320 **13 Claims**

1. A static pick-up for a timepiece comprising at least two juxtaposed touch sensitive capacitive electrodes arranged to be manually actuated and electronic means arranged and adapted to detect each position of a finger which corresponds to at least

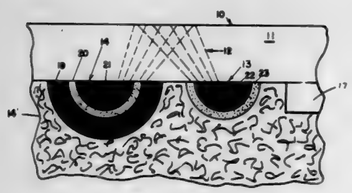
one symbol in the form of a digit, a letter or special sign, the arrangement being fashioned as a compact unit including an electrically insulating shock resistant substrate bearing on its upper surface a first metallization serving as electrodes and on its lower surface a second metallization serving as conductors arranged to bear said electronic means and input and output





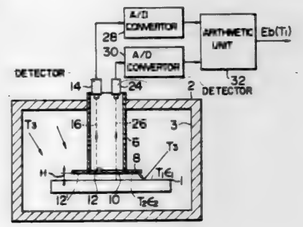
terminals of the pick-up, said first and second metallizations being intercoupled by electric coupling means, said electric coupling means between said first and second metallizations being comprised by metallized passages, said electrodes being covered by a dielectric, said dielectric in turn being covered by at least one abrasion resistant decorative layer.

4,435,091
DEW POINT SENSOR
Robert J. Nedreski, 5073 Wiltsie Rd., Erie, Pa. 16510
Filed Jul. 24, 1981, Ser. No. 286,656
Int. Cl.³ G01N *25/12*
U.S. Cl. 374—20 **6 Claims**



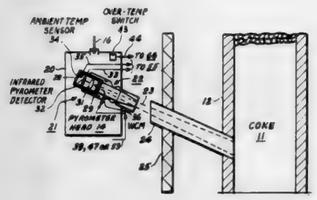
1. A dew point sensor comprising,
an insulation means having a first side and a second side,
said first side of said insulation means having a reflecting surface on said first side,
radiation-emitting means on said sensor on said second side of said insulation means,
electronic circuit means including radiation sensing means and cooling means and temperature sensing means on the second side of said insulation means,
output means connected to said circuit means,
said insulation means being relatively transparent to the radiation emitted by said radiation-emitting means,
said reflecting surface being adapted to be exposed to a gas containing vapor and adapted to condense said vapor at a temperature at the dew point of said gas,
said insulation means having a refractive index substantially different from either the gas whose dew point is being measured or the condensed vapor of said gas but not necessarily different than both,
said insulation means being a relatively good electrical insulator,
said cooling means being disposed in heat transfer relation with said insulation means whereby when no condensation is formed on said reflecting surface a portion of emitted radiation is refracted and a substantial portion of said radiation from said radiation means is reflected onto said radiation sensing means allowing current to flow through said radiation sensing means and said electronic circuit thereby cooling said insulation means and causing condensation to form on said reflecting surface thereby changing the ratio of reflection at said surface whereby said reflected radiation to said radiation sensing means is decreased and current flow through said circuit is decreased, reversing the cooling effect of said circuit and providing an indication of dew point temperature from said temperature sensing means.

4,435,092
SURFACE TEMPERATURE MEASURING APPARATUS FOR OBJECT WITHIN FURNACE
Tohru Iuchi, Kawasaki, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan
Filed Jul. 20, 1981, Ser. No. 285,192
Claims priority, application Japan, Jul. 25, 1980, 55-102114; Jun. 2, 1981, 56-84856
Int. Cl.³ G01J *5/06, 5/14*
U.S. Cl. 374—129 **8 Claims**



1. An apparatus for measuring the surface temperature of an object being heated in a furnace, said apparatus comprising:
a shielding cylinder having a substantially closed end and an open end, said shielding cylinder being adapted to be disposed with said open end facing toward the object within a furnace; and a shield plate fixed to said shielding cylinder and formed at its portion facing toward the object with an opening communicating the exterior of said shielding cylinder with the interior thereof, so as to allow a first radiation emitted depending on the surface temperature of the object to enter said shielding cylinder and pass toward said outer end;
said shielding cylinder being configured and adapted to be positioned relative to the object to block a second radiation emitted depending on the high temperature atmosphere within the furnace from entering said shielding cylinder, and said shield plate being configured to serve as a reference radiation source means for emitting from its inner wall portion disposed within said cylinder and from its outer wall portion facing toward the object, a third radiation which, on the one hand, is directed from said inner wall portion toward said closed end and, on the other hand, is directed from said outer wall portion and combined with said first radiation entering said shielding cylinder means, whereby the combined effects of said first and third radiations enter said shielding cylinder through said opening;
radiation detecting means provided at said closed end of said shielding cylinder for separately detecting said combined effect of said first and third radiations and a sole effect of said third radiation; and
means for determining the surface temperature of said object from the values of said combined effect and said sole effect detected by said detecting means.

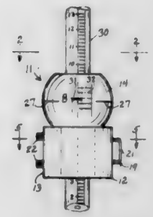
4,435,093
PYROMETER WITH SIGHTING WINDOW CLEANLINESS MONITOR
Richard H. Krause; Thomas J. Pfeiffer, and Vincent V. Horvath, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Dec. 8, 1981, Ser. No. 328,769
Int. Cl.³ G01J *5/04, 5/26*
U.S. Cl. 374—129 **9 Claims**



1. Apparatus for measuring temperature of a high temperature irradiant mass, said apparatus comprising:
(a) pyrometer means for measuring temperature of said irradiant mass including:
(i) a first housing closed at one end and having a sighting window at an opposite end, said sighting window having an outside surface subject to environmental matter;
(ii) pyrometer detector means within said first housing for producing a signal which varies proportional to the irradiant mass temperature and an optical error induced by the environmental matter on said outside surface of said sighting window;
(iii) lens means within said first housing for focusing an irradiant image of said irradiant mass on said pyrometer detector means; and
(iv) said first housing fitted within an adjustable mount in a second housing,
(b) sighting window cleanliness monitor means for detecting sighting window cleanliness including:
(i) monitor light assembly means for generating a stable source of light;
(ii) first light conducting fibre optic means within said second housing and outside said sighting window for transmitting light from said monitor light assembly means first through the environmental matter on said outside surface and thereafter through said sighting window into said pyrometer detector means; and
(c) circuit means with means for indicating the need for correcting the irradiant mass temperature signals from said pyrometer detector means due to optical error induced by the environmental matter on said outside surface of said sighting window.

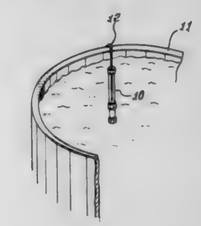
4,435,094
THERMOMETER SCALE MAGNIFIER
Justin J. Shapiro, 620 Hearst Ave., Berkeley, Calif. 94710
Filed Jun. 23, 1982, Ser. No. 391,453
Int. Cl.³ G01K *1/06*
U.S. Cl. 374—191 **11 Claims**

1. A magnifying indicator for an elongated tubular instrument of the type having a linearly extending scale, said indicator comprising a main body including a base block and an upstanding lens rigidly secured on the base block, the rear portion of the base block being formed with a vertical groove in which the elongated instrument is receivable, and a spring arm connected to the rear portion of the base block and transversely overlying said groove and being resiliently engageable with such instrument to retain the instrument in the groove and to limit angular displacement of the instrument relative to the



lens, wherein said spring arm comprises a generally U-shaped wire spring member having anchoring elements, said base block having bores adjacent one side of the groove lockingly receiving said anchoring elements.

4,435,095
HOT TUB THERMOMETER
James B. Jones, 913 Howard St., Venice, Calif. 90291, and Ron B. Soyka, Woodland Hills, Calif., assignors to James B. Jones, Woodland Hills, Calif.
Filed Jan. 29, 1982, Ser. No. 343,913
Int. Cl.³ F21V *33/00*; F21K *1/14*
U.S. Cl. 374—194 **4 Claims**



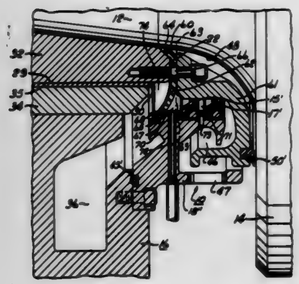
1. In a thermometer for a hot tub or the like, the combination of:
a housing;
means for supporting said housing in a hot tub or the like in a first orientation, with said housing being manually moveable to a second opposite orientation;
a temperature sensor and indicator positioned within said housing;
a light bulb carried in said housing for directing light onto said temperature indicator;
an orientation sensitive power supply for said bulb for energizing said bulb when said housing is in said second orientation, said power supply including a battery and a mercury switch connected in series with said bulb;
a cap on said housing adjacent said power supply; and
a pair of electrical conducting plates with an insulating spacer therebetween, and an electrical conducting pin positioned at said plate,
with said plates connected in series with said bulb, battery and switch, and
with said cap moveable from a first position with said pin out of engagement with said pair of plates, to a second position with said pin punched through said plates and spacer electrically bridging said plates.

4,435,096

SEALING ARRANGEMENT FOR A ROTATABLE MEMBER

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Sep. 11, 1981, Ser. No. 301,374
Int. Cl.³ F16C *33/74*; F16J *15/32*
U.S. Cl. 384—147 **11 Claims**



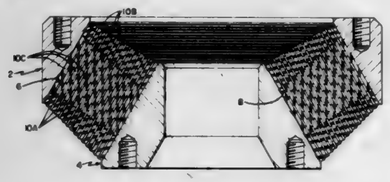
1. A sealing arrangement for sealing a stationary bearing chock to a rotatable roll member neck, said arrangement comprising a stationary bearing chock, a rotatable roll member having a roll member neck coaxially received in a sleeve secured for rotation therewith, said sleeve journaled for rotation in said bearing chock, an extension ring annularly secured to one end of said sleeve, a normally flat washer type annular thrower seal of elastomeric material annularly engaged between said extension ring and said one end of said sleeve to provide a seal therebetween with inner and outer annular peripheral portions of said thrower seal radially protruding, said inner peripheral portion of said thrower seal annularly engaging and stretched over said roll member neck under elastic deformation of said seal for annular static seal engagement therebetween, a peripheral side face of said outer peripheral portion of said thrower seal annularly engaging an annular seal rubbing surface of said bearing chock under elastic deformation of said seal to provide an annular rubbing seal therebetween.

4,435,097

LAMINATED BEARING STRUCTURES

Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Newton Lower Falls, Mass.

Continuation of Ser. No. 806,811, Jun. 15, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,823
Int. Cl.³ F16C *27/06, 27/08*
U.S. Cl. 384—221 **10 Claims**



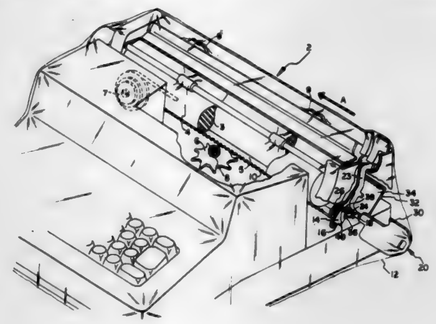
1. A compressive load carrying laminated bearing comprising a plurality of alternating resilient layers and non-extensible layers generally concentrically disposed about a common center, at least some of said resilient layers each comprising at least first and second end portions at opposite ends of said bearing and a third portion between said first and second end portions, said first and second end portions having a modulus of elasticity which is different from the modulus of elasticity of said third portion, said first and second end portions being made of a first material and said third portions being made of a second material, and the respective widths of said portions being such that the effective moduli of elasticity of said at least some layers differ inversely with the distance between said at least some layers and said common center.

4,435,098

OFFICE MACHINE ESCAPEMENT DISENGAGEMENT AND AUTOMATIC ENGAGEMENT MECHANISM

William E. Cleveland, Homer, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,156
Int. Cl.³ B41J *29/56*
U.S. Cl. 400—674 **4 Claims**



1. A mechanism for disengaging and engaging an escapement mechanism for use in office machines such as typewriters and the like wherein the escapement mechanism selectively engages a carriage rack of a movable carriage to enable incremental carriage advancement, the disengaging and engaging mechanism comprising:

a pivotal arm connected to the carriage rack for causing pivotal movement of the carriage rack therewith;

a carriage release lever connected to the carriage rack by a spring means for maintaining the carriage rack in engagement with the escapement mechanism, said carriage release lever having an opening therein;

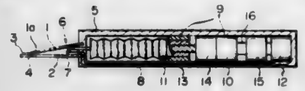
separator means insertable between the opening in the carriage release lever and the pivotal arm for pivoting the arm and causing pivotal movement of the carriage rack therewith out of engagement with the escapement mechanism; and, means including the separator means abutting a portion of the typewriter in response to carriage advancement for automatically ejecting the separator means from between the opening in the carriage release lever and the pivotal arm, whereby the spring means connected to the carriage release lever causes the carriage rack to be pivoted into engagement with the escapement mechanism.

4,435,099

FOUNTAIN PEN WITH MOTOR FEED

Koichi Murahara, Isehara, Japan, assignor to Piolt, Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,788
Claims priority, application Japan, Mar. 13, 1979, 54-28970
Int. Cl.³ B43K *5/06, 5/18*
U.S. Cl. 401—145 **20 Claims**



1. A hand-held fountain pen comprising:

a pen tip having a slit formation region and a slit formed therein;

an ink holder covering said slit formation region in said pen tip and shaped so as to form a discrete ink pool formed by capillary action and/or surface tension between said ink holder and said pen tip and said ink pool held in place in any functional position of said pen, said ink pool communicating with said slit;

a detector provided in said ink pool for detecting the quantity of ink therein;

a pen holder coupled to said pen tip, said pen holder having an ink storing section with conduit means opening into said ink pool, an ink delivery device coupled to said ink storing section for delivering ink under pressure, an electric power source for operating said ink delivery device, and a power delivery circuit connecting said electric source to said ink delivery device; and

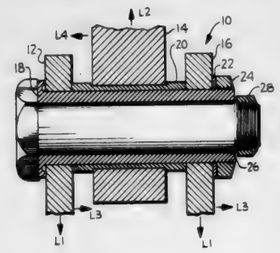
a switch circuit connecting said detector to said power delivery circuit whereby in response to a detection of the absence of ink, [the detector] said power delivery circuit operates said ink delivery device to supply ink to said ink holder from said ink storing section.

4,435,100

FAIL-SAFE ZERO-LOAD HINGE/PIVOT

Ronald L. Cox, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 21, 1981, Ser. No. 333,114
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—27 **7 Claims**



1. A fail-safe hinge for joining linkage members comprising:

a primary sleeve inserted through the linkage members having a flange on one end and threads on the opposite end and an axial bore;

a primary nut threaded on the sleeve that captures and holds the linkage members in juxtaposition;

a secondary support member axially inserted inside the primary sleeve, and having a diameter with a predetermined clearance therein and having a head on one end and threads on its opposite end; and

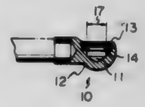
a secondary nut in threaded engagement with said secondary support member, limited travel of said nut limited on said support member to provide axial clearance between said secondary support member and nut and the combined primary sleeve and nut said secondary support member and secondary nut being of such a size that upon failure of the primary sleeve and nut combination said secondary support member and nut maintain the linkage members in juxtaposition and hold the primary sleeve and nut combination in their relative position.

4,435,101

BALL JOINT

Minoru Sugiyama, and Shinji Kaneko, both of Kanagawa, Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Dec. 22, 1981, Ser. No. 333,615
Claims priority, application Japan, Dec. 29, 1980, 55-191263[U]
Int. Cl.³ F16C *11/06*
U.S. Cl. 403—122 **5 Claims**



1. A ball joint including:

a ball member having a ball end;

a socket member comprising two components formed of synthetic resin material, having a recess therein for receiving said ball end of said ball member, said recess having a ring receiving portion at the upper end thereof; and

an annular metal retaining ring having a split therein of normally zero gap received in said ring receiving portion of said recess, said ring being resiliently radially expandable, said gap widening during expansion of said ring, said ring in its unexpanded state having an inner diameter less than the diameter of said ball end;

said two components being supersonically welded together so as to irremovably hold said ring in said ring receiving portion, said ring receiving portion being shaped to permit said ring to radially expand to receive said ball end therethrough into said recess when said ball end is pushed downward thereon, and to block said ring from expanding when said ball end is pulled outward against said ring from within said recess, so as to block removal of said ball end from said recess.

4,435,102

TIE DOWN CONNECTOR

Robert G. Smith, 2707-½ Rockefeller La., Redondo Beach, Calif. 90278

Filed Jan. 20, 1982, Ser. No. 340,863
Int. Cl.³ F16G *11/00*
U.S. Cl. 403—206 **7 Claims**

1. A tie down connector for releasably securing the end of a bungee cord comprising the combination of:

a bungee cord;

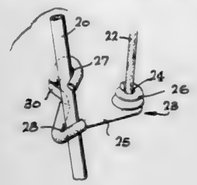
an elongated body terminated at one end in a holder section provided with a pair of registered and coaxially disposed semi-circular U-shaped recessed portions axially spaced a distance substantially equal to twice the depth of a recess and terminated at its other end in a conical, open-ended receptacle;

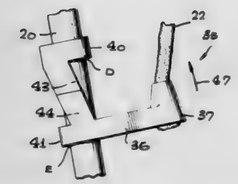
said holder semi-circular U-shaped portions characterized as a retainer arrangement having spaced apart recesses opening from opposite directions;

a connection element integrally disposed and joined between said pair of semi-circular U-shaped portions to separate and maintain said recesses in substantially fixed and spaced apart relationship;

said bungee cord extending from the small end of the conical receptacle;

a knot carried on the end of said bungee cord having a physical size greater than the opening in said conical





receptacle of said body and secured therein so that said bungee card is retained thereon.

4,435,103

CONNECTION FOR FURNITURE FRAME PARTS, PARTICULARLY OFFICE FURNITURE

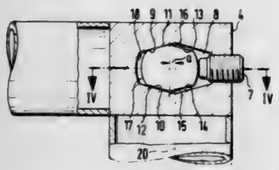
Norbert Becker, Weringhauser Strasse 15, D-4782 Erwitte 2, and Norbert Hildebrandt, Grüner Winkel 32, D-4782 Erwitte 1, both of Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,119

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039389

Int. Cl.³ F16B *7/00, 12/36, 13/00*

U.S. Cl. 403—292 **8 Claims**



1. A furniture frame comprising first and second frame members connected to one another, said first frame member having a dowel extending outwardly thereof, said second frame member having an elongated opening therein, said dowel extending into said opening, said dowel having a pair of spaced exterior planar surfaces which are disposed on opposite sides of the longitudinal central plane of said dowel and which are inclined at angles to said longitudinal central plane of said dowel, said opening having a pair of spaced interior planar surfaces which are disposed on opposite sides of the longitudinal central plane of said opening and which are inclined at angles to said longitudinal central plane of said opening, said inclined exterior dowel surfaces being in abutment with said inclined interior surfaces of said opening respectively, the angles of inclination of said exterior dowel surfaces being slightly greater than the angles of inclination of said interior opening surfaces, and a screw member in thread engagement with said second frame member and extending into said opening at right angles to the longitudinal axis of said dowel, said screw member being positioned to engage an exterior side of said dowel and to apply a force thereto in a direction transverse to said axis of said dowel to press said inclined exterior surfaces of said dowel into forceable engagement with said differently inclined interior surfaces of said opening thereby to securely connect said first and second furniture frame members to one another.

4,435,104

RING WEDGE JOINT FOR SOLID OR LAMINATED WOOD SECTIONS

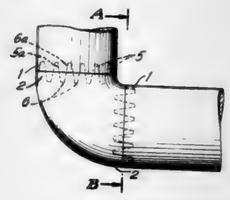
Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,190

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135030

Int. Cl.³ F16B *12/00*

U.S. Cl. 403—332 **7 Claims**



1. Ring wedge joint for solid or laminated wood sections, such as rod-shaped or bar-shaped wood sections used as chair parts, tool shanks, window frame members and the like, comprising an axially extending first wood section having a first end surface extending transversely of the axis thereof, an axially extending second wood section having a second end surface extending transversely of the axis thereof, each of said first and second end surfaces being axially aligned and lying in a comma plane substantially normal to said axes and havng extending therefrom alternating, co-extensive concentric ring wedges and ring wedge grooves extending around the aligned axes of said first and second wood sections, said first wood section having a frusto-conically shaped dowel centered on the axis thereof spaced radially inwardly from the adjacent said ring wedge on said first wood section by one said concentric ring wedge groove, said second wood section having a frusto-conically shaped wedge groove corresponding to said frusto-conically shaped dowel encircled by the innermost said ring wedge on said second wood section, and said ring wedges on said first end surface and said ring wedge grooves on said second end surface and said ring wedge grooves on said first end surface and said ring wedges on said second end surface are aligned so that said ring wedges on said first and second ends interfit in surface contacting engagement with said ring wedge grooves on the other one of said first and second ends, said ring wedges and said ring wedge grooves are equidistantly spaced apart on said first and second wood sections and the axially extending surfaces of the interfitting said ring wedges and said ring wedge grooves afford a snug meshing of said first and second wood sections.

4,435,105

ADJUSTABLE LOCK ARRANGEMENT AND METHOD FOR MAKING SAME

Neil Rampley, La Porte, Ind., assignor to Heath Manufacturing Company, Coopersville, Mich.

Filed Feb. 22, 1982, Ser. No. 350,735

Int. Cl.³ F16B *7/10*

U.S. Cl. 403—109 **41 Claims**

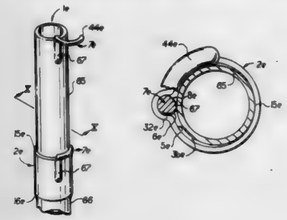
1. An adjustable lock arrangement for rods and the like, comprising:

a rigid collar having a central opening and a central, longitudinal axis;

a rod having an exterior surface shaped for close, telescoping reception in the central opening of said collar;

said collar having an interior surface defining said central opening, with an elongate keyway extending along at least a portion of said interior surface in a direction generally parallel with the longitudinal axis of said collar; said keyway opening into said central opening, and having a central, longitudinal axis;

a key rotatably mounted in said keyway for rotation about an axis disposed generally parallel with the longitudinal axis of said keyway; said key having an eccentric transverse cross-sectional shape, with first and second circumferentially spaced apart surfaces; said key being rotatable in said keyway between locked and unlocked positions;



said first key surface being disposed sufficiently close to the rotational axis of said key that when said first key surface is located in the unlocked position, said first key surface is in a non-abutting relationship with the exterior surface of said rod and permits relative longitudinal translation between said collar and said rod;

said second key surface being spaced sufficiently apart from the rotational axis of said key that when said second key surface is located in the locked position, said second key surface abuttingly engages the exterior surface of said rod and frictionally locks said collar to said rod, whereby said key rotates to frictionally engage and lock said collar and rod.

4,435,106

DIRECTING-BARRIER FOR A ROADWAY

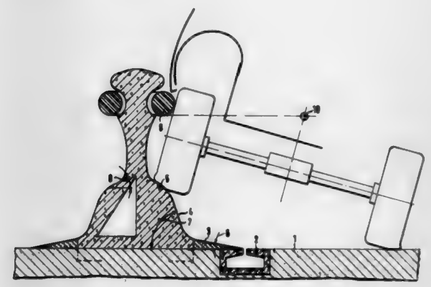
Günther Förster, Neuen Bäue 27, D-6300 Giessen, and German Gresser, Schönleinstrasse 3, D-8700 Würzburg, both of Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,558

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106047

Int. Cl.³ E01F *15/00*

U.S. Cl. 404—6 **10 Claims**



1. In a safety barrier adapted to be placed adjacent a roadway having an upper surface, said safety barrier having means defining a driving surface thereon which extends generally upwardly and outwardly from a lateral edge of said roadway surface and includes a first portion which is adjacent said lateral edge of said roadway surface and rises gently, and wherein said saftey barrier has a guide portion spaced vertically above and overhanging at least part of said driving surface, the improvement comprising wherein said driving surface includes second and third portions in addition to said first portion, said second portion being between and contiguous with said first and third portions and merging smoothly therewith, wherein said second portion of said driving surface rises steeply and includes a generally concave region followed by a generally convex region, wherein said third portion of said driving surface is approximately flat and rises gently, and wherein said guide portion overhangs said third portion of said driving surface.

4,435,107

TRAFFIC DELINEATOR

Lawrence J. Sweeney, Seneca, Pa., assignor to Franklin Steel Company, Franklin, Pa.

Continuation of Ser. No. 101,439, Dec. 10, 1979. This application Aug. 5, 1981, Ser. No. 290,249

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.³ E01F *9/01*

U.S. Cl. 404—10 **2 Claims**



1. A traffic delineator assembly comprising:

an elongated rigid anchor post having an upper end to receive blows and to be driven into a support surface such as the ground or roadway surface or the like with its upper end to be located below ground;

an elongated rigid pilot means mounted on said anchor means and adapted to be driven into the ground or roadway surface with said anchor means;

said rigid pilot means being located in a parallel vertical relationship with said anchor post and being located below the upper edge of the anchor post so as to be driven into the ground with the anchor post;

flexible delineator means mounted on said anchor means and defining a lower edge, said delineator means being located so that said lower edge follows said pilot plate means into the ground or roadway surface and being adapted to extend above the ground or roadway surface when said anchor means and pilot plate means are driven into the ground or roadway surface, said delineator means being sufficiently rigid to be unaffected by static conditions yet resiliently deformable to bend upon impact and spring back substantially to its pre-bend position

and fastener means connecting the flexible delineator means

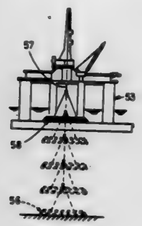
to the rigid anchor post and to the rigid pilot means and to be located below ground.

4,435,108

METHOD OF INSTALLING SUB-SEA TEMPLATES

James E. Hampton, Peterculter, Scotland, assignor to SEDCO, Inc., Dallas, Tex.

Filed Aug. 11, 1981, Ser. No. 292,014
Int. Cl.³ E02B 17/02
U.S. Cl. 405—209 **15 Claims**



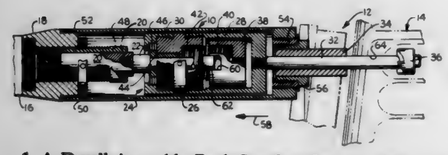
1. A method of installing a subsea template at a predetermined site on a seabed comprising the steps of:
providing a semi-submersible drilling vessel having a pair of spaced apart submersible hulls, a deck supported above said hulls and connected to said hulls by frame means of said vessel, and hoisting apparatus on said vessel extending through an opening in said deck between said hulls;
providing at least one subsea template having a fixed area greater than said opening in said deck;
positioning said template with respect to said vessel beneath said deck and between said hulls and lifting said template with said hoisting apparatus to a transport position beneath said deck and between said hulls;
securing said template to said vessel;
moving said vessel and said template to said site; and
lowering said template from said vessel to said seabed.

4,435,109

DWELL ASSEMBLY BACK SPOTFACE

Vernon H. Wilder, Murfreesboro, Tenn., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 6, 1982, Ser. No. 406,055
Int. Cl.³ B23B 39/00
U.S. Cl. 408—14 **5 Claims**



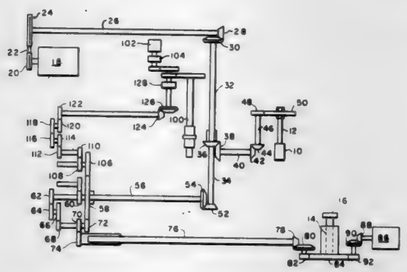
1. A Dwell Assembly Back Spotface for use with a reverse feed drill having a drill housing and a drill spindle having an axis, which spotface limits the movement of a cutter spindle comprising:
an exterior housing to be attached to the drill housing;
a first spindle attached to the drill spindle;
a spring housing attached to said first spindle;
a central body with means engaging said spring housing to transmit rotational drive and permit relative axial movement between said central body and said spring housing;
a forward housing surrounds said spring housing and is attached to the central body;
a cutter spindle attached to said forward housing;
spring means engaged by said spring housing and by said central body to provide spring biased axial movement between said spring housing and said central body, and
adjustment means attached to said exterior housing to limit the stroke of the cutter spindle where the central body and the spring housing are disposed between said cutter spindle and said adjustment means.

4,435,110

DRIVE TRAIN FOR GEAR HOBBING MACHINE

Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Nov. 23, 1981, Ser. No. 323,775
Int. Cl.³ B23F 5/22
U.S. Cl. 409—11 **3 Claims**



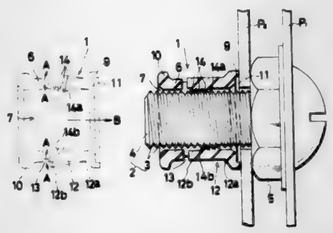
1. In a hobbing machine having a drive train for imparting rotation to a work spindle while feeding and rotating a hobbing tool in timed relationship therewith, the improvement characterized by
a final drive system for said work spindle comprising a hypoid pinion mounted to be rotated by a main drive train of the machine, said hypoid pinion being in meshing engagement with a hypoid gear,
a spur pinion carried for rotation with said hypoid gear, said spur pinion being in meshing engagement with a spur gear which is operatively connected to said work spindle to thereby impart rotational movements to the work spindle,
a supplemental driving system having a motor operatively connected to said work spindle for imparting rotation to said work spindle while said hypoid pinion and said hypoid gear maintain accurate positioning of said work spindle relative to said hobbing tool.

4,435,111

NUT

Akira Mizusawa, Fujisawa, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jul. 13, 1981, Ser. No. 282,837
Claims priority, application Japan, Jul. 15, 1980, 55-98744[U]
Int. Cl.³ F16B 37/16
U.S. Cl. 411—437 **3 Claims**



1. A nut molded integrally of a plastic material and adapted

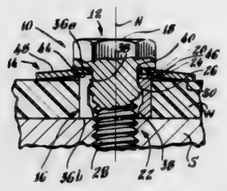
for engagement with a bolt rod, which nut comprises a cylindrical body possessing a receiving hole for admitting the bolt rod in the axial direction and having circumferentially continuous cylindrical end portions at both ends of said body, at least one resilient tab formed in one portion of sayd cylindrical body in such a manner that said at least one resilient tab is integral on one side thereof with said cylindrical body adjacent the receiving end of said body and is flexible in the radial direction of the nut, and partial screw threads formed on the inner surfaces of said at least one resilient tab bordering on said receiving hole and adapted to be meshed with the screw threads on said bolt rod.

4,435,112

FASTENER ASSEMBLY

Philip D. Becker, Southbury, Conn., assignor to Buell Industries, Inc., Waterbury, Conn.

Filed Apr. 9, 1981, Ser. No. 252,385
Int. Cl.³ F16B 43/00
U.S. Cl. 411—368 **28 Claims**



1. An improved fastener assembly for securing a workpiece to a support, the workpiece having known thickness, a hole therethrough and being subject to plastic deformation; said assembly comprising:
a threaded fastener including a head having a load bearing surface; and a shank projecting from said head generally perpendicularly from said surface and having an unthreaded portion adjacent said head, a radially outwardly protruding annular rib spaced from said surface, and a threaded portion projecting coaxially from said unthreaded portion beyond said rib, said rib having a larger diameter than either the diameter of the crests on the threads of said threaded portion or the diameter of said unthreaded portion;
a sleeve including a generally cylindrical side wall having a split discontinuity therein and circular edges at opposing axial extremes thereof; said sleeve, with said side wall normally collapsed at said discontinuity, defining a normal inside diameter larger than the diameter of said rib and a normal outside diameter smaller than the diameter of the hole in said workpiece; said sleeve further including means forming a radially inwardly projecting constriction adjacent at least one of said edges, confined between said rib and said bearing surface, having a normal diametrical dimension, with said side wall normally collapsed at said discontinuity, less than the diameter of said rib; and
washer means having a hole therein with a diameter greater than the diameter of said rib and less than said normal outside diameter of said sleeve; said washer means being received about said unthreaded portion of said shank and formed on one face thereof with an annular rabbet about said washer hole having a base and a radially inwardly facing cylindrical side wall with a diameter greater than said normal outside diameter of said sleeve, said one edge being received in said rabbet to assemble said sleeve and said washer means together and confine said side wall of said sleeve against spreading, the axial distance between at least a portion of said one face of said washer means and the edge of said sleeve opposite said one edge, when said washer means and sleeve are assembled, being slightly less than the thickness of said workpiece, and the axial distance between the face of said washer means opposite said one face and said contriction forming means when said washer means and sleeve are assembled being less than the axial distance between said load bearing surface and said rib.

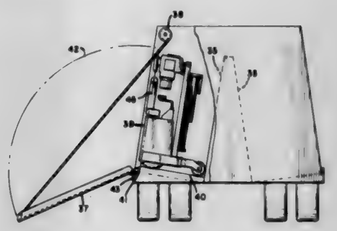
24. A method of assembling an improved fastener device that comprises a fastener including a head having a load bearing surface; and a shank projecting from said head generally perpendicularly from said surface and having an upper portion adjacent said head, a radially outwardly protruding annular rib spaced from said head, and an operative portion for securing said assembly to a support projecting coaxially from said upper portion beyond said rib, said rib having a larger diameter than either the diameter of said operative portion or said upper portion; a sleeve including a generally cylindrical side wall having a split discontinuity, circular edges at opposing axial extremes thereof and, with said side wall normally collapsed at said discontinuity, defining a normal inside diameter larger than the diameter of said rib, said sleeve further including means forming a radially inwardly projecting constriction adjacent at least one of said edges having a normal diametrical dimension, with said side wall collapsed at said discontinuity, less than the diameter of said rib; and washer means having a hole therein with a diameter greater than the diameter of said rib and less than said normal outside diameter of said sleeve, said washer means being receivable about said upper portion of said shank and formed on one face thereof with an annular rabbet about said hole having a base and a radially inwardly facing cylindrical side wall with a diameter greater than said normal outside diameter of said sleeve, said one edge being receivable in said rabbet to confine said side wall of said sleeve against spreading, the axial distance between the face of said washer means opposite said one face and said constriction forming means, when said washer means and said sleeve are assembled, being less than the axial distance between said load bearing surface and said rib; said method comprising the steps of:
mounting said washer means on said fastener by placing said shank through said hole in said washer means with said opposite surface of said washer means confronting and adjacent said bearing surface; and
mounting said sleeve in its normal configuration on said fastener and assembling it with said one edge received in said rabbet of said washer means and with said constriction forming means located between said rib and said load bearing surface.

4,435,113

SELF-PROPELLED FREIGHT HANDLING TRUCK

John F. Mosely, Ormond Beach, Fla., and Stephen R. Austin, Winnetka, Ill., assignors to Superior Handling Equipment, Inc., Ormond Beach, Fla.

Filed Aug. 24, 1981, Ser. No. 295,783
Int. Cl.³ B66F 9/08
U.S. Cl. 414—347 **18 Claims**



9. A self-propelled, collapsible, forklift truck comprising a frame including a pair of parallel vertical rails, wheels mounted on said frame for transporting said truck, lifting forks mounted

on said rails to move upwards and downwards and selectively to be collapsible against said rails, internal combustion power means for generating power to propel said truck and to raise, lower, and tilt said lifting forks, at least one of said wheels being a driving wheel rotated by said power means, two horizontally pivoted legs with a freely rotating wheel at the forward end of each leg telescopically attached to extend or retract longitudinally from each leg, hydraulic power means to pivot said legs and to extend or retract said wheels, and a tiller guiding means attached to said driving wheel for manually guiding said truck, said tiller being selectively collapsible by folding against said frame.

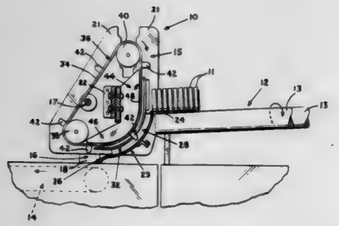
14. A beverage transport system comprising a highway transport truck for transporting interiorly thereof a driver, a plurality of cases of beverage, and a self-propelled beverage handling forklift truck for transporting said cases from said highway transport truck to a delivery destination, said highway transport truck including an interior bay enclosing said self-propelled forklift truck in a collapsed condition, said bay having a pivotable ramp which in its closed position is folded against the side of said highway transport truck and in its open position extends from the floor of said bay to the ground, said self-propelled forklift truck including foldable lifting forks mounted on a wheeled frame supporting a foldable tiller for guiding said forklift truck, and power means for propelling said forklift truck, for raising, lowering, and tilting said lifting forks, and for expanding and narrowing the spacing between the wheels adjacent said lifting forks.

4,435,114

CONTAINER LID SEPARATING ASSEMBLY

Carlos Fardin, Paterson, N.J., assignor to Van Dam Machine Corporation of America, West Paterson, N.J.

Filed Sep. 11, 1981, Ser. No. 301,064
Int. Cl.³ B65G 59/00
U.S. Cl. 414—330 **12 Claims**



1. A separator assembly for the continuous translational movement of container lids, comprising:

(A) an assembly housing pivotally mounted on a base, said housing comprising parallel vertical walls with their planes in line with the direction of travel of said container lids, and a connecting cross member extending transversely therebetween;

(B) a downwardly extending rigid chute for the reception and passage therethrough of said container lids, said chute mounted between said walls and having a generally vertical infeed end, a generally horizontal discharge end, and a plane rotating, arcuately directed channel disposed therebetween;

(C) said chute having stationary walls comprising at least one broad, partially curvilinear outer wall, and at least one broad, partially curvilinear inner wall parallel and spaced part therefrom, said outer wall and said inner wall cooperating to define, at their respective ends, said infeed end and said discharge end, and defining between their broad surfaces, said arcuately-directed channel; and

(D) movable lid advancing means supported by said walls and said cross member, having a portion thereof extending into said chute and traveling through the entire length of said chute, cooperating with said chute to urge said container lids downwardly therethrough;

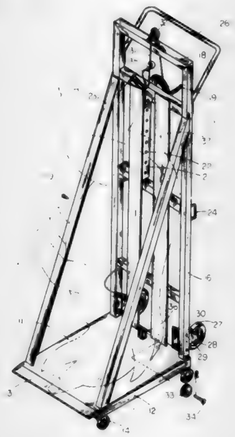
wherein the vertical attitude of said chute and said lid advancing means is incrementally adjustable to accommodate variations in container lid design.

4,435,115

DOLLY FOR LIFTING AND CARRYING DEAD SOWS AND THE LIKE

Russell D. Orstad, and Durwood D. Orstad, both of Rte. 2, Villisca, Iowa 50864

Filed Aug. 19, 1981, Ser. No. 294,271
Int. Cl.³ B62B 1/06
U.S. Cl. 414—490 **9 Claims**



1. A dolly for lifting and carrying dead sows and the like in a confined space, comprising:

a substantially square platform supported by ground engaging wheels;

a rectangular vertical back attached at one of its narrow edges to an edge of the platform;

a means affixed to the vertical back for pulling a cable towards the upper end of the vertical back;

a cable attached at one end to a means for temporary attachment to a leg of a dead sow and at its second end to the cable pulling means; and

an operably removable means affixed to the dolly near the adjoinment of the platform and the vertical back for temporarily directing the path of the cable in a horizontal direction along the platform towards the adjoinment of the platform and the vertical back and then in a vertical direction along the vertical back, whereby a dead sow can be pulled onto the platform substantially to the point of adjoinment and then lifted upwards along the vertical back.

4,435,116

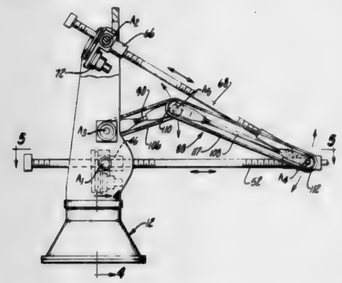
ROBOTIC MANIPULATOR

Walter H. Van Deberg, 1829 Kipling Ave., Berkley, Mich. 48072

Filed May 27, 1982, Ser. No. 382,706
Int. Cl.³ B06C 23/00
U.S. Cl. 414—728 **22 Claims**

1. A robotic manipulator comprising a support frame, a pair of laterally spaced, parallel screws rigidly interconnected at their front ends; a rigid support bracket journalled on said frame for rotation about a generally horizontal first axis; a pair of laterally spaced nuts rotatably supported on said bracket in threaded engagement with said screws; drive means on said bracket for rotating said nuts simultaneously at the same rate

and in either direction so as to extend and retract the interconnected screws as a unit; a second support bracket journalled on said frame for rotation about a second axis spaced from and parallel to said first axis; a third screw; means pivotally connecting the front end of the third screw with the connected front ends of the first-mentioned screws; a nut journalled on the second bracket in threaded engagement with the third screw; drive means on the second bracket for rotating the last-mentioned nut in either direction to extend and retract the third screw, said two drive means being operable to rotate their respective nuts in relation to each other to displace the interconnected ends of the three screws along a programmed path in a vertical plane, and a work member supported adjacent the connected forward ends of said screws, said frame and said screws defining a vertically disposed, rigid triangular truss having one side of fixed length corresponding to the distance on said frame between said two axes and the two remaining sides being of variable length and connected adjacent said work member.



13. A robotic manipulator comprising a support frame; a pair of laterally spaced, parallel screws rigidly interconnected at their front and rear ends in laterally spaced parallel relation; a rigid support bracket journalled on said frame for rotation about a generally horizontal first axis; a pair of laterally spaced nuts rotatably supported on said bracket in threaded engagement with said screws, drive means on said bracket for rotating said nuts simultaneously at the same rate and in either direction so as to extend and retract the interconnected screws as a unit; a work member supported at the connected forward ends of said screws; a flexible tension member anchored at one end to and extending rearwardly and upwardly from the connected forward ends of said screws, a circular member journalled on said frame at a second axis above and parallel to said first axis, said flexible member extending around said circular member; and motor means on said frame connected with said flexible member for lengthening and shortening the portion thereof extending between the circular member and said anchored end.

4,435,117

LIFT TRUCK PAPER ROLL CLAMP HAVING AUTOMATICALLY ADJUSTABLE ROLL OF DIFFERENT DIAMETERS

Marshall K. House, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Feb. 1, 1982, Ser. No. 344,796
Int. Cl.³ B66F 9/18
U.S. Cl. 414—620 **13 Claims**

1. A load-handling clamp adapted to be mounted upon the lifting apparatus at the forward end of a lift truck for engaging a cylindrical load such as a roll of paper and the like, comprising:

(a) a frame adapted to be mounted upon said lifting apparatus so as to be selectively movable vertically by said lifting apparatus;

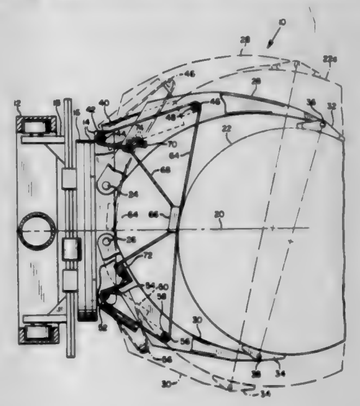
(b) a pair of selectively openable and closable opposing clamp arms mounted upon said frame projecting therefrom in a forward direction, each of said clamp arms having a forward tip for engaging a load;

(c) means movably connecting each of said clamp arms to said frame for permitting each of said clamp arms to move with respect to said frame selectively toward and away from the other of said clamp arms;

(d) clamp arm power means connecting said clamp arms with said frame for selectively moving each of said clamp arms with respect to said frame toward and away from the other of said clamp arms;

(e) a load positioner comprising an elongate member extending between said clamp arms generally transversely to said forward direction and having a pair of extremities, each of said extremities being located adjacent a respective one of said clamp arms; and

(f) respective means adjacent each of said extremities for



selectively moving each respective extremity forwardly with respect to said frame automatically in response to movement of the respective adjacent clamp arm toward the other one of said clamp arms, and for moving each respective extremity rearwardly with respect to said frame automatically in response to movement of the respective adjacent clamp arm away from the other one of said clamp arms, said respective means including means for moving said elongate member to different positions, automatically variably dependent upon the relative positions of said clamp arms with respect to each other, for forcibly abutting a cylindrical load located between the forward tips of said clamp arms prior to the engagement of said load by said tips and, by such abutment, ensuring that said tips are in substantially diametrically opposed relation to said load when said tips are separated by a distance substantially equal to the diameter of said load.

4,435,118

METHOD OF CONTROLLING HORIZONTAL MOTION OF A LOAD APPLICATION POINT ON AN ARTICULATED CRANE

Volkmar Behrend, Bad Schwartau, and Eckhard Röder, Lübeck, both of Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 5, 1983, Ser. No. 482,001
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 3213332
Int. Cl.³ B66C 23/00, 23/52
U.S. Cl. 414—744 R **15 Claims**

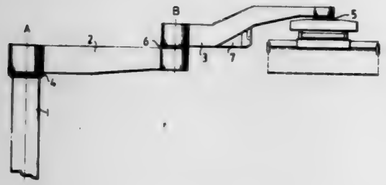
1. A method of controlling horizontal motion of a load application point on an articulated crane having a base member, a head member of substantially equal length L as the base member, the base member being connected at one of its ends to a crane post through a sluing gear for rotation on an axis A and

at another end thereof to one end of the head member through another sluing gear rotating on a common axis of rotation B of the base and head members, the head member carrying the load application point on another end thereof, comprising:

determining an angle β formed between the base member and a longitudinal axis of the head member;

presetting a desired moving direction value v for the load application point by means of a drive direction selector of a drive direction indicator provided on the head member;

readjusting the desired moving direction value by small increments toward a desired target for the load application point;



forming from the desired moving direction value a head axis component value v_1 which equals v cos α and a perpendicular axis component value v_2 which equals v sin α, with α being an angle of misalignment between the longitudinal axis of the head member and the drive direction selector;

determining the pivotal speed n_A of the base member about the axis of rotation A on the crane post in accordance with the equation $n_A = v_1/2L\pi \sin \beta$; and

determining the pivotal speed n_B of the head member about the common axis of rotation B in accordance with the equation

$$n_B = -2n_A \sin^2 \frac{\beta}{2} \pm \frac{v_2}{2\pi L}.$$

8. A device for controlling horizontal motion of a load application point on an articulated crane having a crane post, a base member pivotally mounted on the crane post about a first axis A, and a head member pivotally mounted to an end of the base member about a second axis B between an angle β of from 0° to 360° with respect to the base member and of a length L substantially the same as that of the base member, the head member carrying the load application point at an outer end thereof, comprising:

a direction indicator on the base member for indicating directions toward which the load application point can be moved;

a direction selector movably mounted on the direction indicator for movement toward a desired direction v for the load application point;

an angle sensor associated with the second axis B for detecting the angle β;

direction component calculation means associated with said direction indicator and direction selector for calculating a first component v_1 of the desired direction along a major axis of the head member, which first component equal v cos α, and a second direction component v_2 perpendicular to the first component which is equal to v sin α, where α is equal to a misalignment angle between the longitudinal axis of the head member and the desired direction v of the direction indicator;

first pivotal speed calculating means for calculating the pivotal speed n_A of the base member about the first axis A which is equal to $v_1/2L\pi \sin \beta$; and

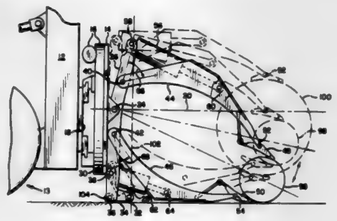
second pivotal speed calculation means for calculating the pivotal speed n_B of relative rotation between the head member and base member about the second axis B which is equal to $-2\, n_A \sin^2 \beta/2 \pm v_2/2\pi L$.

4,435,119

LIFT TRUCK LOAD CLAMP HAVING POWER-ACTUATED PIVOTAL SUBFRAME FOR HANDLING PAPER ROLLS

Marshall K. House, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Nov. 16, 1981, Ser. No. 321,921
Int. Cl.³ B66F 9/18
U.S. Cl. 414—620 **17 Claims**



10. A load-handling clamp adapted to be mounted upon the lifting apparatus at the forward end of a lift truck for engaging a cylindrical roll of paper and the like, comprising:

(a) a frame adapted to be mounted upon said lifting apparatus so as to be selectively movable vertically by said lifting apparatus;

(b) rotating means for rotating said frame with respect to said lifting apparatus about a generally forwardly-extending axis of rotation;

(c) a subframe and first pivotal connection means connecting said subframe to said frame for permitting said subframe to pivot with respect to said frame about a first pivot axis extending transverse to said forwardly-extending axis of rotation;

(d) first and second selectively openable and closeable opposing clamp arms mounted upon said subframe projecting therefrom in a forward direction;

(e) second pivotal connection means connecting said first clamp arm to said subframe for permitting said first clamp arm to pivot with respect to said subframe about a second pivot axis transverse to said forwardly-extending axis of rotation, and third pivotal connection means connecting said second clamp arm to said subframe for permitting said second clamp arm to pivot with respect to said subframe about a third pivot axis extending transverse to said forwardly-extending axis of rotation;

(f) said second and third pivot axes being spaced apart in a direction transverse to said forwardly-extending axis of rotation and said first pivot axis being located between said second and third pivot axes; and

(g) power means connected to said frame at a first location and connected to said subframe at a second location for selectively pivoting said subframe with respect to said frame about said first pivot axis, said second location being positioned at least as far forwardly as said first pivot axis.

4,435,120

ARM FOR A PROGRAMME CONTROLLED MANIPULATOR

Junichi Ikeda, Tokyo; Iwao Ohtani, Inagi; Noriyuki Utsumi, Yokohama, and Shinichi Nojima, Tokyo, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Mar. 2, 1982, Ser. No. 354,048
Claims priority, application Japan, Mar. 17, 1981, 56-38093[U]
Int. Cl.³ B66C 23/00
U.S. Cl. 414—735 **9 Claims**

1. A manipulator arm comprising:

a base member,

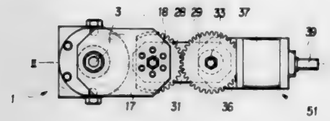
a stationary gear secured to the base member,

a first movable gear meshing with the stationary gear,

a connecting member secured at one end thereof with the first movable gear,

a first rotational shaft rotatably mounted on the other end of the connecting member,

a second movable gear secured to the rotational shaft,



a third movable gear meshing with the second movable gear,

a second rotational shaft secured with the third movable gear and passing through the first movable gear,

a working tool attached to the second movable gear, and

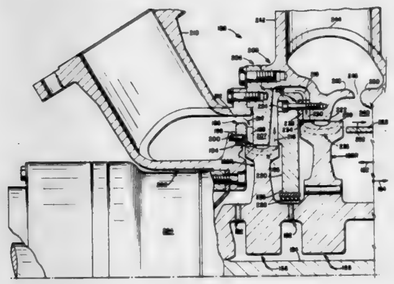
a driving means for causing the first movable gear to move while meshing it with the stationary gear.

4,435,121

TURBINES

Leon R. Wosika, El Paso, Tex., assignor to Solar Turbines Incorporated, San Diego, Calif.

Continuation of Ser. No. 79,584, Sep. 27, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,394
Int. Cl.³ F01D 1/16
U.S. Cl. 415—56 **7 Claims**



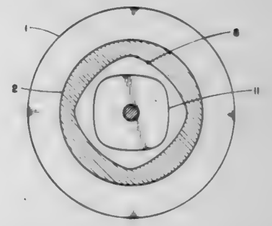
2. A full admission radial impulse turbine comprising: a wheel having buckets formed around and opening onto the periphery thereof, means mounting said wheel for rotation about an axis corresponding to the axial centerline of the turbine, and means for introducing a working fluid into said buckets which comprises nozzles spaced around the periphery of said wheel and oriented to discharge the working fluid therefrom into said buckets, the means for introducing working fluid into said buckets also including vanes alternating with and determining the contours of said nozzles, said vanes having surfaces facing the axial centerline of the turbine which are continuously curved from a first location corresponding to the exit from each nozzle to a second location corresponding to the trailing edge of the adjacent nozzle and the angle of divergence at those edges of the vanes corresponding to the exits of the nozzles being a maximum of ca. 3°, said turbine also having a discharge plenum on the downstream side of said wheel and the buckets formed in said wheel being so configured as to dump the working fluid into said discharge plenum after that fluid has passed through a single bucket.

4,435,122

METHOD AND APPARATUS FOR PUMPING FIBER SUSPENSIONS

Toivo Niskanen, Hamina; Frey Sundman, and Jorma Tuomaala, both of Karhula, all of Finland, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Continuation-in-part of Ser. No. 903,494, May 8, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,427
Claims priority, application Finland, May 16, 1977, 771541
Int. Cl.³ F04D 1/04
U.S. Cl. 415—121 B **2 Claims**



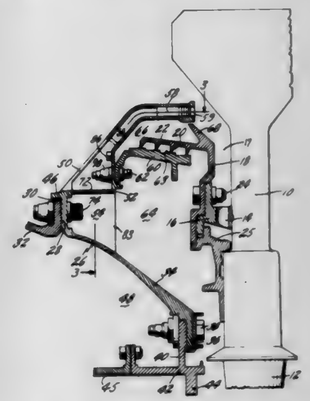
1. A method of fluidizing and pumping a fiber suspension with a centrifugal pump in the fluidized state; said pump having an inlet which has a conduit; a housing, an impeller with vanes, an outlet and a non-round rotor which is located in the inlet of the pump, the inlet having recesses on its surface, which comprises feeding said fiber suspension into the conduit of the inlet; causing the rotor to rotate, bringing the fiber suspension into rotating motion in the inlet of the pump, said rotating motion having alternate flow components towards and away from the rotation axis of the rotor whereby shear forces are generated in the inlet of the pump which disrupt the fiber-to-fiber bonds whereby the fiber suspension is fludized, becomes pumpable and flows to the impeller in a fluidized state.

4,435,123

COOLING SYSTEM FOR TURBINES

Richard Levine, Bloomfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,700
Int. Cl.³ F01D 5/18
U.S. Cl. 416—95 **6 Claims**



1. A cooling structure for supplying cooling air to a chamber at a face of a turbine disk the structure being a single unitary case article including:

spaced annular walls defining an air flow chamber and ter-

minating at one end in an axially positioned discharge nozzle having vanes therein extending between the walls and integral therewith;

an annular connecting element integral with and connecting said walls at the ends remote from the nozzle, said element extending from said walls and having mounting means on the end remote from the wall;

radially extending partitions integral with extending between and connecting the spaced walls and defining circumferentially spaced flow passages for air from said connecting element to the nozzle, the element having air inlet holes therein;

an interrupted substantially cylindrical partition integral with and between said walls at a point spaced from said connecting element, said cylindrical partition being interrupted to form openings therein at points in alignment with the holes in the connecting element for a flow of air from said holes to said openings between selected partitions and one of said annular walls having first access openings therein out of alignment with the holes in the connecting walls and the openings in the cylindrical partition, the other of said annular walls having attachment means therein for access through the openings in said one of said annular walls.

4,435,124

VERTICAL AXIS WINDMILL

Yea K. Zheng, Nanking, China, assignor to Nianbilla Company Limited, Hong Kong, China

Filed Aug. 20, 1981, Ser. No. 294,785

Claims priority, application United Kingdom, Aug. 20, 1980, 8027111

Int. Cl.³ F03D *7/06*

U.S. Cl. 416—119 **7 Claims**



1. A vertical axis windmill having at least one blade of airfoil form with a leading edge and a trailing edge, each said blade being freely pivotally connected about a vertical axis passing through the center of gravity of said blade to support means rotatable about an axis by the action of the wind on said blades, each said blade being constructed so that said vertical axis lies closer to said leading edge than does the aerodynamic center of said blade whereby said leading edge automatically swings radially outwardly when moving upstream of, and radially inwardly when moving downstream of, said axis of rotation of said support means, said windmill including regulator means for adjustably defining the limits of an angle through which each said blade can freely swing about said vertical axis, said regulator means being constructed such that said angle decreases with increasing speed of rotation of said support means and so controls the speed of rotation of the windmill, said windmill further including means for releasing said blades from the control of said regulator means and allowing said blades to feather in the event of excessive wind speeds.

4,435,125

WIND TURBINE SPINDLE ASSEMBLY WITH SPINDLE CONSTRAINT

Gregory E. Cook, Warrenville, Ill., assignor to Windpowered Machines Ltd., Livingston, Mont.

Filed May 20, 1981, Ser. No. 265,617

Int. Cl.³ F03D *11/04*

U.S. Cl. 416—132 B **38 Claims**



1. An anti-bowing spindle constraint assembly for a wind turbine having a wheel with an axle suspended from a rim, said axle having a hub, an elongate spindle mounted radially between said hub and said rim in a manner minimizing force loading thereof along its elongate axis, said spindle carrying a soft airfoil furled thereabout and mounted for rotation about its elongate axis to permit furling and unfurling of said soft airfoil, an elongate boom assembly pivotally mounted adjacent said rim for supporting at a point along the length thereof the unfurled clew portion of said airfoil spaced from said spindle and for changing the angle of attack of said airfoil with respect to the wind, and an elongate support member mounted in tension between said hub and said rim adjacent said spindle, comprising in operative combination:

(a) means for constraining the spindle against excessive lateral bowing in response to wind pressure on said airfoil when at least a portion thereof is unfurled, including:

(b) means for receiving said airfoil furled on said spindle disposed intermediate said rim and said hub,

(i) said receiving means defining a space permitting freely winding or unwinding said airfoil from said spindle upon rotation of said spindle about its elongate axis, and

(ii) said receiving means providing a slot communicating with said space for passage therethrough of said airfoil upon furling or unfurling of said airfoil;

(c) means for transmitting lateral pressure from said spindle to said receiving means mounted to said receiving means adjacent said slot;

(d) means for reducing friction on said airfoil as it passes through said slot mounted in engagement with said airfoil and in association with said pressure-transmitting means;

(e) means for mounting said receiving means to said support means at a position radially outwardly from the hub end of said spindle to transfer at least a portion of said lateral bowing pressure on said spindle to said support means while permitting free axial rotation of said spindle for furling and unfurling of said airfoil, and permitting pivoting of said boom through an angle for change of said angle of attack of said airfoil.

4,435,126

CENTRIFUGAL PUMP IMPELLER WITH REPLACEABLE WEAR RING

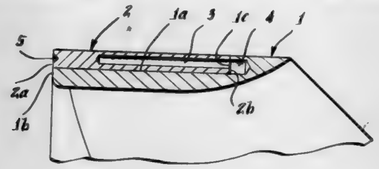
Wolfgang Schneider, Weisenheim, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,190

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011675

Int. Cl.³ F04D *29/22*

U.S. Cl. 416—186 R **10 Claims**



1. An impeller for use in centrifugal pumps, particularly in pumps for effecting forced circulation of fluids in primary circuits of nuclear power plants, comprising an impeller body having a peripheral surface; and a wear ring adapted to be readily removed from said impeller body, said ring surrounding said surface and having an exposed end face, a second end face, a plurality of elongated axially parallel sockets provided in said second end face and extending toward said first end face, and indices provided on said first end face in axial alignment with said sockets so that a material removing tool, such as a drill, can be caused to penetrate into said sockets by placing it into register with such sockets with the aid from the respective indices for ready removal of said wear ring from said impeller body.

4,435,127

APPARATUS WITH LATCHING EFFECT FOR LIMITING PRESSURE IN LIQUID FEEDING SYSTEMS

Josef Krämzle, Auerstrasse 42, 7918 Illertissen, and Lutz Droitsch, Bussardweg 25, 4800 Bielefeld, both of Fed. Rep. of Germany

Filed Aug. 12, 1981, Ser. No. 292,125

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037259

Int. Cl.³ F04B *49/08*

U.S. Cl. 417—26 **9 Claims**

1. A valve system for use in a liquid feeding system in which in operation liquid is fed by an electric pump to a delivery means, said valve system comprising:

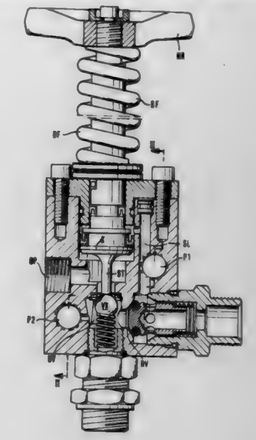
a main outlet, a check valve, and an inlet connectable via a said valve to said main outlet,

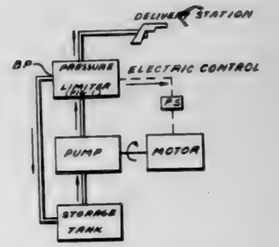
a bypass valve and a bypass outlet connectable to said inlet via said bypass valve which opens in response to a sudden increase in pressure at said main outlet,

a first pressure switch in communication with said main outlet and settable to either a first condition or to a second condition when the pressure applied to said first pressure switch is less than or exceeds a predetermined threshold value respectively,

a second pressure switch in communication with said inlet and settable to either a first condition or to a second condition when the pressure applied to said second switch is less than or exceeds a predetermined threshold value respectively,

said first and second pressure switches being connected together in such a manner than when the pressure switches are both in said first condition or are both in said second condition a switch on path for said pump is closed enabling operation of the pump, the arrangement further being such that when said bypass valve is opened by said sudden pressure increase said second pressure switch is switched from its second condition to its first condition





for switching off said pump by opening the associated switch on path.

4,435,128

APPARATUS FOR ASCERTAINING A PREDETERMINED ROTARY POSITION OF A ROTATIONAL BODY

Hansjörg Frey; Heinrich Hampel; Rolf Müller; Ernst Ritter, and Reinhard Schwartz, all of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,399

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127048

Int. Cl.³ F04B *21/00, 51/00*

U.S. Cl. 417—63 **12 Claims**

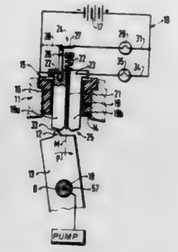
1. An apparatus for ascertaining a predetermined rotary position of a rotational body mounted to a housing, such as the supply onset position of the drive shaft of a fuel injection pump for an internal combustion engine, comprising:

angle indication marking means fixedly connected to the rotational body for rotation therewith; and

signal transducer means, including: a transducer housing fixedly secured to the rotational body housing; a rough indication circuit having a first contact switch; a precise indication circuit having a second contact switch and a rotary position signal means; and a transducer body displaceably guided in the transducer housing in a direction approximately radial with respect to the axis of rotation of the rotational body, wherein:

(i) the transducer body partly defines the second contact switch;

(ii) at a predetermined rotary position of the rotational body, the angle indication marking means trigger the first contact switch to energize the rough indication circuit; and



(iii) at a subsequent predetermined rotary position of the rotational body, the angle indication marking means and the transducer body complete the second contact switch to energize the rotary position signal means of the precise indication circuit.

4,435,129

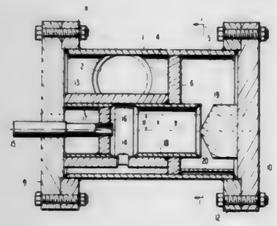
VORTEX INJECTOR

Gyorgy Mika, 9/A, Szajko utca, 1021 Budapest; Denes Csako, 6 Budakeszi ut, 1121 Budapest; Laszlo Paczuk, 93, Beke ut, 6131 Szank; Laszlo Beres-Deak, Tallya u. 8-10, 1121 Budapest, and Laszlo Novotny, Bimbo u. 3, 1022 Budapest, all of Hungary

Continuation-in-part of Ser. No. 22,046, Mar. 19, 1979, abandoned. This application Sep. 22, 1981, Ser. No. 304,634

Int. Cl.³ F04F *5/00*

U.S. Cl. 417—151 **8 Claims**



1. A vortex injector comprising a cylindrical casing, means for introducing a high pressure gas into the cylindrical casing, means for introducing a low pressure gas into the casing parallel but eccentrically to the axis of the casing, means for mixing together the low and high pressure gases, means for discharging from the casing the mixed low and high pressure gases at an intermediate pressure, said discharge means being disposed tangentially of the casing, and a partially cylindrical plate forming with said discharge means a helical scroll for gases leaving said chamber.

4,435,130

HYDRAULIC PLANETARY PISTON ENGINE HAVING FREE WHEELING VALVE

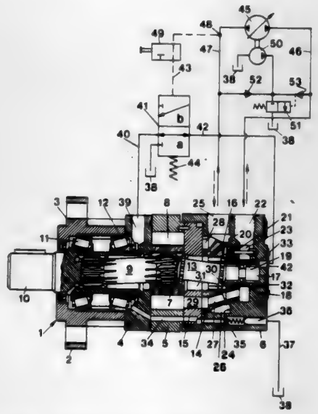
Carl V. Ohrberg, and Gunnar L. Hansen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jul. 29, 1981, Ser. No. 288,039

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3029997

Int. Cl.³ F04B *49/08*; F04C *1/06*

U.S. Cl. 417—310 **4 Claims**



1. A hydraulic planetary piston engine, comprising, an externally serrated pinion gear with a splined bore and an internally serrated ring gear in mesh therewith, drive side and valve side housing means attached to opposite sides of said ring gear, said housing means defining inlet and outlet ports, drive means rotatably mounted in said drive side housing means, first cardan shaft means connecting said drive means to said pinion gear, valve means in said valve side housing means including a fixed annularly shaped plate valve member attached to said ring gear and a rotatable annularly shaped plate valve member in sealing engagement therewith, second cardan shaft means connecting said rotatable valve member to said pinion gear, a confined interior chamber defined by said drive side housing and said valve means in conjunction with said pinion gear bore, piston means having inner and outer pressure areas on opposite inner and outer axial sides thereof having respective fluid communication with said inlet and outlet ports, said piston means being in bisable engagement with said rotatable valve member, said piston means having inner and outer pressure faces with said inner face being (face thereof) in fluid communication with said confined interior chamber, passage means externally of said housing means for connecting said confined interior chamber to said outer pressure face of said pressure piston means, changeover valve means in said passage means having a first position placing said confined interior chamber and said outer pressure face in fluid communication to bias said rotatable valve member into sealing engagement with said fixed valve member and a second position connecting said outer pressure face to atmosphere to effect a releasing of said sealing engagement between said valve members.

4,435,131

LINEAR FLUID HANDLING, ROTARY DRIVE, MECHANISM

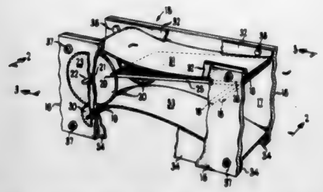
Zorro Ruben, 8923 Bronx, Skokie, Ill. 60077

Filed Nov. 23, 1981, Ser. No. 324,030

Int. Cl.³ F04B *19/00*

U.S. Cl. 417—334 **23 Claims**

1. In a fluid energy machine including at least one fluid engaging vane having substantially parallel side edges, said vane and side edges extending generally in a longitudinal direction while executing an alternating pivotal motion about said vane's longitudinal ends, and receiving or imparting motion to a fluid, the improvement in support means for each vane com-



prising means cohstraining one end portion of each vane to substantially rotary motion and means constraining the other end portion of each vane to substantially reciprocation motion along lines of reciprocation which cross said longitudinal direction obliquely.

4,435,132

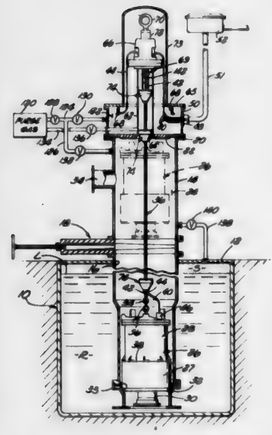
SUBMERSIBLE PUMPING SYSTEM

William G. Haesloop, Dana Point; Melvin S. Mann, Newport Beach, and James W. Jones, Pico Rivera, all of Calif., assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 195,514, Oct. 9, 1980. This application Mar. 14, 1983, Ser. No. 475,463

Int. Cl.³ F04B *35/00*; B67D *5/40*

U.S. Cl. 417—360 **12 Claims**



1. A group of interrelated pumping system components especially adapted to be assembled together for use in a pumping system including a fluid transmitting casing passing through the roof of a reservoir comprising:

a pump and motor unit adapted to be lowered through said casing to the lower end thereof for pumping fluid upwardly through said casing;

valve means adapted to be installed on an upper portion of said casing for opening and closing said casing, said valve means having an opening therein of such a size that when the valve is open, said pump and motor unit may be passed through said opening;

a head plate adapted to be mounted on the top of said casing, said head plate having a hole therein;

a vertical pipe mounted on said head plate aligned with said hole;

a flexible lift cable and flexible electrical conductors adapted to be connected to said pump and motor unit and to pass upwardly through said valve opening, said hole in said head plate and said pipe;

a plurality of combined clamping and sealing elements connected to said lift cable and conductors at spaced intervals, said elements having a close substantially sealing fit with said pipe when passed therethrough; and

said elements being spaced apart a distance less than the length of said pipe whereby when said valve means is open and said lift cable is raised to lift said pump and motor unit through said casing above said valve means, one element will enter the lower end of said pipe before the next adjacent upper element exits from the upper end of said pipe so that the pipe, and hence the casing, will be continuously blocked to minimize venting of the casing to atmosphere when said valve means is open.

4,435,133

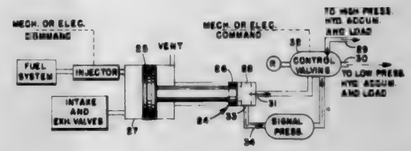
FREE PISTON ENGINE PUMP WITH ENERGY RATE SMOOTHING

John W. Meulendyk, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed Oct. 17, 1977, Ser. No. 842,494

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—364 **32 Claims**



1. A free piston engine pump comprising hydraulic pump means including plural piston and cylinder areas of different effective areas adapted to be simultaneously linearly driven by such engine to generate different hydraulic work rates during the engine power stroke, means for phasing such different hydraulic work rates at different points during the power stroke to provide plural levels of hydraulic output work in order to smooth out the hydraulic energy or work rate of said free piston engine, and means for supplying hydraulic energy to said plural piston and cylinder areas at different points during the return stroke to achieve optimum return stroke timing to accelerate the return movement of said hydraulic pump means during the return stroke.

4,435,134

FLOW CONTROL VALVE

Akio Okada, 11-19, Tsudanuma 2-chome, Narashino-shi, Chiba-ken; Tokifumi Nakata, 14-8, Nishitsuga 3-chome, Chiba-shi, Chiba-ken, and Kiyoshi Nemoto, 2290-2, Kikuma, Ichihara-shi, Chiba-ken, all of Japan

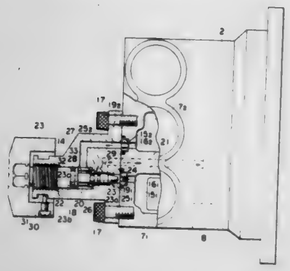
Filed Jun. 22, 1982, Ser. No. 390,833

Int. Cl.³ F04B *23/06*, *41/06*

U.S. Cl. 417—428 **5 Claims**

1. A flow rate control valve for a multiple cylinder type reciprocating pump, said control valve comprising, in combination, a body member of the control valve including a first duct communicating with a first passage on the discharge side of one cylinder, a second duct communicating with a second passage on the discharge side of another cylinder, said first and second passages being distinct from discharge ports for said cylinders, a double stepped cylinder chamber extending through the length of said body member with the forward opening end of the chamber defining said first duct, said cylinder chamber communicating with said second duct at back of a second rearward step, and a bypass passage communicating with said cylinder chamber at back of said first step and with

a suction port of the pump; a needle valve extending into said cylinder chamber adjustably and reciprocably into a position normally abutting on said first step to interrupt fluid communication between said first duct and said bypass passage; and a valving member slidably fitted on said needle valve and spring-biased to normally abut on said second step to interrupt fluid communication between said second duct and said bypass



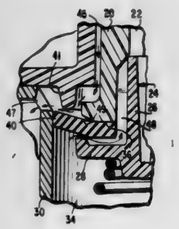
passage; wherein said first step is first freed from the needle valve upon rearward displacement of said needle valve to establish fluid communication between said first duct and said bypass passage and thereafter said valving member is acted upon by a projection secured to said needle valve to free said second step from said valving member to establish fluid communication between said second duct and said bypass passage.

4,435,135

PUMP ASSEMBLY WITH IMPROVED SEAL

Michael G. Knickerbocker, Crystal Lake, Ill., assignor to Sequist Valve Company, Cary, Ill.

Filed Apr. 3, 1981, Ser. No. 250,573
Int. Cl.³ F04B *21/04, 39/10*
U.S. Cl. 417—511 **9 Claims**



1. A hand-actuatable pump assembly adapted to be sealingly secured to the mouth of a container for dispensing material in the container, comprising:

a generally tubular adapter defining a discharge passageway,

a spray member seated on said adapter and defining a discharge opening in communication with said passageway,

a stem defining a portion secured to said adapter,

a valve body defining a pressure chamber, and

a piston having flat top and bottom surfaces sealingly and slidably engaging the wall of said valve body,

spring means biasing said stem upwardly,

said piston comprising a first portion clamped between confronting surfaces of said stem and said adapter, and a second deflectable portion in sealing engagement with said stem in a position of rest and being out of sealing engagement in a second position of actuation, said deflectable portion confronting a relieved portion of said adapter accommodating flexure of said deflectable portion of said piston,

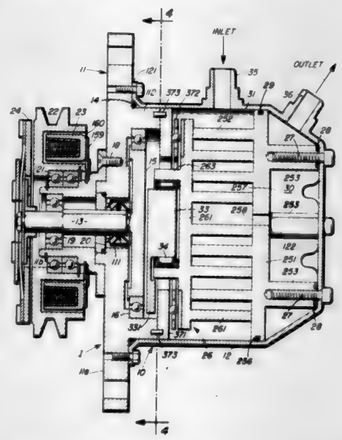
said deflectable portion of said piston being deflectable in response to hydraulic pressure upon movement of said piston downwardly into said valve body to expose said passageway to communication with said pressure chamber, whereby when said deflectable portion is deflected, said clamped portion remains clamped between said confronting surfaces of said stem and said adapter.

4,435,136

ORBITING PISTON TYPE FLUID DISPLACEMENT APPARATUS WITH SHAFT BEARING AND SEAL MECHANISMS

Kiyoshi Terauchi, Isesaki, and Selichi Sakamoto, Gunma, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed May 5, 1981, Ser. No. 260,756
Claims priority, application Japan, May 7, 1980, 55-59460
Int. Cl.³ F01C *1/02, 19/12, 21/02*
U.S. Cl. 418—55 **8 Claims**



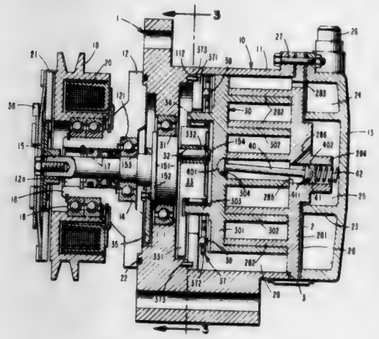
1. In an orbiting piston type fluid displacement apparatus including a housing having a front end plate member, a fixed member fixedly disposed relative to said housing, an orbiting piston member disposed within said housing and interfitting with said fixed member to make it least one line contact to define a sealed off fluid pocket, and a drive shaft which penetrates said front end plate member and is rotatably supported by said front end plate member through two bearings, said drive shaft being connected to said orbiting piston member to effect the orbital motion of said orbiting piston member, the improvement comprising said front end plate member including a front end plate portion and a separately formed annular sleeve portion, said front end plate portion being formed with an opening through which said drive shaft extends, and said annular sleeve portion being fixed to and extending from a front end surface of said front end plate portion for surrounding said drive shaft, said front end plate portion having a major dimension transverse to the axis of said drive shaft and a minor dimension along the axis of said drive shaft with said major dimension being substantially greater than said minor dimension, said annular sleeve portion having a hollow space which forms a continuation of the opening formed in said front end plate portion, a shaft seal assembly assembled on said drive shaft within said opening in said front end plate portion, said drive shaft being rotatably supported by said two bearings, which are disposed within said housing, and one of said bearings being disposed axially outward of said shaft seal assembly in said separate annular sleeve portion and the other of said bearings being disposed inward of said shaft seal assembly in said front end plate portion.

4,435,137

SCROLL-TYPE FLUID COMPRESSOR WITH SCROLL STABILIZING MECHANISM

Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed Mar. 31, 1981, Ser. No. 249,657
Claims priority, application Japan, Apr. 5, 1980, 55-44073
Int. Cl.³ F04C *18/02*; F16D *3/04*
U.S. Cl. 418—55 **10 Claims**



1. In a scroll-type fluid compressor including a housing havibng a fluid inlet port and a fluid outlet port, a fixed scroll member fixedly disposed within said housing and having first end plate means from which first wrap means extend, an orbiting scroll member having second end plate means from which second wrap means extend and said first and second wrap means interfitting at an angular offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, a drive shaft rotatably supported by said housing, a drive pin eccentrically disposed with respect to the axis of the drive shaft at an iner end of said drive shaft and connected to said orbiting scroll member for transmitting orbiting movement, and a rotation preventing means for preventing the rotation of said orbiting scroll member during the orbital motion of said orbiting scroll member, whereby said fluid pockets change volume by the orbital motion of said orbiting scroll member and merge with a central high pressure fluid space, the improvement comprising thrust supporting means engaged with the side of said second end plate means opposite to the side thereof from which said second wrap means extend, for providing axial thrust support to said orbiting scroll member, and axial pushing means including a separate pushing member, located generally centrally of said scroll members in said high pressure fluid space, in engagement with said orbiting scroll member generally at the center thereof for mechanically pushing said orbiting scroll member against said thrust supporting means from the side of said orbiting scroll member which faces said fixed scroll member, to minimize axial slant of sai orbiting scroll member.

4,435,138

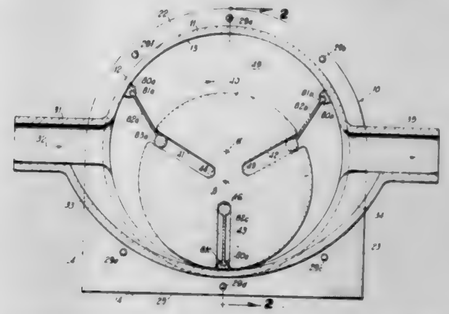
ROTARY VANE MACHINE WITH ROTATING END SEALING PLATES

Howard B. Johnson, Rte. 2, Box 172C, Adairsville, Ga. 30103

Filed Oct. 20, 1980, Ser. No. 196,853
Int. Cl.³ F01C *1/00, 19/00, 19/08*
U.S. Cl. 418—131 **10 Claims**

1. A rotary vane machine of the type having a housing with end plates and a body therebetween having a peripheral inner surface concentric about a transverse axis and defining an interior, an inlet means communicating with said interior for conducting fluid into said interior, an outlet means communicating with said interior at a point spaced circumferentially from said inlet means with respect to said inner surface for conducting fluid from said interior, a rotor eccentrically mounted in said interior for rotation about a second transverse axis parallel to said first axis, said rotor being provided with circumferentially spaced vane receiving slots therein and vanes received respectively in said slots, said vanes being movable in said slots and extending outwardly therefrom, wherein the improvement comprises:

(a) a pair of opposed sealing plates disposed respectively between one of said end plates and the end of said rotor,



each of said sealing plates having a larger radial dimension than said rotor for seating with fluid pressure against the inner surface of said one of said end plates to retard leakage of fluid therebetween; and

(b) circumferentially spaced wiper bars connected to and extending between said plates and riding against said peripheral inner surface and connected to the outer ends of said vanes.

4,435,139

SCREW ROTOR MACHINE AND ROTOR PROFILE THEREFOR

Ake Astberg, Nacka, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Feb. 3, 1982, Ser. No. 345,230
Claims priority, application United Kingdom, Feb. 6, 1981, 8103739
Int. Cl.³ F01C *1/16*
U.S. Cl. 418—201 **51 Claims**



1. Screw rotor machine for a working fluid comprising a casing with a working space provided with spaced apart low pressure and high pressure ports for communication with low pressure and high pressure channels, respectively, and including at least two intersecting bores with parallel axes, a number of rotors disposed in said bores and intermeshing in pairs, each rotor having helical lands and intervening grooves, whereby a pair of communicating groove portions form a chevron-shaped chamber having its base end disposed in a plane transverse to the axes of the rotors and adjacent to the high pressure port of the machine, one rotor of each pair being of female rotor type formed such that at least the major portion of each land and groove is located inside the pitch circle of the rotor, the other

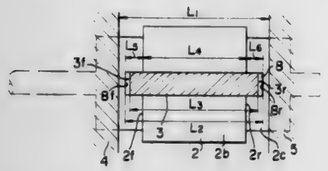
rotor of the pair being of male rotor type formed such that at least the major portion of each land and groove is located outside the pitch circle of the rotor, the lands of one rotor following the envelopes developed by the grooves of the other rotor to form a continuous sealing line between the rotors, each rotor groove being provided with a primary flank forming the peripherally outer wall of the leg of said chamber comprised of a female rotor groove and the peripherally inner wall of the leg of said chamber comprised of a male rotor groove, respectively, and a secondary flank forming the other wall of the related leg of the chamber, characterized in that in a plane perpendicular to the rotor axes at least the primary flank of each male rotor groove comprises a first flank portion adjacent to the pitch circle and extending outwardly therefrom, that the tangent to said first flank portion in its pitch point, where it intersects with the pitch circle, and a radial line from the centre of the rotor through the pitch point form an angle therebetween falling within the range of 0.25 rad to 0.75 rad, when measured outside the pitch circle from the tangent towards the groove, and that the radius of curvature of said first flank portion in its pitch point has a length exceeding the product of the pitch radius and the sine function of said pitch point angle between the tangent and the radial line.

4,435,140

COMPRESSOR HAVING ROTOR ROTATING WITHOUT CONTRACTING SIDE PLATES

Mitsuo Inagaki, and Hideaki Sasaya, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 14, 1981, Ser. No. 330,581
Claims priority, application Japan, Dec. 16, 1980, 55-178358
Int. Cl.³ F01C *1/00*; F04C *2/00*
U.S. Cl. 418—259 **1 Claim**



1. In a rotary compressor comprising:
a cylindrical housing,
side plates secured on axial opposite ends of said housing,
a rotor rotatably mounted in said housing and formed with a plurality of slots extending radially of said rotor, and
a plurality of vanes each slidably received in one of said slots;
said housing, said side plates, said rotor and said vanes cooperating with one another to define a working space of a variable volume;
the improvement wherein:
said rotor has an increased diameter portion substantially in a central position of said rotor as viewed in an axial direction of the latter and diameters smaller than said increased diameter on opposite axial sides thereof;
said slots extend through said increased and smaller diameter portions; and
said increased diameter portion, said vanes, said slots, and said housing having the dimensional relationships expressed by the following formulae,

$L_1 > L_3 > L_4$,

$L_2 > L_3$,

$L_3 > L_4 + L_5$, and

$L_3 > L_4 + L_6$;

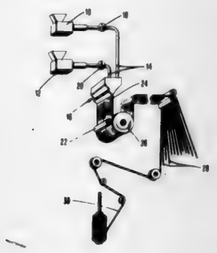
in which
L_1 = an axial length of said housing,
L_2 = an axial length of said slots,
L_3 = an axial length of said vanes,
L_4 = an axial length of said increased diameter portion,
L_5 = distance between a forward end of said slots and a forward end of said increased diameter portion, and
L_6 = distance between a rear end of said slot and a rear end of said increased diameter portion.

4,435,141

MULTICOMPONENT CONTINUOUS FILM DIE

Carl S. Weisner, Pleasant Hill, and David W. Raynolds, Fairfield, both of Calif., assignors to Polyloom Corporation of America, Dayton, Tenn.

Filed Apr. 7, 1982, Ser. No. 366,238
Int. Cl.³ B29F *3/12*
U.S. Cl. 425—131.1 **15 Claims**



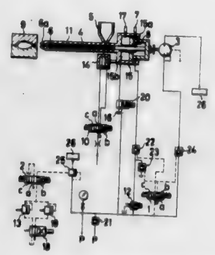
1. Die apparatus for extruding a multicomponent polymer film between 1 and 10 mils in thickness comprising:
a body member including a body block and at least one body section, removably attached to said body block, said body member having one manifold through which a feedstock of one molten polymer is flowed and at least one other manifold through which at least another feedstock of molten polymer is flowed, said body member having an elongated lip passage through which a sheet of polymer film formed of said feedstocks is extruded under pressure; and
an insert, which, together with surfaces of said body member, forms separate, longitudinally alternating passages communicating between said manifolds and said lip passage for interspersing, in alternating arrangement, the feedstocks, said insert including a replaceable bar having a longitudinal axis parallel to a plane of the extruded film and having a planar, longitudinally extending face with a plurality of slots formed therein, wherein the planar face of the bar is abutted with a planar face of the body section when the body section is attached to the body block to define a first plurality of said passages which open into one of said manifolds and longitudinally narrow downstream of said one manifold to facilitate a sweeping flow of feedstock through the die apparatus.

4,435,142

SCREW IN-LINE TYPE INJECTION MOLDING METHOD AND APPARATUS FOR LOW-PRESSURE INJECTION MOLDING

Akiyoshi Morita, and Mitsuyoshi Sato, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 136,083, Mar. 31, 1980, Pat. No. 4,366,110.
This application Jun. 9, 1982, Ser. No. 386,518
Claims priority, application Japan, Mar. 31, 1979, 54-38810
Int. Cl.³ B29F *1/06*
U.S. Cl. 425—145 **1 Claim**



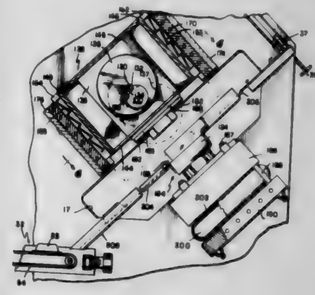
1. A screw in-line type injection molding machine for injecting a urea mixed resin powder into a mold, comprising:
hopper means for receiving an urea mixed resin powder;
an injection cylinder coupled to said hopper means, said cylinder including a nozzle at one end and a hydraulic chamber at the other end, said nozzle facing said mold;
a screw inserted into said injection cylinder, said screw being rotatably and axially free to move within said cylinder;
a hydraulic motor coupled to said screw to rotatably drive said screw;
an injection piston which slidably moves within said hydraulic chamber to divide said chamber into a first and a second pressure chamber, said piston being coupled to said screw and movable together with said screw in said hydraulic chamber;
a first limit switch installed at a position where it is contacted by said injection piston when said screw is withdrawn to a distance where a space equivalent to a desired charge of one of a molten and plasticized urea mixed resin powder in said cylinder is secured;
a second limit switch installed at a position where it is contacted by said piston when said screw has moved a distance at which the charge of one of a molten and plasticized urea mixed resin powder into said mold is 85 to 95% completed;
a first hydraulic circuit including means for selectively supplying a working hydraulic oil to said first pressure chamber at high and low injection pressures, so that a first injection may be performed under said high injection pressure at a specified first injection velocity and a second injection may be effected under said lower injection pressure;
means for moving said cylinder in the direction of the cylinder axis; and
a second hydraulic circuit for actuating said means for moving whereby said nozzle can contact said mold,
wherein said first hydraulic circuit is constructed to supply hydraulic oil so that said high injection pressure lies within the range of 400–700 Kg/cm² in converted injection pressure and said first injection velocity lies within the range of 40–50 mm/sec, while said lower pressure lies within the range of 50–150 Kg/cm² in converted injection pressure,
wherein said first hydraulic circuit is constructed such that said hydraulic motor stops the rotation of said screw when said first limit switch is contacted by said injection piston, and
wherein said first hydraulic circuit is constructed such that the change of the pressure of the pressurized hydraulic oil supplied to the first pressure chamber from high to low is effected when the injection piston contacts said second limit switch.

4,435,143

SMALL BLANK FEEDER AND TRAY FORMER

Edmond N. Dempsey, Marion, Ind., assignor to Peerless Machine & Tool Corporation, Marion, Ind.

Filed May 27, 1982, Ser. No. 382,716
Int. Cl.³ B29C *17/00, 1/00*
U.S. Cl. 425—150 **31 Claims**



1. A press, comprising
a frame,
a first die and a base for supporting the first die with respect to the frame,
a second die and a reciprocally movable head for reciprocally moving the second die with respect to the first die,
a shaft rotatably mounted within the frame and an eccentric drive means for connecting the shaft to the head,
a flywheel rotatably mounted to the frame, drive means for rotatably driving the flywheel, a selectively actuable clutch for engaging the flywheel to the shaft, and
control means for controlling dwell time of the press by the selective actuation of the clutch at a preselected rotation position of the shaft, the control means including means for sensing the position of the shaft and means for actuating the clutch in response to a sensed position of the shaft.

4,435,144

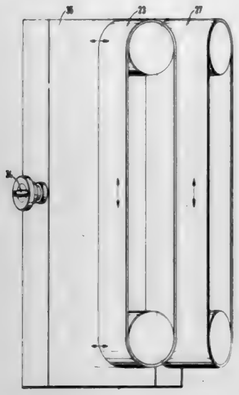
APPARATUS FOR SHAPING DOUGH

Kate Kemper, Furthstr. 10, CH 8700 Küsnacht-Zürich, Switzerland

Filed Jun. 8, 1981, Ser. No. 271,800
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021329; Mar. 13, 1981, 3109683
Int. Cl.³ A21C *7/01, 7/02*
U.S. Cl. 425—332 **13 Claims**

1. An apparatus for shaping dough comprising:
a pair of endless band units, each of said band units having a molding surface forming a V-shaped gap for the dough to be shaped;
rotary means for imparting oscillatory motion to one of said endless band units in the direction normal to the molding surface and said means including a molding band arranged on an adjusting slide displaceable in said direction and a

motor driven eccentric device for actuating said molding band and



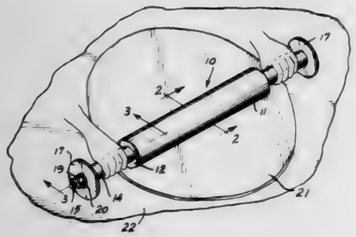
a molding strip abutting the molding surface of said endless band unit adapted for said oscillatory motion.

4,435,145

ROLLING PIN WITH GAUGE WHEELS

Gerald Abrams, P.O. Box 351, Pinetops, N.C. 27864

Filed Feb. 23, 1982, Ser. No. 351,566
Int. Cl.³ A21C *1/08, 3/02*
U.S. Cl. 425—458 **2 Claims**



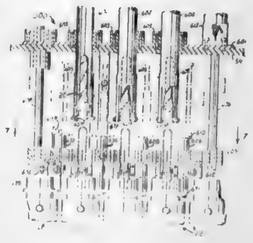
1. A rolling pin for rolling a mass of resilient material to a constant uniform thickness comprising an elongated cylindrical body having a predetermined diameter and having opposite ends, rod means extending axially outwardly from each end of said body, each of said rod means having an outer end, gauge wheel means mounted adjacent said outer end of each of said rod means, said gauge wheel means both having the same diameters and being of a diameter which is greater than the predetermined diameter of said body, handle means carried by each of said rod means, said handle means being disposed between said gauge wheel means and said ends of said cylindrical body, and locking means for obstructing the removal of each of said gauge wheel means for said rod means, said gauge wheel means having a central opening therethrough of a size to slidably receive said outer ends of said rod means, stop means on each of said rod means between said outer ends thereof and said handle means for obstructing the movement of said gauge wheel means along said rod means toward said cylindrical body whereby said handle means are spaced inwardly of said gauge wheel means so that downward pressure applied to either of said handle means will be directed to said gauge wheel means and said cylindrical body even if no downward pressure is being applied to the other of said handle means.

4,435,146

APPARATUS FOR HIGH RATE PRODUCTION OF BIAXIALLY ORIENTED THERMOPLASTIC ARTICLES

James G. Wiatt; James W. Calvert; Samuel L. Belcher, all of Cincinnati, and Roger D. Smith, Bethel, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 257,468, Apr. 24, 1981, Pat. No. 4,382,760. This application Jan. 25, 1983, Ser. No. 460,827
Int. Cl.³ B29C *17/07*; B65G *47/06*
U.S. Cl. 425—534 **2 Claims**



1. An apparatus for high rate production of biaxially oriented articles from thermoplastic article preforms, the articles having a neck portion and a formable portion, the apparatus biaxially expanding the formable portion when its temperature is at or near the molecular orientation temperature of the thermoplastic and while the preform is suspended by a carrier for transporting the article, the carrier including grippers for releasably retaining the article by the neck portion, the apparatus comprising

(a) a machine frame; and

(b) an article preform loading apparatus for loading article preforms into the carriers, the preform loading apparatus comprising

(1) a mounting plate attached to the machine frame and spaced apart from a carrier,

(2) staging means attached to the mounting plate for releasably retaining an article preform by a neck portion thereof,

(3) transfer means movably connected to the mounting plate to move between the staging means and the carrier, for transferring the preform from the staging means to the carrier, the transfer means releasably grasping the preform by the formable portion, and

(4) gripper operating means movably connected to the transfer means for

(a) forcing the gripper into its article release condition prior to advancement of the article preform thereinto, and

(b) allowing the gripper to return to its article retention condition subsequent to advancement of the article preform thereinto.

4,435,147

SPLIT INJECTION MOLD

William H. Myers, Raytown, and Dennis L. Dundas, Lee's Summit, both of Mo., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

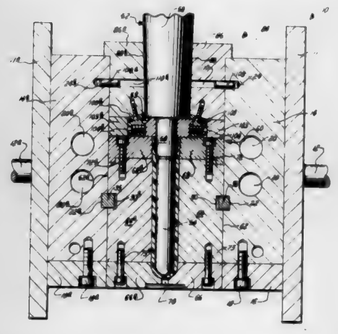
Filed Apr. 12, 1982, Ser. No. 367,653
Int. Cl.³ B29F *1/00*
U.S. Cl. 425—577 **5 Claims**

1. An improved injection molding apparatus having two opposed platens which are powered for movement towards and away from one another and a core pin reciprocally movable from a position outside of an injection mold cavity to a position inside of such mold cavity, said injection mold cavity being defined by a pair of injection mold halves carried on said platens, the improvement comprising:

a. a split carrier means, one-half of said split carrier means being affixed to one of said platens and the other of said split carrier means being affixed to said other platen, each of said split carrier halves having,

i. a pocket into which one of said injection mold halves nest, said pocket having (a) a rear planar wall lying in a plane substantially perpendicular to the long axis of said core pin movement, and (b) two outwardly angled side walls, one of said side walls emanating from one latitudinal extent of said rear planar wall and the other of said side walls emanating from the other latitudinal extent; and,

ii. a split alignment means for aligning said core pin with a line of reference when said core pin is positioned inside of said injection mold cavity, one of said split alignment means halves being affixed to one of said split



carrier halves and the other of said split alignment means halves being affixed to the other of said split carrier means halves; and,

iii. a core pin alignment means carried at the upper extent of said core pin, said core pin alignment cooperating with said split alignment means to effect said core pin alignment with said line of reference; and

b. said injection mold halves each having a planar rear wall and two opposed outwardly angled side walls, said planar wall and said side walls being dimensioned and configured to achieve aligned nesting of each injection mold half in its respective pocket whereby said injection mold cavity will be in alignment with said line of reference; and

c. means for removably affixing each of said injection mold halves to its respective pocket.

4,435,148

LOW POLLUTION METHOD OF BURNING FUELS

Gerald Moss, Wantage, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 22, 1982, Ser. No. 360,413
Claims priority, application United Kingdom, Mar. 24, 1981, 8109214
Int. Cl.³ F23D *19/02*
U.S. Cl. 431—7 **15 Claims**

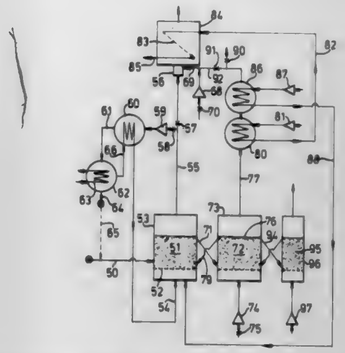
1. A low pollution method of burning a fuel, comprising the steps of:

(a) passing the fuel into a dense phase fluidized bed of particles which are fluidized by a fluidizing gas substantially free of non-combustible inert components;

(b) partially oxidizing the fuel within the dense phase bed at an elevated partial oxidation temperature to produce a combustible gas which has a low content of non-combustible inert components.

(c) passing at least some of the combustible gas to a burner; and

(d) burning the combustible gas in a flame at the burner with a combustion-supporting gas to which has been added a



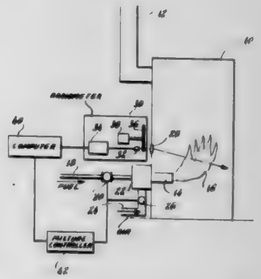
non-combustible inert gas to suppress or reduce the formation of pollutants in the resulting flue gas.

4,435,149

METHOD AND APPARATUS FOR MONITORING THE BURNING EFFICIENCY OF A FURNACE

Robert W. Astheimer, Westport, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Dec. 7, 1981, Ser. No. 328,010
Int. Cl.³ F23N *1/02*
U.S. Cl. 431—12 **6 Claims**



1. The method of monitoring the burning efficiency of a furnace having variable burning rates comprising the steps of:

viewing the flame of said furnace with an infrared detector in a manner such that the thickness of the section of the flame viewed by the detector varies with the burner feeding rate,

measuring the infrared radiation emitted by said flame in at least three different wavelengths, having a first wavelength representing a strong emission band of carbon dioxide, a second wavelenth representing a weak emission band of water and carbon dioxide, and a third wavelength reprsenting a band where none of the furnace gases absorb,

deriving a control parameter based on the ratio of the measurements of the third to the first wavelengths corrected by the measurement of said second wavelength,

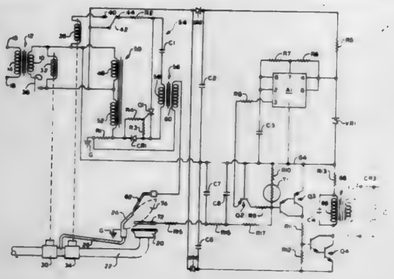
and applying said control parameter to said furnace for varying the fuel to air mixture for maximizing the burning efficiency of said furnace.

4,435,150

GAS BURNER CONTROL SYSTEM

Dennis M. Rippelmeyer, Waterloo, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 22, 1982, Ser. No. 421,299
Int. Cl.³ F23Q 9/14
U.S. Cl. 431—46 12 Claims



1. In a gas burner control system wherein a main burner is ignited by a pilot burner, wherein the pilot burner is ignited upon a call for heat, and wherein gas flow to the main burner is prevented until a pilot burner flame exists, the improvement comprising:

an oscillator having an input connected to a power source so as to be energized thereby upon a call for heat and maintained energized thereby as long as said call for heat exists, and an output having a high frequency signal appreciably higher than 60 Hz;

solid-state switch means connected to said output of said oscillator;

capacitor means connected to said switch means and operative, when sufficiently charged, for effecting on-off operation of said switch means at the frequency of said high frequency output signal of said oscillator;

coupling circuit means including a transformer having a primary winding connected in circuit with said switch means and a secondary winding connected in circuit with means for controlling the gas flow to the main burner,

said coupling circuit means being effective to enable sufficient energizing of said means for controlling the gas flow to the main burner only when said frequency of said on-off operation of said switch means is within a predetermined frequency span; and

flame responsive means connected to said capacitor means for effecting said sufficient charging of said capacitor means only when the pilot burner flame exists.

4,435,151

FUEL SUPPLY CONTROL SYSTEM

Michiaki Matumoto, Tokyo; Hironori Etou, Kashiwa, and Hidekazu Nakamoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,138
Claims priority, application Japan, May 26, 1980, 55-68976
Int. Cl.³ F23N 1/02
U.S. Cl. 431—90 3 Claims

1. A fuel supply control system comprising:

a first diaphragm;

a first chamber located adjacent to said diaphragm on one side thereof;

a valve port of a liquid fuel passage connected to a liquid fuel source on an upstream side thereof and to said chamber on a downstream side thereof;

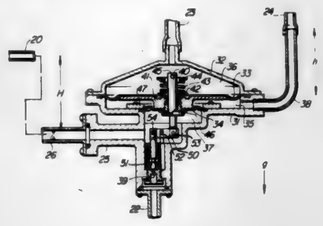
a liquid fuel supply pipe connected to said chamber for supplying the liquid fuel from said chamber to a combustor;

a second diaphragm of a larger effective area than that of said first diaphragm and located on a side of said first diaphragm opposite to said first chamber;

a valve connected to said diaphragms for regulating the opening of said valve port;

a second chamber located between said diaphragms;

a riser pipe connected to said second chamber at one end and to a portion of an air supply and exhaust passage system at the other end;



a third chamber located adjacent to said second diaphragm on a side thereof opposite to said second chamber and connected to a combustion air supply passage system in which the pressure is higher than that in said air supply and exhaust passage system; and

the vertical distance H between an end of said liquid fuel supply pipe from which the liquid fuel is directed to said combustor and said chamber has a value commensurate with the weight or the like of said diaphragm and other movable parts in accordance with the relationship:

$$H\gamma = \frac{A_0 r_1 P_1 + W_0}{A_2 + A_0 r_1},$$

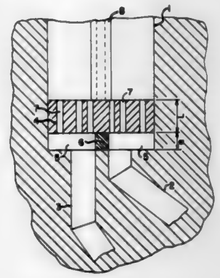
where γ=specific gravity of the liquid; A_0=area of the valve port; r_1=a valve constant $\leqq 1$; P_1=pressure of said end of the liquid fuel supply pipe; A_2=effective pressure receiving area of said diaphragm; and W_0=weight of movable parts.

4,435,152

APPARATUS FOR IMPROVING THE FLOW OF GASES TO A COMBUSTION CHAMBER OF A COKE OVEN OR THE LIKE

Carl-Heinz Struck, Bochum, and Ralf Schumacher, Hagen, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. GmbH, Bochum, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,151
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037956
Int. Cl.³ F23D 21/00
U.S. Cl. 431—170 7 Claims



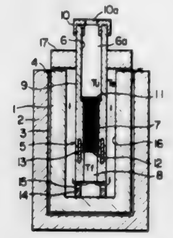
1. Apparatus for conducting a flow of combustion gases from ducts into a heating flue of an industrial gas-fired system, such as a coke oven, which system includes recuperative waste-gas heat recovery means for preheating sand combustion gases which comprise air when heating by combustion of rich gas and comprise air and lean gas when heating by combustion of lean gas; said heating flue having a lower end, a bottom wall, and an upper end; at least a portion of said combustion gases being introduced through said ducts from the outlet of said waste-gas heat recovery means into said lower end of said heating flue; said apparatus including the combination therewith of a flow plate mounted in said lower end of said heating flue and spaced from said bottom wall to form a chamber therebelow, and a central refractory web to divide said chamber into two halves in a gas-tight manner; each of the chamber halves communicating with one of said ducts; the height of said chamber to the thickness of said flow plate being in a ratio of within 0.3 to 0.7.

4,435,153

LOW BTU GAS BURNER

Takashi Hashimoto, Ibaraki, and Shigeyuki Yamazaki, Abiko, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 284,792
Claims priority, application Japan, Jul. 21, 1980, 55-98752; Jul. 21, 1980, 55-98753
Int. Cl.³ F23D 11/44
U.S. Cl. 431—208 10 Claims



1. A low Btu gas burner comprising:

a combustor means;

means for defining a primary passage;

means for defining a secondary passage separated from the primary passage;

at least one set of fine ducts located in at least the primary passage;

at least one combustion chamber located on a downstream side of the at least one set of fine ducts;

at least one heater located in a wall of the combustor means;

means for communicating the primary and secondary passages with each other at first ends thereof;

means for connecting a second end of the primary passage to an inlet port for a low Btu gas; and

means for connecting a second end of the secondary passage to an exhaust port for combustion gas, whereby the combustion gas heats the at least one set of fine ducts and the at least one combustion chamber through the wall of the combustor means.

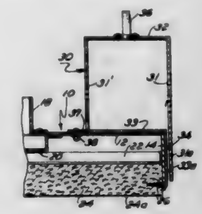
4,435,154

HEAT TRANSFER DEVICE

David L. Vigneau, 12 Payan St., West Warwick, R.I. 02893

Filed Jul. 19, 1982, Ser. No. 399,293
Int. Cl.³ F23D 13/12
U.S. Cl. 431—328 4 Claims

1. A heat transfer device comprising a convective radiant burner having a gas permeable matrix, a combustible gas plenum chamber having top, side, and end walls with an open bottom, the side and end walls having abutment means, said matrix received in the open bottom and seated against said abutment, a plurality of air knife structures abutting and extending along the outer surface of the side and end walls, means for feeding each air knife structure with air independently of the others to be able to establish in each air knife independent exit velocities, each air knife structure forming a narrow elongated air discharge slot.

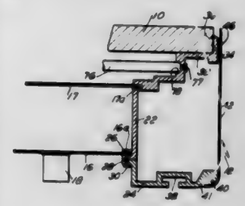


4,435,155

INFRA-RED RADIANT BURNER

David L. Vigneau, 12 Payan St., West Warwick, R.I. 02893

Filed Apr. 13, 1983, Ser. No. 484,523
Int. Cl.³ F23D 13/12
U.S. Cl. 431—328 5 Claims



1. An infra-red radiant burner comprising a rectangular permeable matrix, a first frame member part extending along two opposite sides and a second frame member part extending along the other two opposite sides, said frame members having a ledge upon which the matrix lies and a peripheral lip with means protruding therefrom inwardly to grip the edge of the matrix, said frame members having grooves facing each other, a flat sheet received in said grooves, said sheet forming a wall, said sheet with said frame members forming a gas combustion mixture chamber with said matrix, said frame members being hollow, means supplying non-combustible gas to and from each of said frame members independently of the other, said frame members each having a narrow slot exit means adjacent said peripheral lip and on the outer side of said lip.

4,435,156

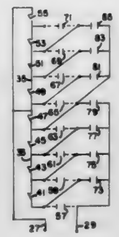
SUBMINIATURE ARRAY WITH NORMALLY CLOSED AND NORMALLY OPEN SWITCHES

Boyd G. Brower, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 2, 1982, Ser. No. 365,053
Int. Cl.³ F21K 5/00
U.S. Cl. 431—359 10 Claims

1. In a miniaturized photoflash array having a circuit board with a printed circuit including common and energizing conductors on the inner surface thereof and a plurality of flashlamps each having a pair of electrically conductive leads connected to said printed circuit, the improvement comprising a plurality of normally closed (N/C) switches formed from at least one continuous strip of switching material and connecting a plurality of flashlamps to said common conductor of said printed circuit, a plurality of normally open (N/O) switches

parallel coupling all except one of said plurality of flashlamps to said energizing conductor of said printed circuit and circuit means electrically coupling all except one of said flashlamps to



a sequentially following flashlamp whereby parallel paths for energizing a sequentially following flashlamp by said energizing conductor are provided.

4,435,157

HEAT EXCHANGER CONSTRUCTION AND METHOD OF OPERATION

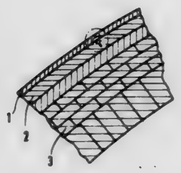
Hans-Eugen Bühler, Königstein, and Horst Kalfa, Frankfurt, both of Fed. Rep. of Germany, assignors to Brohital-Deumag AG fur feuerfeste Erzeugnisse, Urmitz b. Koblenz, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,506

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101174

Int. Cl.³ F24H *7/00*; C22C *33/00*; C21B *7/02, 9/00*

U.S. Cl. 432—30 **17 Claims**



1. A heat exchanger having an inner refractory lining, an intermediate insulating layer and an outer metal shell, said insulating layer being disposed to maintain the temperature of said metal shell in the range of from 20°-60° C. during the operation of said heat exchanger, said metal sheel comprising an essentially chromium-free structural steel having a molybdenum content in the range of from 0.01 to 2% by weight.

4,435,158

HEATED CHAMBER WALLS

Maurice Harman, Milton Keynes, England, assignor to The Energy Equipment Company Limited, Bedfordshire, England

Continuation-in-part of Ser. No. 43,325, May 29, 1979, Pat. No. 4,299,562. This application Jun. 25, 1981, Ser. No. 277,383

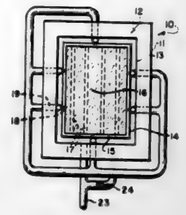
Claims priority, application United Kingdom, May 30, 1978, 24517/78

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ F27B *15/00*; F23G *5/00*; F23M *5/00*; F27D *1/00*

U.S. Cl. 432—58 **9 Claims**

4. A combustor or furnace of the fluidized bed shell type boiler comprising a furnace tube, a front end wall, a rear end wall and a plurality of fluidizing sparge tubes extending between said front and rear end walls, said front end wall and said rear end wall being mounted to provide an annular gap with respect to inner surface of said furnace tube, and at least



one sparge pipe provided within said gap between said front end wall and said furnace tube.

4,435,159

APPARATUS FOR THERMALLY TREATING PULVEROUS MATERIALS SUCH AS CEMENT RAW MATERIAL

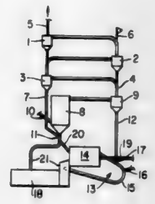
Hans B. Knudsen, Kolding, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Nov. 16, 1981, Ser. No. 321,725

Claims priority, application United Kingdom, Nov. 17, 1980, 8036837

Int. Cl.³ F27B *7/02*; C04B *7/02*

U.S. Cl. 432—106 **22 Claims**



1. Apparatus for thermally treating pulverous materials which comprises:

(a) preheating means having inlet and outlet means for heating gas and raw materials;

(b) suspension calcining means having inlet means for fuel, combustion air and preheated raw materials, combustion gas outlet means communicating with said heating gas inlet means of said preheating means;

(c) sintering furnace means having inlet means for fuel and combustion air, and combustion gas outlet means communicating with said heating gas inlet means of said preheating means, and outlet means for the sintered product, said calcined material outlet means of said suspension calcining means communicating with said material inlet means of said sintering furnace means;

(d) air cooling means for cooling the sintered product, said air cooling means having air outlet means communicating with said air inlet means of said sintering furnace means and with said air inlet means of said suspension calcining means, and material inlet means communicating with said sintering furnace means;

(e) said sintering furnace means comprising at least one sintering drum rotatable about an axis inclined with respect to the horizontal and suspension inlet duct means provided with material inlet means and having at least a first end portion communicating with said air outlet means of said material cooling means and at least a second end portion communicating with said upper end portion of said sintering furnace means substantially tangentially to the inner surface portion of said sintering furnace means;

(f) fuel inlet means projecting into at least one of said material inlet means of said sintering furnace means and said suspension inlet duct means;

(g) combustion gas outlet duct means communicating with at least one end portion of said sintering furnace means; and

(h) material outlet means for the sintered product at the lower end portion of said sintering furnace means.

4,435,160

METHOD AND MANUFACTURE FOR APPLYING AND REMOVAL OF ORTHODONTIC BRACKET

Ronald M. Randklev, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 172,218, Jul. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 137,631, Apr. 7, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,500

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—9 **13 Claims**

1. A manufacture for orthodontic bracket application and removal without abrading tooth enamel, comprising:

(1) an orthodontic bracket adhesive composition which contacts said tooth enamel, comprising a finely divided first inorganic material admixed with a polymerizable resin, said first inorganic material being non-toxic, essentially insoluble in mouth fluids, and having a Mohs hardness less than about 4.5;

(2) a solid abrasive tool which abrasively contacts said orthodontic bracket adhesive composition to effect removal thereof, comprising a second inorganic material, said second inorganic material being non-toxic and having a Mohs hardness which is greater than the Mohs hardness of said first inorganic material and less than about 5.

11. A method for applying an orthodontic bracket to a tooth surface and for removing said bracket therefrom, comprising the steps of:

A. cleaning said tooth surface using dental prophylactic paste and an etchant;

B. applying a thin layer of sealant resin to said tooth surface;

C. coating said thin layer of sealant resin with a layer of orthodontic bracket adhesive composition comprising a finely divided first inorganic material admixed with a polymerizable resin, said first inorganic material being non-toxic, essentially insoluble in mouth fluids, and having a Mohs hardness less than about 4.5;

D. applying an orthodontic bracket to said layer of orthodontic bracket adhesive composition and curing said adhesive composition;

E. removing said orthodontic bracket at the completion of orthodontic treatment; and

F. removing any residual adhesive which may remain on said tooth surface by grinding said residual adhesive away with a solid abrasive tool comprising a finely divided second inorganic material admixed with a solid binder, said second inorganic material being non-toxic and having a Mohs hardness which is greater than the Mohs hardness of said first inorganic material and less than about 5.

4,435,161

DENTAL TURBINE

David Mosimann, Ch. des Grillons 13-15, CH-2504 Bienne 6, Switzerland

PCT No. PCT/CH81/00113, § 371 Date Jun. 10, 1982, § 102(e) Date Jun. 10, 1982, PCT Pub. No. WO82/01309, PCT Pub. Date Apr. 29, 1982

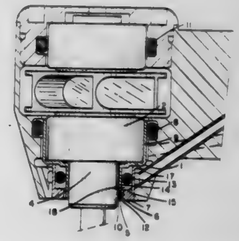
PCT Filed Oct. 8, 1981, Ser. No. 395,084

Claims priority, application Switzerland, Oct. 10, 1980, 7576/80

Int. Cl.³ A61C *1/05*

U.S. Cl. 433—132 **5 Claims**

1. A dental turbine comprising a rotor assembly receiving turbine head forwardly terminating in a nose containing a turbine shaft accommodating bore which forms an inwardly facing bore surface, and a rotor assembly laterally displaceably received in the head and including a turbine shaft mounted for rotation in bearing means, such bearing means being positioned for lateral displacement relative to the head and including a correspondingly laterally displaceable bearing adjacent to the bore and having a rotatable inner bearing part connected to the shaft for movement therewith and a cooperating non-rotatable outer bearing part laterally displaceably positioned in the head, and such shaft having a forward portion forwardly of the bearing and extending through the bore in inwardly spaced relation to the bore surface and thereby defining a clearance space between the shaft and the bore surface for accommodating lateral displacement of the shaft relative to the head thereat, and a non-rotatable and correspondingly laterally displaceable protective sleeve fitted to the outer bearing part



for lateral displacement therewith and extending therealong to the forward portion of the shaft and into the annular space and maintained in outwardly spaced relation to the forward portion of the shaft to permit unhindered rotation of the shaft and to provide a relatively minute clearance gap between the forward portion of the shaft and the adjacent portion of the sleeve in the clearance space for protecting against entry of external waste material thereat, and correspondingly maintained in inwardly spaced relation to the bore surface to provide a resultant reduced clearance space between the adjacent portion of the sleeve and the bore surface for similar protection against entry of such waste material thereat yet sufficient for accommodating lateral displacement of the forward portion of the shaft and the sleeve upon lateral displacement of the rotor assembly relative to the head.

4,435,162

TRIGONOMETRY VISUALIZERS AND METHOD OF MAKING SAME

Justin P. Schoenwald, 876 Burrow Rd., Ontario, N.Y. 14519

Filed Dec. 22, 1982, Ser. No. 452,128

Int. Cl.³ G09B *23/04*

U.S. Cl. 434—215 **10 Claims**

1. A trigonometric visualizer, comprising

a pair of plane members connected together for rotation relative to each other about a common axis,

means defining a first circle on one of said members coaxially of said axis,

means defining on said one member a pair of radial extending zones which intersect at right angles at said axis and which define therebetween at least one quadrant of said circle,

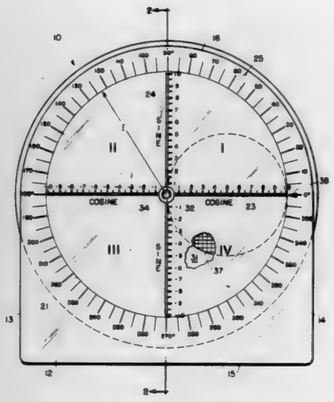
a plurality of spaced graduations arranged along each of said zones and denoting the decimal values of one of two trigonometric functions for a ninety degree interval about said axis,

a plane geometric figure formed on the other of said members and having a periphery viewable through said zones during relative rotation between said members, and

means for indicating the degree to which said members are rotated relative to each other,

said periphery being operative, at the point where it inter-

sects one of said zones, to indicate the decimal value of the associated trigonometric function corresponding to the



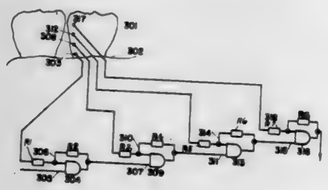
indicated degree of relative rotation between said members.

4,435,163

DENTAL TECHNIQUE TRAINING DEVICE

Oscar A. Schmitt, 4218 State St., Erie, Pa. 16509; Robert J. Nedreski, 5073 Wiltsie Rd., Erie, Pa. 16510, and Eskil Karlson, 4634 State St., Erie, Pa. 16509

Filed Feb. 19, 1982, Ser. No. 350,207
Int. Cl.³ G09B *23/28*
U.S. Cl. 434—263 23 Claims



1. A dental teaching device comprising,

a manikin head having a mouth with moveable jaw and teeth,

each said tooth having at least one electrical sensing element imbedded therein,

a microprocessor,

at least some of said electrical sensing elements being disposed in said teeth, being connected to said microprocessor, and actuating counting devices contained in the manikin,

said electrical elements include a special sensing element connected to said microprocessor by means of an elongated electrical conducting means connected to a said microprocessor,

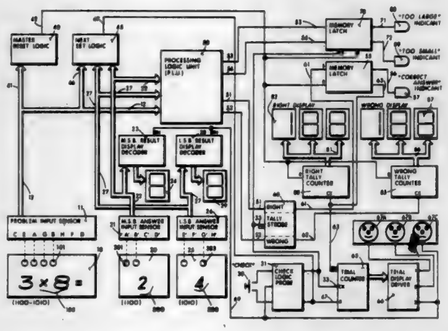
said special sensing element being adapted to be brought into close proximity to a said tooth and adapted to sense the electrical elements in said teeth whereby the effect on said teeth is indicated.

4,435,164

DIDACTIC APPARATUS PROVIDING FOR TUTELAGE OF RESPONSES THROUGH INCULCATION

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Sep. 17, 1979, Ser. No. 76,480
Int. Cl.³ G09B *7/02*
U.S. Cl. 434—337 19 Claims



1. Didactic means adapted for providing essentially a disjunctive problem entry and answer response entry effect thereby providing a student directed learning experience, comprising in operative combination:

i. a set of substantially planar interrogative elements with each element therewith provided individually having thereon at least a first symbolic stimuli which is presented as an effectively visible problem to the student for tutorial consideration, together with a first cryptogrammic code identity corresponding to the said first symbolic stimuli which is machine readable by noncontiguous means and results in an effective indication of the requisite student response;

ii. a set of substantially planar responser elements with at least one element selectable therefrom having second symbolic stimuli presented thereon which substantially serves as an effectively visible answer component which is correlative with the said individual interrogative element problem put to the student, together with a second cryptogrammic code identity corresponding to the said second symbolic stimuli which is machine readable by noncontiguous means and results in an effective indication of the response selection;

iii. an interrogative element sensor station means comprising a substantially separate stationary sensing element means for each cryptogrammic code element which is effectively recipient for the purpose of converting the said first cryptogrammic code identity representations on the said interrogative element into a plurality of effectively parallel first functional electical signals;

iv. a responser element sensor station means comprising a substantially separate stationary sensing element means for each cryptogrammic code element which is effectively recipient for the purpose of converting the said second cryptogrammic code identity representations on at least one said responser element into a plurality of effectively parallel second functional electrical signals;

v. processing logic means arranged as an effectual combination of electrical devices suited for the correlative manipulation and comparison of the said first and said second functional electical signals effectively coupled thereto as provided by the said sensor station means; and,

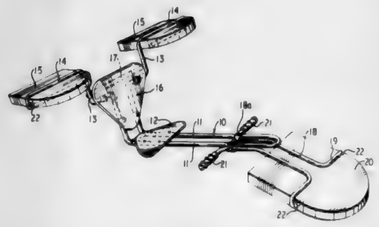
vi. indication means coupled with the said processing logic unit to signal and thereby score the student as to the exactitude of his/her selected responser element answer.

4,435,165

FLOTATION DEVICE FOR SUPPORTING A PERSON IN WATER

James E. Johnson, Cheltenham, England, assignor to J. E. Johnson & Sons (Engineers) Limited, Cheltenham, England

Filed Jul. 17, 1980, Ser. No. 169,755
Claims priority, application United Kingdom, Jul. 31, 1979, 7926682
Int. Cl.³ B63C *9/08*
U.S. Cl. 441—130 13 Claims



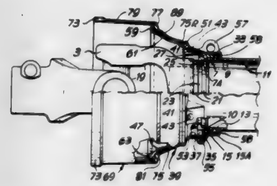
1. A flotation device for supporting a person in water comprising an elongate frame including at least one body-support member, and front and rear float assemblies mounted on the frame, at least one of said float assemblies comprising two float elements spaced apart transversely of the elongate frame, and locating means on the frame providing a push-fit connection between the float elements and the frame, whereby the float elements are easily attachable and detachable to and from the frame by hand, each float element comprising a body of buoyant material connected to the elongate frame by a respective mounting element, each mounting element being shaped to define an aperture into which said body of buoyant material is received, each mounting element being round aluminum tubing bent into a loop to define said aperture, each body of buoyant material including notches between two portions of greater cross-sectional area, the buoyant material being retained in the aperture by forcing it through the loop of bent aluminum tubing until the tubing snaps into the notches.

4,435,166

GUARD MADE UP OF SECTIONAL UNITS FOR CARDAN SHAFTS

Edi Bondioli, Via Gina Bianchi 18, Suzzara, Mantova, Italy

Filed May 25, 1982, Ser. No. 381,747
Claims priority, application Italy, Jun. 5, 1981, 9437 A/81
Int. Cl.³ F16D *3/84*
U.S. Cl. 464—172 9 Claims



1. A guard for a cardan shaft having at least one universal joint with a base, and a shaft connected to the base, comprising:

a collar (21) having an annular throat (23) and mounted on the base;

an inner radially expandable open ring nut (7) having an inner annular projection (25) rotatably engaged in said annular throat (23), a plurality of resilient tongues (27) extending on one side of said ring nut, and a plurality of appendixes (15, 33) extending on an opposite side of said ring nut and forming a seat on the inner surface thereof;

a telescopic guard part (9, 11) having a tubular sheath (9) for covering the shaft and engaging in said seat, said sheath having a plurality of slots (13);

at least some of said appendixes (15) having click detents (15A) for engagement into said slots (15) of said tubular sheath;

an inner main funnel (39) mounted on and covering said inner ring nut (7) holding said nut and preventing its radial expansion, said inner main funnel having a tongue seat (41) for each of said resilient tongues (27) for a spring-engagement of said inner main funnel (39) on said inner ring nut (7) and for preventing relative rotation between said nut and said inner main funnel; and

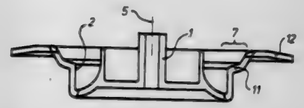
an outer funnel-shaped band (69) spring-fitted on said main funnel to form an extension thereof in an axial direction of said guard and axially fixed with respect to said inner main funnel.

4,435,167

CENTRIFUGE

Reinhard Stöwer, Au in der Hallertau, Fed. Rep. of Germany, assignor to Compur-Electronic GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,409
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1980, 3036538
Int. Cl.³ B04B *5/02*
U.S. Cl. 494—16 15 Claims



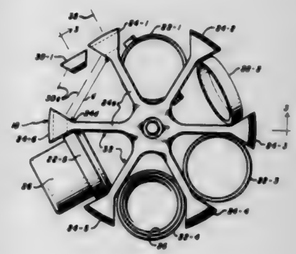
1. In a centrifuge having a rotor and at least one sample vessel swingingly supported in said rotor for swinging into a horizontal position on running the centrifuge, the invention residing in that said centrifuge has a rolling system for supporting said vessel on said rotor, said system being made up of at least two cooperating rolling structures of which at least one is convexly curved, one structure being on the rotor and the other on the vessel, said convexly curved structure being arranged normal to a plane of rotation of said rotor, said structures being adapted to permit said sample vessel to swingingly turn into and out of a horizontal centrifuging position.

4,435,168

CENTRIFUGE ROTOR APPARATUS WITH SLING ARMS

A. Terence Kennedy, Walpole, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Filed Jun. 4, 1982, Ser. No. 384,899
Int. Cl.³ B04B *5/02*
U.S. Cl. 494—20 10 Claims



1. In a centrifuge rotor having plural arms extending radially

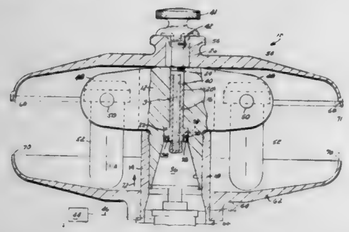
from a hub, said rotor being arranged for supportingly receiving on said arms pivoting support means for centrifuge carrier means, the improvement in which each rotor arm comprises sling means formed by vertically-spaced upper and lower arm segments joined at a sling seat distal from the rotor hub, said segments of each rotor arm being vertically-separated for removably and replaceably receiving therebetween receptacle-supporting pivot structure, and said sling seat forming bearing means for receiving the receptacle-supporting pivot structure.

4,435,169

CENTRIFUGE ROTOR HAVING A CLOSABLE WINDSHIELD

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1982, Ser. No. 427,907
Int. Cl.³ B04B 5/02
U.S. Cl. 494—20 **14 Claims**



1. A rotor for a swinging bucket centrifuge comprising:
a shaft;
a plurality of rotor buckets pivotally mounted to the shaft, the buckets being pivotable from a rest position to an operating position;
an upper windshield portion attached to the shaft for rotation therewith, the outer boundary of the upper windshield portion terminating in a mating edge; and
a lower windshield portion movably mounted with respect to the shaft, the lower windshield portion having a mating edge thereon, the lower windshield portion being movable in a direction parallel to the axis of rotation of the rotor in response to a closing force generated by the rotation of the rotor to displace the lower windshield portion along the shaft and dispose the mating edges thereof into closed engagement with the mating edges on the upper windshield portion.

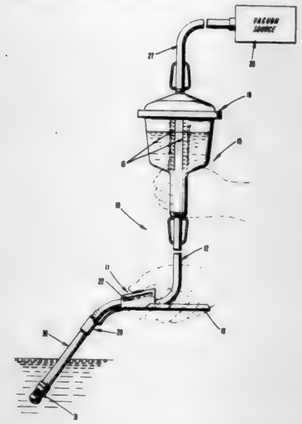
4,435,170

ASSEMBLY FOR RECEIVING AND DISCHARGING A COLLECTION OF BLOOD

Max Laszczower, Basel, Switzerland, assignor to Solco Basel AG, Switzerland

Filed Jun. 15, 1981, Ser. No. 273,711
Int. Cl.³ A61M 37/00; A61B 19/00
U.S. Cl. 604—4 **20 Claims**

1. An assembly operable by a single person for receiving by aspiration, storing and discharging a collection of blood to the same patient, said assembly comprising:
(a) a single vessel means for collection and dispensing having a structural configuration effective to be held in one hand of an operator and further effective for receiving and storing blood, said vessel means having a plurality of chamber means for alternate collection and dispensing of the aspirated blood and having inlet and outlet means disposed at opposite ends thereof, one of said chamber means having a lesser diameter than the other chamber means,
(b) a flexible tube removably connected to one of the inlet or outlet means,
(c) fluid flow aspirating regulating means removably disposed on the said flexible tube at a location spaced from said collection vessel means, said flow regulating means including coupling means rigidly mounted to one end of a support element means to support the flexible tube and handle means disposed at the other end of said element means, said handle means having a structural configuration effective to be held simultaneously in the other hand of the operator while said lesser diameter chamber means of the vessel means is being held in said one hand of the operator while the flow of blood is simultaneously regulated by the fluid flow regulating means,



(d) said flexible tube being removably connected to one end of said coupling means and the other end of said coupling means including an opening for directing liquid therethrough into and out of said flexible tubing,
(e) said fluid flow regulating means including a pair of walls upwardly extending from the support element at a location between the handle means and the coupling means, roller means movably mounted with respect to the pair of walls and being effective to control the amount of fluid flowing in a flexible hose disposed between said roller and the support element.

4,435,171

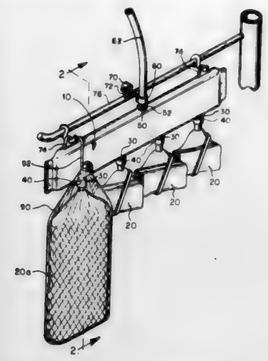
APPARATUS TO BE WORN AND METHOD FOR REMOVING FLUID FROM A LIVING SUBJECT

Edward M. Goldberg, 225 Maple Hill Rd., Glencoe, Ill. 60022, and Seymour Bazell, 9235 N. Latrobe, Skokie, Ill. 60077

Continuation of Ser. No. 45,294, Jun. 4, 1979, abandoned. This application Sep. 30, 1981, Ser. No. 307,188
Int. Cl.³ A61M 31/00
U.S. Cl. 604—49 **13 Claims**

1. A method for collecting body liquids comprising the steps of:
(a) connecting a sterile, liquid receiving, device to a source of draining body liquids, said device including a manifold means for connection to the source of draining body liquids and a plurality of sterile containers connected to and below said manifold, each of said containers having a valve associated therewith which is selectively manually operable to either open gravity flow of liquids from the manifold to the container or to isolate the container from the manifold;
(b) positioning the valves to cause the body liquids to flow by gravity from the manifold into a preselected container;
(c) repositioning the valves to isolate said preselected container from the manifold;
(d) removing said preselected container with liquids therein from the manifold so as to leave the associated valve

coupled to the manifold, thereby separating the preselected container and the body liquids contained therein from the manifold without opening the manifold during



said transfer of liquids to atmosphere or contamination; and
(e) repeating steps (b) through (d) with a second preselected container included in the drainage receiving device.

4,435,172

ABSORBENT ARTICLE HAVING ENHANCED BLOOD ABSORPTION

James R. Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 22, 1982, Ser. No. 421,680
Int. Cl.³ D02G 3/00; A61S 13/16
U.S. Cl. 604—368 **13 Claims**

1. A water-swellable hydrophilic polymer article containing an effective amount of a water soluble amido compound having the formula

$$H_2N—X—NH_2$$

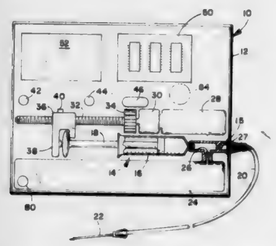
where X is —CO—, —CS—, —SO— or —SO_2—, and an effective amount of a non-ionic surfactant which are effective to improve the blood absorption rate of said article.

4,435,173

VARIABLE RATE SYRINGE PUMP FOR INSULIN DELIVERY

George G. Sipos, Costa Mesa, Calif., and Jerry B. Christian, St. Louis, Mo., assignors to Delta Medical Industries, Costa Mesa, Calif.

Filed Mar. 5, 1982, Ser. No. 355,102
Int. Cl.³ A61M 5/20
U.S. Cl. 609—155 **12 Claims**



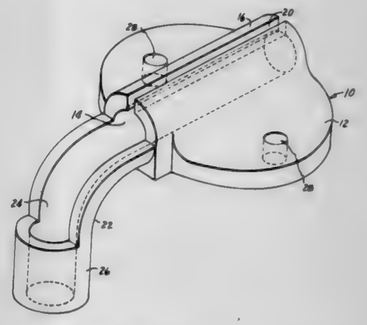
1. A variable rate pump for insulin delivery comprising:
a piston pump having an output for connection for delivery of medication to a patient, said piston pump having a piston therein;
electrical motor drive means connected to said piston to move said piston in said pump to dispense medication from said pump, said electric motor means comprising a pulse-driven electric motor having an output shaft, said output shaft being connected to a lead screw, a nut on said lead screw to move axially of said lead screw when said lead screw rotates, said nut being in engagement with said plunger to move said plunger as said motor rotates, a wheel connected to rotate with said lead screw, a plurality of magnetic poles on said wheel, said motor drive means including a pulse switch, said pulse switch being a magnetically controlled switch mounted directly adjacent said wheel and controlled by said wheel to produce signal pulses as said motor moves said plunger;
control means for controlling said motor, said control means having pulse interval selection means for producing a base command pulse rate which is proportional to the desired medication dispensing command rate, said pulse switch being connected to said motor control means so that the pulses produced as said motor moves said piston are counted by said control means and are compared to the command pulses delivered for controlling said motor, said base rate selection means being manually selectable, said control means also including a bolus control means connected to deliver a preselected number of bolus command pulses to said motor drive means for the delivery of a preselected amount of medication.

4,435,174

CATHETER GUIDE

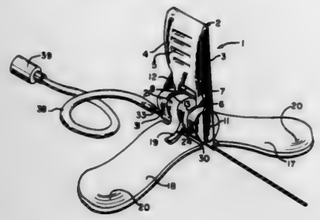
Russell J. Redmond, Santa Barbara, and Donald L. Hannula, Goleta, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 12, 1982, Ser. No. 367,816
Int. Cl.³ A61M 5/00
U.S. Cl. 604—174 **13 Claims**



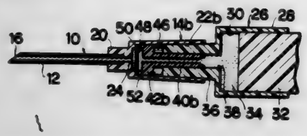
1. A catheter guide comprising:
a base having a channel with a first portion of the channel which extends across the base for receiving a catheter;
an outwardly and arcuately extending member on the base having a second portion of the channel which extends along such member;
a first retaining means on the base for retaining a catheter within the first portion of the channel; and
a second retaining means on the arcuately extending member for retaining such catheter within the second portion of the channel.

4,435,175
INFUSION NEEDLE CARRIER
G. Burton Friden, 2200 Broad St., Colmar, Pa. 18915
Filed Sep. 11, 1981, Ser. No. 301,190
Int. Cl.³ A61M 5/00
U.S. Cl. 604—177 21 Claims



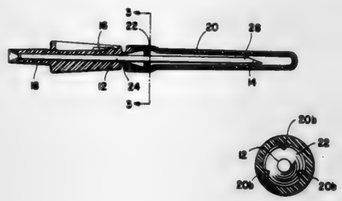
1. An infusion needle carrier comprising:
a body member, said body member including at least one body hinge block means;
an infusion needle firmly affixed to said body member;
a laterally extending support base portion affixed to said body member for selective movement with respect to said body member;
a control member affixed to said body member, said control member having two opposed sides and having a manually squeezed condition in which said opposed sides are forced towards each other and an unsqueezed condition;
camming means on said control member, said camming means being selectively operatively associated with said support base portion, the engagement condition of said camming means being operatively responsive to said squeezed and unsqueezed conditions of said control member;
whereby, when said control member is in said squeezed condition, said camming means are adapted to release said body member and said support base portion from mutual locked engagement thereby disposing them in an unset non-locked condition with respect to each other, and, when said control member is in said unsqueezed condition, said support base portion and said body member are in a set locked condition with respect to each other, said engagement condition of said camming means thereby determining said set and unset condition.

4,435,176
NEEDLE ASSEMBLY
Soji Ishikawa, No. 6-22, Miyazaki 6-chome, Takatsu-ku, Kawasaki-shi, Kanagawa-ken, Japan
Filed Feb. 9, 1982, Ser. No. 347,160
Claims priority, application Japan, Oct. 22, 1981, 56-156380[U]
Int. Cl.³ A61M 5/32
U.S. Cl. 604—190 3 Claims



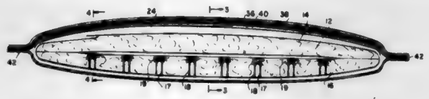
1. A needle assembly for use with a hypodermic syringe including a syringe barrel with a snout formed at its leading end, said snout being tapered towards its tip end and having a hole therein, which comprises:
a needle having a longitudinal bore extending throughout its length;
a needle holder receiving the needle at its one end and having a flared bore therein at its other end, said flared bore being shaped and sized to be press fitted over the tapered snout of the syringe barrel, said needle holder having a narrow hole in the needle receiving section which communicates with the flared bore;
a hollow pipe fixed in the flared bore at the innermost area thereof by means of a bulged portion formed at a base thereof, said pipe being shaped and sized to be inserted in the snout hold and having a passage which communicates with the needle bore through the narrow hole in the needle holder; and
a plate-like filter provided at the area in the needle holder which communicates with the needle and the pipe, the filter being carried by annular projections formed on the end walls of the pipe and the flared bore of the needle holder.

4,435,177
NEEDLE ASSEMBLY
Bruce N. Kuhlemann, Hayward; Kalman Horvath, Concord, and Prentice C. Wharff, Oakley, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.
Filed Jun. 9, 1982, Ser. No. 386,549
Int. Cl.³ A61M 5/32
U.S. Cl. 604—263 14 Claims



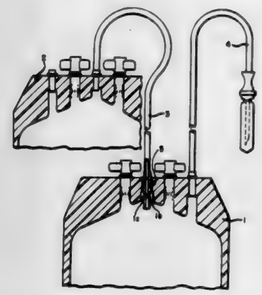
1. A needle assembly comprising a needle, a needle-retaining portion, a removable needle protector portion, and a resilient member for removing liquid from the surface of said needle, said liquid-removing member being contained within and removable with said needle protector portion and being positioned around a portion of, and disposed rearward of the point of, said needle, said liquid-removing member further having a needle-accommodating opening with an inner diameter approximately that of the outside diameter of the needle and outer cross sectional dimensions such that at least one of the dimensions is less than the internal cross sectional dimension of the protector, thereby providing a passageway for facilitating steam sterilization rearward of the liquid-removing member.

4,435,178
DISPOSABLE ABSORBENT PRODUCT HAVING AN EMBOSSED PAD CONTAINING A GEL FORMING COMPOUND
Harry G. Fitzgerald, Green Bay, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 27, 1978, Ser. No. 890,155
Int. Cl.³ A61F 13/16
U.S. Cl. 604—365 1 Claim



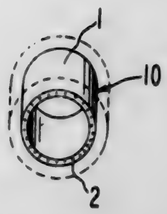
1. A disposable product comprising an absorbent core having a corrugated tissue sandwiched between two layers of fluffed pulp, upper and lower layers of wadding above and below said absorbent core, a fluid impervious sheet wrapped about said upper wadding layer and said absorbent core and having edges bonded to said lower wadding layer, and a non-woven sheet material wrapped about said wadding, core, and fluid impervious sheet, the lower layer of said layers of fluffed pulp facing the wearer and being provided with embossed recesses therein, said recesses extending about four-fifths the thickness of said lower layer of fluffed pulp and the material of said lower layer of fluffed pulp above said re-esses being highly compressed, said recesses being coated with a stabilizing binding material selected from polymers derived from poly acrylo nitrile, poly acrylamide and starches grafted therewith, said lower layer of fluffed pulp having grooves in the lower layer interconnecting said recesses.

4,435,179
BLOOD BAGS WITH INTERCONNECTING SYSTEM
Wolfram H. Walker, Rödermark, Fed. Rep. of Germany, assignor to Biotest-Serum-Institut GmbH, Frankfurt-Niederrad, Fed. Rep. of Germany
Filed Nov. 9, 1981, Ser. No. 319,769
Int. Cl.³ A61M 5/00
U.S. Cl. 604—410 5 Claims



1. A blood bag assembly comprising at least first and second bags and tubular means connecting the interiors of the bags, the first bag having a sealed flattened edge, the interior of said first bag projecting upwardly into the region of the sealed edge to form a recess, the connecting means including a coupling composed of a connecting portion, a break-off portion and a fracture line located within the recess, the connecting portion being joined directly to said first bag so that it is situated directly at the upper edge of said first bag and terminating substantially evenly therewith, the break-off portion within said recess upon breaking off falling into the inside of the bag and leaving the connecting portion open for free passage of liquid across its full cross-sectioned area.

4,435,180
ELASTOMERIC ACTIVE AGENT DELIVERY SYSTEM AND METHOD OF USE
Harold M. Leeper, Mountain View, Calif., assignor to ALZA Corporation, Palo Alto, Calif.
Filed May 25, 1982, Ser. No. 381,994
Int. Cl.³ A61K 9/00
U.S. Cl. 604—896 14 Claims



1. A transdermal therapeutic system for delivering active agent to the skin comprising body member surrounding means, at least a portion of said means being formed from an elastomeric matrix having active agent dispersed therethrough at a concentration greater than the saturation concentration of said agent in said elastomer, the skin proximal surface area of said matrix being smaller in its relaxed condition than in its condition of use when applied around a body member whereby the elastomeric matrix creates a compressive force on said body member sufficient to establish and maintain active agent transferring contact between said transdermal therapeutic system and the skin of said body member.

4,435,181

CONCENTRATED FLOWABLE STORAGE STABLE AQUEOUS FORMULATIONS OF COLD DYEING FIBER REACTIVE DYESTUFFS

Robert G. Hoguet; Dietmar Kalz; Thomas J. Thomas; Henry T. Whetsell, all of Summerville, S.C.; Joachim Wolff, Cologne, Fed. Rep. of Germany; Konrad Nonn, and Karl-Heinz Wolf, both of Leverkusen, Fed. Rep. of Germany, assignors to Mobay Chemical Corporation, Pittsburgh, Pa. and Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

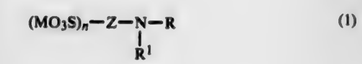
Filed Apr. 21, 1982, Ser. No. 370,426

Int. Cl.³ D06P *67/00*

U.S. Cl. 8—527 **14 Claims**

1. A storage stable concentrated fluid aqueous dispersion of at least one water soluble cold dyeing fiber reactive dyestuff having superior kinetic solubility comprising

(A) between about 10 and 50 wt. % of at least one dyestuff having an average particle size less than about 100 microns of the formula:



(1)

wherein

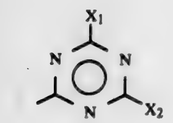
M=the cation of Li, Na, K, NH_3 or an organic amine

n=an integer of 1 to 5

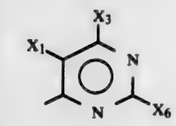
Z=a dyestuff chromophore system

R^1=H or a C_1 to C_4 alkyl, and

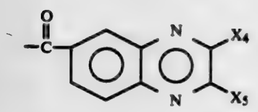
R=a fiber reactive group of one of the following structures:



(2)



(3)



(4)

wherein

X_1=Cl, F, but F if X_2 not F or Cl

X_2=Cl, F, NH_2, NHR^2, OR^2, SR^2, $—CH_2R^2$

X_3=Cl, F, CH_3

X_4=Cl, F

X_5=Cl, F, CH_3 X_6=Cl, F

with the proviso that one of X_3 and X_6 is F,

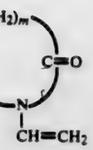
and wherein

R^2=alkyl substituted by OH, SO_3H, COOH, or C_1–C_4-alkoxy,

aryl substituted by SO_3H, C_1–C_4-alkyl, or C_1–C_4-alkoxy,

aralkyl substituted by SO_3H, C_1–C_4-alkyl, or C_1–C_4-alkoxy;

(B) between about 2 and 15 wt. % of dispersant selected from the group consisting of anionic dispersing agents and vinyl polymers synthesized from monomers of the formula



(5)

in which m is an integer from 3 to 5; and

(C) between about 4 and 25 wt. % of water soluble electrolyte said dispersion having a viscosity at 20° C. of less than 5,000 cps at 20 rpm.

4,435,182

PROCESS FOR THE EXTRACTION OF SOLID MATERIAL FROM SOLUTION BY CRYSTALLIZATION

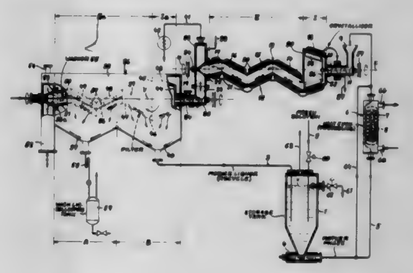
Zoltan Banos; Endre Vereczkey; György Kerey; Peter Rudolf; Istvan Takacs; Jozsef Felmeri, and Gyula Bosits, all of Budapest, Hungary, assignors to Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Division of Ser. No. 131,826, Mar. 19, 1980, Pat. No. 4,357,306. This application Aug. 6, 1981, Ser. No. 290,509

Claims priority, application Hungary, Mar. 21, 1979, RI 704

Int. Cl.³ B01D *9/02*

U.S. Cl. 23—295 R **6 Claims**



1. In a process for the extraction of dissolved solid material from a solution by crystallization in which a mother phase in a metastable range in which crystallization begins is formed, said mother phase is cooled to increase crystal growth and form a crystal slurry, and crystals are separated from said slurry, the improvement which comprises the steps of:

(a) separating said crystals from said crystal slurry by continuous filtration of said slurry to form a fraction containing a required grain size of crystals and a fraction of mother liquor containing crystals of a grain size less than said required size;

(b) continuously mixing the mother liquor from step (a) with fresh solution containing dissolved solids;

(c) allowing the crystals from the mother liquor and the fresh solution to settle and form said mother phase and a further mother liquor free from crystals, and discharging said further mother liquor;

(d) cooling and simultaneously moving the mother phase formed in step (c) to increase crystallization thereof and form said crystal slurry, the cooling and simultaneous moving of said mother phase formed in step (c) being effected by passing it along cooled surfaces from one end to another of an elongated body while swinging said body around an axis; and

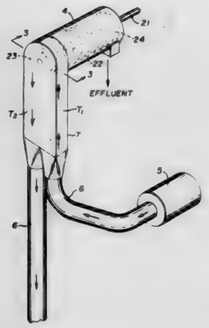
(e) feeding the crystal slurry formed in step (d) to filtration in step (a).

4,435,183

PROCESS FOR RAPID DEWATERING AND DRYING OF CALCIUM SULFATE HEMIHYDRATE

Donald O. Baehr, Arlington Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Feb. 16, 1982, Ser. No. 349,231
Int. Cl.³ B01D *1/14*; C01F *11/46*; C04B *11/02*
U.S. Cl. 23—293 R **6 Claims**



1. A process for rapid mechanical dewatering and thermal drying of a calcium sulfate hemihydrate slurry in a centrifuging and flash drying operation comprising:

enclosing the discharge end of a centrifuge bowl within a high velocity, high volume, heated air stream of a flash dryer;

passing high velocity, high volume heated air through the dryer;

ejecting damp hemihydrate solids directly from the centrifuge bowl lip into the high velocity, high volume heated air stream of the flash dryer;

and suspending the hemihydrate solids in the high velocity, high volume heated air stream until dry.

4,435,184

METHOD OF RECOVERING BORIC ACID FROM WASTE-WATER CONCENTRATES OF NUCLEAR PLANTS

Heinrich J. Schroeder, Biblis; Rainer Ambros, Biblis-Wattenheim; Gottfried Paffrath, Hohen Sülzen, and Norbert Brenner, Bürstadt, all of Fed. Rep. of Germany, assignors to Rheinisch-Westfälisches Elektrizitätswerk AG, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 215,151, Dec. 11, 1980, abandoned. This application Apr. 30, 1981, Ser. No. 259,094
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950601
Int. Cl.³ B01D *9/02*; C01B *35/10*
U.S. Cl. 23—300 **3 Claims**

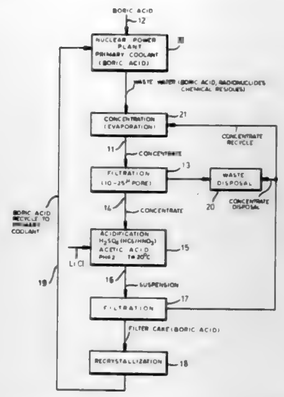
1. A method of recovering boric acid from a nuclear power plant waste-water concentrate containing boric acid, radionuclides and chemical residues, comprising the steps of:

removing solids from said nuclear power plant waste-water concentrate by filtration;

acidifying the concentrate to a pH of about 2 with at least one acid selected from the group which consists of sulfuric acid, hydrochloric acid, nitric acid and acetic acid, adding a boric-acid-solubility reducing salt thereto, and lowering the temperature as the resulting solution to precipitate boric acid;

recovering the precipitated boric acid by filtering upon a filter of a pore size of 10 to 25 microns;

taking the precipitated boric acid into solution in hot water; and



cooling the solution to recrystallize the boric acid out of the latter solution.

4,435,185

FURNACE FUEL

Thomas C. Kenny, Syosset, and John P. Plunkett, Smithtown, both of N.Y., assignors to Horizon Chemical, Inc., Freeport, N.Y.

Filed Oct. 1, 1979, Ser. No. 81,017
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—68 **16 Claims**

1. A liquid hydrocarbon furnace fuel having improved combustion properties by the addition thereto as a combustion catalyst of from about 1.0×10^{-6} to about 1.0×10^{-3} parts by weight of at least one isomer of dinitrotoluene.

4,435,186

ALCOHOL FUELS CONTAINING WEAR-INHIBITING AMOUNTS OF REACTION PRODUCTS OF AMINES AND PHOSPHATE ESTERS OF PHOSPHONIC ACIDS

Rodney L. Sung, Fishkill; Benjamin J. Kaufman, and William M. Sweeney, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

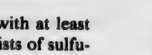
Filed May 3, 1982, Ser. No. 374,572
Int. Cl.³ C10L *1/26*
U.S. Cl. 44—53 **40 Claims**

1. A fuel composition for internal combustion engines comprising

(a) a major portion of a fuel containing (i) at least one alcohol selected from the group consisting of ethanol and methanol and (ii) gasoline in amount of 0–50 volumes per volume of alcohol; and

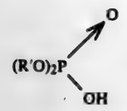
(b) a minor wear-inhibiting amount 0.2–10 w % of, as a wear-inhibiting additive, a reaction product of

(i) an amine

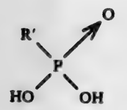


wherein R contains 1–30 carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkaryl, aralkyl, cycloalkyl, and aryl hydrocarbon groups, R'' is a divalent hydrocarbon group containing 1–30 carbon atoms and is selected from the group consisting of alkylene, alkenylene, alkarylene, aralkylene, cycloalkylene, and arylene hydrocarbon groups, a and c are each integers 1–2, a plus c is 2–3, and b is an integer 1–5 with

(ii) a phosphate ester



or a phosphonic acid



wherein R' contains 1–30 carbon atoms and is selected from the group consisting of alkyl, alkenyl, alkaryl, aralkyl, cycloalkyl, and aryl.

4,435,187

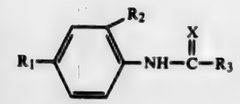
FUEL AND LUBRICANT COMPOSITIONS FOR OCTANE REQUIREMENT REDUCTION

L. B. Graiff, and T. E. Kiovsky, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

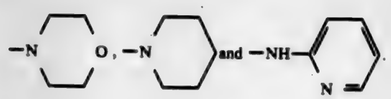
Filed Dec. 31, 1981, Ser. No. 336,221
Int. Cl.³ C10L *1/18, 1/22, 1/24*
U.S. Cl. 44—63 **10 Claims**

1. A fuel composition wherein a major portion of the fuel comprises hydrocarbons boiling in the gasoline range and incorporating a minor amount of an additive composition which exhibits octane requirement reduction properties, said additive composition comprising a substituted urea selected from 4-[N-(2,4-xylyl)carbamoyl] morpholine, 1-[N-(2,4-xylyl)-carbamoyl] piperidine and 1-(2-pyridyl)-3-(2,4-xylyl)-2-thiourea.

7. A method of operating a spark ignition internal combustion engine which comprises burning in said engine a motor fuel comprising a gasoline boiling range hydrocarbon mixture containing an additive composition comprising a minor amount of substituted urea represented by the formula:



in which X is an oxygen or sulfur atom, R_1 and R_2 are hydrocarbyl radicals having from 1 to 3 carbon atoms, and R_3 is selected from the group consisting of

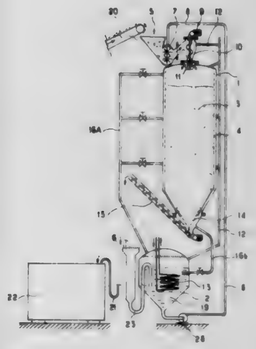


4,435,188

INSTALLATION FOR PREPARING COMBUSTIBLE GASES THROUGH FERMENTATION

Jean-Marie Dedenon, 10 Rue du 8 Mai, 77370 Nangis, France, and Denis Rassak, 15 Rue Georges Blandon, 78430 Louveciennes, France

PCT No. PCT/FR81/00053, § 371 Date Dec. 17, 1981, § 102(e) Date Dec. 17, 1981, PCT Pub. No. WO81/03030, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 17, 1981, Ser. No. 333,875
Claims priority, application France, Apr. 21, 1980, 80 08855
Int. Cl.³ C02F *3/28*
U.S. Cl. 48—111 **4 Claims**



1. Installation for the preparation of fuel gases by anaerobic fermentation, comprising

a first tank (1) for the treatment of fermentable solids or concentrated liquids containing fermentable solids and having a solid content greater than 16%, said first tank being provided with a perforated partition means to permit drainage of liquid therethrough over almost the entire height of said first tank and allowing gases and liquids to circulate therethrough while holding solids from passing therethrough;

a second tank (2) for the treatment of dilute fermentatable liquids the dry content of which is less than 10%, said second tank having a heating coil (13) therein;

fermentable solids feeding means connected to the top of said first tank for feeding fermentable solids to said first tank, said fermentable solids feeding means comprising a chopper (7), a recirculation intake pipe (8) connected between said second tank and said feeding means for recycling liquor from said second tank to said fermentable solids feed device, and a conveyor means (25) for conveying a mixture of the recycling liquor from said intake pipe and fermentable solids from said chopper to said first tank;

means (6) for introducing fermentable liquid to said second tank;

means (14, 15) for collecting fermentation residue coming from said first tank;

connecting pipes (16*a*, 16*b*) extending between said first tank and said second tank for passing liquids from said first tank to said second tank from several different levels of said first tank; and

a collector pipe (12) extending from the upper portion of said first tank and said second tank for collecting gases produced by fermentation.

4,435,189

METHOD OF PREPARING ROUGH TEXTURED METAL COATED ABRASIVES AND PRODUCT RESULTING THEREFROM

Harold P. Bovenkerk, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Jan. 15, 1982, Ser. No. 339,575
Int. Cl.³ C23C 3/02
U.S. Cl. 51—295 **7 Claims**

1. An improved nickel coated crystal of diamond or cubic boron nitride which is made by the steps of:
   (a) treating said crystals with an acidic solution of palladium chloride; and
   (b) stirring said treated crystals in an aqueous solution containing coating nickel ions and hypophosphite ions capable of reducing said nickel ions to the free metal for coating said crystals;

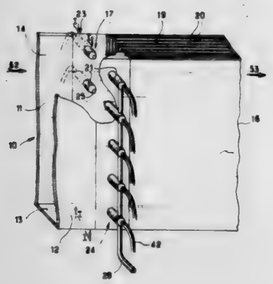
the improvement which comprises the additional steps of:
   (i) interrupting step (b) by forming a passivated coating on the nickel-coated crystals of step (b);
   (ii) reactivating said passivated coated crystals with additional acidic solution of palladium chloride whereby an array of preferential sites for nickel coating deposition is obtained; and
   (iii) resuming the coating process of step (b) whereby a rough nickel surface is obtained.

4,435,190

METHOD FOR SEPARATING PARTICLES IN SUSPENSION IN A GAS

Joseph Taillet, Boulogne, and Serge Larigaldie, Chatenay Malabry, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, France

Filed May 22, 1981, Ser. No. 266,587
Claims priority, application France, Mar. 14, 1981, 81 09646
Int. Cl.³ B03C 3/00
U.S. Cl. 55—5 **5 Claims**



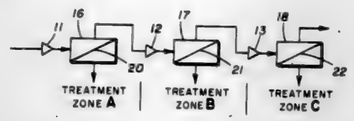
1. A method for separating particles suspended in a gas, which comprises:
   producing ions trapped by microscopic ice crystals by supersonic expansion of a moist gas stream in a supersonic nozzle including a corona discharge in a separate chamber;
   injecting the ions trapped by the ice crystals into an enclosure from the nozzle causing the ice crystals to change their state in said enclosure freeing the trapped ions to create a space charge;
   passing a gas containing suspended particles through the space charge thereby transferring a charge to the particles; and,
   collecting the charged particles by electrostatic deposition.

4,435,191

PROCESS FOR SEPARATING AGGRESSIVE GASES FROM GAS MIXTURES

Tommy E. Graham, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 30, 1983, Ser. No. 509,823
Int. Cl.³ B01D 53/22
U.S. Cl. 55—16 **9 Claims**



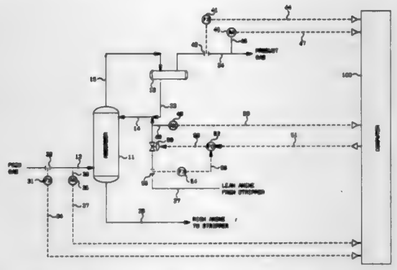
1. A process for separating an aggressive gas from a mixture of said aggressive gas and at least one other gas, comprising
   (a) passing the gas mixture through a plurality of treatment zones connected in series,
   (b) in each zone first compressing the gas mixture,
   (c) then in each zone bringing the compressed gas mixture into contact with a feed side of a membrane having a critical partial pressure for the aggressive gas and being more permeable to the aggressive gas than said other gas such that the aggressive gas permeates the membrane to the other side thereof to thereby decrease the partial pressure of the aggressive gas on the feed side of the membrane, said gas mixture being compressed at a temperature and to such a pressure prior to contact with the membrane that the partial pressure of the aggressive gas is a least 75 percent of said critical partial pressure and the partial pressure of the aggressive gas is not above the critical partial pressure of the aggressive gas,
   (d) maintaining the gas mixture in contact with said feed side of said membrane a sufficient time to decrease the partial pressure of the aggressive gas on the feed side of the membrane to less than 40 percent of said critical partial pressure, and
   (e) passing the gas mixture through a sufficient number of treatment zones that the non-permeated gas mixture leaving the last treatment zone in said series contains less than 20 percent of said aggressive gas.

4,435,192

CONTROL OF A H_2S ABSORBER

William S. Stewart, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 24, 1982, Ser. No. 444,140
Int. Cl.³ B01D 53/14
U.S. Cl. 55—19 **8 Claims**



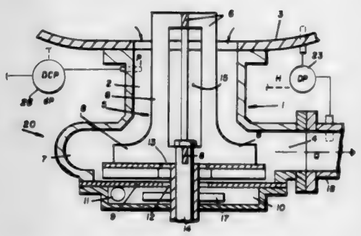
1. A method for controlling an absorption process wherein a feed gas containing H_2S is contacted with a lean absorption medium, suitable for removing said H_2S from said feed gas, in an absorption column, wherein a product gas stream having a substantially reduced concentration of H_2S with respect to said feed gas is removed from an upper portion of said absorption column and wherein a rich absorption medium containing the H_2S removed from said feed gas is removed from a lower portion of said absorption column, said method comprising the steps of:
   establishing a first signal representative of the flow rate of said lean absorption medium to said absorption column required to maintain the actual concentration of H_2S in said product gas stream substantially equal to a desired concentration;
   establishing a second signal representative of the flow rate of said lean absorption medium to said absorption column required to maintain the actual H_2S concentration in said rich absorption medium at or below a high limit for the actual concentration of H_2S in the rich absorption medium;
   establishing a third signal which is equal to the one of said first and second signals which is representative of the highest flow rate of said lean absorption medium; and
   manipulating the flow rate of said lean absorption medium to said absorption column in response to said third signal.

4,435,193

CONTROLLING OPERATION OF A CENTRIFUGAL PUMP

Johan E. Gullichsen, Siuntio, Finland; Esko Harkonen, Karlstad, Sweden; Toivo Niskanen, Hamina, Finland; Jaakko Kujala, and Voitto Reponen, both of Karhula, Finland, assignors to Kamyr AB, Karlstad, Sweden

Continuation-in-part of Ser. No. 139,162, Apr. 7, 1980, Pat. No. 4,410,337. This application Nov. 5, 1982, Ser. No. 439,600
Int. Cl.³ B01D 19/00
U.S. Cl. 55—21 **25 Claims**



1. A method for controlling the operation of a centrifugal pump pumping a suspension having a consistency of about 8–12 percent and containing gas, the pump having an inlet suspension pressure, a pressure head, and a suspension discharge flow rate, comprising the steps of:
   (a) effecting rotation of the suspension within the pump so that a gas bubble is created in a central part of the pump;
   (b) discharging gas from the gas bubble in the pump central part, at a gas discharge pressure;
   (c) rotating the pump impeller at a speed sufficient to effect fluidization of the suspension, and effecting discharge of the fluidized suspension at a flow rate;
   (d) determining the differential pressure between the suspension inlet pressure and the gas discharge pressure; and
   (e) controlling the head and/or discharge flow rate of the pump by controlling the differential pressure determined in step (d).

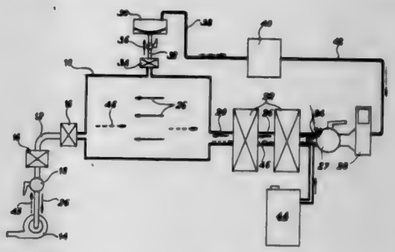
18. A method for controlling the operation of a centrifugal pump pumping a liquid or suspension containing gas, the pump having an inlet liquid or suspension pressure, a pressure head, and a liquid or suspension discharge flow rate, comprising the steps of:
   (a) effecting rotation of the liquid or suspension within the pump so that a gas bubble is created in a central part of the pump;
   (b) discharging gas from the gas bubble in the pump central part, at a gas discharge pressure, to an air vessel;
   (c) determining the differential pressure between the liquid or suspension inlet pressure and the gas discharge pressure, the gas discharge pressure measured in the air vessel;
   (d) controlling the head and/or discharge flow rate of the pump by controlling the differential pressure determined in step (c); and
   (e) at pump start up, or when a rapid differential pressure change is desired, feeding air at a controlled pressure and flow rate—from a source independent of the pump gas discharge—to the air vessel.

4,435,194

CIRCUIT FOR VENTILATING AND FILTERING THE MEDIUM CONTAINED IN A CONFINEMENT ENCLOSURE

Claude Picard, Nanterre, and Bernard Saint Martin, Paris, both of France, assignors to La Calhene, Bezons, France

Continuation-in-part of Ser. No. 230,624, Feb. 2, 1981, abandoned. This application Apr. 22, 1982, Ser. No. 372,327
Claims priority, application France, Feb. 12, 1980, 80 03067
Int. Cl.³ B01D 46/04
U.S. Cl. 55—96 **21 Claims**



1. A process for establishing and maintaining a vacuum within a ventilated and filtered air tight enclosure, said process comprising:
   introducing a filtered medium into the enclosure through a supply pipe having a first filtering means in the supply pipe;
   establishing a vacuum in the enclosure by employing an enclosure discharge pipe which discharges the medium from the enclosure in a normal flow direction and which is connected to a means for establishing the vacuum, the discharge pipe having a second filtering means, and by regulating the flow rate in the supply pipe; and
   maintaining the vacuum in the enclosure in the event of a failure by sensing the pressure within the enclosure and actuating a means for maintaining the vacuum upon a predetermined rise in pressure within the enclosure; the means for maintaining the vacuum being connected to the supply pipe upstream of the first filtering means and operable to reverse the flow of the medium in the supply pipe.

4,435,195

FILTER UNIT AND IONIZING UNIT COMBINATION

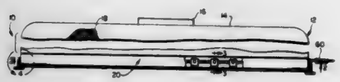
Anthony Q. Testone, Lee, Mass., assignor to Static, Inc., Skippack, Pa.

Filed Jul. 22, 1982, Ser. No. 400,900
Int. Cl.³ B03C 3/01
U.S. Cl. 55—126 **11 Claims**

1. Apparatus for introducing filtered, ionized air into a room comprising:
   (a) a filter unit including an air impervious housing having an air inlet on one face, an air discharge face opposite the air inlet, and filter material in the housing between the air inlet and the air discharge face,
   (b) an ionizing unit comprising a plurality of ionizing points, means supporting said ionizing points in positions distrib-

uted across the discharge face of the filter unit comprising insulated conductor means, means capacitively coupling said ionizing points to said conductor means, and conductive tubular means having said conductor means extending therethrough,

(c) conductive frame means extending around said ionizing unit and including means for supporting said ionizing unit



therein, said frame means conforming in size and shape to the air discharge face of the filter unit, and means for electrically connecting said frame means to said conductive tubular means,

(d) means for securing said frame means to said filter unit housing at the discharge face thereof, and

(e) sealing means for preventing the passage of air between said filter unit housing and said frame means.

4,435,196

MULTIPHASE SEPARATOR

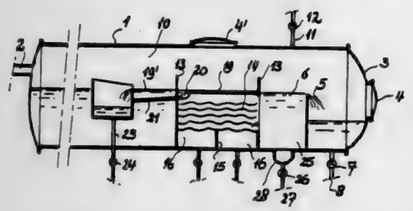
Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex Beheer B.V., Assendelft, Netherlands

Filed Feb. 22, 1982, Ser. No. 351,293

Claims priority, application Netherlands, Feb. 27, 1981, 8100955

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—174 **22 Claims**



1. A multiphase separation device, comprising a gas-tight tank with a substantially horizontal axis, which tank is provided with a supply connection for the liquid to be treated opening near one extremity of said tank into an inlet space thereof, a plurality of discharge connections for the different gaseous, liquid or solid phases, a plate separator arranged within said tank with inclined parallel corrugated plates adapted for cross-flow separation, an overflow weir arranged at the other side of said separator for determining the normal liquid level in said tank, above which a gas phase collecting space is present, extending over substantially the whole length of the tank, the discharge connections being situated so that the different components separated in the tank and in the cross-flow separator can be discharged separately from one another, in which;

said overflow weir is designed to determine the normal level of a heavier liquid phase of the liquid to be treated, discharge means for said heavier liquid phase being provided at the downstream side of said overflow weir;

said plate separator being confined between two transverse baffles extending upwards into said gas space, said baffles being provided with an inlet and an outlet window respectively;

the plates of said separator being substantially submerged below said normal level, said windows defining a substantially horizontal liquid flow through the passages between said plates, overflow means for collecting a lighter liquid phase separated in said passages and floating as a floating layer on the liquid between said baffles being provided above said separator, said baffles extending sufficiently above said normal level for restraining said floating layer between said baffles;

additional overflow means being provided in said inlet space for removing a floating layer of said lighter liquid phase separated from said liquid in said inlet space;

discharge means being provided for discharging a heaviest phase separated from said liquid in said passages and collected in the space below said separator; and

additional discharge means being provided for discharging said heaviest phase separated in the space between the downstream baffle and said overflow weir.

4,435,197

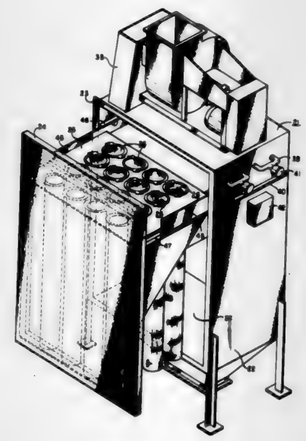
BAGHOUSE FILTER

Pramodh Nijhawan, and William W. Avera, both of Winston-Salem, N.C., assignors to The Bahnson Company, Winston-Salem, N.C.

Filed Apr. 9, 1982, Ser. No. 367,046

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—341 R **19 Claims**



1. In a bag filter comprising a housing having a dirty-gas inlet, a clean gas outlet, a partition having an operative position in the interior of said housing separating said inlet and outlet, said partition having a plurality of filter openings therein affording passage of gaseous medium from said inlet to said outlet, each of said filter openings having a filter unit mounted therein, said filter units comprising elongated bags of filter material, said partition and said units comprising a filtering assembly separating particulate matter from the gaseous medium flowing from the inlet to the outlet, said filtering assembly being mounted for displacement from said operative position into a second position affording ready removal and replacement of the filter units in said filter openings; the improvement wherein

said housing has an access opening in a front wall thereof, said access opening being coextensive with an outline of said filtering assembly to enable at least a substantial part of said filtering assembly to pass through said access opening upon displacement between said operative and said second positions,

a door closing said access opening when said filtering assembly is in said operative position,

said filtering assembly having one end mounted on said door so as to effect displacement of said assembly with the door between said operative and second positions, and a free end opposite said one end, and

door sealing elements disposed between said door and the housing around the periphery of said opening, and end sealing elements disposed between the opposite free end of the filtering assembly and a rear wall of the housing opposite said opening, said elements being positioned in sealing engagement by displacement of said door and filtering assembly from said second position into said operative position.

18. In a bag filter comprising a housing having a dirty-gas inlet, a clean gas outlet, a partition having an operative position in the interior of said housing separating said inlet and outlet, said partition having a plurality of generally circular filter openings therein affording passage of gaseous medium from said inlet to said outlet, each of said filter openings having a filter unit mounted therein, said partition and said units comprising a filtering assembly separating particulate matter from the gaseous medium flowing from the inlet to the outlet, said filtering assembly being mounted for displacement from said operative position into a second position affording ready removal and replacement of the filter units in said filter openings; the improvement wherein

each of said filter openings has recess means along its periphery;

each of said filter units includes means mounting said filter unit in said filter opening for removal and replacement from the inlet side of the partition when said assembly is in said second position;

said mounting means for each of said filter units comprises a collar encircling said unit at one end, said collar having a cylindrical portion with an outer diameter corresponding to the diameter of said filter opening, at least two locking tabs projecting outwardly from said cylindrical portion a distance to overlap the circular outline of said opening, the projection and circumferential width of said tabs being less than the depth and circumferential width of the recess means to enable passage of said tabs through said recess means upon axial displacement of said filter unit in said opening and to enable engagement of the tabs with the outlet side of said partition upon rotary displacement of said filter unit about the axis of said opening; and sealing means comprising a circlet of resilient elastomeric material anchored to said cylindrical portion and projecting outwardly from said cylindrical portion at a distance from said tabs to seal against the inlet side of said partition, said sealing means having a flared lip projecting radially and axially in the direction of said tabs circumscribing said opening and said recess means to sealingly engage the surface of said partition on the inlet side thereof; and

each filter unit further includes a filter bag open at one end and having the open end encircling said collar, circumferential means projecting radially outward from said collar between the end of said filter bag and the tabs, said circlet having its flared lip disposed between said circumferential means and said tabs with a portion below said flared lip sealing against said circumferential means and an extended portion beyond said circumferential means mounted between the open end of said filter bag and said collar to provide a seal therebetween.

4,435,198

SEPARATION OF NITROGEN FROM NATURAL GAS

Michael L. Gray, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 24, 1982, Ser. No. 351,727

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—28 **17 Claims**

1. A process for liquifying and reducing the nitrogen content of a normally gaseous natural gas feed comprising predominantly methane with significant amounts of nitrogen and in its vapor phase at an elevated pressure, comprising:

(a) cooling said natural gas feed, in a first cooling step comprising at least one cooling stage, to liquify the same;

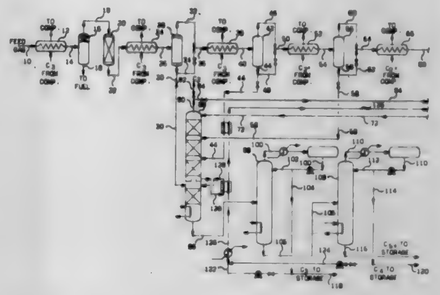
(b) separating the thus liquified natural gas feed, in a first separation step, into a first vapor phase, containing a major portion of said nitrogen, and an unvaporized first liquid phase, comprising liquified natural gas;

(c) further cooling at least a part of the thus separated first vapor phase, in a second cooling step;

(d) separating the thus cooled first vapor phase, in a second separation step, into a second vapor phase, further enriched in nitrogen, and an unvaporized second liquid phase, comprising liquified natural gas;

(e) recovering the thus separated second vapor phase as a product of the process;

(f) expanding the thus separated first liquid phase and the thus separated second liquid phase, in at least one expansion step, to produce a single vapor-liquid mixture therefrom;



(g) passing the thus separated first vapor phase in indirect heat exchange with the thus produced vapor-liquid mixture, in said second cooling step, prior to said second separation step, to provide at least part of the cooling of said first vapor phase in said second cooling step;

(h) separating said vapor-liquid mixture, in a third separation step, into a third vapor phase, comprising methane containing additional nitrogen, and a third liquid phase, comprising liquified natural gas; and

(i) recovering the thus separated third liquid phase as the liquified natural gas product of the process.

4,435,199

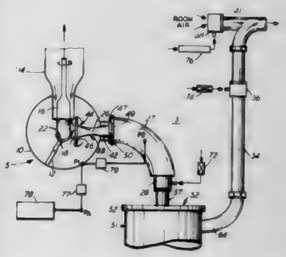
EXHAUST SYSTEM FOR A VAPOR DEPOSITION CHAMBER

Eugene Potkay, Hamilton Township, Mercer County, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,630

Int. Cl.³ C03C *25/02*

U.S. Cl. 65—3.12 **4 Claims**



1. A method of fabricating a lightguide soot-boule in a vapor-phase axial deposition chamber, comprising the steps of:

directing a stream of glassy soot, from a soot deposition torch, towards a growing soot-boule, to deposit at least a portion of the soot stream thereon;

exhausting undeposited soot from the chamber through a

hollow, substantially cylindrical exhaust tube having a constricted central portion with a flared intake and a gradually turned back end projecting into the chamber and an output end connected to an exhaust line; and

removing the soot with an extracting means, connected to the exhaust line, having a plurality of tubular members mounted concentrically to provide a circuitous path to exhaust soot to extract particles therefrom while isolating the deposition chamber from downstream pressure fluctuations.

4,435,200

METHOD OF PREPARING PRECISION PRESSED GLASS OBJECT

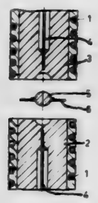
Hendrik J. M. Joormann; Hendrik Verweij, and Jan Haisma, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 161,196, Jun. 19, 1980, Pat. No. 4,348,484, which is a continuation-in-part of Ser. No. 119,324, Feb. 7, 1980, abandoned. This application Jul. 8, 1982, Ser. No. 396,533

Claims priority, application Netherlands, May 18, 1979, 7903914

Int. Cl.³ C03B *19/00, 23/00, 29/00;* C03C *3/16*

U.S. Cl. 65—64 **6 Claims**



1. A method of forming a precision pressed object of glass comprising the steps of

precisely grinding a cube of glass having a composition consisting essentially of 45–55 mol.% P_2O_5, 15–40 mol.% BaO, 5–35 mol.% PbO, 5–15 mol.% Li_2O, 0–2 mol.% Al_2O_3, and 0–6 mol.% F in the form of fluoride wherein up to 25% of BaO may be replaced by an equimolar quantity of at least one of CaO, MgO and SrO, and up to 25% of Li_2O may be replaced by an equimolar quantity of at least one other alkali metal oxide;

positioning said cube on a carrier;

preheating said cube to a temperature 20°–60° C. above the American softening point to obtain a polishing effect;

preheating dies of a glass forming device to a temperature 10°–40° C. above the American softening point of said glass;

inserting said preheated cube and carrier into said dies; and

closing said dies to form a precision pressed object of said glass.

4. A method according to claim 1, wherein said precision pressed object of said glass is an optical lens.

4,435,201

MANUFACTURING AND USING NITROGEN FERTILIZER SOLUTIONS ON A FARM

John A. Eastin, P.O. Box 389, Lincoln, Nebr. 69140

Continuation-in-part of Ser. No. 100,825, Dec. 6, 1979, abandoned, which is a continuation of Ser. No. 824,289, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 728,788, Oct. 1, 1976, abandoned, which is a division of Ser. No. 581,050, May 27, 1975, abandoned. This application May 18, 1982, Ser. No. 379,466

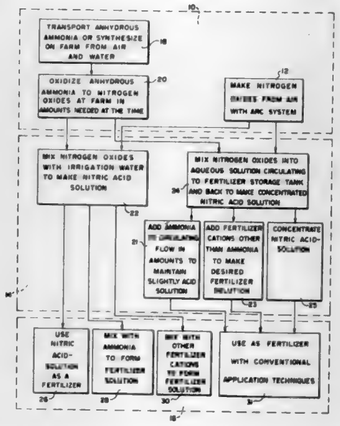
Int. Cl.³ C05C *3/00*

U.S. Cl. 71—54 **6 Claims**

1. A method of nitrogenous fertilizing of a farm comprising the steps of:

oxidizing between 12.5 pounds and 146 pounds of nitrogen each hour in a continuous process by burning ammonia;

bringing the nitrogen oxides in contact with a surface catalyst and with flowing water at a rate in the range of five gallons per minute to twenty gallons per minute in a con-



tinuous process on a surface catalyst as the nitrogen oxides are being formed to form a dilute solution of nitric acid as the nitrogen oxides are formed; and

using the dilute solution of nitric acid in a process leading to and including the application of nitrogenous fertilizer on a farm.

4,435,202

PLANT GROWTH REGULATOR

Masuo Koizumi, Tokyo; Norio Shirakawa, Saitama; Hiromi Tomioka, Tokyo; Masaki Takeuchi; Masanori Okada, both of Saitama; Masahiro Yoshimoto; Yasushi Murakami, both of Tokyo, and Yoshitaka Iwane, Kanagawa, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

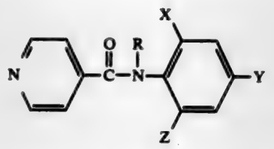
Division of Ser. No. 137,894, Apr. 7, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,023

Claims priority, application Japan, Apr. 19, 1979, 54-47299

Int. Cl.³ A01N *43/40*

U.S. Cl. 71—76 **6 Claims**

1. A method of stunting growth of a grassy plant, without causing phytotoxicity, which comprises applying to its foliage, or to soil containing pre-emergent seeds thereof, a compound of the formula



wherein R is hydrogen or lower alkyl, X is hydrogen or a halogen, Y is hydrogen, a halogen, methyl or nitro, and Z is benzoyl, in an amount of from 50 to 2,000 g per 10 ares.

4,435,203

OPTICAL ISOMER OF TRIAZOLYLPENTENOLS, AND THEIR PRODUCTION AND USE AS FUNGICIDE, HERBICIDE AND/OR PLANT GROWTH REGULANT

Yuji Funaki, Toyonaka; Yukio Yoneyoshi, Otsu; Yukio Ishiguri, and Kazuo Izumi, both of Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

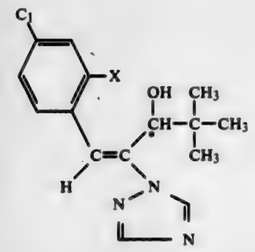
Filed Dec. 7, 1981, Ser. No. 328,191

Claims priority, application Japan, Dec. 15, 1980, 55-177704; Dec. 22, 1980, 55-182407

Int. Cl.³ A01N *43/64;* C07D *249/08*

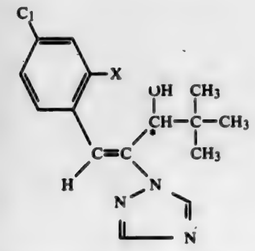
U.S. Cl. 71—76 **10 Claims**

1. A substantially pure triazolyl alcohol derivative represented by the general formula:



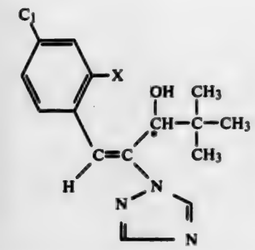
wherein X represents a hydrogen atom or a chlorine atom and the asterisk indicates an asymmetric carbon atom, and having an optical activity of (−) or (+).

6. A fungicidal composition comprising an inert carrier and as an active ingredient, a fungicidally effective amount of a substantially pure triazolyl alcohol derivative represented by the general formula:



wherein X represents a hydrogen atom or a chlorine atom and the asterisk indicates an asymmetric carbon atom and having an optical activity of (−).

7. A plant growth regulatory or herbicidal composition comprising an inert carrier and as an active ingredient, a plant growth regulatory effective or a herbicidally effective amount of a substantially pure triazolyl alcohol derivative represented by the general formula:



wherein X represents a hydrogen atom or a chlorine atom and the asterisk indicates an asymmetric carbon atom and having an optical activity of (+).

4,435,204

N-ORGANO-PHOSPHONOMETHYLGLYCINE-N-OXIDES AND THE USE THEREOF TO INCREASE THE SUCROSE CONTENT OF SUGARCANE

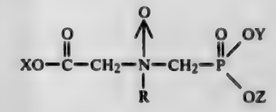
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 613,707, Sep. 15, 1975, abandoned, which is a division of Ser. No. 313,706, Dec. 11, 1972, abandoned. This application Mar. 24, 1980, Ser. No. 133,379

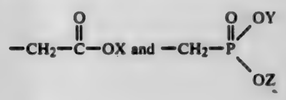
Int. Cl.³ A01N *57/00*

U.S. Cl. 71—86 **11 Claims**

1. A method of increasing the sucrose content of sugarcane which comprises applying to the sugarcane plants, from about 2 to about 10 weeks prior to harvest, an effective amount of a compound of the formula



wherein X, Y and Z are each independently selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, alkali metal, ammonium and alkyl ammonium in which the alkyl groups contain from 1 to 4 carbon atoms, and R is selected from the group consisting of alkyl of 1 to 12 carbon atoms, phenylalkyl and chlorinated phenylalkyl of 7 to 8 carbon atoms, phenoxyalkyl of 7 or 8 carbon atoms,



4,435,205

HERBICIDAL O-ALKYLSULFONYLOXY- AND O-ALKYLSULFONYLAMINOBENZENESULFONAMIDES

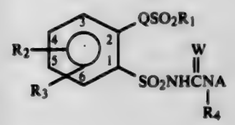
James J. Reap, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 262,813, May 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 168,344, Jul. 11, 1980, abandoned. This application Apr. 15, 1982, Ser. No. 368,809

Int. Cl.³ A01N *9/22;* C07D *239/42*

U.S. Cl. 71—92 **32 Claims**

1. A compound of the formula:

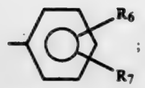


where

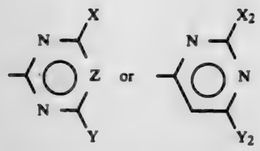
W is O or S;

Q is O or NR_5;

R_1 is C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br, $CH_2CH_2OCH_3$, $CH_2CH_2CH_2OCH_3$ or



R_2 is H, F, Cl, Br, OCH_3, NO_2, CF_3 or C_1–C_2 alkyl;
R_3 is H, F, Cl, Br or CH_3;
R_4 is H, CH_3 or OCH_3;
R_5 is C_1–C_4 alkyl;
R_6 and R_7 are independently H, F, Cl, Br, CH_3, CF_3, NO_2 or OCH_3;
A is

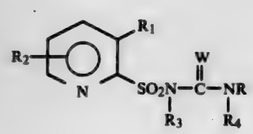


X is NH_2, $N(CH_3)_2$, $NHCH_3$, C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1-3 atoms of F, Cl or Br, CH_2OCH_3, $CH_2OCH_2CH_3$, C_1–C_4 alkoxy, C_1–C_2 alkylthio, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, $OCH_2CH_2OCH_3$ or C_2–C_4 alkoxy substituted with 1-3 atoms of F, Cl or Br;
Y is H, CH_3, OCH_3 or Cl;
X_2 and Y_2 are independently CH_3 or OCH_3; and
Z is CH, CCH_3, CBr, CCl, CF, CI, CC_2H_5, CCH_2CH_2Cl or $CCH_2CH{=}CH_2$;
provided that
(1) when Y is Cl, then X is NH_2, $NHCH_3$, $N(CH_3)_2$, CH_3 or OCH_3;
(2) when Y is H, then X is OCH_3, CH_3 or CH_2OCH_3,
(3) when W is S, then R_4 is H; and
(4) when R_4 is OCH_3, then Q is O.

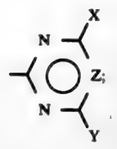
24. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,435,206
AGRICULTURAL PYRIDINESULFONAMIDES
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 83,753, Oct. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,258, Dec. 4, 1978, abandoned. This application Jan. 22, 1981, Ser. No. 227,242
Int. Cl.³ A01N *43/54*; C07D *239/28, 239/30*
U.S. Cl. 71—92 31 Claims

1. A compound of the formula:



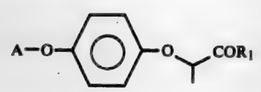
wherein
R is



R_1 is H, Cl, Br, F, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, NO_2, CF_3, $COOR_5$ or $SO_2NR_6R_7$;
R_2 is H, Cl, Br or CH_3;
R_3 and R_4 are independently H or CH_3;
R_5 is C_1–C_6 alkyl, C_3–C_6 alkenyl, $CH_2CH_2OCH_3$, $CH_2CH_2OCH_2CH_3$, $CH_2CH_2CH_2OCH_3$ or CH_2CH_2Cl;
R_6 and R_7 are independently CH_3 or CH_3CH_2;
W is oxygen or sulfur;
X is CH_3, $-OCH_3$ or $-OCH_2CH_3$;
Y is H, Cl, CH_3, CF_3, $-NHCH_3$, $-N(CH_3)_2-$, $-CH_2OR_8$, $-CH_2CH_2OR_8$, $-OCH_2CF_3$ or VR_9;
Z is CH;
V is oxygen or sulfur;
R_8 is CH_3 or CH_3CH_2;
R_9 is CH_3, CH_3CH_2-, $CH_2CO_2R_8$, $-CH_2CH_2OR_8$, $C(CH_3)HCO_2R_8$ or $CH_2CH_2CO_2R_8$;
and agricultural salts thereof.

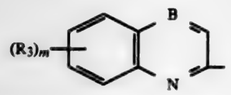
4,435,207
QUINYLOXY-PHENYLOXY-OXIME ESTER COMPOUNDS HAVING HERBICIDAL ACTIVITY
Georg Frater, Greifensee; Milos Suchy, Pfaffhausen; Jean Wenger, Uster, and Paul Winternitz, Greifensee, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Nov. 23, 1981, Ser. No. 323,784
Claims priority, application Switzerland, Nov. 26, 1980, 8750/80; Oct. 1, 1981, 6328/81
Int. Cl.³ A01N *43/40*; C07D *215/22*
U.S. Cl. 71—94 20 Claims

1. An oxime ester of the formula



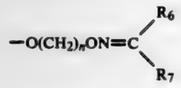
I

wherein A is



Ib

in which R_3 is hydrogen, halogen or trifluoromethyl, m is 1 or 2, B is —CH=, and wherein R_1 is a group of the formula

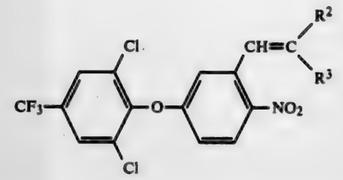


Id

wherein R_6 and R_7 are lower alkyl, cycloalkyl with 3 to 6 carbon atoms, lower alkylcarbonyloxy-lower alkyl, lower alkoxy or lower alkylthio or R_6 and R_7 together with the carbon atom to which they are attached are a cycloalkyl group with 3 to 7 carbon atoms, and wherein n is 1 or 2, and wherein R_6 can also be hydrogen.

4,435,208
HERBICIDALLY ACTIVE SUBSTITUTED PHENOXYCINNAMIC ACID DERIVATIVES
Heinz Förster, Wuppertal; Ludwig Eue, Leverkusen, and Robert Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Nov. 6, 1981, Ser. No. 318,899
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044810
Int. Cl.³ A01N *37/34, 37/10*; C07C *69/618, 121/75*
U.S. Cl. 71—105 8 Claims

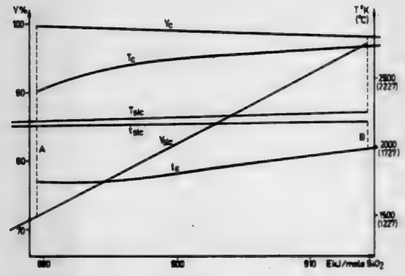
1. A substituted phenoxycinnamic acid derivative of the formula



in which
R^2 represents a hydrogen atom, a cyano, C_1 to C_4 alkyl, acetyl or C_1 to C_4 alkoxycarbonyl radical and R^3 represents a cyano or (C_1 to C_4 alkoxy)-carbonyl radical or a radical of the general formula —COOM
wherein
M represents a hydrogen, sodium or potassium cation or one equivalent of a magnesium or calcium cation.

7. A method of combating weeds comprising applying to the weeds, or to a habitat thereof, a herbicidally effective amount of a compound according to claim 1.

4,435,209
PROCESS FOR THE PREPARATION OF SILICON OR FERROSILICON
Thomas Johansson, Ljungaverk, Sweden, assignor to Kemanord AB, Stockholm, Sweden
Continuation of Ser. No. 195,498, Oct. 9, 1980, abandoned. This application Mar. 31, 1982, Ser. No. 363,812
Claims priority, application Sweden, Oct. 24, 1979, 7908821
Int. Cl.³ C21C *5/52*; C01B *33/02*
U.S. Cl. 75—11 9 Claims



1. A process for the preparation of silicon or ferrosilicon by reduction of silicon oxide in the form of silicas or cation containing silicates and oxides, optionally in the presence of iron or iron oxide, using a carbonaceous reducing agent in a reaction zone which reaction zone comprises
an energy supply zone and,
a subsequent reaction zone,
whereby
at least heat energy and condensed phases from the subsequent reaction zone are brought to the reentry supply zone,
while elementary silicon and a gas phase are leaving the energy supply zone, and
whereby
at least the carbonaceous reducing agent and the gas phase leaving the energy supply zone are brought to the zone of subsequent reaction,
while a gas leaves the zone of subsequent reaction, and
condensed phases enter the energy supply zone,
whereby
at least 33% of the silicon oxide material is fed directly into the energy supply zone,
so that the supply rate of the silicon oxide to the energy supply zone can be controlled independent of the charging of energy to the energy supply zone,
so that the temperature in the energy supply zone can be influenced, and
regulating the supply rates of silicon oxide and energy to give a low content of silicon monoxide in the gas leaving the zone of subsequent reaction,
the improvement comprising
(a) awaiting and securing a carbon reduction mode in the reaction zone
to obtain a greater difference in temperature between the gases leaving the zone of subsequent reaction and the silicon product than at carbide reduction,
by filling reducing agent in the energy supply zone before start up and directly applying an energy to silicon oxide charging ratio within the interval stated in (b), or
by altering a carbide reduction mode into a carbon reduction mode by use of an energy to silicon oxide charging ratio above the interval stated in (b), and
(b) after securing carbon reduction according to step (a)
supplying the energy and the silicon oxide in a ratio within an interval,
the lower limit of said interval being defined by the lowest value permitting a constant carbon reduction, and
the upper limit of said interval being defined by the highest value permitting a constant carbide reduction,
whereby the gas leaving the zone of subsequent reaction has a silicon monoxide content below 1.5 mole percent.

4,435,210
REFINING AGENT OF MOLTEN METAL AND METHODS FOR PRODUCING THE SAME
Norio Hirokawa; Tsuneo Kawachi, both of Chichibu; Hiroshi Saito, Abiko, and Ryoichi Yoshimura, Koganei, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 14, 1983, Ser. No. 466,188
Claims priority, application Japan, Feb. 12, 1982, 57-19696; Feb. 12, 1982, 57-19697; May 14, 1982, 57-80089
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—53 22 Claims

1. A refining agent for metal, consisting essentially of:
(1) a Ca alloy consisting essentially of Ca and at least one element selected from the group consisting of Al and Si, and
(2) a flux mainly comprising CaO and Al_2O_3,
wherein the Ca-alloy and the flux are integrally bonded to one another.

4,435,211

PROCESS OF BLOWING HIGH-OXYGEN GASES INTO A MOLTEN BATH WHICH CONTAINS NON-FERROUS METALS

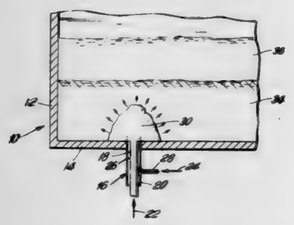
Werner Schwartz, Buchholz, and Peter Fischer, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,297

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045992

Int. Cl.³ C22B *13/00*

U.S. Cl. 75—62 **18 Claims**



1. In a process of blowing high-oxygen gases into a reactor comprising a reactor wall and containing within said wall a molten bath which contains non-ferrous metals, said blowing through double-tube nozzles, each of said nozzles terminating in a tip, said nozzles extend through the reactor wall into the molten bath, wherein a protective cooling fluid consisting essentially of a gas or liquid is injected through one tube of each double-tube nozzle, the improvement which comprises employing a flow rate of the protective fluid relative to the composition of the slag and the difference between the temperature of the slag and its solidification point, such that a gas permeable conical porous crust forms over the tip of the nozzles and regulating such flow rate so that the size of the crust does not exceed a predetermined size.

4,435,212

HIGH PERMEABILITY ALLOY

Norio Ueshima, Yokohama; Nobuo Okawa, Tokyo, and Kiyoshi Takayanagi, Kawasaki, all of Japan, assignors to The Furukawa Electric Company Ltd., Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 446,974

Claims priority, application Japan, Apr. 15, 1982, 57-62983; Jul. 30, 1982, 57-132002; Aug. 3, 1982, 57-135566; Aug. 12, 1982, 57-140352; Aug. 23, 1982, 57-146022

Int. Cl.³ F16H *29/10*

U.S. Cl. 75—124 **10 Claims**

1. A high permeability alloy having an excellent wear resistance, consisting essentially of 3 to 10 wt% Al, 4 to 11 wt% si, 2.1 to 20.0 wt% Ru and the balance Fe.

6. A magnetic head of a high permeability alloy having excellent wear resistance, which consists essentially of 3 to 10 wt% Al, 4 to 11 wt% Si, 2.1 to 20.0 wt% Ru, and the balance Fe.

4,435,213

METHOD FOR PRODUCING ALUMINUM POWDER ALLOY PRODUCTS HAVING IMPROVED STRENGTH PROPERTIES

Gregory J. Hildeman, Murrysville; John C. Kuli, Jr., Saxonburg, and Leo A. Vivola, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 13, 1982, Ser. No. 417,796

Int. Cl.³ C21D *1/02*

U.S. Cl. 75—249 **43 Claims**

1. A method of producing an improved metal article having improved mechanical properties comprising the steps:

(a) providing metal alloy particulate, said alloy being selected to provide strength enhancing dispersed particles capable of degradation at elevated temperatures; and

(b) heating said metal to elevated temperature at a rapid heat-up rate and compacting said metal at elevated temperature to a substantially full density compact, said heat-up rate being such that said heating of said metal to elevated temperature is effected in not more than 0.2 hour for each inch of thickness of said compact, thereby improving said compact such that products made therefrom exhibit an improvement of at least 5% in one or more mechanical properties over a product likewise produced except for said heating occurring over a substantially longer time.

4,435,214

CONDUCTIVE COMPOSITIONS

John E. Ehrreich, Wayland, Mass., assignor to Ercon, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 308,242, Oct. 2, 1981, Pat. No. 4,407,674, which is a division of Ser. No. 126,681, Mar. 3, 1981, Pat. No. 4,319,920. This application Jun. 6, 1983, Ser. No. 501,602

Int. Cl.³ B22F *1/00, 1/02*

U.S. Cl. 75—251 **12 Claims**



1. A metal powder product formed of (A) up to 50% by volume of a precipitated non-planar, essentially flake-shaped particles wherein silver particles are characterized by an average thickness of less than about 0.2 microns and characterized by a bulk density up to 0.85 gram per cc and (B) at least 50% by volume of a relatively-planar, mechanically-formed, conductive flake powder of at least about 1 gram per cc in bulk density.

4,435,215

HEAT-RESISTANT INORGANIC COMPOSITIONS

Shigeo Yoshino; Tadashi Zenbutsu; Hajime Asami, all of Bizen, and Michiyuki Irie, Oku, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,555

Claims priority, application Japan, Jun. 17, 1981, 56-92384

Int. Cl.³ C04B *19/04*

U.S. Cl. 106—84 **6 Claims**

1. A heat-resistant inorganic composition which consists essentially of a metal powder, a powder of an inorganic compound having cation-exchangeability and layered structure and a binder of an alkali metal silicate or an alkali metal aluminate, the largest particle diameter of the inorganic compound having a layered structure is smaller than the average particle diameter of the metal powder,

wherein the weight ratio of the metal powder to the inorganic compound having a layered structure is in the range from 10:90 to 90:10, and substantially all the inorganic compound having a layered structure has a particle diameter not exceeding 30 μm.

4,435,216

PROCESS FOR THE ACCELERATED SOLIDIFICATION OF HYDRAULIC CEMENT MIXTURE

Manfred Diehl, Frankfurt, and Roland Bergmann, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,524

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132928

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—97 **14 Claims**

1. A hydraulic cement mixture having an accelerated solidification time containing 0.2 to 10 weight % of powdery, crystalline zeolite based on the entire mixture, the zeolite being Type A, zeolite Type X or zeolite Type P.

4,435,217

CONCENTRATED HYDROPHILIC POLYMER SUSPENSIONS

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Lafayette, La.

Filed Apr. 22, 1982, Ser. No. 370,865

Int. Cl.³ C08L *1/08, 1/96*

U.S. Cl. 106—171 **12 Claims**

1. A liquid polymer composition consisting essentially of from about 40% to about 55% of a liquid hydrocarbon, from about 35% to about 55% of a hydrophilic, water soluble polymer, from about 2.0% to about 4.5% of an organophilic clay, from about 0% to about 2% of a dispersant for said organophilic clay, from about 0.5% to about 2.5% of a non-ionic surfactant selected from the group consisting of octyl phenol reacted with from 0 to about 9 moles per mole of ethylene oxide, nonyl phenol reacted with from 0 to about 15 moles per mole of ethylene oxide, dodecyl phenol reacted with from 0 to about 15 moles per mole of ethylene oxide, C_{16}–C_{18} fatty acids reacted with about 3 to about 15 moles per mole of ethylene oxide, C_6–C_{18} aliphatic alcohols reacted with 2 to about 8 moles per mole of ethylene oxide, 2, 4, 7, 9-tetramethyl-4, 7-dihydroxy-5-decyne reacted with from 0 to about 12 moles of ethylene oxide, and mixtures thereof, and from about 1.25% to about 5.0%, based on the weight of said polymer, of a liquid fatty acid, wherein said liquid fatty acid and said surfactant synergistically interact to decrease the viscosity and increase the thermal aging stability of said composition.

4,435,218

VISCOSITY INCREASING ADDITIVE FOR NON-AQUEOUS FLUID SYSTEMS

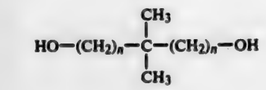
Louis J. Jubanowsky, 310 Indian Trail, Mountainside, N.J. 07092

Filed Nov. 15, 1982, Ser. No. 441,428

Int. Cl.³ C08L *91/00, 91/06*; C08K *5/17*

U.S. Cl. 106—266 **10 Claims**

1. A self-activating organoclay rheological composition useful as an additive for non-aqueous fluid systems, comprising a mixture of an organo modified clay and an alcohol having the formula



wherein n is a whole integer from 1 to 5.

4,435,219

STABLE INORGANIC COATING COMPOSITION FOR ADHERENT, INORGANIC COATINGS

Paul P. Greigger, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 2, 1982, Ser. No. 384,368

Int. Cl.³ C09K *3/00*; C08G *77/06*

U.S. Cl. 106—287.16 **12 Claims**

1. A composition comprising:

I. a vehicle comprising,

A. a dispersion of colloidal silica,

B. a hydrolyzable alkoxysilane,

C. an alcohol,

D. water, and

E. a soluble acidifying agent in an amount sufficient to provide a pH of said vehicle ranging from about 2.8 to about 6.0 wherein said acidifying agent is a soluble metal acid phosphate, and

II. optionally a pigment.

4,435,220

TRANSPARENT COLORED PIGMENTS

Takaji Watanabe, Ohmiya, and Tamio Noguchi, Atsugi, both of Japan, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 26, 1982, Ser. No. 436,861

Claims priority, application Japan, Oct. 26, 1981, 56-170148

Int. Cl.³ C04B *31/00*; C09C *1/00*

U.S. Cl. 106—291 **12 Claims**

1. A transparent, colored pigment comprising a platelet-shaped, transparent substrate, which is coated with a layer of colored metal oxides or metal hydroxides, and which layer contains 0.1–5% by weight of an alkaline earth metal oxide or hydroxide.

4,435,221

PROCESS FOR CLEANING METAL SURFACES OF POLY(ARYLENE SULFIDE) DEPOSITS

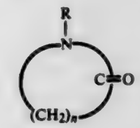
Ronald D. Mathis, and Jerry O. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1982, Ser. No. 403,434

Int. Cl.³ C23G *5/02*

U.S. Cl. 134—2 **10 Claims**

1. A process for the removal of poly(arylene sulfide) deposits from metal surfaces comprising contacting said deposits with a cleaning solution, consisting essentially of at least one alkali metal hydrosulfide in a lactam of the general formula



where R is hydrogen or an alkyl radical having from 1 to 5 carbon atoms and n is an integer from 5 to 7 at a temperature and for a time sufficient to remove said deposits.

4,435,222

PROCESS FOR CLEANING METAL SURFACES OF POLY(ARYLENE SULFIDE) DEPOSITS

Jerry O. Reed, and Timothy W. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1982, Ser. No. 403,435
Int. Cl.³ C23G 5/02
U.S. Cl. 134—2 **21 Claims**

1. A process for removing poly(arylene sulfide) deposits from metal surfaces comprising:

(a) contacting said poly(arylene sulfide) deposits with at least one halogenated aromatic cleaning agent under conditions of temperature and time sufficient to remove said deposits; and

(b) thereafter contacting the remaining deposits with a solution comprising at least one aluminum halide in an aromatic hydrocarbon having from about 6 to about 12 carbon atoms per molecule at a time and for a temperature sufficient to remove said deposits.

4,435,223

NON-FLUORIDE ACID COMPOSITIONS FOR CLEANING ALUMINUM SURFACES

David Y. Dollman, Doylestown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 277,560, Jun. 24, 1981, abandoned. This application May 18, 1982, Ser. No. 378,749
Int. Cl.³ C11D 1/66, 3/04, 7/08; C23G 1/12
U.S. Cl. 134—3 **14 Claims**

1. A process for cleaning an aluminum based surface comprising the steps of

(a) contacting said surface with an aqueous cleaning solution which is free of hydrofluoric acid and other fluorides and which comprises from about 4 to about 24 grams/liter of sulfuric acid, from about 9 to about 22 grams/liter of orthophosphoric acid, and from about 0.1 to about 7.5 grams/liter of a surfactant at a temperature in the range of from about 90° F. to about 140° F. and a treatment time of from about 10 seconds to about 1 minute, and

(b) rinsing the aluminum based surface to remove the cleaning solution therefrom.

4,435,224

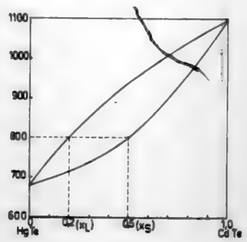
PROCESS FOR PREPARING HOMOGENEOUS LAYERS OF COMPOSITION $HG_{1-x}CD_xTE$

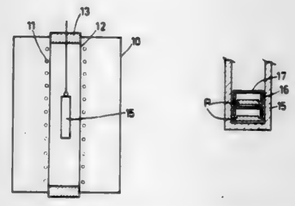
Alain Durand, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Feb. 17, 1981, Ser. No. 234,753
Claims priority, application France, Feb. 22, 1980, 80 04015
Int. Cl.³ H01L 21/205, 21/324
U.S. Cl. 148—1.5 **4 Claims**

1. In a process for preparing a wafer comprising an epitaxial layer of $Hg_{1-x}Cd_xTe$ on a substrate of CdTe by isothermal evaporation-diffusion in vacuo characterized by said epitaxial layer having mediocre internal homogeneity and a gradual compositional transition with the CdTe substrate, the improvement comprising:

depositing a layer of an intermediate composition $Hg_{1-x_o}Cd_{x_o}Te$, wherein $X_o<X$, by epitaxial growth on the CdTe substrate;





melting said layer by subjecting it to heating to a temperature above the liquids point of the layer; and

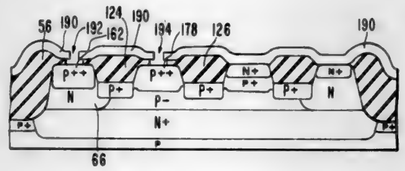
cooling said melted layer rapidly.

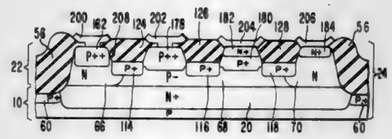
4,435,225

METHOD OF FORMING SELF-ALIGNED LATERAL BIPOLAR TRANSISTOR

Jay A. Shideler, San Mateo, and Robert L. Berry, Cupertino, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed May 11, 1981, Ser. No. 262,568
Int. Cl.³ H01L 29/72, 21/225, 21/22
U.S. Cl. 148—1.5 **20 Claims**





1. A method for manufacturing bipolar a transistor having a base, an emitter, and a collector comprising the steps of:

providing a body of semiconductor material having an impurity region of a first conductivity type therein adjacent to an electrically insulating layer along an upper surface of the body;

forming a protective layer over the insulating layer;

forming an open space through the protective layer above a first region in the body intended for a first doped region of a second conductivity type opposite to the first conductivity type, at least a portion of the first region being coincident with a portion of the impurity region, the open space defining an edge of the remainder of the protective layer nearest to a second region in the body spaced apart from the first region and intended for a second doped region of the second conductivity type, at least a portion of the second region being coincident with a portion of the impurity region;

introducing a first semiconductor dopant of the second conductivity type through the open space into the body to form the first doped region;

etching the insulating layer through the open space back under the remainder of the protective layer laterally at least toward the second region to define an open space through the insulating layer;

oxidizing adjacent portions, along the insulating layer, of the first doped region and the impurity region outside the first doped region to create an electrically insulating region which includes therein the insulating layer, thereby to leave a remaining impurity region comprising the non-oxidized portion of the impurity region still of the first conductivity type and likewise to leave a remaining first doped region comprising the non-oxidized portion of the first doped region, the insulating region having a minimum thickness at a point above the second region;

removing at least a portion of the remainder of the protective layer above the second region;

forming an open space through the insulating region above the second region; and

introducing a second semiconductor dopant of the second conductivity type through the open space in the insulating region into the body to form the second doped region;

whereby the base comprises the remaining impurity region excluding the second doped region, the emitter comprises one of the second doped region and the remaining first doped region, and the collector comprises the other of the second doped region and the remaining first doped region.

4,435,226

WEAR RESISTANT CAST IRON ALLOY WITH SPHEROIDAL GRAPHITE SEPARATION AND MANUFACTURING METHOD THEREFOR

Hans J. Neuhäuser, Bergish-Gladbach, and Hans-Jürgen Veutgen, Burscheid, both of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Nov. 29, 1982, Ser. No. 444,962
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1981, 3147461
Int. Cl.³ C21D 5/06, 5/14
U.S. Cl. 148—3 **19 Claims**

1. Wear resistant cast iron alloy of high strength and containing spheroidal graphite precipitates for the manufacture of machine parts subject to wear, comprising a cast iron alloy having the following composition:

1.5 to 3.0% carbon
3.0 to 6.0% silicon
0.1 to 2.0% manganese
0.05 to 0.5% phosphorus
up to 0.15sulfur
0.1 to 1.0% chromium
0 to 3.5% vanadium
0.1 to 2.5% molybdenum
0.1 to 3.0% total of at least one element from the group nickel and cobalt
0.1 to 3.5% copper
0.1 to 2.5% tungsten
0.1 to 1.0% total of at least one element from the group titanium, niobium and tantalum
up to 0.15% magnesium
up to 0.15% nitrogen,
remainder iron including impurities inherent in the manufacturing process,

said cast iron alloy having a tempered structure in which the graphite is formed by a heat treatment process in which ledeburite decomposes, the graphite being present in an extremely fine form and with a high number of spheroids of about 300,00 to 900,000 per cm^2.

9. Method for producing a cast piece of a cast iron alloy of high strength and containing spheroidal graphite precipitates for the manufacture of machine parts subject to wear, the cast iron alloy having the following composition:

1.5 to 3.0% carbon
3.0 to 6.0% silicon
0.1 to 2.0% manganese
0.05 to 0.5% phosphorus
up to 0.15sulfur
0.1 to 1.0% chromium
0 to 3.5% vanadium
0.1 to 2.5% molybdenum
0.1 to 3.0% total of at least one element from the group nickel and cobalt
0.1 to 3.5% copper
0.1 to 2.5% tungsten
0.1 to 1.0% total of at least one element from the group titanium, niobium and tantalum
up to 0.15% magnesium
up to 0.15% nitrogen,
remainder iron including impurities inherent in the manufacturing process,

said cast iron alloy having a tempered structure in which the graphite is formed by a heat treatment process in which ledeburite decomposes, the graphite being present in an extremely fine form and with a high number of spheroids of about 300,00 to 900,000 per cm^2,

comprising inoculating a cast iron melt with 0.1 to 1.0% ferrosilicon containing 0.5 to 2.0% magnesium, casting the cast iron melt to harden ledeburitically to form a cast piece, and then subjecting the cast piece to a graphitization annealing, subsequently quenching from a temperature above 700° C., and then tempering above 300° C.

4,435,227

METHOD OF TREATING STEEL SURFACES TO PREVENT WEAR, AND COATING OBTAINED THEREBY

Guy R. Nicolas, 22 Clos Nollet, 91200 Athis-Mons, France

Filed Sep. 30, 1982, Ser. No. 428,661
Claims priority, application France, Oct. 6, 1981, 81 18780
Int. Cl.³ C23C 11/04; C23F 7/24
U.S. Cl. 148—6.24 **15 Claims**

1. A method for treating steel parts having a carbon content of at least 0.15%, said treatment providing said steel parts with protection against surface wear, comprising:

a three-stage process comprising,

a first stage wherein iron-molybdenum is deposited on the surface of the steel,

a second stage wherein a sulfur containing compound is introduced to the surface of said steel part and thereafter adheres to said surface; and

a third stage wherein said steel part with said sulfur containing compound adhering thereto is subjected to vapor phase chromizing thereby forming an outer surface layer comprising chromium-molybdenum sulfide and an inner layer under lying the outer surface layer comprising chromium carbides $M_{23}C_6$ and M_7C_3.

4,435,228

PROCESS FOR PRODUCING NB_3SN SUPERCONDUCTING WIRES

Kyoji Tachikawa, Tokyo, and Yuji Yoshida, Sakura, both of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,518
Claims priority, application Japan, Feb. 22, 1982, 57-25981
Int. Cl.³ H01L *39/24*
U.S. Cl. 148—11.5 Q **8 Claims**

1. A process for producing a Nb_3Sn superconducting wire, which comprises preparing a composite from a tin material, a niobium material and a matrix of copper alloy material which is tin-free containing 0.1 to 5 atomic percent in total of at least one element of Group IV of the periodic table selected from the group consisting of titanium, zirconium, and hafnium; processing the composite into a wire, tape or tube; and heat-treating the processed composite at a temperature of 400° to 900° C. to form a Nb_3Sn compound.

4,435,229

METHOD OF PREPARING A TWO-WAY SHAPE MEMORY ALLOY

Alfred D. Johnson, 5383 Bancroft Ave., Oakland, Calif. 94601
Continuation of Ser. No. 78,891, Sep. 25, 1979, abandoned. This application Oct. 2, 1981, Ser. No. 308,127
Int. Cl.³ C22F *1/00, 1/10*
U.S. Cl. 148—11.5 R **28 Claims**

1. A method of training a shape memory alloy so that the alloy has a two-way shape memory when the alloy is operated in a working cycle for converting heat into mechanical work with the conditions of the cycle including an upper operating temperature T of the alloy and a stress σ_w at which the alloy is operated in the working cycle, the method comprising iteratively performing the steps of heating the alloy under a first training stress σ_1 to a temperature T_H which is above said temperature T, cooling the alloy to a temperature T_C which is below the zero-force transition temperature of the alloy, deforming the alloy at T_C while applying to the alloy a second training stress $\sigma_2$where $\sigma_2 \neq \sigma_1$ and $\sigma_2 \cong \sigma_w$, heating the alloy back to T_H, and changing stress on the alloy to the first training stress.

4,435,230

ALUMINUM ALLOY PRINTING PLATE AND METHOD FOR MANUFACTURING SAME

Chozo Fujikura, Nikko, Japan, assignor to Furukawa Aluminum Co., Ltd., Tokyo, Japan
Filed Aug. 20, 1982, Ser. No. 410,053
Claims priority, application Japan, Sep. 3, 1981, 56-139148
Int. Cl.³ C22C *21/08*
U.S. Cl. 148—11.5 A **3 Claims**

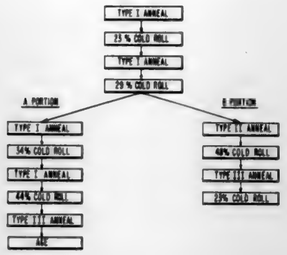
1. An aluminum alloy printing plate comprising a printing plate of an aluminum alloy consisting essentially of 0.05–0.30% Mg, 0.05–0.30% Si, 0.15–0.30% Fe and the remainder Al and ordinary impurities said plate having a uniformed grained surface and a photosensitive layer thereon.

4,435,231

COLD WORKED FERRITIC ALLOYS AND COMPONENTS

Michael K. Korenko, Wexford, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 31, 1982, Ser. No. 364,050
Int. Cl.³ C21D *8/04*
U.S. Cl. 148—12 EA **16 Claims**

1. A process for treating a precipitation hardening ferritic alloy comprising the steps of:
solution treating said alloy;
followed by a final cold working of said alloy;



and then placing said alloy in said alloy intended application, wherein the first significant precipitation hardening of said alloy after said final cold working step is induced.

4,435,232

EXPLOSIVE COMPOSITION

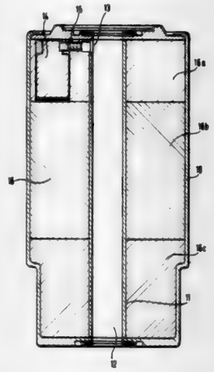
David A. Claramitaro, and Jack M. Moore, both of Benson, Ariz., assignors to Apache Powder Company, Benson, Ariz.
Filed Dec. 10, 1982, Ser. No. 448,874
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **9 Claims**

1. An explosive composition comprising:
a low density carbonaceous absorbent formed at least in part from comminuted, processed cellulose;
a liquid explosive absorbed onto the low-density, carbonaceous absorbent, said carbonaceous absorbent remaining substantially chemically unchanged after absorption of the liquid explosive; and
an oxygen-supplying salt.

4,435,233

PROCESS FOR THE PREPARATION OF A SMOKE COMPOSITION

Peter Rayer, Mülheim; Hartmut Krone, Auggen; Alois Schiessl, Marzoll; Wolfgang Steinicke, Bad Reichenhall, and Wolfgang Trede, Weil am Rhein, all of Fed. Rep. of Germany, assignors to Buck Chemisch-Technische Werke GmbH & Co., Fed. Rep. of Germany
Filed Jan. 29, 1982, Ser. No. 343,839
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1981, 3104464
Int. Cl.³ C06B *33/02*
U.S. Cl. 149—44 **5 Claims**



1. Process for the preparation of a smoke composition, par-

ticularly for extremely heavy-duty projectiles, preferably mortar shells, from a mixture that includes hexachloroethane and metal powder, with the mixture being compressed by high pressure into a self-supporting solid, wherein the improvement comprises the steps of
providing powdered zinc oxide,
highly compressing said powdered zinc oxide,
crushing said high compressed zinc oxide powder to form a granular zinc oxide, and
mixing said granulated zinc oxide with said hexachloroethane and said metal powder to form said mixture.

4,435,234

METHOD OF PRODUCING HIGH PRESSURE DECORATIVE LAMINATES CONTAINING AN AIR-LAID WEB

James E. B. Hunt, Middlesex, England, assignor to Formica Corp., Del.
Division of Ser. No. 233,418, Feb. 11, 1981, Pat. No. 4,379,193. This application Apr. 5, 1982, Ser. No. 365,671
Claims priority, application United Kingdom, Feb. 12, 1980, 8007002
Int. Cl.³ B32B *23/04*
U.S. Cl. 156—62.4 **3 Claims**

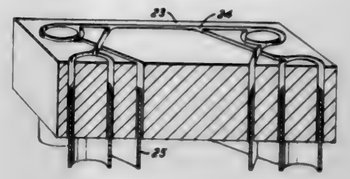
1. A method of producing a heat and pressure consolidated, high pressure decorative laminate which comprises,
(1) defibrating cellulosic fibers to produce fibers of an average length of about 0.5 to 2.5 mm in the presence of air to thereby form an air-fiber stream,
(2) incorporating into said air-fiber stream from about 20%–35% of particles of a thermosetting resin to thereby form an air-fiber-resin stream,
(3) depositing the fibers and resin from said air-fiber-resin stream, under conditions of 40–80% relative humidity, onto a foraminous belt at a thickness ranging from about 5–100 mm to form a layer of uniform composition and basis weight,
(4) pre-consolidating the deposited fibers and resin to a thickness of from about 0.5–10.0 mm,
(5) forming a laminate assembly comprising, in superimposed relationship,
(A) a monostichous layer of said preconsolidated fibers and resin and
(B) a thermosetting resin impregnated decorative sheet, and
(6) heat and pressure consolidating said laminate assembly.

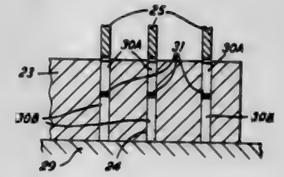
4,435,235

GASKET MANUFACTURE

Alan W. Atkinson, Rochdale, and Janet M. Lancaster, Dearnley, both of England, assignors to T&N Materials Research Limited, Manchester, England
Filed Dec. 22, 1981, Ser. No. 321,231
Claims priority, application United Kingdom, Nov. 15, 1980, 8036727
Int. Cl.³ B32B *17/00;* B29C *19/00;* D04H *1/16;* F02F *11/00*
U.S. Cl. 156—62.2 **6 Claims**

1. A method of making a flat gasket directly from expanded graphite particles, the method comprising the steps of:
(1) providing co-operating male and female mould members, the female mould member being in the form of a channel extending through a block from one face to a directly opposite face, the channel as seen in plan having a width and configuration corresponding to a desired gasket shape,
(2) placing a flat, rigid back-up tool in contact with one of said faces,
(3) introducing a charge of graphite particles into said channel,
(4) placing a gasket substrate into said channel,
(5) introducing a second charge of graphite particles into the channel, followed by



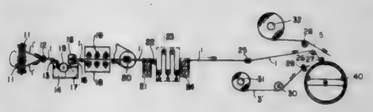


(6) applying the male mould member and pressing both charges and the substrate against the back-up tool to form a graphite gasket in situ on both sides of the substrate.

4,435,236

METHOD OF MANUFACTURING A FOLDABLE BICYCLE TIRE HAVING FLEXIBLE BEADS

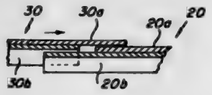
Shoji Inae, and Harunori Okamoto, both of Kagawa, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan
Division of Ser. No. 269,097, Jun. 2, 1981, Pat. No. 4,378,042. This application Jul. 20, 1982, Ser. No. 400,202
Claims priority, application Japan, Jun. 11, 1980, 55-79390
Int. Cl.³ B29H *17/22, 17/32;* B60C *15/04*
U.S. Cl. 156—132 **9 Claims**



1. A method of manufacturing a tire comprising: the steps of;
twisting two untwisted linear members having a low elongation ratio and high strength supplied from corresponding bobbins at 1 to 2 turns/10 cm to form a cord tensile member,
adhesion treating said cord tensile member;
drying said cord tensile member;
covering said cord tensile member with rubber; accumulating the rubber covered cord tensile member in an accumulator;
winding a bias tire fabric having a predetermined width and length on a former in the outer wall of which bead grooves spaced a predetermined distance from each other are formed;
joining both ends of said bias tire fabric to form an endless tire fabric;
winding said cord tensile member accumulated in said accumulator on said endless tire fabric on a drum of said former along each of said bead grooves to three to five turns;
overlapping start and finish ends of said cord tensile member wound along each bead groove 60 to 150 mm;
bonding together said start and finish ends with bead rubber to form a bead core having a cut elongation of 5% or less and a strength of 300 kg/core;

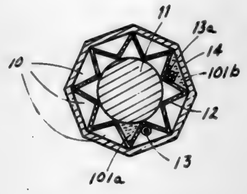
folding both sides of said endless tire fabric inwardly along said bead cores to form a tire fabric member with beads;
bonding a tread rubber member having predetermined width and length to said tire fabric member with beads to form an unvulcanized tire; and
vulcanizing said unvulcanized tire under predetermined conditions.

4,435,237
METHOD FOR FORMING MULTI-FLUTE-LAYER CORRUGATED BOARD
Walther J. Hoelzinger, Vienna, Austria, assignor to Boise Cascade Corporation, Boise, Id.
Division of Ser. No. 889,387, Mar. 23, 1978, Pat. No. 4,128,677, which is a division of Ser. No. 722,699, Sep. 13, 1976, Pat. No. 4,126,508. This application Aug. 18, 1978, Ser. No. 934,859
Int. Cl.³ B31F *5/00*
U.S. Cl. 156—157 **12 Claims**



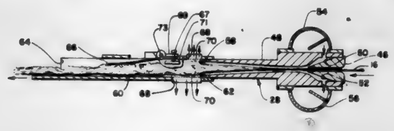
1. The method of forming a continuous web having a planar fibrous layer superimposed upon a corrugated layer the flutes of which extend longitudinally of the web, which comprises the steps of
(a) adhesively bonding a continuous planar fibrous facer layer (22*a*) upon a corrugated fibrous layer (22*b*) having parallel flutes, said planar and corrugated layers having the same dimension in the direction of the flutes and being laterally displaced relative to each other a given distance in the direction of said flutes, thereby to define a preliminary web (22) at one longitudinal edge of which the facer layer projects a given distance laterally beyond the corrugated layer, and at the other longitudinal edge of which the corrugated layer projects said given distance laterally beyond the facer layer;
(b) transversely severing said preliminary web in the direction of said flutes to define a plurality of sections (30) of equal length;
(c) arranging said sections in corresponding succession in a common plane with their flutes extending colinearly in longitudinal relation, each section having
(1) at one end a corrugated layer portion extending above, and in flute-enmeshing engagement with the projecting corrugated layer portion of a second section, and a projecting facer layer portion that extends in overlapping relation at least partially above the adjacent portion of the facer layer of said second section; and
(2) at the other end, a projecting corrugated layer portion that extends beneath the projecting facer layer of a third section and at least partially in flute-enmeshing engagement with the adjacent corrugated layer portion of said third section;
(d) adhesively bonding the corrugated and projecting facer layer portions at said one end of the section with the corresponding portions of the second section; and
(e) adhesively bonding the projecting corrugated layer portion of said section with the adjacent portion of said third section, thereby to form a continuous first web (20) the flutes of which extend longitudinally thereof.

4,435,238
MANUFACTURING PROCESS FOR A LOW LOSS OPTICAL FIBER CABLE
John C. Smith, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 28, 1982, Ser. No. 437,392
Int. Cl.³ B65H *81/02*; G02B *5/14*
U.S. Cl. 156—171 **11 Claims**



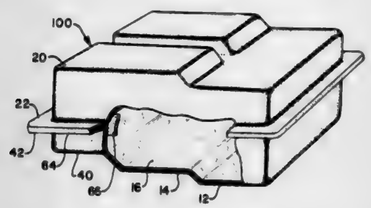
1. A method of manufacturing an optical fiber cable unit comprising the steps of:
paying off an axial strength member such that said strength member rotates;
paying off a corrugated tape; applying said tape to said rotating strength member so that said tape is helically wrapped about said strength member and so that the corrugations form helical grooves;
paying off an optical fiber and laying said fiber in a helical groove formed by the corrugations; and
winding the cable on a reel.

4,435,239
PNEUMATIC TOW BLOOMING PROCESS
James E. Harris, Bristol, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 19, 1982, Ser. No. 359,968
Int. Cl.³ D01D *11/02*
U.S. Cl. 156—180 **5 Claims**



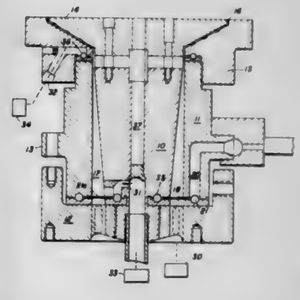
1. A process for treatment of tow in preparation for forming tobacco smoke cigarette filter rods comprising the steps of
withdrawing a continuous multifilament crimped tow from a supply source;
banding the crimped tow to a predetermined width wider than the tow at the supply source by removing false twist from the tow, spreading the tow and partially breaking up bundles of crimped filaments;
feeding said banded tow to a first zone and applying tension axially to the filaments across the width of said banded crimped tow to extend the crimp in and to partially deregister the crimped filaments within said tow and to partially bloom the tow;
feeding the partially bloomed banded crimped tow to an enclosed second zone and further spreading the width of the tow within said second zone into a wide flat bundle of filaments by impelling a flat gaseous compressed stream in impingement against opposite sides of and across the width of said bundle of filaments at an angle less than 90° to the longitudinal axis of said bundle sufficient to penetrate the bundle, to encompass the filaments with said gaseous compressed stream and to propel the bundle toward and through a tapering exit of said second zone;
feeding said bundle of filaments into a partially enclosed, wide rectangular third zone and therein momentarily confining and rapidly decelerating the linear speed of said bundle, applying compression against the mass of said bundle and allowing said bundle to be momentarily stored under conditions of low longitudinal tension, simultaneously allowing the compressed gaseous streams to expand and escape from said third zone at a location prior to the exit for said bundle from said wide rectangular third zone and thereby separate and bloom said filaments and cause said filaments to fill said wide rectangular third zone and to relax and recover a portion of their crimp, thereby forming a flat wide low density bloomed tow;
feeding the bloomed filaments of the wide flat low density tow to a fourth zone and uniformly applying plasticizer at a consistent rate to both sides of and through said tow across the width thereof;
feeding said tow to a fifth zone through and between two rolls to squeeze and to spread the plasticizer more uniformly on said filaments, and then
feeding said tow onward for subsequent processing into filter rods.

4,435,240
FABRIC-REINFORCED, FLEXIBLE-WALLED CONTAINER AND METHOD OF MAKING SAID CONTAINER
Ernest Knaus; Raymond J. Namsick, and Herbert D. Smith, all of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio
Division of Ser. No. 194,173, Oct. 6, 1980, Pat. No. 4,360,124. This application Sep. 22, 1982, Ser. No. 421,697
Int. Cl.³ B29C *11/00*
U.S. Cl. 156—242 **7 Claims**



1. A method of making a flexible, fabric-reinforced, complex-shaped container for holding a volume of a volatile liquid hydrocarbon fuel comprising the steps of:
providing a fabric reinforcement material comprised of yarns exhibiting a change-in-effective length characteristic so as to stretch and be shaped to conform to a complex configuration;
coating one face surface of the fabric with an elastomeric gum;
coating the opposite face surface with an elastomeric adhesive gum;
applying an air-impervious nylon plastic film to the adhesive gum to form a complete composite material structure, said film exhibiting a resistance to the deleterious affects of volatile fuels to provide a barrier against penetration of such fuels into the fabric and to aid in vacuum drawing of the composite structure;
placing composite material in a first concave mold forming the upper portion of the complex-shaped container, the elastomeric gum facing inwardly into the mold while the nylon film faces outwardly of the mold;
placing composite material in a second concave mold forming the lower portion of the complex-shaped container, the elastomeric gum facing inwardly into the mold while the nylon film faces outwardly of the mold;
clamping the first and second molds together about peripheral edges to secure the composite material about the peripheral edges in a manner to form an external flange;
applying a differential pressure to the upper and lower molds to draw the composite material into the confines of the respective upper and lower mold cavities to effect shaping of the composite to the mold configurations, said elastomeric gum penetrating the interstices of the fabric to adhere to the adhesive gum on the opposite side of the fabric upon stretching of the fabric; and
curing the composite while holding the differential pressure such that the composite is set and the yarns of the fabric are maintained to the shaped container configuration as established by the molds.

4,435,241
METHOD OF EXTRUDING LAMINATED FILM
Herbert O. Corbett, Bridgeport, Conn., assignor to National Distillers and Chemical Corporation, New York, N.Y.
Filed May 26, 1967, Ser. No. 654,941
Int. Cl.³ B29C *19/00*
U.S. Cl. 156—244.11 **11 Claims**



1. A method for the extrusion of a composite stream of heat-plastified synthetic resinous material in a sheet-like configuration wherein the composite stream comprises at least three layers of diverse synthetic resinous material, the method comprising:
providing a first stream of heat-plastified synthetic resinous material to a restraining configuration, the restraining configuration having a generally slot-like extrusion orifice,
dividing the first stream of heat-plastified synthetic resinous material into a first substream and a second substream having a generally planar configuration,
providing a second stream of heat-plastified synthetic resinous material, the second stream having a generally planar configuration and a width substantially less than the first and second substreams, positioning the first and second substreams on either side of the second stream, subsequently,
passing the first and second substreams and the second stream through an elongate slot-like extrusion orifice, the second stream being encapsulated within the first and second substreams in the composite stream, the second stream being generally coextensive with the resultant extruded sheet, the improvement which comprises restricting the flow of the first stream generally at the point where it is divided into the first and second substreams and introducing between the first and second substreams the second stream in a generally planar configuration generally parallel to the first and second substreams and having a dimension substantially less in width than the first and second substreams, and passing the first and second substreams and the second stream to the extrusion orifice by means of a tapering configuration which converges toward the orifice.

4,435,242

ELONGATE STRUCTURE

John P. McNulty, Cotham, England, assignor to Bristol Composite Materials Engineering Limited, Bristol, England

Filed Nov. 17, 1982, Ser. No. 442,255

Claims priority, application United Kingdom, Nov. 26, 1981, 8135717

Int. Cl.³ B32B *31/04, 31/30*

U.S. Cl. 156—264 **6 Claims**



1. A method of fabricating a tapered elongate structure comprising the steps of (a) producing a longitudinal member in the form of a tube of even number sided polygonal uniform cross section or of a circular cross-section, or a channel cross section member, (b) cutting the member lengthwise and at an angle to the longitudinal axis so as to produce a plurality of similar segments of tapered shape, (c) arranging the segments in an abutting or overlapping relationship so as to form a tapered configuration and (d) bonding the segments at the abutment or overlap areas to form the tapered elongate structure.

4,435,243

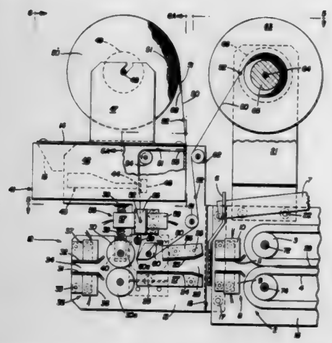
DEPOSIT INFORMATION LABELING MECHANISM FOR ATM ENVELOPE DEPOSITING EQUIPMENT

Syed A. Azeez, North Canton; Paul A. Leipelt, and Herbert Morello, both of Canton, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Sep. 24, 1982, Ser. No. 422,835

Int. Cl.³ B32B *3/00*

U.S. Cl. 156—361 **26 Claims**



1. Mechanism for labeling on a deposit-containing envelope deposit information about a deposit in said envelope, in which said deposit information is derived in part from a customer credit card entered by said customer into and read by a card reader in a credit card activated ATM-type envelope depository which verifies said customer's identity, in which said deposit information also is derived in part from indicia including said customer's personal identification number and the amount of the deposit entered by said customer into the depository keyboard, in which the depository has a control system that translates said entered information and indicia into signals transmitted to and from system computer-based control circuitry, in which said depository has conveyor means having conveyor drive means within a safelike compartment having an exit gate movable between closed and open positions at the discharge end of said conveyor means, and in which first sensor means is located adjacent the conveyor discharge end which senses arrival of the leading end of a deposit envelope being deposited and enables opening of said exit gate and continued conveyor means movement; wherein the improvement comprises depositor mechanism mounted at the discharge end of said conveyor means adjacent said exit gate, including,

(a) conveyor roll means having upper and lower pinch rolls driven by said conveyor drive means and located in said depositor mechanism at a labeling station communicating with said depository conveyor means when said exit gate is opened by said first sensor means upon sensing the arrival at said first sensor means of the leading end of a deposit-containing envelope to be labeled;

(b) delivering said deposit containing envelope by said continued conveyor means movement when said exit gate is open to said driven conveyor roll means at said labeling station to engage the leading end of said deposit-containing envelope with said conveyor roll means to continue envelope movement through said conveyor roll means to adjacent second sensor means;

(c) dot matrix impact printer mechanism mounted at a printing station location adjacent said labeling station;

(d) pressure-sensitive-label carrying strip means movable in a path of travel from a pay-out spool through said printing and labeling stations to a take-up spool;

(e) peeler means engaging said carrying strip at said labeling station;

(f) said carrying strip normally being at rest with a label thereon in printing receiving position at said printing station; and

(g) means enabled when said second sensor means senses the arrival of the leading end of said deposit-containing envelope at said second sensor means to energize the printer mechanism to print deposit information entered into the depository and transmitted to the printer mechanism, onto said label located at said printing station, to move said carrying strip in its path of travel, and to peel the printed label from the carrying strip at the labeling station by said peeler means onto its related deposit envelope during continued movement of said carrying strip.

4,435,244

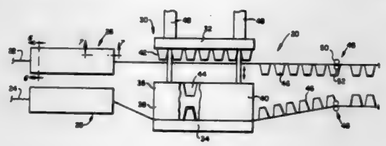
RECIPROCATING CLAMP APPARATUS FOR THERMOFORMING PLASTIC CONTAINERS

Martin H. Beck, Brookline; Suppayan M. Krishnakumar, and Ieuan L. Harry, both of Nashua, all of N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 315,842, Oct. 28, 1981, Pat. No. 4,427,476. This application Sep. 30, 1982, Ser. No. 431,446

Int. Cl.³ B29C *17/04*; B32B *1/10*

U.S. Cl. 156—379.8 **15 Claims**



1. Apparatus for forming containers, said apparatus comprising two sets of mold units each including a first platen having a plurality of mold cavities formed therein and a second platen carrying plungers cooperable with said mold cavities to form from sheet material containers within said mold cavity, means mounting a platen of each mold unit set in spaced relation, means joining together and mounting the others of said platens between said spaced platens for movement between a first position wherein one of said mold unit sets is closed and the other of said mold unit sets is open and a second position wherein said other mold unit set is closed and said one mold unit set is open, and means for sequentially advancing separate and continuous sheet material along two paths relative to a respective mold unit set when that mold unit set is open to displace newly formed containers and to align new sheet portion between platens of the open mold unit set.

4,435,245

APPARATUS FOR IMPRINTING AND DISPENSING PRESSURE-SENSITIVE LABELS ADHERING TO A CARRIER TAPE

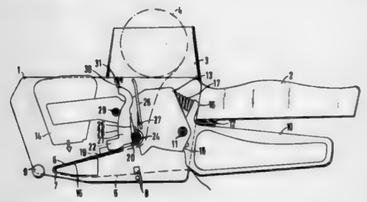
Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Hirschhorn, Fed. Rep. of Germany

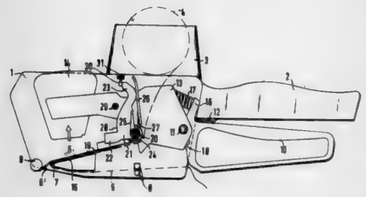
Continuation of Ser. No. 254,296, Apr. 15, 1981, abandoned. This application Feb. 2, 1983, Ser. No. 463,312

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017843

Int. Cl.³ B41F *21/00, 1/08*; B32B *31/00*

U.S. Cl. 156—384 **7 Claims**





1. In an apparatus for imprinting and dispensing pressure-sensitive labels adhering to a carrier tape comprising an operating lever which is pivotal from a rest position in which it holds a printing mechanism raised from a platen into an operating position in which it holds the printing mechanism bearing against the platen, a feed means for stepwise drawing of the carrier tape over the platen and a peel edge at which the pressure-sensitive labels detach from the carrier tape and move into a dispensing position, and a braking means for clamping the carrier tape with the pressure-sensitive labels adhering thereto on the path to the peel edge in the rest position of the operating lever, the improvement comprising the braking means including (a) a brake actuating member, (b) a spring which normally biases the brake actuating member into a carrier tape clamping position out of which said member is pivotal into a carrier tape release position, and (c) a cam gearing disposed between the brake actuating member and the operating lever, said cam gearing pivoting the brake actuating member out of the carrier tape clamping position against the bias of said spring into the carrier tape release position in response to the operating lever moving through a part of its travel from the rest position into the operating position, an arresting member which arrests the brake actuating member in the carrier tape release position against the bias of said spring and means for releasing the arresting member when the operating lever reaches its rest position so that the brake actuating member is immediately returned to said tape clamping position by said spring.

4,435,246

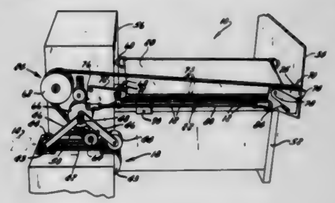
LABEL DISPENSING AND APPLYING APPARATUS

Ronald J. Green, Baraboo, Wis., assignor to Franchise Mailing Systems, Milwaukee, Wis.

Filed Oct. 4, 1982, Ser. No. 432,646

Int. Cl.³ B32B *1/00*

U.S. Cl. 156—542 **16 Claims**



1. An apparatus for simultaneously removing a plurality of pressure-sensitive labels from a backing sheet and applying the labels to parcels moving in sequence on a conveyor,

said apparatus comprising

a label stripping assembly for stripping a substantial portion of the labels from the backing sheet to expose the pressure-sensitive adhesive surface of the labels,

conveyor means for transporting parcels in sequence from a loading station to a dispensing station,

an elastic belt conveyor for transferring labels in sequence from said stripping assembly to said parcels,

means operatively connected to move a portion of said belt conveyor through a cycle of motion which intersects the non-adhesive surface of the label on the initial movement of the conveyor and the pressure-sensitive adhesive surface on the return motion of the conveyor whereby said labels will adhere to the belt conveyor on the return motion.

4,435,247

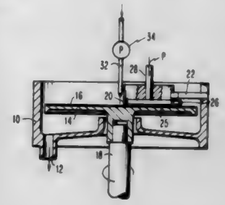
METHOD FOR POLISHING TITANIUM CARBIDE

Jagtar S. Basi, Fishkill, and Eric Mendel, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1983, Ser. No. 473,938

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—636 **9 Claims**



1. A method for the chemical-mechanical polishing of a titanium carbide surface to a high degree of perfection comprising:

maintaining said titanium carbide surface continuously wetted with a water slurry containing a soft abrasive material;

continuously wiping the titanium carbide surface with a firm surface using pressure while maintaining a relative movement between the titanium carbide surface and the firm surface to remove the water reacted titanium carbide

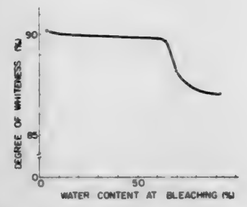
product from the high points of the titanium carbide surface.

4,435,248

PROCESS FOR PRODUCING PHOTOGRAPHIC PAPER

Shun Arakawa, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 1, 1980, Ser. No. 212,008
Claims priority, application Japan, Nov. 30, 1979, 54-155115
Int. Cl.³ D21D *3/00*
U.S. Cl. 162—12 **8 Claims**



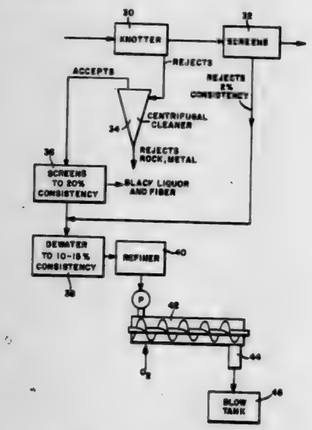
1. A process for producing photographic paper comprising bleaching a paper web containing from 0 to 65% by weight water, using a size press and drying said web at a temperature of from 50° C. to 80° C. for 30 seconds to 3 minutes, wherein the bleaching agent is H_2O_2 used in an amount of from about 0.1% to 5.0% by weight, based on the weight of the pulp forming the paper web.

4,435,249

PROCESS FOR THE OXYGEN DELIGNIFICATION OF PULP MILL REJECTS

Larry D. Markham, Pierrefonds, Canada; Andrew C. Martin, Middletown, Ohio; Edward F. Elton, Bethlehem; Vincent L. Magnotta, Coopersburg, both of Pa., and Scott A. Wallick, Seattle, Wash., assignors to The Black Clawson Co., Middletown, Ohio and Air Products & Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 72,796, Sep. 5, 1979, abandoned. This application Nov. 25, 1981, Ser. No. 325,084
Int. Cl.³ D21B *1/04*; D21C *9/10*; D21D *5/02*
U.S. Cl. 162—24 **9 Claims**



1. A process for the treatment of pulp mill fine screen rejects and knotter rejects to produce a bleachable grade pulp comprising the steps of:

(a) treating a pulp stream from an initial cooking or digestion stage to separate knotter rejects from said pulp,

(b) passing said pulp from step (a) to a fine screen to separate fine screen rejects,

(c) dewatering said knotter rejects to a consistency of about 20% while removing black liquor and free fiber;

(d) mixing fine screen rejects from step (b) having a consistency of from about 0.5–5.0% with said knotter rejects;

(e) dewatering the mixture of knotter and fine screen rejects to a consistency of about 10–15%;

(f) mechanically fiberizing said mixture at the same 10–15% consistency;

(g) delignifying the fiberized mixture with mixing at the same 10–15% consistency in the presence of oxygen and alkaline chemicals for a period of from about 5 to about 120 minutes at 80°–140° C., in a reactor separate from any reactor used to delignify said pulp, and

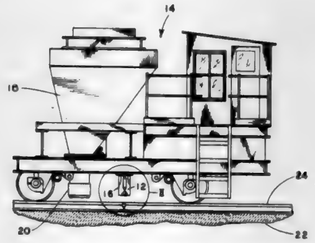
(h) sending said fiberized materials to a bleaching stage.

4,435,250

DEVICE FOR ADJUSTING THE POSITION OF A TRACK MOUNTED CAR

Carl Lindgren, Glenshaw, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 6, 1982, Ser. No. 375,445
Int. Cl.³ B61B *12/00*; B61L *3/02, 27/04*; C10B *45/00*
U.S. Cl. 202—239 **26 Claims**



1. A track mounted car, track and a device for moving the track mounted car from an initial spotted position on said track to a second predetermined position on said track comprising:

(a) an arm member having a terminal feeler means and being pivotally mounted on said car so as to be oscillatory in a vertical arc generally parallel to said track;

(b) sensing means for providing an electrical output signal related in polarity and proportional in amplitude to angular displacements of the arm member in its vertical arc from a gravity based reference position of the arm member in said vertical arc;

(c) a protrusion engageable with said feeler means and positioned remotely from the car and in fixed relation to the track so that when the feeler means and the protrusion are engaged and the car has reached its second predetermined position, the arm member will be positioned in its gravity based reference position;

(d) a dual directional, variable speed drive means for moving the car on the track; and

(e) control means for operating said drive means in a direction dependent on the polarity of said signal and at a speed proportional to the amplitude of said signal, such that the car will move to said second predetermined position at an instantaneous velocity which is approximately proportional to its remaining distance from said second position.

4,435,251

METHOD FOR PURIFICATION OF 2-METHYLENEGLUTARONITRILE

Makoto Takeda; Kazuhito Miyoshi, both of Ami; Mitsumasa Kaitoh, Kashiwa, and Hiroyuki Omori, Yokkaichi, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,815
Claims priority, application Japan, Dec. 27, 1980, 55-185497
Int. Cl.³ B01D *3/34*
U.S. Cl. 203—50 **3 Claims**

1. In a method for purification of crude 2-methyleneglutaronitrile product containing as impurities a metal halide, a trialkylamine, and a trimer or higher polymer of acrylonitrile, which crude product is a reaction product obtained by dimerizing acrylonitrile in the presence of a catalyst comprising a metal halide and a trialkylamine, wherein the purification comprises treating said crude 2-methyleneglutaronitrile product with an acid and then subjecting the treated product to distillation, the improvement comprising effecting said purification by the following sequential steps:

(1) subjecting said reaction product to predistillation at a temperature of 120° C. or lower under a pressure of 10 to 200 mm Hg to distill off therefrom at least portions of unreacted acrylonitrile and trialkylamine;

(2) treating said crude 2-methyleneglutaronitrile product with an acid selected from the group consisting of hydrochloric acid, sulfuric acid and nitric acid of a concentration of 1 to 30% by weight at a temperature of 10° to 50° C. in the presence of an aromatic hydrocarbon selected from the group consisting of benzene, toluene, ethylbenzene and xylene in a quantity of 0.1 to 2 volumes relative to that of the crude 2-methyleneglutaronitrile;

(3) separating the acid-treated crude product from the aqueous layer, and washing the remaining organic layer with a dilute aqueous alkaline solution; and

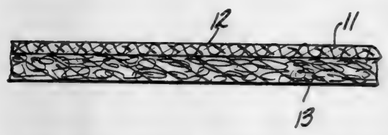
(4) subjecting the washed crude product to distillation under a reduced pressure.

4,435,252

METHOD FOR PRODUCING A RETICULATE ELECTRODE FOR ELECTROLYTIC CELLS

Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 143,970, Apr. 25, 1980, Pat. No. 4,370,214. This application Sep. 24, 1982, Ser. No. 422,799
Int. Cl.³ C25B *1/08*
U.S. Cl. 204—11 **16 Claims**



1. A method for producing a reticulate electrode for use in the electrolysis of aqueous solutions of ionizable compounds which comprises:

(a) affixing filaments to a support fabric to form a network of filaments, said filaments being comprised of a metal or metal sensitized plastic,

(b) depositing an electroconductive metal on said filaments to form metal coated filaments, said deposition providing interfilament bonding at contact sites between adjacent filaments, and

(c) removing said support fabrics from said metal coated filament network to produce a reticulate electrode having a porosity of at least 80 percent.

4,435,253

GOLD SULPHITE ELECTROPLATING SOLUTIONS AND METHODS

Kenneth D. Baker, Bridgewater, and Hans Scheider, Bloomfield, both of N.J., assignors to OMI International Corporation, Warren, Mich.

Filed Jan. 28, 1983, Ser. No. 461,341
Int. Cl.³ C25D *3/48, 3/62*
U.S. Cl. 204—43 G **19 Claims**

1. In an aqueous electrolyte sulphite gold electroplating solution comprising an alkali metal or ammonium gold sulphite, and at least a grain refining amount of thallium metal, the improvement where said solution also contains a non-hydroxy, non-amino carboxylic acid to maintain the hardness of the gold deposited therefrom below about 90 Knoop.

4,435,254

BRIGHT NICKEL ELECTROPLATING

Kenneth W. Lemke, Englishtown, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Continuation of Ser. No. 88,610, Oct. 26, 1979, abandoned, which is a continuation of Ser. No. 956,741, Nov. 1, 1978, abandoned. This application Jun. 12, 1981, Ser. No. 272,850
Int. Cl.³ C25D *3/14, 3/16, 3/18*
U.S. Cl. 204—49 **46 Claims**

1. An aqueous acidic electroplating solution for use in electrodepositing nickel from a nickel compound containing solution, wherein said solution comprises:

(a) a nickel compound;

(b) 0.005 gram per liter to 0.1 gram per liter of an acetylenic amine or substituted amine, aliphatic or aromatic; and

(c) 0.01 gram per liter to 0.10 gram per liter of a sulfonated acetylenic and salts thereof where the acetylenic bond and the sulfonate radical are connected by a carbon chain where C=1–6.

4,435,255

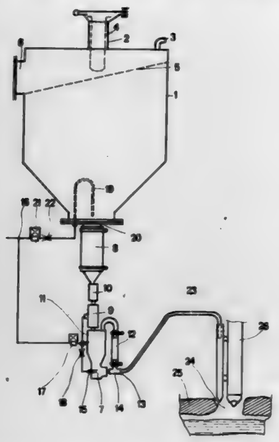
PROCESS AND APPARATUS FOR CONTROLLED FEED OF ALUMINA AND HALOGEN ADDITIVES INTO ELECTROLYSIS VATS FOR THE PRODUCTION OF ALUMINUM

Spyridon Casdas, Paralia Distomon, Greece, assignor to Aluminium de Grece, Athens, Greece

Filed Apr. 9, 1982, Ser. No. 366,990
Claims priority, application France, Apr. 15, 1981, 81 07855; Dec. 8, 1981, 81 23328
Int. Cl.³ C25C *3/06, 3/14, 3/20*
U.S. Cl. 204—67 **16 Claims**

1. Process for feeding alumina and halogen additives into an electrolytic cell for production of aluminum by electrolysis of alumina dissolved in the molten cryolite according to the Hall-Heroult technique, wherein the alumina or halogen additive is in a storage means having a bottom discharge flow orifice, cutoff means for controlling flow from said flow orifice, and a feed regulator for receiving and dispatching successive regulated dose quantities through a system of pipes and into at least one orifice in the crust of solidified electrolyte which covers the cell during normal operation; the process comprising, opening the cutoff means and allowing the alumina or halogen additive to flow into and fill the feed regulator by gravity, closing the cutoff means, and injecting compressed air at the base of the feed regulator through the feed regulator

and into the system of pipes until all alumina or halogen additive contained in the feed regulator has been dispatched,



through said system of pipes, to the orifice in the electrolysis crust.

4,435,256

PROCESS FOR MAKING POTASSIUM FERRATE [FE(VI)] BY THE ELECTROCHEMICAL FORMATION OF SODIUM FERRATE

J. Paul Deininger, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 246,790, Mar. 23, 1981, and a continuation-in-part of Ser. No. 246,794, Mar. 23, 1981. This application Jul. 1, 1983, Ser. No. 510,115
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—86 **28 Claims**

1. A process for preparing potassium ferrate which comprises:
(a) admixing sodium hydroxide containing less than about 0.02% by weight of sodium halide with sufficient sodium halide to increase the sodium halide concentration of the resulting mixture to between about 0.02% and about 4.0% by weight;
(b) carrying out an electrolysis process with an anolyte comprising said resulting mixture and ferric ions whereby sodium ferrate is formed in the anolyte;
(c) reacting said sodium ferrate with a potassium compound capable of reacting with said anolyte to form a potassium ferrate precipitate; and
(d) recovering said potassium ferrate therefrom.

4,435,257

PROCESS FOR THE ELECTROCHEMICAL PRODUCTION OF SODIUM FERRATE [FE(VI)]

J. Paul Deininger, and Ronald L. Dotson, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 246,790, Mar. 23, 1981. This application Jul. 1, 1983, Ser. No. 510,114
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—86 **23 Claims**

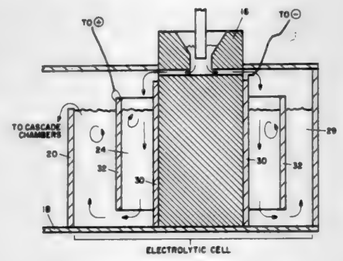
1. A process for preparing sodium ferrate which comprises:
(a) admixing sodium hydroxide containing less than about 0.02% by weight of sodium halide with sufficient sodium halide to increase the sodium halide concentration of the resulting mixture to between about 0.02% to about 4.0% by weight;
(b) carrying out an electrolysis process with an anolyte comprising said resulting mixture and ferric ions whereby sodium ferrate is formed in the anolyte; and
(c) recovering said sodium ferrate therefrom.

4,435,258

METHOD AND APPARATUS FOR THE RECOVERY OF PALLADIUM FROM SPENT ELECTROLESS CATALYTIC BATHS

James P. Melka, Jr., Henrico County, and John F. Barnes, Glen Allen, both of Va., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 426,054
Int. Cl.³ C25C *1/20*
U.S. Cl. 204—109 **11 Claims**



1. A method for recovering palladium from a tin-containing acidic colloidal palladium bath comprising the steps of:
(a) dissolving the colloidal palladium by the addition of an oxidizing agent to the bath;
(b) heating the solution containing the dissolved palladium;
(c) placing the solution in an electrolytic cell having a nickel anode and a cathode of nickel or copper; and
(d) electrowinning palladium from the solution at a voltage and current density which tends to preferably plate palladium as opposed to any tin in the solution.

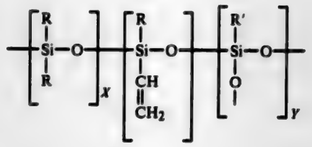
4,435,259

RADIATION CURABLE COMPOSITION OF VINYL POLYSILOXANE AND HYDROGEN POLYSILOXANE WITH PHOTOSENSITIZER

Mike S. H. Chang, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 230,789, Feb. 2, 1981, Pat. No. 4,376,210. This application Sep. 1, 1982, Ser. No. 413,645
Int. Cl.³ C08F *2/50, 2/54;* C08G *77/12, 77/20*
U.S. Cl. 204—159.13 **7 Claims**

1. Radiation curable composition comprising a liquid vinyl polysiloxane polymer having the moiety formula:



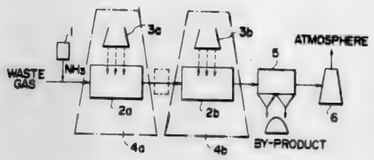
wherein X is a number greater than 1, Y is a number greater than 0 to about 10, R's are the same or different monovalent hydrocarbon radicals selected from the group consisting of C_1 to C_4 alkyl groups, cyclohexyl groups and phenyl groups and R′ is a R group an oxygen radical; a liquid polymethylhydro siloxane and at least one photosensitizer.

4,435,260

METHOD AND APPARATUS FOR DESULFURIZATION AND DENITRIFICATION OF WASTE GAS BY MULTI-STAGE ELECTRON BEAM IRRADIATION

Yamada Koichi, Tokyo; Kawamura Keita, Fujisawa, and Aoki Shinji, Tokyo, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,511
Claims priority, application Japan, Jun. 16, 1980, 55-81088
Int. Cl.³ C01B *17/60*
U.S. Cl. 204—164 **2 Claims**



1. An improved method of treating waste gas containing sulfur dioxide (SO_2) and nitrogen oxides (NOx) to remove said oxides wherein ammonia is added to the waste gas and the waste gas is irradiated and SO_2 and NOx are then removed from the waste gas, the improvement comprising carrying out said irradiation by multiple steps comprising
(1) the first irradiation step comprising introducing waste gas into the first irradiation unit and irradiating the same gas in an irradiation vessel of said unit with electron beams to give a dose which is determined by the concentrations of NOx and SO_2 of the non-irradiated waste gas to thereby reduce concentrations of NOx and SO_2 to the certain predetermined levels, respectively;
(2) the second irradiation step, the third irradiation step, the fourth irradiation step,—and the n th irradiation step in sequence each comprising substantially the same procedure as that mentioned in the first irradiation step;
(3) the n th irradiation step comprising introducing the irradiated gas discharged from the (n−1) irradiation step into the n th irradiation unit and irradiating the same gas in an irradiation vessel of the n th irradiation unit with electron beams to give a dose which is determined by the concentrations of NOx and/or SO_2 of the waste gas discharged from the (n−1)th irradiation unit to thereby reduce the concentrations of both NOx and SO_2 to the intended final levels, respectively; and
(4) an aerosol collection step comprising introducing the waste gas discharged form the n th irradiation step into an aerosol collector to thereby separate aerosol particles from the waste gas.

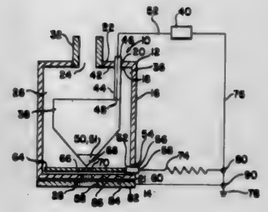
4,435,261

POLYMERIZATION REACTION BY CHARGE INJECTION

Donald J. Mintz, Fort Lee; Arnold J. Kelly, Princeton Junction, and Anthony M. Gleason, Westfield, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 27, 1981, Ser. No. 287,411
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.³ C25B *3/00*
U.S. Cl. 204—168 **6 Claims**

1. A process for the free radical polymerization of liquid monomers into thermoplastic polymers, which comprises:
(a) introducing at least one monomer into a chamber of a cell of an electrostatic atomizing device, said electrostatic having a discharge spray means;
(b) means for injecting an electrical charge through said liquid monomer in said chamber, said electrical charge being sufficient to generate free excess charge in said liquid monomer to initiate polymerization of said monomer into a polymer within said chamber, said means including at least a first electrode and a second electrode disposed in said chamber, said first and second electrodes being in liquid contact with said monomer within said chamber, said first and said second electrodes being of different voltages;
(c) ejecting said charged thermoplastic polymer through said discharge spray means in the form of a stream or charged droplets; and



(d) directing said formed stream or charged droplets towards a third electrode at a different potential and disposed externally to said housing for producing a high electric field in said thermoplastic polymer at said discharge spray means, said field being produced by a voltage differential between said thermoplastic polymer and said external electrode.

4,435,262

ELECTRICALLY NEUTRAL NONPERMSELECTIVE POROUS MEMBRANE

Edward L. Phillips, Medford Lakes, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Division of Ser. No. 299,574, Sep. 4, 1981, Pat. No. 4,397,908, and a continuation-in-part of Ser. No. 99,338, Dec. 3, 1979, abandoned. This application Dec. 27, 1982, Ser. No. 453,225
Int. Cl.³ C25D *13/00*
U.S. Cl. 204—181 C **1 Claim**

1. A method of transporting anions or cations through a membrane barrier which comprises:
(a) providing a painting bath which contains both anions and cations;
(b) placing in said bath at a selected location an electrically neutral nonpermselective porous membrane which compromises a woven fabric substrate having coated thereon a mixture of a binder material and an inert porous filler material, with the porosity of said filler material forming a plurality of random paths which pass through the thickness of said membrane:
(c) providing an electrodepostion system which includes an electrical potential which is imposed within said bath and across said membrane whereby ions of a given polarity are transported through the membrane via said porous paths, while paint which has become electrically charged an opposite polarity is deposited on a workpiece contained within said painting bath.

4,435,263

BACKFILL FOR MAGNESIUM GALVANIC ANODES

Philip Y. Lau, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1982, Ser. No. 353,460
Int. Cl.³ C23F *13/00;* C04B *33/13*
U.S. Cl. 204—197 **17 Claims**

1. A backfill composition for use with underground placement of magnesium galvanic anodes, said composition consisting essentially of
a mixture of calcium sulfite and bentonite, and a positive

amount of up to about 25% of total solids of at least one compound selected from the group consisting of sodium alkylates and sodium dialkyldithiocarbamates in which the alkyl groups contain 1–4 carbons,

wherein said bentonite contains a substantial amount of alkaline earth metal bentonite

and,

wherein the ratio of calcium sulfite/bentonite is in the range of about 0.2 to about 5.

4,435,264

MAGNESIUM ANODE BACKFILLS

Philip Y. Lau, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1982, Ser. No. 353,461

Int. Cl.³ C23F *13/00*; C04B *33/13*

U.S. Cl. 204—197 **16 Claims**

1. A backfill composition for use with underground placement of magnesium galvanic anodes, said composition consisting essentially of

a mixture of calcium sulfite, $B(OH)_3$, and bentonite, wherein said bentonite contains a substantial amount of alkaline earth metal bentonite, wherein the $B(OH)_3$ is present in a positive amount up to about 16% by weight of the solids in the backfill composition, and

wherein the ratio of calcium sulfite/bentonite is in the range of about 0.2 to about 5.

8. A packaged galvanic anode for underground placement for the cathodic protection of ferrous metal structures, said package comprising

a magnesium anode surrounded by a backfill composition which is contained in a water-permeable material, with means for providing electrical wiring between anode and ferrous metal structure,

wherein said backfill composition consisting essentially of a mixture of calcium sulfite, $B(OH)_3$, and bentonite, wherein said bentonite contains a substantial amount of alkaline earth metal bentonite,

wherein the $B(OH)_3$ is present in a positive amount up to about 16% by weight of the solids in the backfill composition, and

wherein the ratio of calcium sulfite/bentonite is in the range of about 0.2 to about 5.

4,435,265

DEVICE FOR ELECTRO-DEPOSITION OF ALUMINUM

Siegfried Birkle, Hochstadt; Johann Gehring, Spardorf, and Klaus Stöger, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

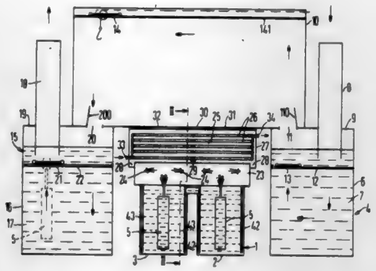
Filed Aug. 11, 1983, Ser. No. 522,019

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 3231855

Int. Cl.³ C25D *17/06, 17/18, 21/02*

U.S. Cl. 204—198 **6 Claims**

1. In an assembly for the electro-deposit of aluminum onto core goods having a plating tank including at least one open-ended cell containing aprotic, oxygen-free and water-free, organic aluminum electrolyte, a hood means, having inlet and outlet portals, defining an interior space over said at least one cell open end closed to ambient and containing an inert gas, and truck means movable in said interior space for sequentially drawing goods carriers through said inlet portal, passing said goods carriers into and out of said at least one cell, and discharging said goods carriers through said outlet portal, a charging liquid lock means connected to said inlet portal for inputing goods carriers to said plating tank, a discharging liquid lock means connected to said outlet portal for removal of goods carriers from said plating tank, apparatus for preventing smoke formation in said interior space and contamination of said charging and discharging liquid lock means comprising a spray chamber immediately over said at least one cell open end having pipe means for directing liquid sprays at opposed sides of said goods carriers, a condensing chamber immediately over said spray chamber having means for cooling the interior



thereof, and a cover plate defining a slot correspondingly aligned with the open end of said at least one cell for passage of said goods carriers between said interior space of said hood means and said at least one cell.

4,435,266

ELECTROPLATING ARRANGEMENTS

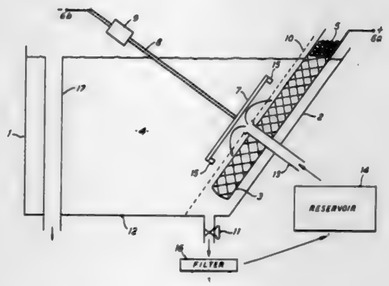
Samuel J. B. Johnston, Ashford, England, assignor to EMI Limited, Hayes, England

Filed Sep. 30, 1982, Ser. No. 428,525

Claims priority, application United Kingdom, Oct. 1, 1981, 8129625

Int. Cl.³ C25D *21/12*

U.S. Cl. 204—276 **12 Claims**



1. An electroplating apparatus, for forming a disc record stamper plate, comprising a bath capable of holding an electrolyte, a filter screen dividing said bath into a cathode region and an anode region, a cathode, at which said stamper plate is formed, in said cathode region, an anode in said anode region, said anode facing and lying substantially parallel to said cathode, said anode comprising anode material in the form of pellets contained in an open mesh container, an electrolyte inlet pipe entering said cathode region through said anode with an open end protruding through said filter screen to face said cathode, and an electrolyte outlet in said anode region, circulating means operative in use of the apparatus to continuously circulate electrolyte through said bath, said circulating means including pump means connected between said outlet and said inlet pipe to create a high pressure region between said filter screen and said cathode thereby continuously flushing the cathode with fresh electrolyte and creating a major return flow path to said outlet directly through said screen and through said anode which substantially purges said anode of contaminating material.

4,435,267

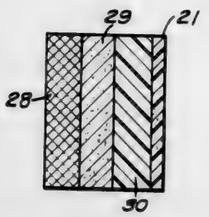
GAS PERCOLATION BARRIER FOR GAS FED ELECTRODE

John S. Batzold, Union, and Judith C. Savas, Clark, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 8, 1982, Ser. No. 433,753

Int. Cl.³ C25B *11/03, 11/04, 13/08*; H01M *4/86*

U.S. Cl. 204—284 **5 Claims**



1. A gas fed porous electrode adapted for vertical use in an electrolytic cell of the type wherein a first side of said electrode is positioned to be in contact with aqueous electrolyte and the second and opposite side is positioned to face a source of gas being fed to said electrode, said electrode comprising:

a porous electroconductive body of hydrophobic polymeric material selected from the group consisting of polymers and copolymers and vinylchloride, polyethylene, polybutylene, polypropylene, polytrifluorethylene, and polytetrafluoroethylene, said body including a carbon cloth support for said hydrophobic polymeric material and an electrochemical catalyst, said porous electroconductive body having on the surface in contact with the electrolyte a thin porous hydrophilic layer selected from the group consisting of asbestos, alumina and silica gel, said hydrophilic material being bonded to said hydrophobic polymer with a hydrophobic polymer in an amount sufficient to bond the hydrophilic material while maintaining the hydrophilic nature of such material.

4,435,268

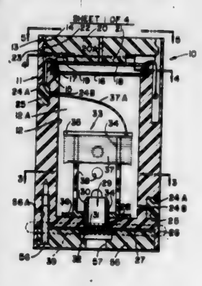
OXYGEN SENSING CELL

Gordon W. Martin, Ronceverte, and John Strohl, Morgantown, both of W. Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 26, 1982, Ser. No. 411,765

Int. Cl.³ G01N *27/50*

U.S. Cl. 204—408 **6 Claims**



1. An oxygen sensing cell, comprising a body having a pair of end portions provided with respective first and second openings therein, the body further having a central bore forming a main cavity communicating with the openings, an electrolyte within the cavity, a compensation membrane mounted over the first opening in the body, an anode within the cavity in the body, a cathode across the second opening in the body and including an outer permeation sense membrane and an inner porous electrode bonded to the inner surface of said sense membrane, a guard electrode between the second opening and the cathode, said guard electrode being substantially coextensive with and overlying said inner porous electrode, a thin layer of insulating material which is pervious to said electrolyte interposed between said guard electrode and said porous electrode, the opposite sides of said insulating layer being in intimate contact with the adjacent surfaces of said guard electrode and said porous electrode so that said guard electrode is spaced from said porous electrode only by said insulating layer, the guard electrode operating continuously, whereby oxygen molecules dissolved in the electrolyte and diffusing towards the cathode will be scavenged by the guard electrode, thereby substantially increasing the dynamic range of the sensing cell, and means within the body for respectively establishing electrical connections to the anode, cathode and guard electrode.

4,435,269

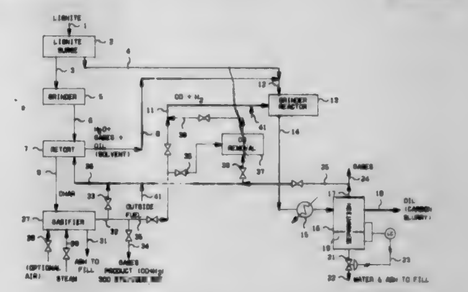
CONVERSION OF LIGNITE TO HIGHER QUALITY FUELS

Paul L. Gomory, Bethesda, Md., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 30, 1982, Ser. No. 373,778

Int. Cl.³ C10G *1/06, 1/00*

U.S. Cl. 208—8 R **15 Claims**



1. A process for the beneficiation of a low grade particulate carbonaceous fuel source which comprises:

retorting in a solids/vapor first retort reactor means a first portion of said particulate carbonaceous fuel source under elevated temperatures with a fuel gas comprising hydrogen and CO, thereby producing products comprising a residue char, a first stream of off-gases comprising first gaseous hydrocarbons, and a first oil, and

contacting in a second retort reactor means a second portion of said particulate carbonaceous fuel source with said oil under reaction conditions of elevated temperatures with CO and H_2 effective to convert at least in part said second portion of said particulate carbonaceous fuel source to products comprising further oil, hydrocarbon gases, CO, water, ash, and particulate carbon.

4,435,270

RE-REFINING LUBRICATING OIL IN A BED OF OIL SHALE

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 20, 1983, Ser. No. 515,717

Int. Cl.³ C10B *53/06*

U.S. Cl. 208—11 R **12 Claims**

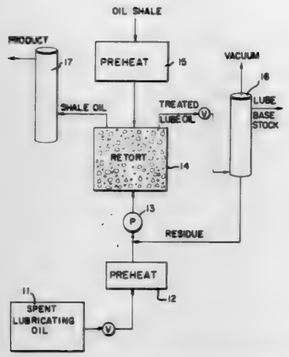
1. A method of reclaiming usable stock from used lubricating oil comprising:

passing said used lubricating oil through a bed of oil shale containing kerogen;

collecting the treated oil passed through said bed; and

heating the oil shale in said bed to convert said kerogens to

shale oil in the presence of hydrogen donor compounds contained in the lubricating oil remaining in said shale and



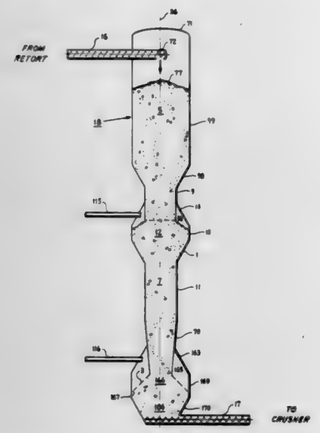
which enhance hydrogen transfer during shale oil production.

4,435,271

OIL SHALE RETORTING PROCESS WITH A MOVING BED PRESSURE LETDOWN STAGE

Roland F. Deering, Brea, and John H. Duir, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Dec. 20, 1982, Ser. No. 451,597
Int. Cl.³ C10G 1/00
U.S. Cl. 208—11 R **34 Claims**



1. A process for treating hydrocarbon-bearing particulates recovered from a retort, said process comprising:

(a) passing said particulates from said retort maintained at a higher pressure as a moving solids bed in series flow successively through a surge chamber, a gas injection chamber, a seal leg chamber, and a gas disengaging chamber to a location at a lower pressure than said retort, the configuration of the surge chamber being such that said flow of the solids bed is continuous and the configuration of said seal leg chamber being such as to provide a substantial resistance to gas flow therethrough when said seal leg chamber is traversed by said moving solids bed;

(b) injecting a stream of sealing gas into said moving solids bed in said gas injection chamber, which stream divides, a first portion flowing countercurrently to said moving solids bed through said surge chamber and into said retort at a pressure greater than said retort, and a second portion flowing co-currently with said moving solids bed through said seal leg chamber wherein a substantial pressure drop is incurred and thence into said gas disengaging chamber wherein at least some of said second portion of the sealing gas is separated and withdrawn from the moving solids bed and said solids bed is withdrawn from said gas disengaging chamber at a pressure lower than that of said retort;

(c) crushing particulates withdrawn from step (b) in a crushing zone to a size suitable for combustion under fluidizing conditions in step (e) hereinafter;

(d) transporting crushed particulates from step (c) to a fluidized combustion zone using a carrier gas stream; and

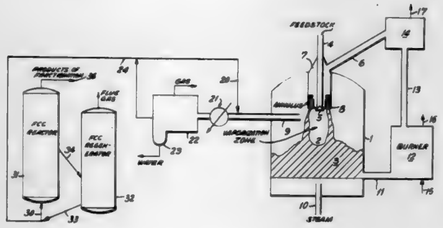
(e) burning a substantial proportion of the combustible materials in the crushed particulates in said fluidized combustion zone, the crushed particulates being maintained in a fluidizing condition by a gas stream comprising oxygen introduced into the combustion zone.

4,435,272

PROCESS FOR UPGRADING CRUDE OIL AND RESIDUAL FRACTIONS THEREOF BY VAPORIZING THE CHARGE IN A FALLING CURTAIN OF CONTACT PARTICLES

David B. Bartholic, Watchung, N.J., and Robert L. Flanders, San Anselmo, Calif., assignors to Engelhard Corporation, Edison, N.J.

Filed Apr. 16, 1982, Ser. No. 369,056
Int. Cl.³ C10G 9/30, 9/42
U.S. Cl. 208—127 **16 Claims**



1. A process for upgrading a petroleum charge of a crude oil or a residual fraction thereof to provide a product with reduced heavy metal and Conradson Carbon content comprising the steps of:

(a) contacting said charge with a substantially inert heated contact material for a period of time less than three seconds and less than that which induces substantial thermal cracking of said charge by dispersing said charge into a curtain of descending contact material to vaporize the charge;

(b) removing immediately the vaporized hydrocarbon product generated thereby through means on the opposite side of said curtain of contact material from which said charge is dispersed without subjecting said product vapor to additional contact with said inert heated contact material before said removal; and

(c) reducing the temperature of said vapors below that at which substantial thermal cracking of the product occurs.

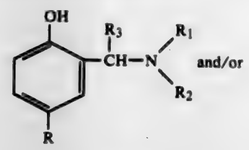
4,435,273

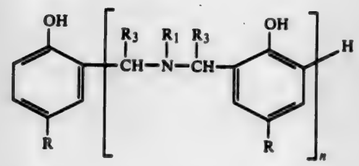
HEAT EXCHANGER ANTIFOULANT

Richard L. Ferm, Lafayette, and Louis R. Kray, Novato, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 23, 1982, Ser. No. 401,438
Int. Cl.³ C10G 9/16
U.S. Cl. 208—48 AA **10 Claims**

1. A process for reducing heat exchanger fouling in which a liquid hydrocarbon stream is passed through a heat exchanger at a temperature from 0° to 1500° F. wherein from 1 to 500 parts per million of an antifouling additive is added to said hydrocarbon stream, said additive comprising an alkylamino alkylphenol of the formulae:

(I)  and/or

(II) 

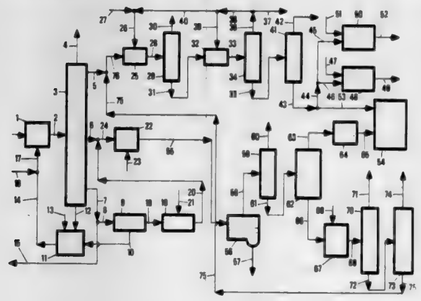
wherein: R and R_1 are independently alkyl groups of 1 to 20 carbon atoms; R_2 is H, or an alkyl group of 1 to 20 carbon atoms; R_3 is H, or an alkyl group of 1 to 6 carbon atoms; and n is 1 to 10.

4,435,274

PROCESS FOR MANUFACTURING GASOLINE WITH UPGRADING OF HYDROCARBON OILS

Bernard Juguin, Rueil-Malmaison; Jean-Pierre Franck, Bougival; Yves Jacquin, Sevres; Christian Marcilly, Houilles, and Germain Martino, Poissy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 28, 1982, Ser. No. 425,348
Claims priority, application France, Sep. 28, 1981, 81 18372
Int. Cl.³ C10G 45/02, 35/04, 65/00
U.S. Cl. 208—80 **9 Claims**



1. A process for manufacturing gasoline from a feed charge selected from residual oils of the steam-cracking and catalytic cracking units, oils obtained by hydroliquefaction of coal and oils recovered from bituminous sands and shales, in which process and the feed charge is fractionated and at least the two following fractions are recovered separately:

a naphtha comprising at least 50% of constituents distilling between 25° and 200° C. and containing at least 40% by weight of naphthenic hydrocarbons and at least 300 ppm of sulfur, 300 ppm of nitrogen and 300 ppm of oxygen, and a middle distillate comprising at least 50% of constituents distilling between about 200° and 360° C., and process being characterized by the steps of:

(a) admixing said naphtha with a gasoline cut "E" defined below, contacting the resultant mixture with a hydrotreatment catalyst, under hydrotreatment conditions, and recovering a hydrotreated naphtha,

(b) contacting the hydrotreated naphtha with a dehydrogenation catalyst under dehydrogenation conditions and fractionating the dehydrogenation product to obtain a gasoline fraction,

(c) contacting said middle distillate with a hydrotreatment catalyst, under hydrotreatment conditions, and fractionating the hydrotreatment product to separately obtain a gasoline fraction and a heavier fraction,

(d) contacting the heavier fraction, obtained in step (c), with a hydrocracking catalyst, under hydrocracking conditions, and fractionating the hydrocracking product to obtain a gasoline cut called "E", and

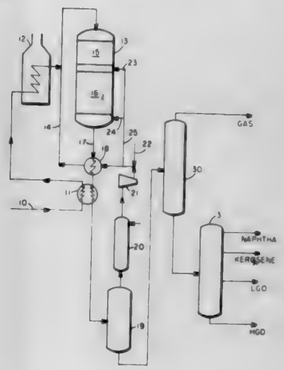
(e) feeding the gasoline cut "E" to step (a) to be admixed with said naphtha.

4,435,275

HYDROCRACKING PROCESS FOR AROMATICS PRODUCTION

Walter R. Derr, Voorhees, and Michael S. Sarli, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 375,075
Int. Cl.³ C10G 47/16, 65/02
U.S. Cl. 208—89 **14 Claims**

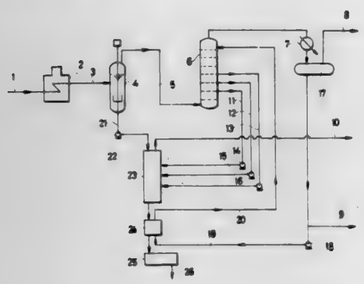


1. A hydrocracking process of improved distillate selectivity which comprises:

(i) passing a hydrocarbon feedstock comprising a heavy gas oil having an initial boiling point of at least 340° C. containing nitrogenous and sulfurous impurities over a hydrotreating catalyst in the presence of hydrogen at elevated temperature and at a pressure of not more than 7000 kPa to hydrotreat the feedstock,

(ii) passing the hydrotreated feedstock without intermediate separation or liquid recycle over a hydrocracking catalyst in the presence of hydrogen at elevated temperature and at a pressure of not more than 7000 kPa to hydrocrack the feedstock at a volume conversion of less than 50 percent to produce a distillate boiling range product.

4,435,276
METHOD OF TREATING HEAVY OIL
Saburo Matsumiya, Chiba; Koichi Washimi, Tokorozawa, and Tsuneo Tanji, Chiba, all of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan
Filed Sep. 9, 1982, Ser. No. 416,394
Claims priority, application Japan, Apr. 9, 1982, 57-57993
Int. Cl.³ C10G 55/04
U.S. Cl. 208—96 10 Claims

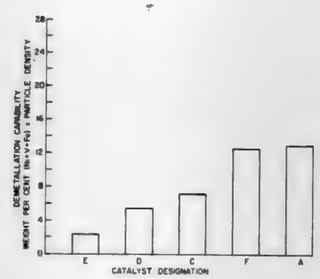


1. In a process of treating heavy oil, in which a gas and a volatile oil fraction produced by thermal decomposition of petroleum heavy oil are distilled therefrom, the residue of the thermal decomposition is withdrawn in a liquid state and then is brought into contact with an extraction solvent comprising a part of said volatile oil fraction to extract the component of said thermal decomposition residue that is soluble in said extraction solvent, and then an extraction residue is separated as solid particles from said extraction solvent, the improvement which comprises: fractionating said volatile oil fraction used as said solvent into two or more sub-fractions having different boiling point ranges from each other on condensing the volatile oil fraction in a fractionating column, and contacting said sub-fractions with said thermal decomposition residue in succession according to the boiling point ranges thereof, beginning with the fraction having the highest boiling point range and proceeding with the remaining fractions in descending order of boiling point ranges, to thereby extract the component soluble in said extraction solvent.

4,435,277
PROCESS FOR THE HYDROTREATMENT OF HEAVY HYDROCARBONS IN THE PRESENCE OF REDUCED METALS
Chan T. Dinh, Le Vesinet; Alain Desvard, La Celle Saint Cloud; Yves Jacquin, Sevres, and Germain Martino, Poissy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France
Filed Apr. 15, 1982, Ser. No. 368,531
Claims priority, application France, Apr. 15, 1981, 81 07750
Int. Cl.³ C10G 45/08, 47/02, 47/12
U.S. Cl. 208—108 15 Claims

1. A process for hydrotreating a heavy hydrocarbon charge containing sulfur and asphaltenes, in the liquid phase, comprising contacting said charge with hydrogen, at a temperature of 250°–500° C. and a pressure of 20–350 bars, in the presence of a preformed catalyst prepared by reacting at least one transition metal organic compound with at least one organic aluminum compound, in a hydrocarbon solvent which is substantially free of asphaltenes, said transition metal being titanium, zirconium, vanadium, chromium, molybdenum, tungsten, manganese, rhenium, iron, ruthenium, cobalt, nickel, copper, zinc or tin.

4,435,278
HYDROPROCESSING WITH A CATALYST HAVING BIMODAL PORE DISTRIBUTION
Hong C. Chen, Novato, Calif., assignor to Chezon Research Co., San Francisco, Calif.
Filed Jun. 9, 1980, Ser. No. 158,017
Int. Cl.³ C10G 45/06, 47/20
U.S. Cl. 208—251 H 15 Claims



1. A process for hydroprocessing a hydrocarbonaceous feedstock containing constitutents boiling above 350° C. comprising contacting said feedstock with hydrogen under hydroprocessing conditions with a catalyst composition comprising a rigidly interconnected pack containing inorganic matrix oxide which consists essentially of silica, alumina, or mixtures thereof, and about 10–95% fluid catalytic cracking catalyst microspheroids, based upon the total weight of said matrix oxide and said microspheroids, said microspheroids comprising fresh or used fluid catalytic cracking catalyst having a mean diameter within the range of 50–70 microns, said pack characterized by a pore volume of at least 0.15 cc per cc, at least about 30% of said pore volume present as pores having diameters within the range of 50–250 Angstroms and at least about 5% of said pore volume present as pores having diameters greater than 1000 Angstroms, said pack containing 0.5–20 weight percent as metal of a Group VIB metal, metal oxide, or metal sulfide.

4,435,279
METHOD AND APPARATUS FOR CONVERTING OIL FEEDS
Lloyd E. Busch; Charles W. Palmeter; Gerald O. Henderson, and William M. Rice, all of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.
Filed Aug. 19, 1982, Ser. No. 411,719
Int. Cl.³ C10G 11/05, 47/16
U.S. Cl. 208—111 14 Claims

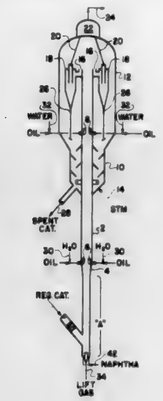
1. A method for upgrading crude oils and residual portions of crude oils comprising carbometallic impurities to produce gasoline and lower boiling components which

A. passing a suspension of hot regenerated catalyst particles at a temperature in the range of 1300° to 1600° F. in a wet gaseous product of catalytic conversion comprising C_5 and lower boiling components upwardly from the bottom portion of a riser contact zone;

B. contacting the suspension thus formed in a downstream portion of the riser with a residual portion of crude oil to provide the residual oil with a residence time in the riser reaction zone in the range of 0.5 or less up to about 6 seconds and sufficient to obtain vaporous products of catalytic conversion comprising substantial yields of gasoline boiling range components;

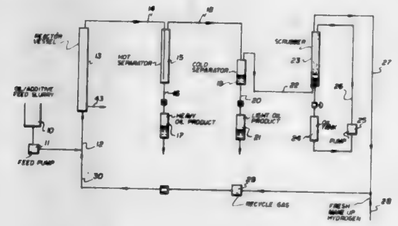
C. initially separating said suspension of catalyst particles and vaporous products by imparting a greater momentum to said catalyst particles than said hydrocarbon vapors prior to discharge from the riser open upper end;

D. substantially enhancing the separation of hydrocarbon vapors from catalyst particles of greater momentum discharged from the riser open end by establishing a zone of reduced pressure adjacent the riser open end comprising hydrocarbon vapors separated from catalyst particles by momentum differential; and



E. withdrawing hydrocarbon vapors from said zone of reduced pressure in the substantial absence of catalyst particle entrainment.

4,435,280
HYDROCRACKING OF HEAVY HYDROCARBON OILS WITH HIGH PITCH CONVERSION
Ramaswami Ranganathan, Regina; David J. Patmore, Ottawa, and Adolfo E. Silva, Calgary, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Ottawa, Canada
Filed Sep. 30, 1982, Ser. No. 429,683
Claims priority, application Canada, Oct. 7, 1981, 387463
Int. Cl.³ C10G 47/02
U.S. Cl. 208—112 11 Claims



1. A process for hydrocracking a heavy hydrocarbon oil containing a substantial portion of pitch which boils above 524° C., which comprises:

(a) passing a slurry feed of said heavy hydrocarbon oil and from about 0.01–60 wt.% of carbonaceous additive particles in the presence of hydrogen upwardly through a confined vertical hydrocracking zone, said hydrocracking zone being maintained at a temperature between about 350° and 500° C., a pressure of at least 3.5 MPa and a space velocity of up to 4 volumes of hydrocarbon oil per hour per volume of hydrocracking zone capacity,

(b) removing from the top of said hydrocracking zone a vaporous effluent comprising hydrogen and vaporous hydrocarbons and being substantially free of pitch and metals, and

(c) removing from the remaining liquid in the hydrocracking zone a drag stream comprising carbonaceous additive, metals and any unconverted pitch, the products coming off at the top of the reactor containing substantially only vaporous hydrocarbons and the drag stream containing substantially all of the liquid material produced during the hydrocracking whereby a pitch conversion of over 90% is achieved.

4,435,281
CATALYTIC CRACKING WITH REDUCED EMISSION OF NOXIOUS GAS
Iacovos A. Vasalos, Thessaloniki, Greece, assignor to Standard Oil Company (Indiana), Chicago, Ill.
Filed Sep. 15, 1980, Ser. No. 187,613
Int. Cl.³ C10G 11/18; B01J 37/14
U.S. Cl. 208—113 20 Claims

1. A process for the fluidized catalytic cracking of a hydrocarbon feedstock containing organic sulfur compounds which comprises:

(a) cracking said feedstock in a reaction zone through contact with a particulate cracking catalyst;

(b) separating cracking products from cracking catalyst which is deactivated by sulfur-containing coke deposits and passing said deactivated cracking catalyst to a stripping zone;

(c) contacting the deactivated cracking catalyst with an oxygen-containing gas in said stripping zone at a temperature in the range from about 550° to about 700° C. and reacting the oxygen with said sulfur-containing coke deposits to form products which include sulfur-containing gases, wherein the amount of oxygen introduced into said stripping zone is effective to remove at least about 10 weight percent of the sulfur content and less than about 30 weight percent of the carbon content of said sulfur-containing coke deposits, and wherein said weight percent of the sulfur content removed is greater than said weight percent of the carbon content removed;

(d) withdrawing from the stripping zone cracking catalyst which is deactivated by modified coke deposits having a reduced sulfur content and passing said catalyst from the stripping zone to a regeneration zone;

(e) removing said modified coke deposits from the deactivated cracking catalyst in said regeneration zone by burning with an oxygen-containing regeneration gas, thereby regenerating and heating the cracking catalyst;

(f) recycling a stream of hot regenerated cracking catalyst from the regeneration zone to said stripping zone in an amount which is effective to maintain the temperature in said stripping zone within the range from about 550° to about 700° C. and to provide a recycle ratio of hot regenerated cracking catalyst to deactivated cracking catalyst within the range from about 0.05 to about 1.0; and

(g) withdrawing regenerated cracking catalyst from the regeneration zone and passing a stream of said regenerated cracking catalyst to the reaction zone.

4,435,282

CATALYTIC CRACKING USING A CRACKING CATALYST IN ADMIXTURE WITH PARTICLES OF PLATINUM GROUP METAL OR RHENIUM ON A SUBSTRATE REGENERATED TO UP TO ABOUT 0.1% COKE

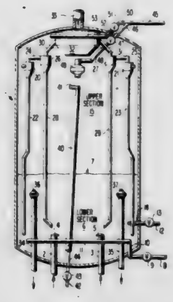
Ralph J. Bertolacini, Lisle Township, DuPage County, Ill., and William L. Forsythe, Jr., Munster, Ind., assignors to Standard Oil Company, (Indiana), Chicago, Ill.

Division of Ser. No. 225,712, Jan. 16, 1981, Pat. No. 4,341,660, which is a division of Ser. No. 158,613, Jun. 11, 1980, Pat. No. 4,341,623, which is a continuation of Ser. No. 963,991, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 664,057, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 447,753, Mar. 4, 1974, abandoned. This application Apr. 19, 1982, Ser. No. 369,500

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ C10G *11/18, 11/05;* B01J *23/96, 29/38*

U.S. Cl. 208—113 **7 Claims**



1. A process for the fluidized catalytic cracking of higher molecular weight hydrocarbon to produce gasoline or distillate fuel range hydrocarbon comprising:

(a) contacting in a cracking zone said higher molecular weight hydrocarbon with a cracking catalyst which becomes deactivated with coke deposits while being employed in said cracking, and thereby producing gasoline or distillate fuel range hydrocarbon;

(b) withdrawing coked cracking catalyst particles from said cracking zone, said catalyst particles being in admixture with particles containing platinum group metal or rhenium oxidation promoter supported on a substrate;

(c) contacting said mixed particles in a regeneration zone with an oxygen-containing regeneration gas stream in excess of that required for substantially complete combustion of carbon monoxide formed and substantially complete burning of coke from said particles to provide effluent gas containing up to about 1 volume % carbon monoxide and regenerated catalyst particles having up to about 0.1% coke, the amount of said oxidation promoter being effective to enhance the oxidation of carbon monoxide at regeneration temperature, said amount being up to about 10 ppm based on said cracking catalyst, and the amount of said admixture of particles being sufficient to absorb the major amount of the heat from the combustion of said carbon monoxide and burning of said coke;

(d) withdrawing from said regeneration zone oxidation promoter-containing particles admixed with cracking catalyst particles; and

(e) returning said mixture to said cracking zone wherein cracking catalyst and said platinum group metal or rhenium oxidation promoter are contacted with said higher molecular weight hydrocarbon and said cracking is thereby obtained.

2. The process of claim 1 wherein the substrate for said oxidation promoter is selected from the group consisting of silica, alumina and silica-alumina.

6. The process of claim 1 wherein the substrate for said oxidation promoter is selected from the group consisting of silica and alumina.

4,435,283

METHOD OF DEHYDROCYCLIZING ALKANES

Waldeen C. Buss, Kensington, and Thomas R. Hughes, Orinda, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Feb. 1, 1982, Ser. No. 344,572

Int. Cl.³ C07C *2/52;* C10G *35/06*

U.S. Cl. 208—138 **27 Claims**

1. A method of reforming hydrocarbons comprising contacting said hydrocarbons with a catalyst comprising a large-pore zeolite containing:

(a) at least one Group VIII metal; and

(b) an alkaline earth metal selected from the group consisting of barium, strontium and calcium, wherein the process conditions are adjusted so that the selectivity for n-hexane dehydrocyclization is greater than 60%.

4,435,284

RECOVERY OF MERCURY FROM SCRAP GLASS

Herman R. Heytmeijer, Hanover, N.J., assignor to North American Philips Electric Corp., New York, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,478

Int. Cl.³ B03B *1/00*

U.S. Cl. 209—3 **8 Claims**



1. A method for removing mercury from lamp exhaust tubing or similar scrap glass comprising the steps of:

placing the mercury contaminated scrap glass in a suitable container;

adding a predetermined amount of finely divided sub-micron size powder to the mercury contaminated scrap glass;

agitating the mixture of scrap glass and finely divided powder for a predetermined time to strip the mercury from the glass;

decanting the mixture through a screen of suitable mesh to remove the separated mercury from the glass; and

rinsing the mercury with a suitable solvent to remove the powder from the mercury.

4,435,285

SORTING APPARATUS

Isao Okouchi; Sankichi Takahashi; Yasuteru Mukai; Katsumoto Otake; Takuya Sasaki, all of Hitachi, and Masahiko Miyai, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 278,994

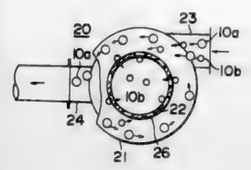
Claims priority, application Japan, Jun. 30, 1980, 55-89717

Int. Cl.³ B03B *7/00;* B07B *1/06;* F28G *1/00*

U.S. Cl. 209—250 **13 Claims**

1. A sorting apparatus for sorting bodies suspended in a liquid according to the size of said bodies, the apparatus comprising: a casing having a circular cross-section and provided with and inlet pipe through which said bodies are introduced together with said liquid; a separation sleeve disposed at a

center of said casing and cooperating with an inner peripheral surface of said casing and defining therebetween a swirling passage for imparting a swirl to said liquid, said separation sleeve having a peripheral wall in which are formed a plurality of apertures sized and shaped to permit only the bodies smaller



than a predetermined size to pass therethrough, a discharge pipe connected to said casing and adapted for discharging the bodies of small sizes which have passed through said apertures into said separation sleeve, and an outlet pipe also connected to said casing and adapted for taking out the bodies greater than said predetermined size.

4,435,286

LIQUID FILTER DEVICE

Robert Louboutin, Crespieres, and Michel Riotte, Garches, both of France, assignors to Degremont, Malmaison, France

Filed Jun. 21, 1982, Ser. No. 390,623

Claims priority, application France, Jun. 25, 1981, 81 12462

Int. Cl.³ B01D *23/20*

U.S. Cl. 210—116 **8 Claims**

1. A liquid filter device for use in nitrification of the liquid, said device comprising:

an upwardly open structure having a bottom and a floor positioned above said bottom, said bottom and said floor defining a chamber;

a filter element comprising granular material supported by said floor within said structure, liquid to be treated passing downwardly through said granular material in contact with a gas passing upwardly through said granular material during normal operation, and water and gas passing upwardly through said granular material during a washing operation thereof;

a plurality of nozzles opening into said granular material and having stems extending into said chamber;

said plurality of nozzles including first nozzles having opening means for, during said normal operation, passing said liquid from said granular material into said chamber, and for, during said washing operation, distributing said water and gas from said chamber into said granular material, said opening means of each said first nozzle comprising an upper orifice and a lower slit; and

said plurality of nozzles further including second nozzles having opening means for, during said normal operation, distributing said gas from said chamber into said granular material, and for, during said washing operation, distributing said water and gas from said chamber into said granular material, said opening means of each said second nozzle comprising an upper orifice and lower orifice means positioned at a level above the level of said upper orifice of said first nozzle.

4,435,287

APPARATUS FOR FILTRATION OF LUBRICATING OIL FOR AN INTERNAL COMBUSTION ENGINE

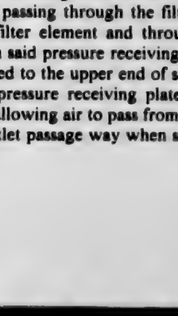
Morio Sumimoto, Kanagawa, Japan, assignor to Kabushiki Kaisha Sumimoto Kagaku Kenkyusho, Kanagawa, Japan

Continuation of Ser. No. 343,907, Jan. 29, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 486,454

Claims priority, application Japan, Feb. 6, 1981, 56-17166

Int. Cl.³ B01D *27/10, 35/14*

U.S. Cl. 210—131 **7 Claims**



5. An apparatus for the filtration of lubricating oil for an internal combustion engine, comprising:

a filter element having horizontal and vertical axes, upper and lower surfaces, and made of paper accumulated in horizontal layers between which filtrate passes and having a filtrate outlet passageway vertically through the center thereof;

a body casing provided with said filter element therein;

an inlet pipe for liquid to be filtered;

an outlet pipe for filtrate, said inlet pipe and said outlet pipe being connected to said body casing, said outlet pipe being in communication with the filtrate outlet passageway of said filter element;

a pressure-receiving plate located on the upper surface of the said filter element such that the pressure of the liquid is exerted thereon to compress said filter element and provided with an air and oil release hole therein, said air and oil release hole being in communication with said filtrate outlet passageway and smaller in area than said inlet hole of said inlet pipe;

a replaceable cartridge case, said filter element and said pressure-receiving plate being positioned inside said replaceable cartridge case, said replaceable cartridge case having upper and lower surfaces provided with an inlet aperture for liquid to be filtered and an outlet aperture in communication with said filtrate outlet passageway of said filter element, respectively, and being prefilled with lubricating oil and additive;

a supporting plate abutting the lower surface of said filter element;

a connecting rod abutting the lower surface of said supporting plate and passing through the filtrate outlet passage way of said filter element and through the air and oil release hole in said pressure receiving plate; and

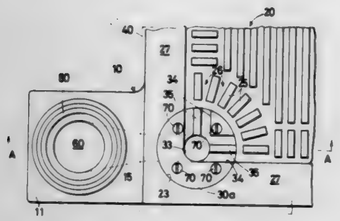
a stopper attached to the upper end of said connecting rod, holding said pressure receiving plate against said filter element, and allowing air to pass from and oil to pass into the filtrate outlet passage way when said filter element is compressed.

4,435,288

EXPRESSING PLATE ASSEMBLY FOR FILTER PRESS

Muneyuki Miyano, Sakai, Japan, assignor to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Jun. 28, 1982, Ser. No. 392,768
Claims priority, application Japan, Oct. 9, 1981, 56-161779
Int. Cl.³ B01D 25/12
U.S. Cl. 210—227 4 Claims



1. In an expressing plate for a plate-type filter press wherein flexible expressing sheets cover the opposite surfaces of a rigid core plate, the core plate has a peripheral frame portion, expressing fluid being fed between the core plate and expressing sheets, and aligned filtrate discharge openings are provided in the peripheral portions of the core plate and expressing sheets, the improvement comprising, fitting recesses in the opposite surfaces of said core plate around each said opening therein, a raised portion around each said opening in each expressing sheet on the inner face thereof facing said core plate and having a peripheral shape substantially conforming to that of said adjacent fitting recess to interfit therein, a seating ring recess around each said opening in each expressing sheet on the outer side thereof and smaller than said adjacent fitting recess, seating rings each having an opening therethrough and a peripheral shape substantially conforming to that of the adjacent seating ring recess and interfitting therein so that a pair of seating rings is disposed at each core plate opening one on each side of said core plate with said seating ring openings aligned with said core plate openings, means to clamp each said pair of seating rings together to clamp said expressing sheets to said core plate and maintain alignment of said openings, a plurality of ridges defining grooves therebetween which serve as filtrate passages on the outer face of each expressing sheet, and filtrate passage grooves on a part of the outer face of each seating ring substantially aligned with said grooves on said expressing sheets to be substantially continuous therewith.

4,435,289

SERIES ULTRAFILTRATION WITH PRESSURIZED PERMEATE

Barry R. Breslau, Action, Mass., assignor to Romicon, Inc., Woburn, Mass.

Filed Dec. 23, 1981, Ser. No. 333,743
Int. Cl.³ B01D 31/00, 13/00
U.S. Cl. 210—637 14 Claims

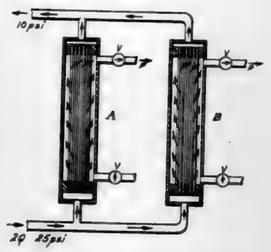
1. A method for separating solutes, colloidal particles or suspended matter from a solution or suspension of such matter by ultrafiltration which comprises:

(a) connecting multiple ultrafiltration membrane containing separatory units in series flow configuration, thereby providing, at least, a first unit, a last unit and optionally intermediate units;

(b) introducing a solution or suspension to be separated into the first unit at a pressure exceeding the maximum allowable transmembrane pressure difference for said membrane;

(c) concurrently applying a back pressure on the permeate side of said membrane to produce a transmembrane pressure difference in said first unit not exceeding the maximum allowable transmembrane pressure difference for said membrane;

(d) repeating steps (b) and (c) in at least each intermediate unit;



(e) withdrawing permeate from each unit; and

(f) recovering concentrate containing solutes, colloidal particles or suspended matter from the last serially connected unit.

4,435,290

PROCESS FOR THE TEMPORARY STORAGE OF RECYCLABLE LIQUID WASTES IN UNDERGROUND SALT CAVERNS

Walter Lindörfer, Kassel, and Wilhelm Jan-Held, Staufenberg, both of Fed. Rep. of Germany, assignors to Wintershall AG, Kassel, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,900
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141885
Int. Cl.³ C02F 1/66
U.S. Cl. 210—708 21 Claims

1. A process for temporary storage of recyclable pumpable liquid waste in an underground salt-enclosed cavern, which is provided with pipelines for filling and emptying, comprising the steps of:

(a) introducing said liquid waste into said cavern;

(b) neutralizing acid components in said liquid waste before, during or after step (a);

(c) allowing said neutralized liquid waste to stand in said cavern in order to separate into two liquid phases of differing specific gravities; and

(d) pumping out the phase having the lower specific gravity leaving the phase with the higher specific gravity.

4,435,291

BREAKPOINT CHLORINATION CONTROL SYSTEM

Theodore N. Matsko, Richmond Heights, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 22, 1982, Ser. No. 360,860
Int. Cl.³ C02F 1/76
U.S. Cl. 210—739 7 Claims

1. A method for the breakpoint chlorination of waste water containing an amount of ammonia to be oxidized comprising:

supplying the waste water at a selected flow rate to a mixer tank;

measuring the amount of ammonia in the supplied waste water;

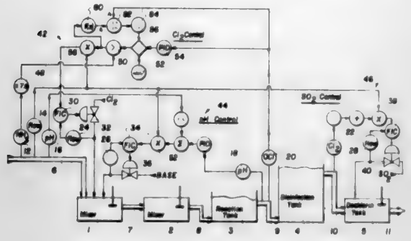
initially dosing the waste water in the mixing tank with a first amount of chlorine which is a selected multiple of the measured ammonia amount by weight;

supplying the dosed waste water from the mixing tank to a reaction tank where chlorine and ammonia react;

supplying the waste water out of the reaction tank;

measuring the residual chlorine in the waste water coming from the reaction tank;

calculating the derivative of the residual chlorine with respect to the amount of chlorine added to the waste water; and



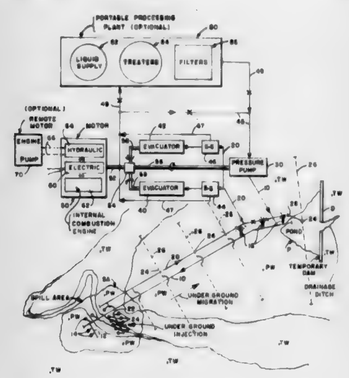
with the derivative being negative dosing the mixing tank with a second amount of chlorine according to an induced signal which adds chlorine until the derivative becomes positive.

4,435,292

PORTABLE METHOD FOR DECONTAMINATING EARTH

James L. Kirk, Findlay, Ohio, and Robert J. Ohneck, Lambertville, Mich., assignors to KBI Corp., Findlay, Ohio

Continuation of Ser. No. 115,992, Jan. 28, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 315,345
Int. Cl.³ C02F 1/74
U.S. Cl. 210—747 17 Claims



1. A method for decontaminating the soil below an area of earth which has been contaminated by a spill by means of a flexible portable reversible closed fluid circulating system, comprising the steps of:

(A) testing the area for determining the boundaries of the contamination,

(B) inserting a plurality of relatively closely spaced perforated pipes around and into said soil below said area,

(C) circulating a flushing fluid under positive pressure into said pipes around the determined contaminated area,

(D) simultaneously under negative pressure removing said circulating flushing fluid which contains contaminants from said pipe in said determined contaminated area,

(E) from at least a portion of the removed circulating fluid which contains contaminants, and

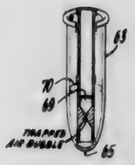
(F) injecting the decontaminated flushing fluid back into said soil under said positive pressure to maintain said closed fluid circulating system.

4,435,293

PARTICLE WASHING SYSTEM AND METHOD OF USE

Henry A. Graham, Jr., Annandale; Johnna B. Hawk, Rocky Hill, and Rosemary K. Chachowski, Manville, all of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Aug. 5, 1981, Ser. No. 290,267
Int. Cl.³ B01D 21/26; B01L 11/00
U.S. Cl. 210—772 14 Claims



1. A method for washing and collecting particles contained in a first fluid for use with a system comprising (1) an outer zone for containing a wash solution and (2) an inner zone insertable into said outer zone and having a chamber to which the first fluid may be added, said chamber having a bottom wall with an orifice for providing communication between the first fluid placed in said inner zone chamber and the wash solution contained in said outer zone, said method comprising the steps of:

placing in said outer zone a wash solution having a density at the minimum substantially equal to that of the first fluid, and at the maximum no greater than that of the particles;

adding to said inner zone the first fluid containing the particles to be washed and collected;

inserting said inner zone into said outer zone containing the wash solution whereby an air bubble is trapped at the orifice;

applying force for displacing said air bubble and for moving the particles from the first fluid through the orifice and the wash solution to substantially the bottom of the outer zone; and

removing said first fluid, said inner zone, and said wash solution.

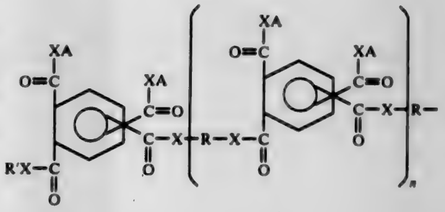
4,435,294

POLYCYCLIC PYROMELLITATES AND USE THEREOF ON POLYESTERS AND POLYAMIDES

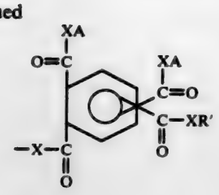
Bryce C. Oxenrider, Florham Park, and David J. Long, Stanhope, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 429,945
Int. Cl.³ C07C 153/07; D06M 13/20
U.S. Cl. 252—8.6 18 Claims

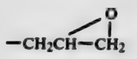
1. A composition comprising a polycyclic compound of the formula:



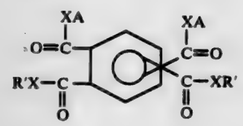
-continued



wherein X is independently at each occurrence —O—, —S—, —N(CH$_3$)— or —NH—; wherein A is alkyl of 2-24 carbons or —R″—(CF$_2$)$_p$CF$_3$ with R″ being alkylene of 1-6 carbons and p being an integer of 3-13, wherein R′ is a monovalent radical selected from the group consisting of —CH$_2$CH(OH)CH$_2$Cl, —CH$_2$CH(OH)CH$_2$Br, —CH(CH$_2$OH)(CH$_2$Cl), —CH(CH$_2$OH)(CH$_2$Br), —(CH$_2$)$_m$Cl, —(CH$_2$)$_m$Br, —CH(CH$_2$Cl)$_2$, —CH(CH$_2$Br)$_2$,



and —(CH$_2$)$_q$—Si(OR‴)$_3$, with m being an integer of 1-8, q being an integer of 1-8, and R‴ being alkyl of 1-3 carbons; wherein R is a divalent radical selected from the group consisting of alkylene of 2-6 carbons, —CH$_2$CH(CH$_2$Cl), —CH$_2$C(CH$_2$Cl)$_2$CH$_2$—, —CH$_2$CH=CHCH$_2$—, 1,3-phenylene and 1,4-phenylene; n is an integer of 0-20; or mixtures of such polycyclic compounds with different values of n or of such polycyclic compounds with different values of n and with the monocyclic compound:



4,435,295

SULFONATE FOR WATERFLOODING

Olaf M. Stokke, and Roy C. Sias, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed May 17, 1982, Ser. No. 379,210

Int. Cl.^{3} C09K *7/02*; E21B *43/16*

U.S. Cl. 252—8.55 D **6 Claims**

1. An improved sulfonate composition for use in aqueous phase stable waterflooding systems comprising

(a) from about 80 to about 20 parts per weight of monoalkyl benzene having an average molecular weight of from about 400 to about 490, together with

(b) from about 20 to about 80 parts by weight of n-alkyl aromatic compounds having an average molecular weight of from about 325 to about 385, wherein the mixture is sulfonated to a nonsulfonate/sulfonate ratio of about 0.10 to about 0.25.

4,435,296

LUBRICATING GREASE

Christopher P. Brooks, Addlestone; Stanley C. Dodson, Leatherhead, and Robert H. Newman, Weybridge, all of England, assignors to The British Petroleum Company Limited, London, England

Filed May 22, 1981, Ser. No. 266,607

Int. Cl.^{3} C10M *7/30, 1/10*

U.S. Cl. 252—28 **4 Claims**

1. A lubricating grease, suitable for use as an open gear lubricant, comprising:

a lubricating base oil;

from 2 to 20%, by weight of total composition of a clay thickener;

from 2 to 12% wt., by weight of total composition of an alkali metal borate as extreme pressure additive; and

a combination of an olefin polymer selected from the group consisting of atactic polypropylene and polyisobutylene and a light coloured particulate mineral which is zinc oxide, as tackifier and filler, the polymer and particulate material each being present in an amount of from 3 to 12% wt. by weight of total composition and the polymer; particulate mineral ratio being from 1.5:1 to 1:1.5 by weight.

4,435,297

CARBOXYLIC ACID DERIVATIVES OF ALKANOL TERTIARY MONOAMINES

John W. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 946,294, Sep. 27, 1978, Pat. No. 4,329,249. This application Mar. 4, 1982, Ser. No. 352,695

The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.^{3} C10M *1/32, 3/26*

U.S. Cl. 252—34.7 **171 Claims**

1. A composition comprising: water; and dispersed in said water nitrogen-containing, phosphorus-free carboxylic acid derivative made by reaction, at a temperature in the range of about 30° to the decomposition temperature of one or more of the reaction components, of (A) at least one carboxylic acid acylating ageant with (B) at least one alkanol tertiary monoamine, said acylating agent having at least one hydrocarbyl-based substituent of about 20 to about 500 carbon atoms and said monoamine (B) having one hydroxyl group and a total of up to about 40 carbon atoms, said water being provided in an effective amount to disperse said derivative in said water.

4,435,298

AMMONIUM SALTS OF POLYMALEIC ACIDS, AND THEIR USE AS CORROSION INHIBITORS IN MINERAL OILS

Knut Oppenlaender, Ludwigshafen; Karl Stork, Lampertheim; Hans-Henning Vogel, Frankenthal; Erich Schwartz, Ludwigshafen, and Claus P. Jakob, Viernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,765

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039977

Int. Cl.^{3} C10M *1/32*; C01C *87/00*; C10G *9/12*

U.S. Cl. 252—34 **6 Claims**

1. An ammonium salt having an equivalents ratio of 1:1 of a polymaleic acid having a molecular weight of from 200 to 1,500 and an amine component, of the formula



where R^1 and R^2 are identical or different and are hydrogen, C$_9$-C$_{20}$-alkyl or C$_9$-C$_{20}$-alkenyl and R^3 is C$_9$-C$_{20}$-alkyl or C$_9$-C$_{20}$-alkenyl.

4,435,299

PREPARATION OF HIGH DROPPING POINT LITHIUM COMPLEX SOAP GREASE

Don A. Carley, Houston; Arnold C. Witte, Jr., Port Neches; William B. Green, Nederland, and Kermit W. Doerr, Katy, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,744

Int. Cl.^{3} C10M *5/14*

U.S. Cl. 252—41 **20 Claims**

1. A process for preparing a lithium soap grease having a dropping point above 500° F. which comprises the steps of:

(a) dissolving a C$_{12}$ to C$_{24}$ hydroxy fatty acid and a C$_4$ to C$_{12}$ aliphatic dicarboxylic acid in approximately a 3:1 to 0.5:1 mole ratio range in a lubricating oil to form an oil-acid mixture in which the amount of oil employed comprises about 30 to 50 weight percent of the total amount of oil employed in the finished composition;

(b) adjusting the oil and acid mixture to a temperature below about the boiling temperature of water;

(c) adding slowly at a controlled rate of below about 0.30 lbs./minute a concentrated aqueous solution of approximately 8 to 10 weight percent of lithium hydroxide in an amount slightly in excess of that required to neutralize the acids;

(d) maintaining the reaction conditions for a period of time sufficient to obtain substantially complete saponification between the fatty acids and lithium hydroxide;

(e) dehydrating the mixture of lubricating oil and lithium complex soap;

(f) heating the mixture until it is uniformly at a temperature of from about 390° F. to about 430° F.;

(g) rapidly cooling the mixture to about 375° F. or below by quenching it with approximately 5 to 25 weight percent of the total amount of lubricating oil employed in the finished composition;

(h) incorporating the remainder of the lubricating oil into the grease composition.

4,435,300

DETERGENT COMPOSITIONS

Jacob J. Guth, Upper Black Eddy, Pa.; Diane L. Spilatro, Piscataway, and Robert J. Verdicchio, Succasunna, both of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

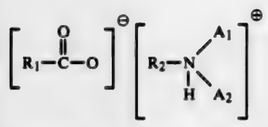
Continuation-in-part of Ser. No. 241,874, Mar. 9, 1981, abandoned. This application May 5, 1982, Ser. No. 375,074

Int. Cl.^{3} C11D *1/10, 1/65, 1/88, 1/94*

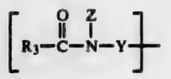
U.S. Cl. 252—117 **9 Claims**

1. A low irritating detergent and cleansing composition wherein the active ingredients consist essentially of

(a) from about 1 to 50% by weight of an amphoteric-fatty acid complex of the formula



wherein R$_1$ is alkyl or substituted alkyl containing from about 5 to 17 carbon atoms and mixtures thereof; R$_2$ is alkyl containing from about 6 to 18 carbon atoms and mixtures thereof or alkyl amido of the formula



wherein R$_3$ is alkyl containing from about 5 to 17 carbon atoms, Z is H or lower alkyl containing from 1 to 4 carbon atoms; and Y is alkylene containing from 2 to 4 carbon atoms;

A$_1$ and A$_2$ are the same or different and at least one of A$_1$ and A$_2$ are selected from the group of anionic salt moieties consisting of the following:

—CH$_2$CH$_2$—COOX]$_n$

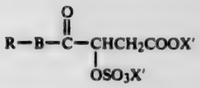
—CH$_2$—COOX]$_n$

—CH$_2$CHOH—CH$_2$—SO$_3$X]$_n$

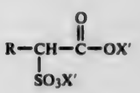
—CH$_2$—CHOH—CH$_2$—OPO$_3$X]$_n$

wherein X is a water soluble cation and n is an integer of 1 or 2 with the proviso that if only one of A$_1$ and A$_2$ are selected from the anionic salt moieties above the other is lower alkyl or lower hydroxyalkyl containing from 1 to 4 carbon atoms; and

(b) from about 2 to 50% by weight of an anionic surfactant selected from the group consisting of alkyl sulfosuccinates of the formula



alkyl ether carboxylates, α-sulfo fatty acids of the formula



alkyl succinates, acyl sarcosinates and fatty acid protein condensates; wherein R is alkyl from 8 to 17 carbon atoms, X′ is hydrogen or a water soluble cation and B is O, N or O—C$_2$—CH$_2$O)$_m$ wherein m is an integer of from 1 to 5; and wherein the amphoteric-fatty acid complex and the anionic surfactant are in the ratio of from about 1:4 to 4:1.

4,435,301

PREPARATION OF OVERBASED MAGNESIUM PHENATES

Cecil G. Brannen, Wayne Township, DuPage County, and Mack W. Hunt, Naperville, both of Ill., assignors to Standard Oil Company, (Indiana), Chicago, Ill.

Filed Apr. 19, 1982, Ser. No. 369,823

Int. Cl.^{3} C10M *1/40*

U.S. Cl. 252—33.2 **12 Claims**

1. A process for the preparation of an overbased magnesium phenate composition which comprises:

(a) reacting magnesium oxide in a substantially inert liquid diluent with: (i) at least one phenolic material selected from the group consisting of oil-soluble hydrocarbyl-substituted phenols and oil-soluble sulfurized hydrocarbyl-substituted phenols, (ii) an oil-soluble ammonium sulfonate, (iii) a monohydric alcohol of from 1 to 4 carbon atoms, and (iv) water, wherein the amount of magnesium oxide is in excess of the stoichiometric amount required for conversion of said sulfonate and phenolic material to neutral magnesium salts, and the ratio of equivalents of phenolic material to equivalents of ammonium sulfonate is from about 5 to about 30;

(b) removing substantially all of said alcohol from the product of (a); and

(c) contacting the product of (b) with carbon dioxide at a temperature in the range from about 0° to about 120° C.

4,435,302

CONCENTRATING AND RECLAIMING MAGNETIC FLUIDS

George W. Reimers, Burnsville, and Sanaa E. Khalafalla, Minneapolis, both of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 28, 1982, Ser. No. 383,060
Int. Cl.³ H01F *1/25, 1/00;* C10M *3/00;* C09D *11/00*
U.S. Cl. 252—62.51 **5 Claims**

1. A method for concentrating a dilute dispersion of magnetic particles in water, said dispersion having a concentration of magnetic particles of about 0.1 to 5 grams per liter and having been formed by dilution of a saturated fatty acid-stabilized magnetic fluid, consisting essentially of:
(a) adding hydrochloric acid to the dilute dispersion in an amount sufficient to flocculate the magnetic particles,
(b) separating the flocculated magnetic particles from the supernatant liquid, and
(c) admixing the flocculated magnetic particles with an aqueous ammonia solution of a concentration, and in an amount, sufficient to redisperse the magnetic particles and form a magnetic fluid having the desired concentration of magnetic particles.

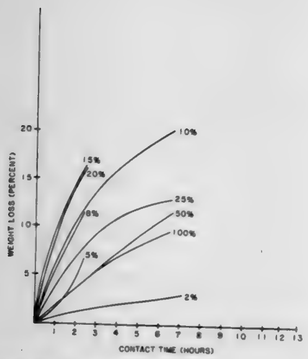
4,435,303

DESCALING COMPOSITION

Khodabandeh Abadi, 5719 N. Camino Del Conde, Tucson, Ariz. 85718

Filed Jan. 3, 1983, Ser. No. 455,298
Int. Cl.³ C02F *5/08, 5/10;* C23F *11/00*
U.S. Cl. 252—80 **33 Claims**

CONCENTRATION (%)	0	10	15	20	25	50	100
TIME ELAPSED (hrs.)	SCALE CHIP WEIGHT (grams)						
0	3.5	7.8	7.5	7.6	8.3	5.2	5.2
I	3.5	7.5	7.0	7.2	8.2	-	-
II	3.5	7.1	6.7	7.0	7.9	-	-
3	3.4	6.9	6.6	6.9	7.8	4.9	5.0
4	3.4	6.9	6.6	6.7	7.6	4.7	4.6
II	3.4	6.3	6.5	6.7	7.3	4.7	4.6
9	3.4	6.3	6.4	6.8	7.3	4.6	4.6



1. A composition comprising
(a) an anionic fatty alcohol metal sulfate surfactant;
(b) a nonionic, substituted poly(ethylene oxide) surfactant;
(c) an ethanol amine of the formula

$$MR_{3-x}(CH_2CH_2OH)_x;$$

wherein R is hydrogen or an alkyl group of 1–4 carbon atoms and x is an integer of from 1 to 3;
(d) zinc;
(e) hydroxyacetic acid; wherein the ratio by weight of (d) to (a)+(b) is between about 9:1 and 10:1, the ratio by weight of (a):(b):(c) is about 1:1:1 and the ratio by weight of (e) to (a)+(b)+(c) is about 1:2.

29. A method for perparing a descaling composition comprising the steps of:
(a) mixing a nonionic, substituted-polyethylene oxide surfactant with a mixture of zinc and an anionic fatty alcohol metal sulfate surfactant;
(b) adding an ethanolamine of the formula

$$NR_{3-x}(CH_2CH_2OH)_x;$$

wherein R is hydrogen or an alkyl group of 1–4 carbon atoms and x is an integer of 1–3; and
(c) adding hydroyacetic acid;
wherein the ratio by weight of zinc to the nonionic surfactant plus the anionic surfactant is between about 9:1 and 10:1, the ratio by weight of the nonionic surfactant to the ethanolamine is about 1:1:1, and the ratio by weight of hydroxyacetic acid to the nonionic surfactant plus the anionic surfactant plus the ethanol amine is about 1:2.

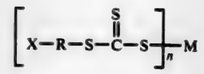
4,435,304

SULFUR BASED METAL CLEANERS

Merlin R. Lindstrom; Robert M. Parlman, and James B. Kimble, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 15, 1982, Ser. No. 441,586
Int. Cl.³ C11D *7/06*
U.S. Cl. 252—156 **8 Claims**

1. An aqueous composition useful for cleaning metal surfaces consisting essentially of a Group IA or IIA metal hydroxide present in an amount from about 0.1 to about 5.0 weight percent of the composition and at least one active metal cleaning ingredient of the formula



wherein R can be any hydrocarbylene radical having 1 to 6 carbon atoms, X is H or OH, M is any group IA or IIA metal and n is the valence of M present in an amount from about 0.25 to about 10.0 weight percent of the composition.

4,435,305

CHEMICAL FORMULATION FOR RECLAIMING SILK SCREENS

Skevos N. Tsoukalas, 1426 Womack Rd., Dunwoody, Ga. 30338, and John H. Andros, 3018-D Spring Hill Rd., Smyrna, Ga. 30080

Filed Jan. 24, 1983, Ser. No. 460,669
Int. Cl.³ C11D *7/06*
U.S. Cl. 252—158 **9 Claims**

1. A method for removing hardened stencil emulsion and ink from the surface of a silk screen comprising the steps of: contacting said silk screen at ambient temperatures for a period of time sufficient to loosen said stencil and ink from said silk screen surface with a solution of a non-aqueous formulation consisting essentially of approximately 20–60% by weight of a C_1–C_{12} alcohol, 2–10% by weight of an alkali metal hydroxide and 20–60% by weight of a hydrocarbon solvent and separating said loosened stencil and ink from said silk screen surface by a high pressure water jet stream.

4,435,306

STABLE COAL-WATER SUSPENSIONS AND THEIR PREPARATION

Geza L. Kovacs, Baltimore, Md., assignor to Koal, Inc., Baltimore, Md.

Filed Nov. 2, 1981, Ser. No. 317,545
Int. Cl.³ C10L *1/32*
U.S. Cl. 252—173 **17 Claims**

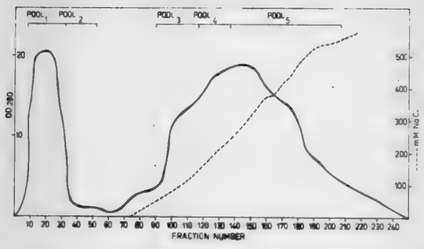
1. A non-settling fuel composition consisting essentially of a particulate suspension of coal, water and a fatty acid soap, the coal concentration in said composition being at least 50% by weight and the soap concentration in the water phase of said composition being above about 5% by weight, said soap further characterized in having sufficient free base to neutralize all acid associated with or released by said coal.

4,435,307

DETERGENT CELLULASE

Peder O. Barbesgaard, Farum; Georg W. Jensen, Bagsvaerd, and Poul Holm, Bronshoj, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Apr. 23, 1981, Ser. No. 256,275
Claims priority, application Denmark, Apr. 30, 1980, 1872/80
Int. Cl.³ D06M *15/02*
U.S. Cl. 252—174.12 **14 Claims**



1. A harshness reducing detergent additive for a main wash detergent composition, comprising
a non-dusting granulate containing a fungal cellulase producible by a strain of *Humicola insolens* or *Humicola grisea* var. *thermoidea.*

4,435,308

COMPOSITIONS BASED ON ALUMINUM HYDROXYCHLORIDES

Maryvonne Thomas, Boulogne Billancourt, and Jean Grosbois, L'Isle Adam, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 709,178, Jul. 27, 1976, abandoned. This application Jun. 8, 1978, Ser. No. 913,853
Claims priority, application France, Jul. 31, 1975, 75 23926
Int. Cl.³ C02F *5/10*
U.S. Cl. 252—181 **4 Claims**

1. A composition of matter comprising (i) aluminum hydroxychloride, (ii) SO_4^{-2} anions in an amount of from about 0.05 to 0.3 M/gram-atom of aluminum present, and (iii) at least one anion of an organic acid selected from the group consisting of citric acid, sulfosalicyclic acid, pyrocatechol-3,5-disulfonic acid, chromotropic acid and mixtures thereof, said anion forming anionic or uncharged complexes with aluminum in a neutral or nonacidic medium and said anion being present in an amount of at least about 0.01 M/gram-atom of aluminum present, and (iv) said composition exhibiting a basicity, expressed as the ratio OH/Al, of from about 1.2:1 to 1.7:1.

4,435,309

METHOD OF LIQUIFYING WAXY MATERIALS

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Lafayette, La.

Filed Sep. 18, 1981, Ser. No. 303,703
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—314 **9 Claims**

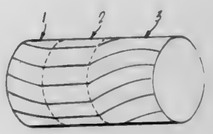
1. A method of liquifying an organic material which is a waxy solid at ambient temperature, which comprises:
(a) admixing a solvent with said organic material at a temperature such that a solution is formed;
(b) cooling the solution to a temperature such that a solid or semi-solid, viscous material is formed; and
(c) shearing said solid or semi-solid material to produce particles of said organic material suspended in said solvent; wherein the concentration of said solvent is sufficient to produce a liquid as a result of step (c) and to produce a solid or semi-solid, viscous material as a result of step (b); wherein said organic material is selected from the group consisting of amines, amine salts, quaternary ammonium salts, and mixtures thereof; and wherein said solvent is selected from the group consisting of water, alcohols having from one to five carbon atoms, and mixtures thereof.

4,435,310

MANUFACTURE OF MULTICOLORED DETERGENT BARS HAVING SINUSOIDAL STRIPING

Michael R. Lowry, Chester, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 195,209, Oct. 17, 1980, abandoned, which is a continuation of Ser. No. 12,619, Feb. 16, 1979, abandoned. This application Nov. 16, 1981, Ser. No. 321,854
Claims priority, application United Kingdom, Feb. 20, 1978, 6653/78
Int. Cl.³ C11D *9/44, 13/08, 13/18, 17/00*
U.S. Cl. 252—370 **4 Claims**



1. A method of manufacturing detergent bars having curved surface striping wherein a continuous log of a longitudinally striped detergent mass is extruded from a nozzle and the log is subjected to torque about the longitudinal axis at a station spaced from the nozzle with subsequent cutting into billets and stamping to form bars, characterized in that the torque is reversed to provide a reversing spiral striping on the log and at least a half of a cycle of striping of substantially sinusoidal form along the longitudinal axis of the bar.

4,435,311

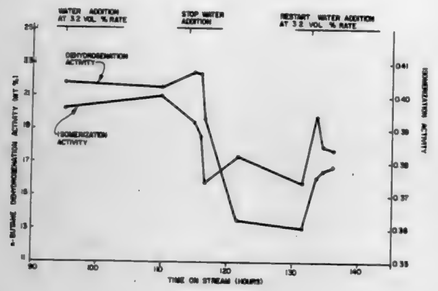
CONTINUOUS REACTIVATION OF AMS-1B-CONTAINING CATALYST SYSTEMS

David L. Sikkenga, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 24, 1982, Ser. No. 422,745
Int. Cl.³ B01J *37/10*
U.S. Cl. 502—22 **18 Claims**

1. A process to reactivate a noble metal-containing AMS-1B crystalline borosilicate comprising contacting such catalyst

with water at reactivation conditions comprising a temperature of about 100° to about 750° C., a pressure of about 0.1 to



about 100 atmospheres and a weight hourly space velocity of about 0.1 to about 40 hr^{-1}.

4,435,312

ASSOCIATIONS OF BASES, RESULTING FROM THE COMBINATION OF A LITHIUM ALKYL OR ARYL WITH AN ALKALI METAL AMIDE OR HYDRIDE, POLYMERIZATION PROCESS IN WHICH THEY ARE USED, AND PRODUCT OBTAINED

Serge Lecolier, Janville sur Juine, and Serge Raynal, Draveil, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jan. 18, 1982, Ser. No. 340,078

Claims priority, application France, Jan. 19, 1981, 81 00854

Int. Cl.³ C08F *4/48*

U.S. Cl. 502—157 **8 Claims**

1. An association of bases, of the general formula:

n'RLi—n MZ

in which: n and n' are the numbers of mols of each compound, R is an alkyl or aryl radical, M is an alkali metal which is, sodium or potassium and Z is a hydride or an inorganic amide, the ratio n/n' being between 0.2 and 50.

4,435,313

ELECTRODE WITH OUTER COATING FOR EFFECTING AN ELECTROLYTIC PROCESS AND PROTECTIVE INTERMEDIATE COATING ON A CONDUCTIVE BASE, AND METHOD OF MAKING SAME

Michael Katz, Geneva; Jean M. Hinden, Chambesy, and Jürgen F. Gauger, Le Lignon, all of Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 17, 1981, Ser. No. 293,381

Claims priority, application United Kingdom, Aug. 18, 1980, 8026830; Apr. 9, 1981, 8111257

Int. Cl.³ C25B *11/16, 11/08*

U.S. Cl. 502—101 **8 Claims**

1. A method of manufacturing an anode comprising a stable outer coating effective for carrying out an electrolytic process and a protective intermediate coating formed on an anode base consisting essentially of titanium, characterized by the steps of:

(a) forming said protective intermediate coating by: applying to said anode base successive layers of a homogeneous solution

of at least one thermally decomposable compound of a platinum group metal and an organic precursor compound selected from the group consisting of polyacrylonitrile, polybenzoxazole and poly-p-phenylene; drying each of said layers; and subjecting the dried layers to heat treatment in an oxidizing atmosphere, in such a manner as to thermally convert said organic precursor compound into a conducting insoluble polymer network adhering to the anode base, while said metal compound is thermally converted to a platinum group metal oxide finely dispersed throughout said conducting insoluble network formed in situ on the anode base, and so as to thereby provide said protective intermediate coating adhering to said anode base; and

(b) forming on the protective intermediate coating thus formed said stable outer coating effective for carrying out an electrolytic process.

4,435,314

PROCESS OF PREPARING A POLYMERIZATION CATALYST AND PREPARATION OF ETHYLENE POLYMERS WITH THIS CATALYST

Lambertus J. M. A. van de Leemput, Echt, and Godefridus A. H. Nooijen, Helden-Panningen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Aug. 5, 1982, Ser. No. 405,374

Claims priority, application Netherlands, Aug. 6, 1981, 8103703

Int. Cl.³ C08F *4/64, 4/70, 4/62*

U.S. Cl. 502—154 **7 Claims**

1. Process of preparing a chromium-containing catalyst component, which upon activation with heat at a temperature of from 200° to 1200° C. will effect the polymerization of alpha-olefins, comprising depositing jointly or subsequently from solution onto an inert, particulate, inorganic support the following components:

(a) a first component which is a chromium complex comprising the reaction product of:

(1) a chromium compound, and

(2) a group II or III element hydrocarbyl compound wherein the hydrocarbyl group contains 1-20 carbon atoms; and

(b) at least one second component selected from the group consisting of

(1) a transition metal complex which is the reaction product of:

(a) a transition metal compound wherein the metal is selected from the group consisting of nickel, molybdenum, and titanium, and

(b) a group II or III metal hydrocarbyl compound wherein the hydrocarbyl groups contain 1-20 carbon atoms, and

(2) a transition metal alkoxide or carboxylic acid salt wherein the metal is selected from the group consisting of nickel, molybdenum, and titanium.

4,435,315

USE OF ALKYL-SUBSTITUTED 1,3-DIOXOLANES AS PERFUMING AGENTS

Jens Conrad, Hilden; Ulf-Armin Schaper, Düsseldorf, and Klaus Bruns, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

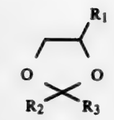
Continuation of Ser. No. 226,201, Jan. 19, 1981, abandoned. This application Apr. 7, 1982, Ser. No. 366,374

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004661

Int. Cl.³ C11B *9/00*

U.S. Cl. 252—522 R **29 Claims**

1. A perfumery composition consisting essentially of from about 1 to 50 percent by weight of at least one alkyl-substituted 1,3-dioxolane of the formula



(I)

wherein R_1 represents an alkyl of from 4 to 12 carbon atoms; R_2 represents a cycloalkyl or cycloalkenyl of from 5 to 8 carbon atoms, an optionally alkyl-substituted aryl, or a furyl group; and R_3 represents hydrogen or an alkyl of from 1 to 3 carbon atoms, and the remainder of customary constituents of perfumery compositions.

4,435,316

NORBORNYL ESTERS AND USES THEREOF IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF A CONSUMABLE MATERIAL AND PROCESS FOR PREPARING SAME

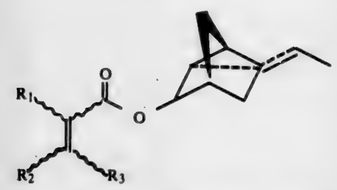
Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jul. 8, 1982, Ser. No. 396,288

Int. Cl.³ C07C *69/533*; A61K *7/46*

U.S. Cl. 252—522 R **10 Claims**

1. At least one compound defined according to the structure:



wherein one of the dashed lines represents a carbon-carbon bond and the other of the dashed lines represents no bond; wherein the wavy lines represent a "cis" or a "trans" juxtaposition of the R_1, R_2, R_3 and carboalkoxy moieties around the carbon-carbon double bond; wherein R_1, R_2 and R_3 each represent methyl or hydrogen with the proviso that at least one of R_1, R_2 and R_3 is hydrogen.

10. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes comprising the step of adding to a perfume composition or cologne an aroma augmenting or enhancing quantity of at least one compound defined according to claim 1.

4,435,317

DISHWASHING LIQUID INCLUDING ALKYL SULFATE, ALKYL ETHER SULFATE, ALKYLBENZENE SULFONATE AND MAGNESIUM

Jan Gerritsen, Strombeek-Bever, Belgium; Ronald E. Atkinson, Hexham, Anthony F. Martin, Blyth, Mark R. Atkins, Gosforth, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 255,405, Apr. 20, 1981, abandoned. This application Jan. 25, 1983, Ser. No. 460,967

Claims priority, application United Kingdom, Apr. 24, 1980, 8013627; Oct. 20, 1980, 8033730

Int. Cl.³ C11D *1/37, 1/831*

U.S. Cl. 252—547 **17 Claims**

1. A physically stable aqueous liquid detergent composition consisting essentially of

(a) from about 6% to about 16% by weight of the composition of a primary C_{10}–C_{16} alkyl sulphate salt;

(b) from about 0.5% to about 20% by weight of the composition of a water-soluble C_{10}–C_{16} primary alkyl ethoxy sulphate salt containing an average of from about 2 to about 6 ethylene oxide groups per alkyl group in the alkyl ether sulphate, and

(c) from about 10% to about 28% by weight of the composition of a water-soluble substantially linear C_{10}–C_{16} alkyl benzene sulphonate salt;

provided that the ratio of the total weight of components (a) and (c) to the weight of component (b) is $\leqq$33:1, and that the composition contains magnesium ion in a molar amount corresponding to 0.45–0.55X where X is the number of moles of C_{10}–C_{16} alkyl sulphate present.

4,435,318

ELECTRODIALYSIS PREPARATION OF PURIFIED AHF CONCENTRATE

Patrea L. Pabst, Jamaica Plain, and David H. Bing, Brookline, both of Mass., assignors to Ionics, Incorporated, Watertown, Mass.

Filed May 22, 1981, Ser. No. 266,400

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 B **10 Claims**

1. A process for the separation and recovery of Factor VIII, von Willebrand's factor, and Factor V from plasma and plasma derivative streams having a pH normally between about 6 to 8.5 comprising removing from said blood stream when present substantially all initial turbidity therein, subsequently passing said blood plasma into and out of an apparatus containing one or more semi-permeable membranes which separate said plasma stream from a salt receiving stream thereby decreasing the salt content of said plasma stream between about 45 to 80% to cause the formation of a protein turbidity enriched in Factor VIII, von Willebrand's factor and Factor V, subsequently removing substantially all of said turbidity and maintaining the temperature of said plasma stream during said separation and recovery process in the range of between about 4°–40° C., and at substantially its original starting pH level.

4,435,319

PREPARATION OF PROTEIN ISOLATE FROM SUNFLOWER SEED

Robert J. Pearce, Beaumaris, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jul. 15, 1983, Ser. No. 514,341

Claims priority, application Australia, Jul. 15, 1982, PF4882

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 **9 Claims**

1. A process for the production of a protein isolate from sunflower seed meal, which process comprises the sequential steps of:

(1) treating a suspension of sunflower seed meal with an acid at a pH of between 4.0 and 7.0;

(2) separating the insoluble residue from the protein extract;

(3) resuspending the insoluble residue and repeating steps (1) and (2) sequentially on the residue until the desired depletion of colour has been achieved;

(4) resuspending and treating the insoluble residue with an acid other than sulphuric acid at a pH $<$4.0;

(5) separating the insoluble residue from the protein extract;

(6) repeating steps (4) and (5) until the desired amount of protein has been extracted;

(7) combining the protein extract from steps (2), (3), (5) and (6) and recovering the protein therefrom by either precipitation with an acid or by ultrafiltration.

4,435,320

DISPERSE AZO DYES FROM 2-AMINO-3,5-BISFLUOROSULPHONYL THIOPHENE AND ANILINE, TETRAHYDROQUINOLINE, AND BENZOMORPHOLINE COUPLERS

Robert N. Gourley, Liverpool, England, assignor to Eastman Kodak Company, Rochester, N.Y.

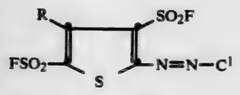
Filed Feb. 8, 1982, Ser. No. 346,831

Claims priority, application United Kingdom, Nov. 4, 1981, 8133251

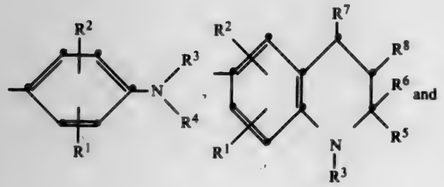
Int. Cl.³ C09B *29/033, 29/09, 29/36, 29/44*

U.S. Cl. 260—152 **11 Claims**

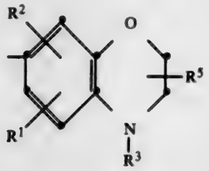
1. A compound having the formula



wherein R is hydrogen, alkyl, or alkyl substituted with aryl or cycloalkyl; and C^1 is a coupler selected from those of the formulae:



and



wherein:

R^1 and R^2 are each selected from hydrogen, fluorine, chlorine, bromine, alkyl, alkoxy, phenoxy, alkylthio, arylthio, and radicals having the formula —NH—X—R^9 in which X is —CO—, —COO—, or —SO_2— and R^9 is selected from alkyl and alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulphonyl, alkylthio, alkanoyloxy, and alkoxy, and when X is —CO—, R^9 is also selected from hydrogen, amino, alkenyl, alkylamino, dialkylamino, arylamino, aryl, or furyl;

R^3 and R^4 are selected from hydrogen; cycloalkyl; cycloalkyl substituted with one or two groups selected from alkyl, —OH, alkoxy, halogen and hydroxy substituted alkyl; phenyl or phenyl substituted with alkyl, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; straight or branched alkenyl; straight or branched alkyl and such alkyl substituted with one to three of the following: hydroxy; halogen; cyano; alkoxy; alkoxy-alkoxy; alkanoyloxy; phenoxy; phenylcarbamoyloxy; cyclohexyl; phenyl or phenyl substituted with alkyl, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; alkamoylamino; carbamoyl; sulphamoyl; alkylsulphamoyl; alkylsulphonamido; phenylsulphonamido; alkoxycarbonylamino; alkylcarbamoyloxy; alkoxycarbonyl; alkoxycarbonyloxy; alkenylcarbonylamino; or R^3 and R^4 combined is pentamethylene, ethyleneoxyethylene or ethylenesulphonylethylene; and

R^5, R^6, R^7 and R^8 are each selected from hydrogen and alkyl.

4,435,321

AZETIDINONE 4-DISULFIDES

Takashi Kamiya, Suita; Yoshihisa Saito, Takarazuka; Tsutomu Teraji, Hirakata; Osamu Nakaguti, Osaka, and Teruo Oku, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

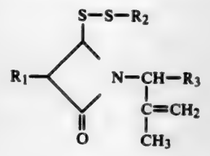
Division of Ser. No. 852,053, Nov. 16, 1967, Pat. No. 4,367,340, which is a division of Ser. No. 711,980, Aug. 5, 1976, Pat. No. 4,071,527, which is a division of Ser. No. 430,688, Jan. 4, 1974, Pat. No. 3,993,646, which is a continuation-in-part of Ser. No. 266,470, Jun. 26, 1972, abandoned. This application Dec. 1, 1980, Ser. No. 211,911

Claims priority, application Japan, Jun. 24, 1971, 46-46158; Aug. 14, 1971, 46-61776; Aug. 14, 1971, 46-61777; Aug. 18, 1971, 46-62687; Aug. 21, 1971, 46-63885; Aug. 21, 1971, 46-63886; Sep. 9, 1971, 46-70018; Dec. 23, 1971, 46-2516

Int. Cl.³ C07D *205/08, 401/12, 409/12, 417/12*

U.S. Cl. 260—239 A **8 Claims**

1. An oxoazetidine compound of the formula:



wherein

R_1 represents amino or amino substituted with a pharmaceutically acceptable carboxylic acyl protective group for the amino substituents in penicillin compounds,

R_3 represents a pharmaceutically acceptable carboxy, esterified carboxy which is esterified with lower alkyl, 1-cyclopropylethyl or trihalo(lower)alkyl, or salt of said carboxy group employed in penicillin compounds, and

R_2 represents a pharmaceutically acceptable group selected from the group consisting of quinolyl, lower alkanoyl and thiadiazolyl substituted by lower alkyl.

4,435,322

HETEROCYCLIC COMPOUNDS CONTAINING AN ALKOXYCARBONYL AND A SUBSTITUTED METHYL GROUP

Karoly Lempert; Kalman Harsanyi; Gabor Doleschall; Gyula Hornyak; Jozsef Nyitrai, all of Budapest; Karoly Zauer, Szentendre; Jozsef Fetter, Budapest; Gyula Simig, Budapest; Zsuzsanna Visky nee Gombos, Budapest, and Gizella Barta nee Szalai, Vecses, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

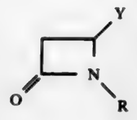
Filed Sep. 11, 1981, Ser. No. 301,191

Claims priority, application Hungary, Sep. 15, 1980, 2264/80

Int. Cl.³ C07D *205/08, 487/04*

U.S. Cl. 260—239 A **7 Claims**

1. A compound of the formula (IV)



wherein

R is benzyl or benzhydryl;

Y is a group of the formula —COOZ or —CH_2M, in which Z is lower alkyl and

M is hydroxyl, halogen, cyano, or a group of the formula —O—SO_2—R^2 in which R^2 is lower alkyl or tolyl.

4,435,323

VINYLACETYLENE-TERMINATED POLYMIDE DERIVATIVES

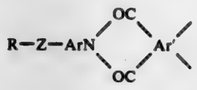
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by Daniel L. Curry, Vice-President of St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

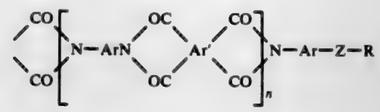
Continuation-in-part of Ser. No. 199,616, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,871

Int. Cl.³ C07D *209/34, 471/00;* **C08F** *22/40*

U.S. Cl. 548—473 **27 Claims**

1. A polyimide of the formula:





wherein:

Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms of said aromatic radical and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar′ except that in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical;

n is an integer having a value of one to 20;

R is hydrogen or an organic moiety containing one to 21 carbon atoms; and

Z is the structure —CH=CH—C≡C— or —C≡C—CH=CH—.

4,435,324

PROCESS FOR THE PREPARATION OF 1-ALKYLAMINOANTHRAQUINONES

Karl-Julius Reubke, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,692

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115548

Int. Cl.³ C07C *97/24*

U.S. Cl. 260—378 **8 Claims**

1. In the process for the preparation of 1-alkylaminoanthraquinones, wherein 1-nitroanthraquinones are aminolysed with alkylamines at elevated temperature in water and organic water-immiscible solvents, in the presence of acid-binding agents, the improvement comprising using calcium hydroxide as the acid-binding agent.

4,435,325

1α,25α-DIHYDROXY-CHOLECALCIFEROL AND METHODS FOR THE PRODUCTION THEREOF

Jean Jolly, Fontenay-sous-Bois; Primo Rizzi, Villemomble, and Jean Taillardat, Domont, all of France, assignors to Roussel Uclaf, Paris, France

Filed May 5, 1980, Ser. No. 146,497

Claims priority, application France, May 23, 1979, 79 13118

Int. Cl.³ C07J *71/00, 5/00*

U.S. Cl. 260—397.2 **4 Claims**

1. A process for the preparation of the product of claim 1 comprising dissolving a chloroform solvate of 1α,25-dihydroxy-cholecaliferol in an organic solvent to effect desolvation and adding water to the solution to crystallize the monohydrate.

4,435,326

INTERMEDIATES USEFUL IN THE PREPARATION OF 17,17-BIS(SUBSTITUTED THIO)ANDROSTENES

Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

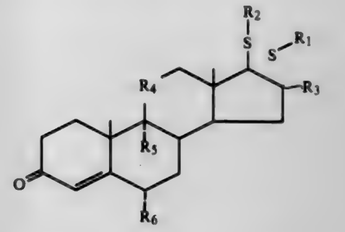
Filed Sep. 9, 1982, Ser. No. 416,181

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.3 **6 Claims**

1. A steroid having the formula



or the 1,2-dehydro derivative thereof wherein

R_1 is hydrogen;

R_2 is alkyl, cycloalkyl, aryl, arylalkyl, alkylthioalkyl, alkoxyalkyl, alkanoyloxyalkyl, aroyloxyalkyl, alkoxycarbonylalkyl, carboxyalkyl, or arylalkyl;

R_3 is hydrogen, hydroxy, alkoxy, aryloxy, oxo, methylene, alkylthio, arylthio, alkanoyl, alkanoyloxy, or halogen;

R_4 is carbonyl, β-hydroxymethylene or β-acetyloxymethylene;

R_5 is hydrogen or halogen; and

R_6 is hydrogen, methyl, hydroxy, alkanoyl or halogen.

4,435,327

3β,7β,15α-TRIHYDROXY-5-ANDROSTEN-17-ONE, ITS 3,15-DIPIVALATE, AND THEIR PREPARATION

Karl Petzoldt; Henry Laurent, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,674

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137919

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.5 **14 Claims**

1. A process for preparing 3β,7β,15α-trihydroxy-5-androsten-17-one, comprising acidifying 3β,7β,15α-trihydroxy-5-androsten-17-one with a dilute mineral acid or dilute strong organic acid in the presence of a ketone, and, then, reacting the resultant product with and organic base.

12. 3β,7β,15α-Trihydroxy-5-androsten-17-one.

14. In a process for preparing 6β,7β;15β,16β-dimethylene-3-oxo-17α-pregn-4-ene-21,17-carbolactone from 7β-hydroxy-15β,16β-methylene-3β-pivaloyloxy-5-androsten-17-one, the improvement wherein the latter compound is prepared by,

carrying out the process of claim 7 in order to prepare the 3,15-dipivalate of 3β,7β,15α-trihydroxy-5-androsten-17-one, and

methylenating the 15β,16β-position in the resultant compound to form 7β-hydroxy-15β,16β-methylene-3β-pivaloyloxy-5-androsten-17-one.

4,435,328

PREPARATION AND USE OF ALKALI METAL ISETHIONATES FROM ETHIONIC ACID

Vincent Lamberti, Upper Saddle River, and Wilder F. Pease, Norwood, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 270,318, Jun. 4, 1981, Pat. No. 4,369,144. This application Sep. 27, 1982, Ser. No. 423,912

Int. Cl.³ C07C *143/90*

U.S. Cl. 260—400 **9 Claims**

1. A process for the preparation of a fatty acid ester of an alkali metal isethionate wherein said isethionate is prepared from ethionic acid, comprising the steps of:

(a) heating an aqueous solution containing about 20% to about 50% of ethionic acid at a temperature of about 80° C. to about 160° C. for a sufficient time to produce a solution of isethionic acid and sulfuric acid;

(b) neutralizing said aqueous solution with a mixture of calcium hydroxide and an alkali metal hydroxide, the amount of said hydroxides in said mixture being sufficient to substantially completely convert the sulfuric acid into hydrated calcium sulfate and the isethionic acid into an alkali metal isethionate;

(c) separating the alkali metal isethionate from said neutralized solution; and

(d) reacting a fatty acid with said alkali metal isethionate in the presence of an esterification catalyst and a sufficient amount of an alkali or an alkali metal salt of a carboxylic acid to form said fatty acid ester of said isethionate, wherein said fatty acid ester has a yellowness index less than about 10.

4,435,329

SUBSTITUTED N-(ω-AROYLPROPIONYL) DERIVATIVES OF α-AMINO ACIDS AND ESTERS THEREOF

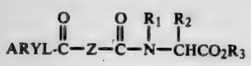
Francis J. McEvoy, Pearl River, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 16, 1981, Ser. No. 312,119

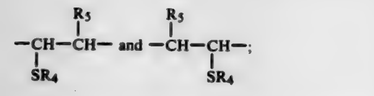
Int. Cl.³ C07C *149/40, 149/43, 153/023*

U.S. Cl. 260—455 R **21 Claims**

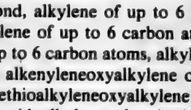
1. Compounds represented by the formula



wherein Z is a divalent moiety selected from the class consisting essentially of



R_1 is selected from the class consisting essentially of hydrogen and lower alkyl having from 1 to 4 carbon atoms but excluding tertiary butyl; R_2 is selected from the class consisting essentially of hydrogen, lower alkyl having from 1 to 4 carbon atoms but excluding tertiary butyl; hydroxy—R_8—, lower alkyl—R_8—, mercapto—R_8—, cyclohexyl, cyclopentyl, phenyl, phenyl—R_8—, carboxy—R_8—, amino—R_8— and carbamoyl—R_8—, wherein R_8— is a divalent straight chain parafinic moiety having 1 to 6 carbon atoms; R_3 is selected from the class consisting essentially of hydrogen and lower alkyl having from 1 to 4 carbon atoms; R_4 is selected from the class consisting essentially of hydrogen, lower alkanoyl, benzoyl and phenyl-substituted-lower alkanoyl; R_5 is selected from the class consisting essentially of hydrogen and a lower alkyl having from 1 to 4 carbon atoms but excluding tertiary butyl; ARYL is selected from the class consisting essentially of 1-naphthyl, 2-naphthyl, 4-chloro-1-naphthyl, 4-methoxy-1-naphthyl, 5,6,7,8-tetrahydro-1-naphthyl, 5,6,7,8-tetrahydro-2-naphthyl, 4-biphenylyl, 5-indanyl, 4-indanyl, phenyl, and substituted phenyl moieties having the formula



wherein R_6 is selected from the class consisting essentially of fluoro, chloro, bromo, trifluoromethyl, cyano, phenoxy, halophenoxy, phenylthio, halophenylthio, lower alkyl having from 1 to 4 carbon atoms, and lower alkoxy having from 1 to 4 carbon atoms, and R_7 is selected from the group consisting of chloro, fluoro, bromo, lower alkyl having from 1 to 4 carbon atoms and lower alkoxy having from 1 to 4 carbon atoms; and where m is an integer of zero, one or two; including individual optically active isomers; racemic mixtures thereof; non-toxic pharmacologically-acceptable salts of the foregoing; and mixtures of the foregoing.

4,435,330

PERFLUOROALKYL-ALKYLENE BRANCHED AMPHOTERIC SULFATO BETAINES

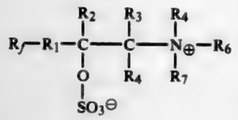
Robert A. Falk, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 29, 1982, Ser. No. 457,609

Int. Cl.³ C07C *141/00, 141/02*

U.S. Cl. 260—458 F **6 Claims**

1. A compound of the formula



(I)

wherein

R_f is straight or branched chain perfluoroalkyl of 3 to 18 carbon atoms, or perfluoroalkoxyperfluoroalkyl of 3 to 18 carbon atoms;

R_1 is a direct bond, alkylene of up to 6 carbon atoms, alkyleneoxyalkylene of up to 6 carbon atoms, alkylenethioalkylene of up to 6 carbon atoms, alkyleneoxy of up to 6 carbon atoms, alkenyleneoxyalkylene of up to 6 carbon atoms, alkylenethioalkyleneoxyalkylene of up to 9 carbon atoms, carbonamidoalkylene wherein the alkylene moiety contains up to 6 carbon atoms and the amido nitrogen is further unsubstituted or substituted by lower alkyl, sulfonamidoalkylene wherein the alkylene moiety contains up to 6 carbon atoms and the amido nitrogen is further unsubstituted or substituted by lower alkyl, caronamidoalkylenethioalkylene wherein the carbonamidoalkylene moiety is as defined hereinabove and the thioalkylene moiety contains up to 6 carbon atoms, or sulfonamidoalkylenethioalkylene wherein the sulfonamidoalkylene moiety is as defined hereinabove and the thioalkylene moiety contains up to 6 carbon atoms;

R_2, R_3 and R_4 are independently hydrogen or lower alkyl;

R_5, R_6 and R_7 are independently lower alkyl, and may additionally represent aralkyl, and R_6 and R_7 taken together with the nitrogen to which they are attached may also represent piperidino or morpholino, or R_5, R_6 and R_7 taken together with the nitrogen to which they are attached represent pyridyl, acridyl or quinolyl, and salts thereof.

4,435,331

METHYL CARBONATE OF α,3,3-TRIMETHYL CYCLOHEXANE METHANOL, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

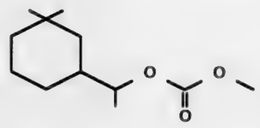
Michael Licciardello, Little Silver, and Richard M. Boden, Ocean, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 10, 1983, Ser. No. 474,158

Int. Cl.³ C07C *69/96*

U.S. Cl. 260—463 **1 Claim**

1. The methyl carbonate of α,3,3-trimethyl cyclohexane methanol having the structure:



4,435,332

M-PHENOXYBENZAMIDE DERIVATIVES

Hiroshi Noguchi, Toyonaka; Shunichi Hashimoto, Takarazuka; Shigeyoshi Kitamura, Toyonaka; Takashi Matsuo, Iruma; Akihiko Mine, Kawanishi, and Katsuzo Kamoshita, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

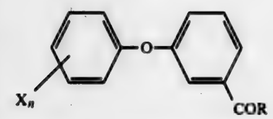
Division of Ser. No. 44,249, May 31, 1979, Pat. No. 4,263,039, which is a division of Ser. No. 792,221, Apr. 29, 1977, Pat. No. 4,173,464. This application Dec. 5, 1980, Ser. No. 213,637

Claims priority, application Japan, May 7, 1976, 51-52430; May 13, 1976, 51-54989; Jun. 10, 1976, 51-120754; Dec. 28, 1976, 51-160388

Int. Cl.³ C07C *103/76*

U.S. Cl. 260—465 D **4 Claims**

1. A m-phenoxybenzamide compound of the formula:



wherein X, which may be the same or different, is a halogen atom or a lower alkyl or lower alkoxy group, n is zero or an integer of 1 to 5 and R is a group of the formula:



wherein R_1' is a hydrogen atom or a lower alkyl group and R_2' is a lower cyanoalkyl or benzyl group.

4,435,333

ACETONITRILE SOLVATE OF AN α-AMINOACYL CHLORIDE HYDROCHLORIDE

Rodolfo Maggi; Gian P. Maggi, both of Milan, and Giuliano Marcon, Bulciago, all of Italy, assignors to Chimica Bulciago S.r.l., Bulciago, Italy

Division of Ser. No. 261,516, May 7, 1981, Pat. No. 4,369,146, which is a continuation of Ser. No. 120,357, Feb. 11, 1980, abandoned. This application Jul. 23, 1982, Ser. No. 401,357

Claims priority, application Italy, May 3, 1979, 22323 A/79

Int. Cl.³ C07C *121/80*

U.S. Cl. 260—465 D **1 Claim**

1. The hemisolvate consisting of the acetonitrile hemisolvate of D(−)2-(p-hydroxyphenyl)glycyl chloride hydrochloride.

4,435,334

NAPHTHOLSULPHONIC ACID COMPOUNDS, THEIR PREPARATION AND USE AS COUPLING COMPONENTS

Frank-Michael Stöhr, Burscheid; Peter Wild, Alten-Buseck, and Horst Nickel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

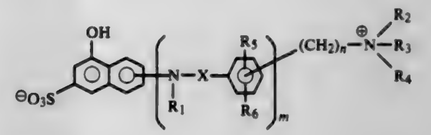
Filed Dec. 28, 1981, Ser. No. 334,613

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3100978

Int. Cl.³ C07C *143/38, 143/53*

U.S. Cl. 260—501.12 **4 Claims**

1. A naphtholsulphonic acid substituted with an ammonium group and, in the betaine form, corresponding to the formula



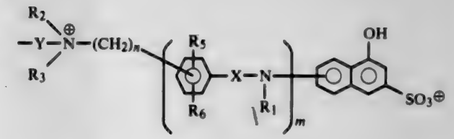
wherein

X is —CO— or —SO_2—,

R_1 is hydrogen or alkyl,

R_2 and R_3 each independently is alkyl, alkenyl or phenylalkyl,

R_4 is alkyl, alkenyl, phenylalkyl or



Y is alkylene or xylylene,

m is 1 or 2,

n is 0 or 1,

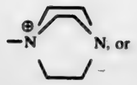
R_5 and R_6 each independently is hydrogen, alkyl, alkoxy or halogen,

and in addition, if n=1,

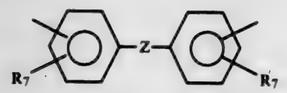
R_2 or R_4 may be amino, alkylamino, dialkylamino, cycloalkyl, phenyl, or phenyl substituted by halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy or cyano,

R_2 and R_3, together with the nitrogen atom to which they are bonded may form optionally C_1–C_4-alkyl-substituted pyrrolidine, piperidine, morpholine, piperazine or N-hydroxyethyl-piperazine,

R_2, R_3 and R_4, together with the nitrogen atom to which they are bonded may form a pyridinium ring, or a group of the formula



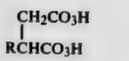
R_2, R_3 and R_4 may be hydrogen,
Y is phenylene, which is optionally substituted by hydroxyl, halogen, cyano, C_{1-4}-alkyl or C_1–C_4-alkoxy, benzylene or a radical of the formula



Z is a direct bond, $-(CH_2)_p-$, $-O-$, $-O-(CH_2)_p-O$, $-SO_2-$, $-NHCO-$, $-NHCONH-$, $-NHCO-(CH_2)_p-CONH-$ or $-CONH-(CH_2)_p-NHCO-$,
p is 1, 2 or 3, and
R_7 is hydrogen, alkyl, alkoxy or halogen.

4,435,335
SUBSTITUTED-BUTANEDIPEROXOIC ACIDS AND PROCESS FOR BLEACHING
James M. Mayer, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Jan. 4, 1982, Ser. No. 336,542
Int. Cl.³ C07C *179/10*
U.S. Cl. 260—502 R **7 Claims**

1. A compound represented by the formula:



wherein
R is alkyl of 6 to 18 carbon atoms or phenyl.

4,435,336
PROCESS FOR THE PREPARATION OF AROMATIC AMINOSULPHONIC ACIDS
Herbert Emde, Cologne; Heinz U. Blank, and Peter Schnegg, both of Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 31, 1982, Ser. No. 364,082
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114829
Int. Cl.³ C07C *143/58, 143/60*
U.S. Cl. 260—508 **17 Claims**

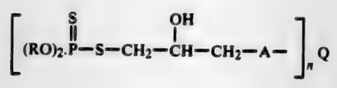
1. In a process for the preparation of an aminoarylsulphonic acid by heating a reaction mixture comprising an arylamine and sulphuric acid or an arylammonium hydrogen sulphate by the baking process, the improvement which comprises carrying out the process under pressure at a temperature of at least 140° C. and, at least partially, in the presence of water, sulphuric acid where present being present in an amount of 0.5 to 1.1 mols per mol of arylamine, said water being present in the reaction mixture in an amount of 0.02 to 2 mols per mol of arylamine or arylammonium hydrogen sulphate originally introduced into the reaction mixture.

4,435,337
PROCESS FOR EXTRACTING RUBBER AND BY-PRODUCTS FROM GUAYULE AND GUAYULE-LIKE SHRUBS
Edward L. Kay, Akron, and Richard Gutierrez, Canal Fulton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 263,387, May 13, 1981, abandoned, and Ser. No. 149,862, May 14, 1980, abandoned. This application Sep. 1, 1981, Ser. No. 298,447
Int. Cl.³ C08C *4/00*
U.S. Cl. 528—493 **7 Claims**

1. A process for isolating rubber, resins, water-solubles, and bagasse from comminuted guayule and guayule-like fibrous plant material which comprises the steps of:
(a) drying the plant material to a moisture content of about 5 to about 25%; and then
(b) deresinating with essentially anhydrous oxygenated organic solvent which is resin miscella comprising acetone and at least about 4% resin;
(c) recovering rubber, water-solubles and by-product bagasse by water flotation.

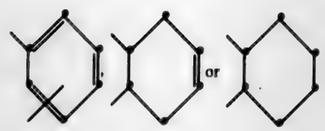
4,435,338
DITHIOPHOSPHATES
Klaus-Peter Michaelis, Lindenfels, and Rainer Schneider, Zwingenberg, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Sep. 21, 1981, Ser. No. 303,748
Claims priority, application Switzerland, Sep. 29, 1980, 7277/80
Int. Cl.³ C07F *9/17*
U.S. Cl. 260—929 **4 Claims**

1. A compound of the formula

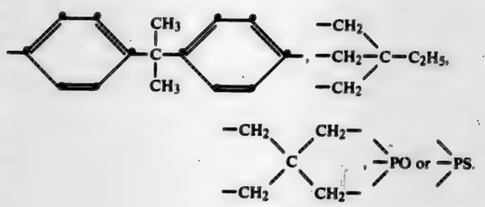


(I)

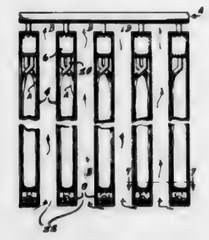
in which
n is 2, 3 or 4 and is the valency of Q,
R is a hydrocarbon radical having 1 to 22 carbon atoms, or said radical having an —O— or —S— group in the chain, or said radical substituted by hydroxy or by halogen,
A is the group —OCO— and Q is a group



or A is the group —O— and Q is one of the radicals



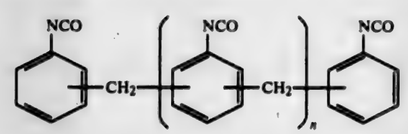
4,435,339
FALLING FILM HEAT EXCHANGER
Loren G. Kragh, Federal Way, Wash., assignor to Tower Systems, Inc., Tacoma, Wash.
Filed Aug. 6, 1979, Ser. No. 63,797
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—153 **5 Claims**



1. A falling film heat exchanger for establishing thermal contact between two fluids of different temperatures comprising:
a plurality of spaced apart and juxtaposed cells each having: substantially vertically disposed parallel side walls; and first fluid collector means disposed at the bottom of the side walls along the length thereof;
first fluid distributing means disposed at the top of the cell side walls along the length thereof for dispensing a first fluid in a substantially uniform film over the inside of each of the cell side walls;
second fluid distributing means disposed above the interspace between each of said cells along the length thereof for dispensing a second fluid in a substantially uniform film over the outside and confronting side wall surfaces of two juxtaposed cells; and
second fluid collector means disposed beneath the said interspaces for collecting the said second fluid.

4,435,340
PROCESS FOR PREPARING MICROCAPSULES FOR PRESSURE SENSITIVE MANIFOLD PAPER
Tetsuro Horiike; Takio Kuroda, both of Sakai, and Tomoharu Shiozaki, Amagasaki, all of Japan, assignors to Kanzaki Paper Manufacturing Company Limited, Tokyo, Japan
Filed Jan. 20, 1982, Ser. No. 340,972
Claims priority, application Japan, Jan. 27, 1981, 56-11374; Jun. 30, 1981, 56-102518
Int. Cl.³ B01J *13/02*
U.S. Cl. 264—4.7 **5 Claims**

1. A process for preparing microcapsules for pressure sensitive manifold paper characterized by emulsifying in a hydrophilic liquid a hydrophobic liquid containing an aromatic isocyanate repesented by the formula



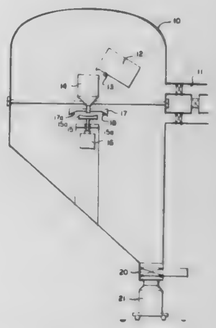
(I)

wherein n is an integer of 1 to 10, an aliphatic isocyanate and an electron donated organic chromogenic material, and forming a polymer at the interface to cover hydrophobic liquid droplets with the polymer, the aromatic isocyanate and the aliphatic isocyanate being used in the ratio of 1:0.05–20 by weight.

4,435,341
METHOD OF MANUFACTURING AMMONIUM SULFATE GRANULES
Horst Bechthold, Erftstadt-Friesheim, Fed. Rep. of Germany, assignor to Buckau-Walther AG, Grevenbroich, Fed. Rep. of Germany
Filed Mar. 8, 1982, Ser. No. 355,533
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108986
Int. Cl.³ B01J *2/00*
U.S. Cl. 264—7 **5 Claims**

1. A method of manufacturing ammonium sulfate granules, having useful properties of increased resistance to applied pressure and abrasion, comprising
(a) spraying a solution of ammonium sulfate to form it into finely divided droplets,
(b) drying said droplets to form fine particles of ammonium sulfate,
(c) spraying onto said fine particles an aqueous solution containing 30–50% ammonium sulfate, and
(d) drying said particles to form ammonium sulfate granules having improved resistance to pressure and abrasion.

4,435,342
METHODS FOR PRODUCING VERY FINE PARTICLE SIZE METAL POWDERS
Jospeh M. Wentzell, Ty Careg, Remsen, N.Y. 13438
Filed Nov. 4, 1981, Ser. No. 318,261
Int. Cl.³ B01J *2/02*
U.S. Cl. 264—8 **12 Claims**



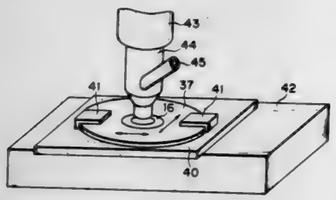
1. A method of producing ultra fine solid metal particles comprising the steps of:
(a) discharging droplets of molten metal from a rotating primary member having a substantially circular periphery in a generally radial path from said rotating member tangentially against a spaced secondary annular planar surface surrounding and spaced from the periphery of the rotating primary member, said annular planar surface being inclined to the path of the droplets of molten metal from the rotating member at an angle such that the droplets are free from any tendency for the metal to stick to said annular planar surface and such that the molten droplets are further atomized into finer droplets which continue tangentially beyond said secondary annular surface into a cooling environment;
(b) cooling said finer droplets in said cooling environment to solidify the droplets to solid particles; and
(c) collecting said cooled particles as ultra fine solid metal particles.

4,435,343

METHOD FOR MANUFACTURING AN INFORMATION MEMORY DISK

Hideo Ando, and Isao Suzuki, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 9, 1982, Ser. No. 396,594
Claims priority, application Japan, Jul. 20, 1981, 56-113244
Int. Cl.³ B29D 17/00
U.S. Cl. 264—22 12 Claims



1. A method for manufacturing an information memory disk comprising the steps of:

(a) preparing a die having one surface on which are formed an annular first rugged pattern corresponding to tracks, and an annular second rugged pattern corresponding to a positioning mark and concentrically located against the tracks;

(b) manufacturing by the use of the die a blank having one surface on which are formed an annular rugged track corresponding to the first rugged pattern and an annular rugged positioning mark corresponding to the second rugged pattern;

(c) detecting the position of the center of the blank on the basis of the positioning mark;

(d) boring a hole through the blank centered upon the center of the positioning mark; and

(d) forming a light reflecting layer on the annular rugged track.

4,435,344

METHOD FOR PRODUCING A HEAT-INSULATING PAPER CONTAINER FROM A PAPER COATED OR LAMINATED WITH A THERMOPLASTIC SYNTHETIC RESIN FILM

Akira Iioka, Inzaimachi, Japan, assignor to Nihon Dixie Company, Limited, Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,346
Claims priority, application Japan, Dec. 29, 1980, 55-187575
Int. Cl.³ B29D 27/00
U.S. Cl. 264—45.1 11 Claims

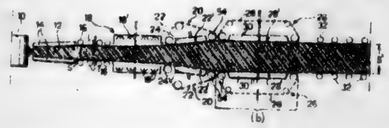
1. A method for producing an insulating composite paper container which comprises heating a fabricated container having a container body member and a bottom panel member, wherein the container body member is formed of paper coated or laminated with a thermoplastic synthetic resin film on one surface thereof and coated or laminated with the same or different thermoplastic synthetic resin film or aluminum foil on the other surface thereof, wherein the bottom panel member is formed of paper which may or may not be coated or laminated with a thermoplastic synthetic resin film or aluminum foil and wherein the paper has a moisture content of at least about 2% and wherein the heating is performed at a temperature and for a time sufficient to form a heat-insulating layer on at least one surface of the container body member by a foaming action on at least one of the thermoplastic resin films of the container body member through the action of the moisture in the paper of the container body member.

4,435,345

PROCESS FOR THE PRODUCTION OF A CONTINUOUS SHEET OF FOAMED SYNTHETIC, THERMOPLASTIC POLYMER BY EXTRUSION

Roberto Colombo, Turin, Italy, assignor to Lavorazione Materie Plastiche L.M.P. S.p.A., Turin, Italy

Filed Oct. 29, 1981, Ser. No. 316,383
Claims priority, application Italy, Nov. 5, 1980, 68689 A/80
Int. Cl.³ B29D 27/00
U.S. Cl. 264—53 4 Claims



1. In a process of producing a continuous sheet of foamed synthetic thermoplastic polymer comprising extruding a foamable melt of the polymer through a slit and guiding the sheet during foaming with the opposite faces thereof in contact with respective cold surfaces thereby to cool said faces to below the gelling point of the polymer, the improvement further comprising the steps of:

(a) passing the so foamed sheet through a heating zone before the temperature at the core of the sheet has fallen substantially below the incipient softening point of the polymer, thereby to raise the temperature of the sheet to a value which is at least substantially constant throughout the thickness of the sheet and is between said incipient softening point and the critical viscosity point of the polymer,

(b) applying sub-atmospheric pressure to the opposite faces of the sheet exiting from said heating zone of step (a), through a pair of mutually diverging moving walls which are permeable to gas while advancing said walls in synchronism with the sheet thereby to temporarily adhere the said faces of the sheet to the respective walls and progressively increase the thickness of the sheet during its advance,

(c) continuing to apply sub-atmospheric pressure to the opposite faces of the sheet exiting from step (b) through a pair of mutually parallel moving walls which are permeable to gas and are advanced in synchronism with the sheet while cooling the sheet, thereby to keep the faces of the sheet adhering to the respective walls and maintaining the thickness of the sheet constant until the foam is consolidated.

4,435,346

METHOD OF PRODUCING OPEN-CELL FOAMED ARTICLES OF CROSS-LINKED POLYOLEFINS

Hiroo Ito; Takeo Kasanami, both of Joyo, and Shuji Miura, Uji, all of Japan, assignors to Sanwa Kako Company, Limited, Kyoto, Japan

Filed Mar. 12, 1982, Ser. No. 357,682
Claims priority, application Japan, May 22, 1981, 56-76700
Int. Cl.³ B29D 27/00
U.S. Cl. 264—54 13 Claims

1. A method for the production of open-cell foamed articles of cross-linked polyolefins comprising the steps of:

blending with heating a polyolefin, a chemical blowing agent and a cross-linking agent to obtain a foamable and cross-linkable composition,

forming the foamable and cross-linkable composition into a desired shape under pressure and at a temperature of from 115° to 155° C. and which is lower than the foaming temperature of said composition while maintaining its gel percent at zero,

heating the shaped composition at a suitable foaming temperature under atmospheric pressure to decompose the cross-linking agent and the blowing agent concurrently, the peak of the ratio of the degree of cross-linking to the degree of decomposition of the blowing agent being not more than 20, thereby giving rise to a foamed product of cross-linked polyolefin having cells enclosed with very thin membranes capable of being easily ruptured by the action of mechanical force, and

mechanically deforming said foamed product to cause the membranes of the cells to rupture,

wherein the gel percent is the ratio of the foamable and cross-linkable composition after extraction to that before



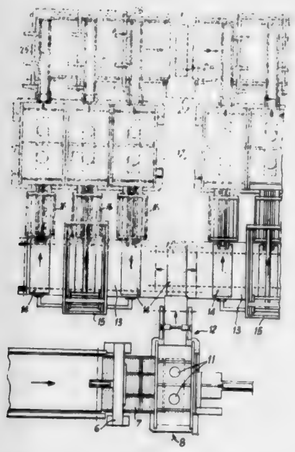
extraction, the extraction being carried out under reflux of trichloroethylene as a solvent for 24 hours by means of a soxhlet extractor using a glass filter of from 40 to 50μ; the degree of cross-linking is the gel percent of the composition at a given heating time and the degree of decomposition of the blowing agent is the ratio of the degree of expansion at said given heating time to the final degree of expansion of the foamed composition.

4,435,347

PROCESS FOR THE PRODUCTION OF MOLDED MEMBERS FROM ELONGATED PARTICLES OF WOOD

Pierre Sorbier, Pernes-les-Fontaines, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Continuation of Ser. No. 52,266, Jun. 26, 1979, abandoned. This application Jun. 15, 1981, Ser. No. 274,267
Int. Cl.³ B27J 5/00
U.S. Cl. 264—118 10 Claims



1. A process for producing, from binder-coated wood particles, a one piece molded article having a base, and at least one side wall as a continuation of said base, but extending at an angle relative to said base, comprising:

forming a layer of binder coated wood particles into a generally flat section,

having a first portion to be the base of said article, and at least one other portion to be at least one side wall of said article,

precompressing said side wall portion to a thickness less than the thickness of said base portion, then bending said side wall portion at the junction of said base portion and said side wall portion of said section to form an angle with said base portion,

placing the bent section into a mold,

compressing and heating said bent section in said mold to mold said section, and to bond said coated wood particles to form said molded article, and

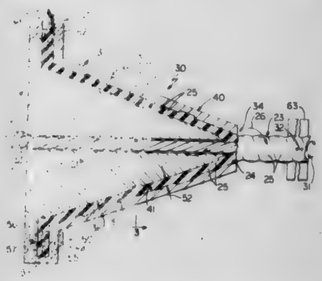
opening said mold, and removed said molded article.

4,435,348

APPARATUS AND METHOD FOR MAKING FLEXIBLE LOAD-CARRYING CORD

Paul M. Standley, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 244,530, Mar. 17, 1981, Pat. No. 4,355,069. This application Sep. 20, 1982, Ser. No. 419,862
Int. Cl.³ B29F 3/10
U.S. Cl. 264—174 16 Claims



1. In a method for making a flexible load-carrying cord which is adapted to be embedded in a polymeric product; said method comprising the steps of twisting a plurality of elements in one direction and wherein said elements normally have a tendency to untwist; and moving said twisted elements in a rectilinear path; the improvement in said method comprising the steps of, forming a flowable polymeric matrix material which has a plurality of discrete randomly arranged fibers embedded therein to define a polymeric sleeve having said fibers disposed in a helical pattern which extends in a direction opposite from said one direction, and bonding said sleeve concentrically around and against said elements during said moving step so that upon curing said sleeve said fibers serve to substantially eliminate said tendency of said elements to untwist.

4,435,349

METHOD FOR MAKING A REINFORCED RIM ELASTOMER

Richard J. G. Dominquez, and Doris M. Rice, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,750
The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.
Int. Cl.³ B29C 5/00, 3/02
U.S. Cl. 264—257 6 Claims

1. A method for making a high strength composite comprising a reinforcing mat impregnated with reaction injection molded polyurethane elastomer resin, the method comprising

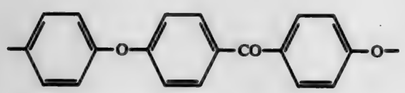
placing a reinforcing mat in a mold cavity and injecting into the mold cavity a polyol of about 5500 molecular weight based on a trihydric initiator, ethylene glycol, a stannic diester of a thiol acid and a polyisocyanate.

4,435,350
METHOD FOR THE ORIENTATION OF THERMOPLASTIC POLYETHER ETHER KETONE FILMS

Nobuo Fukushima; Teruo Saitou, both of Shiga, and Haruo Hayashida, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Feb. 18, 1982, Ser. No. 349,940
Claims priority, application Japan, Feb. 19, 1981, 56-23706
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—280 **1 Claim**

1. A method for the orientation of a film or sheet consisting essentially of a crystalline thermoplastic polyether ether ketone containing therein a repeating unit represented by the formula:

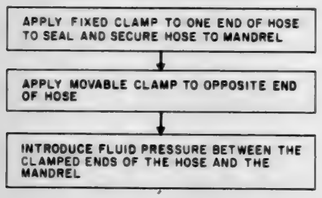


singly or in combination with one or more different repeating units, which comprises rolling the film or sheet of crystalline thermoplastic polyether ether ketone at a linear pressure of at least 100 kg/cm by the use of at least one pair of pressure rolls maintained within a temperature range of from 80° C. to 320° C. while applying a backward tension of at least 80 kg/cm^2.

4,435,351
METHOD OF BREAKING LOOSE VULCANIZED HOSE FROM A RIGID MANDREL

Brian J. Gilmore, Belfast, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 16, 1982, Ser. No. 418,917
Claims priority, application United Kingdom, Mar. 18, 1982, 8207869
Int. Cl.³ B29C *7/00*; B29H *7/14*
U.S. Cl. 264—335 **3 Claims**

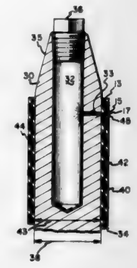


1. A method of breaking loose a vulcanized hose having first and second ends from a rigid mandrel on which the hose has been vulcanized comprising:
(a) applying a fixed clamp to the first end of the hose so as to prevent movement of said first end relative to the mandrel and to form a fluid-tight seal of said first end relative to the mandrel;
(b) applying a movable clamp to the second end of the hose less securely than said fixed clamp so as to permit movement of said second hose end relative to the mandrel but restrict the passage of fluid between said second end of the hose and the mandrel; and
(c) introducing fluid pressure between the hose and the mandrel thereby causing the hose to increase in diameter and shorten in length by movement of its second end toward its first end.

4,435,352
METHOD FOR MAKING A HOSE HAVING AN INDEX MARK

Roy W. Olsen, and Curtis H. Bell, both of Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 4, 1981, Ser. No. 299,286
Int. Cl.³ B29C *17/08*; B29H *3/06*
U.S. Cl. 264—504 **4 Claims**



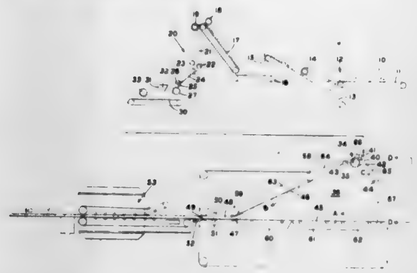
1. A method of manufacturing elastomeric hose having an index mark at or adjacent the end of the hose comprising the following sequence of steps:
(a) providing a mandrel including:
(i) a portion having an exterior hose-bearing surface which is cylindrical, and
(ii) an interior cavity that is in communication with said exterior surface of the mandrel via a hole in said portion at a location corresponding in location to that of the index mark to be formed on the hose;
(b) placing a sleeve having a wall of uncured elastomer material on the mandrel, the sleeve having an inside diameter corresponding approximately to the outside diameter of the mandrel, the sleeve covering the hole in the mandrel, the size of the hole being selected to permit forcing of uncured elastomer material through the hole by fluid pressure;
(c) subjecting the sleeve while mounted on the mandrel to a fluid pressure differential to form a portion of the elastomer material of the sleeve wall through the hole and into the cavity of the mandrel and thereby form a hole in the sleeve wall corresponding in location to that of the mandrel;
(d) curing the sleeve having a hole through its wall into a hose having a hole through its wall; and
(e) removing the cured sleeve from the mandrel.

4,435,353
PROCESSES FOR FORMING BUILDING MATERIALS COMPRISING NON-WOVEN WEBS

John S. Forry, Manor Township, Lancaster County, and John R. Garrick, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 16, 1982, Ser. No. 408,060
Int. Cl.³ B29C *5/00*
U.S. Cl. 264—518 **20 Claims**

1. A process for forming a non-woven web, said process comprising the steps of
preparing a mixture comprising a binder and principally inorganic fibrous material;
introducing said mixture into the upper regions of a mat-forming zone comprising a first moveable foraminous wire disposed in the lower region thereof and, optionally, a second moveable foraminous wire disposed so as to converge with said first foraminous wire at a nip opening disposed therebetween, said mixture being introduced through a first aperture such that it falls into and is entrained in a horizontally or upwardly directed air stream which is introduced through a second aperture into said mat-forming zone, said second aperture having means associated therewith for controlling the direction of the air which passes therethrough;

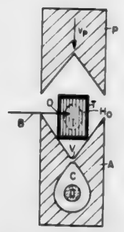


adjustably exhausting the entraining air through said wire or wires to selectively deposit said mixture thereupon, said second aperture and said optional second foraminous wire being disposed relative to said first foraminous wire such that the mixture which is deposited on said wire or wires is deposited essentially uniformly;
consolidating said deposited mixture to yield a non-woven web of material; and
compressing and curing said material.

4,435,354
METHOD FOR THE RELEASE OF THERMONUCLEAR ENERGY COMBINING IMPACT, MAGNETIC AND INERTIAL CONFINEMENT FUSION

F. Winterberg, 5395 Goldenrod Dr., Reno, Nev. 89511

Filed Oct. 14, 1980, Ser. No. 196,928
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—108 **5 Claims**

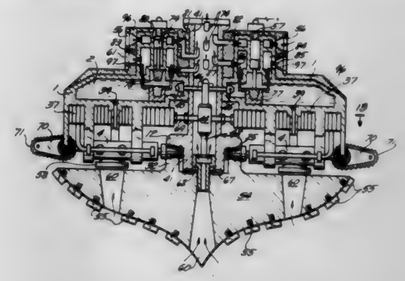


1. A method for the release of nuclear energy comprising:
(a) at least one means accelerating a mass weighing at least one hectogram to at least 10 km/sec,
(b) directing the mass to impact a target structure comprising a body having a cavity therein, an indentation adjacent the cavity, a sealed target chamber containing a first amount of fusion fuel therein positioned in the indentation and the cavity containing a second amount of fusion fuel,
(c) creating a multi-kilogauss field about said target chamber whereby upon impact of the mass upon the target chamber a magnetized plasma is created which in turn creates a plasma in the cavity by ablatively driven implosion from either black body radiation or shock waves from the magnetized plasma.

4,435,355
POWER WHEEL WITH DOUBLE ACTION VALVE IN CONJUNCTION WITH A DRILL BIT

Friederich Weinert, 219-19 131st Ave., Jamaica, N.Y. 11413

Continuation-in-part of Ser. No. 182,104, Aug. 28, 1980, Pat. No. 4,340,970. This application Aug. 4, 1982, Ser. No. 405,310
Int. Cl.³ G21C *00/00*
U.S. Cl. 376—208 **13 Claims**



1. A power wheel with double action valves comprising a vertical axis mounted on a frame means shaft having first and second ends, said both ends fixed to a side gear whereby both gears confronting each other and connecting each other by a plurality of pinion gears intermeshing with both side gears,
a wheel fixedly mounted between the first and second end of said shaft, said wheel having an outer perimeter,
a plurality of expansion valves mounted on said outer perimeter on radial axis,
each of said expansion valves including a hollow T shaped piston,
a pressurized fluid, a pair of push rods connecting:
A. a pair of valve control bars,
B. a pair of duplex inlet and outlet valves,
C. a pinion gear intermeshing with said stationary side gear and a satellite gear,
D. a drive gear for delivering useful work output wherein a plurality of expansion valves are activated,
E. said pressurized fluid supplied from
F. a fluid vessel through valve controls separating high pressurized fluid from low pressurized fluid whereby relaxed fluid is channeled through
G. a radiator via a hollow shaft,
H. said Shaft containing an interior pressure pump extracting relaxed fluid out of said radiator to be pumped back into a pressure cell,
I. said Pressure cell including
J. a plurality of heating elements, heat elements selected to be conventional or nuclear and said satellite gear mounted in center of a drill bit,
K. said drill bit consisting of a solid tapered disc with a plurality of exchangeable cutting edges.

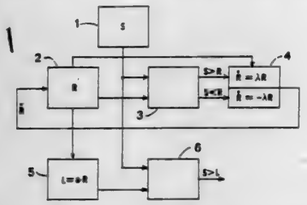
4,435,356
METHOD AND AN APPARATUS FOR MONITORING THE PERIOD OF A NUCLEAR REACTOR

Lars O. Johansson, Nyköping, Sweden, assignor to Studsvik Energiteknik AB, Nyköping, Sweden

Continuation of Ser. No. 17,267, Mar. 5, 1979, abandoned. This application May 8, 1981, Ser. No. 261,696
Int. Cl.³ G21C *7/36*
U.S. Cl. 376—216 **2 Claims**

1. A method of monitoring the period of a nuclear reactor, wherein a power signal representing the power of the reactor is measured and is continuously compared with a reference signal, and a warning signal is generated in response to the result of said comparison, characterized in that when a difference between the power signal and the reference signal is detected, the value of the reference signal is multiplied by a

fixed constant, the polarity of which is dependent upon the difference between the power signal and the reference signal to reduce said difference, whereby the multiplied reference signal is fed back to generate a new reference signal describing an exponential function of the time to be compared with the power signal, that the reference signal is brought to follow the power signal as long as the latter does not change faster than a predetermined rate of change for the reference signal, that at



least one warning signal is generated, the value of which being equal to the instant level of the reference signal multiplied by a predetermined factor greater than one, and that the power signal is compared also with this warning signal, said warning signal being generated when the value of the power signal becomes equal to or exceeds the value of said warning signal to provide a short response time to a rapid increase of the power signal.

4,435,357

SUPPORT FOR USED FUEL RODS IN NUCLEAR INSTALLATIONS

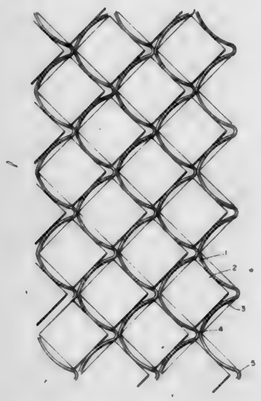
Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Gg. Noell GmbH, Würzburg, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,441

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004239

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—272 **11 Claims**



1. A structure for storing a plurality of spent fuel elements of nuclear power plants comprising a plurality of chambers wherein the wall separating one chamber from a plurality of other chambers comprises only two elements in the form of strips which strips also form all of the wall separating additional individual chambers from a plurality of other additional chambers, and wherein said pair of strips for separating one chamber from a plurality of other chambers are all of the same arched shape having large concave cylindrical surfaces on one side and large corresponding convex cylindrical surfaces on the other side of the strip such that the spacing between the fuel elements from each other is provided by the curved arched strips of the structure and where the separation distance for neighboring fuel elements is provided by one of the neighboring fuel elements contacting the strip tangentially at the convex cylindrical side surface part of the arched strip while the other neighboring fuel element contacts the strip about near the outer edge of the concave cylindrical side surface part and where the distance of the neighboring fuel elements from each other depends on the size of the curvature of the arched strip along the neighboring sides of the adjacent fuel elements.

4,435,358

MEANS FOR FIXATION OF SPENT NUCLEAR ELEMENTS

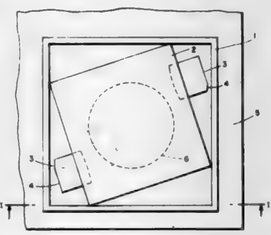
Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Gg. Noell GmbH, Würzburg, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,638

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004274

Int. Cl.³ G21F *7/00*

U.S. Cl. 376—272 **5 Claims**



1. In a nuclear fuel storage device for receiving and storing in nuclear power plants a four sided spent fuel element, a structure including at least one chamber square in cross-section, said structure also including means for preventing relative movements between the walls of the chamber and the fuel element therein wherein the novel feature comprises at least two guided surfaces inside the chamber engaging the bottom of the fuel element at opposite sides thereof, each of the guide surfaces being oblique in regard to the longitudinal axis of the chamber and adapted to cause engagement between each of the four edges of a fuel element and one of the walls of the chamber by imparting a rotary motion to the fuel element around the longitudinal axis of the chamber.

4,435,359

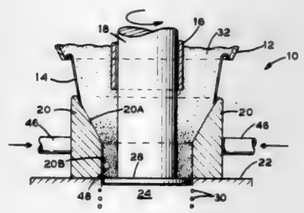
APPARATUS AND METHOD FOR FABRICATING TUBES FROM POWDER

Herbert L. Eiselstein; Darrell F. Smith, Jr., and Edward F. Clatworthy, all of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

Filed Jun. 21, 1982, Ser. No. 390,277

Int. Cl.³ B22F *3/02*; B28B *21/42, 3/08*; B29D *23/04*

U.S. Cl. 419—3 **9 Claims**



1. An apparatus for fabricating tubes from metal powders, the apparatus comprising a powder hopper, means for rotating and withdrawing the mandrel from the hopper, a plurality of arcuate tube forming dies spatially circumscribing the mandrel, means for expanding and contracting the dies about the mandrel, the dies and the mandrel defining a tube compaction zone therebetween, flexible means disposed between the hopper and the dies for preventing the powder from escaping from the hopper, and an aperture for withdrawing the mandrel and resultant tube through the aperture disposed after the compaction zone.

7. A method for fabricating tubes from metal powders, the method comprising:

a. introducing the powder into a hopper;

b. rotating a mandrel disposed within the hopper, the powder in communication with the mandrel;

c. contracting a plurality of arcuate dies spatially disposed about the mandrel to compact the powder in a compaction zone formed between the mandrel and the dies to form a tube section;

d. withdrawing the mandrel and resultant tube section;

e. expanding the dies to permit additional powder to enter the compaction zone;

g. flexing flexible means disposed between the hopper and the die, to prevent the powder from escaping from the hopper; and

h. repeating steps (a) through (g) until a continuous tube of desired length is fabricated.

4,435,360

METHOD OF MANUFACTURING METAL PIECES BY CASTING AND SINTERING OF A METAL ALLOY POWDER

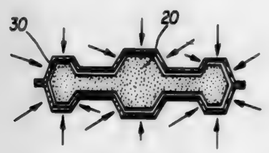
Jean-Pierre Trottier, Bagneux, and Michel Jeandin, Paris, both of France, assignors to A.R.M.I.N.E.S. and S.N.E.C.M.A., both of Paris, France

Filed Mar. 1, 1982, Ser. No. 353,110

Claims priority, application France, Feb. 27, 1981, 81 03904

Int. Cl.³ B22F *3/00*

U.S. Cl. 419—49 **9 Claims**



1. A method for preparing a metal piece utilizing a formal casting and an nonconforming airtight casing of metal soldered ribbon of a predetermined thickness which comprises:

introducting a metal load of predetermined composition inside said formal casting;

heating said casting under predetermined temperature and time conditions so as to obtain a porous preform with a plurality of open pores;

decasting said preform;

introducing said preform inside said nonconforming airtight casing; and

heating said preform under isostatic pressure so as to execute a formal metal piece via compactification and sintering such that said airtight casing is distorted under the action of said isostatic pressure and intimately contacts said preform to transmit said isostatic pressure to said preform.

4,435,361

CORROSION INHIBITION SYSTEM CONTAINING DICYCLOPENTADIENE SULFONATE SALTS

Michael G. DaGue, and Frederick W. Valone, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,163

Int. Cl.³ C23F *11/04*; C09K *7/00*; C04B *9/02*; C07F *143/00*

U.S. Cl. 422—12 **26 Claims**

1. An oil-dispersible corrosion inhibiting solution comprising about 0.25% to about 10% by weight of a compound represented by the formula

$$DH_x(SO_3M)_x(SO_2M)_y$$

wherein D is a dicyclopentadiene moiety, M is an alkali metal, alkaline earth metal or ammonium cation, x is 1 or 2 and y is 0, 1 or 2, provided that y is less than or equal to x.

23. A method of protecting metals from corrosive agents in hydrocarbon and aqueous fluids which comprises contacting the metal with an effective amount of a compound represented by the formula

$$DH_x(SO_3M)_x(SO_2M)_y$$

wherein D is a dicyclopentadiene moiety, M is an alkali metal, alkaline earth metal or ammonium cation, x is 1 or 2 and y is 0, 1 or 2, provided that y is less than or equal to x.

4,435,362

INTEGRAL MULTILAYER ANALYTICAL ELEMENT FOR THE ASSAY OF TOTAL PROTEIN

Harumi Katsuyama, and Masaaki Terashima, both of Asaka, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Japan

Filed Nov. 12, 1982, Ser. No. 441,062

Claims priority, application Japan, Nov. 17, 1981, 56-184080

Int. Cl.³ G01N *21/78, 33/68*

U.S. Cl. 422—56 **7 Claims**

1. An integral multilayer analytical element for the assay of total protein contained in liquid sample using a biuret reaction, said element comprising a transparent support on which a reagent layer and a spreading layer are superposed, said reagent layer being positioned between said spreading layer and said transparent support;

said reagent layer containing potassium sodium tartarate, a cupric salt, a basic compound providing a pH in excess of about 12.0 in said element under conditions of use thereof, an alkali-proof polymer and an alkali metal ion complexing agent.

4,435,363

CONTINUOUS COUNTERCURRENT LIQUID-SOLIDS CONTACTOR

Allyn L. Boldt, Kennewick, Wash., assignor to Exxon Nuclear Company, Inc., Bellevue, Wash.

Filed Jul. 2, 1981, Ser. No. 280,113

Int. Cl.³ B01D *11/02*

U.S. Cl. 422—270 **64 Claims**

1. An apparatus for providing countercurrent liquid-solid contact comprising:

(a) an Archimedes' screw having a bottom end and a top end for conveying solids uphill from said bottom end to said top end;

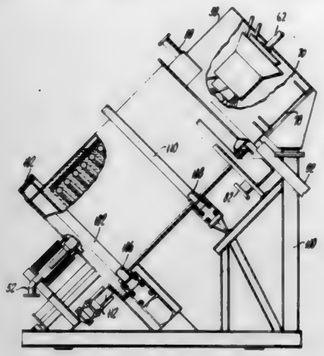
(b) a distribution system including a first housing containing a plurality of first weirs and a plurality of first means for maintaining open communications between said housing and said Archimedes' screw so that liquid may pass between said screw and said housing;

(c) means for injecting solid material into said bottom end of said Archimedes' screw;

(d) means for injecting liquid into said distribution system;

(e) means for rotatably supporting said Archimedes' screw with its longitudinal axis at an acute angle with respect to the horizontal;

(f) means for rotating said Archimedes' screw about said longitudinal axis to convey said solids uphill;
(g) means for withdrawing liquid and dissolved solids after contact with said solids from said apparatus; and

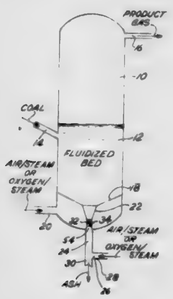


(h) means for withdrawing undissolved solid material after contact with said liquid from said Archimedes' screw.

4,435,364
FLUIDIZED BED GASIFIER OR SIMILAR DEVICE FOR SIMULTANEOUS CLASSIFICATION OF ASH AND UNREACTED COAL

Karl S. Vorres, Western Springs, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Division of Ser. No. 288,158, Jul. 29, 1981, Pat. No. 4,369,045. This application Sep. 30, 1982, Ser. No. 428,785
Int. Cl.³ C10J 3/56; F27B 15/00
U.S. Cl. 422—145 **15 Claims**

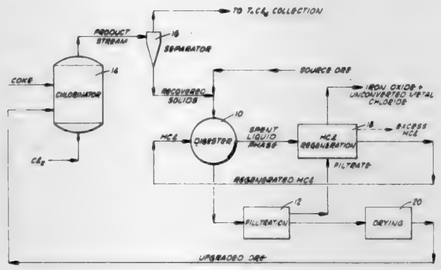


1. In an apparatus for withdrawing agglomerated solids, from a fluidized bed of solid hydrocarbonaceous particles, said apparatus having an upright vessel containing a fluidized bed of hydrocarbonaceous particles, said vessel having a bottom, means defining a passage positioned at the bottom of said vessel for withdrawal of agglomerated solids from the fluidized bed, said passage having a top end, a bottom end and a constricted opening therebetween, and an upwardly extending portion wherein said agglomerated solids are formed, and means for passing a gas stream upwardly into the bottom of the vessel through said passage, the improvement which comprises means defined on the interior surface of said passage for guiding said agglomerated solids in a helical motion during flow of said solids through said passage from said top end of said constricted opening to said bottom end of said constricted opening, said guiding means comprising at least one spiral ridge positioned on the interior surface of said constricted opening for increasing the rate of solid agglomerate discharge from said fluidized bed.

4,435,365
PROCESS FOR PRODUCING TITANIUM TETRACHLORIDE

Alan J. Morris, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed May 12, 1982, Ser. No. 377,334
Int. Cl.³ C01G 23/02
U.S. Cl. 423—76 **8 Claims**

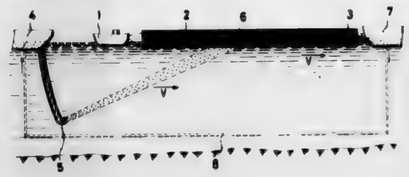


1. In a process for producing titanium tetrachloride from an iron-titanium ore wherein said ore is subjected to a leaching step where, in a digestion zone, said ore is leached, at elevated temperatures, with a leach liquor containing hydrochloric acid to produce a solid phase of upgraded titanium-containing material and a spent liquid phase containing dissolved metal chlorides; a first separation step wherein said solid phase and said spent liquid phase are separated; an acid regeneration step where, in an acid regeneration zone, the metal chlorides dissolved in the spent liquid phase are reacted at elevated temperatures in the presence of air and water to produce hydrochloric acid; a chlorination step where, in a chlorination zone, said separated solid phase is chlorinated in the presence of a carbonaceous reducing agent at elevated temperatures to produce a product stream containing a titanium tetrachloride phase and an entrained solids phase, said entrained solids phase containing metal chlorides, unreacted upgraded titanium-containing material and unreacted reducing agent and a second separation step wherein said titanium tetrachloride phase is separated from said entrained solids phase, the improvements which comprise:
combining said entrained solids phase with a liquid mdium consisting of water or leach liquor containing hydrochloric acid and additional iron-titanium ore to dissolve said metal chlorides in said medium and to suspend said unreacted titanium-containing material and unreacted reducing agent in said medium;
separating said liquid medium into a liquid phase containing dissolved metal chlorides and a solid phase containing unreacted titanium-containing material and unreacted reducing agent from the chlorination product stream;
recovering chlorine values from said dissolved metal chlorides in said liquid phase as hydrochloric acid by reaction of said metal chlorides in said acid regeneration zone; and
recovering titanium values from said unreacted titanium-containing material and unreacted reducing agent in said solids phase as titanium tetrachloride by chlorinating said unreacted titanium-containing material in said chlorination zone.

4,435,366
METHOD AND APPARATUS FOR CONCENTRATION OF TRACE MATERIAL FROM LARGE WATER VOLUMES

Dieter Heitkamp, and Klaus Wagener, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 104,811, Dec. 18, 1979, abandoned. This application May 12, 1981, Ser. No. 262,828
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914203
Int. Cl.³ B01D 15/02
U.S. Cl. 423—6 **12 Claims**

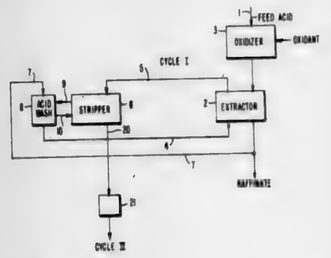


6. A method of concentrating a trace material dissolved in a body of water having a layer with a natural current by accumulation of the trace material on the surface areas of carrier bodies having a density less than that of water, the method comprising the steps of:
discharging the carrier bodies into the body of water at a discharge station positioned at a selected depth in the layer, said body of water being sea water;
allowing the carrier bodies to rise vertically through the layer while being transported horizontally by the current;
accumulating the trace material on the exposed surface areas of the carrier bodies by adsorption as the carrier bodies rise and are transported, said trace material being uranium;
collecting the carrier bodies downstream of the discharging station after the carrier bodies have risen through the layer and have accumulated trace materials thereon;
removing trace material from the carrier bodies after the carrier bodies have been collected; and
returning the carrier bodies with the trace material removed therefrom upstream to the discharge station for subsequent discharge to again adsorb trace material in the layer of the body of water as the current brings additional trace material into proximity with the carrier bodies.

4,435,367
BARREN SOLVENT WASH BY OXIDIZED RAFFINATE ACID IN THE PROCESS OF URANIUM EXTRACTION FROM PHOSPHORIC ACID

Edward J. Steck, Lakeland, Fla., assignor to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Jul. 21, 1981, Ser. No. 285,666
Int. Cl.³ C01G 43/00
U.S. Cl. 423—10 **9 Claims**

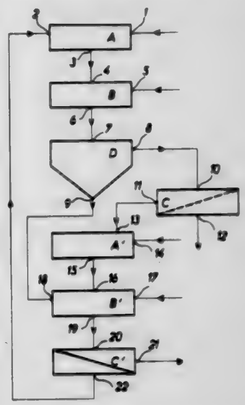


1. In the method of recovering uranium from wet process phosphoric acid, where, in the first cycle of the process, wet process phosphoric acid feed solution is passed through an extraction means to provide a uranium rich organic solvent stream containing di-alkyl phosphoric acid and trialkylphosphine oxide extractants and an oxidized, aqueous raffinate acid stream, and wherein the uranium rich solvent stream is passed through a reductive stripper means, to provide a barren, organic solvent stream which contains entrained, reduced iron containing phosphoric acid, and a product acid stream which is oxidized and passed to the second cycle of the uranium recovery process; the improvement comprising, in the first cycle of the process, contacting the barren, organic solvent stream which contains entrained, reduced iron containing phosphoric acid exiting the stripper means, and before extraction, with an acid wash of oxidized raffinate acid, in an amount effective to remove about 70% to 98% of the entrained phosphoric acid.

4,435,368
HYDROMETALLURGICAL PROCESS FOR SELECTIVE DISSOLUTION OF MIXTURES OF OXY COMPOUNDS

Jean-Michel Demarthe, Viroflay; Paolo Fossi, Elancourt, and Louis Gandon, Rambouillet, all of France, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 950,446, Oct. 11, 1978, which is a continuation of Ser. No. 904,306, May 9, 1978, abandoned, which is a continuation of Ser. No. 765,813, Feb. 4, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 86,791
Claims priority, application France, Feb. 6, 1976, 76 03266
Int. Cl.³ C01G 5/00, 51/00, 53/00, 21/00
U.S. Cl. 423—40 **1 Claim**



1. A process for the selective dissolution of oxygenated compounds containing at least a nickel compound selected from the group consisting of nickel oxide, nickel carbonate and mixtures thereof, present in a mixture of oxygenated compounds containing said nickel compound and at least cobalt, copper and lead, comprising suspending the mixture of the oxygenated compounds in an aqueous phase, treating the resulting aqueous suspension at a pH exceeding about 1 and at a temperature of from about 60° to 100° C. with chlorine to selectively solubilize said nickel compound while said cobalt, copper and lead remain in an essentially insoluble residue, and separating the aqueous solution containing the dissolved said nickel compound from the insoluble residue.

4,435,369

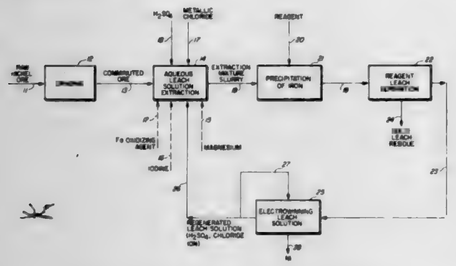
HYDROMETALLURGICAL PROCESS FOR EXTRACTION OF NICKEL

Charles H. Simpson, 7749 E. Chaparrel Rd., Scottsdale, Ariz. 85253

Continuation-in-part of Ser. No. 275,763, Jun. 22, 1981. This application Jul. 29, 1982, Ser. No. 402,977

Int. Cl.³ C01G *53/09*

U.S. Cl. 423—147 **4 Claims**



1. A hydrometallurgical process for extracting nickel from raw nickel oxide-laterite ore comprising the steps of

(a) contacting said comminuted nickel bearing minerals in an extraction zone with an aqueous solution containing stoichiometric amounts of metal and chloride ions necessary to displace nickel contained in the ore and including

(i) at least one oxidizing agent selected from the class of sodium hypochlorite, calcium hypochlorite and potassium hypochlorite;

(ii) at least one metal chloride selected from the group consisting of aluminum chloride, cupric chloride, copper chloride and tin chloride,

(iii) sodium chloride,

(iv) sulfuric acid, and

(v) magnesium

at an elevated temperature and continuing said contact to form an extraction mixture slurry including

(vi) a liquid component comprising an aqueous solution containing extracted nickel from said comminuted minerals dissolved therein, and

(vii) a solid tailing component, and

(b) separating said liquid and components of said extraction mixture slurry.

4,435,370

PREPARATION OF MONOCALCIUM PHOSPHATE AND/OR PHOSPHORIC ACID FROM PHOSPHATE ROCK

Dysart E. Holcomb, Shreveport, La.; Erhart K. Drechsel, Montgomery, Tex., and John B. Sardisco, Shreveport, La., assignors to Pennzoil Company, Houston, Tex.

Filed Sep. 29, 1981, Ser. No. 306,856

Int. Cl.³ C01B *25/22, 25/32*

U.S. Cl. 423—158 **10 Claims**

1. A process for the production of monocalcium phosphate and phosphoric acid, and calcium fluoride, which comprises:

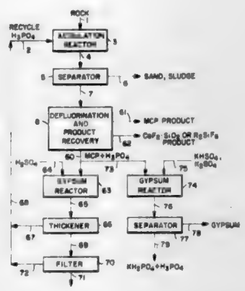
(a) acidulating phosphate rock with an excess of phosphoric acid in the presence of silicon dioxide to produce an acidulation reaction product mixture containing monocalcium phosphate, phosphoric acid, and insoluble solids;

(b) separating insoluble solids from the mixture to recover a clarified solution of monocalcium phosphate in phosphoric acid;

(c) cooling the clarified solution to precipitate at least a portion of the monocalcium phosphate;

(d) recovering a portion of the monocalcium phosphate solid and passing the resulting solution to a defluorination stage wherein sufficient alkali metal ion is added to cause formation of alkali metal fluosilicate with the fluoride and silicon dioxide values contained in the clarified solution with resultant precipitation of said alkali metal fluosilicate;

(e) removing the solid alkali metal fluosilicate and monocalcium phosphate and hydrolyzing the alkali metal fluosilicate in an aqueous medium in the presence of the calcium ion provided by the monocalcium phosphate to convert the alkali metal fluosilicate and form calcium fluoride and silicon dioxide;



(f) removing the solid calcium fluoride and silicon dioxide from the mixture;

(g) recycling the alkali metal ion and excess monocalcium phosphate hydrolysis solution to the defluorination stage; and

(h) removing the phosphoric acid and monocalcium phosphate process liquids from the defluorination reactor.

4,435,371

SULFUR REMOVAL FROM A GAS STREAM

Kenneth J. Frech, Tallmadge, and James J. Tazuma, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 26, 1982, Ser. No. 352,812

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 **11 Claims**

1. A process for removing hydrogen sulfide, sulfides and mercaptans from a gas stream which comprises the steps in combination of:

(a) contacting the gas stream with an oxide of a metal selected from the group consisting of iron, chromium, cobalt, lead, manganese, molybdenum, nickel, copper, vanadium, zinc, tungsten, and antimony;

(b) introducing ammonia onto the metal oxide; and

(c) subsequently or concurrently introducing hydrogen peroxide onto the metal oxide while continuing to contact the gas stream with the metal oxide.

4,435,372

PRODUCTION OF PURIFIED STRONG WET-PROCESS PHOSPHORIC ACID

Alva W. Frazier, and Ewell F. Dillard, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 417,804, Sep. 13, 1982, now Defensive Publication No. T103,202. This application Jan. 17, 1983, Ser. No. 458,403

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—321 R **26 Claims**

1. In an improved process for the preparation of purified strong phosphoric acid containing greater than about 40 weight percent P_2O_5 by the wet process wherein:

A. phosphate rock and phosphoric acid are added to a first reaction zone, said first reaction zone containing a first slurry containing the congeneric impurities comprising Fe_2O_3, Al_2O_3, MgO, and F, and said first slurry comprising calcium sulfate, monocalcium phosphate, phosphoric acid, and dissolved calcium, wherein said added phosphate rock is converted to monocalcium phosphate, calcium sulfate, and phosphoric acid, and wherein said first slurry is maintained at a soluble sulfate concentration less than the stoichiometric amount required for the formation of calcium sulfate;

B. sulfuric acid is added to a second reaction zone which contains a second slurry containing said congeneric impurities as said first slurry, supra, and said second slurry comprising calcium sulfate, monocalcium phosphate, phosphate rock, and sulfuric acid, wherein said sulfuric acid is reacted with monocalcium phosphate and said phosphate rock to effect the formation of calcium sulfate and phosphoric acid, and second slurry being maintained at a temperature in the range from about 80° C. to about 130° C. for a period of time ranging from about 1 to about 6 hours, and said second slurry being maintained at a soluble sulfate concentration greater than the stoichiometric amount required for the formation of calcium sulfate with the dissolved calcium;

C. a portion of said first slurry is caused to be in intimate contact with at least a portion of said second slurry and simultaneously therewith a portion of said second slurry is caused to be in intimate contact with at least a portion of said first slurry; and

D. a portion of said second slurry, separate from said portion thereof in intimate contact with said first slurry, is introduced into separating means wherefrom is recovered as the liquid product, wet-process phosphoric acid, and as the solid byproduct, calcium sulfate hemihydrate, to wit, $CaSO_4.0.5H_2O$;

the improvement in combination therewith for both effecting desirable environmental fluorine evolution abatement and for eminently improving on the wet acid product purification as it relates to certain congeneric impurities originally present therein, which improvement comprises the steps of:

(1) adjusting the Al_2O_3:MgO weight ratio of said first slurry to the range of between about 2 and about 10;

(2) adjusting the Fe_2O_3 concentration of said first slurry to a range of between about 2.5 and about 5.0 percent by weight to effect the precipitation therein of the two crystalline compounds $(Na,K)_2SiF_6$ and $(Ca,Mg)Al_2F_8.2H_2O$, said Fe_2O_3 functioning as a catalyst;

(3) adjusting the fluorine concentration of said second slurry to the range of between about $1.5\times$wt % $Al_2O_3+0.7$ to about $1.5\times$wt % $Al_2O_3+1.3$ percent by weight to subsequently prevent precipitation therein of $(Fe,Al)_3KH_{14}(PO_4)_8.4H_2O$ and to effect the precipitation therein of the crystalline compounds $(Ca,Mg)Al_2F_8.2H_2O$ and $(Na,K)_2SiF_6$;

(4) maintaining the temperature of said second slurry in the range between about 80° C. to about 130° C. for a period of time ranging from about 1 hour to about 6 hours; and

(5) subsequently introducing at least a portion of said second slurry into separating means to effect removal therefrom of $CaSO_4.0.5H_2O$ and said precipitated compounds $(Na,K)_2SiF_6$ and $(Ca,Mg)Al_2F_8.2H_2O$;

said improved process characterized by the fact that the concentration of the wet-process phosphoric acid congeneric impurities comprising Al_2O_3 and MgO are reduced therein in the range from about 30 to about 90 percent.

4,435,373

FIBRE PACKS FOR AMMONIA OXIDATION

Arthur G. Knapton, Henley on Thames, and Gordon L. Selman, Sonning Common, Near Reading, both of England, assignors to Johnson, Matthey & Co., Limited, London, England

Division of Ser. No. 197,683, Oct. 16, 1980, Pat. No. 4,375,426. This application Aug. 30, 1982, Ser. No. 413,163

Claims priority, application United Kingdom, Oct. 18, 1979, 7936209

Int. Cl.³ C01B *21/26*

U.S. Cl. 423—403 **13 Claims**

1. A process for the production of nitric oxide by the oxidation of ammonia comprising providing a catalyst assembly including an agglomeration or assemblage of randomly oriented melt-extracted or melt-spun fibres made by melt extracting or melt spinning a platinum group metal or an alloy containing at least one platinum group metal and passing a gas stream containing ammonia and oxygen through said assembly.

4,435,374

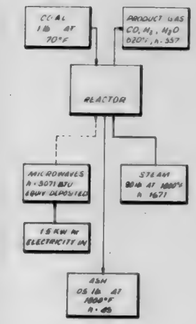
METHOD OF PRODUCING CARBON MONOXIDE AND HYDROGEN BY GASIFICATION OF SOLID CARBONACEOUS MATERIAL INVOLVING MICROWAVE IRRADIATION

John L. Helm, Jr., 171 E. 89th St., New York, N.Y. 10028

Filed Jul. 9, 1981, Ser. No. 281,846

Int. Cl.³ C01B *31/18*

U.S. Cl. 423—415 A **9 Claims**



1. A method for gasifying carbon of solid carbonaceous material to produce carbon monoxide and hydrogen, which comprises providing a bed of solid carbonaceous material with interstices in the bed, infiltrating superheated steam through said interstices thereby contacting said solid carbonaceous material with said superheated steam, and during said infiltration irradiating the contact product of said solid carbonaceous material and superheated steam with an amount of microwave energy sufficient to effect gasification of the carbon.

4,435,375

METHOD FOR PRODUCING A CARBON FILAMENT AND DERIVATIVES THEREOF

Shohei Tamura, c/o Tohdai-shokuin-shukusha, 8, Komaba 4-chome, Meguro-ku, Tokyo; Mizuka Sano, Koganei; Hiroo Inokuchi, Okazaki; Koshiro Toriumi, Okazaki, and Naoki Sato, Okazaki, all of Japan, assignors to Shohei Tamura, Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,604

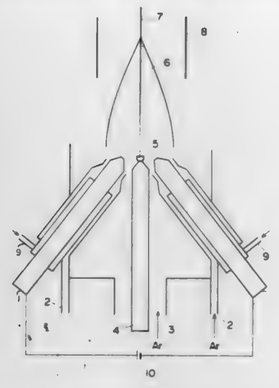
Claims priority, application Japan, Mar. 27, 1981, 56-44956

Int. Cl.³ C01B *31/30, 31/04;* D01F *9/12*

U.S. Cl. 423—439 **7 Claims**

1. A method for producing a graphite filament which comprises purifying a graphite material, heating the resulting purified graphite material in a plasma having an electron tempera-

ture of at least 3,400° C. under a pressure of about 1 atm. to form a carbon filament, then subjecting the carbon filament to



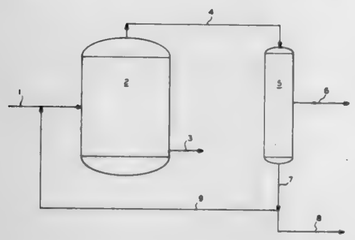
heat treatment at a temperature of at least 2,500° C. to effect graphitization thereof.

4,435,376

FIBROUS CARBON PRODUCTION

Randall A. Porter, and Larry E. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 26, 1982, Ser. No. 362,349
Int. Cl.³ D01F 9/12; C01B 31/02, 3/24
U.S. Cl. 423—447.3 **13 Claims**



1. A process of decreasing the amount of externally-supplied carrier gas required in a pyrolysis operation for producing carbon particles from a carbonaceous feed comprising alkanes having from about 4 to about 10 carbon atoms comprising the steps of: (1) pyrolyzing the feed in a pyrolysis zone at a temperature ranging from about 500° C. to about 800° C., (2) removing hydrocarbon-containing effluent from the pyrolysis zone, (3) treating the effluent to remove hydrogen therefrom, and (4) employing the treated effluent as a carrier for carbonaceous feed to the pyrolysis zone.

4,435,377

OXIDATIVE AFTER-TREATMENT OF CARBON BLACK

Lothar Rothbühr, Hürth, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 313,028, Oct. 19, 1981, abandoned. This application Oct. 6, 1982, Ser. No. 433,072
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1980, 3041188
Int. Cl.³ C09C 1/56, 1/48; C01B 31/02
U.S. Cl. 423—460 **9 Claims**

1. A process for the after-treatment of powdery carbon black with an oxidation agent which is gaseous, vaporous or aerosol-like in order to convert carbon black with a non-polar surface into carbon black which has a polar surface and thereby to improve the compatibility of the carbon black with polar binders for lacquers and printing inks, comprising introducing the powdery carbon black into a reaction zone, said reaction zone having an upper and a lower portion, introducing into the lower reaction zone an oxidation agent whereby said oxidation agent flows from the lowest part of the reaction zone up through the carbon black in said reaction zone, continuously agitating said carbon black in said reaction zone, said reaction zone being a vertical, cylindrical reactor, containing a shaft in the middle axis of said reactor, said shaft being equipped with stirrer arms brushing the entire cylinder cross section in an overwhelmingly horizontal position, said arms being displaced in the manner of tiers over the height of the reactor and rotating with a speed such that the stirrer arm points move between 0.2 and 2.0 m/sec, whereby the volume of the oxidation agent stream is dimensioned so that the reaction temperature in the reactor remains below about 150° C., after the carbon black reaches the desired degree of oxidation, removing the surplus of oxidation agent by flushing air while maintaining the above-mentioned stirring movement and recovering the treated carbon black product in a powdery form without compression or agglomeration of the carbon black.

4,435,378

PROCESS FOR REMOVING EXTRACTABLE SUBSTANCES FROM CARBON BLACK

Reinhold Reck, Maintal; Gerhard Kühner, Hanau; Manfred Voll, Erlensee, and Peter Kleinschmit, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 376,051
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118907
Int. Cl.³ C01B 31/02, 31/00; C09C 1/56
U.S. Cl. 423—461 **7 Claims**

1. A process for removing toluene extractable substances from powdery carbon blacks by treatment with a stream of gas at an elevated temperature comprising treating powdery carbon black containing 0.15 to 1.5% by weight of toluene extractable substances with an oxygen containing gas in a fluidized bed at a temperature from 200° to 320° C.

4,435,379

PROCESS FOR TREATING CHLORINATED HYDROCARBONS

Robert S. Olson, Lafayette; Joseph P. Surls, Jr., Walnut Creek, and Ben F. West, Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 18, 1982, Ser. No. 409,383
Int. Cl.³ C01B 9/02; C01G 27/00, 41/00, 25/00
U.S. Cl. 423—472 **11 Claims**

1. A process for using a chlorinated hydrocarbon to convert a metal oxide to a metal chloride or metal oxychloride, said process consisting essentially of:

contacting at reactive conditions at least one gaseous chlorinated hydrocarbon of the formula $C_aH_bCl_C$, wherein "a" is an integer greater than 1, "c" is an integer greater than 0 and "b" is an integer equal to at least 0, with a sufficient quantity of a suitable refractory metal oxide and a sufficient quantity of chlorine to convert substantially all of the carbon atoms of the chlorinated hydrocarbon to carbon monoxide or carbon dioxide and to convert any hydrogen moieties present on the chlorinated hydrocarbon to hydrogen chloride, wherein the ratio of carbon atoms present to oxygen atoms available for reaction is in the range from about 1:1 to about 1:2 and the metal oxide is chlorinated contemporaneously with the oxidation of the chlorinated hydrocarbon.

4,435,380

HUMECTANTS FOR CLEAR GEL DENTIFRICE COMPOSITIONS

Morton Pader, Teaneck, N.J., assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 344,238, Jan. 29, 1982, abandoned. This application Apr. 18, 1983, Ser. No. 485,913
Int. Cl.³ A61K 7/16
U.S. Cl. 424—49 **23 Claims**

1. A visually clear dentifrice composition comprising about 20 to 70% by weight of humectant solids, about 5 to 50% by weight of an abrasive, and water,

(a) the humectant solids comprising a hydrogenated hydrolyzed polysaccharide wherein said hydrogenated hydrolyzed polysaccharide contains 25% or less maltitol and at least about 20 to 30% by weight DP_{10} oligosaccharides or higher;

(b) said abrasive being capable of:

(i) cleaning and polishing human teeth without damaging said teeth, and of

(ii) forming a clear gel when combined with the humectant system,

(c) the amount of water and the distribution of the molecular weights of said hydrogenated hydrolyzed polysaccharide being such as to render the dentifrice composition translucent or transparent.

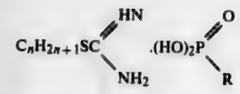
4,435,381

THIOURONIUM PHOSPHONATES FOR USE IN DENTAL TREATMENTS

Edward E. Flagg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 18, 1983, Ser. No. 514,999
Int. Cl.³ A61K 7/16, 7/22
U.S. Cl. 424—54 **9 Claims**

1. A method for treating the teeth and gums of animals which comprises applying to the dental surfaces an effective amount of a compound corresponding to the formula



in which n is an integer of from about 10 to about 14, and R is hydrogen, methyl or phenyl.

4,435,382

ANHYDROUS ALCOHOLIC ANTIPERSPIRANT SUSPENSION COMPOSITION CONTAINING CERTAIN ALUMINUM OR ALUMINUM/ZIRCONIUM SALT GLYCINE COMPLEXES

Chung T. Shin, Livingston, and Navin Geria, Elizabeth, both of N.J., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,925
Int. Cl.³ A61K 7/34, 7/38
U.S. Cl. 424—66 **21 Claims**

1. A roll-on antiperspirant suspension composition adapted to be dispensed from a roll-on dispenser comprising an anhydrous ethyl alcohol vehicle containing an effective amount of a suspending agent and an antiperspirant effective amount of an astringent salt glycine complex suspended in said alcoholic vehicle, said complex being selected from the group consisting of aluminum/zirconium/tetrachlorohydrate glycine complexes; aluminum/zirconium/trichlorohydrate glycine complexes; aluminum/zirconium/pentachlorohydrate glycine complexes; aluminum/zirconium/octachlorohydrate glycine complexes; and aluminum/sesquichlorohydrate glycine complexes and mixtures of said complexes; said composition containing from about 20% to about 65% by weight of anhydrous ethyl alcohol.

4,435,383

SLOW RELEASE PESTICIDE FORMULATIONS

Robert D. Wysong, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 184,209, Sep. 5, 1980, abandoned. This application Jul. 22, 1981, Ser. No. 284,700
Int. Cl.³ A01N 25/10; A61K 31/74
U.S. Cl. 424—78 **30 Claims**

1. A solid one-phase pesticidal composition containing no solvent and consisting essentially of about 5 to 75 weight % pesticide in homogeneous combination with a cross-linked copolymer prepared from

(a) about 40 to 80% by weight of a hydrophobic barrier monomer selected from styrene and α-methyl styrene, and

(b) about 20 to 60% by weight of one or more unsaturated mono- or di-carboxylic acids in which all or part of the carboxyl groups may be in the anhydride form,

where 5 to 95% of the available carboxyl groups in said copolymer are cross-linked with a cross-linking agent selected from (i) one or more aromatic polyfunctional amines, optionally in combination with one or more aromatic polyfunctional isocyanates, aliphatic polyfunctional amines, polyols or polyfunctional epoxides.

4,435,384

TRANSFER FACTOR COMPOSITION AND SKIN TREATMENT

Stanley L. Warren, Hallendale, Fla., assignor to Viragen, Inc., Hasbrouck Heights, N.J.

Filed Apr. 30, 1982, Ser. No. 373,816
Int. Cl.³ A61K 35/14, 39/00
U.S. Cl. 424—101 **17 Claims**

1. A topical composition for dermatological treatment comprising an ointment-type vehicle and an effective amount of transfer factor dispersed therein.

11. A method of dermatological treatment comprising applying to the affected skin a topical composition comprising a vehicle including transfer factor dispersed therein.

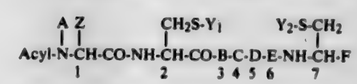
4,435,385

N-ACYL-POLYPEPTIDES AND PROCESSES FOR THE PRODUCTION THEREOF

Wilfried Bauer, Lampenberg, and Janos Pless, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Mar. 2, 1982, Ser. No. 353,900
Claims priority, application Switzerland, Mar. 6, 1981, 1531/81; Sep. 4, 1981, 5723/81
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 424—177 **20 Claims**

1. An N-acyl-polypeptide of formula I,



(I)

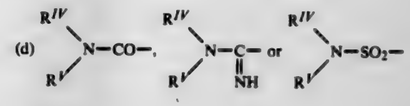
where

"Acyl" is

(a) R^ICO— wherein R^I is $C_{1\text{-}20}$alkyl, $C_{3\text{-}20}$alkenyl, $C_{3\text{-}20}$alkinyl, phenyl, naphthyl or $C_{7\text{-}10}$(phenylalkyl);

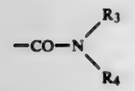
(b) $R^{II}SO_2$— wherein R^{II} is $C_{1\text{-}10}$alkyl, phenyl or $C_{7\text{-}10}$(phenylalkyl);

(c) $R^{III}O$—CO— wherein R^{III} is $C_{1\text{-}10}$alkyl or $C_{7\text{-}10}$(phenylalkyl); and

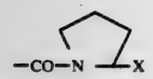


wherein

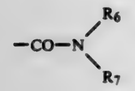
R^{IV} is hydrogen, C_{1-10}alkyl, phenyl or C_{7-10}(phenylalkyl) and
R^{V} is hydrogen or C_{1-10}alkyl,
A is hydrogen or C_{1-3}alkyl,
>N—CH(Z)—CO— is
(a) an (L)- or (D)-phenylalanine residue optionally ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3}alkyl and-/or C_{1-3}alkoxy, or
(b) the residue of a natural α-amino acid in which Z is alkyl of 3 to 4 carbon atoms,
B is —Phe— optionally ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3}alkyl and/or C_{1-3}alkoxy,
C is —Trp— or (D)-Trp- optionally α-N-methylated and optionally benzene-ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3}alkyl and/or C_{1-3}alkoxy,
D is —Lys— optionally α-N-methylated and optionally ε-N-C_{1-3}alkylated,
E is —Thr— or —(D)—Thr— optionally α-N-methylated,
F is a group of formula $—COOR_1$, $—CH_2OR_2$,



or



wherein
R_1 is hydrogen or C_{1-3}alkyl,
R_2 is hydrogen or the residue of a physiologically acceptable, physiologically hydrolysable ester,
R_3 is hydrogen or methyl,
R_4 is $—CH(R_5)—X$,
R_5 is hydrogen, $—(CH_2)_2—OH$, $—(CH_2)_3—OH$, $—CH_2—OH$, $—CH(CH_3)—OH$ or isobutyl, and
X is a group of formula $—COOR_1$, $—CH_2OR_2$ or



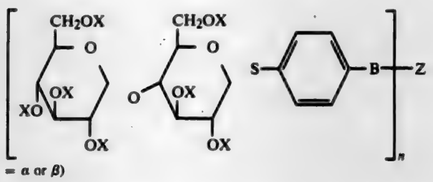
wherein
R_1 and R_2 are as defined above,
R_6 is hydrogen or C_{1-3}alkyl and
R_7 is hydrogen, C_{1-3}alkyl, phenyl or C_{7-10}phenylalkyl,
the group $—CH(R_5)—X$ having the (D)- or (L)-configuration, and Y_1 and Y_2 are each hydrogen or together represent a direct bond, whereby the residues in the 2- and 7-position each independently have the (L)- or (D)-configuration, and with the proviso that (L)- and/or (D)-cysteine residues are present at the 2- and 7-positions only, or a pharmaceutically acceptable salt or complex thereof.

4,435,386
REFINED DETOXIFIED ENDOTOXIN PRODUCT
Edgar E. Ribi, and Cantrell John L., both of Hamilton, Mont., assignors to Ribi ImmunoChem Research, Inc., Hamilton, Mont.
Filed May 26, 1982, Ser. No. 382,406
Int. Cl.³ A61K *37/00*; A01N *65/00*; C07G *7/00*
U.S. Cl. 424—177 **11 Claims**

1. A therapeutic composition for imparting immunotherapy comprising an effective amount of each of:
(a) refined detoxified endotoxin having no detectable 2-keto-3-deoxyoctanoate and having between 350 and 475 nmoles/mg of phosphorus and between about 1700 and 2000 nmoles/mg of fatty acids prepared by the method which comprises:
(i) hydrolyzing an endotoxin extract derived from Enterobacteriaciae with an acid capable of hydrolyzing the same;
(ii) lyophilizing the hydrolyzed product to obtain crude lipid A;
(iii) treating crude lipid A with a first solvent capable of dissolving fatty acids contained therein to remove said fatty acids from a resulting insoluble product
(iv) dissolving the resulting insoluble product in a second solvent capable of dissolving the same; and
(v) passing the resulting solution through a chromatographic column of a type which will allow elution of the desired product to obtain the refined detoxified endotoxin;
(b) an acetone precipitated by-product of endotoxic glycolipids extracted with a mixture of chloroform and methanol;
(c) trehalose dimycolate; and
(d) a pharmaceutically acceptable carrier.

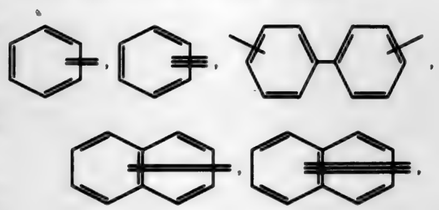
4,435,387
POLY-CATION SALTS OF BIS (OR TRIS) 4-O-POLYHEXOSE-THIO-ARYLENE SULFATE DERIVATIVES
Robert E. Schaub, Upper Saddle River, N.J.; Janis Upeslacis, Pomona, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Filed Oct. 25, 1982, Ser. No. 436,750
Int. Cl.³ A61K *31/70*; C07H *15/22*
U.S. Cl. 424—180 **42 Claims**

19. A method of modulating the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement modulating amount of a pharmaceutically acceptable compound selected from those of the formula:

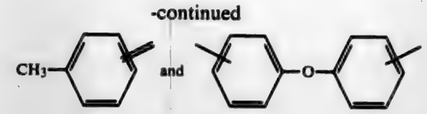


(= α or β)

wherein X is $—SO_3M$ and M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, aluminum, ammonia, zinc and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6); B is selected from the group consisting of —NHCO— and $—NHSO_2—$; n is an integer 2 or 3; and Z is an arylene selected from the group consisting of:

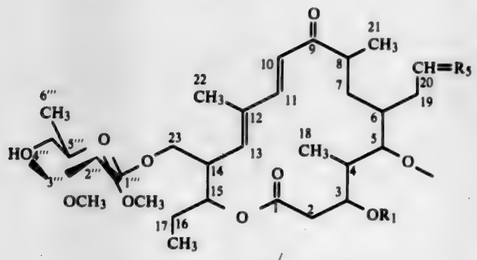


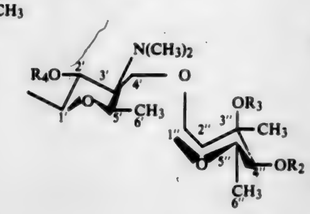
-continued



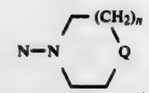
4,435,388
TYLOSIN 20-IMINO-20-DEOXO-4‴-ACYL DERIVATIVES, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE
Ashit K. Ganguly, Upper Montclair; Alan K. Mallams, West Orange, and Yi-Tsung Liu, Parsippany, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Jun. 10, 1982, Ser. No. 386,834
Int. Cl.³ A61K *31/71*; C07H *17/08*
U.S. Cl. 424—180 **45 Claims**

1. A compound of the formula

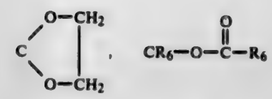




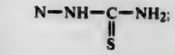
wherein
R_1 is hydrogen or an acyl group selected from alkanoyl of 2 to 5 carbon atoms, palmityl, stearyl, lauryl, oleyl, chloroacetyl, benzoyl, adamantanecarbonyl, cyclopropanecarbonyl, cyclohexanecarbonyl, β-cyclohexylpropionyl, phenylacetyl, phenoxyacetyl, mandelyl, 2-thienylacetyl, alkyl-, aryl- and aralkylsulfonyl, substituted aryl- and aralkylsulfonyl, wherein the substituents on the aryl portions are halogen, nitro and alkoxy groups, succinyl, maleyl, fumaryl, malonyl and phthalyl;
R_2 is acyl, wherein acyl is as defined in R_1;
R_3 is hydrogen or acyl, wherein acyl is as defined in R_1; or R_2 and R_3 are together a carbonyl group linking the 3″-and 4″-hydroxyl groups;
R_4 is hydrogen or acyl, wherein acyl is as defined in R_1;
R_5 is selected from the group consisting of



wherein
n is 0–2, and
Q is selected from the gorup consisting of CH_2, CR_6R_7, CHR_6, CHR_7, NH,NR_6, O, S, SO_2, CHOH, $CHOR_6$, $CHOR_7$,



CHCOOH, $CHCOOR_6$, $CHCONH_2$, and $CHCONR_6R_7$, wherein R_6 and R_7 may be the same or different each being a member of the group consisting of (C_1–C_6)alkyl, (C_7–C_{10})aralkyl and (C_6–C_{10})aryl including X-substituted aryl and aralkyl, wherein X is halogen, trifluoromethyl, (C_1–C_6) alkoxy, or (C_1–C_6) alkylcarbonyl; N—NH—aralkyl, and



and the non-toxic pharmaceutically acceptable acid addition salts thereof.

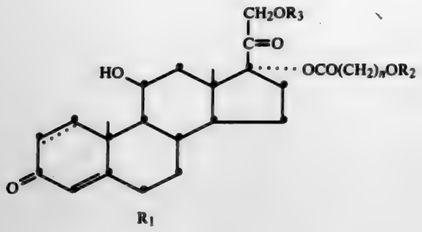
20. A method of eliciting an antibactrial response in a mammal having a gram positive bacterial infection which comprises administering to the mammal a therapeutically effective quantity of a compound according to claim 1.

4,435,389
COMPOSITION FOR PROMOTING GROWTH OF BIFIDOBACTERIA
Masahiko Mutai, Higashi Yamato; Tsuneo Terashima, Musashi Murayama; Tokutaro Takahashi, Tokyo; Ryuichiro Tanaka, Tachikawa; Akio Kuroda, Nishinomiya; Sadao Ueyama, Kobe, and Keisuke Matsumoto, Fujiidera, all of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan
Filed Jul. 7, 1980, Ser. No. 166,463
Int. Cl.³ A61K *31/71*; C12P *19/04*
U.S. Cl. 424—181 **1 Claim**

1. A composition for promoting growth of bifidobacteria consisting essentially of a mixture of oligosaccharides represented by the general formula Gal-(Gal)$_n$-Glc, wherein Gal denotes a galactose residue, Glc a glucose residue and n an integer of 1 to 4, and in which the galactose-galactose linkage is β-1,3, β-1,4 or β-1,6 with the β-1,6 linkage being predominant and the galactose-glucose linkage is β-1,3, β-1,4 or β-1,6 with the β-1,4 linkage being predominant; said oligosaccharides being produced by reacting lactose or a lactose-containing material with β-galactosidase produced by *Aspergillus oryzae* at a temperature and time sufficient to produce said composition.

4,435,390
HYDROCORTISONE DERIVATIVES, THE PREPARATION AND USE THEREOF
Klaus Annen; Henry Laurent; Helmut Hofmeister, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany
Filed Aug. 18, 1982, Ser. No. 409,263
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3133082
Int. Cl.³ C07J *5/00*; A61K *31/56*
U.S. Cl. 424—243 **27 Claims**

1. A hydrocortisone derivative of the formula



wherein
is a single bond or a double bond,
n is 1 or 2,
R_1 is hydrogen or methyl,
R_2 is alkyl of 1–6 carbon atoms, and
R_3 is hydrogen or alkanoyl of 2–6 carbon atoms.

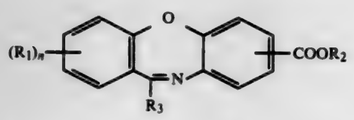
27. A method of treating inflammation in a patient in need of such treatment comprising administering an amount of a compound of claim 1 effective for such treatment.

4,435,391
DIBENZOXAZEPINE DERIVATIVE, AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Kazuo Sasahara, Omiya; Masamitsu Honda, Tokyo; Masuo Koizumi, Tokyo; Yasushi Murakami, Tokyo; Tomohiro Neichi, Tokorozawa; Hiroshi Nakakimura, Kamakura; Yukifumi Noda; Hiroshi Matsushita, both of Tokyo, and Shun-ichi Hata, Yokohama, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 263,184, May 13, 1981, abandoned. This application Mar. 4, 1982, Ser. No. 354,651
Claims priority, application Japan, May 28, 1980, 55-70176
Int. Cl.³ C07D *273/06;* A61K *31/55*
U.S. Cl. 424—244 **20 Claims**

1. A dibenzoxazepine derivative of the formula:



(I)

wherein the carboxy substituent is in the 6- or 8-position; R_1 is a hydrogen atom, a halogen atom, a lower alkyl group or a lower alkoxy group; n is an integer of 1 or 2 provided that each R_1 is the same or different when n is 2; R_2 is a hydrogen atom or a lower alkyl group; R_3 is a lower alkyl group, a phenyl group which may have a m-CH_3 group substituent or a styryl group; or a pharmaceutically acceptable salt thereof.

4,435,392
2,5-BENZODIAZOCINE DERIVATIVES AND SALTS THEREOF, AS WELL AS PHARMACEUTICAL AGENT COMPRISING AS EFFECTIVE COMPONENT AT LEAST ONE OF THE DERIVATIVES AND SALTS

Masatoshi Ban, Gifu; Kenji Miura, Kasugai; Yutaka Baba, Bisai; Noriyuki Iwata; Akira Fukui, both of Kasugai; Mikio Hori, Gifu; Hajime Fujimura, Kyoto, and Eiichi Suenaga, Kunitachi, all of Japan, assignors to Sanwa Kagaku Kenkyusho Co. Ltd., Aichi, Japan

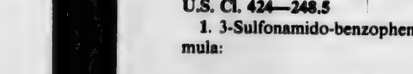
Filed Jan. 24, 1983, Ser. No. 460,649
Claims priority, application Japan, Mar. 24, 1982, 57-45716
Int. Cl.³ A61K *31/33;* C07D *245/06*
U.S. Cl. 424—244 **4 Claims**

1. A 2,5-benzodiazocine derivative represented by a formula



(I)

wherein R_1 is phenyl or p-methoxyphenyl, R_2 is hydrogen or methyl, and R_3 is methoxyphenethyl, 3-(p-fluorobenzoyl)-propyl, cyclopropylmethyl or



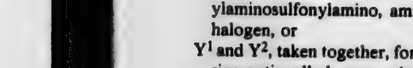
or a salt thereof.

3. A pharmaceutical agent which comprises as an effective component at least one 2,5-benzodiazocine derivative represented by the formula



(I)

wherein R_1 is phenyl or p-methoxyphenyl, R_2 is hydrogen or methyl, and R_3 is methoxyphenethyl, 3-(p-fluorobenzoyl)-propyl, cyclopropylmethyl radical or



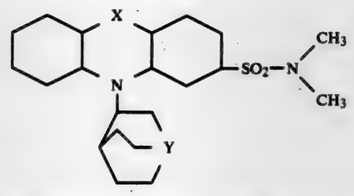
or salts of said derivatives.

4,435,393
DERIVATIVES OF 10-(1-AZABICYCLO[2.2.2]OCT-3-YL)-N,N DIMETHYL-10H-PHENOTHIAZINE-2-SULFONAMIDE AS MEDICAMENTS

Marie-Christine Dubroeucq, Enghien-les-Bains, and Jean E. M. A. Rataud, Paris, both of France, assignors to Pharmindustrie, Gennevilliers, France

Filed Mar. 22, 1982, Ser. No. 360,150
Claims priority, application France, Apr. 3, 1981, 81 06713
Int. Cl.³ A61K *31/54*
U.S. Cl. 424—246 **4 Claims**

1. A process for treating a human suffering from duodenal and gastric ulcers which comprises orally administering to said human 50 to 500 mg per day of a compound of the formula



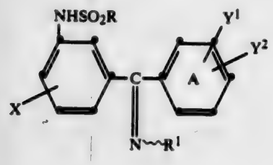
in which either X represents an atom of sulfur and Y represents the N-oxide group, or X represents the sulfinyl group or the sulfonyl group and Y represents an atom of nitrogen or the N-oxide group, or its salt of addition with a pharmaceutically acceptable acid.

4,435,394
3-SULFONAMIDO-BENZOPHENONIMINE DERIVATIVES USEFUL FOR TREATING VIRUS INFECTIONS

Masaru Ogata, and Kosaburo Sato, both of Hyogo, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Dec. 17, 1981, Ser. No. 332,099
Int. Cl.³ C07C *143/79, 143/75;* A61K *31/18*
U.S. Cl. 424—248.5 **20 Claims**

1. 3-Sulfonamido-benzophenonimine derivatives of the formula:



wherein
R is C_1–C_5 alkyl, amino, C_1–C_5 alkylamino, C_2–C_8 dialkylamino, or 5- or 6-membered heterocycle;
R^1 is hydroxy, C_1–C_5 alkoxy, C_1–C_{10} acyloxy, benzyloxy, amino, C_2–C_5 alkoxycarbonylamino, or ureido;
X is hydrogen, C_1–C_5 alkyl, C_1–C_5 alkoxy, or halogen;
Y^1 and Y^2 each is hydrogen, C_1–C_5 alkyl, C_1–C_5 alkoxy, C_1–C_5 alkylthio, C_2–C_5 alkoxymethyl, C_2–C_5 alkoxycarbonyl, C_1–C_5 alkylamino, C_2–C_8 dialkylamino, C_1–C_5 alkanesulfonamido, C_1–C_{10} acylamino, C_2–C_8 dialkylaminosulfonylamino, amino, nitro, cyano, hydroxy, or halogen, or
Y^1 and Y^2, taken together, form C_1–C_3 alkylenedioxy; and A ring optionally has a condensed benzene ring or a pharmaceutically acceptable acid addition salt thereof.

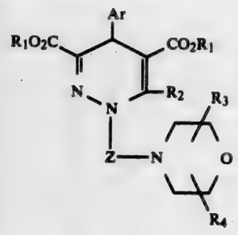
19. A method for treating viral infections comprising administering to a host an effective antiviral amount of a compound according to claim 1.

4,435,395
N-SUBSTITUTED 1,4-DIHYDROPYRIDAZINES AND PHARMACEUTICAL COMPOSITIONS

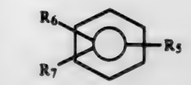
Bernard Loev, Scarsdale; Howard Jones, Ossining, both of N.Y., and James R. Shroff, Riverside, Conn., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,958
Int. Cl.³ A61K *31/535;* C07D *413/06*
U.S. Cl. 424—248.5 **23 Claims**

1. A compound of the formula



wherein Ar is heteroaryl, cycloalkyl or



wherein each of R_5, R_6 and R_7 is H, alkyl, aryl, halo, lower alkoxy, nitro, amino, alkylmercapto, cyano, carboxy, carbalkoxy, sulfamyl, trifluoromethyl, hydroxy, acyloxy, methanesulfonyl, alkylamino or acylamino; and R_5 and R_6, when taken together, form a methylenedioxy; Z is alkylene containing 1 to about 5 carbon atoms in the principal chain; R_3 and R_4 are each H or alkyl; and each R_1 and R_2 is alkyl; and acid addition salts thereof.

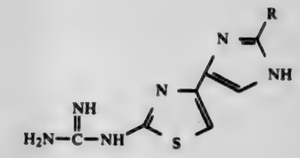
8. An anti-hypertensive composition comprising a compound according to claim 1 and a carrier.

4,435,396
ANTIULCER 2-GUANIDINO-4-(2-SUBSTITUTED-AMINO-4-IMIDAZOLYL)THIAZOLES AND PROCESS THEREFOR

John L. LaMattina, Ledyard, and Christopher A. Lipinski, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed May 10, 1982, Ser. No. 376,486
Int. Cl.³ C07G *417/04;* A61K *31/425*
U.S. Cl. 424—248.51 **36 Claims**

1. A compound of the formula



wherein
R is NHR^1 or NR^2R^3;
R^1 is (C_7–C_{12})alkyl, (C_6–C_{11})pyridylalkyl or (C_{11}–C_{12})phenylalkyl, optionally monosubstituted or disubstituted on the phenyl group with chloro, bromo, fluoro, (C_1–C_3)alkoxy or trifluoromethyl; and
R^2 and R^3 are each independently (C_1–C_{12})alkyl or (C_7–C_{12})phenylalkyl, optionally monosubstituted or disubstituted on the phenyl group with chloro, bromo, fluoro, (C_1–C_3)alkyl, (C_1–C_3)alkoxy or trifluoromethyl; or
R^2 and R^3 are taken together with the nitrogen to which they are attached to form a pyrrolidone, piperidine, perhydro-1H-azepine, or morpholine ring;
or a pharmaceutically-acceptable acid addition salt thereof.

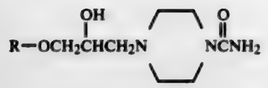
13. A method of inhibiting gastric ulcers in a mammal which comprises administering to said mammal a gastric ulcer inhibiting amount of a compound of claim 1.

4,435,397
CARBAMYLPIPERAZINE COMPOUNDS

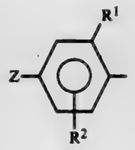
Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi, Kyoto, and Haruo Tanaka, Hikone, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Mar. 26, 1981, Ser. No. 247,881
Claims priority, application Japan, Apr. 8, 1980, 55-46443
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ C07D *241/04;* A61K *31/495;* C07D *295/00*
U.S. Cl. 424—250 **8 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R is

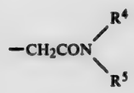


in which

R^1 is alkyl of up to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms or alkanoyl of up to 6 carbon atoms

R^2 is hydrogen or alkyl of up to 6 carbon atoms, and

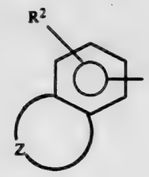
Z is $-CH_2CH_2NHCO_2R^3$, $-NHSO_2R^3$ or



in which

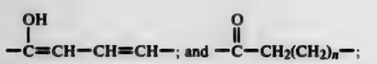
R^3 is alkyl of up to 4 carbon atoms and each of R^4 and R^5 independently of the other is alkyl of up to 4 carbon atoms, or

(b) a bicyclic group of the formula:



in which

Z is a chain of 3 or 4 atoms, said chain being selected from the group consisting of $-(CH_2)_2(CH_2)_n-$; $-CH=CH-(CH_2)_n-$;



n has a value of 1 or 2 and

R^2 is as herein defined.

4,435,398

GUANIDINE COMPOUNDS

M. Mehdi Naftsi-Varchei, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 198,424, Oct. 20, 1980, Pat. No. 4,348,406. This application Feb. 8, 1982, Ser. No. 346,445

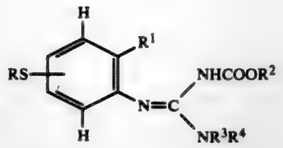
Claims priority, application European Pat. Off., Oct. 12, 1981, 81108212

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ A01N *43/60, 47/44;* C07C *129/12*

U.S. Cl. 424—250 13 Claims

1. A compound of the formula



I

(a) wherein

R is C_1 to C_6 alkyl;

R^1 is hydrogen, halo, nitro, $NHCOR^5$ or $NHSO_2R^5$;

R^2 is C_1 to C_6 alkyl or C_1 to C_6 alkyl substituted with C_1 to C_6 alkoxy, hydroxy or amino;

R^3 and R^4 are independently selected from hydrogen, N-alkyl piperidyl, wherein the alkyl group has 1 to 4 carbon atoms, tetrahydropyranyl, morpholinyl, piperidyl, and C_1 to C_6 alkyl substituted with hydroxy, $-SCH_3$, piperazinyl, pyridyl, $-COR^6$, $-COOR^7$, amino, and substituted amino wherein the substituents in the substituted amino are selected from C_1 to C_6 alkyl,



R^5 is C_1 to C_6 alkyl, C_1 to C_6 alkyl substituted with phenyl or with halo, phenyl, or phenyl substituted with C_1 to C_6 alkyl or with halo;

R^6 is C_1 to C_6 alkyl, C_1 to C_6 acyl, or a peptide residue having up to three amino acids;

R^7 and R^8 are C_1 to C_6 alkyl; and the pharmaceutically acceptable acid addition salts thereof.

4,435,399

2-ARYL-1-(IMIDAZOL-1-YL)-8-(4-PIPERAZIN-1-YLPHENOXY) OCTAN-2-OL ANTIFUNGAL AGENTS

Kenneth Richardson, and Geoffrey E. Gymer, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

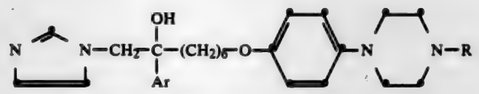
Filed Jun. 25, 1982, Ser. No. 392,394

Claims priority, application United Kingdom, Jul. 18, 1981, 8122246

Int. Cl.³ C07D *403/06;* A61K *31/495*

U.S. Cl. 424—250 28 Claims

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein

R is hydrogen, alkyl of 1–4 carbon atoms, cycloalkyl of 3–7 carbon atoms, carbamoyl, N,N-dialkylcarbamoyl having 1–4 carbon atoms in each alkyl group, N,N-dialkylaminoalkyl having 1–4 carbon atoms in each alkyl group and 1–4 carbon atoms in the alkyl chain, monohydroxyalkyl having 1–4 carbon atoms, dihydroxyalkyl having 1–4 carbon atoms, cycloalkylalkyl having 3–7 carbon atoms in the cycloalkyl group and 1–4 carbon atoms in the open alkyl chain, carbamoylalkyl having 1–4 carbon atoms in the alkyl chain or N,N-dialkylcarbamoylalkyl having 1–4 carbon atoms in each alkyl group and 1–4 carbon atoms in the alkyl chain; and

Ar is phenyl, monosubstituted phenyl or disubstituted phenyl wherein each substituent group is halogen, alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms.

4,435,400

AMINO AND ALKYLAMINOALKENOATE ESTER DERIVATIVES OF AMINOCHLORONITROPYRAZINE

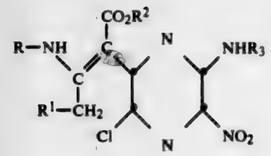
George D. Hartman, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 19, 1982, Ser. No. 399,615

Int. Cl.³ C07D *241/16, 241/20;* A01K *31/495*

U.S. Cl. 424—250 8 Claims

1. An aminoalkenoate ester of 2-amino(or alkanoylamino)-5-chloro-3-nitropyrazine compound having the formula:



I

where

R, R^1 and R^2 may be the same or different and are each selected from the group consisting of hydrogen, $C_{1\text{-}6}$alkyl, $C_{1\text{-}6}$ mono-to tetrahydroxyalkyl, or $C_{1\text{-}6}$aminoalkyl;

R^3 is selected from the group consisting of hydrogen and lower $C_{1\text{-}6}$alkanoyl;

and acid addition salts thereof.

4,435,401

4-AMINO-6,7-DIMETHOXY-2-(4-HETEROARYL-PIPERAZINO)QUINAZOLINE ANTIHYPERTENSIVES

Simon F. Campbell, Deal, and Rhona M. Plews, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

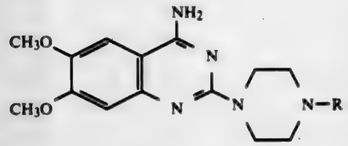
Filed Dec. 23, 1981, Ser. No. 333,672

Claims priority, application United Kingdom, Dec. 29, 1980, 8041411

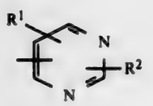
Int. Cl.³ A61K *31/505, 31/38;* C07D *403/14, 417/14*

U.S. Cl. 424—251 9 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R is of the formula



wherein R^1 is hydrogen and R^2 is 6,7-dimethoxy-1,2,3,4-tetrahydroisoquinolin-2-yl, or R^1 and R^2 are each a member selected from the group consisting of hydrogen, hydroxy, F, Cl, Br, I, (alk)R^3, O(alk)R^3, S(alk)R^3, NR^4R^5, $C_6H_4R^6$ and $OC_6H_4R^6$, where (alk) is (C_1-C_4) alkylene, R^3 is hydrogen or $C_6H_4R^6$, when taken separately, R^4 is hydrogen or (C_1-C_4) alkyl and R^5 is hydrogen, phenyl, (alk)R^3 or (C_3-C_7) cycloalkyl, or R^4 and R^5 taken together with the nitrogen atom to which they are attached form a pyrrolo, piperidino, 4-methylpiperazino, morpholino or thiomorpholino group and R^6 is hydrogen, F, Cl, Br, I, (C_1-C_4) alkyl or (C_1-C_4) alkoxy.

8. A method for treating mammalian hypertension which comprises orally or parenterally administering to a mammal in need of such treatment an antihypertensive effective amount of a compound according to claim 1.

4,435,402

AMINOPYRIMIDINE DERIVATIVES, PROCESSES FOR THEIR PREPARATION, AND FUNGICIDAL, INSECTICIDAL AND ACARICIDAL COMPOSITIONS CONTAINING THEM

Hideakira Tsuji; Shinjiro Yamamoto; Kazuto Nakagami, all of Shiga; Takeo Honda, Ube; Katsutoshi Fujii, Ube; Takashi Kobayashi, Ube; Tokio Obata, Ube; Mikio Kojima, Ube, and Yuji Akiyoshi, Ube, all of Japan, assignors to Sankyo Company, Limited, Tokyo and Ube Industries, Limited, Ube, both of, Japan

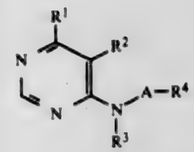
Filed Jan. 22, 1982, Ser. No. 341,776

Claims priority, application Japan, Jan. 29, 1981, 56-11979; Apr. 21, 1981, 56-60178

Int. Cl.³ C07D *239/42;* A01N *43/54*

U.S. Cl. 424—251 53 Claims

1. A fungicidal, insecticidal or acaricidal composition comprising an effective amount of a compound having the formula (I)



(I)

wherein:

R^1 and R^2 are the same or different and are each selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms and halogen atoms, or R^1 and R^2 jointly represent a trimethylene or tetramethylene group;

R^3 is selected from the group consisting of a hydrogen atom and alkyl groups having from 1 to 6 carbon atoms;

A is an alkylene group; and

R^4 is selected from the group consisting of:

an unsubstituted phenyloxy group,

a substituted phenyloxy group substituted with at least one substituent selected from the group consisting of alkyl groups, halogen atoms, alkoxy groups having from 1 to 6 carbon atoms, alkylthio groups having from 1 to 6 carbon atoms, alkenyl groups having from 2 to 6 carbon atoms, a trifluoromethyl group and a nitro group,

an unsubstituted benzyloxy group,

a substituted benzyloxy group substituted in the phenyl ring with at least one substituent selected from the group consisting of alkyl groups, halogen atoms, alkoxy groups having from 1 to 6 carbon atoms, alkylthio groups having from 1 to 6 carbon atoms, alkenyl groups having from 2 to 6 carbon atoms, a trifluoromethyl group and a nitro group,

an unsubstituted phenyl group,

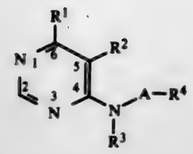
a substituted phenyl group substituted with one or two substituents selected from the group consisting of halogen atoms, alkyl groups having from 1 to 6 carbon atoms and alkoxy groups having from 1 to 6 carbon atoms,

a furyl group, and

a thienyl group

or a salt thereof, together with a carrier.

37. A compound having the formula (I)



wherein

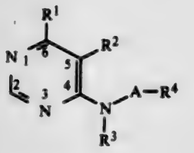
R^1 and R^2 are each methyl;

R^3 is selected from the group consisting of a hydrogen atom and alkyl groups having from 1 to 4 carbon atoms;

A is an alkylene group having 1 to 5 carbon atoms;

R^4 is the group $—OR^5$, and R^5 is selected from the group consisting of an unsubstituted phenyl group, and a substituted phenyl group substituted with one, two or three substituents selected from the group consisting of alkyl groups having from 1 to 10 carbon atoms, halogen atoms, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, alkenyl groups having from 3 to 4 carbon atoms, a trifluoromethyl group and a nitro group; and acid addition salts thereof.

38. A compound having the formula (I)



(I)

wherein

R^1 is an alkyl group having from 1 to 4 carbon atoms;

R^2 is chlorine or bromine;

A is an alkylene group having 1 to 5 carbon atoms;

R^4 is the group $—OR^5$, and R^5 is selected from the group consisting of an unsubstituted phenyl group, and a substituted phenyl group substituted with one, two or three substituents selected from the group consisting of alkyl groups having from 1 to 10 carbon atoms, halogen atoms, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, alkenyl groups having from 3 to 4 carbon atoms, a trifluoromethyl group and a nitro group; and acid addition salts thereof.

4,435,403

PHARMACOLOGICALLY ACTIVE 3-SUBSTITUTED BETA-CARBOLINES

Claus T. Braestrup, Gentofte; Jogen A. Christensen, Virum; Mogens Engelstoft, Vaerloese, all of Denmark; Günter Neef, Berlin, Fed. Rep. of Germany; Ulrich Eder, Berlin, Fed. Rep. of Germany; Ralph Schmiechen, Berlin, Fed. Rep. of Germany; Andreas Huth, Berlin, Fed. Rep. of Germany; Dieter Rahtz, Berlin, Fed. Rep. of Germany; Dieter Seidelmann, Berlin, Fed. Rep. of Germany; Wolfgang Kehr, Berlin, Fed. Rep. of Germany, and Dieter Palenschat, Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

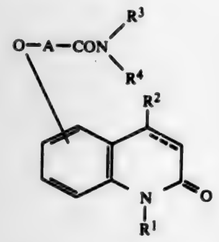
Filed Dec. 17, 1981, Ser. No. 331,740

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3048318

Int. Cl.³ C07D *487/14*; A61K *31/44*

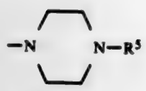
U.S. Cl. 424—256 **7 Claims**

1. A beta-carboline of the formula



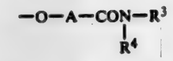
(I)

wherein R^1 is a hydrogen atom; R^2 is a hydrogen atom or a C_{1-6}-alkyl group; A is a C_{1-6}-alkylene group; R^3 is a hydroxy C_{1-6}-alkyl group having one to three hydroxy groups as the substituent, a C_{1-6}-alkoxy-C_{1-6}-alkyl group, a C_{1-6}-alkanoyloxy-C_{1-6}-alkyl group, or a benzoyloxy-C_{1-6}-alkyl group; R^4 is a C_{3-10}-cycloalkyl group which may have 1 to 3 hydroxy groups as the subsitituent in the cycloalkyl ring, or a C_{3-10}-cycloalkyl-C_{1-6}-alkyl group; further R^3, R^4 and the adjacent nitrogen atom, as well as with another nitrogen atom, may form a group of the formula



wherein R^5 is a phenyl group, a C_{3-10}-cycloalkyl group or a phenyl-C_{1-6}-alkyl group; the carbon-carbon bond between the three and four positions in the carbostyril skeleton is a single or

double bond; and the substituted position of the group of the formula



is either the 5- or 6-position in the carbostyril skeleton.

27. A pharmaceutical composition used for the prevention and treatment of thrombosis containing an effective amount of the carbostyril derivative represented by the general formula (1) or its salt of claim 1.

4,435,405

QUINOLINE DERIVATIVES WHICH ARE 5-HYDROXYTRYPTAMINE ANTAGONISTS

Thomas P. Blackburn, Congleton; Barry Cox, Chorltonville; Allen J. Guildford, Sandbach; David J. Le Count, Congleton; Robert J. Pearce, Wilmslow, and Craig W. Thornber, Macclesfield, all of England, assignors to Imperial Chemical Industries PLC, London, England

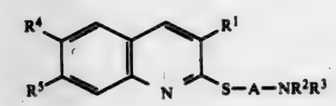
Filed May 26, 1982, Ser. No. 382,116

Claims priority, application United Kingdom, Jun. 9, 1981, 8117642

Int. Cl.³ A61K *31/47*; C07D *215/36*

U.S. Cl. 424—258 **7 Claims**

1. A quinoline derivative of the formula:



I

wherein:

A is a member selected from the group consisting of the radical $—(CH_2)_2—$, the radical $—(CH_2)_2—$ which is substituted by not more than two (1-2C)alkyl radicals, and the radical $—(CH_2)_2—$ which is substituted by an alkylene radical so as to form, together with the residue of the $—(CH_2)_2—$ radical, a cycloalkylene radical of not more than 6 carbon atoms;

R^1 is a member selected from the group consisting of n-, iso- and s-(3-4C)alkyl, cyclopropyl and phenyl; and phenyl which bears not more than two substituents selected from the group consisting of halogen, hydroxy, (1-4C)alkyl, (1-4C)alkoxy, (1-4C)alkylthio, (1-2C)perfluoroalkyl, cyano, carboxy, (1-2C)alkoxy-carbonyl, carbamoyl, N-[(1-3C)alkyl]carbamoyl and N,N-di-[(1-3C)alkyl]carbamoyl; and furyl, thienyl, pyridyl, thiazolyl or oxazolyl, any of which may optionally be substituted by (1-2C)alkyl;

R^2 is a member selected from the group consisting of hydrogen, methyl and ethyl, and dimethylene, trimethylene or tetramethylene which is linked to one or other of the carbon atoms forming the two-carbon-atom-backbone of radical A so as to form, together with the adjacent nitrogen atom, a pyrrolidinyl or piperidyl radical;

R^3 is a member selected from the group consisting of hydrogen, methyl and ethyl; and

one or R^4 and R^5 stands for hydrogen, and the other is a member selected from the group consisting of hydrogen, halogen atoms, (1-3C)alkyl and (1-3C)alkoxy;

or a pharmaceutically-acceptable acid-addition salt thereof.

6. A pharmaceutical composition for use as a 5-hydroxytryptamine antagonist comprising an effective amount of a quinoline derivative of the formula I, wherein A, R^1, R^2, R^3, R^4 and R^5 have the meanings stated in claim 1, or a pharmaceutically-acceptable acid-addition salt thereof, and an inert pharmaceutically-acceptable diluent or carrier.

7. The method of inhibiting the activity of 5-hydroxytryptamine in warm-blooded animals which comprises administering to such animals an effective amount of a compound according to claim 1.

4,435,406

IMIDAZOLE DERIVATIVES

Anna Krasso, Basel, and Henri Ramuz, Birsfelden, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

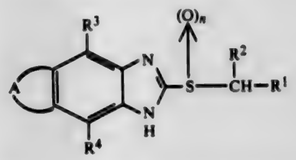
Filed Aug. 5, 1981, Ser. No. 290,032

Claims priority, application Switzerland, Aug. 21, 1980, 6321/80

Int. Cl.³ C07D *491/14*; A61K *31/44*

U.S. Cl. 424—263 **11 Claims**

1. A tricyclic imidazole of the formula



I

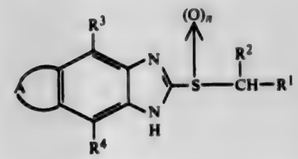
wherein R^1 is 2-pyridyl optionally substituted by lower alkyl or lower alkoxy, n is the integer 0 or 1, R^2 is hydrogen or lower alkyl, R^3 and R^4, independently, are hydrogen or lower alkyl, A is a group of the formula



and R^5 is hydrogen or lower alkyl,

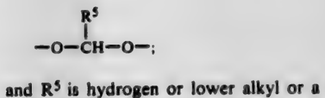
or a pharmaceutically acceptable acid addition salt thereof.

11. A method of preventing gastric ulcers which comprises administering orally or parenterally to a mammal in need of such treatment an effective amount of a compound of the formula



I

wherein R^1 is 2-pyridyl optionally substituted by lower alkyl or lower alkoxy, n is the integer 0 or 1, R^2 is hydrogen or lower alkyl, R^3 and R^4, independently, are hydrogen or lower alkyl, A is a group of the formula



and R^5 is hydrogen or lower alkyl or a pharmaceutically acceptable acid addition salt thereof.

4,435,407

CERTAIN SUBSTITUTED β-OXO-α-CARBAMOYLPYRROLEPROPIONITRILES

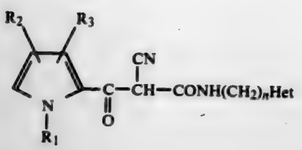
Gordon N. Walker, Morristown, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 7, 1982, Ser. No. 337,897

Int. Cl.³ C07D *401/12*; A61K *31/44*

U.S. Cl. 424—263 **8 Claims**

1. A compound of the formula



(I)

or a tautomer thereof wherein R_1, R_2 and R_3 independently represent hydrogen or lower alkyl; n represents 0 or 1; Het represents pyridyl, unsubstituted or mono or disubstituted by lower alkyl, lower alkoxy, halogen, hydroxy or trifluoromethyl; a pharmaceutically acceptable salt thereof.

4,435,408

DOPAMINERGIC STIMULATING AND ANTIANOXIC 4-SUBSTITUTED 2H-INDOLE-2-ONES

Lucien Nedelec, Le Raincy; Jacques Guillaume, Le Pre Saint Gervais, and Claude Dumont, Nogent sur Marne, all of France, assignors to Roussel Uclaf, Paris, France

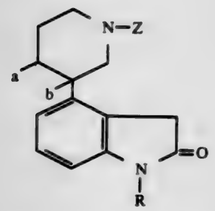
Filed Jul. 15, 1982, Ser. No. 398,576

Claims priority, application France, Jul. 24, 1981, 81 14429

Int. Cl.³ A61K *31/44, 31/445;* C07D *401/04*

U.S. Cl. 424—263 **15 Claims**

1. A compound selected from the group consisting of 2H-indole-2-ones of the formula



I

wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and aralkyl of 7 to 12 carbon atoms, a and b are both hydrogen or together form a carbon-carbon bond, Z is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, hydroxyalkyl of 2 to 8 carbon atoms, aryloxyalkyl of 7 to 12 carbon atoms, cycloalkylalkyl of 4 to 12 carbon atoms, alkenyl and alkynyl of 3 to 8 carbon atoms and aralkyl of 7 to 12 carbon atoms optionally substituted with at least one member of the group consisting of halogen, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms, —OH, —CF_3, —OCF_3, —NO_2 and —NH_2 and their non-toxic, pharmaceutically acceptable acid addition salts.

11. A method of inducing dopaminergic stimulating and antianoxic activity in warm-blooded animals comprising administering to warm-blooded animals a dopaminergic stimulating and antianoxically effective amount of at least one compound of claim 1.

4,435,409

METHOD OF STIMULATING PRODUCTION OF IGM ANTIBODIES

Mitchell J. Leibowitz, West Nyack, N.Y.; Ah S. Kong, Westfield, N.J.; Paula Sonnino-Goldman, Stamford, Conn., and Peter Wolf, Granite Springs, N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,160

Int. Cl.³ A61K *31/455*

U.S. Cl. 424—266 **6 Claims**

1. A method of stimulating production of IgM antibodies in a mammal in need of such IgM antibodies comprising: the administering to said mammal an effective amount of nifedipine to stimulate production of IgM antibodies.

4,435,410

3-[2-(3-ALKYL AND ALKENYL-4-PIPERIDYL)-ETHYL]-INDOLES FOR INHIBITING SEROTONIN UPTAKE AND FOR RELEASING SEROTONIN

Gerard R. Le Fur, Plessis Robinson, and Christian L. A. Renault, Taverny, both of France, assignors to Pharmindustrie, Gennevilliers, France

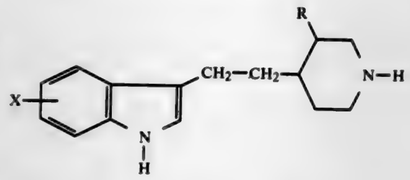
Filed May 3, 1982, Ser. No. 374,366

Claims priority, application France, May 22, 1981, 81 10219

Int. Cl.³ A61K *31/445;* C07D *401/06*

U.S. Cl. 424—267 **7 Claims**

1. A compound of the formula:



(II)

in which X represents hydrogen or halogen, and R represents alkyl having 1 to 3 carbon atoms or alkenyl having 2 to 3 carbon atoms.

7. A method of treating a mammal afflicted with depression or migraine conditions or to prevent the formation of arterial thrombi, which comprises administering to said mammal a therapeutically effective amount of a composition containing a compound according to claim 1 or a pharmaceutically acceptable salt thereof in a pharmaceutically acceptable carrier therefor.

4,435,411

COMBATING FUNGI WITH 1-PHENYL-2-(1,2,4-TRIAZOL-1-YL)-PROP-2-EN-1-ONES

Wolf Reiser; Hans-Ludwig Elbe, both of Wuppertal; Karl Büchel, Burscheid; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

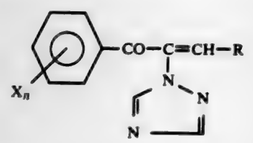
Filed Apr. 30, 1981, Ser. No. 259,304

Claims priority, application Fed. Rep. of Germany, May 19, 1980, 3019045

Int. Cl.³ A01N *43/64;* C07D *249/08;* C07F *1/08*

U.S. Cl. 424—269 **10 Claims**

1. A 1-phenyl-2(1,2,4-triazol-1-yl)-prop-2-en-1-one of the formula



in which

R is phenylacetylene,

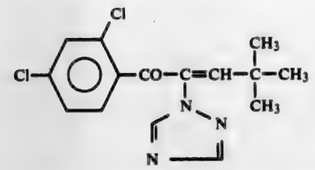
X is halogen, or phenyl or phenoxy either of which may optionally carry one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms and halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, and

n is 0, 1, 2 or 3,

or an addition product thereof with a physiologically acceptable acid or a metal salt.

5. A fungicidal composition comprising a fungicidally effective amount of a compound of addition product thereof according to claim 1 in admixture with a diluent.

8. 1-(2,4-Dichlorophenyl)-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-pent-2-en-1-one of the formula



or an addition product thereof with a physiologically acceptable acid or a metal salt.

9. A fungicidal composition comprising a fungicidally effective amount of a compound or addition product thereof according to claim 8 in admixture with a diluent.

4,435,412

5R,6S,8R-2-(1-METHYL-2-IMIDAZOLYLMETHYLTHIO)-6-(1-HYDROXYETHYL)PENEM-3-CARBOXYLIC ACID

Viyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair; Patrick A. Pinto, Mine Hill, and Richard W. Versace, Ringwood, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 445,295, Nov. 29, 1982. This application Jan. 17, 1983, Ser. No. 458,511

Int. Cl.³ C07D *501/36;* A61K *31/425*

U.S. Cl. 424—270 **15 Claims**

1. 5R,6S,8R-2-(1-methyl-2-imidazolylmethylthio)-6-(1-hydroxyethyl)penem-3-carboxylic acid and the pharmaceutically acceptable salts and esters thereof.

4,435,413

(5R-6S,8R)-6-(1-HYDROXYETHYL)-2-(2-GLYCYLAMINOETHYLTHIO)-PENEM-3-CARBOXYLIC ACID

Stuart W. McCombie, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Jan. 28, 1983, Ser. No. 461,845

Int. Cl.³ A61K *31/425;* C07D *499/00*

U.S. Cl. 424—270 **12 Claims**

1. (5R,6S,8R)-2-6-(1-hydroxyethyl)-2-(2-glycylaminoethylthio)penem-3-carboxylic acid and the pharmaceutically acceptable salts and esters thereof.

8. An antibacterially effective pharmaceutical composition comprising an antibacterial effective amount of a compound of claim 1 in admixture with a pharmaceutically acceptable carrier therefor.

4,435,414

INJECTABLE PENICILLIN COMPOSITION

Michael J. Greenway, Worthing, England, assignor to Beecham Group Limited, England

Continuation of Ser. No. 210,603, Nov. 26, 1980. This application Aug. 23, 1982, Ser. No. 410,328

Claims priority, application United Kingdom, Nov. 27, 1979, 7940833

Int. Cl.³ A61K *31/43, 31/74*

U.S. Cl. 424—271 **7 Claims**

1. A pharmaceutical composition, which on reconstitution with water yields an injectable solution, of enhanced solubility at higher injection strengths and lower temperatures, which comprises, in the respective weight ratio range of 10:1 to 1:5,

(a) sodium dicloxacillin, and

(b) polyethylene glycol or propylene glycol having a molecular weight in the range of 180–7000.

4,435,415

N-ARYL OXAZOLIDINONES, OXAZOLIDINETHIONES, PYRROLIDINONES, PYRROLIDINES AND THIAZOLIDINONES

Guy R. Bourgery, Colombes; Colette A. Douzon, Paris; Jean-Francois R. Ancher, Rueil-Malmaison; Alain P. Lacour, La Varenne; Patrick G. Guerret, Rueil-Malmaison; Michel Langlois, Buc, and Philippe L. Dostert, Le Vesinet, all of France, assignors to Delalande S.A., Courbevoie, France

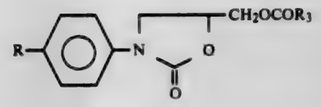
Division of Ser. No. 45,143, Jun. 4, 1979, Pat. No. 4,348,393. This application Jun. 16, 1982, Ser. No. 389,136

Claims priority, application France, Jun. 9, 1978, 78 17388; Aug. 17, 1978, 78 24024

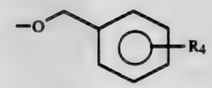
Int. Cl.³ A61K *31/42;* C07D *263/14, 263/24*

U.S. Cl. 424—272 **8 Claims**

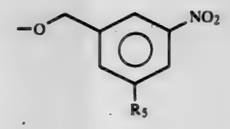
1. A compound having the formula



in which R_3 is selected from the group consisting of alkyl having 1 to 8 carbon atoms, cyclohexyl, phenyl, methoxymethyl and phenoxymethyl, and R is selected from the group consisting of n-butoxy, 3-methylbutoxy, cyclopentylmethoxy, cyclohexylmethoxy, 2-cyanoethoxy, cyanomethoxy,



in which R_4 is hydrogen, m—Cl, m—F, p—F, m—CN or m—NO_2, and



in which R_5 is Cl or CN.

4,435,416

FUNGICIDAL AND ALGICIDAL 1-METHYL-3,4-DIHALO-5-SUBSTITUTED THIO-, SULFOXYL-, OR SULFONYL-PYRAZOLES

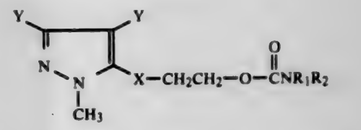
Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1982, Ser. No. 393,213

Int. Cl.³ A01N *43/56;* C07D *231/18*

U.S. Cl. 424—273 P **18 Claims**

1. A compound of the formula:



wherein Y is chloro or bromo; X is —S—, —SO—, or —SO_2—; and R_1 and R_2 are independently hydrogen, alkyl having from 1 to 8 carbon atoms, cycloalkyl having up to 6 carbon atoms, lower alkenyl of 3 to 6 carbon atoms, alkylene carbalkoxy having a total of 3 to 4 carbon atoms, or aryl or aralkyl having from 6 to 10 carbon atoms

optionally substituted with one or two substituents, each independently selected from the group consisting of halogen, nitro, cyano, lower alkyl having from 1 to 6 carbon atoms, lower alkoxy having from 1 to 6 carbon atoms, trihalo-substituted methyl and phenoxy.

7. A method for controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of the formula defined in claim 1.

4,435,417

ANTIINFLAMMATORY 3H-NAPHTHO[1,2-D]IMIDAZOLES

Emilio Toja, Milan; Amedeo Omodei-Sale', Voghera, and Domenica Selva, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

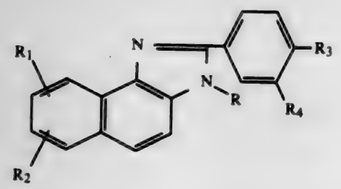
Continuation of Ser. No. 236,473, Feb. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,490, Dec. 17, 1979, abandoned. This application Jun. 24, 1982, Ser. No. 391,653

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.³ A61K *31/415;* **C07D** *235/18*

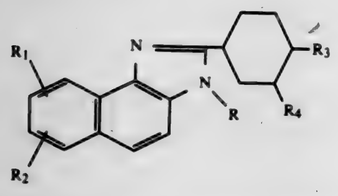
U.S. Cl. 424—273 B **15 Claims**

1. A 3H-naphtho[1,2-d]imidazole derivative having the following formula



wherein R stands for (C_{1-6})alkyl, (C_{3-6})alkenyl, (C_{3-6})alkynyl or (C_{3-7})cycloalkyl, R_1 and R_2 each independently may represent hydrogen, halogen (C_{1-4})alkyl, (C_{1-4})alkylthio, (C_{1-4})alkoxy or halo(C_{1-4})alkoxy, R_3 stands for hydrogen, methoxy, ethoxy or mono- or di-methylamino, and R_4 represents hydrogen or (C_{1-4})alkyl with the proviso that when simultaneously R stands for an ethyl radical, one of R_1 and R_2 is hydrogen and the other one is a methoxy group and R_4 is hydrogen, R_3 cannot be a dimethylamino group; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

13. A method for relieving antiinflammatory diseases in animals which comprises administering to an animal in need thereof an amount comprised between about 0.05 to about 10.00 g per day of a compound of formula I



wherein R, R_1, R_2, R_3, and R_4 are as defined in claim 1 or a salt therewith of a pharmaceutically acceptable acid.

4,435,418

5-PHENYLETHENYLBENZIMIDAZOLES

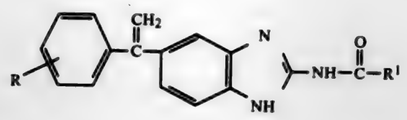
Alfred W. Chow, Radnor, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Dec. 13, 1982, Ser. No. 449,350

Int. Cl.³ A01N *43/52;* **C07D** *235/30, 235/32*

U.S. Cl. 424—273 B **14 Claims**

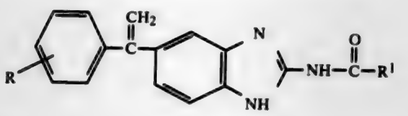
1. A chemical compound of the formula:



in which:

R is hydrogen, halo, methyl, methoxy or methylthio; and R^1 is lower alkyl of 1–4 carbons, cycloalkyl of 3–4 ring members or lower alkoxy of 1–4 carbons.

10. The method of producing anthelmintic activity in hosts infected with, or susceptible to, helminthic infections comprising administering orally to said hosts an anthelmintic, but non-toxic, quantity of a compound of the formula:



in which:

R is hydrogen, halo, methyl, methoxy or methylthio; and R^1 is lower alkyl of 1–4 carbons, cycloalkyl of 3–4 ring members or lower alkoxy of 1–4 carbons.

4,435,419

METHOD OF TREATING DEPRESSION USING AZABICYCLOHEXANES

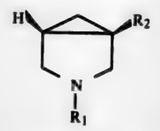
Joseph W. Epstein, Monroe; Arnold C. Osterberg, Pearl River, and Herbert J. Brabander, Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 279,366, Jul. 1, 1981, abandoned. This application May 10, 1982, Ser. No. 376,131

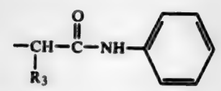
Int. Cl.³ A61K *31/40;* **C07D** *209/52*

U.S. Cl. 424—274 **24 Claims**

1. A compound selected from the group consisting of an optically active compound of the formula:



the mirror image isomer thereof, the racemic mixture of the optical isomers and the pharmacologically acceptable acid addition salts thereof wherein R_1 is hydrogen or a moiety of the formula:



wherein R_3 is alkyl$(C_1–C_3)$, R_2 is 3,4-methylenedioxyphenyl or a moiety of the formula:



wherein R_4 is chloro, bromo, alkanoyl$(C_2–C_4)$, alkylamino $(C_1–C_3)$, dialkylamino$(C_1–C_3)$, hydroxymethyl, benzyl or benzoyl with the proviso that when R_1 is hydrogen then R_4 may not be halogen.

4,435,420

ANTI-INFLAMMATORY AGENTS AND ANTIASTHMATIC AGENTS

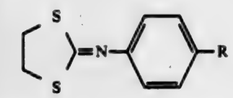
Boyd L. Harrison, and Niall S. Doherty, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals, Cincinnati, Ohio

Filed Apr. 12, 1982, Ser. No. 367,510

Int. Cl.³ A61K *31/385;* **C07C** *339/06*

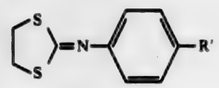
U.S. Cl. 424—277 **12 Claims**

1. A method of treating asthma which comprises administering to a patient in need thereof an effective antiasthmatic amount of a compound of the formula:



wherein R is alkyl of 1–10 carbon atoms or cycloalkyl of 5–7 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

9. A compound of the formula:



wherein R′ is alkyl of 6–8 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

4,435,421

BIOCIDAL SULFUR-CONTAINING BIS-IMINO CARBAMATE COMPOUNDS

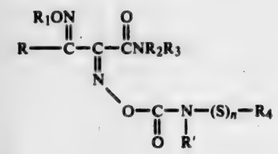
Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 3, 1978, Ser. No. 957,561

Int. Cl.³ A61K *31/385, 31/21, 31/335;* **C07C** *83/10*

U.S. Cl. 424—277 **56 Claims**

1. A compound of the formula:



wherein:

n=1 or 2;

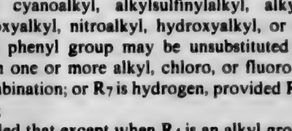
R, R′, R_1, R_2, and R_3 are individually alkyl groups of one to four carbon atoms;

R_4 is:

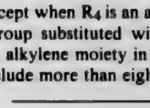
(a) $C_1–C_{18}$ alkyl, $C_3–C_8$ cycloalkyl, or dialkylamino group; or

(b) a phenyl group which may be unsubstituted or substituted with one or more alkyl, chloro, fluoro, cyano, nitro, alkoxy, trifluoromethyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxyalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl or dialkylamino groups; or

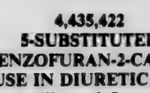
(c) a group of the formula:



A.



B.



C.

wherein:

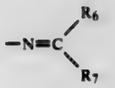
R_5 is:

(1) an alkyl, alkoxyalkyl, or phenylalkyl group; or

(2) a phenyl group which may be unsubstituted or substituted with one or more $C_1–C_{12}$ alkyl, chloro, fluoro, alkoxy, alkylthio, alkylthioalkyl, alkylsulfinyl, alkylsulfinylalkyl, alkylsulfonyl, alkylsulfonylalkyl, alkynyloxy, dialkylamino, alkoxyamino, formamidino, cyano, dioxolanyl or dithiolanyl groups in any combination; or

(3) a naphthyl or tetrahydronaphthyl, group all of which may be unsubstituted or substituted with one or more alkyl groups; or

(4) a group of the formula:



wherein:

R_6 is a chloro, alkyl, alkylthio, cyanoalkylthio, amidoalkylthio or cyano group; or R_6 is hydrogen provided R_7 is not hydrogen;

R_7 is an alkyl, alkylthio, alkoxycarbonyl aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkylthioalkyl, cyanoalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkoxyalkyl, nitroalkyl, hydroxyalkyl, or phenyl group, said phenyl group may be unsubstituted or substituted with one or more alkyl, chloro, or fluoro groups in any combination; or R_7 is hydrogen, provided R_6 is not hydrogen;

provided that except when R_4 is an alkyl group or when R_5 is a phenyl group substituted with an alkyl group, no single alkyl or alkylene moiety in any R_4, R_5, R_6, or R_7 group may include more than eight carbon atoms.

4,435,422

5-SUBSTITUTED 2,3-DIHYDROBENZOFURAN-2-CARBOXYLIC ACIDS AND THEIR USE IN DIURETIC COMPOSITIONS

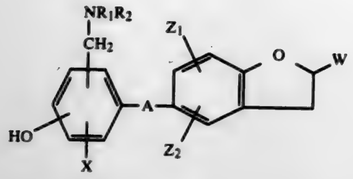
Cheuk M. Lee, Libertyville, and James A. Parks, North Chicago, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 15, 1982, Ser. No. 418,321

Int. Cl.³ A61K *31/34;* **C07D** *307/85*

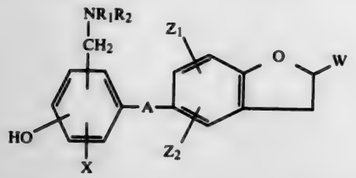
U.S. Cl. 424—285 **31 Claims**

1. A compound of the formula



wherein R_1 and R_2 independently of one another denote hydrogen or loweralkyl; A is CO, CH_2, O, S, SO or CHOH; X is hydrogen, halo, loweralkyl, or $-CH_2NR_1R_2$ wherein R_1 and R_2 are as defined above; W is COOR wherein R is hydrogen or alkyl of 1-10 carbon atoms, CH_2OH, $CONR_1R_2$ or $CH_2NR_1R_2$ wherein R_1 and R_2 are as defined above; and Z_1 and Z_2 independently of one another denote hydrogen, halo or loweralkyl; and pharmaceutically acceptable salts thereof.

22. A method of increasing the urinary excretion of a patient comprising administering to a patient in need of such treatment a therapeutically effective amount of a diuretic agent of the formula



wherein R_1 and R_2 independently of one another denote hydrogen or loweralkyl; A is CO, CH_2, O, S, SO or CHOH; X is hydrogen, halo, loweralkyl, or $-CH_2NR_1R_2$ wherein R_1 and R_2 are as defined above; W is COOR wherein R is hydrogen or alkyl of 1-10 carbon atoms, CH_2OH, $CONR_1R_2$ or $CH_2NR_1R_2$ wherein R_1 and R_2 are as defined above; and Z_1 and Z_2 independently of one another denote hydrogen, halo or loweralkyl; and pharmaceutically acceptable salts thereof.

4,435,423

ANTI-ULCER COMPOSITION COMPRISING TERPENOID CONTAINING TWO FUNCTIONAL GROUPS AND METHOD OF TREATING ULCERS

Akio Sato, Yatabe; Kenji Nakajima, Sakuramura; Yoshimasa Takahara, Narashino; Shizumasa Kijima, Niiza; Noriaki Kuwana, Aichi; Shinya Abe, Kawagoe, and Kouzi Yamada, Tokyo, all of Japan, assignors to Eisai Co., Ltd. and General Director of the Agency of Industrial Science and Technology, Seiichi Ishizaka, both of Tokyo, Japan

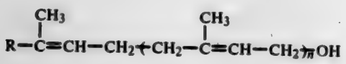
Division of Ser. No. 221,163, Dec. 29, 1980, Pat. No. 4,338,251. This application Mar. 22, 1982, Ser. No. 360,722

Claims priority, application Japan, Jan. 12, 1980, 55-2395

Int. Cl.³ A61K *31/20, 31/11, 31/045*

U.S. Cl. 424—318 **9 Claims**

1. A method for treatment of ulcers comprising administering to a subject requiring such treatment a therapeutically effective amount of a pharmaceutical composition containing an effective anti-ulcer amount of a compound having the formula:



in which n is an integer of from 1 to 5, and R is hydroxymethyl, formyl or carboxyl, and a pharmacologically acceptable carrier.

4,435,424

PROCESS FOR IMPROVING VIGOR AND MOOD IN NORMAL HUMAN PATIENTS

Richard J. Wurtman, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 169,001, Jul. 15, 1980, abandoned, which is a continuation of Ser. No. 66,158, Aug. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 898,740, Apr. 24, 1978, abandoned. This application Aug. 31, 1981, Ser. No. 297,623

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **1 Claim**

1. The process for improving vigor in a human patient who lacks vigor associated with a deficiency of catecholamines in synapses which comprises administering to the patient a neutral amino acid containing tyrosine in an amount effective to regulate blood plasma levels of tyrosine to form corresponding amounts of catecholamines released in synapses in the brain.

4,435,425

FLUORINATED DIAMINOBUTANE DERIVATIVES

Albert Sjoerdsma, Cincinnati, Ohio; Philippe Bey, Strasbourg; Michel Jung, Illkirch-Graffenstaden, both of France; Fritz Gerhart, Kehl-Leutesheim, Fed. Rep. of Germany, and Daniel Schirlin, Hoenhein, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

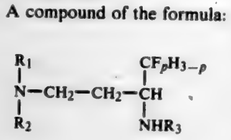
PCT No. PCT/US81/01130, § 371 Date Apr. 9, 1982, § 102(e) Date Apr. 9, 1982

PCT Filed Aug. 21, 1981, Ser. No. 373,600

Int. Cl.³ A61K *31/13;* C07C *87/22*

U.S. Cl. 424—325 **13 Claims**

1. A compound of the formula:



wherein:

R_1 is hydrogen, C_1-C_6alkyl or phenyl-(C_1-C_4alkyl);

R_2 is hydrogen, C_1-C_6alkyl, phenyl-(C_1-C_4alkyl), or R_4, where R_4 is as defined below;

R_3 is hydrogen or, except when R_2 is R_4, R_4, where R_4 is as defined below;

each R_4, independently, is C_2-C_5alkylcarbonyl, phenylcarbonyl, phenyl-(C_1-C_4alkyl)carbonyl, or an aminocarboxylic acid residue derived by removal of an hydroxy group from the carboxy moiety of glycine or an L-aminocarboxylic acid of the formula $HOCOCH(R_9)NH_2$ or $HO—CO(CH_2)_nCH(NH_2)CO_2H$ wherein R_9 is C_1-C_4alkyl, aminopropyl, aminobutyl, benzyl, or p-hydroxybenzyl and n is 1 or 2; and

p is 1 or 2,

or a pharmaceutically acceptable acid addition salt thereof.

12. A pharmaceutical composition for inhibiting GABA-T comprising a GABA-T inhibiting effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier.

4,435,426

ETHERS OF PHENOL ACTIVE ON THE CARDIOVASCULAR SYSTEM, PROCESS FOR PREPARING SAME AND USE THEREOF IN DRUGS

Henri Demarne, and Jean Wagnon, both of Montpellier, France, assignors to Societe Anonyme dite: Sanofi, France

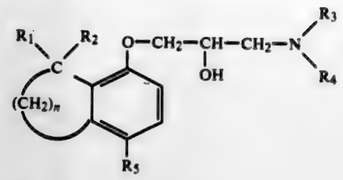
Filed May 25, 1982, Ser. No. 381,796

Claims priority, application France, Jun. 5, 1981, 81 11242

Int. Cl.³ C07C *97/10;* A61K *31/165*

U.S. Cl. 424—324 **22 Claims**

1. Novel products, responding to general formula:



(I)

in which:

R_1 and R_2 taken together represent an atom of oxygen =O or R_1 represents hydrogen and R_2 represents an OH radical,

R_3 designates an atom of hydrogen or a straight or branched alkyl radical having from 1 to 6 atoms of carbon,

R_4 represents a straight or branched alkyl radical having from 1 to 6 atoms of carbon, or an alkynyl group having 2 to 6 atoms of carbon,

R_5 designates an atom of hydrogen, an alkyl group having from 1 to 4 atoms of carbon or an acylamine group,

n=3 or 4;

as well as the mineral acid or organic acid addition salts of said products.

4,435,427

STABLE INJECTABLE β-CAROTENE MICELLAR SOLUTIONS AND THEIR PREPARATION

Peter P. Hoppe, Wachenheim; Joachim U. Schneider, Weisenheim; Bernhard Schulz, Schwetzingen, and Hubert Tiefenbacher, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,124

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048000

Int. Cl.³ A61K *31/015*

U.S. Cl. 424—356 **10 Claims**

1. A process for the preparation of a β-carotene micellar solution, which comprises: forming a melt having a temperature of from 160° to 180° C. of a mixture of β-carotene, an antioxidant for β-carotene and a non-ionic and water-soluble emulsifier having an HLB value of from 12 to 16 and which is capable of forming a homogeneous melt with said β-carotene, the amount of β-carotene in the melt being from 20 to 30% by weight, based on the weight of the emulsifier;

adding water to the mixture to cool the melt rapidly to a temperature below 100° C.; and thereafter,

adding additional water to the chilled mixture to form a clear micellar solution having a concentration of β-carotene of from 3 to 6% by weight.

4,435,428

USE IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFF OR CHEWING GUM WITH THE METHYL CARBONATE OF 1-HYDROXYMETHYL-2-HEPTANOYL CYCLOPROPANE

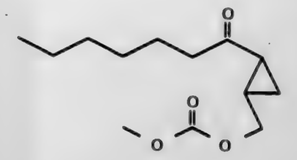
Richard M. Boden, Ocean; Marie R. Hanna, Hazlet, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 23, 1982, Ser. No. 422,486

Int. Cl.³ A23L *1/226, 1/235*

U.S. Cl. 426—3 **1 Claim**

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of foodstuffs and chewing gums comprising the step of adding to a foodstuff or chewing gum from 0.02 parts per million up to about 50 parts per million based on the total composition of the compound having the structure:



4,435,429

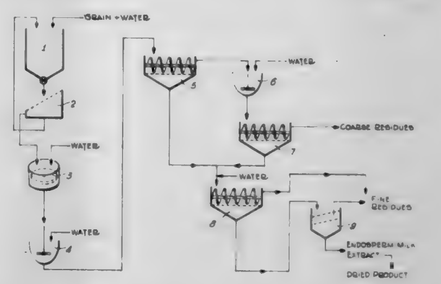
PROCESSING AQUEOUS TREATED CEREALS

Vernon D. Burrows; Royce G. Fulcher, both of Ottawa, and David Paton, Orleans, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Feb. 16, 1982, Ser. No. 349,424

Int. Cl.³ A23B *9/00;* A23L *1/10*

U.S. Cl. 426—18 **14 Claims**



1. A process for treating cereal grains to separate endospermic from non-endospermic tissues thereof, said process comprising:

(a) soaking the grains in an aqueous medium having a pH in the range 3.0–7.0 at a temperature in the range 40.0°–70.0° C. until the grains have absorbed said liquid medium in an amount at least equivalent to the weight of the grain, to substantially liquefy said endosperm portion by the action of indigenous cell wall degrading enzymes;

(b) applying pressure on the soaked grains so as to split each grain and release substantially all of the liquified endosperm; and

(c) separating liquified endosperm from non-endospermic tissues.

4,435,430

ENZYME-SACCHARIFIED ALL NATURAL, READY-TO-EAT CEREAL FROM WHOLE CEREAL GRAIN

Charles V. Fulger, Millwood, and Ernest K. Gum, Granit Springs, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 20, 1983, Ser. No. 459,422

Int. Cl.³ A23L *1/164*

U.S. Cl. 426—18 **28 Claims**

1. A process for preparing an enzyme-saccharified, ready-to-eat cereal derived from a whole cereal grain comprising:

(a) milling and separating a whole cereal grain to produce a germ fraction, a bran fraction and an endosperm fraction;

(b) processing the germ fraction by:

(i) toasting the germ fraction, and

(ii) grinding the toasted germ to a particle size of from 0.25 to 2.0 millimeters;

(c) treating the bran fraction to improve its functionality by

milling said bran fraction to a particle size of from 5 to 100 microns;

(d) processing the endosperm fraction by:

(i) milling to a practicle size less than 2 millimeters,

(ii) forming a slurry containing from 15 to 60% by weight of said milled endosperm,

(iii) cooking the milled endosperm until substantially all the starch is gelatinized, and

(iv) enzymatically hydrolyzing from 15 to 75% by weight of said endosperm to form soluble saccharides such that the ready-to-eat cereal contains from 7.5 parts sucrose-equivalent sweetness up to 50 parts sucrose-equivalent sweetness;

(e) recombing the ground, toasted germ of step (b)(ii), the milled bran of step (c) and the enzymatically hydrolyzed endosperm of step (d)(iv) to form a cereal dough containing whole grain levels of protein, fiber and digestible carbohydrates;

(f) obtaining a ready-to-eat cereal from said cereal dough.

4,435,431

ELIMINATION OF RANCID ODOR IN FERMENTED MILK PRODUCTS

Shin-ichiro Akatsuka, Saitama, Japan, assignor to Eisai Company, Limited, Tokyo, Japan

Filed Feb. 26, 1982, Ser. No. 352,871

Claims priority, application Japan, Mar. 6, 1981, 56-31204

Int. Cl.³ A23C *9/12, 19/00*

U.S. Cl. 426—36 **4 Claims**

1. A process for preventing fermented milk products from becoming rancid, which comprises adding an effective amount of a mixture of a yeast decomposed product and an albumen decomposed product to a fermented milk product, wherein the decomposed yeast and albumin are each present in the mixture in amounts sufficient to substantially eliminate the rancid odor ordinarily generated in said fermented product.

4,435,432

PROCESS FOR THE PRODUCTION OF STABLE CURDLED MILK PRODUCTS

Hans J. Klupsch, Hamm, Fed. Rep. of Germany, assignor to EVOG - Etablissement für Verwaltung und Organisation, Liechtenstein

Filed May 19, 1982, Ser. No. 379,894

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120505

Int. Cl.³ A23C *9/12, 21/06;* **C12N** *1/20;* **C12R** *1/01*

U.S. Cl. 426—43 **8 Claims**

1. A process for the production of semi-solid curdled milk products, comprising inoculating and fermenting raw milk material with a bacterial strain of *Bifidobacterium longum* CK1 1979 (DSM 2054) under conditions suitable for the formation of said semi-solid curdled milk product.

4,435,433

METHOD FOR INHIBITING NITROSAMINE FORMATION AND ELIMINATING SURFACE CHARRING DURING MEAT COOKING

Richard F. Theiler, Scottsdale, Ariz., assignor to Armour Food Company, Phoenix, Ariz.

Filed Jun. 18, 1982, Ser. No. 389,736

Int. Cl.³ A23B *4/02, 4/14*

U.S. Cl. 426—266 **23 Claims**

1. A method for inhibiting the formation of nitrosamines and substantially eliminating surface charring when cooking a nitrite-impregnated meat product, comprising the step of introducing a reducing sugar alkylated at the C-1 position into said meat product prior to said step of cooking.

4,435,434

PACKAGING SYSTEM FOR FULLY BAKED, UNFILLED PASTRY SHELLS

John A. Caporaso, Ringwood, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 344,290, Feb. 1, 1982, Pat. No. 4,399,157. This application Aug. 15, 1983, Ser. No. 523,627

Int. Cl.³ B65D *85/36*

U.S. Cl. 426—108 **8 Claims**



1. A packaging system for protecting the freshness and structural integrity of a plurality of fully-baked unfilled pastry shells during shipping and storage, the system comprising:

at least one vertical stack of said fully-baked unfilled pastry shells, each individual shell being held in a conforming baking pan which is of frusto-conical construction having a supporting base member and an upper open surface, each individual shell and pan wrapped with a continuous, substantially moisture-impermeable high polymer film substantially conforming to the outer surface dimensions of said baking pan and stretched across the upper, open surface of the pastry shell so as to provide an enclosed air space substantially equal to the filling volume of the pastry shell;

said stack being arranged such that the wrapped base member of individual baking pans in the stack rests entirely upon said high polymer film stretched across the upper open surface of a shell and pan therebelow;

said high polymer film possessing sufficient strength and resiliency so as to resist breakage when the wrapped shells are stacked in said vertical stacked arrangement and such that the arrangement of wrapped shells in said vertical stack and conditions encountered in handling and shipping will not result in the portion of the film stretched across the upper open surface of any of the pastry shells being deformed or depressed to the point such that any of the individual shell and pan combinations in the vertical stack rest together in a manner whereby the wrapped base member of a baking pan actually rests against the inner surface of a film-wrapped pastry shell below it;

a high polymer film bag surrounding the stack of pastry shells; and

a corrugated shipping container enclosing the high polymer film and the stack of pastry shells.

4,435,435

RICE PASTA COMPOSITION

Jau Y. Hsu, Brookfield, Conn., assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 7, 1981, Ser. No. 327,913

Int. Cl.³ A23L *1/16*

U.S. Cl. 426—557 **12 Claims**

1. A composition comprising uncooked rice flour and, based on the weight of the uncooked rice flour, from 0 to 40% by weight of precooked rice flour, from 0.1 to 4% by weight of sodium or potassium alginate or mixture thereof and from 0.1 to 4% by weight of propylene glycol alginate wherein when the composition contains less than 5% by weight of precooked rice flour, each of the said alginates are present in an amount of at least 1% by weight.

4,435,436

ALKALIZED COCOA POWDERS AND FOODSTUFFS CONTAINING SUCH POWDERS

Johannes L. Terink, and Maurits J. Brandon, both of Zaandam, Netherlands, assignors to Cacaofabrik DeZaan B.V., Koog aan de Zaan, Netherlands

Filed Mar. 16, 1982, Ser. No. 358,763

Claims priority, application Netherlands, May 14, 1981, 8102377

Int. Cl.³ A23G *1/00, 1/02*

U.S. Cl. 426—631 **25 Claims**

1. An alkalized cocoa powder having a pH of 7.5 or less; a ratio pH: alkalinity of the ash below 0.046; color coordinates L between 9.0 and 14.0, a between 4.0 and 8.0, and b between 2.0 and 6.0; in which neither more nor other acid radicals are present than those by nature present in fermented cocoa.

4,435,437

AROMATIC CITRUS OIL CONCENTRATE WHICH IS STABLE IN STORAGE

Erich Ziegler, Draisendorfer Strasse 143, D-8551 Aufsess, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,893

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112380

Int. Cl.³ A23L *1/221, 1/28*

U.S. Cl. 426—651 **6 Claims**

1. Concentrate of natural citrus oil which retains its aroma and is stable in storage, comprising:

(a) 10 to 90 percent by weight citrus peel oil concentrate produced from cold-pressed citrus peel oil, the peel oil concentrate being obtained by subjecting the cold-pressed citrus peel oil to adsorption at a solid separating agent which adsorbs polar organic substances to thereby form an adsorbed fraction at the solid separating agent, eluting the adsorbed fraction with a polar organic eluant to form an eluate containing the adsorbed fraction, recovering the eluate, and separating the adsorbed fraction from the eluate and

(b) the remainder essence oil concentrate.

4,435,438

SOY ISOLATE SUITABLE FOR USE IN IMITATION CHEESE

William F. Lehnhardt; Charles E. Streaty, Jr., both of Decatur; Walter C. Yackel, Jr., Oreana; Ho S. Yang, and Daniel K. Tang, both of Decatur, all of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 388,864, Dec. 29, 1980, Pat. No. 4,349,576. This application Jun. 16, 1982, Ser. No. 388,864

Int. Cl.³ A23J *1/14;* **A23C** *20/00*

U.S. Cl. 426—656 **9 Claims**

1. A method for preparing a soy protein isolate suitable for use as a replacement of caseinate in imitation cheese which comprises:

(a) preparing a slurry of a defatted soybean material in water;

(b) extracting the water-soluble protein from the slurry in the presence of sulfurous ions at a temperature of about 25° to 35° C. and a pH of about 7.0 to 7.5;

(c) clarifying the extract to remove insolubles;

(d) adding acid to the clarified extract to adjust its pH to about 4.2 to 4.6 to precipitate the protein;

(e) separating the precipitated protein from the other components of the clarified extract to recover at least a major weight portion of the water-soluble protein in the clarified extract;

(f) washing the separated protein to remove substantially all of the pH 4.2 to 4.6 water-soluble components therefrom;

(g) dissolving and washed protein in water at a pH of about 7.0 to 7.5;

(h) heating the protein solution at a temperature of at least 65° C. for a period of time sufficient to impart a melt value of at least 25 cm^2 to the protein; and

(i) recovering the soy protein isolate from the solution.

4,435,439

FROZEN DESSERT

John D. Morris, 203 Buckingham Rd., Pittsburgh, Pa. 15215

Filed Jul. 7, 1982, Ser. No. 395,999

Int. Cl.³ A23G *9/02*

U.S. Cl. 426—565 **17 Claims**

1. A method for the preparation of a frozen dessert which comprises:

(a) preparing an initial mix containing the following components:

Component	Amount in Weight %
Non Fat Milk Solids	10 to 13.5
Sweetening Agent	10.5 to 13
Casein	0 to 1.10
Other solid components selected from the group consisting of stabilizers, emulsifiers, corn syrup solids, calcium salts, magnesium salts and microcrystalline cellulose	1.5 to 2.25
Water	to 100%

(b) pasteurizing the initial mix at a minimum temperature of 165° F. for a minimum time period of 30 minutes to obtain an initial mix having a viscosity at a temperature of 165° F. immediately after pasteurization in the range of about 18 to 31 seconds as measured by a Zahn cup viscosity meter with B tip;

(c) cooling the pasteurized initial mix to a temperature of not greater than 40° F.;

(d) blending the pasteurized initial mix with fruit juice concentrate to obtain a final blended composition having a viscosity at a composition temperature of 50° F. in the range of about 700 to 1400 cps as measured by a Brookfield viscometer with spindle No. 3 at 60 rpm; and

(e) freezing the final blended composition to obtain a frozen dessert.

4,435,440

SWEETENERS

Leslie Hough, Wimbledon; Shashikant P. Phadnis, Talbot Square, Riaz A. Khan, Sonning, all of England, assignors to Tate & Lyle Limited, England

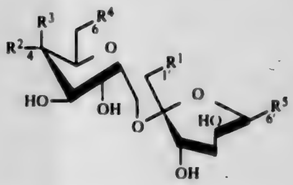
Filed Dec. 30, 1976, Ser. No. 755,661

Claims priority, application United Kingdom, Jan. 8, 1976, 616/76; May 12, 1976, 19570/76

Int. Cl.³ A23L *1/09*

U.S. Cl. 426—658 **40 Claims**

1. A method of sweetening an ingestible product or oral composition, comprising incorporating therein a compound of the general formula (I)



(I)

in which

R^1 represents a hydroxy group or a chlorine atom;

R^2 and R^3 respectively represent a hydroxy group and a

hydrogen atom, a chlorine atom and a hydrogen atom, or a hydrogen atom and a chlorine atom, the 4-position being in the D-configuration;

R^4 represents a hydroxy group; or, if at least two of R^1, R^2, R^3 and R^5 represent chlorine atoms, R^4 represents a hydroxy group or a chlorine atom; and

R^5 represents a hydroxy group or a chlorine atom;

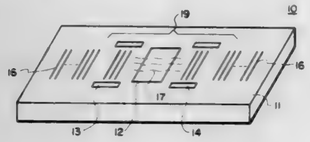
provided that at least one of R^1, R^2, and R^3 and represents a chlorine atom; in a sweetening amount.

4,435,441

METHOD OF FREQUENCY TRIMMING SURFACE ACOUSTIC WAVE DEVICES

Elio Mariani, Hamilton Square, and Arthur Ballato, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1982, Ser. No. 454,806
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—10 **9 Claims**



1. A method of adjusting the frequency of a piezoelectric device, having a substrate containing an active resonator element with an acoustic path, comprising the steps of:

applying a low out-gassing polymer to the substrate of the device;

partially curing the device;

sealing the device; and

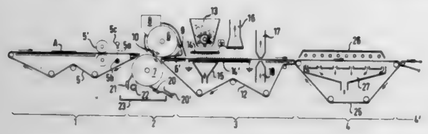
energizing the polymer.

4,435,442

METHOD AND APPARATUS FOR REINFORCING FACE FABRIC MATERIALS FOR GARMENTS

Josef Hefele, Gräfelfing, Fed. Rep. of Germany, assignor to Kufner Textilwerke KG, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,656
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014656
Int. Cl.³ B05D *1/06, 1/14*
U.S. Cl. 427—14.1 **24 Claims**



1. A method of reinforcing a face fabric material for a garment by a layer of flocking on the rear side of the face fabric to eliminate the need for a fixing lining for the garment, comprising the steps of imprinting the back of the material with an aqueous cross-linkable dispersion paste in a grid-like manner by an intaglio printing process, applying flock to the dispersion paste and curing by heat treatment, characterized in that:

(a) the printing step is performed with a flock binding dispersion paste on fabric cuttings:

(b) the flock is applied to the dispersion paste electrostatically;

(c) the aqueous dispersion paste is pre-stabilized by at least one technique selected from thermal coagulation and pre-drying: and

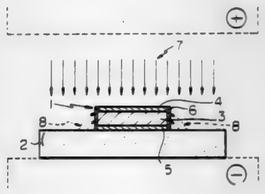
(d) a further operating stage in which the step of cross-linking the dispersion paste is carried out with a plurality of cuttings positioned to form a stack in a heated chamber at 90° to 140° C.

4,435,443

METHOD FOR FORMING A PROTECTING FILM ON SIDE WALLS OF A SEMICONDUCTOR DEVICE

Hajime Imai, Tokyo; Masahiro Morimoto, Yokohama, and Takao Fujiwara, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 223,152, Jan. 7, 1981, Pat. No. 4,356,210, which is a continuation of Ser. No. 62,415, Jul. 30, 1979, abandoned. This application Jun. 18, 1982, Ser. No. 389,916
Claims priority, application Japan, Jul. 29, 1978, 53-92777; Dec. 1, 1978, 53-148838
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ B05D *3/06*; C23C *17/00*
U.S. Cl. 427—38 **23 Claims**



1. A method for forming a protecting film on the side walls of a semiconductor device comprising the steps of:

forming a plurality of electrodes on at least one surface of a semiconductor substrate;

cleaving said substrate into a plurality of portions, each said portion having at least one of said electrodes;

placing said substrate portions on the surface of a substrate target made of a protecting film material so that said side walls are oriented essentially perpendicularly to said substrate target;

placing said substrate target with each said substrate portion in an atmosphere including energetic particles; and

impinging said energetic particles against said substrate target, so that particles of said protecting film material are sputtered from said substrate target and deposited on said side walls of each said substrate portion to form said protecting film, while simultaneously, said energetic particles sputter-etch the exposed ones of said electrodes and the exposed portions of said semiconductor substrate surface.

4,435,444

METHOD OF MAKING ULTRA-MICROCRYSTALLITE SILICON CARBIDE PRODUCT

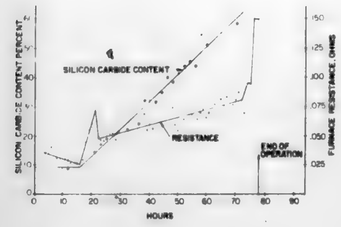
William Goldberger, and A. K. Reed, both of Chicago, Ill., assignors to Superior Graphite Co., Chicago, Ill.

Division of Ser. No. 319,976, Nov. 10, 1981. This application Sep. 1, 1982, Ser. No. 413,613
Int. Cl.³ B05D *3/14*
U.S. Cl. 427—49 **22 Claims**

1. A method of producing a silicon carbide and carbon product comprising the steps of:

mixing a substantially greater percentage of additional carbonaceous material in particulate form with a substantially lesser percentage of silicon dioxide to form a first reaction mixture;

fluidizing in an inert gaseous medium and providing electrical current to the mixture, with the electrical current sufficient to render a temperature sufficient to react the silicon dioxide with the carbonaceous material but insufficient to decompose the formed silicon carbide and for a time sufficient to react substantially all of the silicon dioxide; and



EFFECT OF SILICON CARBIDE CONTENT ON FURNACE RESISTANCE

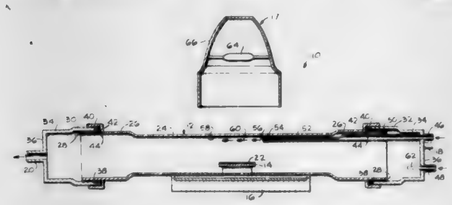
successively repeating the above steps until the electrical resistance of the reacted mixture rises asymptotically.

4,435,445

PHOTO-ASSISTED CVD

David D. Allred, Troy; Lee Walter, Bloomfield Hills; Jaime M. Reyes, Birmingham, and Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 13, 1982, Ser. No. 377,738
Int. Cl.³ C23C *13/00*
U.S. Cl. 427—54.1 **7 Claims**



1. A process for making an amorphous silicon and germanium alloy film comprising:

providing a gas comprising silane and germane in a deposition environment containing the substrate;

heating the substrate below the temperature required for pyrolysis of the silane and germane;

irradiating the silane and germane with radiation below an energy level required to photochemically decompose the gas; and

the combination of heat and radiation causing deposition of an amorphous silicon and germanium alloy film on the substrate.

4,435,446

EDGE SEAL WITH POLYSILICON IN LOCOS PROCESS

Alan D. Marston, Los Altos, and Lenin Anne, Cupertino, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 15, 1982, Ser. No. 441,593
Int. Cl.³ H01L *21/76*
U.S. Cl. 427—93 **5 Claims**

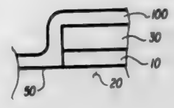
1. In a method for producing a semiconductor structure, the steps comprising:

forming a covering layer over a semiconductor substrate;

removing portions of the covering layer to expose desired areas on the substrate;

depositing a layer of polysilicon over the entire preceding structure;

anisotropically etching the polysilicon layer to remove the polysilicon in the plane parallel to the semiconductor substrate; and



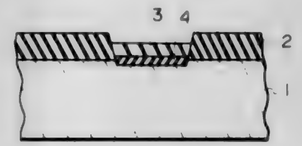
oxidizing the remaining polysilicon and the exposed areas of the semiconductor substrate forming a field oxide layer whereby a bird's beak free structure is produced.

4,435,447

METHOD FOR FORMING AN INSULATING FILM ON A SEMICONDUCTOR SUBSTRATE SURFACE

Takashi Ito, Kawasaki, and Takao Nozaki, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 105,094, Dec. 19, 1979, abandoned. This application Nov. 18, 1981, Ser. No. 322,718
Claims priority, application Japan, Dec. 26, 1978, 53-163155
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—94 **9 Claims**



1. A method for forming an insulating film having stable electrical properties and high density and which is suitable for a gate insulating film, by direct thermal nitridation of a surface portion of a silicon semiconductor substrate, comprising

selecting said substrate to have a concentration of oxygen of not more than $10^{18}/cm^3$ at least in a surface layer of said substrate of at least 10 microns depth at the top of which said direct nitridation is to occur, and

subjecting said substrate to a nitridizing gas atmosphere comprising nitrogen or a nitrogen compound, so as to convert the top portion of said substrate to said insulating film by direct thermal nitridation.

4,435,448

METHOD FOR MANUFACTURING BABBITTED BEARINGS

James R. Nolt, Jr., York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 21, 1983, Ser. No. 487,253
Int. Cl.³ B05D *1/36, 3/12*; C23C *1/04*
U.S. Cl. 427—234 **10 Claims**

1. A method for lining an inner surface of a bearing shell with a babbitt metal comprising:

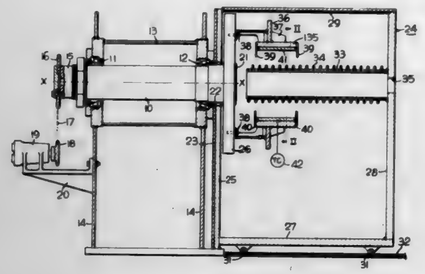
covering said surface with a flux;

placing a solid babbitt metal on said covered surface;

rotating said shell about an axis coaxial with a cylindrical axis of said inner surface;

heating said babbitt metal and said flux to a temperature sufficient to melt said metal and flux and rotating said shell

at a rotational velocity sufficient to urge any impurities at said surface to migrate toward said axis of rotation;



cooling said shell until said babbitt metal solidifies with said migrated impurities at a radially inner surface of said babbitt metal.

4,435,449

TREATMENT OF MINIMAL BRAIN DYSFUNCTION (MBD)

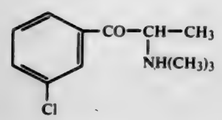
Warren C. Stern, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 263,717, May 14, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,147

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **10 Claims**

1. A method of treating minimal brain dysfunction in a human suffering from same, which comprises administering to said human an effective non-toxic minimal brain dysfunction amount of a compound of the formula (I)



(I)

or a pharmaceutically acceptable acid addition salt thereof.

4,435,450

METHOD FOR APPLYING ABRASION RESISTANT THIN POLYURETHANE COATINGS

Charles R. Coleman, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 2, 1982, Ser. No. 394,556

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **10 Claims**

1. A method for applying an abrasion resistant polyurethane coating onto a surface of a substrate while minimizing volatilization of free isocyanate comprising the steps of:

a. reacting an aliphatic diisocyanate with excess hydroxy-terminated diol to form a linear hydroxy-terminated prepolymer;

b. adding to said prepolymer a triisocyanate crosslinking agent having a molecular weight greater than 500;

c. applying said prepolymer and triisocyanate mixture in a solvent to the surface of the substrate by contacting said surface with said solution in a continuous liquid phase;

d. evaporating said solvent; and

e. reacting said prepolymer and triisocyanate to form a crosslinked polyurethane coating.

4,435,451

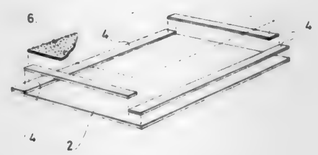
FLOOR MATS OF THE WASHABLE, DIRT ADSORBING TYPE

Robert Neubert, Hornslet, Denmark, assignor to Clean-Tex A/S, Morke, Denmark

Filed Aug. 17, 1981, Ser. No. 293,088

Int. Cl.³ A47G *27/04*

U.S. Cl. 428—15 **2 Claims**



1. A method of producing a washable, dust absorbing mat having a rubber backing, a nap of a soft yarn material on a top side of said rubber backing and a nap-free frame area along the edges of the mat, comprising the steps of preparing a pre-assembly consisting of a backing member of a "black" non-colorable rubber, a frame portion of a colored rubber or rubber-like material placed in contact with at least a top side edge area of the backing member, and an uppermost nap sheet extending outwardly to beyond the inner edge of the frame portion on a top side thereof, and subjecting this pre-assembly to heat and pressure in a vulcanization press so as to form said pre-assembly into a single unitary mat structure.

4,435,452

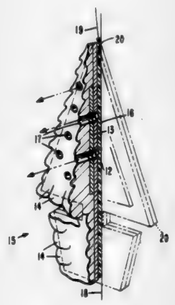
LIL GOLDEN PINE NOVELTY DISPLAY DEVICE

Ruben R. Hernandez, and Freda M. Hernandez, both of 156 McKinney Ave., Pacifica, Calif. 94044

Filed Jan. 31, 1983, Ser. No. 433,289

Int. Cl.³ A47G *33/06*; B44C *5/04*

U.S. Cl. 428—17 **1 Claim**



1. A novelty display device, comprising, in combination, a plurality of flat, variously-shaped panels glued one flat side upon another, forming a three dimensional contoured base, and a plurality of pine cone scales glued to the front side of said base; a gold paint coating being applied on the front of said pine cone scales; a flat sheet of Lucite being adhered to the rear side of said base, said Lucite sheet being contoured smaller than said base, and a plurality of holes drilled from the front side of said device, through said base and into the front side of said Lucite forming a roughened surface in said Lucite drilled-out portions of said holes, whereby exterior light rays upon an edge of said Lucite sheet illuminate said drilled-out, roughened Lucite surface.

4,435,453

SATURATED PREFORM AND METHOD FOR PREPARATION THEREOF

Wolf R. Vieth, 19 Partridge Run, Belle Meade, N.J. 08502, and Leonard B. Ryder, 5 Sharon Dr., Whippany, N.J. 07981

Filed Jul. 19, 1982, Ser. No. 399,824

Int. Cl.³ B65D *87/00, 89/00*; B32B *9/04*

U.S. Cl. 428—35 **9 Claims**

1. Biaxially oriented hollow thermoplastic article having walls which are saturated with a dissolved presaturant gas selected from the group consisting of carbon dioxide, dichlorodifluoromethane, and oxygen.

4,435,454

RECOVERABLE ARTICLE

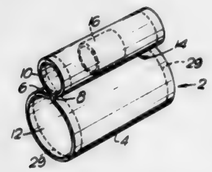
Regis Flot, Eragny, and Michel Zoppi, Creteil, both of France, assignors to Raychem Pontoise S. A., France

Filed Apr. 1, 1982, Ser. No. 364,267

Claims priority, application United Kingdom, Apr. 8, 1981, 8111059

Int. Cl.³ B32B *7/14*

U.S. Cl. 428—36 **18 Claims**



1. A recoverable article in which spaced-apart portions thereof are temporarily secured together to form at least one compartment in the article, the article being recoverable by heat and being arranged such that forces produced therein on recovery about a substrate overcome forces securing said portions together.

4,435,455

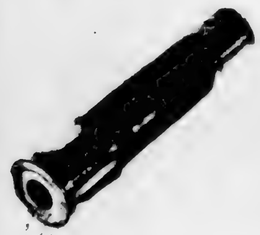
COMPLIANT COMPOSITE TUBULAR LINERS OF FIBER REINFORCED GLASS/GLASS-CERAMIC HAVING UTILITY AS GUN BARREL LINERS

Karl M. Prewo, Vernon, and John J. Brennan, Portland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 10, 1983, Ser. No. 456,884

Int. Cl.³ B32B *1/08, 17/12*; F41C *21/02*; F41F *17/08*

U.S. Cl. 428—36 **5 Claims**



1. A compliant tubular liner particularly adapted to withstand brisant forces comprising a fiber reinforced glass or glass-ceramic matrix having an elastic modulus less than 15×10^6 psi and high fracture toughness exemplified by a critical stress intensity factor greater than 5×10^3 psi $(inch)^{\frac{1}{2}}$.

2. A composite gun barrel comprising a fiber reinforced glass or glass/ceramic matrix liner surrounded by a metal outer sleeve, the liner having an elastic modulus less than 15×10^6 psi, a fracture toughness exemplified by a critical stress intensity factor greater than 5×10^3 psi $(inch)^{\frac{1}{2}}$, and being capable of withstanding brisant forces.

4,435,456

APPLICATION OF AMBIENT TEMPERATURE CURED POLYMERS OR PREPOLYMERS TO A CURED ELASTOMER

Walter R. Hausch, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 316,023, Oct. 28, 1981, Pat. No. 4,399,852, which is a division of Ser. No. 164,127, Jun. 30, 1980, Pat. No. 4,327,138, which is a continuation-in-part of Ser. No. 73,760, Sep. 10, 1979, abandoned. This application Mar. 21, 1983, Ser. No. 477,451

Int. Cl.³ F16L *11/12*; B32B *25/04*

U.S. Cl. 428—36 **9 Claims**



1. A rubber substrate having an amine curable polymer or prepolymer adhered thereto, comprising:

(a) a cured rubber substrate containing unsaturated groups therein;

(b) a treating agent bonded to said substrate, said treating agent selected from the group consisting of N-halohydantoins, N-haloamides, N-haloimides, and combinations thereof;

(c) a polyisocyanate layer, said polyisocyanate layer residing on said treating agent, said polyisocyanate being a compound having the formula $R(N=C=X)_n$ where R is an alkyl having from 2 to 20 carbon atoms, a cycloalkyl having from 4 to 20 carbon atoms, an aromatic or an alkyl substituted aromatic having from 6 to 20 carbon atoms, where n is 2 or 3, and where X is oxygen or sulfur;

the amine curable polymer or prepolymer bonded to said polyisocyanate layer at ambient temperature.

4,435,457

THERMOPLASTIC NON-WOVEN FABRIC SEAMED BY MELT-SEAMING AND A METHOD OF MAKING SUCH A FABRIC

Matti Servo, and Matti Vainio, both of Tampere, Finland, assignors to Tamfelt Oy AB, Tampere, Finland

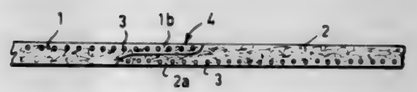
PCT No. PCT/FI82/00001, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO82/02412, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 6, 1982, Ser. No. 417,135

Claims priority, application Finland, Jan. 15, 1981, 810104

Int. Cl.³ C09J *5/10*; D06H *5/00*

U.S. Cl. 428—58 **6 Claims**



1. A non-woven fabric made of a thermoplastic material and

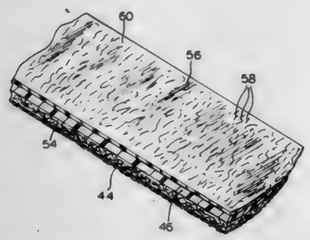
seamed by means of melt-seaming, the said fabric consisting of at least two strips of fabric (1, 2; 11, 12; 21, 22) positioned side by side in the same plane and joined to each other at their opposite overlapping edges by means of a melt seam (4; 14; 24), characterized in that the strips of fabric (1, 2; 11, 12; 21, 22) to be joined together are, at least at the edges (1*b*, 2*b*; 11*b*, 12*b*; 21*b*, 22*b*) to be joined together, provided with reinforcement yarns (3; 23) parallel to said edges and having a melting point higher than the melting point of the rest of the material of the fabric strips and that said edges to be joined together have by means of melting been shrunk into such a thickness that the thickness of the seam formed by said edges is substantially equal to the thickness of the strips of fabric.

4,435,458

LAMINATE FOR WEARING APPAREL AND METHODS FOR THE MANUFACTURE OF THE LAMINATE

Charles E. Hill, Coshocton, Ohio, assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 22, 1982, Ser. No. 452,222
Int. Cl.³ B32B *3/26, 33/00*
U.S. Cl. 428—91 **32 Claims**



18. A laminate for use in wearing apparel, characterized by
(a) a fibrous web;
(b) a synthetic foamed resin web joined to said non-woven fibrous web to form a prelaminate;
(c) the exposed surface of said non-woven fibrous web on said pre-laminate being napped to form the internal surface of wearing apparel formed therefrom.
(d) a resin film web adhered to the exposed foam surface of said pre-laminate; and
(e) the exposed surface of said film web being creped.

4,435,459

CARPET BACKED WITH FIRE SUPPRESSANT POLYURETHANE COMPOSITION

Linda D. McKinney, and Randall C. Jenkines, both of Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 372,584, Apr. 28, 1982, Pat. No. 4,397,978. This application Mar. 18, 1983, Ser. No. 476,679
Int. Cl.³ B32B *3/02, 33/00*
U.S. Cl. 428—95 **12 Claims**

1. A carpet comprising (I) a primary backing; (II) a yarn tufted or woven through said primary backing thereby creating a yarn bundle on the underside of the resultant tufted or woven greige good and (III) a polyurethane composition applied to the underside thereby encapsulating the yarn bundles and adhering the yarn bundles to the primary backing; said polyurethane composition comprising a catalyzed reaction product of a mixture comprising
(A) a relatively high molecular weight polyether polyol having an average of from 2 to about 8 hydroxyl groups per molecule and an average hydroxyl equivalent weight of from about 500 to about 2200 or a mixture of such polyols;
(B) a relatively low molecular weight polyol having an average of from about 2 to about 8 hydroxyl groups per molecule and an average equivalent weight of from about 31 to about 230 or a mixture of such polyols;
(C) an organic polyisocyanate or polyisothiocyanate having an average of from about 2 to about 4 NCX (each X being independently O or S) groups per molecule or a mixture of such isocyanates or isothiocyanates; and
(D) a filler component comprising
(1) an inorganic filler component comprising
(a) hydrated alumina,
(b) lead-containing compound,
(c) antimony compound, and
wherein component (a) is present in quantities of from about 10 to about 55 percent by weight of the combined weight of the components of (D-1); component (b) is present in quantities of from about 0.01 to about 2 percent by weight of the combined weight of the components of (D-1); component (c) is present in quantities of from about 46 to about 90 percent by weight of the combined weight of the components (D-1); and such compounds have an average particle size of from about 0.02 to about 22 microns, and an average surface area of from about 0.7 to about 75 m^2/gram;
(2) a halogen-containing resin containing at least about 85% halogen by weight and an average particle size of from about 9 to about 60 microns; and
with the proviso that (a) if it is desired that the urethane backed carpet passes the Vertical Flammability Test employing a flame temperature of greater than about 1550° F. (843° C.), then component (D-1) also contains a hydrated zinc compound in an amount of from about 12 to about 40 percent by weight of the combined weight of the components of (D-1), and (b) if the carpet substrate is woven and has a stitch rate of at least 50 tufts per square inch (7.55 tufts per square centimeter) then a sufficient quantity of
(E) an organometallic viscosity reducing agent is employed to provide a mixture of components (A), (B), (D) and (E) with a viscosity of less than about 14,000 centipoise (14 Pa·s) at 33° C. and wherein
(1) components (A) and (B) are present in quantities such that the ratio of the number of hydroxyl equivalents contributed by component (B) to the number of hydroxyl equivalents contributed by component (A) is from about 0.8:1 to about 5.5:1;
(2) components (A), (B) and (C) are present in quantities so as to provide an NCX to OH ratio of from about 0.95:1 to about 1.5:1;
(3) component (D-1) is present in quantities of from about 20 to about 60 percent by weight based upon the combined weight of components A, B and D; and
(4) component (D-2) is present in quantities of from about 10 to about 35 percent by weight based on the combined weight of components A, B and D.

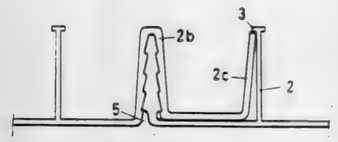
4,435,460

PLASTIC TUBULAR OBJECTS

Julian M. Menzel, Sempahore Park, Australia, assignor to Rib Loc (Hong Kong) Ltd., Hong Kong, Hong Kong

Division of Ser. No. 950,085, Oct. 10, 1978, Pat. No. 4,209,043. This application Jun. 18, 1980, Ser. No. 160,586
Claims priority, application Australia, Oct. 18, 1977, PD2100; Feb. 15, 1978, PD3384
The portion of the term of this patent subsequent to Jun. 24, 1999, has been disclaimed.
Int. Cl.³ B23B *3/04;* **F16L** *9/16*
U.S. Cl. 428—129 **8 Claims**

1. An elongated strip which can be formed into a tubular article by helically winding said strip to overlap at least its two longitudinal edges, said strip including:
a series of longitudinally extending spaced apart reinforcements, said strip further including connecting means comprising a longitudinally extending joining rib near one of said longitudinal edges and a longitudinally extending engaging rib spaced from said joining rib and adapted to engage said joining rib when the strip is wound to form the tubular article, said reinforcements being between said engaging rib and said joining rib; and
extension means attached to and extending laterally outwardly from said engaging rib for engaging and interlocking with at least said longitudinally extending reinforcement which is adjacent said joining rib when said strip is helically wound to form said tubular article, said extension means having a length at least equal to the spacing between said joining rib and said last mentioned reinforcement.

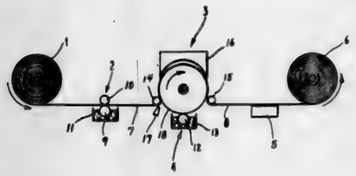


4,435,461

METHOD OF PROVIDING A SURFACE EFFECT IN A RELEASE PAPER PRODUCT

Lorin S. Gray, III, Portland, and Jeffrey S. Doody, Yarmouth, both of Me., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Oct. 19, 1982, Ser. No. 435,209
Int. Cl.³ B05D *3/06*
U.S. Cl. 428—141 **10 Claims**



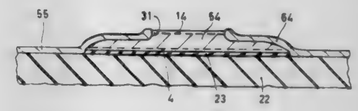
1. In a method of providing a desired surface effect in a release coating on a substrate, comprising the steps of:
A. applying a coating of an electron beam radiation curable composition or material to a side of a substrate;
B. pressing the coated side of the substrate against a replicative surface having a desired surface effect to cause the surface of the coating to conform to the replicative surface;
C. irradiating the coating with electron beam radiation directed first through the substrate to partially cure the coating sufficiently to enable it to be removed from the replicative surface securely attached to the substrate and with the replicated surface effect in the coating being maintained; and
D. stripping the substrate from the replicative surface with the partially cured coating adhered to the substrate;
The improvement including the further step of
E. irradiating the partially cured coating out of contact with the replicative surface a second time with electron beam radiation without first applying additional coating composition or material over the first coating.

4,435,462

INFRA-RED DETECTOR ELEMENTS

Richard B. Withers, Romsey, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 179,339, Aug. 18, 1980, abandoned, which is a division of Ser. No. 59,831, Jul. 23, 1979, Pat. No. 4,301,591. This application Nov. 9, 1981, Ser. No. 319,776
Claims priority, application United Kingdom, Jul. 31, 1978, 31750/78
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—156 **7 Claims**



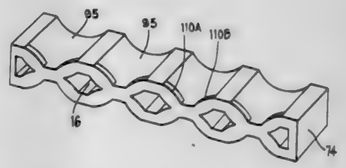
1. An infra-red detector device having at least one detector element and comprising:
a substrate having a major surface;
a body of cadmium mercury telluride which is sensitive t infra-red radiation mounted on the major surface of the substrate, at least a portion of the body being in the form of a mesa on a major surface of the body which is remote from the substrate which mesa includes an active area of the detector element and has a top surface and at least two side walls; and
a plurality of separate, metal layer electrodes which are disposed on the body in contact with the mercury cadmium telluride to define, between the electrodes, a current carrying path through the active area of the mesa and which extend onto a part of the major surface of the substrate beyond the body to provide connections to the detector element;
wherein each of the electrodes contacts the body at a side wall of the mesa without contacting the top surface of the mesa and the contacted side walls of the mesa are sufficiently steep so that said current carrying path passes through the bulk of the mesa between its side walls.

4,435,463

SUPPORTING AND SPACING MEMBER FOR WEB MATERIAL ROLLS

Thomas A. Roellchen, Almena Township, Van Buren County, Mich., assignor to Ace Polymers, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 235,827, Feb. 19, 1981, Pat. No. 4,385,091. This application Jun. 7, 1982, Ser. No. 385,360
Int. Cl.³ B32B *3/26;* **B65D** *85/67, 85/62*
U.S. Cl. 428—158 **4 Claims**



1. In a structure for protectively supporting and spacing rolls of web material in a multi-layer stack, comprising an elongated member of expanded polystyrene material having a pair of opposed surfaces, a first of said surfaces having a plurality of spaced, parallel, generally semi-cylindrical indentations disposed to receive rolls of web material, said indentations being separated by separating walls, the endmost indentations being oriented between a separating wall and an end wall, the radius of each of said semi-cylindrical indentations being

greater than the depth of said indentation, whereby the rolls will be snugly retained within the indentations in a pair of members and the members will be out of contact with each other, the improvement comprising wherein at least one upright and spaced wall segment is provided in each said indentation along one lateral edge of said elongated member and between said separating walls and associated end walls, each said wall segment having an arcuate edge with a radius opposite the radius of said semi-cylindrical indentation and conforming to the radius of a respective indentation in an adjacent member thereby enabling, upon a lengthwise shifting of one member relative to said adjacent member, said wall segment in one indentation to be received in the indentation of said adjacent member upon a nesting thereof and without any lateral offset of said one member relative to said adjacent member.

4,435,464

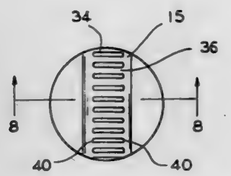
HINGE FOR THERMOPLASTIC MATERIAL

Loren J. Hulber, Naperville, and Raymond W. Fluckiger, Chicago, both of Ill., assignors to Jostens, Inc., Minneapolis, Minn.

Division of Ser. No. 253,245, Apr. 13, 1981, Pat. No. 4,397,904. This application May 2, 1983, Ser. No. 490,383

Int. Cl.³ B32B *3/30*

U.S. Cl. 428—167 **2 Claims**



1. A hinge for devices composed of thermoplastic sheet material comprising: a plurality of grooves in said sheet material extending along the desired dimension of said sheet and defining a longitudinal orientation for the hinge, each of said grooves oriented transversely to the longitudinal orientation of the hinge and spaced apart from each other by planar regions of said sheet material which are integral with the sheet material on either side of said hinge, each of said grooves being more narrow in the longitudinal direction than each of said regions separating them, such that the hinge lacks a substantially continuous longitudinally oriented line of indentation where tearing would most likely occur.

4,435,465

COMPOSITE MATERIAL FOR SHIELDING AGAINST ELECTROMAGNETIC RADIATION

Harold Ebneth, Leverkusen; Hans G. Fitzky, Odenthal, and Wolfgang Oberkirch, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,803

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024888

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—195 **20 Claims**

1. A composite material comprising: metallized sheet-form textiles contained in a polymer matrix with additives for increasing at least one of the ohmic, electrical and magnetic



losses uniformly present in the polymer or on the sheet-form textiles.

4,435,466

MULTI-LAYERED SEALING SHEET OF ELASTOMERIC SYNTHETIC RESIN

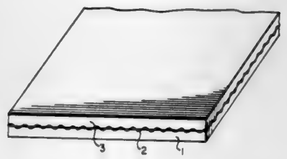
Werner Kuhnel, Neunkirchen-Schoneshof; Peter Pütz, St. Augustin-Menden; Manfred Simm, Troisdorf, and Paul Spielau, Troisdorf-Eschmar, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,400

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150021

Int. Cl.³ B32B *5/08, 17/04*

U.S. Cl. 428—215 **11 Claims**



1. A multi-layered sealing sheet for the building industry which comprises a textile reinforcing insert embedded between layers of elastomeric synthetic resin containing additives to enhance the weatherability and fillers to enhance the mechanical properties of said sealing sheet, the outer layers of said sealing sheet being weldable thermally and/or by use of solvents or swelling agents, all layers which contain elastomeric synthetic resin being free of vulcanization accelerator and containing synthetic resin consisting essentially of an ethylene-propylene-diene terpolymer and/or ethylene-propylene copolymer, and the reinforcing insert embedded in between the layers with the use of heat being a fabric, mat, knitted fabric, or similar textile material formed of synthetic resin fibers and/or glass fibers with a weight per unit area of 20–70 g/m^2 and with interstices having a spacing of at least 2.0 mm through which the elastomeric synthetic resin penetrates; said multi-layered sealing sheet, due to the penetration of the elastomeric synthetic resin through the interspaces of the reinforcing insert, exhibiting a parting force of the layers which is larger than 100 N/5 cm.

4,435,467

ATHLETIC SUPPORT FABRIC

Jack S. Rogers, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

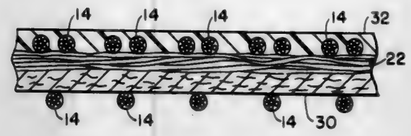
Filed May 9, 1983, Ser. No. 492,820

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—254 **8 Claims**

1. An athletic support fabric having a substrate comprising:

a warp knit fabric having a face and a rear side, a plurality of rows of weft continuous filament weft yarn laid in on the face side of said knit fabric, a layer of non-woven fabric on the rear side of side of said knit fabric, a plurality of wales of a chain



stitch spaced along the course direction of said fabric being knit through said non-woven fabric and holding said non-woven fabric and said weft yarn in position and a layer of rubber base adhesive coated to the face side of said fabric.

4,435,468

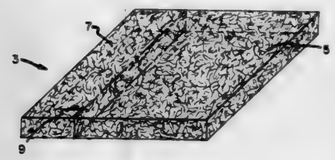
SEAMLESS CERAMIC FIBER COMPOSITE ARTICLES AND METHOD AND APPARATUS FOR THEIR PRODUCTION

John D. TenEyck, Lewiston, N.Y., assignor to Kennecott Corp., Cleveland, Ohio

Filed Feb. 12, 1982, Ser. No. 348,482

Int. Cl.³ B32B *5/22*; E04B *1/00*

U.S. Cl. 428—285 **9 Claims**



1. A planar seamless composite fiber insulating mat comprising at least one planar lower temperature resistant portion having planar faces and edge faces, the lower temperature resistant portion comprising lower temperature resistant insulating fibers and at least one planar high temperature resistant portion having planar faces and edge faces, the higher temperature resistant portion comprising higher temperature resistant fibers, wherein an edge face of said lower temperature resistant portion is joined to an edge face of said higher temperature resistant portion by a transition zone of commingled fibers of said lower temperature resistant fiber and said higher temperature resistant fibers.

4,435,469

HOT MELT ADHESIVE FOR BONDING PAPER TO GLASS FIBER

Ralph M. Fay, Lakewood, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Apr. 28, 1982, Ser. No. 372,605

Int. Cl.³ C08K *5/01, 3/26, 7/10*; C09J *3/14*

U.S. Cl. 428—285 **18 Claims**

1. A hot melt adhesive composition consiting essentially of by weight:

Microcrystalline Wax	8–12%
Synthetic Polyethylene Wax	8–12%
Hydrocarbon Resin	13–17%
Ethylene-Vinyl Acetate Copolymer	6–12%
Filler and	Balance

-continued

Antioxidant.	

16. A fiber glass mat adhered to a Kraft paper facing wherein the paper and the fiber glass are intimately contacted at temperatures exceeding 140 degrees F. and the composition adhering the fiber glass mat to the Kraft paper facing consists essentially of by weight:

Microcrystalline Wax	8–12%
Synthetic Polyethylene Wax	8–12%
Hydrocarbon Resin	13–17%
Ethylene-Vinyl Acetate Copolymer	6–12%
Filler and Antioxidant.	Balance

4,435,470

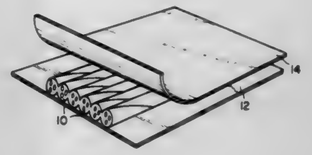
REPAIR MATERIAL FOR TUBELESS TIRES

Alec W. Niconchuk, Peabody, Mass., assignor to North Shore Laboratories Corporation, Peabody, Mass.

Filed Apr. 12, 1982, Ser. No. 367,462

Int. Cl.³ B32B *31/00*

U.S. Cl. 428—294 **8 Claims**



1. Cord repair material for repairing tubeless tires from the outside comprising:

(a) a multiplicity of individually twisted, parallel fibrous cords,

(b) an elastomeric adhesive adhering to, fully coating, and at least partially impregnating each said cord in quantity over 175% by weight of fiber,

(c) said adhesive comprising a highly plasticized, vulcanized, essentially weak elastomer, and

(d) said cords lying substantially contiguous with the elastomer which coats adjacent cords vulcanized together, at least in places, whereby adjacent cords are joined by permanently set elastomer but can be peeled apart by rupturing the weak elastomeric connection therebetween.

4,435,471

TRANSFER-ONTO-PLAIN PAPER TYPE OF PRESSURE-SENSITIVE COPYING PAPER

Toshihiko Matsushita, Funabashi; Shigetoshi Hiraishi, Tokyo, and Sadao Morishita, Ibaraki, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 387,145

Claims priority, application Japan, Jun. 17, 1981, 56-93219

Int. Cl.³ B41M *5/16*

U.S. Cl. 428—320.8 **5 Claims**

1. A transfer-onto-plain paper type of pressure-sensitive copying paper prepared by coating the back of a substrate with a single layer containing a chelate color forming reaction system comprising a chelate forming metal compound and ligand and further containing a wax, both of said metal compound and ligand being microencapsulated.

4,435,472

ADHERENT, ACID CURED RESIN PROTECTIVE COATINGS FOR CONCRETE AND STEEL

George R. Leah, New Kensington, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 27, 1982, Ser. No. 412,329
Int. Cl.³ B32B 9/06; B05D 1/36
U.S. Cl. 428—333 11 Claims

6. A corrosion resistant coated structure comprising a substrate having an acid soluble surface, a primer layer coated on the surface of the substrate, which layer comprises an acid stable, thermoplastic elastomer selected from the group consisting of styrene-polybutadiene block copolymers, styrene-polyisoprene block polymers, chlorosulfonated polyethylene, styrene-butadiene copolymers, and neoprene, and a corrosion resistant layer coated on the primer layer, which layer comprises an acid cured, corrosion resistant furan or phenolic polymer.

9. The article of claim 6 wherein the primer layer has a thickness of at least about 0.2 mil and the corrosion resistant layer has a thickness of at least about $\frac{1}{8}$ inch.

4,435,473

AQUEOUS PEROXIDE EMULSION FOR USE WITH GLASS FIBERS

Albert E. Tamosauskas, Pittsburgh, and Chester S. Temple, McKees Rocks, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 136,645, Apr. 2, 1980, Pat. No. 4,391,876. This application Jul. 28, 1982, Ser. No. 402,501
Int. Cl.³ B32B 9/00; C08K 3/40
U.S. Cl. 428—378 20 Claims

1. An aqueous sizing composition for treating glass fibers, wherein the sizing composition, comprises:

(1) an aqueous emulsion of an organic peroxide that is a liquid at about 20° C. and that is insoluble or has limited solubility in water present in an effective amount to give an amount of active peroxide in the sizing composition in the range of greater than 0.6 to about 10 weight percent and, wherein the emulsion has improved stability and dilutability and has an average particle size of around 1.5 microns or less, comprising:

(a) at least 1 to about 60 percent by weight based on the weight of the emulsion of said liquid organic peroxide selected from the group consisting of hydroperoxides, α-oxy and α-peroxy hydroperoxides, dialkyl peroxides, aldehyde and ketone peroxides, diacyl peroxides, peroxyesters, peroxy acids, peroxydicarbonates, peroxymonocarbonates and perketals,

(b) about 1 to about 15 weight percent of the emulsion of a nonionic emulsifier blend having three emulsifiers selected from the group consisting of polyalkylene glycol ethers, dialkylarylpolyether alcohols, and polyoxypropylene-polyoxyethylene condensates, phenoxy polyethoxyethanols, polyethylene derivatives of fatty acids, partial esters of sorbitol anhydrides; ethoxylated alcohols, fatty acids, fatty esters and oils, alkylphenols; glycerol esters, sucrose esters and derivatives, monoglycerides and derivatives, and sorbitan derivatives polyethoxy phenols, alkyl polyether alcohols, ethylene oxide alkylated phenol condensation products, and mixtures thereof, wherein one emulsifier has an HLB in the range of about 6 to about 12 and one emulsifier has an HLB in the range of about 9 to 15 and one emulsifier has an HLB in the range of about 12 to about 20 each in proportions to give an overall HLB level for the emulsifier system in the range of about 9 to about 20, and

(c) the remaining weight percent of the emulsion is water,

(2) about 0.2 to about 10 weight percent of a vinyl-containing organic silane,

(3) about 0.001 to about 1 weight percent of a lubricant,

(4) an amount of water to give a total solids content in the range of about 1 to about 25 weight percent of the sizing composition.

4,435,474

AQUEOUS SIZING COMPOSITION AND SIZED GLASS FIBERS AND METHOD

Balbhadra Das, and L. Dow Moore, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 273,791, Jun. 15, 1981, Pat. No. 4,338,233. This application Mar. 29, 1982, Ser. No. 363,197
Int. Cl.³ D02G 3/00
U.S. Cl. 428—391 21 Claims

1. One or more glass fiber strands where the glass fibers have the dried residue of an aqueous sizing composition for use in reinforcing polymeric materials, wherein the aqueous sizing composition comprises:

(a) a major amount of the solids of the sizing composition being one or more cross-linkable film forming polymers compatible with the polymeric matrix to be reinforced with glass fibers,

(b) one or more organo-silane coupling agents in an amount up to about 20 weight percent of the solids of the sizing composition,

(c) an interaction product of an epoxidized polar thermoplastic copolymer and an unhydrolyzed or partially hydrolyzed amino-containing organo-silane coupling agent in an amount of about 10 weight percent up to about 50 weight percent of the solids of the sizing composition, wherein the interaction product is formed by contacting the epoxidized copolymer which has about 2 to about 12 parts of epoxidized monomer per 100 parts of copolymer and which has a glass transition temperature from about −10° C. to about 70° C. with the amino-containing organo-silane coupling agent wherein the amount of the amino silane coupling agent is in the range of about 0.1 to about 1.2 weight percent of an aqueous mixture having at least 20 weight percent of the epoxidized copolymer, and

(d) an amount of water sufficient to make the percent solids of the sizing composition in the range of about 2 to about 30 weight percent.

4,435,475

DIELECTRIC FILM

Tohru Sasaki; Syuuzi Terasaki; Hideo Munakata, and Mitsuru Ohta, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 249,900
Claims priority, application Japan, Apr. 24, 1980, 55-54998
Int. Cl.³ B32B 27/30, 27/36; N01G 4/08
U.S. Cl. 428—409 7 Claims

1. A dielectric film having minutely rough surfaces and prepared by (a) molding a resin composition comprising (i) 99.5 to 70 parts by weight of a polyvinylidene fluoride and (ii) 0.5 to 30 parts by weight of a resin selected from the group consisting of a polycarbonate, a thermoplastic polyester, and mixtures thereof into a continuous sheet and (b) stretching the continuous sheet of (a) in at least one direction to give a dielectric film with minutely rough surfaces.

4,435,476

METHOD OF MAKING AN ABRASION RESISTANT COATING ON A SOLID SUBSTRATE AND ARTICLES PRODUCED THEREBY

Richard A. Phillips, Acton, and Theodore A. Haddad, Leominster, both of Mass., assignors to Foster Grant Corporation, Leominster, Mass.

Filed Aug. 18, 1982, Ser. No. 409,272
Int. Cl.³ B32B 27/12, 27/30, 15/08; B05D 3/06
U.S. Cl. 428—412 23 Claims

1. A method of improving the abrasion resistance of cross-linked organosiloxane coating, said coating having been prepared by applying to a solid substrate an organosiloxane coating liquid comprising organosilanol molecules of the formula $R'_mSi(OH)_{4-m}$ or a precursor of said organosilanol or a partial hydrolysis product thereof, where m is 1 or 2 and R' is each independently a hydrocarbon radical and by curing the resultant coating to obtain an abrasion resistant, cross-linked organosiloxane coating, which method comprises a glow discharge treatment of said cross-linked organosiloxane coating under a pressure range of from about 5 to about 150 microns.

17. The solid substrate as defined in claim 16, wherein the solid substrate is a plastic material.

4,435,477

RUBBER COMPOSITIONS AND ARTICLES THEREOF HAVING IMPROVED METAL ADHESION AND METAL ADHESION RETENTION

James A. Davis, Uniontown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jul. 25, 1983, Ser. No. 517,093
Int. Cl.³ B32B 15/06; C08L 93/04; B60C 9/16
U.S. Cl. 428—462 27 Claims

19. A metal-reinforced rubber ply to be used as an element in a manufactured rubber article, said ply having a rubber composition and a brass-plated element bonded thereto wherein said rubber composition is made by curing a composition comprising:

a vulcanizable rubber;

from about 0.5 to about 12.5 parts by weight of an organic salt of nickel per 100 parts of the rubber component in said rubber composition; and

at least about 3.0 parts by weight of a thermoplastic resin derived from crude wood rosin and containing carboxylic acid groups or carboxylic acid ester groups per 100 parts of the rubber component in said rubber composition.

4,435,478

VINYLIDENE CHLORIDE CO-POLYMER COMPOSITIONS

Anthony J. Burgess, and David L. Gardner, both of Runcorn, England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 860,312, Dec. 12, 1977, Pat. No. 4,341,679. This application Jul. 26, 1982, Ser. No. 401,695
Claims priority, application United Kingdom, Dec. 20, 1976, 53021/76
Int. Cl.³ B32B 15/08
U.S. Cl. 428—463 12 Claims

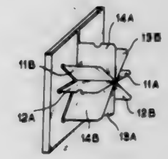
1. A method of applying a protective coating to a metal substrate wherein there is employed an aqueous latex which comprises applying to a metal substrate an aqueous latex of a copolymer capable of forming stable films which have excellent protective properties on metallic substrates, said films having good chemical resistance and low permeability to water vapour, said copolymer consisting essentially of (i) vinylidene chloride, (ii) vinyl chloride, (iii) one or more alkyl acrylates having from 1 to 12 carbon atoms in the alkyl group and/or one or more alkyl methacrylates having from 2 to 12 carbon atoms in the alkyl group and (iv) one or more aliphatic alpha-beta-unsaturated carboxylic acids, the proportion of vinylidene chloride being from 65 to 90 parts by weight, the proportion of the said alkyl acrylates and/or methacrylates being from 2 to 15 parts by weight and the proportion of the said carboxylic acids being from 0.2 to 8 parts by weight, per hundred parts by weight of the total vinylidene chloride and vinyl chloride.

4,435,479

PACKAGING FOR FRAGILE, HEAVY AND/OR DEFORMABLE PRODUCTS

Jean Pivoteau, Le Viviers Du Lac, and Jean-Pierre Durot, Montmelian, both of France, assignors to Vetrotex Saint-Gobain, France

Filed Dec. 2, 1982, Ser. No. 446,259
Claims priority, application France, Dec. 4, 1981, 81 22721
Int. Cl.³ B65D 57/00; G09F 1/06
U.S. Cl. 428—542.8 10 Claims



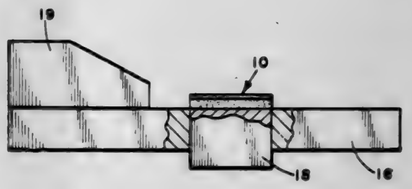
1. An article of manufacture formed from a single blank of sheet material for support of a product such as a length of a yarn reeled in a manner to provide an open cavity, said blank including a central zone providing a substantially continuous surface of rectangular outline, a flap extending from each side of said central zone, each flap being foldable in a first direction about a fold line comprising a line of demarcation between said central zone and a respective flap to form a flange having a make up of three coextensive, superposed sheet material layers, a tab extending from each flap, each tab being foldable in a second, opposite direction about individual second fold lines each comprising a line of demarcation between a flap and a tab, and a slot formed at least within a portion of each tab extending coaxially toward a slot in an opposite tab permitting locking interengagement of said tab to form a spindle extending outwardly of said central zone for receipt in said cavity.

4,435,480

PRESSED AND SINTERED COMPOSITE BODY COMPRISING A THIN TAPE CAST LAYER AND A THICK BASE LAYER

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,654
Int. Cl.³ B22F 7/02; B32B 15/16, 9/00, 9/04
U.S. Cl. 428—548 6 Claims



1. A composite body comprising

a first layer of an alumina ceramic made by tape casting, and

a second layer of

an alumina ceramic having a composition substantially identical to said first layer, second layer being formed from a compressed powdered alumina,

the thickness of said first layer being uniform and substantially less than the thickness of said second layer,

said first and second layers being permanently bonded together by simultaneously compressing said first layer against and compacting the powder comprising said sec-

ond layer to form a compressed composite body and sintering.

3. A composite body comprising

a first layer composed of a first substance made by tape casting, and

a second layer composed of a second substance, said second substance being a compressed powder,

the thickness of said first layer being uniform and substantially less than the thickness of said second layer,

said first and second layers being permanently bonded together by simultaneously compressing said first layer against and compacting the powder comprising said second layer to form a compressed composite body and sintering,

wherein said first and second layers are different compositions.

4,435,481

PYROPHORIC FOIL AND ARTICLE, AND PYROPHORIC TECHNIQUE

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 25,456, Mar. 30, 1979, Pat. No. 4,349,612, which is a continuation-in-part of Ser. No. 963,313, Nov. 24, 1978, abandoned. This application Jul. 28, 1980, Ser. No. 172,671

Int. Cl.³ B32B *15/02, 15/18*

U.S. Cl. 428—550 **7 Claims**

1. A pyrophoric foil that develops a temperature of at least about 500° F. upon exposure to air, and made by pyrophorically activating a foil of low carbon steel not over about 1.5 mils thick, the activating leaving an unactivated stratum about 0.3 mil thick.

4,435,482

SLIDING MEMBER AND PROCESS FOR PRODUCING THE SAME

Kenichiro Futamura, Toyota; Eiji Asada, Okazaki, and Tatsuhiko Fukuoka, Aichi, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Filed Feb. 25, 1981, Ser. No. 238,105

Int. Cl.³ B22F *7/04;* **B32B** *15/16*

U.S. Cl. 428—553 **15 Claims**



(×100)

1. A composite sliding member comprising:

a base comprised of an iron-based alloy; and

a bearing layer, consolidated with said base and formed by applying on said base a powder coating having a thickness of not more than 0.5 mm and baking said powder coating to consolidate it with said base, said powder comprising an iron family element and from 3% to 30% by weight of boron and from 0.5% to 15% by weight of lead.

10. A composite sliding member comprising:

a base comprising an iron-based alloy; and

a bearing layer, consolidated with said base and formed by applying on said base a powder coating having a thickness of not more than 0.5 mm and baking said powder coating to consolidate it with said base, said powder comprising an iron family element, from 15% to 30% by weight of boron and from 0.5 to 8% by weight of phosphorus.

4,435,483

LOOSE SINTERING OF SPHERICAL FERRITIC-AUSTENITIC STAINLESS STEEL POWDER AND POROUS BODY

Christer Ahslund, Torshälla; Karl H. T. Andersson, Eskilstuna, and Sven S. Bergh, Täby, all of Sweden, assignors to Nyby Uddeholm Powder Aktiebolag, Torshälla, Sweden

Filed Feb. 8, 1982, Ser. No. 346,869

Claims priority, application Sweden, Feb. 6, 1981, 8100842

Int. Cl.³ B22F *3/10;* **C22C** *38/44*

U.S. Cl. 428—566 **10 Claims**



1. A porous sintered body, with good resistance to corrosion and with a pore volume which can be predetermined within given narrow limits, produced by loose sintering of a spherical powder of stainless steel at a sintering temperature between 1200° C. and 1600° C., wherein said stainless steel has a ferritic-austenitic structure at room temperature and a ferritic structure at the sintering temperature.

2. The sintered body as claimed in claim 1, wherein said sintered body is a filter material.

4,435,484

DEVICE FOR PROPAGATING MAGNETIC DOMAINS

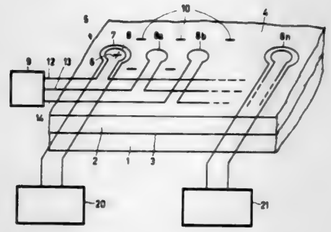
Dirk J. Breed; Bernardus A. H. Van Bakel; Antonius B. Voermans, and John M. Robertson, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,974

Claims priority, application Netherlands, Jul. 22, 1980, 8004201

Int. Cl.³ G11C *11/02;* **C04B** *35/50*

U.S. Cl. 428—693 **7 Claims**



1. A device for propagating magnetic domains comprising:

a monocrystalline, nonmagnetic substrate having a deposition face; and

a monocrystalline layer of an iron garnet, capable of supporting localized, enclosed magnetic domains, grown in compression on the deposition face of the substrate, said iron garnet layer having a positive magnetostriction constant and having a mechanical stress-induced uniaxial magnetic anisotropy component;

characterized in that:

the iron garnet has iron lattice sites and dodecahedral lattice sites, the iron garnet comprises manganese at a portion of the iron lattice sites and the iron garnet consists essentially of

ions which contribute little to damping at the dodecahedral lattice sites;

the nonmagnetic substrate is a rare earth-gallium garnet; and

the iron garnet layer has been grown on a (100) deposition face of the substrate.

4,435,485

MAGNETIC RECORDING MEDIUM

Kaoru Nakajima, Izumi; Masashi Somezawa, Sendai; Minoru Takamizawa, Annaka; Yoshio Inoue, Annaka, and Hiroshi Yoshioka, Annaka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,306

Claims priority, application Japan, Aug. 23, 1980, 55-116166

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—694 **7 Claims**

1. A magnetic recording medium having a magnetic layer comprising magnetic or magnetizable powders or particles and a binder comprising a composition containing (A) a compound having components represented by recurring units having the following formulas:

Unit (I): $+CH_2-\underset{Cl}{CH}+$;

Unit (II): $+CH_2-\underset{OCOR}{CH}+$;

(wherein R is methyl or ethyl group);

Unit (III): $+CH_2-\underset{X}{CH}+$;

(wherein X is a group consisting an acrylic or methacrylic double bond); and,

Unit (IV): $+CH_2-\underset{OH}{CH}+$,

in which the number of recurring units represented as Unit (I) ranges from approximately 200 to 800; the number of recurring units represented by Unit (II) ranges from approximately 10 to 200; the number of recurring units represented by Unit (III) ranges from approximately 3 to 100; and the number of recurring units represented by Unit (IV) is optionally in the range up approximately 200; and (B) a compound having at least two acrylic and/or methacrylic double bonds in the molecule thereof and having a molecular weight ranging from approximately 1,000 to 6,000 in which the molecular weight in the molecule thereof per one double bond is in the range from approximately 80 to 3,000; and said composition used as the binder is cured by irradiation and wherein the composition comprises the compound (A) in the amount ranging from approximately 20 to 80% and the compound (B) in the amount ranging from approximately 80 to 20%.

4,435,486

QUICK DISCONNECT BATTERY INSTALLATION AND CHARGING SYSTEM

Nicholas T. Pomaro, 514 W. Burr Oak Dr., Arlington Heights, Ill. 60004; Russell Pomaro, 5114 Central Ave., Western Springs, Ill. 60558, and Louis H. Stauffer, 2150 Cargill Dr., Northbrook, Ill. 60062

Filed Jun. 4, 1982, Ser. No. 384,797

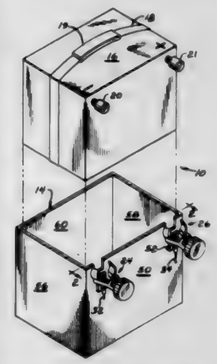
Int. Cl.³ H01M *2/00*

U.S. Cl. 429—1 **15 Claims**

1. In a vehicle having positive and negative electrical leads, means for facilitating the installation therein, removal therefrom, and charging of a storage battery having threaded positive and negative electrical terminals on a lateral portion thereof, said means comprising:

a first housing rigidly mounted to said vehicle and having an open upper portion for receiving said storage battery and including a bottom panel and a plurality of lateral walls for securely engaging said storage battery in tight-fitting relation;

first and second threaded conductive pins securely engaging and electrically coupled to respective electrical terminals



of said storage battery and extending outward from said lateral portion thereof; and

first and second engaging electrical clamp means coupled to respective positive and negative leads of said vehicle and secured to an upper edge portion of a lateral wall of said first housing for securely engaging respective first and second conductive pins when said storage battery is positioned in said first housing in electrically coupling said vehicle to said storage battery.

4,435,487

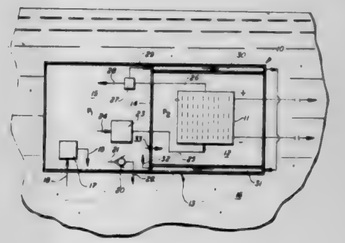
PRIMARY BATTERY SYSTEM

Lawrence S. Supelak, Rocky River; Steven J. Specht, Mentor, and Richard C. Hills, Chardon, all of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 13, 1982, Ser. No. 449,485

Int. Cl.³ H01M *6/34*

U.S. Cl. 429—70 **16 Claims**



10. A primary battery system comprising:

a primary battery cartridge producing as an incident of electrochemical operation thereof a gaseous by-product and a solute by-product in a circulated electrolyte liquid;

means for replacing a portion of the fluid with fresh electrolyte solvent;

pressurizing means for placing the fluid including the electrolyte, the replacement solvent and said by-products therein under a pressure preselected to cause the volume

ratio of the gaseous component to liquid component of the mixture to be reduced; and

recirculating the fluid to the battery cartridge for further operation thereof.

4,435,488

GELLING AGENT FOR ALKALINE CELLS

William S. Bahary, Pearl River, and Rowland A. Griffin, Ossining, both of N.Y., assignors to Duracell Inc., Bethel, Conn.

Filed Mar. 8, 1982, Ser. No. 355,784
Int. Cl.³ H01M *4/62*
U.S. Cl. 429—212 **22 Claims**

9. An anode blend for an electrochemical cell comprising an anode active powder and cross-linked carboxymethyl cellulose.

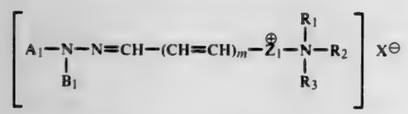
4,435,489

CATIONIC HYDRAZONE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Beat Müller, and Martin Roth, both of Marly, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 264,929, May 18, 1981, Pat. No. 4,383,948. This application Sep. 22, 1982, Ser. No. 421,221
Claims priority, application Switzerland, May 21, 1980, 3962/80
Int. Cl.³ G03C *1/84*; C08K *5/16*; G02B *5/20*; G02C *7/10*
U.S. Cl. 430—17 **9 Claims**

3. A photocrosslinked polymer coating which is coloured by a hydrazone derivative having the formula



(1)

in which A_1 is a substituted or unsubstituted aromatic radical, B_1 is hydrogen, substituted or unsubstituted alkyl having 1 to 8 carbon atoms, substituted or unsubstituted cycloalkyl having 5 to 6 carbon atoms, substituted or unsubstituted aralkyl having 1 to 4 carbon atoms in the alkyl moiety or substituted or unsubstituted aryl, R_1, R_2 and R_3 independently of one another are substituted or unsubstituted alkyl having in each case 1 to 8 carbon atoms, substituted or unsubstituted cycloalkyl having 5 or 6 carbon atoms, substituted or unsubstituted aralkyl having 1 to 4 carbon atoms in the alkyl moiety or polyoxyalkylene, Z_1 is substituted or unsubstituted arylene, $X^{\ominus}$ is an anion and m is 0, 1, 2 or 3.

4,435,490

ELECTRICALLY ACTIVATABLE RECORDING ELEMENT AND PROCESS

Mark Lelental, and David J. Steklenski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,572
Int. Cl.³ G03G *13/01*
U.S. Cl. 430—45 **27 Claims**

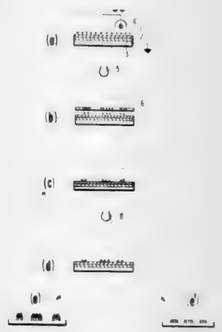
1. In an electrically activatable recording element comprising an electrically conductive support having thereon an electrically activatable recording layer capable of producing a positive image, the improvement wherein said recording layer comprises a transition metal complex selected from the group consisting of Group VIIIB and Group IB metal complexes and a film forming ionic polymer that is capable of undergoing an imagewise reorientation upon exposure to electric current and as a result of said exposure, development of said metal complex in the exposed areas of said recording layer is restricted.

4,435,491

ELECTROPHOTOGRAPHIC PROCESS FOR THE PRODUCTION OF LITHOGRAPHIC PRINTING PLATES AND LIGHT-SENSITIVE MATERIALS FOR USE THEREIN

Takashi Kitamura, Chiba, and Hiroshi Kokado, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 25, 1981, Ser. No. 324,940
Claims priority, application Japan, Nov. 27, 1980, 55-165938
Int. Cl.³ G03G *13/28*
U.S. Cl. 430—49 **13 Claims**



1. A process for producing a lithographic printing plate using a light-sensitive material comprising an electrically conductive support having a hydrophilic surface, and a positive working light-sensitive layer and a photoconductive insulative layer containing an alkali-soluble resin on the support, said process comprising the steps of:

(A) forming an electrophotographic latent image on the photoconductive layer of the light-sensitive material;

(B) developing the latent image with a liquid developer containing developer particles which are opaque to light having a wavelength to which the positive working light-sensitive layer is sensitive;

(C) exposing to light the positive working light-sensitive layer through the developed image obtained in step (B); and

(D) selectively removing with an alkali solution the area of the positive working light-sensitive layer not bearing the developed image together with areas corresponding to said areas of the positive working light-sensitive layer not bearing the developed image of the photoconductive layer; wherein:

the positive working light-sensitive layer and the photoconductive insulative layer are provided on the support as a unit layer, or are individually provided in that order; and the photoconductive insulative layer is substantially chargable either positively or negatively, and contains said alkali-soluble resin in such an amount as to not inhibit the selective removal of the positive working light-sensitive layer in step (D).

4,435,492

COMPLEX TYPE ELECTROPHOTOGRAPHIC PLATE AND ELECTROPHOTOGRAPHIC METHOD USING THE SAME

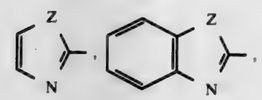
Shigeo Suzuki, Hitachi; Atsushi Kakuta, Hitachiota; Yasuki Mori, and Hirosada Morishita, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

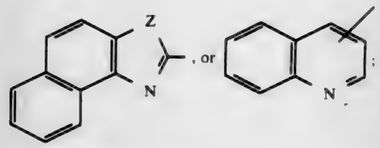
Continuation-in-part of Ser. No. 87,820, Oct. 24, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,957
Claims priority, application Japan, Oct. 27, 1978, 53-131523; Nov. 8, 1978, 53-136695
Int. Cl.³ G03G *5/06, 5/14*
U.S. Cl. 430—58 **20 Claims**

1. A complex type electrophotographic plate comprising an electroconductive support; a first layer, adhered to the support, of a charge generating material, said first layer having a thickness of 0.1 to 5 μm; and a second layer, superposed on the first layer, of a homogeneous mixture of a charge transport material and an insulating resinous binder therefor, said second layer having a thickness of 5 to 100 μm being substantially transparent to light of a wavelength of 4200 to 8000 Å, and said charge transport material being at least one member selected from the group consisting of nonionic compounds represented by the general formula:

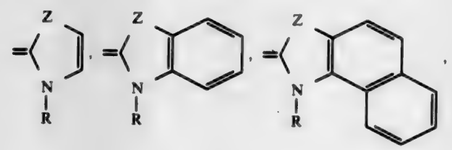
$$X-(CH=CH)_n-CH=Y$$

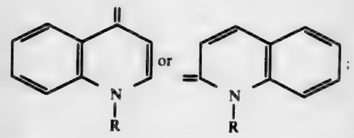
wherein X is a heterocyclic group of the formula:



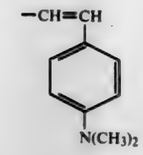


Y is a heterocyclic group of the formula:





these heterocyclic groups may be substituted by one or more lower alkyl groups, halogen atoms, or phenyl groups; Z is an oxygen, sulfur or selenium atom; R is an alkyl group having 1 to 7 carbon atoms; n is an integer of 1 or 2; and one hydrogen atom in the group of the formula $-(CH=CH)_n-$ may be substituted by an alkyl group having 1 to 4 carbon atoms, a halogen atom, a phenyl group, a styryl group, a group of the formula $-N(CH_3)_2$, $-N(C_2H_5)_2$ or $-N(C_3H_7)_2$, an alkoxy group having 1 to 4 carbon atoms, or a group of the formula:

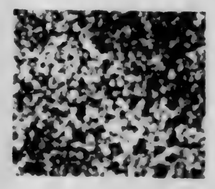


4,435,493

POROUS REUSABLE ZNO ELECTROPHOTOGRAPHIC ELEMENT

Jan A. de Putter, and Paul J. H. Tummers, both of Velden, Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Dec. 10, 1981, Ser. No. 329,407
Claims priority, application Netherlands, Jan. 15, 1981, 8100163
Int. Cl.³ G03G *5/087*
U.S. Cl. 430—87 **6 Claims**



1. A reusable electrophotographic element comprising a substrate suited for use in electrophotography and a photoconductive layer containing sensitized zinc oxide particles in admixture with binding agents that are mutually incompatible, including a first binding agent that has a higher affinity to zinc oxide than a second of said binding agents and is largely deposited on said zinc oxide particles, said first binding agent being a macromolecular compound having an average molecular weight of at least 12,000 and being present in said layer in an amount of 1.5 to 9% by weight calculated on the zinc oxide particles, and the amount of said second binding agent in said layer being substantially larger than that of said first binding agent, said layer being substantially porous and having a negative charge density of at most 1 m Coulomb per m^2 and consisting essentially of agglomerates formed in situ in a matrix consisting essentially of said second binding agent, said agglomerates being of between 2.5 and 6 μm in diameter and being stuck together by portions of said second binding agent and each consisting essentially of a collection of said zinc oxide particles enveloped in a body of said first binding agent.

4,435,494

PROCESS FOR DEPOSITING MAGNETIC TONER MATERIAL ON ELECTROSTATIC LATENT IMAGES

Ryuji Goto, Kumagaya; Keitaro Yamashita, Kodama, and Koji Noguchi, Saitama, all of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 5, 1982, Ser. No. 355,255
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—122 **6 Claims**

1. A process for depositing single component magnetic toner material on electrostatic latent images formed on an image bearing member and characterized by a dark voltage, comprising the steps of:

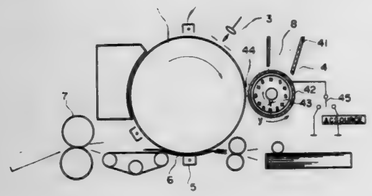
Providing a magnet roll adjacent the image bearing member, the magnet roll including a cylindrical rotatable shell of non-magnetic material and a rotatable permanent magnet member positioned coaxially within the shell, the rotat-

able permanent magnet member having on its outer periphery a plurality of magnetic poles of alternating polarity;

supplying magnetic toner material onto the surface of the shell of the magnet roll;

rotationally advancing the image bearing member in relation to the magnet roll;

rotating both the shell and the permanent magnet in the same direction to form an A.C. magnetic field for advancing the magnetic toner material to a contacting area with the image bearing member, the A.C. magnetic field having a frequency of greater than one per millimeter of the ad-



vancing of the image bearing member in relation to the magnet roll;

subjecting the magnetic toner material in the contacting area to the A.C. magnetic field; and

subjecting the magnetic toner material in the contacting area to an A.C. electrical field to render the toner substantially conductive, said A.C. electrical field having a peak voltage which is greater than the dark voltage of the latent images but less than 3,200 volts and having a frequency which is greater than v/0.3 where v is the advancing speed in millimeter/second of the image bearing member in relation to the magnet roll.

4,435,495

RELEASE OF PHOTOGRAPHIC REAGENTS WITH 3-PYRAZOLIDONE DEVELOPING AGENTS

Philip T. S. Lau, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 207,812, Nov. 17, 1980, abandoned. This application Jan. 22, 1982, Ser. No. 341,713

Int. Cl.³ G03C *5/54*

U.S. Cl. 430—218 **21 Claims**

1. A photographic assemblage for producing a dye image wherein an imagewise pattern of diffusible dye and an imagewise pattern of photographic reagent are formed by means of an oxidized 3-pyrazolidone developing agent, the assemblage comprising

(a) a support bearing at least one silver halide emulsion layer having associated therewith a dye image-providing material which is capable of providing an imagewise pattern of diffusible dye as a function of silver halide development;

(b) a photographic reagent releasing compound comprising an acyclic or cyclic compound in which the photographic reagent is linked, through a hetero atom, to a carbon atom which is adjacent to or in conjugation with a carbonyl group or an imino group;

(c) a dye image receiving layer;

(d) an alkaline processing composition and means for discharging same within the assemblage; and

(e) a 3-pyrazolidone developing agent which in its oxidized form is capable of oxidizing, under alkaline conditions, the photographic reagent releasing compound to cleave the hetero atom from the carbon atom to which it is linked and thereby release the photographic reagent;

the assemblage being free of color developing agent.

4,435,496

PHOTOPOLYMER CLEAVAGE IMAGING SYSTEM

John E. Walls, Wiesbaden Biebrich, Fed. Rep. of Germany, and Tulay Duyal, Englishtown, N.J., assignors to American Hoechst Corporation, Somerville, N.J.

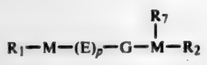
Filed Sep. 22, 1982, Ser. No. 421,685

Int. Cl.³ G03C *1/727*

U.S. Cl. 430—285 **9 Claims**

1. A photosensitive composition comprising

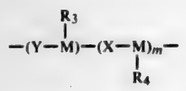
(a) a polymer of the formula



$$R_1-M-(E)_p-G-M-R_2$$

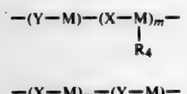
Wherein:

E is selected from the group consisting of one or more of:



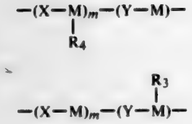
$$-(Y-M)-(X-M)_m-$$

with R_3 and R_4



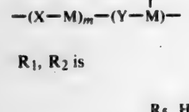
$$-(Y-M)-(X-M)_m-$$

with R_4



$$-(X-M)_m-(Y-M)-$$

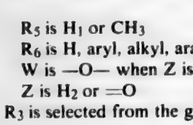
with R_4



$$-(X-M)_m-(Y-M)-$$

with R_3

R_1, R_2 is



$$-CH_2-W-CZ-C=C-R_6;$$

with R_5 and H

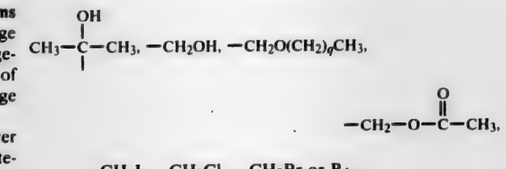
R_5 is H_1 or CH_3

R_6 is H, aryl, alkyl, aralkyl or phenoxy phenyl

W is —O— when Z is =O or is absent when Z is H_2

Z is H_2 or =O

R_3 is selected from the group consisting of



$$CH_3-C(OH)-CH_3,\ -CH_2OH,\ -CH_2O(CH_2)_qCH_3,$$

$$-CH_2-O-C(=O)-CH_3,$$

$-CH_2I$, $-CH_2Cl$, $-CH_2Br$ or R_1.

where q=0 to 3; and

M is an aromatic radical selected from the group consisting diaryl aliphatic hydrocarbon, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones; and

$R_4=R_3$

G=X or Y

$R_7=R_4$ when S=X or is absent when S=Y

m=1 to 3

p=1 to 8

$Y=-CH_2OCH_2-$

$X=-CH_2-$; and

(b) a free radical generating photosensitizer in an amount effective to cause the cleavage of said part (a) polymer upon exposure to actinic radiation.

4,435,497

CARBOXYL-CONTAINING COMPOSITIONS AND THEIR POLYMERIZATION

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,601

Claims priority, application United Kingdom, Jun. 19, 1981, 8119036; Mar. 24, 1982, 8208667

Int. Cl.³ G03C *1/68*; C08F *2/46, 4/00*; C08G *75/04*

U.S. Cl. 430—288 **7 Claims**

1. A polymerizable composition comprising

(a) a compound containing in the molecule

(i) at least one group selected from acryloyloxy and methacryloyloxy groups,

(ii) at least one group selected from allyl, methallyl, and 1-propenyl groups each of which is attached, either directly or through an oxygen atom or an oxycarbonyl group (—OCO—), to a carbon atom which forms part of an aromatic or cycloaliphatic nucleus, and

(iii) at least one carboxylic acid (—COOH) group,

(b) a compound containing, per molecule, at least two mercaptan groups directly attached to an aliphatic carbon atom or atoms, in a proportion as to supply at least 0.8 such mercaptan group per group selected from allyl, methallyl and 1-propenyl groups in (a) but less than 1.0 such mercaptan group per group selected from acryloyl, methacryloyl, allyl, methallyl, and 1-propenyl groups in (a).

4,435,498

MANUFACTURE OF WAFER-SCALE INTEGRATED CIRCUITS

Alan G. Baillie, Stirling, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 7, 1981, Ser. No. 328,339

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—318 **1 Claim**

1. A method of metalizing a wafer scale integrated circuit having a plurality of integrated circuit areas on a common substrate with interconnection between said plurality of circuit areas, said method using a wafer scale integrated circuit initially having a layer of metalization and a layer of photoresist, the method comprising:

irradiating said photoresist layer through a step and repeat optical mask which will allow the through passage of radiation to only those areas of metalization for each of said plurality of integrated circuit areas, each said area of metalization having conductors, said photoresist being a negative photoresist

irradiating said photoresist layer through a reticle optical mask which allows the through passage of radiation to define only global line areas of metalization for providing connection between said plurality of integrated circuit areas, said global lines connecting to said conductors, said reticle mask opaque in said plurality of integrated circuit areas; and,

etching said irradiated wafer scale integrated circuit to leave a pattern of metal providing electrical connection for both said plurality of integrated circuit areas and the electrical connection between said integrated circuit areas.

4,435,499

PHOTOTHERMOGRAPHIC SILVER HALIDE MATERIAL AND PROCESS

John W. Reeves, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,506

Int. Cl.³ G03C *5/16, 1/02*

U.S. Cl. 430—350 **49 Claims**

1. In a photothermographic element comprising a support bearing in reactive association, photosensitive silver halide grains and a photosensitive silver halide processing agent, the improvement wherein;

at least 50% of the projected area of the photosensitive silver halide grains is provided by thin tabular grains having an average grain thickness of less than 0.3 microns.

4,435,500

METHOD FOR DEVELOPING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Okutsu; Nobuyuki Iwasaki, and Shunji Takada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 31, 1982, Ser. No. 413,315

Claims priority, application Japan, Aug. 31, 1981, 56-136267

Int. Cl.³ G03C *5/38*

U.S. Cl. 430—419 **7 Claims**

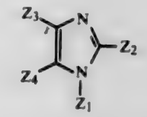
1. A method for processing a silver halide photographic light-sensitive material, comprising the steps of:

(a) providing a silver halide photographic light-sensitive material comprising a support having thereon a surface latent image type silver halide emulsion and a silver halide emulsion containing fogged nuclei inside the grains;

(b) exposing the photographic material to light; and

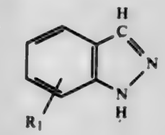
(c) developing the exposed photographic material in a developing solution comprising:

(i) a silver halide solvent, wherein said silver halide solvent is an imidazole derivative represented by the formula:

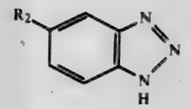


wherein Z_1, Z_2, Z_3 and Z_4 independently represent hydrogen, an alkyl group having 5 or less carbon atoms, a hydroxyalkyl group having 5 or less carbon atoms or an alkenyl group having 5 or less carbon atoms; and

(ii) a compound represented by the following general formula (I) or (II):



(I)



(II)

wherein R_1 is hydrogen, a nitro group, a cyano group or a halogen atom; and R_2 is hydrogen, a halogen atom or an alkyl group.

4,435,501

CONTROLLED SITE EPITAXIAL SENSITIZATION

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,920, Nov. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,855

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—434 **111 Claims**

1. A tabular grain silver halide emulsion comprised of a dispersing medium and

silver halide grains, wherein at least 50 percent of the total projected area of said silver halide grains is provided by tabular silver halide grains having a thickness of less than

0.3 micron, a diameter of a least 0.6 micron, and an average aspect ratio of greater than 8:1,

said tabular silver halide grains being bounded by opposed, substantially parallel {111} major crystal faces, and



silver salt epitaxially located on and substantially confined to selected surface sites of said tabular grains.

4,435,502

USE OF KETAL BLOCKED QUINONES TO REDUCE POST-PROCESS D-MIN INCREASE IN POSITIVE REDOX DYE-RELEASING IMAGE TRANSFER SYSTEMS

Noel R. Vanier, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 392,502, Jun. 28, 1982. This application May 2, 1983, Ser. No. 490,600

Int. Cl.³ G03C *1/40, 5/30*

U.S. Cl. 430—489 **5 Claims**

1. In a photographic processing composition comprising an aqueous alkaline solution and a silver halide developing agent, the improvement wherein said composition also contains a ketal blocked quinone which is soluble therein.

4,435,503

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Keiji Mihayashi; Tadashi Ogawa, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 13, 1982, Ser. No. 397,746

Claims priority, application Japan, Jul. 13, 1981, 56-109056

Int. Cl.³ G03C *5/24*

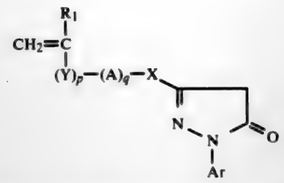
U.S. Cl. 430—548 **21 Claims**

1. A silver halide color photographic light-sensitive material, comprising:

a support base;

a silver halide emulsion layer on the base;

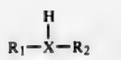
a 4-equivalent magenta color image forming polymer coupler latex being a polymer or copolymer having a repeating unit derived from a monomer coupler represented by formula (III)



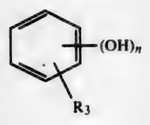
(III)

wherein R represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms, or a chlorine atom; X represents —CONH—, —NH—, —NHCONH— or —NHCOO—; Y represents —CONH— or —COO—; A represents an unsubstituted or substituted alkylene group containing from 1 to 10 carbon atoms in the alkylene moiety or an unsubstituted or substituted phenyl group; Ar represents an unsubstituted or substituted phenyl group; p represents 0 to 1; and q represents 0 or 1; and

a compound capable of reacting with and fixing formaldehyde gas, and being represented by the following general formulae (I) or (II):



(I)



(II)

wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an acyl group, an alkoxycarbonyl group, a carbamoyl group or an amino group, or R_1 and R_2 may be bonded each other to form a ring and at least one of R_1 and R_2 is an acyl group, an alkoxycarbonyl group, a carbamoyl group or an amino group; and X represents —CH— or —N—; R_3 represents an alkyl group, a substituted alkyl group, an aryl group or a substituted aryl group or an atomic group necessary to form a monocyclic ring fused to the benzene ring; and n represents an integer of not less than 2, and has not more than 300 of an equivalent molecular weight per unit of an active hydrogen atom as defined below:

$$\text{Equivalent Molecular Weight} = \frac{\text{Molecular Weight}}{\text{Number of Active Hydrogen Atoms in Molecule}}$$

4,435,504

IMMUNOCHROMATOGRAPHIC ASSAY WITH SUPPORT HAVING BOUND "MIP" AND SECOND ENZYME

Robert F. Zuk, Menlo Park, and David J. Litman, Mountain View, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Jul. 15, 1982, Ser. No. 398,505

Int. Cl.³ G01N *33/54, 33/52, 31/08, 33/58*

U.S. Cl. 435—7 **12 Claims**

1. A method for determining the presence of an analyte in a sample suspected of containing said analyte,

said method employing:

(A) an immunochromatograph having a porous support

permitting solvent travel and a plurality of a specific binding pair member ("mip") and a second enzyme, which mip and second enzyme are non-diffusively and uniformly bound to said support and extend a distance away from a first end of said support to define an immunosorbing zone; and

(B) a labeled mip, where said labeled mip is chosen to bind to said immunosorbing zone in relation to the portion of said immunosorbing zone in which said analyte is bound to define a border related to the amount of analyte present in said sample, said label being an enzyme which is part of a signal producing system including a first enzyme, wherein said first and second enzymes are related by the substrate of one being the product of the other, and which system produces a detectable signal of electromagnetic radiation defining said border;

said method comprising:

contacting said immunochromatograph: (1) at said first end with sample containing solvent for a time sufficient for at least a portion of said solvent to traverse said immunosorbing zone; and (2) with labeled mip containing solvent, where said labeled mip binds in said immunosorbing zone in relation to the analyte bound in said immunosorbing zone, and where steps (1) and (2) are concurrent or consecutive; and

determining the border defined by said labeled mip by means of said signal producing system, by contacting said immunosorbing zone with the remaining members of said signal producing system, where the position of the border relates to the amount of analyte present in said sample.

4,435,505

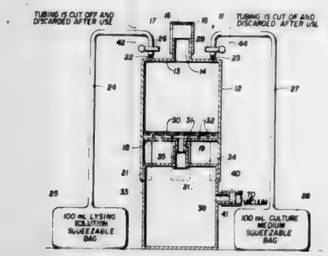
LYSIS FILTRATION CULTURE CHAMBER

Charles H. Zierdt, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 330,020, Dec. 11, 1981, Pat. No. 4,410,630. This application Sep. 28, 1982, Ser. No. 426,141

Int. Cl.³ C12Q *1/04*

U.S. Cl. 435—34 **15 Claims**



1. An apparatus for blood sample treatment involving lysis, filtration and culture, said apparatus comprising an upper chamber for receiving a blood sample, a first flexible bag containing lysing solution, a first flexible severable conduit connecting said first flexible bag to the upper chamber, a first removable clamp on said first flexible conduit, a second flexible bag containing culture medium, a second flexible severable conduit connecting said second flexible bag to said upper chamber, a second removable clamp on said second flexible conduit, said upper chamber having a bottom wall provided with a depending discharge spout, a filter member mounted in said upper chamber above said bottom wall, a lower chamber below said upper chamber and having a top wall provided with a tube member telescopically engaged on said discharge spout, and vacuum conduit means connected to said lower chamber.

14. A method of treating blood samples involving lysis filtration and culture comprising the steps of providing an upper chamber for receiving a blood sample, a lower chamber for receiving vacuum pressure, selectively providing a blood sample to said upper chamber, selectively providing lysing solution to said upper chamber, providing filter means in said upper chamber at the interface between said upper chamber and said bottom chamber, providing a removable mounting of said upper chamber on said lower chamber, mixing the blood sample and the lysing solution in said upper chamber, incubating said mixture for a predetermined period of time to permit complete blood lysis, applying vacuum pressure to said lower chamber while said upper and lower chambers are sealingly fitted together to thereby cause filtration through said filter means, separating said upper and lower chambers after completion of said filtration step, sealig said upper chamber containing the portions of said blood sample not filtered through to said lower chamber on said filter member, sealing said upper chamber, providing culture medium to said upper chamber, and performing normal blood culture analysis on said sealed upper chamber.

4,435,506

ISOLATION OF SUPEROXIDE DISMUTASE

David E. Jackson, Bourbonnais, and Frank J. Mannuzza, Peotone, both of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 13, 1982, Ser. No. 408,038

Int. Cl.³ C12N *9/02, 9/08*

U.S. Cl. 435—189 **7 Claims**

1. A method of isolating superoxide dismutase from red blood cells in the presence of proteinaceous impurities, which comprises contacting said red blood cells with a water-miscible organic solvent, at a pH in the range of 5 to 8, and a temperature of from 15° to 50° C. to denature said impurities, removing said impurities and obtaining therefrom purified superoxide dismutase.

4,435,507

PROCESS AND DEVICE FOR PREPARATION OF CELL SAMPLES FOR CYTOLOGICAL TESTS

Björn G. Stenkvist, Döbelnsgatan 13, S-752 37 Uppsala, Sweden

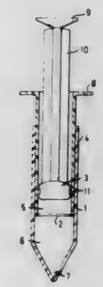
PCT No. PCT/SE81/00199, § 371 Date Feb. 18, 1982, § 102(e) Date Feb. 18, 1982, PCT Pub. No. WO82/00200, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 30, 1981, Ser. No. 355,588

Claims priority, application Sweden, Jul. 8, 1980, 8005023

Int. Cl.³ C12Q *1/36, 1/42;* A01N *1/02*

U.S. Cl. 435—262 **8 Claims**



1. Process for preparation of cell samples for cytological tests of exfoliated cells, in which the cell sample is in the form of a slurry in solution, characterized in that the slurry is introduced into a first chamber provided with a wall with a large number of holes with a cross section of 10–100 μm and in communication with a second chamber, and that said solution under the influence of a pressure differential between the first and the second chambers is made to pass through the wall

provided with holes one or more times, and that the material from the second chamber is used for the preparation of smears on a slide.

4,435,508

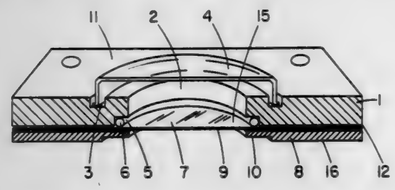
TISSUE CULTURE VESSEL

Michael G. Gabridge, Trudeau Rd., Saranac Lake, N.Y. 12983

Filed Nov. 20, 1981, Ser. No. 323,653

Int. Cl.³ C12M *3/00*

U.S. Cl. 435—284 **5 Claims**



1. A tissue culture vessel for the growth of cellular material comprising:

a. rigid upper plate of autoclavable, nontoxic material having a first aperture therethrough, a circular channel concentric with and remote from the first aperture and being accessible from the top surface of the upper plate, and a groove concentric with and adjacent to the first aperture and accessible from the bottom surface of the upper plate;

b. a rigid base plate of autoclavable material affixed to the upper plate and having a second aperture therethrough being substantially mutually aligned with the first aperture, the bottom surface of the base plate having an inset concentric with the second aperture and being accessible from the bottom surface of the base plate;

c. an interchangeable nontoxic growth substrate situated between the bottom surface of the upper plate and the top surface of the bottom plate and extending at least across the second aperture, providing an optically nondistorting surface for the use of high magnification microscopy visualization of the cellular material contained therein;

d. a nontoxic gasket located in the groove and in an abutting relationship with the interchangeable growth substrate and the upper plate; and

e. removeable cover situated in the circular channel and extending over and enclosing the first aperture.

4,435,509

ASSAYS, INCLUDING IMMUNOASSAYS WITH FITC LABEL ACTIVATED BY SODIUM HYPOCHLORITE

Fritz Berthold, Pforzheim, and Helmut Kubisiak, Wildbad, both of Fed. Rep. of Germany, assignors to Laboratorium Prof. Dr. Rudolf Berthold, Wildbad, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,563

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1980, 8027422

Int. Cl.³ G01N *33/52, 33/54, 33/58, 33/68*

U.S. Cl. 436—518 **14 Claims**

1. Process for carrying out an analytical determination of the presence of a substance by means of chemiluminescence, comprising employing fluorescein isothiocyanate (FITC) as a labelling agent, triggering a chemiluminescence reaction by adding an aqueous solution of sodium hypochlorite, and measuring the emission of light.

4,435,510

PROTECTION OF GRAPHITE ELECTRODES

Dennis Greensmith, Tamworth; Roderic H. Hammerton, Bednall; Colin J. Wall, Birmingham, all of England; Dietger Dunkelmann, Bocholt, Fed. Rep. of Germany; Helmut Jaunich, Raesfeld, Fed. Rep. of Germany, and Josef Schiffarth, Bocholt-Barlo, Fed. Rep. of Germany, assignors to Foseco Trading A.G., Chur, Switzerland

Filed Aug. 3, 1982, Ser. No. 404,906

Claims priority, application United Kingdom, Mar. 20, 1982, 8208226

Int. Cl.³ C03C *5/00*

U.S. Cl. 501—90 **11 Claims**

1. Particulate matter for the protection of a graphite electrode of an electric arc furnace to reduce loss of graphite by oxidation from the side of the electrode, said matter comprising particles each containing both a graphite-wetting fusible matrix material having a melting point below 1000° C. and a refractory filler, said particles comprising 30 to 80% by weight of refractory filler and 20 to 70% by weight of graphite-wetting fusible matrix material, the maximum particle size of the particles of the particulate matter being 0.5 mm and not more than 10% by weight of the matter comprising particles having a particle size of 0.1 mm or less.

4,435,511

GLASSES SUITABLE FOR SEALING FERRITES

Edward A. Weaver, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 13, 1982, Ser. No. 416,821

Int. Cl.³ C03C *3/08, 3/10*

U.S. Cl. 501—22 **1 Claim**

1. A glass suitable for sealing to ferrites such as manganese-zinc ferrites and consisting essentially of a composition which would result by mixing from 20 to 80 weight percent of glass A with 80 to 20 weight percent of glass B and melting the mixture to form a homogeneous glass:

Glass A		Glass B	
	Weight Percent		Weight Percent
SiO_2	1.8–2.2	SiO_2	67–70
B_2O_3	14–16.5	Li_2O	14–17
PbO	69–72	Al_2O_3	4–5.5
ZnO	8.2–9.2	CaO	9–12
BaO	2.7–3.5		

said glass having a coefficient of thermal contraction from 15° C. below the annealing point to room temperature of from 106 to 115×10^{-7}/°C.

4,435,512

PROCESS FOR PRODUCING CORDIERITE CERAMIC PRODUCTS

Kazuyuki Ito, Nishio; Masami Ouki, Nagoya; Naoto Miwa, Tsushima; Osami Kamigaito, Nagoya; Haruo Doi, Nagoya, and Yoshiharu Hirose, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagakute, both of, Japan

Filed Nov. 24, 1981, Ser. No. 324,571

Claims priority, application Japan, Nov. 28, 1980, 55-166643

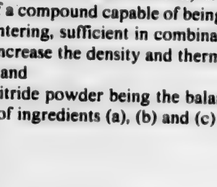
Int. Cl.³ C04B *35/04, 35/10*

U.S. Cl. 501—32 **3 Claims**

1. In a process for producing a cordierite ceramic product comprising the steps of blending the starting cordierite composition, molding the blended composition, and drying and sintering the molded composition, the improvement comprising using as the starting cordierite composition a composition comprising:

(a) a clay formulation having a cordierite composition comprising kaolin, talc, and aluminum oxide and/or an aluminum compound which is convertible into aluminum oxide;

(b) a glass having a cordierite composition present in an amout of from about 10% to about 90% by weight, based on the total weight of said components (a) and (b);



(c) from about 3% to about 8% by weight of an organic binder based upon the total weight of the starting cordierite composition; and

(d) from about 18% to about 23% by weight of water based on the total weight of the starting cordierite composition.

4,435,513

SINTERED BODIES OF ALUMINUM NITRIDE

Katsutoshi Komeya, Oiso; Akihiko Tsuge, Yokohama, and Hiroshi Inoue, Kawaguchi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 21, 1982, Ser. No. 420,842

Claims priority, application Japan, Sep. 28, 1981, 56-152141

Int. Cl.³ C04B *35/52, 35/58*

U.S. Cl. 501—96 **7 Claims**

1. A sintered body of aluminum nitride obtained by sintering a powder mixture consisting essentially of

(b) from about 0.047 to about 5.66 parts by weight (calculated in terms of calcium oxide, barium oxide, strontium oxide or mixtures thereof) of a powder of at least one compound selected from the group consisting of calcium oxide, barium oxide, strontium oxide and a compound capable of being converted into one of these oxides by sintering,

(c) an amount more than 0 and up to about 6.54 parts by weight (calculated in terms of carbon) of carbon powder or powder of a compound capable of being converted into carbon by sintering, sufficient in combination with ingredient (b) to increase the density and thermal conductivity of the body; and

(a) aluminum nitride powder being the balance,

the total amount of ingredients (a), (b) and (c) being 100 parts by weight.

4,435,514

CHROMIA MAGNESIA REFRACTORY

Stephen D. Hartline, Millbury, Mass., assignor to Norton Company, Worcester, Mass.

Filed Jul. 6, 1982, Ser. No. 395,550

Int. Cl.³ C04B *35/04, 35/12*

U.S. Cl. 501—117 **9 Claims**

1. A refractory product consisting essentially of grains of cofused chromia and magnesia, bonded with an in situ formed microcrystalline bond selected from the group consisting of chromia and chromia-magnesia.

4,435,515

CATALYST FOR THE CONVERSION OF CARBO-METALLIC CONTAINING OILS

Oliver J. Zandona, Ashland; William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland, and Hubert W. Beck, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 27, 1981, Ser. No. 296,679

Int. Cl.³ B01J *29/08*

U.S. Cl. 502—65 **2 Claims**

1. A catalyst composition for cracking hydrocarbons boiling above 650° F. and comprising carbo-metallic impurities of naphthenes and asphaltenes comprising at least about 35 wt % of a calcined rare earth exchanged "Y" crystalline faujasite dispersed in a clay containing matrix material, said catalyst composition providing a pore volume of at least 0.35 cc/g, a matrix material providing a substantial amount of pore size openings within the range of 500 to 2000 A, said catalyst composition comprising a residual sodium content of less than 0.30 wt % and said catalyst composition being rare earth exchanged during preparation to provide a lanthanum to cerium ratio greater than 1.3:1.

4,435,516

ACTIVITY ENHANCEMENT OF HIGH SILICA ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,037

Int. Cl.³ B01J *29/28*

U.S. Cl. 502—71 **8 Claims**

1. A method for enhancing the activity of a high silica-containing crystalline zeolite having a silica-to-alumina ratio greater than 500 which comprises contacting said material with an ammoniacal solution of an alkali metal aluminate for a period of time ranging from ½ hour to 5 days at a temperature of from 20° to 50° C. and at a pH of at least 10.

3. A method of enhancing the activity of a high silica zeolite of the ZSM-5 type having a silica-to-alumina ratio of at least 500 which comprises contacting said zeolite with an ammoniacal solution of an alkali metal aluminate at a temperature of from 20° to 50° C., for a period of time ranging from ½ day to 5 days and at a pH of at least 10.

4,435,517

COBALT HYDROFORMYLATION CATALYSTS

Leslie H. Simons, and David C. Alexander, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,194

Int. Cl.³ B01J *29/14, 29/24*

U.S. Cl. 502—74 **10 Claims**

1. A hydroformylation catalyst which is prepared by:

(a) vaporizing metallic cobalt(0);

(b) cocondensing the metallic cobalt(0) with a solvent to form a metallic cobalt(0)-solvent matrix;

(c) melting the metallic cobalt(0) and solvent matrix and thereby forming a metallic cobalt(0)-solvent slurry;

(d) absorbing the metallic cobalt(0)-solvent slurry on dry, oxygen free porous catalyst support;

(e) removing the solvent and thereby producing a catalyst which has from about 0.1 wt % to about 5 wt % of metallic cobalt(0) deposited thereon.

5. A process for the preparation of hydroformylation catalyst containing metallic cobalt(0) which comprises:

(a) vaporizing metallic cobalt(0);

(b) cocondensing the metallic cobalt(0) with a solvent to form a metallic cobalt(0)-solvent matrix;

(c) melting the metallic cobalt(0) and solvent matrix and thereby forming a metallic cobalt(0)-solvent slurry;

(d) absorbing the metallic cobalt(0)-solvent slurry on dry, oxygen-free porous catalyst support,

(e) removing the solvent and thereby producing a catalyst

which has from about 0.1 wt % to about 5 wt % of metallic cobalt(0) deposited thereon.

8. The process of claim 5 wherein the porous catalyst support is a metallic alumino-silicate zeolite having pore diameters in the range of about 3 angstroms to about 15 angstroms.

4,435,518

POLYMERIZATION CATALYST

B. Timothy Pennington, Sulphur, La.; Paul V. Roling, Spring, Tex., and John T. T. Hsieh, Warren, N.J., assignors to Cities Service Co., Tulsa, Okla.

Filed Nov. 24, 1982, Ser. No. 444,287
Int. Cl.³ C08F 4/68
U.S. Cl. 502—107 **22 Claims**

1. A catalyst composition consisting essentially of the product obtained by:

(1) drying an inorganic oxide having surface hydroxyl groups to form a support that is substantially free of adsorbed water,

(2) reacting the surface hydroxyl groups of the support with at least a substantially stoichiometric amount of at least one organometallic compound corresponding to the formula $R_xMR'_yR''_z$, wherein M is a metal of Group III of the periodic table, R is an alkyl group containing 1 to 12 carbon atoms, R′ and R″ are independently selected from the group consisting of H, Cl, and alkyl and alkoxy groups containing 1 to 12 carbon atoms, x has a value of 1 to 3; and y and z both represent values of 0 to 2, the sum of which is not greater than 3−x,

(3) reacting the thus-treated support with at least about 0.001 mol, per mol of organometallic compound, of at least one vanadium compound corresponding to a formula selected from $(RO)_nVOX_{3-n}$ and $(RO)_mVX_{4-m}$, in which formulas R represents a C_1-C_{18} monovalent hydrocarbon radical that is free of aliphatic unsaturation, X is Cl or Br, n has a value of 0 to 3, and m has a value of 0 to 4, and

(4) reacting the product of step 3 with at least about 0.1 mol, per mol of organometallic compound, of an alcohol containing 1 to 18 carbon atoms.

4,435,519

NOVEL CATALYST COMPOSITION

Richard L. Veazey, East Windsor, N.J., and B. Timothy Pennington, Sulphur, La., assignors to Cities Service Co., Tulsa, Okla.

Filed Nov. 24, 1982, Ser. No. 444,289
Int. Cl.³ C08F 4/68
U.S. Cl. 502—107 **15 Claims**

1. A catalyst composition consisting essentially of the product obtained by:

(1) drying an inorganic oxide having surface hydroxyl groups to form a support that is substantially free of adsorbed water,

(2) reacting the surface hydroxyl groups of the support with at least a substantially stoichiometric amount of at least one organometallic compound corresponding to the formula $R_xMR'_yR''_z$, wherein M is a metal of Group III of the periodic table, R is an alkyl group containing 1 to 12 carbon atoms, R′ and R″ are independently selected from the group consisting of H, Cl, and alkyl and alkoxy groups containing 1 to 12 carbon atoms, x has a value of 1 to 3, and y and z both represent values of 0 to 2, the sum of which is not greater than 3-x, and

(3) reacting the thus-treated support with at least about 0.001 mol, per mol of organometallic compound, of at least one vanadium compound prepared by reacting one molar proportion of $VOCl_3$ and/or $VOBr_3$ with about 0.5 to 1 molar proportion of a diol corresponding to the formula HO-R-OH, wherein R is a divalent hydrocarbon radical having a chain length of 2 to 16 carbon atoms.

4,435,520

CATALYST COMPOSITION

David E. Aylward, Madison, N.J., assignor to Cities Service Co., Tulsa, Okla.

Filed Nov. 24, 1982, Ser. No. 444,296
Int. Cl.³ C08F 4/68
U.S. Cl. 502—107 **17 Claims**

1. A catalyst composition consisting essentially of the product obtained by:

(1) drying an inorganic oxide having surface hydroxyl groups to form a support that is substantially free of adsorbed water,

(2) reacting the surface hydroxyl groups of the support with at least about 0.5 mol, per mol of surface hydroxyl groups, of at least one organometallic compound corresponding to the formula $R_xMR'_yR''_z$, wherein M is a metal of Group III of the periodic table, R is an alkyl group containing 1 to 12 carbon atoms, R′ and R″ are independently selected from the group consisting of H, Cl, and alkyl and alkoxy groups containing 1 to 12 carbon atoms, x has a value of 1 to 3, and y and z both represent values of 0 to 2, the sum of which is not greater than 3-x, and

(3) reacting the thus-treated support with at least about 0.001 molar proportion, per mol of organometallic compound, of a vanadium component consisting essentially of a mixture of about 10–90 mol percent of $VOCl_3$ and, correspondingly, about 90–10 mol percent of VCl_4.

4,435,521

HETEROGENEOUS PROCESS FOR PREPARING VANADIUM PHOSPHORUS OXYGEN CONTAINING CATALYST COMPOSITION

Tai-Cheng Yang, Mahwah; Krishna K. Rao, Paterson, and I-der Huang, Upper Saddle River, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 24, 1982, Ser. No. 381,206
Int. Cl.³ B01J 27/14
U.S. Cl. 502—209 **9 Claims**

1. A process for preparing a catalyst composition comprising vanadium, phosphorus and oxygen capable of catalyzing the oxidation of hydrocarbons which comprises:

(a) admixing to form a heterogeneous suspension at least one pentavalent vanadium compound with at least one organic alcohol in a manner and under conditions sufficient to condition said vanadium compound and reduce at least a portion of the pentavalent vanadium to a +4 valence state;

(b) admixing at least one organic alcohol, said conditioned vanadium compound, and at least one phosphorus containing compound, in a manner and under conditions sufficient to form a heterogeneous suspension of a vanadium-phosphorus-oxygen containing catalyst precursor composition having a vanadium valence of from about 3.9 to about 4.7, and a phosphorus to vanadium atomic ratio of from about 0.5:1 to about 2:1;

(c) separating said catalyst precursor composition from said admixture; and

(d) activating said catalyst precursor composition in the absence of air alone by contacting it with an atmosphere comprising a mixture of air and at least one hydrocarbon.

4,435,522

METHOD OF PRODUCING A CATALYST FOR LIQUEFACTION OF COAL

Tsuneo Yoshii, 284-banchi, Jonboji-cho, Kashihara-shi, Nara; Toshitaka Ueda, 5-23, Yagi-cho 3-chome, Kashihara-shi, Nara, and Tsukasa Kuroda, 3-2, Yuzato 1-chome, Higashisumiyoshi-ku, Osaka, all of Japan

Filed Jul. 21, 1982, Ser. No. 400,422
Claims priority, application Japan, Aug. 3, 1981, 56-122211
Int. Cl.³ B01J 23/26
U.S. Cl. 502—319 **1 Claim**

1. A method of producing a catalyst for liquefaction of coal

comprising heat-treating a salt or oxide of molybdenum or an alloy steel containing at least 0.3 weight percent of molybdenum in the presence of an alkali and water in a carbon monoxide atmosphere at a temperature of 220° to 450° C., and after water rinse and drying, reducing the same in the presence of tetralin and/or a phenol compound in a hydrogen atmosphere at a temperature of 400° to 450° C.

4,435,523

PROCESS FOR MANUFACTURING ARTICLES OF FOAMED THERMOPLASTIC MATERIAL AND ARTICLE PRODUCED THEREBY

Giuseppe Ponzielli, Milan, Italy, assignor to Coulson Heel Inc., Hanover, Pa.

Filed Aug. 24, 1982, Ser. No. 410,952
Claims priority, application Italy, Sep. 25, 1981, 24159 A/81
Int. Cl.³ B29D 27/00
U.S. Cl. 521—51 **11 Claims**



1. A process for producing injection molded articles of foamed thermoplastic material comprising the steps of:

(A) injecting a molten mass of thermoplastic material containing a foaming agent into at least one mold cavity of an injection mold;

(B) after the elapse of a relatively brief period of time from step (A), introducing a refrigerated compressed gas into the mold cavity internally of the injected mass of material, while it is still at least internally molten;

(C) cooling said mass of material into an article utilizing said internally introduced gas;

(D) terminating step (B) and shortly thereafter opening the mold for removal of said article.

4,435,524

PROCESS FOR PREPARING SPHERICAL AND POROUS VINYL RESIN PARTICLES

Kornelius Dinbergs, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 299,741, Sep. 8, 1981, Pat. No. 4,360,651, which is a continuation-in-part of Ser. No. 258,854, Apr. 29, 1981, abandoned, which is a continuation of Ser. No. 150,841, May 19, 1980, abandoned. This application Nov. 18, 1982, Ser. No. 442,701
Int. Cl.³ C08V 9/28
U.S. Cl. 521—65 **24 Claims**

1. A process for producing spherical particles of polymer having a high porosity which comprises polymerizing in an aqueous medium, in a reaction vessel having an agitator position therein, one or more ethylenically unsaturated monomers having a terminal $CH_2{=}C<$ grouping in the form of discrete particles having a diameter in the range of about 30 microns to about 1000 microns, said aqueous medium containing a monomer-soluble free radical yielding catalyst, a dispersant comprising a substantially unneutralized, water-insoluble, crosslinked polymer of one or more carboxylic acid monomers with a polyunsaturated crosslinking monomer havng a plurality of terminally unsaturated polymerizable groups, at least one nonpolyethylene oxide containing surfactant selected from the group consisting of the sorbitan ester family, glycerol ester family, and polyglycerol ester family, and at least one polyethylene oxide containing surfactant selected from the group consisting of polyoxyethylene alkylphenols, polyoxyethylene alcohols, polyoxyethylene esters of fatty acids, polyoxyethylene alkylamines, and polyoxyethylene alkylamides and polyoxyethylene sorbitan ester, conducting the polymerization at a temperature in the range of about 0° C. to about 150° C. with vigorous agitation in said aqueous medium throughout the entire polymerization reaction.

4,435,525

REACTION OF CARBONYLHYDRAZINES AND ORGANIC PEROXIDES TO FOAM UNSATURATED POLYESTER RESINS

Ernest R. Kamens, Tonawanda, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 431,545, Sep. 30, 1982, Pat. No. 4,393,148. This application Mar. 28, 1983, Ser. No. 479,300
Int. Cl.³ C08V 9/08, 9/10
U.S. Cl. 521—92 **14 Claims**

1. A foamable and curable composition consisting essentially of an admixture of a medium selected from the class consisting of (i) an unsaturated polyester and at least one polymerizable unsaturated monomer, (ii) polymethylmethyacrylate and at least one polymerizable unsaturated monomer, (iii) polyethers that are terminated by polymerizable unsaturated ester functions and at least one polymerizable monomer, and (iv) polymerizable monomers, said polymers having been dissolved or dispersed in said polymerizable monomers, a peroxide, at least one transition metal salt promoter wherein at least one of the metals is selected from the group consisting of iron and copper, and a carbonylhydrazine blowing agent.

4,435,526

PROCESS FOR THE MANUFACTURE OF UREA-FORMALDEHYDE/POLYURETHANE POLYMERS

Alan M. Wooler, Old Trafford, England, assignor to Abelard Management Services Limited, Manchester, England

Filed Sep. 29, 1982, Ser. No. 427,815
Claims priority, application United Kingdom, Nov. 6, 1981, 8133940; Sep. 13, 1982, 8226000
Int. Cl.³ C08G 18/14, 18/18, 18/54
U.S. Cl. 521—107 **6 Claims**

1. A process for the manufacture of flame-resistant polymer materials which comprises reacting together a stoichiometric excess of an organic polyisocyanate comprising di(isocyanatophenyl)methane or a mixture of di(isocyanatophenyl)methane with poly(isocyanatophenyl) polymethylenes, and an isocyanate-reactive polyether containing 4 to 6 hydroxyl groups to form a prepolymer and subsequently reacting the prepolymer with an aqueous solution of a urea-formaldehyde precondensate in the presence of a poly(haloalkyl) phosphate of a catalyst selected from the class consisting of di-N-morpholinodialkyl ethers, bis(dialkylamino)dialkyl ethers and tetraalkylalkylenediamines.

4,435,527

POLYESTER POLYMER POLYOLS MADE WITH POLYESTER POLYCARBONATES AND POLYURETHANES THEREFROM

Michael Cuscurida, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,506
Int. Cl.³ C08G 18/14
U.S. Cl. 521—173 **6 Claims**

1. A polyester polymer polyol made by the reaction of a polyester polycarbonate, a polyether polyol and an organic polyisocyanate wherein the combined portion of polyester polycarbonate and polyisocyanate is 10 to 40 wt. % of the polyether polyol portion, and the ratio of equivalents of polyester groups to equivalents of isocyanate groups ranges from 0.5 to 2.0.

4,435,528

CONCENTRATED EMULSIONS OF WATER-SOLUBLE POLYMERS

William G. Domina, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1981, Ser. No. 333,139
Int. Cl.³ C08L 33/02, 33/26
U.S. Cl. 523—332 14 Claims

1. A method for preparing a concentrated stable water-in-oil emulsion containing at least 40 weight percent of a water-soluble polymer which method comprises concentrating a stable preconcentrate water-in-oil emulsion containing a water-soluble polymer in an aqueous phase which is dispersed in a continuous oil phase, said preconcentrate emulsion containing (1) a smaller weight percent of water-soluble polymer than the weight percent thereof in the concentrated emulsion, (2) an emulsifying amount of a water-in-oil emulsifier and (3) an amount of an inverting surfactant sufficient to reduce the bulk viscosity of the preconcentrate emulsion, thereby forming the stable concentrated emulsion.

4,435,529

TANNIN-EPOXY REACTION PRODUCTS AND COMPOSITIONS THEREOF

Alan J. Kaylo, Glenshaw, and Nicholas T. Castellucci, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 11, 1982, Ser. No. 347,845
Int. Cl.³ C08L 63/02
U.S. Cl. 523—426 14 Claims

1. A composition of matter comprising an ungelled reaction product obtained by the heating of:

(A) a 1,2-epoxy material, and

(B) a tannin in an amount sufficient to provide an ungelled reaction product.

4,435,530

HEAT RESISTANT RESIN COMPOSITION

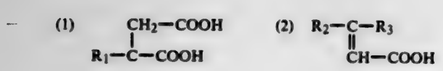
Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 354,829, Mar. 4, 1982, abandoned. This application Oct. 22, 1982, Ser. No. 436,165
Int. Cl.³ C08L 67/06, 77/12
U.S. Cl. 523—512 17 Claims

1. A curable resinous composition comprising

(A) about 5 to 95 weight percent of an unsaturated polyester resin or an unsaturated polyesteramide resin, wherein said resins are terminated with a norbornene functional material so that substantially all the norbornene functional moieties are esterified

(B) about 95 to 5 weight percent of an unsaturated mixture consisting of 20 to 80 weight percent of an ethylenically unsaturated compound and 80 to 20 weight percent of a dicyclopentadiene or polycyclopentadiene bis or tris ester of a unsaturated polycarboxylic acid having one of the formulae



where

R_1 is $=CH_2$ or $=C(CH_3)-CH_3$

R_2 is hydrogen or $-CH_2-COOH$

R_3 is hydrogen when R_2 is a $-CH_2-COOH$ group, or $-COOH$.

4,435,531

EMULSION COMPOSITION CONTAINING CELLULOSE DERIVATIVE

Yasuharu Nakayama; Kenji Yamamoto; Toshiki Komatsuzawa; Hajime Sukejima, and Kazuo Nomoto, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Aug. 2, 1982, Ser. No. 404,053
Claims priority, application Japan, Aug. 4. 1981, 56-121360
Int. Cl.³ C08L 1/10
U.S. Cl. 524—37 22 Claims

1. A cellulose derivative-containing emulsion composition which is the product of emulsion polymerization of (A) at least one ethylenically unsaturated monomer in the presence of (B) a water-solubilized product of a cellulose derivative-modified vinyl copolymer having an acid value of from about 3 to about 150, said vinyl copolymer being obtained by graft-copolymerizing (1) an ethylenically unsaturated monomeric component composed of an ethylenically unsaturated acid (1-a) and another ethylenically unsaturated monomer (1-b) onto (2) a cellulose derivative.

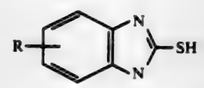
4,435,532

USE OF ZINC SALTS OF MERCAPTOBENZIMIDAZOLE AND DITHIOPHOSPHORIC ACID ESTERS FOR THE PREPARATION OF NITRILE RUBBER/POLYVINYL CHLORIDE MIXTURES

Joachim Thörmer, Leverkusen; Hans H. Bertram, Leichlingen; Otto Benn, Bergisch Gladbach, and Helmut Hurnik, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,529
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126402
Int. Cl.³ C08K 5/04, 5/34
U.S. Cl. 524—92 7 Claims

1. A process for stabilizing a mixture of (A) a copolymer of butadiene and acrylonitrile and (B) polyvinyl chloride or a copolymer of vinyl chloride and vinylidine chloride, vinyl acetate, ethylene, propylene, isobutylene or vinylidine fluoride which comprises adding to said mixture a stabilizing amount of (I) a zinc salt of a mercaptobenzimidazole of the formula



wherein

R is hydrogen or alkyl having 1 to 4 carbon atoms, (II) a zinc salt of di-C_1-C_9-alkyldithiophosphate or (III) a mixture thereof.

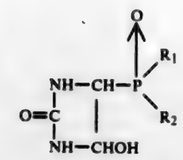
4,435,533

4-HYDROXY-5-(SUBSTITUTED PHOSPHINYL)ETHYLENEUREAS

Alexandros K. Tsolis, 171 Old National Rd., Arachovitika, and Ioannis A. Mikroyannidis, Navmahias Elis 48-52, both of Patra, Greece

Filed Jul. 30, 1981, Ser. No. 288,473
Int. Cl.³ C07F 9/65
U.S. Cl. 524—106 9 Claims

1. A compound of the formula:



wherein R_1 and R_2 are selected from the group consisting of alkoxy of 1 to 4 carbon atoms, cyclohexyloxy, phenoxy, alkoxy containing chlorine, alkoxy containing bromine and hydroxy.

5. A method of fire-proofing a polymeric material selected from the group consisting of cellulose, cellulose containing material, polyamides, polyurethanes, polyesters and polyacrylonitriles, which comprises incorporating into the polymeric material the compounds of claim 1 or 2.

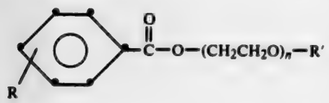
4,435,534

COALESCENT-CONTAINING COATING COMPOSITION

Glenn C. Jones and Larry J. Culver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,557
Int. Cl.³ C08K 5/10
U.S. Cl. 524—292 12 Claims

1. A coating composition comprising a latex of a normally solid organic addition polymer and a coalescing amount of at least one ether-ester solvent having the formula



where R represents hydrogen or an alkyl group of 1 to 4 carbon atoms, R′ represents a C_1–C_3 alkyl group, and n is 1 or 2.

4,435,535

ADIPIC ACID AS A SCORCH INHIBITOR FOR CARBOXYLATED RUBBERS

Donald C. Grimm, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 17, 1982, Ser. No. 379,242
Int. Cl.³ C08K 5/09
U.S. Cl. 524—321 6 Claims

1. An improved scorch resistant dried carboxylated nitrile rubber composition comprising: a dried carboxylated nitrile rubber and adipic acid which is distributed throughout said dried carboxylated nitrile rubber as a scorch inhibitor.

6. A process for improving the scorch resistance of a dried carboxylated nitrile rubber comprising, distributing throughout said dried carboxylated nitrile rubber adipic acid as a scorch inhibitor.

4,435,536

ONE-PACK COMPOSITION

Yasushi Kato, and Hisao Furukawa, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1982, Ser. No. 360,274
Claims priority, application Japan, Apr. 17, 1981, 56-59002
Int. Cl.³ C08K 5/07, 5/05
U.S. Cl. 524—378 3 Claims

1. A one-pack curable composition comprising a mixture consisting essentially of (A) 100 parts by weight of a silyl group containing resin having a backbone substantially comprising a vinyl polymer chain and containing at least one silicon atom attached to a hydrolyzable group at a terminal or in a side chain of its molecule; (B) 0.1 to 10 parts by weight of a curing catalyst; and (C) a solvent;

wherein said curing catalyst is selected from the group consisting of a carboxylic acid type organic tin compound, a mercaptide type organic tin compound having a Sn-S bond, and a sulfide type organic tin compound having a Sn=S bond;

wherein said solvent comprises hydrolyzable ester and/or alkyl alcohol; and

wherein said silyl group containing resin has a molecular weight of between 1,000 and 30,000 and contains an ethylenically unsaturated organic monomer containing active hydrogen as a copolymerization component.

4,435,537

STORAGE STABLE DISPERSIONS OF AROMATIC POLYESTERS IN POLYHYDROXYL COMPOUNDS AND THEIR PREPARATION

Peter Horn, Heidelberg; Anton Hesse; Walter Heckmann, both of Weinheim; Ulrich Lebert, Hettenleidelheim; Alfred Guthmann, Worms, and Matthias Marx, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,763
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112123
Int. Cl.³ C08G 18/14
U.S. Cl. 524—391 11 Claims

1. A storage stable dispersion comprising

(a) a disperse phase comprising from 5 to 35 percent by weight relative to the overall dispersion of a crystallizable polyester of (i) an acid selected from the group consisting of isophthalic acid, terephthalic acid, a mixture of terephthalic acid and an aliphatic dicarboxylic acid, a mixture of terephthalic acid and an aromatic dicarboxylic acids, and a mixture of terephthalic acid, an aliphatic dicarboxylic acid, and an aromatic dicarboxylic acid, and (ii) an alcohol having 1 to 6 carbon atoms wherein said polyester has a melting viscosity at 150° C. of 15 mPas to 3000 mPas; and

(b) a continuous phase consisting of from 65 to 95 percent by weight relative to the overall dispersion of a polyhydroxyl compound having a melting point below 30° C. such that the disperse phase is soluble at temperatures above 35° C. and such that more than 50 percent of the dispersed phase has particle sizes of 10.5 to 100 microns.

4,435,538

COMPOSITION FOR THE PREPARATION OF CARBONACEOUS BASE USE IN THE MANUFACTURE OF SILICONIZED ANTIFRICTION MATERIALS

Valery I. Kostikov, ulitsa Marii Ulyanovoi, 9, korpus 2, kv. 12, Moscow; Jury I. Koshelev, Oktyabrsky prospekt, 365, kv. 8; Vasily D. Telegin, Oktyabrsky prospekt, 306, kv. 71, both of Ljubertsy Moskovskoi oblasti; Alexandr S. Tarabanov, ulitsa Sayanskaya, 6, kv. 123, Moscow; Elena M. Tatievskaya, Strastnoi bulvar, 13a, kv. 32, Moscow, and Lyana I. Kosova, Zeleny prospekt, 11a, kv. 18, Moscow, all of U.S.S.R.

PCT No. PCT/SU80/00102, § 371 Date Jan. 26, 1982, § 102(e) Date Jan. 26, 1982, PCT Pub. No. WO81/03486, PCT Pub. Date Dec. 10, 1981
PCT Filed Jun. 9, 1980, Ser. No. 346,035
Int. Cl.³ C08K 3/34
U.S. Cl. 524—492 4 Claims

1. A composition for the preparation of a carbonaceous base for use in the manufacture of siliconized antifriction materials comprising a carbonaceous filler and phenolformaldehyde resin, characterized in that it also incorporates a sital of the following composition (percent by weight): Al_2O_3—10–12, CaO—12–14, MgO—9–11, Na_2O—5–6, SiO_2—the balance, the components being present in the following proportions, percent by weight:

carbonaceous filler	65 to 85
phenolformaldehyde resin	12 to 30
sital	3 to 5.

4,435,539

STABILIZED POLYMER COMPOSITIONS

David Witiak, Yardley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 218,909, Dec. 22, 1980, abandoned. This application Jul. 29, 1982, Ser. No. 403,240

Int. Cl.³ C08L *33/00*

U.S. Cl. 524—558 **17 Claims**

1. A polymer composition comprising a copolymer of

(a) an alpha, beta-monoethylenically unsaturated monocarboxylic acid, and

(b) a hydroxy alkyl (C_2–C_6) ester of an alpha, beta-monoethylenically unsaturated monocarboxylic acid,

said copolymer characterized by a monomer ratio (a:b) ranging from 95:5 to 50:50; a weight average molecular weight of about 100,000–500,000, partial neutralization to an extent of at least 25%, and wherein aqueous solutions containing 5–20 weight % of the neutralized copolymer exhibit resistance to gelation while producing a Brookfield viscosity of not greater than 20,000 cps measured at 20° C.±2° C. using spindle No. 3 at 3 rpm.

4,435,540

NOVEL POLYMER COMPOSITION

Kazuo Kishida, Otake; Isao Sasaki, Hiroshima, and Nobuhiro Mukai, Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

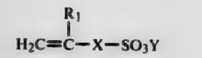
Filed Dec. 31, 1981, Ser. No. 336,460

Claims priority, application Japan, Jan. 6, 1981, 56/937; Mar. 12, 1981, 56/35549

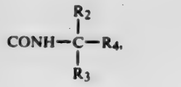
Int. Cl.³ C08K *3/04, 3/08, 3/26, 3/00*

U.S. Cl. 524—780 **6 Claims**

1. A method of preparing a polymeric composition in which an inorganic substance is firmly consolidiated in an organic polymer, comprising: heterogeneously polymerizing methylmethacrylate or a vinyl monomer mixture comprising methylmethacrylate as the major component without initiating the reaction with a radical polymerization initiator at a temperature such that substantially no thermal polymerization occurs in a polymerization system containing said inorganic substance dispersed in an aqueous medium in the presence of at least one monomer selected from the group consisting of sulfonic acid monomers and sulfonate monomers of formula [I]



wherein R_1 is hydrogen, alkyl of 1 to 20 carbon atoms, phenyl, a derivative of a phenyl group, or a halogen atom; X is CONH,



$COO(CH_2)_m$ or $(CH_2)_n$

wherein R_2 and R_3 are each hydrogen or alkyl of 1 to 15 carbon atoms, R_4 is an alkylene group of 1 to 15 carbon atoms, m is an integer of 1 to 20, and n is 0 or an integer of 1 to 20; and U is a hydrogen atom, ammonium radical or an alkali metal atom.

4,435,541

ANTISTATIC THERMOPLASTIC MOLDING MASSES CONTAINING STYRENE-ACRYLONITRILE GRAFTED POLYETHER

Franz Brandstetter, Neustadt; Juergen Hambrecht, Heidelberg; Bernhard Scharf, Schriesheim; Gerhard Lindenschmidt, Leimen; Josef Schwaab, Maikammer, and Rudolf H. Jung, Worms, all of Fed. Rep. of Germany, assignors to Dr. Beck & Co. AG, Hamburg, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,862

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112428

Int. Cl.³ C08L *25/12, 55/02, 71/02*

U.S. Cl. 525—64 **7 Claims**

1. An antistatic thermoplastic molding material comprising a copolymer of styrene and/or α-methylstyrene and acrylonitrile and, as an antistatic agent, from 0.01 percent by weight to 1.5 percent by weight of a graft polyol prepared by polymerization of a styrene-acrylonitrile mixture in a polyhydroxy polyalkylene polyether said polyether having a molecular weight of 500 to 10,000 and being obtained by the addition reaction of an alkylene oxide having 2 to 3 carbon atoms with a di- or trifunctional initiator molecule.

4,435,542

POLYOL RESIN

Shoji Watanabe, and Takuya Miho, both of Ohtake, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Mar. 2, 1982, Ser. No. 354,003

Claims priority, application Japan, Mar. 23, 1981, 56-42035

Int. Cl.³ C08F *8/28*

U.S. Cl. 525—118 **13 Claims**

1. A polyol resin obtained by reacting 95–40% by weight of an aromatic vinyl monomer-allyl alcohol copolymer with 5–60% by weight of ε-caprolactone, or ε-hydroxycaproic acid.

4,435,543

PHENOLIC RESIN COMPOSITIONS

Kenji Ema; Junji Hara; Shuhei Ikado; Hideo Kawashima, and Tomohide Yokoo, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 130,277, Mar. 14, 1980, Pat. No. 4,378,450. This application Apr. 12, 1982, Ser. No. 367,514

Claims priority, application Japan, Mar. 15, 1979, 54-29349; Mar. 3, 1980, 55-25270

Int. Cl.³ C08L *37/00, 61/04*

U.S. Cl. 525—143 **6 Claims**



1. Phenolic resin compositions for molding comprising 100 parts by weight of a polymeric substance having a phenolic OH group selected from the group consisting a phenolic resin and a phenolic polymer and 1 to 100 parts by weight of a rubber containing an epoxy group in its molecule and having an epoxy equivalent of 500 to 30,000 said rubber containing an epoxy group being an acrylic polymer and having a glass transition temperature of 25° C. or lower.

4,435,544

MIXTURES OF POLYCARBONATE ELASTOMERS, CONTAINING HYDROGENATED DIMERIC FATTY ACID ESTERS AS CONDENSED UNITS, AND POLYOLEFINES AND, OPTIONALLY, OTHER POLYCARBONATES

Manfred Schreckenberg; Werner Nouvertne; Harald Medem; Rolf Dhein, and Peter R. Müller, all of Krefeld-Uerdingen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,329

Claims priority, application European Pat. Off., Oct. 21, 1981, 81108608.1

Int. Cl.³ C08L *69/00, 23/04, 23/06*

U.S. Cl. 525—146 **11 Claims**

1. A mixture comprising

(a) a high-molecular weight, segmented, thermoplastically processable, aromatic polycarbonate containing 5 to 70% by weight of hydrogenated dimeric fatty acid esters as condensed units, alone or with,

(b) another high-molecular weight, aromatic, thermoplastic polycarbonate,

and further comprising

(c) a thermoplastic polyolefine,

the sum of the components (a)+(b) being between 98% by weight and 90% by weight and the amount by weight of component (c) being between 2% and 10%, relative to the total amount by weight of (a)+(b)+(c) (which amounts to 100% by weight), in each case, and the amount by weight of hydrogenated dimeric fatty acid ester as condensed units, being from 3 to 30% by weight, relative to the amount by weight of (a)+(b).

4,435,545

METHOD OF PREPARING COSMETOLOGICAL POLYMERS

Claude Favie, and Michel Mercadier, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), France

Continuation of Ser. No. 93,511, Nov. 13, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,532

Claims priority, application France, Nov. 21, 1978, 78 32742; Nov. 21, 1978, 78 34743

Int. Cl.³ C08F *8/34, 8/12, 8/18, 8/00*

U.S. Cl. 525—344 **18 Claims**

1. A process of preparing an organic polymer having a chain carrying at least one active group attached to a chain carbon atom by chemical bonds comprising reacting a polymer having at least two epoxy bridges selected from the group consisting of polyolefin and a polymer or copolymer of an acrylate or methacrylate with an active group containing cosmetological compound selected from the group consisting of cinnamic acid, methoxycinnamic acid and salicylic acid such that 16–90% of the epoxy bridges are opened and one of each pair of the resulting epoxy carbon atoms has the active group cosmetological moiety bonded thereto and the other of the resulting carbon atoms carries a hydroxyl group, and thereafter opening the remaining epoxy bridges such that one of each pair of the newly opened epoxy carbon atoms carries a hydroxyl group and the other carries a halogen, hydroxy, amine or mercaptan group.

4,435,546

POLYESTERS COMPOSITIONS WHICH CRYSTALLIZE RAPIDLY

Peter Bier, New Martinsville, W. Va., and Rudolf Binsack, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 960,976, Nov. 15, 1978, abandoned, and Ser. No. 875,015, Feb. 3, 1978, abandoned, Ser. No. 960,976, , which is a continuation of Ser. No. 852,894, Nov. 18, 1977, abandoned. This application May 18, 1979, Ser. No. 40,385

Claims priority, application Netherlands, Nov. 2, 1977, 1712080; Italy, Nov. 21, 1977, 51875-77; Japan, Nov. 21, 1977, 53-139036; United Kingdom, Nov. 22, 1977, 4860577; France, Nov. 23, 1977, 77 35259; Netherlands, Nov. 23, 1977, 7712914; Switzerland, Nov. 23, 1977, 14348-77

Int. Cl.³ C08F *283/00;* **C08G** *63/76;* **C08L** *67/00*

U.S. Cl. 525—418 **23 Claims**

1. A thermoplastic composition which crystallizes rapidly, comprising

a. a high molecular weight polyalkylene terephthalate which has an intrinsic viscosity of at least about 0.4 dl/g (measured as a 0.5% strength by weight solution in a phenol/-tetrachloroethane mixture in a weight ratio of 1:1 at 25° C.) and

b. about 0.5 to 30% by weight based on the weight of a. and b. of an esterification product of aliphatic carboxylic acids with 1 to 25 carbon atoms and alcohols selected from aliphatic, cycloaliphatic and araliphatic alcohols with 1 to 20 carbon atoms, said esterification product being monomeric and free of groups substantially reactive with said high molecular weight polyalkylene terephthalate under injection molding conditions and having a carbon atom to ester bond ratio of between 4 and 14 inclusive of the carbonyl carbon atom.

4,435,547

STABILIZED POLYPYRROLIDONE END CAPPED WITH ALKANOLAMINE AND PROCESS FOR PREPARING

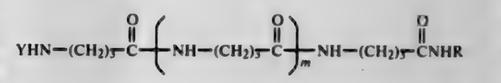
Gar L. Woo, Tiburon, and Phillip H. Parker, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 220,483, Dec. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 220,575, Dec. 29, 1980, Pat. No. 4,383,065. This application Feb. 9, 1983, Ser. No. 465,226

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—420 **25 Claims**

1. A poly-2-pyrrolidone polymer composition, capable of being formed into filaments or other shaped articles, having a weight average molecular weight in the range of about from 35,000 to 100,000 and in which at least about 50% of the molecules of said poly-2-pyrrolidone are capped polymer molecules having the formula



wherein R is a radical having 2 through 12 carbon atoms and having the formula $—R^1R^2Z$, wherein Z is hydroxy, R^1 and R^2 are independently selected from the group of lower alkylene or substituted lower alkylene having 1 through 3 substituents independently selected from the group of amino or hydroxy and wherein the total of the sum of the substituents in R^1 plus R^2 is from 0 through 3 and wherein each carbon atom in said radical has a maximum of one hydroxy or one amino substituent including the Z hydroxy substituent; Y is hydrogen or formyl; and m is a whole integer of at least about 200; and wherein said weight average molecular weight is determined by solution viscosity using a solution containing 0.50 to 1.0

grams of the dried extracted polymer in 10 ml of 88% aqueous formic acid, and applying a Gardner viscosity molecular weight type relationship developed from specific viscosities of 0.1 g of known weight average molecular weight poly-2-pyrrolidone polymers in 100 ml of m-cresol at 25° C.

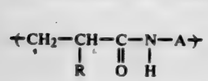
4,435,548

BRANCHED POLYAMIDOAMINES

Donald A. Tomalia; Larry R. Wilson, and Jerry R. Conklin, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

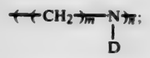
Filed Apr. 27, 1981, Ser. No. 258,158
Int. Cl.³ C08G *69/26*
U.S. Cl. 525—451 **7 Claims**

1. A branched polyamidoamine having a weight average molecular weight of at least about 550 and consisting essentially of units corresponding to the formula I

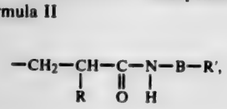


I

wherein R at each occurrence is independently —H or 13 CH_3; A is

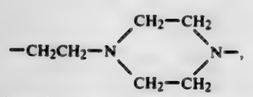


m is an integer from 2 to about 10 and n is an integer from 1 to about 6; D at each occurrence is independently —H or corresponds to formula II



II

with the proviso that at least about 10 percent of the groups represented by D correspond to formula II; B is $CH_{2x}NR'_y$ or



x is an integer from 2 to about 10 and y is an integer from 1 to about 6; R′ at each occurrence is independently —H, a C_1 to C_4 alkyl, or a C_1 to C_4 hydroxyalkyl.

4,435,549

N-CYANO AMIDE COMPOSITIONS AND ADDUCTS THEREOF

Shiow-Ching Lin, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,187
Int. Cl.³ C08G *59/44*
U.S. Cl. 525—504 **7 Claims**

1. N-cyano amide compositions and adducts thereof of the formula:



wherein R is an aromatic moiety or a polymeric adduct with the valence of n and n is 2 or 3.

4,435,550

METHOD FOR POLYMERIZING α-OLEFIN

Haruo Ueno, Chiba; Takefumi Yano, Ichihara; Tokuji Inoue, Ichihara; Shigeru Ikai, Ichihara; Yoshiyuki Kai, Ichihara, and Michimasa Shimizu, Ichihara, all of Japan, assignors to UBE Industries, Ltd., Chiba, Japan

Filed Mar. 9, 1982, Ser. No. 356,475
Claims priority, application Japan, Mar. 19, 1981, 56-38643
The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.
Int. Cl.³ C08F *4/02, 10/04*
U.S. Cl. 526—73 **29 Claims**

1. A method for polymerizing an α-olefin which comprises:
(1) a preliminary polymerization step wherein a feed containing at least one α-olefin having 3 or more carbon atoms is brought, at a temperature of 40° C. or less, into contact with a catalyst comprising (A) a first solid catalytic ingredient which has been prepared in such a manner that (a) a Grignard compound of the formula (I):

$$R^3M_gX \quad (I)$$

wherein R^3 represents an alkyl radical having 1 to 8 carbon atoms and X represents a halogen atom, is reacted with a reaction product of an aluminium halide with an organic silicon compound of the formula (II):

$$R_n^1Si(OR^2)_{4-n} \quad (II)$$

wherein R^1 represents a member selected from the group consisting of alkyl radicals having 1 to 8 carbon atoms and a phenyl radical, R^2 represents an alkyl radical having 1 to 8 carbon atoms and n represents an integer of 0, 1, 2 or 3, (b) the resultant solid carrier is brought into a first contact with a titanium tetrahalide, (c) the resultant titanium-containing solid product is treated with an organic acid ester and, finally, (d) the treated solid product is brought into a second contact with a titanium tetrahalide; (B) a second catalytic ingredient consisting of at least one trialkyl aluminium of the formula (III):

$$AlR_3^4 \quad (III)$$

wherein R^4 represents alkyl radical having 2 to 6 carbon atoms; and (C) a third catalytic ingredient consisting of at least one organic acid ester, whereby at least a portion of said α-olefin is preliminarily polymerized; and, thereafter,
(2) a final polymerization step wherein a polymerization mixture consisting of said catalyst, the resultant preliminary α-olefin polymer and α-olefin to be polymerized is heated at a temperature above 40° C., whereby the entire amount of α-olefin in said feed is polymerized.

4,435,551

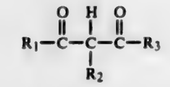
PROCESS FOR THE POLYMERIZATION OR COPOLYMERIZATION OF ETHYLENE WITH AN IMPROVED SUPPORTED CHROMIUM OXIDE TYPE CATALYST

Lambertus J. M. A. van de Leemput, Echt; Godefridus A. H. Nooijen, Helden-Panningen, and Hendrikus W. van der Loo, Munstergeleen, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Division of Ser. No. 261,738, May 7, 1981, Pat. No. 4,382,020.
This application Sep. 14, 1982, Ser. No. 418,020
Claims priority, application Netherlands, May 7, 1980, 8002599
Int. Cl.³ C08F *4/78*
U.S. Cl. 526—101 **3 Claims**

1. An improved process for the polymerization of ethylene, or the copolymerization of ethylene with at most 15 mole percent of one or more alkenes having 3 to 15 carbon atoms, in the prsence of a supported chromium oxide type of catalyst, said improvement comprising carrying out said polymerization in the presence of a catalyst prepared by the steps of:

reacting in the presence of a solvent which is inert with respect to compounds (1), (2), and (3) hereinafter referenced,
(1) a chromium chelate of a 1,3-diketo compound, and
(2) a vanadium chelate or a vanadyl chelate of a 1,3-diketo compound,
separately or jointly with
(3) an organo-metallic compound of an element from Group II or III of the periodic system in which hydrocarbyl groups with 1-20 carbon atoms are bound, via a carbon atom, to the element;
jointly contacting the resulting solution containing the reaction products of (1) and (2) with (3) with, and depositing such reaction products on, an inert inorganic supporting material; and
heating said supporting material having such reaction products deposited thereon in a non-reducing atmosphere at a temperature between about 200° and 1200° C.;
wherein said 1,3-diketo compounds of (1) and (2) are the same or different and have the formula



in which formula R_1, R_2, and R_3 are the same or different, R_1 and R_3 being an alkyl group with 1-10 carbon atoms, and R_2 being selected from the group consisting of an alkyl group with 1-10 carbon atoms, and a hydrogen atom.

4,435,552

PROCESS FOR THE PREPARATION OF COPOLYMERS OF ETHYLENE WITH AT LEAST ONE OTHER 1-ALKENE

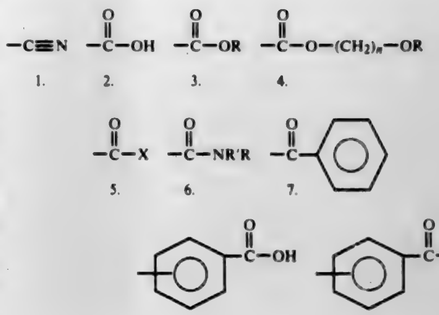
Georges G. Evens, Maasmechelen, Belgium, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Jul. 10, 1981, Ser. No. 282,011
Claims priority, application Netherlands, Jul. 11, 1980, 8003997; Jun. 5, 1981, 8102724
Int. Cl.³ C08F *4/68, 210/16, 210/18*
U.S. Cl. 526—140 **15 Claims**

1. A process for copolymerization to form copolymers containing
from 25-85 Wt. % of ethylene units,
from 15-75 Wt. % of units of at least one other 1-alkene,
and up to 20% of units of aliphatic or alicyclic polyunsaturated monomer of from 3 to 20 carbon atoms and having at least two non-conjugated carbon-carbon double bonds wherein the catalyst system employed contains
(a) a compound of vanadium which is soluble in the polymerization medium,
(b) a compound of metal from Periodic Table Groups I-III in which at least one hydrocarbon group is bound directly to the metal atom through a carbon atom
in the presence of a halogen compound of the general formula:



wherein
A represents a phenyl group having at most one substituent halogen atom or up to two alkyl groups, or a thienyl, furyl, pyrollyl, N-alkylpyrollyl, or pyridyl group bonded to the carbon atom directly or through a carbonyl group
X is chlorine or bromine
Y is chlorine, bromine, hydrogen, or a hydrocarbon group of from 1 to 8 carbon atoms, and
Z represents one of the radicals represented by the following formulae:



wherein R and R^1 represent hydrocarbon groups of from 1 to 8 carbon atoms, and wherein A, X, Y, and Z are chosen such that said halogen compound contains a total of at most two halogen atoms.

4,435,553

PROCESS FOR NONAQUEOUS DISPERSION POLYMERIZATION OF BUTADIENE IN THE PRESENCE OF CARBONYLATED POLYMERIC DISPERSING AGENTS

Morford C. Throckmorton, and Joginder Lal, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 20, 1982, Ser. No. 420,066
Int. Cl.³ C08F *2/08*
U.S. Cl. 526—201 **10 Claims**

1. A process for the nonaqueous dispersion polymerization of butadiene monomer in a reaction mixture containing a liquid nonaqueous dispersion medium, the improvement which comprises carrying out the polymerization of the butadiene monomer in the presence of at least one carbonylated polymer selected from the group consisting of (1) carbonylated copolymers of alpha-olefins and conjugated diolefins, (2) carbonylated terpolymers of alpha-olefins and conjugated diolefins, (3) carbonylated copolymers of alpha-olefins and nonconjugated diolefins, (4) carbonylated terpolymers of alpha-olefins and nonconjugated diolefins, (5) terpolymers of alpha-olefins, conjugated diolefins, and nonconjugated diolefins, (6) carbonylated homopolymers of conjugated diolefins, (7) carbonylated homopolymers of nonconjugated diolefins, (8) carbonylated copolymers of conjugated diolefins and nonconjugated diolefins, and (9) carbonylated terpolymers of conjugated diolefins and nonconjugated diolefins.

4,435,554

EMULSION POLYMERIZATION PROCESS USING MONOBASIC ALKALI PHOSPHATE

Anthony J. Bell, Stow, and Leland E. Beyersdorff, North Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 30, 1982, Ser. No. 412,697
Int. Cl.³ C08F *236/12, 4/08*
U.S. Cl. 526—229 **8 Claims**

1. A process for the preparation of acrylonitrile-butadiene rubber wherein an anionic surfactant and potassium persulfate is used, the improvement which comprises the addition of a monobasic alkali phosphate to an emulsion polymerization formulation
said monobasic alkali phosphate being of the general structural formula

MH_2PO_4

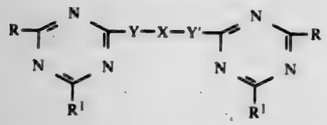
wherein M is selected from the group consisting of sodium, potassium or lithium;
said monobasic alkali phosphate being present in amounts from 0.4 to 1 part per hundred parts of total monomers present in the emulsion polymerization formulation.

4,435,555
NOVEL POLYMERIC LIGHT STABILIZERS FOR POLYMERS

Frank F. Loffelman, Bridgewater, and Thomas E. Brady, Whitehouse Station, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

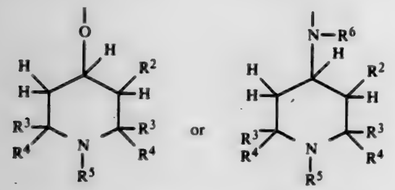
Continuation-in-part of Ser. No. 285,239, Jul. 20, 1981, abandoned. This application Feb. 16, 1983, Ser. No. 467,106
Int. Cl.³ C08F *26/06*
U.S. Cl. 526—261 **6 Claims**

1. A polymer prepared by polymerizing, optionally with a comonomer, a compound of the formula (I)



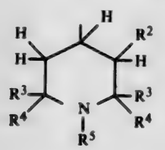
(I)

wherein R represents C_3–C_6 alkenyloxy, C_3–C_6 alkenylamino, or di(C_3–C_6 alkenyl)amino; R^1 represents C_1–C_8 alkyl, C_1–C_8 alkoxy, halo, C_1–C_8 alkylthio, C_3–C_6 alkenyloxy, amino, C_3–C_6 alkenylamino, di(C_3–C_6 alkenyl)amino, the groups

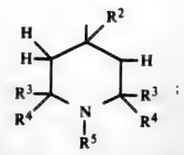


or

C_1–C_{18} alkylamino, di(C_1–C_{18})alkylamino, morpholino, pyrrolidyl, piperidino, a substituted C_1–C_{18} alkylamino, or a substituted di(C_1–C_{18})alkylamino, wherein the substituents are selected from amino, cyano, carboxy, wherein the alkoxy moiety has 1 to 8 carbon atoms, and the group



wherein R^2 represents hydrogen, C_1–C_8 alkyl, or benzyl; R^3 and R^4 independently represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; and R^5 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxyl, or oxyl; R^6 represents hydrogen, C_1–C_8 alkyl, or the group



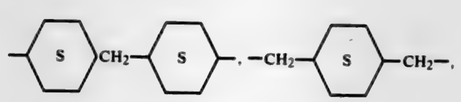
Y and Y', which may be the same, or different, represent oxy, or

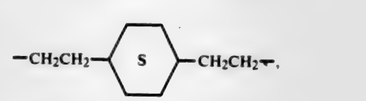


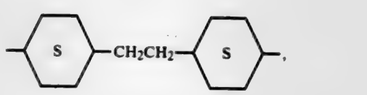
X represents C_2–C_{12} alkylene, wherein the alkylene chain may be interrputed by an oxo, thio, or

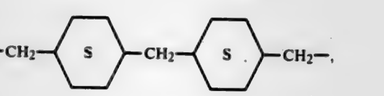


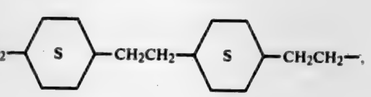
radical, C_5–C_{10} cycloalkylene,

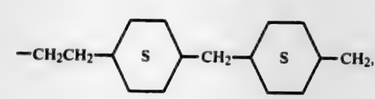


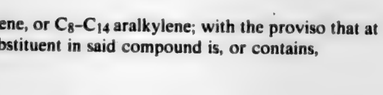




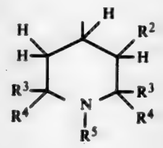








C_6–C_{12} arylene, or C_8–C_{14} aralkylene; with the proviso that at least one substituent in said compound is, or contains,

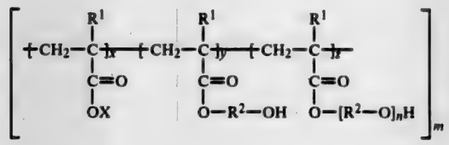


4,435,556
METHOD OF MAKING AND USING NOVEL SCALE INHIBITING TERPOLYMER

William F. Masler, III, 1026 Mattingly Rd., Hinckley, Ohio 44233

Filed Mar. 28, 1983, Ser. No. 480,182
Int. Cl.³ C08F *20/28*
U.S. Cl. 526—317 **13 Claims**

6. A composition for treating process water in a recirculating water system, said composition comprising an effective amount for the purpose, of a water-soluble essentially non-crosslinked random copolymer consisting essentially of a terpolymer of acrylic acid or methacrylic acid and esters of 2-hydroxyalkyl-(meth)acrylate, the terpolymer having the structural formula



wherein,
X represents H, or NH_4, or an alkali metal selected from the group consisting of sodium and potassium;
R^1 represents H, or methyl;
R^2 represents lower alkyl having from 2 to about 4 carbon atoms;
n is an integer in the range from 2 to about 6;
m is an integer in the range from about 3 to about 180; and, for each y (that is, y=1) x is an integer in the range from about 2 to 5, and z is an integer in the range from 0.02 to about 0.3; and x, y and z are present in relative heterogeneous order.

4,435,557
Patent Not Issued For This Number

4,435,558
HARDENABLE URETHANE-EPOXY RESIN MIXTURES

Christian Burba; Hermann-Josef Lucas, both of Ascheberg-Herbern, and Bernd Neffgen, Cappenberg, all of Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 450,015
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151592
Int. Cl.³ C08G *18/80*
U.S. Cl. 528—45 **12 Claims**

1. The method of hardening a glycidyl compound having more than one epoxy group per molecule, which method comprises admixing with said glycidyl compound an approximately stoichiometric amount of an amino hardener which is a polyether urethane urea amine prepared by the reaction of
(1) a prepolymer having blocked isocyanate groups, prepared by reacting a phenol or alkylphenol with the reaction product of a polyether polyol or polythioether polyol with an excess of a polyisocyanate, with
(2) a polyfunctional amino compound having
(a) at least two reactive amino hydrogen atoms per molecule or
(b) at least one reactive amino hydrogen atom and at least one azomethine group per molecule, the amine then being liberated from the reaction product formed between (1) and 2(b) by hydrolysis of the azomethine group.

4,435,559
β-HYDROXY URETHANE LOW TEMPERATURE CURING AGENTS

Joseph T. Valko, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 18, 1982, Ser. No. 409,273
Int. Cl.³ C08G *18/28, 18/81, 59/40*
U.S. Cl. 528—73 **11 Claims**

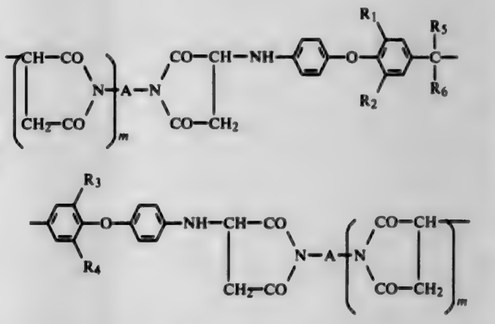
1. A curable composition comprising:
(i) an active hydrogen-containing material,
(ii) a beta-hydroxy urethane, and
(iii) a cure catalyst.

4,435,560
MALEIMIDE: ARYLOXY DIAMINE RESIN COMPOSITION AND PROCESS FOR PRODUCING SAME

Akio Takahashi, Hitachiohta; Moloyo Wajima, Hitachi; Akio Nishikawa, Hitachi, and Hirosada Morishita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,624
Claims priority, application Japan, Sep. 9, 1980, 55-124044
Int. Cl.³ C08G *73/10*
U.S. Cl. 528—170 **16 Claims**

1. A maleimide resin composition comprising a maleimide-diamine adduct having the recurring units:



wherein A represents a mono- , di-, tri-or tetravalent organic group containing at least two carbon atoms, m represents an integer of 0 ro 4, R_1 through R_4 which are the same or different represent hydrogen atom, a lower alkyl group, a lower alkoxy group, chlorine atom or bromine atom, and R_5 and R_6 which are the same or different represent hydrogen atom, methyl group, ethyl group, trifluoromethyl group or trichloromethyl group, said adduct being soluble in an organic solvent having a boiling point of 130° C. or lower to form a solution of a concentration of 50% or more.

4,435,561
TEMPERATURE STABLE THERMOTROPIC POLY(ESTER CARBONATE) CONTAINING HIGH AMOUNTS OF READILY AVAILABLE DIOLS

Yu-Chin Lai; Bruce T. DeBona; Dusan C. Prevorsek, and Murali K. Akkapeddi, all of Morris County, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 30, 1983, Ser. No. 509,471
Int. Cl.³ C08G *63/64*
U.S. Cl. 528—193 **10 Claims**

1. In a thermotropic poly(ester carbonate) having diacyl moieties which are primarily terephthalate moieties, carbonate moieties and dihydroxy-derived moieties, the improvement wherein the dihydroxy-derived moieties comprise a mixture of, by moles:
(a) about 60–20% benzene-1,4-dioxy,
(b) about 20–40% benzene 1,3-dioxy,

(c) about 30–5% methylbenzene-2,5-dioxy, and
(d) about 10–30% t-butylbenzene-2,5-dioxy.

4,435,562

PROCESS FOR THE PRODUCTION OF POLYESTER COPOLYMERS

Carl M. Sullivan, and Mellis M. Kelley, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 6, 1983, Ser. No. 492,109
Int. Cl.³ C08G *63/22*
U.S. Cl. 528—272 **7 Claims**

1. A process to improve randomization of copolyesters comprising;
(a) esterifying a dicarboxylic acid and a diol, said dicarboxylic acid selected from the group comprising alkyl dicarboxylic acids having a total of 2 to 16 carbons atoms or an aryl dicarbocxylic acid having a total of from 8 to 16 carbon atoms; said diol having from 2 to 10 carbon atoms, said diol is in a mole ratio to dicarboxylic acid from 2.5:1 to 1.15:1; thereafter,
(b) transesterifying the esterification product in the presence of a diol and a diester, said diol having from 2 to 10 carbon atoms, said diester being selected from the group of alkyl diesters having a total of from 2 to 20 carbon atoms, and alkyl substituted aryl diesters having a total of from 10 to 20 carbon atoms; thereafter
(c) polymerizing the transesterification product in a condensation stage to form a polycondensed copolyester having an intrinsic viscosity from 0.2 to 0.9.

4,435,563

PROCESS FOR THE RECOVERY OF PURE HELLEBRIN

Gerhard Oepen, Maintal; Karl-Heinz Mangartz, Kahl; Norbert Seifried, Hanau; Jürgen Engel, Alzenau, and Otto Isaac, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 11, 1982, Ser. No. 377,251
Int. Cl.³ C07J *19/00*
U.S. Cl. 536—18.1 **10 Claims**

1. A process for the recovery of pure hellebrin by extraction of a defatted hellebrin extract and deposition of the pure hellebrin by heating the extraction residue in the presence of ethanol comprising multistep countercurrent extracting a defatted hellebrin containing extract in a solvent which is a water -C_1–C_3-alkanol mixture or a water-acetone mixture with a solvent mixture consisting of a C_1–C_3-alkanol or acetone and a chlorohydrocarbon which is dichloromethane, trichloromethane, tetrachloromethane or dichloroethane and subsequently concentrating the hellebrin containing chloromethane or chloroethane phase in a vacuum and heating the thus obtained syrupy residue in ethanol under reflux until the residue is dissolved completely and the first hellebrin crystals begin to deposit.

4,435,564

COMPOSITIONS AND PROCESSES FOR USING HYDROXYETHYL CELLULOSE IN HEAVY BRINES

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Lafayette, La.

Filed Jun. 7, 1982, Ser. No. 385,572
Int. Cl.³ C08B *11/20*; C09K *3/00, 7/00*
U.S. Cl. 536—87 **19 Claims**

1. A process for activating hydroxyethyl cellulose (HEC) such that said HEC will be at least 80% hydrated within about one hour at 22° C. when added to a compatible brine having a density greater than about 13.5 lb./gal. containing one or more salts selected from the group consisting of calcium chloride, calcium bromide, zinc chloride, and zinc bromide, which comprises admixing with said HEC a solution of an amino compound in a water soluble organic liquid in an amount sufficient to provide at least 40% of said amino compound, based on the weight of HEC, and from about 15% to about 30% by weight of HEC in the mixture, said amino compound containing at least two polar groups per molecule selected from the group consisting of primary amino, secondary amino, tertiary amino, hydroxyl and mixtures thereof, having an atomic ratio of carbon atoms to the total number of primary amino plus hydroxyl groups not exceeding five.

19. A process of increasing the viscosity of a heavy brine having a density greater than about 13.5 pounds per gallon containing one or more salts selected from the group consisting of calcium chloride, calcium bromide, zinc chloride, and zinc bromide, which comprises adding to said brine a viscosifying amount of an activated hydroxyethyl cellulose composition obtained from the process of claim 1, 2, 3, 6, 7, 10, 11, 12, 14, 15 or 16.

4,435,565

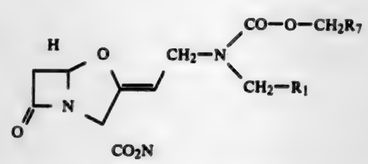
9-DEOXY-9-AMINO-CLAVULANATE ANTIBACTERIAL AGENTS

Irene Stirling, Reigate, and Brian P. Clarke, Kingswood, both of England, assignors to Beecham Group Limited, England

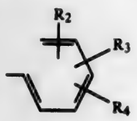
Division of Ser. No. 95,799, Nov. 19, 1979, which is a continuation of Ser. No. 896,441, Apr. 14, 1978, abandoned. This application Mar. 16, 1981, Ser. No. 244,098
Claims priority, application United Kingdom, Apr. 22, 1977, 16764/77; Sep. 6, 1977, 37072/77; Dec. 2, 1977, 50229/77; Dec. 23, 1977, 53866/77
Int. Cl.³ C07D *487/04*; A61K *31/42*
U.S. Cl. 542—416 **8 Claims**

1. A compound of the formula (XI):

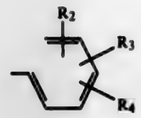
(XI)



a salt or a pharmaceutically acceptable ester thereof wherein R_1 is hydrogen, alkyl of up to 5 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, hydroxyalkyl of up to 6 carbon atoms or a moiety of the sub-formula (a):



wherein R_2 is hydrogen, fluorine, chlorine, bromine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms, acyloxyl of 1–3 carbon atoms and no additional heteroatoms, hydroxyl, alkoxycarbonyl containing 1–3 carbon atoms in the alkoxy moiety or $-N(R_5)CO.R_6-N(R_5)SO_2R_6$ or $-CO-NR_5R_6$ wherein R_5 is hydrogen, alkyl of 1–3 carbon atoms, phenyl or benzyl and R_6 is alkyl of 1–3 carbon atoms, phenyl or benzyl; R_3 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms or acyloxyl of 1–3 carbon atoms and no additional heteroatoms; and R_4 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms or alkoxyl of 1–3 carbon atoms and R_7 is a moiety of the sub-formula (a):



wherein R_2, R_3 and R_4 are as above defined.

4,435,566

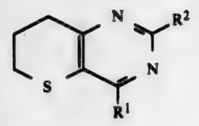
THIOPYRANOPYRIMIDINE COMPOUNDS AND ACID ADDITION SALTS THEREOF

Sachio Ohno; Kiyoshi Mizukoshi; Osamu Komatsu; Hajimu Yamamoto, and Yasuo Kunou, all of Aichi, Japan, assignors to Maruko Seiyaku Co., Ltd., Nagoya, Japan

Filed Feb. 25, 1983, Ser. No. 469,657
Claims priority, application Japan, Feb. 25, 1982, 57-29594; Feb. 1, 1983, 58-15097
Int. Cl.³ C07D *495/04*
U.S. Cl. 544—117 **9 Claims**

1. A thiopyranopyrimidine compound represented by the formula (I)

(I)



wherein R^1 represents an amino group, a methylamino group, a hydroxyethylamino group, a pyrrolidino group, a morpholino group, a piperazino group or an N-substituted piperazino group, and R^2 represents an amino group, a methylamino group, a dimethylamino group, a piperazino group, an N-substituted piperazino group, a pyrrolidino group, a piperidino group or a morpholino group, and the pharmaceutically acceptable acid addition salt thereof.

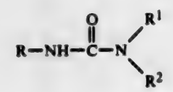
4,435,567

PROCESS FOR PREPARING SUBSTITUTED UREA DERIVATIVES

György Lugosi, Göd-felso; Antal Simay, Budapest; Janos Bodnar, Budapest; Laszlo Simandi, Budapest, and Eva Somfai, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R. T., Budapest, Hungary

Filed Dec. 28, 1981, Ser. No. 334,470
Claims priority, application Hungary, Dec. 29, 1980, 3135/80
Int. Cl.³ C07C *127/00, 127/15, 127/17, 127/19*
U.S. Cl. 544—165 **1 Claim**

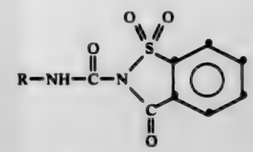
1. A process for the preparation of a urea derivative of formula (I)



wherein
R is hydrogen, alkyl, aryl, cycloalkyl or aralkyl,
R^1 and R^2 are hydrogen, alkyl, alkenyl, alkinyl, alkoxy, oxyalkyl, cycloalkyl, aralkyl, alkoxycarbonylalkyl, aryl or heteroaryl, or R^1 and R^2 together with the adjacent nitrogen atom may form a saturated or unsaturated heterocycle, or a condensed and/or substituted ring system, and said heterocycle or said condensed and/or substituted ring system may contain also a sulfo group,
which comprises reacting an amine of formula (II)



with an N-carbamoyl-benzoic acid sulfimide in a composition consisting essentially of 3 to 60% by weight of a sulfimide of formula (III)



wherein R is hydrogen, alkyl, aryl, cycloalkyl or aralkyl, as an N-acylating agent and of from 97 to 40% by weight, preferably of from 95 to 50% by weight solvent as an additive, and 0.01 to 30% by weight organic or inorganic base.

4,435,568

THIOL METHYLATION PROCESS-REACTION, RECYCLE AND REGENERATION OF METHYL BROMIDE

Kenneth L. Barbour, Newark; William L. Geigle, New Castle, both of Del., and Frank R. Haglid, deceased, late of Wilmington, Del. (by Britt I. Haglid, executrix), assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 22, 1982, Ser. No. 400,756
Int. Cl.³ C07D *253/06*
U.S. Cl. 544—182 **8 Claims**

1. In the process of contacting and reacting butylthion with methyl bromide in aqueous alkaline solution to form a reaction mixture from which metribuzin precipitates and is recovered leaving a reaction supernatant containing methyl bromide, butylthion, and alkali metal bromide, the improvement comprising carrying out the reaction with a temperature profile in which methyl bromide addition and initial reaction occur at one temperature, followed by increasing the temperature and maintaining it for additional reaction.

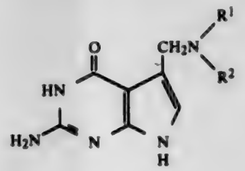
4,435,569

5-[SUBSTITUTED AMINO METHYL]PYRROLO[2,3-D]PYRIMIDINE-4-ONE

Susumu Nishimura, Ichihara, and Hiroaki Nomura, Takatsuki, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 24, 1982, Ser. No. 423,243
Claims priority, application Japan, Nov. 18, 1981, 56-184653
Int. Cl.³ C07D *487/04*; A61K *31/505*
U.S. Cl. 544—280 **10 Claims**

1. A compound of the formula:



wherein
R^1 is C_{1-18} alkyl which may be substituted with di-C_{1-3} alkylamino; C_{1-18} alkenyl; C_{3-8} cycloalkyl; C_{5-8} cycloalkenyl; C_{7-13} aralkyl which may be substituted with C_{1-4}

alkoxy, C_{1-4} alkanoyl, C_{2-4} alkoxycarbonyl, hydroxy, amino, nitro, trifluoromethyl or C_{1-4} alkanoylamino; or C_{6-10} aryl and R^2 is hydrogen or C_{7-13} aralkyl or,

R^1 and R^2, taken together with adjacent nitrogen atom, form a piperidine ring,

or a pharmaceutically acceptable salt thereof.

4,435,570

5-(PHENYL OR BENZYL AMINO)METHYL-PYRROLO[2,3-d]PYRIMIDIN-4-ONE

Susumu Nishimura, Ichihara, and Hiroshi Akimoto, Kobe, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

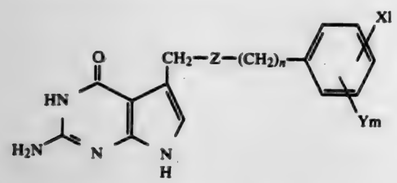
Filed Sep. 24, 1982, Ser. No. 423,249

Claims priority, application Japan, Sep. 26, 1981, 56-152646

Int. Cl.³ C07D *487/04*; A61K *31/505, 43/00*

U.S. Cl. 544—280 **9 Claims**

1. A compound of the formula:



wherein X is halogen, Y is hydroxyl or di-C_{1-3} alkylamino, Z is a —NH— or —NHC(=NH)— group, l is an integer of 1 to 5, m is an integer of 0 to 2, and n is 1 when Z is a —NH— group or n is 0 or 1 when Z is a —NHC(=NH)— group, or a pharmaceutically acceptable salt thereof.

4,435,571

5-(SUBSTITUTED BENZYL)-6-OXO-2-PIPERAZINE CARBOXYLIC ACIDS AND ESTERS

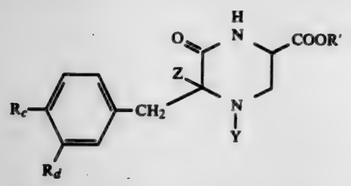
Albert A. Carr; Robert A. Farr, and John M. Kane, all of Cincinnati, Ohio, assignors to Richardson Merrell Inc., Cincinnati, Ohio

Division of Ser. No. 130,431, Mar. 14, 1980, Pat. No. 4,341,698, which is a continuation-in-part of Ser. No. 50,950, Jun. 21, 1979, abandoned. This application Jul. 19, 1982, Ser. No. 399,553

Int. Cl.³ C07D *241/08*; A61K *31/495*

U.S. Cl. 544—384 **4 Claims**

1. A compound of the formula



wherein R′ is hydrogen, straight or branched chain lower alkyl having from 1 to 4 carbon atoms or benzyl, Z is hydrogen or straight chain lower alkyl having from 1 to 4 carbon atoms, Y is hydrogen or a nitrogen blocking group selected from the group consisting of tertiary C4–C5 alkoxycarbonyl, benzyloxycarbonyl, and vinyloxycarbonyl, R_c is hydrogen, halogen or benzyloxy and R_d is hydrogen, or R_c and R_d are benzyloxy; or an individual diastereromer thereof.

4,435,572

SYNTHESIS OF ETHYL-4(3′-METHOXYPHENYL)-1-METHYL PIPERIDINE-3-CARBOXYLATE

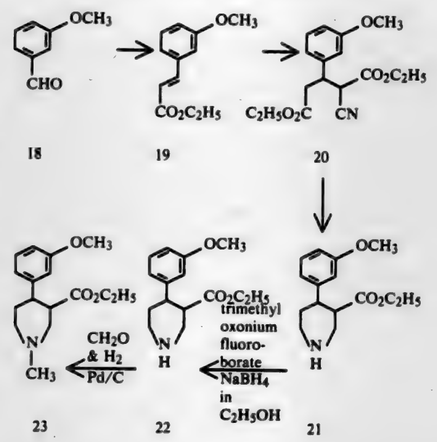
Henry Rapoport, Berkeley, Calif.; Dwight D. Weller, Champaigne, Ill., and Richard D. Cless, Oakland, Calif., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 31,749, Apr. 20, 1979, abandoned, which is a division of Ser. No. 900,275, Apr. 26, 1978, Pat. No. 4,189,583. This application Mar. 16, 1981, Ser. No. 243,775

Int. Cl.³ C07D *211/76, 295/14*

U.S. Cl. 546—228 **3 Claims**

1. In a process for the production of 4a-aryldecahydroisoquinolines, the steps consisting of commencing with 3-methoxybenzaldehyde and producing and isolating as intermediates ethyl 3-methoxycinnamate (19), diethyl 2-cyano-3-(3′-methoxyphenyl)pentanedioate (20), and ethyl 4-(3′-methoxyphenyl)-2-piperidone-5-carboxylate (21) and reducing the amide function of ethyl 4-(3′-methoxyphenyl)-2-piperidone-5-carboxylate (21) and isolating same while retaining the ester function by trimethyl oxonium fluoroborate followed by $NaBH_4$ in ethanol to yield the amino ester ethyl 4-(3′-methoxyphenyl)piperidine-3-carboxylate (22) and subsequently methylating said ester by a reductive methylation to produce ethyl 4-(3′-methoxyphenyl)-1-methylpiperidine-3-carboxylate (23) and isolating same according to the following schemat:



4,435,573

PROCESS FOR THE PREPARATION OF SUBSTITUTED PYRIDINES

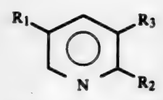
Zenon Lysenko, and Richard G. Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 25, 1982, Ser. No. 436,231

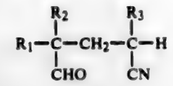
Int. Cl.³ C07D *213/09*

U.S. Cl. 546—250 **8 Claims**

1. A process for preparing a compound having the formula



wherein R_1 is C_1–C_4 alkyl, phenyl, hydrogen or halogen, R_2 is Cl or Br and R_3 is Cl, Br or F which comprises cyclizing a compound having the formula



wherein R_1, R_2 and R_3 are as above-defined, in the presence of a catalytic amount of at least one organic amine base and/or an organometallic transition metal catalyst.

4,435,574

2,6-DIMETHYL-3,5-DICARBOMETHOXY-4-(ORTHO-DIFLUOROMETHYLTHIOPHENYL)-1,4-DIHYDROPYRIDINE

Valeria V. Kastron, ulitsa Avo tu, 33, kv. 2; Rasma O. Vitolin, ulitsa Suvorova, 117, kv. 13; Gunar Y. Dubur, ulitsa Ierikju, 43, kv. 2, all of Riga; Marita Y. Selga, ulitsa Kursas, 1, Rizhsky raion, selo Garkalne; Guntis V. Zarinsh, ulitsa Lachu, 5, kv. 1, Riga; Natalya V. Kondratenko, Rusanovskaya naberezhnaya, 6, kv. 171, Kiev; Vladimir I. Popov, ulitsa Bratislavskaya, 2, kv. 86, Kiev; Alexandr A. Kolomeitsev, prospekt 40 let Oktyabrya, 21, kv. 204, Kiev, and Lev M. Yagupolsky, ulitsa Ivana Kudri, 41, kv. 48, Kiev, all of U.S.S.R.

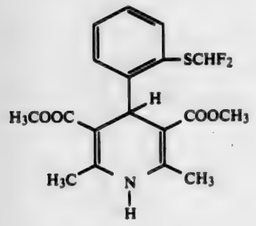
Filed Jul. 16, 1982, Ser. No. 398,910

Claims priority, application U.S.S.R., Jul. 20, 1981, 3353822

Int. Cl.³ C07D *213/55*

U.S. Cl. 546—321 **1 Claim**

1. 2,6-dimethyl-3,5-dicarbomethoxy-4-(o-difluoromethylthiophenyl)-1,4-dihydropyridine having the formula



4,435,575

PROCESS FOR PREPARING CARBOXYLATED ORGANIC COMPOUNDS

Gianfranco Cainelli, Bologna; Marco Foa', Novara; Achille U. Ronchi, Ancona, and Andrea Gardano, Trino Vercellese - Vercelli, all of Italy, assignors to Montedison S.p.A., Milan, Italy

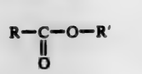
Filed Jun. 30, 1981, Ser. No. 279,090

Claims priority, application Italy, Jul. 1, 1980, 23163 A/80

Int. Cl.³ C07C *51/10*

U.S. Cl. 546—341 **19 Claims**

1. A catalytic process for preparing carboxylated organic compounds, acids and/or esters and/or alkaline salts having the formula (I)



(I)

wherein R is a hydrocarbyl group having up to 11 carbon atoms, selected from the aliphatic alicyclic, aryl- and heteroarylalkyl groups, and said groups substituted by substituents selected from the group consisting of alkyl, aryl, etheric, thioetheric, halogen, nitrile, ester, amide and ketonic groups, and R′ is a hydrogen atom or an alkyl group having up to 8 carbon atoms, by reacting with carbon monoxide the corresponding halides of formula (II)

(II)

wherein R has the same meaning as in formula (I) and X is a halogen bound to a primary or secondary carbon atom, and selected from the group consisting of Cl, Br and I, in the presence of a salt of cobalt hydrocarbonyl in an alcoholic or aqueous alcoholic solvent and of bases, characterized in that the catalyst is a salt of cobalt hydrocarbonyl having the formula:

$$Me^{n+}[Co(CO)_4]_n$$

in which Me is a cation of a metal having a valence n, selected from the group consisting of Na, K, Li, Co, Fe, and Mn, said catalyst being supported on an anion exchange resin.

4,435,576

PROCESS FOR THE PRODUCTION OF 2-AMINO-4-METHYL-BENZOTHIAZOLE

Armand Squaratti, Brig, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Continuation of Ser. No. 103,540, Dec. 13, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,455

Claims priority, application Switzerland, Dec. 20, 1978, 12931/78

Int. Cl.³ C07D *277/82*

U.S. Cl. 548—164 **20 Claims**

1. Process for the production of 2-amino-methylbenzothiazole comprising the steps of:

(a) reacting o-tolylthiourea with chlorine, a ring closure reactant, in the presence of methylene chloride and in the absence of a catalyst, there being no chlorination of the benzene ring in the o-tolylthiourea, 2-amino-4-methylbenzothiazole hydrochloride resulting, one weight unit of o-tolylthiourea being used per 3 to 40 volume units of methylene chloride, 1 to 2 moles of chlorine being used per mole of o-tolylthiourea, step (a) being conducted at a temperature between −20° and +15° C., the methylene chloride being a suspending liquid and a solvent for the o-tolylthiourea, being a suspending agent for the 2-amino-4-methyl-benzothiazole hydrochloride and being a solvent for the chlorine; and

(b) reacting the 2-amino-4-methylbenzothiazole hydrochloride with a sufficient amount of a base, 2-amino-4-methylbenzothiazole resulting, said base being selected from the group consisting of an alkali metal hydroxide, an alkaline earth metal hydroxide, hydrazine, hydroxylamine, sodium oxide, ammonium hydroxide and zinc hydroxide.

4,435,577

PROCESS FOR THE PREPARATION OF CHLORINATED DERIVATIVES OF BENZOXAZOLONES

Noël Rouy, Yerres, and Francois Dewilde, Thiais, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Mar. 11, 1981, Ser. No. 242,538

Claims priority, application France, Mar. 27, 1980, 80 07262

Int. Cl.³ C07D *498/04*

U.S. Cl. 548—221 **10 Claims**

1. A process for the preparation of a chlorinated derivative of benzoxazolone, which comprises the step of reacting benzoxazolone with molecular chlorine in the presence of water and dioxane to thereby form 6-chlorobenzoxazolone.

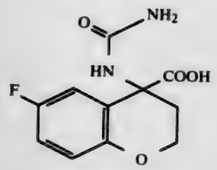
4,435,578

SORBINIL BY OPTICAL RESOLUTION OF PRECURSOR 6-FLUORO-4-UREIDOCHROMAN-4-CARBOXYLIC ACID

Berkeley W. Cue, Jr., Gales Ferry, and Bernard S. Moore, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 10, 1982, Ser. No. 440,641
Int. Cl.³ C07D *491/107, 311/68*
U.S. Cl. 548—309 **8 Claims**

1. A process for the preparation of a crystalline S-6-fluoro-4-ureidochroman-4-carboxylic acid salt with D-(+)-(1-phenethyl)amine or L-(−)-ephedrine which comprises combining a racemic compound of the formula



with at least a half molar quantity of D-(+)-(1-phenethyl)amine or L-(−)-ephedrine in a reaction-inert organic solvent and recovering said crystalline salt.

2. A process of claim 1 which further comprises cyclization of said recovered crystalline salt in glacial acetic acid to form sorbinil and recovering said sorbinil or a pharmaceutically-acceptable cationic salt thereof.

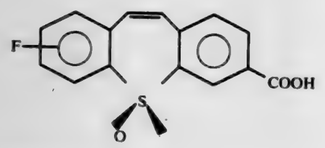
4,435,579

RESOLUTION OF SUBSTITUTED DIBENZO[B,F]THIEPIN-3-CARBOXYLIC ACID-5-OXIDES WITH EPHEDRINE

Patrice C. Belanger; Haydn W. R. Williams, both of Dollard des Ormeaux, and Joshua Rokach, Chomedey-Laval, all of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 351,708, Feb. 24, 1982, Pat. No. 4,424,355, which is a continuation of Ser. No. 229,222, Jan. 28, 1981, abandoned. This application Jul. 12, 1982, Ser. No. 397,253
Int. Cl.³ C07D *337/14*
U.S. Cl. 549—12 **7 Claims**

1. An improved process for the preparation of (−)(7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide of the Formula I:



which comprises:

(1) Heating a solution of equimolar amounts of racemic (7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide and (d or l)-ephedrine in a lower alcohol to form a diastereoisomeric mixture of (d or l)-ephedrine salts of (−)(7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide and (+)(7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide;

(2) Recovering the crystalline (d or l)-ephedrine (−) acid salt;

(3) Recycling the (d or l)-ephedrine (+) acid salt by first hydrolysis with aqueous acid followed by racemization with trifluoroacetic anhydride to regenerate the racemic (7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide; and

(4) Acidifying said (d or l)-ephedrine (−) acid salt with aqueous acid to produce (−)(7 or 8)-fluorodibenzo[b,f]-thiepin-3-carboxylic acid-5-oxide.

3. The d- or l-ephedrine salt of racemic (7 or 8)-fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxide.

4,435,580

PROCESS FOR THE PRODUCTION OF PHTHALIC ANHYDRIDE

Constantine D. Miserlis, Arlington, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed May 3, 1982, Ser. No. 374,284
Int. Cl.³ C07D *307/89*
U.S. Cl. 549—248 **20 Claims**

1. A process for producing an acid anhydride, said process comprising the steps of:

(a) reacting an aromatic hydrocarbon or an unsaturated aliphatic hydrocarbon with oxygen in a reactor in the presence of a catalyst so as to produce a gas stream which comprises an anhydride of a carboxylic or discarboxylic acid;

(b) passing said gas stream from said reactor to a partial condenser where a portion of said anhydride is condensed out of said gas stream as a liquid and is recovered;

(c) passing said gas stream from said partial condenser to a venturi scrubber stage and scrubbing said gas stream so as to purge it of substantially all entrained catalyst dust particles;

(d) passing said gas stream from said scrubber stage to at least one switch condenser;

(e) sublimating substantially all of said anhydride remaining in said gas stream so as to form a solid in said at least one condenser; and

(f) recovering said solid from said at least one condenser.

4,435,581

PROCESS FOR THE PRODUCTION OF PHTHALIC ANHYDRIDE

Constantine D. Miserlis, Arlington, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed May 3, 1982, Ser. No. 374,385
Int. Cl.³ C07D *307/89*
U.S. Cl. 549—248 **18 Claims**

1. A process for producing an anhydride of a carboxylic or dicarboxylic acid, said process comprising the steps of:

(a) reacting an aromatic hydrocarbon or an unsaturated aliphatic hydrocarbon with oxygen in a reactor in the presence of a catalyst under selected conditions so as to produce a gas stream which comprises an anhydride of a carboxylic or dicarboxylic acid;

(b) passing said gas stream from said reactor to a gas cooler where said gas stream is cooled to a temperature above the auto-ignition temperature of said anhydride;

(c) passing said gas stream from said gas cooler to at least one cyclone in order that said at least one cyclone may purge catalyst particles from said gas stream;

(d) passing said gas stream from said at least one cyclone to a temperature which is below the autoignition temperature of said anhydride yet is above the dew point of said anhydride;

(e) passing said gas stream from said desuperheater to a venturi scrubber stage and scrubbing said gas stream so as to purge it of substantially all entrained catalyst dust particles;

(f) passing said gas stream from said scrubber stage to at least one switch condenser;

(g) sublimating substantially all of said anhydride out of said gas stream so as to cause said anhydride to deposit as a solid in said at least one condenser; and

(h) recovering said solid from said at least one condenser.

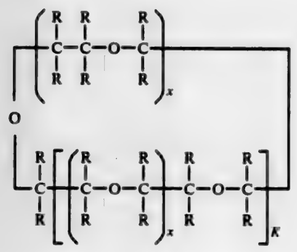
4,435,582

MANUFACTURE OF MACROCYCLIC POLYETHERS

Wilhelmus J. Krijnen, and Paulus A. M. Grotenhuis, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

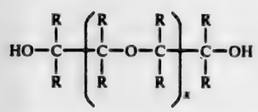
Filed Apr. 9, 1981, Ser. No. 252,648
Claims priority, application United Kingdom, Jun. 11, 1980, 8019112
Int. Cl.³ C07D *323/00, 319/12*
U.S. Cl. 549—352 **8 Claims**

1. A process for the preparation of macrocyclic polyethers according to the formula:



I

where x is an integer from 1 to 9, K is 0 or 1, and each R, which may be the same or different, represents a hydrogen atom or a lower alkyl group which process comprises reacting a compound according to the formula:



II

where x and R have the meaning as defined herein before, with a sulphonyl halide in the presence of a base and a chlorobenzene solvent.

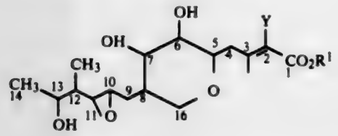
4,435,583

2-HALO-SUBSTITUTED MONIC ACID A USEFUL AS ANTIBACTERIAL COMPOUNDS

Norman H. Rogers, and Michael J. Crimmin, both of Horsham, England, assignors to Beecham Group p.l.c., England

Filed Dec. 7, 1982, Ser. No. 447,516
Claims priority, application United Kingdom, Dec. 9, 1981, 8137147
Int. Cl.³ C07D *309/06;* A61K *31/35*
U.S. Cl. 549—414 **3 Claims**

1. A compound of formula (I):



(I)

wherein

Y is halogen,

R^1 is hydrogen, a salt forming radical, alkyl or aralkyl.

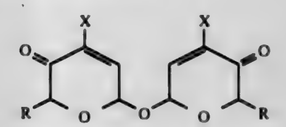
4,435,584

PREPARATION OF GAMMA-PYRONES

Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, Pawcatuck; Paul D. Weeks, and Donald E. Kuhla, both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

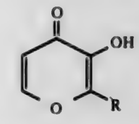
Division of Ser. No. 311,252, Oct. 14, 1981, Pat. No. 4,387,235, which is a division of Ser. No. 72,057, Sep. 4, 1979, Pat. No. 4,323,506, which is a division of Ser. No. 971,897, Dec. 21, 1978, abandoned, which is a division of Ser. No. 869,493, Jan. 16, 1978, Pat. No. 4,147,705, which is a division of Ser. No. 721,885, Sep. 9, 1976, Pat. No. 4,082,717, which is a continuation-in-part of Ser. No. 710,901, Aug. 2, 1976, abandoned. This application Jul. 19, 1982, Ser. No. 399,342
Int. Cl.³ C07D *309/22*
U.S. Cl. 549—415 **8 Claims**

1. A compound of the formula

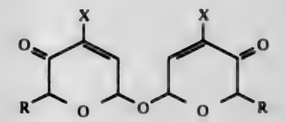


wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl; and X is chlorine or bromine.

5. A process for preparing a gamma-pyrone of the formula



which comprises heating in aqueous solution until hydrolysis is substantially complete a compound of the formula



wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl; X is chlorine or bromine.

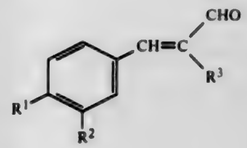
4,435,585

PROCESS FOR THE PREPARATION OF DIHYDROCINNAMALDEHYDE DERIVATIVES

Yvo Crameri, Oberwil; Paul A. Ochsner, Geneva, and Peter Schudel, Grüt-Wetzikon, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

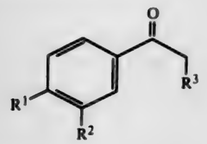
Filed Nov. 17, 1981, Ser. No. 322,135
Claims priority, application Switzerland, Nov. 21, 1980, 8621/80
Int. Cl.³ C07D *317/54;* C07C *45/50*
U.S. Cl. 549—446 **8 Claims**

1. A process for the manufacture of a compound of the formula

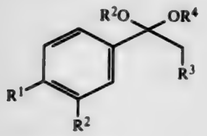


wherein:

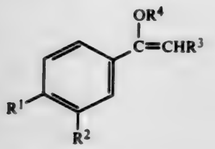
R^1 represents isopropyl, n-butyl, sec. butyl, isobutyl, tert. butyl, methoxy or, together with R^2, represents methylene dioxy;
R^2 represents hydrogen or, together with R^1, represents methylenedioxy; and
R^3 represents hydrogen or methyl which comprises:
(a) converting a ketone of the formula



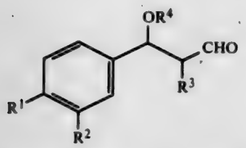
to the corresponding ketal



wherein R^4 is methyl or ethyl;
(b) converting said ketal by means of an alcohol cleavage, to the corresponding enol ether



(c) converting said enol ethers to the corresponding β-alkoxy aldehyde



by means of a hydroformylation reaction, and
(d) subjecting said β-alkoxy aldehyde to an alcohol cleavage, wherein the hydroformylation is carried out by reacting said enol ether with carbon monoxide and hydrogen in the presence of a rhodium catalyst wherein:
(a) the ratio of carbon monoxide to hydrogen is between 1 to 4 and 4 to 1;
(b) the temperature is between 50° C. and 150° C; and
(c) the pressure is between 150 and 700 atmospheres.

4,435,586

ETHERIFICATION PROCESS FOR HEXITOLS AND ANHYDROHEXITOLS

Walter M. Kruse, 1 Woodbury Ct., Wilmington, Del. 19805, and John F. Stephen, 200 William Penn Blvd., West Chester, Pa. 19380

Filed Apr. 28, 1982, Ser. No. 372,623
Int. Cl.³ C07D *493/04, 307/20*
U.S. Cl. 549—464 **9 Claims**

1. An improved high yield process for the polyalkylation of hexitols and inner ether derivatives thereof to form polyalkyl ether derivatives of said hexitols which comprises the steps of:
(a) forming an aqueous solution of hexitol or hexitol inner ether dispersed in an organic solvent selected from the group consisting of dimethyl sulfoxide, dimethyl acetamide, dimethyl formamide, toluene, xylene, bis(2-methoxyethyl)ether, and ethyleneglycoldiethyl ether to form an aqueous dispersion,
(b) forming a monoalkali metal alkoxide of said hexitol or hexitol inner ether by the addition of sodium or potassium alkali to said dispersion,
(c) forming a monoalkyl ether and the halide salt of sodium or potassium from said monoalkali metal alkoxide by the addition of an alkyl monohalide having 1–4 carbon atoms to said dispersion,
(d) continuing the alkylation of said formed monoalkyl ether by the addition to said dispersion of substantially stoichiometric amounts of said alkyl monohalide and substantially stoichiometric amounts of said alkali such that no more than a monoalkali metal alkoxide derivative is present in said dispersion until a completely polyalkylated hexitol or hexitol inner ether is produced, and
(e) separating said produced polyalkylated hexitol or hexitol inner ether from said aqueous dispersion.

4,435,587

PROCESS FOR PRODUCING SILICON ISOCYANATE COMPOUNDS

Iwakichi Sugiyama, Narashino; Kiyoshi Endo, Inba, and Yukihisa Takaoka, Inashiki, all of Japan, assignors to Matsumoto Seiyaku Kogyo Kabushiki Kaisha, Japan

Filed Aug. 10, 1982, Ser. No. 406,961
Claims priority, application Japan, Aug. 19, 1981, 56-128734
Int. Cl.³ C07F *7/10*
U.S. Cl. 556—410 **10 Claims**

1. A process for producing a silicon isocyanate compound which comprises reacting a silicon halide compound selected from the group consisting of silicon chloride compounds, silicon bromide compounds and silicon iodide compounds with an isocyanate of the formula [I] $M(NCO)_m$ or a cyanate of the formula [I'] $M(OCN)_m$ wherein M represents a member selected from the group consisting of alkali metals and alkaline earth metals, and m is 1 or 2, in the presence of one or more reaction accelerators selected from the group consisting of alkylene glycols, polyalkylene glycols, ether and ester derivatives thereof and halogen-substituted derivatives thereof, thereby to prepare a silicon isocyanate containing at least one Si—NCO linkage.

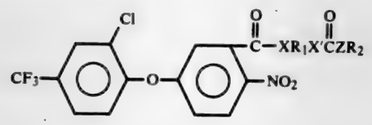
4,435,588

HERBICIDAL COMPOUNDS, COMPOSITIONS, AND METHOD OF USE

Kou-chang Liu, Wayne, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Jul. 15, 1981, Ser. No. 283,402
Int. Cl.³ C07C *69/76*
U.S. Cl. 500—21 **32 Claims**

1. A compound of the formula



where:
X and X' are independently oxygen, sulfur, disulfur, or $-NR_5$;
R_1 is a saturated or unsaturated, straight or branched chain aliphatic diradical C_1–C_{18} wherein one or more of the methylene group may be replaced by oxygen, sulfur, $-SO-$, $-SO_2-$, or $-NR_6$; where the aliphatic diradical may be optionally substituted with halogen, trihalomethyl, cyano, hydroxy, alkoxy, aryl, cyano or a cyclic alkyl c_3–C_6;
Z is oxygen, sulfur, NR_7, or a direct bond;
R_2 is a saturated straight or branched chain aliphatic hydrocarbon radical C_1–C_8 substituted with halogen, trihalomethyl, cyano, nitro, hydroxy, alkoxy, thioalkoxy or aryl; an aryl radical optionally substituted with halogen, trihalomethyl, cyano, nitro, alkyl, alkoxy or hydroxy; a cyclic alkylene or alkenylene ring C_3–C_6 optionally substituted with halogen, trihalomethyl, hydroxy, alkyl, alkoxy or cyano; or R_2 can be isopropyl when R_1 is $-CH_2CH(CH_2Cl)CH_2-$; ethenyl or acetoxy when X is $-NH-$; ethyl when X is $-N(CH_3)-$ or methyl when R_1 is $-C_2H_3{=}C_2H_3-$, $-C_2H_4SSC_2H_4-$, or when X is $-N(CH_3)-$, $-NH-$ or $-S-$ or when X' is $-NH-$, $-S-$ or $-N(CH_3)-$;
R_3, R_4, R_5, R_6, and R_7, and are independently hydrogen, a saturated or unsaturated, straight or branched chain aliphatic radical C_1–C_8 optionally substituted with halogen, hydroxy, alkoxy, cyano or nitro.

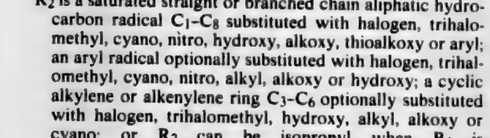
4,435,589

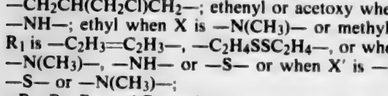
PROCESS FOR THE PREPARATION OF DIMETHYL SUCCINYLOSUCCINATE, THE DISODIUM SALT THEREOF, DIANILINODIHYDROTEREPHTHALIC ACIDS, THE DIMETHYL ESTERS AND SALTS THEREOF, AND DIANILINOTEREPHTHALIC ACIDS, AND THE DIMETHYL ESTERS AND SALTS THEREOF

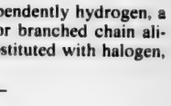
Meinhard Rolf, Leverkusen; Detlef-Ingo Schütze, Bergisch-Gladbach; Rütger Neeff, Leverkusen, and Hans-Volker Runzheimer, Odenthal-Gloebusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,047
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1981, 3104644
Int. Cl.³ C07C *101/38, 101/68, 103/76*
U.S. Cl. 560—48 **14 Claims**

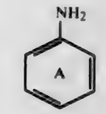
1. Process for the preparation of dimethyl succinylosuccinate or the disodium salt thereof, characterized in that dimethyl succinate is condensed in a 35–45 percent by weight solution of 120–180 percent of theory sodium methylate in methanol and the disodium salt is isolated or dimethyl succinylosuccinate is liberated by means of an acid and is isolated.
2. Process for the preparation of dimethyl dianilinodihydroterephthalates of the formula (I),





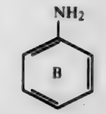


the rings A and B optionally being substituted by 1 to 4 substituents from the group comprising C_1–C_4-alkyl, chlorine, fluorine, C_1–C_4-alkoxy, carbamoyl which is optionally monosubstituted or disubstituted by C_1–C_4-alkyl, trifluoromethyl, carboxyl or nitro, or optionally an aromatic ring is fused thereto, characterized in that the suspension of the disodium salt of dimethyl succinylosuccinate, which suspension is obtained by condensation of dimethyl succinate in a 35–45 percent by weight solution of 120–180 percent of theory of sodium methylate in methanol, is acidified, the liberated dimethyl succinylosuccinate is condensed with at least two mols of a compound of the formula



(II)

in which
A has the meaning given under formula (I), or with, altogether, at least 2 mols of a mixture of a compound of the formula (II) and a compound, which differs therefom, of the formula (III)



(III)

in which B has the meaning given under formula (I), or with salts of the amines (III) and/or (II), and the dimethyl esters are isolated.

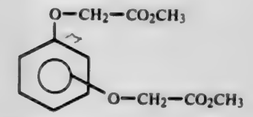
4,435,590

RADIATION STERILIZABLE ABSORBABLE POLYMERIC MATERIALS AND METHODS FOR MANUFACTURING THE SAME

Shalaby W. Shalaby, Mountainville, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Aug. 6, 1981, Ser. No. 290,641
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—61 **6 Claims**

1. A relatively pure cystalline monomer of the following general formula:



where the benzene ring is 1,2-, 1,3-, or 1,4-substituted.

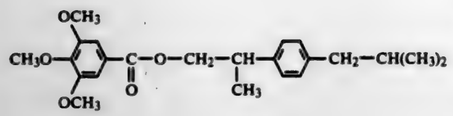
4,435,591

COMPOUND WITH ANALGESIC, ANTIINFLAMMATORY AND ANTIPYRETIC ACTIVITY, AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Leonardo De Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici s.r.l., Pomezia, Italy

Filed Jun. 22, 1982, Ser. No. 390,979
Claims priority, application Italy, Mar. 10, 1982, 20074 A/82
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—73 **2 Claims**

1. The compound 2-(4-isobutylphenyl)1-propanol 3,4,5-trimethoxybenzoate of formula I:



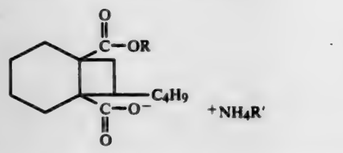
(I)

4,435,592
PROCESS FOR THE PREPARATION OF POLYETHER-ESTER POLYOLS
Curtis J. Reichel, Wyandotte, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
Filed Sep. 29, 1982, Ser. No. 426,312
Int. Cl.³ C07C 67/08, 67/26
U.S. Cl. 560—91 10 Claims

1. A process for the preparation of a polyether-ester polyol comprising (a) reacting an alkaline catalyst, selected from the group consisting of hydroxides and alkoxides of sodium, potassium, lithium, rubidium and cesium, containing polyoxyalkylene polyether polyol with tetrahydrophthalic anhydride to form a half acid ester, (b) reacting the product of (a) with an alkylene oxide and (c) removing the catalyst.

4,435,593
ADDUCTS OF 1-CYCLOHEXENE-1,2-DICARBOXYLIC ANHYDRIDE WITH OLEFINS
Ellis K. Fields, River Forest, and Tayseer S. Nimry, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Division of Ser. No. 330,154, Dec. 14, 1981, Pat. No. 4,371,701. This application Sep. 30, 1982, Ser. No. 430,340
Int. Cl.³ C07C 69/753
U.S. Cl. 560—119 3 Claims

1. A composition of the structural formula

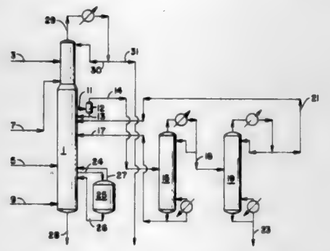


wherein R is an alkyl moiety of from 5 to 18 carbon atoms and R′ is an alkyl moiety of from 8 to 18 carbon atoms.

4,435,594
PROCESS FOR THE PREPARATION OF METHACRYLIC ACID ESTERS
Hiroshi Matsumura; Fumiki Murakami, and Hiroshi Sonobe, all of Otake, Japan, assignors to Minemet Recherche, Trappes, France
Filed Oct. 30, 1979, Ser. No. 89,497
Claims priority, application Japan, Oct. 31, 1978, 53-133858
Int. Cl.³ C07C 67/48
U.S. Cl. 560—205 6 Claims

1. In a process for preparing a methacrylic acid ester by reacting methacrylic acid with a lower aliphatic alcohol in the liquid phase using a solid acidic catalyst at a molar ratio of alcohol to methacrylic acid of 1.2–3.0:1 and a reaction temperature of 70°–100° C., the improvement comprising: (1) extracting substantially only the unreacted alcohol from the reaction mixture containing unreacted alcohol, unreacted methacrylic acid, ester product and impurities with an aqueous solvent at a temperature of 40° to 60° C.; (2) removing the low boiling substances and water from the extraction-residual mixture by distillation whereby an organic residue is generated containing methacrylic acid ester and unreacted methacrylic acid; and (3) separating said unreacted methacrylic acid and said methacrylic acid ester by distillation.

4,435,595
REACTIVE DISTILLATION PROCESS FOR THE PRODUCTION OF METHYL ACETATE
Victor H. Agreda, and Lee R. Partin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 26, 1982, Ser. No. 371,626
Int. Cl.³ B01D 3/36
U.S. Cl. 560—234 28 Claims



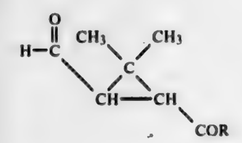
27. A process for the production from methanol and glacial acetic acid of methyl acetate which is at least about 99.5% pure, wherein said acetic acid functions both as reactant and as extractive agent, said process comprising the steps of
(a) selecting a design for a single reactive distillation column and a residence time thereof to provide intimate contact sufficient to enable said acetic acid to be used both as a reactant and as an extractive agent within said column,
(b) countercurrently flowing approximately stoichiometric quantities of glacial acetic acid and methanol through said single reactive distillation column in the presence of sulfuric acid, which is fed to the column at a rate of about 1 kg of sulfuric acid per 100 kg of acetic acid, so as to provide intimate contact in said column between said acetic acid and methanol, between said acetic acid and methyl acetate/water azeotrope, and between said acetic acid and methyl acetate/methanol azeotrope, the residence time in said column being at least about 2.4 hours and the reflux ratio being about 1.5 to 1.7;
(c) removing intermediate boiling compounds comprising methyl propionate, methyl butyrate, isopropyl acetate, and mixtures thereof from a vapor sidedraw stream which is continuously removed from and returned to the middle to upper part of the reaction section of said column;
(d) controlling the methanol feed rate within about ±10% of the target flow rate so as to maintain at a preselected constant level the temperature of a point located in the column below the methanol feed and controlling the methyl acetate distillate flow rate within about ±5% of the target flow rate so as to maintain at a preselected constant level the temperature of a point located in the middle to upper part of the reaction section of said column; and
(e) continuously removing said high purity methyl acetate from the top of said column and continuously removing water from the bottom of said column.

4,435,596
PROCESS OF PRODUCING TEREPHTHALIC ACID
Yulin Wu, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 894,069, Apr. 6, 1978, Pat. No. 4,357,257. This application Aug. 23, 1982, Ser. No. 410,766
Int. Cl.³ C07C 51/347
U.S. Cl. 562—481 3 Claims

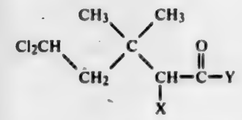
1. In a method of producing terephthalic acid wherein potassium benzoate is disproportionated to form dipotassium terphthalate which is converted to terephthalic acid, the improvement comprising:
(a) charging an aqueous solution of potassium benzoate to a dryer so as to produce a sheet of crystals of said potassium benzoate;
(b) subjecting said sheet of crystals to a powder-forming apparatus so as to form a powder of said crystals, the size of said powder being within the range from about 50 mesh to about 140 mesh and the shape of said powder being granular;
(c) mixing said powder with terphenyl so as to form a low viscosity slurry; and then
(d) transporting said low viscosity slurry to a disproportionation reactor.

4,435,597
PREPARATION OF CARONALDEHYDE ACID AND DERIVATIVES THEREOF
Dieter Arlt, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 5, 1982, Ser. No. 355,034
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111849
Int. Cl.³ C07C 51/04
U.S. Cl. 562—506 5 Claims

1. A process for the preparation of caronaldehyde acid or a derivative thereof of the formula



in which
R is O^-Me^+, and
Me^+ is an equivalent of an alkali metal, alkaline earth metal or ammonium cation, comprising reacting a 2-halogeno-3,3-dimethyl-5,5-dichloropentanoic acid halide of the formula



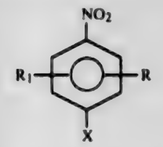
wherein X and Y each independently is a halogen atom, with a base selected from the group consisting of an alkali metal hydroxide, alkaline earth metal hydroxide, tertiary amine, alkali metal carbonate and alkaline earth metal carbonate in the presence of water.

4,435,598
PROCESS FOR THE CATALYTIC OXIDATION OF PROPYLENE TO ACRYLIC ACID
James A. Hinnenkamp, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.
Filed Oct. 28, 1977, Ser. No. 846,470
Int. Cl.³ C07C 51/25, 51/50, 57/045, 57/075
U.S. Cl. 562—546 8 Claims

1. In a process for preparing acrylic acid by the liquid phase catalytic oxidation of propylene, the improvement for increasing the selectivity to acrylic acid, decreasing the production of the combustible side product carbon dioxide, enhancing the catalyst utility and providing a reaction mixture having a higher final concentration of acrylic acid which comprises conducting the process in the presence of an effective amount of hydroquinone.

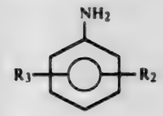
4,435,599
PARA-NITRODIPHENYLAMINE SYNTHESIS
Budd H. Sturm, Hartville, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 26, 1982, Ser. No. 444,633
Int. Cl.³ C07C 85/18, 85/24
U.S. Cl. 564—433 15 Claims

1. A process wherein (1) a para-halonitrobenzene conforming to the following structural formula:



(II)

wherein R and R_1 are selected from the group consisting of hydrogen and alkyl radicals of 1 to 9 carbon atoms and wherein X is a halogen selected from the group consisting of chlorine and bromine is reacted with (2) a primary aromatic amine of the following structural formula:



(III)

wherein R_2 and R_3 are radicals selected from the group consisting of hydrogen, alkyl radicals of 1 to 9 carbon atoms, alkoxy radicals of 1 to 9 carbon atoms and cycloalkyl radicals of 5 to 6 carbon atoms; (3) in the presence of a neutralizing agent selected from the group consisting of alkaline metal salts, oxides of alkali metal salts and alkali metal hydroxides; (4) a copper catalyst system at a concentration of at least 0.1 parts by weight per 100 parts by weight of the para-halonitrobenzene; (5) at a temperature of 100° to 250° C. (6) at a pressure from atmospheric to about 300 kPa and (7) with an excess of primary aromatic amine wherein the improvement is characterized in that the copper catalyst system has added thereto at least one zinc (II) compound selected from a group consisting of zinc (II) salts, zinc (II) oxides, zinc (II) sulfides and organometallic zinc (II) compounds.

4,435,600
PROCESS FOR PREPARATION OF TERTIARY BUTYL HYDRAZINE
Yoichi Hasegawa, Marugame; Mineo Nakagawa, Takamatsu, and Syuji Hara, Zentsuji, all of Japan, assignors to Japan Hydrazine Co., Inc., Tokyo, Japan
Filed Mar. 10, 1983, Ser. No. 474,000
Int. Cl.³ C07C 109/02
U.S. Cl. 564—464 8 Claims

1. A process for the preparation of a tertiary butyl hydrazine hydrohalogenide, which comprises reacting a hydrazine salt of a hydrohalogenic acid with tertiary butanol in the presence of a hydrazine dihydrohalogenide or a hydrogen halide.

4,435,601

PREPARATION OF POLYPHENOLS BY OXIDATION OF HYDROXYBENZALDEHYDES

Karel Formanek, Serezin Du Rhone; Daniel Michelet, Tassin La Demi-Lune, and Dominique Petre, Lyons, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 7, 1981, Ser. No. 281,248
Claims priority, application France, Jul. 11, 1980, 80 15753
Int. Cl.³ C07C *45/64*
U.S. Cl. 568—430 **36 Claims**

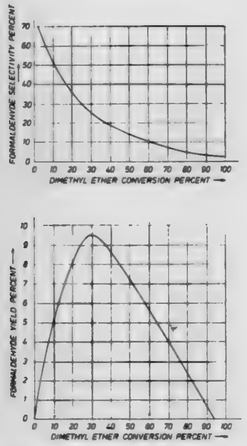
1. In a process for the preparation of optionally aldehyde substituted polyphenols by oxidizing, with hydrogen peroxide, a hydroxybenzaldehyde bearing at least one aldehyde substituent ortho- and/or para- to the nuclear hydroxyl group, in an aqueous reaction medium and in the presence of an alkali or alkaline earth metal base, the improvement comprising maintaining the pH of the said reaction medium in the range of from about 2 to 7 throughout the course of the oxidation reaction, with the hydrogen peroxide and an alkali metal base or alkaline earth metal base being added gradually to the reaction medium, whereby at least one formyl of the hydroxybenzaldehyde is oxidized to a hydroxyl.

4,435,602

CONVERSION OF DIMETHYL ETHER TO FORMALDEHYDE

Robert M. Lewis, Sugarland, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 26, 1982, Ser. No. 402,017
Int. Cl.³ C07C *47/04*
U.S. Cl. 568—470 **6 Claims**



1. A process for converting dimethyl ether to formaldehyde which comprises contacting the dimethyl ether with oxygen at a temperature ranging from about 250° C. to about 500° C. with a catalyst comprising naturally occurring manganese nodules.

4,435,603

METHOD FOR PREVENTING CAKING OF POLYOLS

Boy Cornils, Dinslaken; Hanswilhelm Bach, Duisburg; Roderich Gärtner, Dinslaken, and Wilhelm Gick, Duisburg, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Mar. 11, 1981, Ser. No. 242,772
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010138
Int. Cl.³ C07C *27/26, 29/94*
U.S. Cl. 568—701 **17 Claims**

1. A polyol composition consisting essentially of a solid polyol which is crystalline under normal conditions and a tertiary amine containing at least two identical organic substituents, each having 2 to 20 carbon atoms, said tertiary amine being present in said polyol composition in a concentration of 0.005 to 0.25 percent by weight, based upon the weight of said polyol.

4,435,604

METHOD FOR THE RECOVERY OF PENTAERYTHRITOL FROM THE RESIDUAL MIXTURES OF THE SYNTHESIS FROM ACETALDEHYDE AND FORMALDEHYDE

Gianalvise Carazzolo, Castellanza; Giancarlo Colombo, Milan; Giulio Gavella, Imola; Silvano Giacomuzzo, Cassano Magnago, and Franco Gianetti, Gallarate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 19, 1982, Ser. No. 379,778
Claims priority, application Italy, May 22, 1981, 21891 A/81
Int. Cl.³ C07C *31/24, 29/88*
U.S. Cl. 568—854 **14 Claims**

1. A method for recovering pentaerythritol from a residual mixture of the synthesis of pentaerythritol from acetaldehyde and formaldehyde containing, besides other by-products, at least 20% by weight of formals, which method is characterized in that said formals are transacetalized by contacting the residual mixture containing them, in a liquid medium and in the presence of an acid selected from the group consisting of sulphuric, phosphoric paratoluene-sulphonic acids and the cation-exchange resins, with a saturated aliphatic alcohol selected from the group consisting of methanol, ethylene glycol and 1,3-propylene glycol, the amount of water in the transacetalization reacting mixture being equal to or lower than 10% by weight.

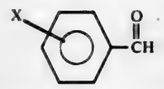
4,435,605

PROCESS FOR PREPARATION OF 2-PHENYLETHYL ALCOHOLS FROM AROMATIC ALDEHYDES

Susan B. Butts, and George E. Hartwell, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

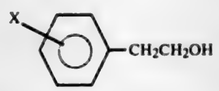
Filed Aug. 27, 1982, Ser. No. 412,333
Int. Cl.³ C07C *27/22*
U.S. Cl. 568—878 **7 Claims**

1. A process for the preparation of a 2-phenylethyl alcohol which comprises contacting a aromatic aldehyde with carbon monoxide and hydrogen in a solvent comprising an oxygenated polar hydrocarbon and water, in the presence of a catalytic amount of a catalyst comprising a cobalt compound, a ruthenium salt and an iodine salt, at elevated temperatures and a pressure of between about 600 and 45,000 psi, wherein the aromatic aldehyde is represented by the formula



I

and the 2-phenylethyl alcohol is represented by the formula



II

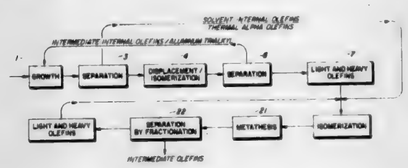
wherein X is a hydrogen, halogen, alkyl, alkoxy or nitro group.

4,435,606

PROCESS FOR THE PREPARATION OF LINEAR OLEFINS FROM TRIETHYLALUMINUM AND TRIPROPYLALUMINUM VIA GROWTH, ISOMERIZATION AND METATHESIS

Kaye L. Motz; Paul H. Washecheck; Ronald L. Poe, and James E. Yates, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 24, 1981, Ser. No. 334,406
Int. Cl.³ C07C *3/21, 3/02*
U.S. Cl. 585—324 **27 Claims**



1. A process for extending catalyst life during the alteration of the carbon atom distribution of internal olefins to obtain internal olefin products containing a majority of mid-range homologues wherein air or oxygen is excluded from the olefins throughout the process from growth through metathesis, the process comprising

(1) reacting ethylene with aluminum trialkyl in the presence of an internal olefin solvent in a growth step to form aluminum alkyls and linear thermal alpha olefins;

(2) removing the inert internal olefin solvent comprising from 10 to 14 carbon atoms and thermal linear alpha olefins formed containing up to about 14 carbon atoms as overhead in a fractional distillation, and passing these olefins to isomerization in step 5(*a*);

(3) passing the remaining products of (2) into a vessel containing a transition metal catalyst and adding ethylene or ethylene and propylene wherein aluminum alkyl and alpha olefins are formed in a displacement reaction;

(4) passing the product of (3) through an isomerization reactor containing a transition metal catalyst to transform alpha olefins present into internal olefins, then

(5) subjecting the product of (4) to separation to obtain internal olefins containing up to about 10 carbon atoms, a stream containing from 15 to 30 carbon atom internal olefins and a stream having internal olefins containing from about 10 to about 14 carbon atoms and aluminum trialkyls prepared by displacement in (3) and returning these 10 to 14 carbon atom materials to the growth reactor as solvent and recovered aluminum alkyl as a reactant, while the overhead containing internal olefins up to about 10 carbon atoms together with the overhead stream from step 2 are combined and wherein the carbon atom distribution of both the alpha-olefins and internal olefins is altered to obtain internal olefins controlled with respect to proportions by (a) passing a feedstream of internal olefins containing up to about 10 carbon atoms and from about 15–30 carbon atoms together with the mixture of 10–14 carbon atom internal olefins and up to 14 carbon atom alpha-olefins from the separator following growth through a vessel containing an isomerization catalyst to randomize the internal olefinic double bond, and (b) passing the randomized internal olefin product of (a) through a closely coupled metathesis reactor to alter the carbon atom distribution of linear carbon chains, said distribution having an average molecular weight substantially equal to the feed internal olefins, then (c) separating product carbon atom range internal olefins from the product, while (d) recycling non-product carbon atom range internal olefins to (a), (b), or both.

4,435,607

DEHYDROGENATION OF DEHYDROGENATABLE HYDROCARBONS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 258,358, Apr. 28, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,628
Int. Cl.³ C07C *5/40, 5/48*
U.S. Cl. 585—443 **11 Claims**

1. A process for the dehydrogenation of a dehydrogenatable hydrocarbon with separate and intermediate selective oxidation of hydrogen which compises:

(a) contacting said hydrocarbon with a dehydrogenation catalyst comprising an alkaline metal-promoted iron compound in a first reaction-dehydrogenation zone in the presence of steam to produce a first reaction-dehydrogenation zone effluent stream comprising a mixture of uncoverted hydrocarbons, dehydrogenated hydrocarbons, hydrogen and steam;

(b) removing said first-reaction dehydrogenation zone effluent from said first reaction-dehydrogenation zone;

(c) passing said removed first-reaction dehydrogenation zone effluent of step (b) to a second-reaction oxidation zone, which is separate and discrete from said-reaction dehydrogenation zone;

(d) contacting said first-reaction dehydrogenation zone effluent in said second-reaction oxidation zone with an oxygen-containing gas to selectively oxidize said hydrogen within said first-reaction dehydrogenation zone effluent to the substantial exclusion of oxidation of said unconverted and dehydrogenated hydrocarbons in the presence of an oxidation catalyst consisting essentially of about 0.01 to about 5 wt% of a Group VIII noble metal, about 0.01 to about 5wt% of a Group IVA metal, and from about 0.01 to about 10% by weight of a metal of Group IA or IIA composited on a highly porous alumina support at oxidation conditions, wherein said exothermic selective oxidation of said hydrogen provides additional heat and thereby raises the temperature of said unconverted and dehydrogenated hydrocarbons;

(e) withdrawing said unconverted and dehydrogenated hydrocarbons from said second-reaction oxidation zone having an increased temperature with respect to the temperature of said first-reaction dehydrogenation effluent zone;

(f) passing said removed second reaction-oxidation zone product stream of step (e) to a third-reaction dehydrogenation zone, containing a dehydrogenation catalyst comprising an alkaline metal promoted iron compound at dehydrogenation conditions to produce dehydrogenated hydrocarbons; and

(g) withdrawing and recovering said dehydrogenated hydrocarbons.

4,435,608

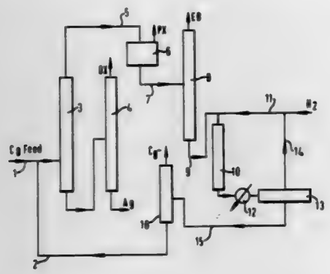
XYLENE ISOMERIZATION

Wicher T. Koetsier, Mijnsheerenland, and Johannes P. Verduijn, Spijkenisse, both of Netherlands, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 4, 1981, Ser. No. 327,176
Claims priority, application United Kingdom, Dec. 12, 1980, 8039961
Int. Cl.³ C07C *5/22*
U.S. Cl. 585—480 **6 Claims**

1. A process for obtaining ethylbenzene and para-xylene and/or ortho-xylene from a mixed C_8 feed, which process comprises recovering ethylbenzene from the mixed C_8 feed to leave an ethylbenzene-depleted feed containing mixed xylenes and less than 5 wt.% ethylbenzene, thereafter contacting the ethylbenzene-depleted feed under isomerization conditions with a catalyst comprising a gallosilicate zeolite having a mole ratio of SiO_2:Ga_2O_3 greater than 5 and a consistent index of from 1 to 12, said gallosilicate zeolite overlying a silica core.

the silica core and the zeolite having substantially the same crystalline structure, to give an isomerate enriched in para-



xylene and ortho-xylene, and recovering para-xylene and/or ortho-xylene from the isomerate which is thereafter recycled to the ethylbenzene recovery step.

4,435,609

ISOMERIZATION OF BUTENE-1 TO BUTENE-2 IN ISOBUTYLENE

Wolfgang W. J. Gschwendtner, Cologne, Fed. Rep. of Germany, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 31, 1983, Ser. No. 499,351

Claims priority, application United Kingdom, Jun. 8, 1982, 8216535

Int. Cl.³ C07C *5/30, 7/01*

U.S. Cl. 585—670 **13 Claims**

1. A method of treating an isobutylene feed which contains 0.05 to 0.5 wt% of n-butene-1 to convert n-butene-1 to n-butene-2 with at least 65% conversion and at most 0.3% hydrogenation, which method comprises passing the isobutylene feed and hydrogen, in the gas phase, over a catalyst system comprising a Group VIII metal, under isomerisation conditions defined by a pressure of from 3 to 5 bar gauge, a temperature of from 40° to 50° C., a space velocity of from 150 to 300 vol/vol/hr at operating temperature and pressure, a mass velocity of from 1.1 to 1.5 metric tons/m^2/hour and a hydrogen/isobutylene feed volume ratio of at most 2.5% at operating temperature and pressure.

4,435,610

ELECTRET SEMICONDUCTOR SOLAR CELL

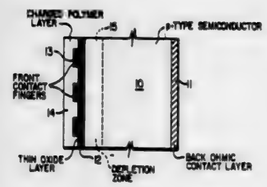
Martin M. Perlman, Montreal, and Andre Y. Filion, Greenfield Park, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 14, 1983, Ser. No. 458,019

Claims priority, application Canada, Sep. 7, 1982, 410894

Int. Cl.³ H01L *31/06, 31/18*

U.S. Cl. 136—255 **8 Claims**



1. An induced junction solar cell comprising a p-type semiconductor substrate; a thin oxide layer on a front surface of said substrate; a grid-type rectifying contact on said oxide layer; a charged polymer coating on said front surface and rectifying contact; and an ohmic contact layer on the other surface of said substrate.

4,435,611

CONDUCTIVE PASTE

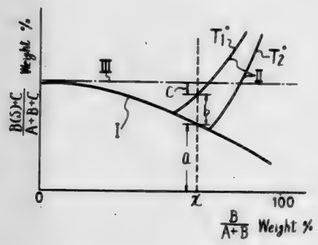
Kenji Ohsawa, Yokohama; Takao Ito; Shimetomo Fueki, both of Tokyo; Masayuki Osawa, and Keiji Kurata, both of Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 246,902, Mar. 23, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,611

Claims priority, application Japan, Mar. 24, 1980, 55-37152

Int. Cl.³ H05K *1/09*

U.S. Cl. 174—68.5 **6 Claims**



1. A printed circuit board comprising:
an insulating substrate,
a first conductive pattern located on one surface of said substrate,
a second conductive pattern insulated from said first conductive pattern, and
a conductive material electrically connecting said two conductive patterns together, said conductive material being formed of a conductive paste comprising a melt of gallium and a metal element which forms a eutectic mixture with gallium, said melt containing at least 20 weight parts of said metal element for 100 weight parts of said melt, and a metal powder which alloys with gallium uniformly dispersed in said melt, said metal powder being present in an amount of between 10 and 50 weight parts for 100 weight parts of said melt, the amount of said metal element and said metal powder providing a solids content in said conductive paste between 30 to 50% by weight at a predetermined temperature, said conductive paste being alloyed and hardened.

4,435,612

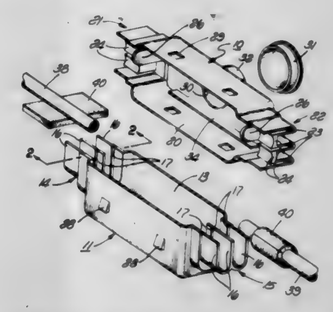
CABLE SPLICE HOUSING

Donald J. Smith, Woodland Hills, Calif., assignor to Communication Technology Corporation, Los Angeles, Calif.

Filed Mar. 9, 1982, Ser. No. 356,374

Int. Cl.³ H02G *15/113*

U.S. Cl. 174—92 **7 Claims**



1. A housing for an electrical cable splice, comprising:
a first shell of generally rectangular cross-section having parallel sides and a bottom defining a first central section and opposed first end sections, with each of said first end sections having a wall defining at least one channel leading to said first central section and defining an open slot for receiving an electrical cable; and
a second shell of generally rectangular cross-section having parallel sides and a bottom defining a second central section and opposed second end sections, with each of said second end sections having channel closure means for sliding in said channels;
with the end sections of one of said shells having projecting tabs and with the end sections of the other of said shells having means defining abutments for said tabs;
with one said shells sliding over the other of said shells with said parallel sides overlying each other bringing said central sections together to form an open main compartment defined by said overlying parallel sides, top and bottom, and
with said channel closure means sliding part way in said channels to form entrance passages for electrical cable and with said tabs sliding in said end sections of said other shell against said abutments closing said entrance passages for blocking liquid flow from said main compartment,
with said tabs selectively breakable to provide open entrance passages through said channels into said main compartment.

4,435,613

SEMICONDUCTOR PACKING COMPOSITION FOR AN UNDERSEA CABLE, A CABLE CONTAINING SAID SUBSTANCE AND A METHOD OF MANUFACTURING SUCH A CABLE

Jean Gaubert, St-Andre de Corcy, France, assignor to Les Cables de Lyon, Clichy, France

Filed Apr. 20, 1982, Ser. No. 370,222

Claims priority, application France, Apr. 30, 1981, 81 08653

Int. Cl.³ H01B *7/14, 1/24, 13/22*

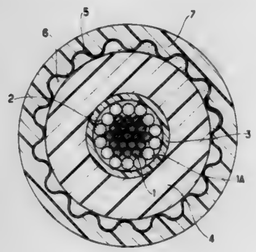
U.S. Cl. 174—102 SC **7 Claims**

1. A semiconductor packing composition for packing a cable core made of conductors disposed axially, with said conductors being surrounded by a polyethylene layer which includes semiconductive material, then by a layer of insulating polyethylene, said packing composition comprising reticulated nitrile

rubber with carboxylic bonds, an epoxy resin, carbon black with a specific surface area of at least 100 m^2/g, an anti-oxidizing agent and a reticulation accelerator.

4. An undersea cable for transporting electric power, said cable comprising a core made of conductors disposed axially, a polyethylene layer surrounding said conductors, said layer including a semiconductive material, a layer of insulating polyethylene surrounding said polyethylene layer including said semiconductive material and a packing composition disposed between said conductors of the core and within said polyethylene layer including said semiconductive material, and wherein said packing composition comprises reticulated nitrile rubber with carboxylic bonds, an epoxy resin an anti-oxidizing agent, carbon black with a specific surface area of at least 100 m^2/g, and a reticulation accelerator.

6. A method of manufacturing an undersea cable for transporting electrical power, said method comprising, in order, the steps of:

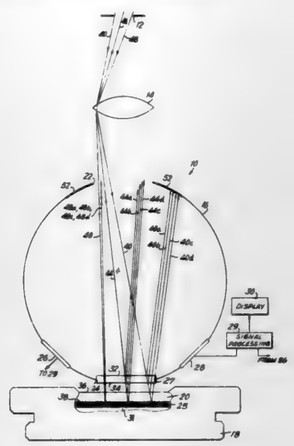


(a) forming a core by disposing conductors axially;
(b) injecting between the conductors of the core a packing composition made of a mixture of liquid nitrile rubber with carboxylic bonds, an epoxy resin, carbon black whose specific surface area is at least equal to 100 m^2/g, an anti-oxidizing agent, and a reticulation accelerator;
(c) surrounding the axially disposed conductors with a layer of polyethylene including semiconductive material; and
(d) surrounding said layer of polyethylene including semiconductive material with a layer of insulating polyethylene, and wherein the step of forming the core by disposing conductors axially comprises assembling the conductors of the core to form a cord in a die, and wherein said method further comprises the steps of applying a metal screen around the layer of insulating polyethylene and depositing said packing composition additionally within said longitudinal corrugations between said metal screen and said layer of insulating polyethylene.

4,435,614
ELONGATED PRINTED CIRCUIT FLEXIBLE CABLES AND METHOD OF MAKING THE SAME
Robert R. McAusland, Seattle, Wash., assignor to Advanced Technology Laboratories, Bellevue, Wash.
Filed Feb. 28, 1983, Ser. No. 470,692
Int. Cl.³ H01B *7/04, 7/08, 13/00*
U.S. Cl. 174—117 PC **8 Claims**

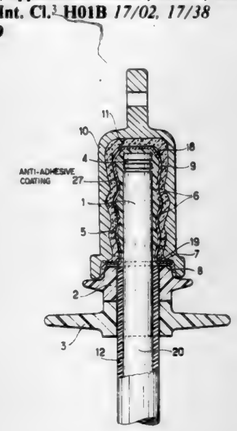
1. A long, flexible printed circuit board cable comprising:
(a) A pattern of cables on a flexible substrate, said pattern comprising at least two substantially parallel, elongated sections joined by a perpendicular connecting section and separated by a slit;
(b) A fold through one of said elongated sections on a fold line substantially perpendicular to said slit; and
(c) A fold through said connecting section along a second fold line substantially perpendicular to said first fold line and substantially aligned with said slit.

6. The method of making a long, flexible printed circuit board cable comprising:
(a) Forming a pattern of cables on a flexible substrate, said pattern comprising at least two substantially parallel, elongated sections joined by a perpendicular connecting section;
(b) Forming a slit between said elongated sections by slitting said pattern up to said connecting section;



(c) Folding one of said elongated sections on a fold line substantially perpendicular to said slit; and
(d) Folding said connecting section along a second fold line substantially perpendicular to said first fold line and substantially aligned with said slit.

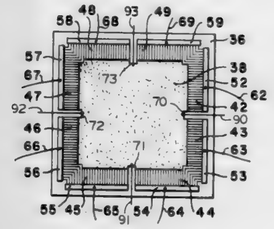
4,435,615
SEALED END CAP MOUNTING FOR LAMINATED INSULATOR CORE
Alexandre Kaczerginski, Bellerive sur Allier, and Michel Willem, Vichy, both of France, assignors to Societe Anonyme dite: CERAVER, Paris, France
Filed Jan. 27, 1982, Ser. No. 343,343
Claims priority, application France, Feb. 5, 1981, 81 02205
Int. Cl.³ H01B *17/02, 17/38*
U.S. Cl. 174—189 **8 Claims**



1. An insulator having an elongated core including a fiber reinforced rod of organic material, a mass of hardened organic substance formed on one end of the rod, a thimble encasing the mass of organic substance, the thimble having a side wall of corrugated profile in longitudinal cross section and a rim, and a protective insulating sheath covering the rod and sealed to the rim of the thimble, and a fixing cap having an internal

surface defining a core-receiving recess, an embedding substance fixed to the internal surface of the cap defining the core-receiving recess, the thimble being slidably embedded in said embedding substance, wherein the improvement comprises:
the mass of hardened organic substance directly contacts the inner surface of the corrugated side wall of the thimble to form a rigid connection therewith, and
the outer surface of the corrugated side wall of the thimble is coated with an anti-adhesive layer that does not adhere to the embedding substance, so that the thimble, the mass of hardened organic substance, and the one end of the rod form a rigid assembly completely sealed to the insulating sheath and resistant to large tensile forces applied between the fixing cap and the other end of the core.

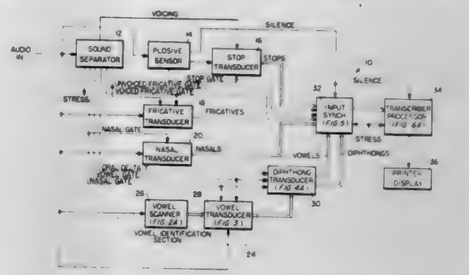
4,435,616
GRAPHICAL DATA ENTRY APPARATUS
Victor B. Kley, 1119 Park Hills Rd., Berkeley, Calif. 94708
Filed Aug. 25, 1981, Ser. No. 296,238
Int. Cl.³ G08C *21/00*
U.S. Cl. 178—18 **13 Claims**



2. A graphical entry device comprising an electrically insulated substrate; and a patterned layer on the substrate wherein the patterned layer includes
a generally rectangular resistive graphic area with four edges and four corners, each of the four edges defining a midportion separating a pair of spaced joining portions extending from the midportion to the respective corners,
four pairs conductor strips spaced from and extending along the respective pairs of joining portions,
four pairs of resistive edge connecting means joining the respective pairs of conductor strips to the respective pairs of joining portions, said resistive edge connecting means each having an effective resistance parallel to the respective joining portions substantially greater than that of the graphic area and the respective conductor strips, and
four conductors connected to the respective midportions for providing analog-to-digital converter reference voltages.

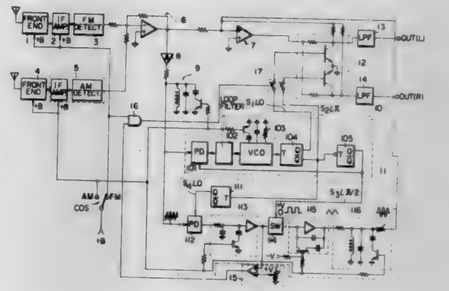
4,435,617
SPEECH-CONTROLLED PHONETIC TYPEWRITER OR DISPLAY DEVICE USING TWO-TIER APPROACH
David T. Griggs, 5128 S. Rolling Rd., Baltimore, Md. 21227
Filed Aug. 13, 1981, Ser. No. 292,717
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—44 **28 Claims**

1. A two-tier method of converting an audio input, comprising words maade up of various sounds in a spoken sequence, into a visible form, comprising a sequence of corresponding phonemes, said method comprising the steps of:
(a) breaking down the spoken sequence of sounds into syllabits, each syllabit comprising a group of classes of sounds;
(b) grouping the syllabits into syllabit groups, each syllabit group defining corresponding possible words;
(c) providing, for each of said possible words corresponding to each syllabit group, a respective skeletal sequence of phonemes comprising a corresponding grouping of phonemes;
(d) determining, for each distinctive syllabit group, the phonemes occurring therein so as to develop an input sequence of phonemes for each syllabit group;
(e) comparing the input sequence of phonemes for each syllabit group with the respective skeletal sequence of phonemes of each of the corresponding possible words so



as to determine, with reference to the phonemes in each grouping of phonemes, which possible word has a skeletal sequence of phonemes which contains, in a given sequence, phonemes all of which are found, in said given sequence, in the input sequence of phonemes, thereby identifying each of said words of said audio input; and
(f) providing said identified words of said audio input in said visible form.

4,435,618
ADJACENT STATION INTERFERENCE REJECTING CIRCUIT
Masakazu Fujishima, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan
Filed Jan. 20, 1982, Ser. No. 341,080
Claims priority, application Japan, Jan. 28, 1981, 56-11142
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—7 **6 Claims**



1. An adjacent station interference rejecting circuit of a receiver comprising:
a cancel signal forming circuit coupled to an AM detector and, responsive to a beat signal resulting from interference between a receiving station signal and an adjacent station signal and contained in an AM detected signal to produce a cancel signal which is synchronized with the beat signal; and
a mixing circuit connected to receive the AM detected signal of said AM detector and the cancel signal to combine the detected output signal and the cancel signal to remove the beat signal contained in the AM detected signal.
2. An FM/AM radio receiver comprising:

reception band switching means for switching the reception band of said radio receiver between FM and AM bands;

FM receiving circuit means which is enabled to demodulate an FM broadcast signal when said reception band switching means is switched to the FM band;

AM receiving circuit means which is enabled to demodulate an AM broadcast signal when said reception band switching means is switched to the AM band;

first circuit means coupled to outputs of said FM receiving circuit means and AM receiving circuit means for passing a pilot signal contained in a detected output signal of said FM receiving circuit means when said reception band switching means is switched to the FM band and passing a beat signal resulting from interference between a receiving station signal and an adjacent station signal when said reception band switching means is switched to the AM band;

PLL circuit means coupled to the output of said first circuit means and including a voltage-controlled oscillator having its free running frequency selected under the control of said reception band switching means;

cancel signal forming circuit means coupled to the output of said first circuit means and responsive to output signals from said PLL circuit means to form, when receiving an FM stereo broadcast signal, a pilot signal cancellation signal having a frequency, a phase and an amplitude necessary for calcelling a pilot signal contained in an FM detected output signal from said FM receiving circuit means and produce, when receiving an AM broadcast signal, a beat signal cancellation signal having a frequency, a phase and an amplitude necessary for cancelling the beat signal contained in an AM detected output signal of said AM receiving circuit means;

a mixing circuit coupled to said AM receiving circuit means, FM receiving circuit means and cancel signal forming circuit, for combining, when receiving the FM stereo broadcast signal, the detected output signal of said FM receiving circuit means and an output signal of said cancel signal forming circuit means to cancel the pilot signal contained in the FM detected output signal and combining, when receiving the AM broadcast signal, the detected output signal of said AM receiving circuit means and the output signal from said cancel signal forming circuit means to cancel the beat signal contained in the AM detected output signal.

4,435,619

SWITCHING NETWORK INTERFACING TELEPHONE-EXCHANGE EQUIPMENT WITH TWO-SUBSCRIBER PARTY LINE

Ennio Bonaparte, Seregno, and Virgilio Mosca, Milan, both of Italy, assignors to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed Oct. 7, 1981, Ser. No. 309,479
Claims priority, application Italy, Oct. 9, 1980, 25213 A/80
Int. Cl.³ H04M *3/14, 3/16*
U.S. Cl. 179—17 R **14 Claims**

1. In a telephone system wherein an electronic exchange communicates with two subscriber sets via a line loop with a first and a second conductor respectively including a first and a second line relay, each conductor being normally connected to an associated set via contacts closed in the unoperated state of the line relay in the other conductor, each set including a hook switch operable by the subscriber to ground the associated conductor, each line relay in an operated state connecting the associated set across said line loop to the exclusion of the opposite set,

the combination therewith of a switching network interfacing said line loop with call-control circuitry at the exchange, said switching network comprising:

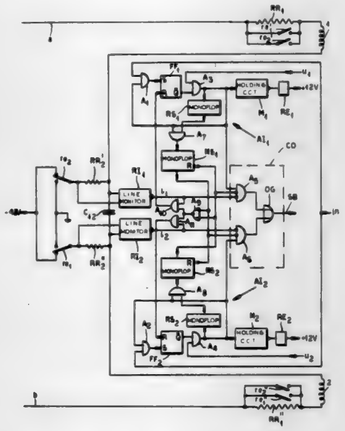
a line transformer having first and second subscriber-side windings respectively in series with said second conductors and further having an exchange-side winding connected across a voice path;

first and second high-ohmic resistors and first and second low-ohmic resistors in said first and second conductors in series with said first and second subscriber-side windings, respectively;

first and second line-monitoring means respectively connected across said first and second low-ohmic resistors;

first and second selection relays respectively connecting said first and second conductors to a source of operating potential in a normal unoperated condition thereof whereby a grounding of either of said conductors by the hook switch of the associated set causes a current flow insufficient to operate the respective line relay but sufficient to be detected by the respective line-monitoring means for the emission of a respective engagement signal;

first and second gating means responsive to first and second scanning pulses from said circuitry, respectively addressed to said first and second conductors, for alternatively passing a first engagement signal from said first line-monitoring means and a second engagement signal from said second line-monitoring means to said circuitry as an indication of an off-hook condition of the respective subscriber set, said scanning pulses being normally generated at a relatively slow recurrence rate but being accelerated by said circuitry to a relatively fast recurrence rate in response to said off-hook condition, such acceleration being accompanied by an assignment of a time slot for communication with said voice path to the set found to be in off-hook condition;



first and second holding means respectively connected between said first and second gating means and said first and second selection relays for respectively operating said selection relays in response to a scanning of the respective engagement signal at said relatively fast rate, operation of said first and second selection relays respectively short-circuiting said first and second high-ohmic resistors with resulting intensification of current flow and operation of said first and second line relays, respectively;

first inhibiting means responsive to an isolation command emitted by said circuitry concurrently with a first scanning pulse for blocking said first gating means in the presence of said first engagement signal and in the absence of activity in a time slot assigned to said first conductor, thereby restoring said first selection relay to its unoperated condition with resulting release of said first line relay; and

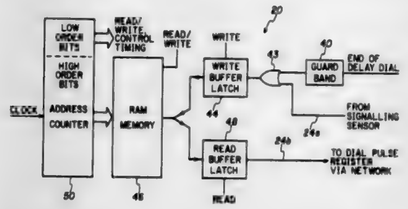
second inhibiting means responsive to an isolation command emitted by said circuitry concurrently with a second scanning pulse for blocking said second gating means in the presence of said second engagement signal and in the absence of activity in the time slot assigned to said second conductor, thereby restoring said second selection relay to its unoperated condition with resulting release of said second line relay.

4,435,620

DIAL PULSE DELAY CIRCUIT

William A. Fechalos, Naperville, and Carl J. Stehman, La-Grange, both of Ill., assignors to Rockwell International Corporation, Downers Grove, Ill.

Filed Oct. 22, 1981, Ser. No. 313,909
Int. Cl.³ H04M *3/22*; H04Q *1/32*
U.S. Cl. 179—18 EB **12 Claims**



1. A dial pulse delay circuit for use in combination with a common control telephone switching system having a plurality of trunks, a plurality of registers, and a switching network for providing selective connections between said trunks and registers, one register of which is assigned to receive dial pulse information received by way of one of said plurality of trunks, comprising:

means for delaying dial pulse information for a period during which one of said registers is assigned and connected to receive said dial pulse information, a different one of said means for delaying associated with each one of said plurality of trunks;

means for storing said dial pulse information;

means for transferring said stored dial pulse information to the assigned register after its connection to receive said information is effected; and

means for sampling for cyclically producing dial pulse information amplitude data at a rate of at least twice the expected dial pulse information rate.

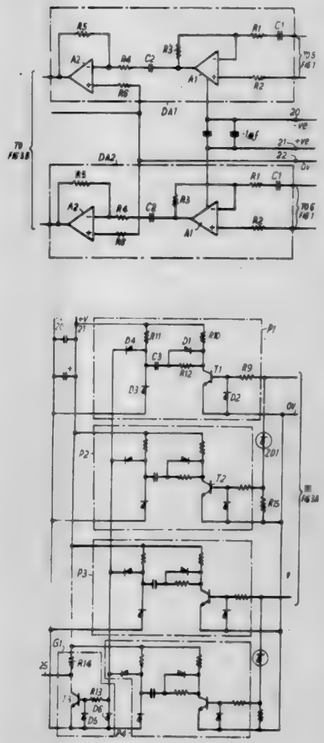
4,435,621

SPEECH DIRECTION DETECTION CIRCUITS FOR TELEPHONE COMMUNICATION DEVICES

Bloomfield J. Warman, 67, King Harold's Way, Bexleyheath, Kent, England

Filed Apr. 30, 1981, Ser. No. 259,273
Claims priority, application United Kingdom, Apr. 30, 1980, 8014263
Int. Cl.³ H04M *9/08*
U.S. Cl. 179—81 B **11 Claims**

1. A speech direction detecting circuit for a telephone communication device, comprising means for detecting a.c. speech signals across two impedances of an impedance network located in a speech transmission path between the output of an amplifier and a telephone line, said impedance network having a configuration such that the said two impedances of said network are effectively connected to present a load both to signals transmitted from the output of said amplifier towards said telephone line and to signals received from said telephone line, in such a manner that voice frequency signals developed across said impedances from the output of said amplifier will be phase displaced relatively to one another so that the respective signals pass through a corresponding reference level of the signal waveform at instants relatively displaced in time whereas voice frequency signals developed across said impedances from the telephone line will pass through the same reference level at the same instants in time, means for generating, in response to excursions of said signals across the reference level, trains of pulses having a duration less than the period of



relative time displacement of said phase displaced signals, and a comparator arranged to compare said respective trains of pulses and to provide an output signal when the pulses of said respective trains overlap in time.

4,435,622

LATCHING RELAY HOLD CIRCUIT FOR A TELEPHONE INSTRUMENT

Gary Grantland, Hartselle, and Eduard F. B. Boeckmann, Huntsville, both of Ala., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Nov. 1, 1982, Ser. No. 437,932
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R **9 Claims**

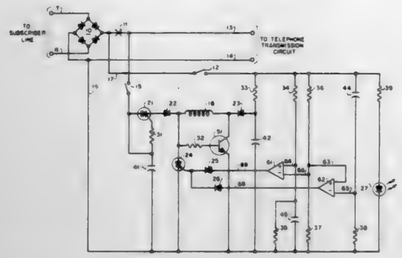
1. A hold circuit for use with a telephone instrument, said telephone instrument connected to a subscriber line and a source of line voltage, said hold circuit comprising:

subscriber line seizing means, including first and second leads arranged to connect across said subscriber line, said first lead including a normally open contact rendering said seizing means normally disconnected from said subscriber line;

line voltage storage means connected across said subscriber line through a normally open hold switch, said hold switch manually closed charging said line voltage storage means to said line voltage; and,

contact activating means connected between said line voltage storage means and said seizing means second lead,

whereby said line voltage storage means discharges through said contact activating means latching said



contact closed, connecting said subscriber line seizing means across said subscriber line and placing said subscriber line into a hold condition.

4,435,623

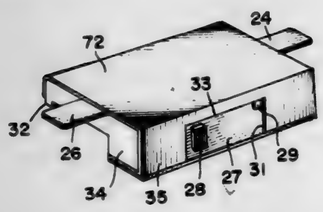
TELEPHONE GUARD DEVICE

Michael J. Valentine, 37 Hillside Rd., Penfield, N.Y. 14526

Filed Nov. 16, 1979, Ser. No. 95,012

Int. Cl.³ H04M *1/66*

U.S. Cl. 179—189 R **11 Claims**



1. A device for selectively maintaining a telephone set having at least one switch hook button which is released when a handset is lifted off its cradle in a first condition to go off hook when the handset is lifted and in a second condition to remain on hook even though the handset is lifted, said device comprising a body having mounting means for retaining said body in fixed position on said telephone adjacent to said cradles, at least one blade slidably mounted in said body and movable laterally between retracted and extended positions out of and into blocking relationship with said switch hook button, and means including a manually actuable slide movably mounted in said body and coupled to said blade for selectively extending and retracting said blade to selectively provide said second and first conditions, respectively.

4,435,624

LOCK OFF-LOCK ON

Luis F. Sepulveda, Fajardo, P.R., assignor to Challenger Caribbean Corporation, Canovanas; Challenger Products Corporation, Rio Piedras, both of, P.R. and Commander Electrical Equipment, Inc., Scarborough, Canada

Filed Sep. 23, 1982, Ser. No. 421,754

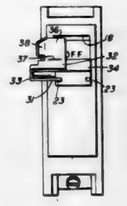
Int. Cl.³ H01H *9/24*

U.S. Cl. 200—42 T **10 Claims**

1. A lock off-lock on for a handle of an electrical circuit breaker, the circuit breaker including a housing comprising a case of suitable insulating material having a slot formed therein including defined opposing edges and an insulative cover for engaging said case, said handle being manually movable and pivotally mounted within said case and extending outwardly from said slot with a dependent arcuate portion of said handle in proximal relationship with the interior of said slot, said handle being adapted for reciprocation about a partial arcuate path between "on" and "off" positions, said handle being adapted to have an opening therethrough in a direction perpendicular to said path, said lock off lock on comprising a unitary member formed from a metallic sheet comprising

a first handle engaging portion adapted to be inserted into said opening of said handle;

a second handle engaging portion, joined to said first portion by a bight to form a U-shaped structure, for engagement with a surface of said handle which is in exposed adjacency to said dependent arcuate portion;



flat spring means coupled to a part of one side of said second portion by an angular bend so that said flat spring means is engageable with said dependent arcuate portion and in abutting relation with said case at one of said edges of said slot; and

a flange, coupled to said flat spring means proximal to said bight, bent outwardly away from said housing so as to facilitate manual removal of said lock off-lock on from said handle.

4,435,625

PNEUMATICALLY OPERABLE SWITCH UNIT FÓR MONITORING TIRE PRESSURE

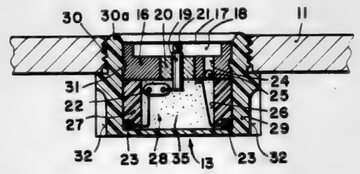
Emil Buchschmid, Rosstal, Fed. Rep. of Germany; Rainer Burkel, Le Chesnay; Jean Danamps, Asnieres, both of France; Anton Frenznick, Nuremberg, and Günther Stradtmann, Ansbach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,966

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108998

Int. Cl.³ H01H *35/00*

U.S. Cl. 200—61.22 **7 Claims**



1. A pneumatically operated switch unit for monitoring vehicle tire pressure comprising a metallic conducting switch housing (16) capable of being inserted into a bore in a vehicle tire rim, an electrically conducting membrane (17) with the periphery thereof fastened to said switch housing on the side of said switch housing facing into the tire interior, said membrane closing off a gas-filled reference pressure chamber of said switch housing into which chamber there extends a switch contact insulatedly mounted in said switch housing, by pass-through insulation means, in such a position that it makes contact with said membrane when gas pressure in said chamber is at a reference pressure value and the air pressure in said tire exceeds a predetermined threshold value and is put out of contact with said membrane when the pressure in said tire falls below said threshold value, and circuit elements constituting a resonant circuit with said switch contact when the latter is in contact with said membrane, said switch unit also incorporating the improvement which comprises the provision of:

a cup-shaped shell (29) of insulating material capable of withstanding temperature changes and gradients, externally threaded for being screwed into said bore in said tire rim with its open end facing the interior space of said tire, and within which said metallic switch housing (16) and said resonant circuit (22,23) are firmly secured, said metallic switch housing (16) electrically connecting said conducting membrane (17) with said resonant circuit elements and being held within said cup-shaped shell (29) in a position in which said metallic switch housing (16) and said conducting membrane (17) do not project beyond said bore into said tire interior.

4,435,626

PRESSURE RESPONSIVE SWITCH ACTUATING MECHANISM

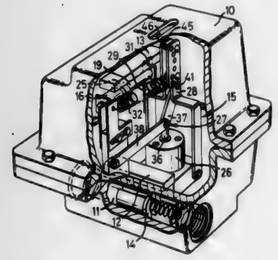
Christopher J. Coffin, Milton, England, assignor to Alan Cobham Engineering Limited, London, England

Filed Mar. 23, 1981, Ser. No. 246,796

Claims priority, application United Kingdom, Mar. 21, 1980, 8009626; Jan. 27, 1981, 8102443

Int. Cl.³ H01H *35/40*

U.S. Cl. 200—81.9 R **17 Claims**



1. A pressure responsive switch actuating mechanism including a movable actuating element which is movable between an inoperative location and an operative location to actuate the switch, and a pressure responsive system including a movable stop against which the movable actuating element is normally urged, the pressure responsive system being operable to control movement of said movable actuating element by controlling location of the movable stop in accordance with the fluid pressure to which said movable stop is subjected, there being a time delay mechanism which operates to delay movement of said movable actuating element following movement of said movable stop in response to certain pressure changes, wherein the improvement comprises a bistable mechanism responsive to pressure of a flow of fluid, said bistable mechanism comprising a movable wall having one side to which the fluid pressure is subjected is subjected, and a plurality of links movable by said movable wall which causes movement of the stop, said mechanism having only two stable conditions and which moves rapidly to either of those stable conditions when displaced from one to the other one, the bistable mechanism including a compression spring which bias said bistable mechanism to one of its two stable conditions so that the pressure responsive system is set in one condition in which it locates said movable stop in one location when the working fluid pressure is within a range bounded by ambient pressure and a predetermined switching pressure even when the fluid pressure is changing and is convertible rapidly to another condition so as to move said movable stop rapidly to another location when the fluid pressure reaches said predetermined switching pressure at which said yieldable biassing means yields whereby said movable actuating element is released for delayed movement into abutment with said movable stop at said other location to actuate said switch.

4,435,627

HIGH TENSION CIRCUIT BREAKER

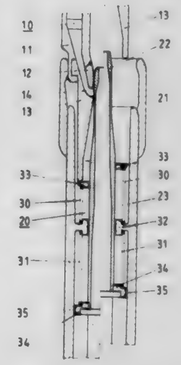
Not-Duri Barth, Oberehrendingen, and Osvin Gaupp, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 13, 1981, Ser. No. 282,597

Claims priority, application Switzerland, Jul. 18, 1980, 5512/80

Int. Cl.³ H01H *33/59*

U.S. Cl. 200—148 R **7 Claims**



1. A high tension circuit breaker comprising:

a stationary first switching mechanism;

a second switching mechanism axially movable in a first axial direction;

a first and second arcing contact operatively connected to said movable switching mechanism and said stationary switching mechanism, respectively, and wherein said first contact normally pressingly engages said second contact;

means for supplying gas under pressure;

nozzle means communicating with said gas supply means formed in said movable switch mechanism and terminating adjacent said first and second contacts for communicating expanded gas from said supply gas to the point of pressing engagement of said first and second contact upon cutting out of said gas supply means wherein said nozzle means comprises insulation material; and

means for shifting said second contact in a second axial direction opposite said first axial direction of movement of said movable switching mechanism upon cutting out of said gas supply means.

4,435,628

SEED HEATING MICROWAVE APPLIANCE

Robert F. Bowen, Burlington; George Freedman; Wesley W. Teich, both of Wayland; Thomas J. Martel, North Reading, and E. Eugene Eves, II, Nabnasset, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 865,824, Dec. 30, 1977, Pat. No. 4,158,760.

This application Apr. 11, 1979, Ser. No. 29,227

The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.

Int. Cl.³ H05B *6/80*

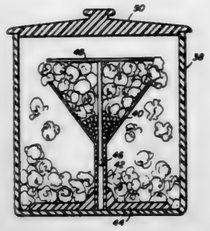
U.S. Cl. 219—10.55 M **15 Claims**

1. The method of popping kernels using microwave energy, comprising the steps of:

bunching said kernels together in a clump;

radiating said clump with microwave energy; and

directing unpopped kernels displaced from said clump back to the region of said clump while continuing to radiate said microwave energy until a substantial portion of said kernels are popped.

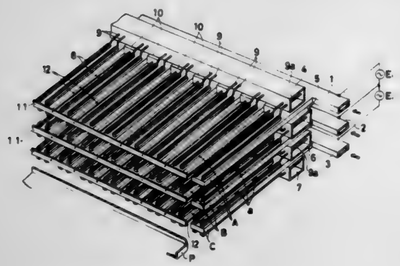


4,435,629

COMBINATION HEATING APPARATUS

Kimio Ishimaru, Osaka, and Kenichi Abe, Omiya, both of Japan, assignors to Osaka Gas Co., Ltd., Osaka, Japan

Filed Aug. 17, 1981, Ser. No. 293,310
Claims priority, application Japan, Aug. 22, 1980, 55-114819
Int. Cl.³ F26B *3/34*; H05B *6/64*
U.S. Cl. 219—10.55 A **5 Claims**



1. A heating apparatus comprising a microwave heating means having microwave leakage-type waveguides, each waveguide having a plurality of microwave emitting openings extending along the advancing direction of microwave radiation, said waveguides being disposed in parallel with one another; radiation heating means having heat conducting members disposed along upper and lower surfaces of the microwave leakage-type waveguides; and high frequency heating means utilizing said microwave leakage-type waveguides as electrodes.

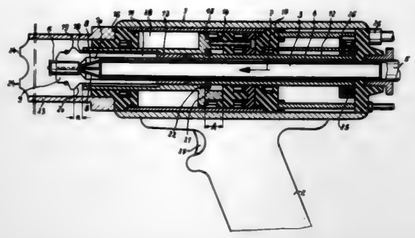
4,435,630

STUD WELDING APPARATUS

Ernst G. Jordan, Menden, Fed. Rep. of Germany, assignor to Firma Obo Bettermann OHG, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,065
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014583
Int. Cl.³ B23K *9/20*
U.S. Cl. 219—98 **22 Claims**

1. A stud welding apparatus comprising an elongated housing, tubular member extending axially therethrough to form a stud inlet having a bore and which tubular member is fastened at one end in the housing at which end is fastened a stud feed means, tongues fastened at the other end of the tubular member and tapering toward each other under spring tension, a stud clamping sleeve behind the tongues and having a tubular shank portion forming a stud delivery passage disengageably connected to a tube in a space in the housing adjacent the stud feed means, and means for feeding a succession of studs through the stud delivery passage.

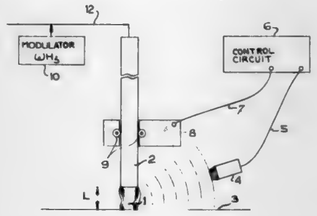


4,435,631

METHOD AND DEVICE FOR CONTROLLING THE LENGTH OF AN ELECTRICAL ARC IN AN ARC GENERATING MACHINE

Michel G. Drouet, St-Bruno, and Francois Nadeau, Montreal, both of Canada, assignors to Hydro Quebec, Montreal, Canada

Filed Dec. 15, 1981, Ser. No. 331,242
Claims priority, application Canada, May 19, 1981, 377808
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—124.02 **14 Claims**



1. A method for controlling the length of an electrical arc generated in an arc generating machine, comprising the steps of:

a. detecting an acoustical signal generated by the electrical arc of said arc generating machine, said acoustical signal being directly proportional to the actual length of the arc and generating an electrical output signal in response to said detected signal:

b. subtracting from the amplitude of said electrical output signal a reference amplitude corresponding to the level of sound of a desired arc length, thereby producing an electrical difference signal proportional to the difference between the actual length and the desired length of the arc, said difference signal being positive if the arc is too long and negative if the arc is too short; and

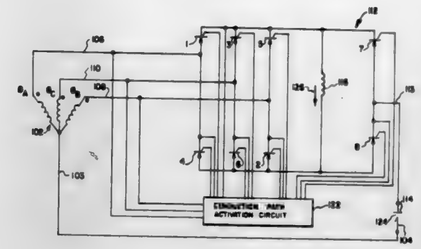
c. adjusting the length of said electrical arc by increasing said length if the difference signal is negative and reducing said length if the difference signal is positive until the difference signal is zero.

4,435,632

THREE PHASE SQUARE WAVE WELDING POWER SUPPLY

Robert L. Risberg, New Berlin, Wis., assignor to Hobart Brothers Company, Troy, Ohio

Filed Feb. 12, 1982, Ser. No. 348,531
Int. Cl.³ B23K *9/09*
U.S. Cl. 219—130.51 **15 Claims**



1. A controllable current supply for generating an alternating polarity square wave current for a welding arc comprising:

a power input for receiving three phase alternating current power;

a power control circuit connected in series with said power input and said welding arc, said power control circuit comprising:

three straight polarity conducting paths each comprising a phase related unidirectional input switching device connected to the corresponding phase of said power input, a common unidirectional output switching device connected to said arc and common inductor means connected between said input switching device and said output switching device of each of said straight polarity paths; and

three reverse polarity conducting paths each comprising a phase related unidirectional input switching device connected to the corresponding phase of said power input and a common unidirectional output switching device connected to said arc, said inductor means also being common to said reverse polarity conducting paths and connected between said input switching device and said output switching device of each of said reverse polarity paths such that current flow is in the same direction through said inductor means whether a straight polarity conducting path is active or a reverse polarity conducting path is active;

path switching means synchronized with three phase power received on said power input for controlling said power control circuit to activate said conducting paths at defined non-zero voltage points of said three phase power; and

timing means synchronized with three phase power received on said power input for enabling said path switching means to activate said conducting paths to conduct repetitive sequences of independent numbers of half cycles of each polarity of said three phase power.

4,435,633

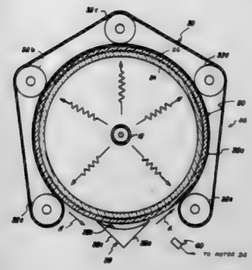
FLASH FUSING APPARATUS

Walter A. Stryjewski, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1981, Ser. No. 258,961
Int. Cl.³ H05B *3/02, 1/00*
U.S. Cl. 219—216 **8 Claims**

1. In apparatus for fusing images formed of pigmented thermoplastic resin marking particles to a receiver member, such apparatus including a hollow member for contacting on its peripheral surface a marking particle image on the surface of such receiver member and a source of radiant energy, capable of at least partially melting such particles, mounted within said hollow member, said hollow member being substantially transparent to the energy of said source, the improvement comprising:

means, effective during radiation of energy by said source, for simultaneously pressing the entire image-bearing surface of a receiver member into full and intimate contact with said peripheral surface of said hollow member to lower the particle/receiver member boundary thermal resistance and enhance particle flow during fusing of the image to said receiver member.

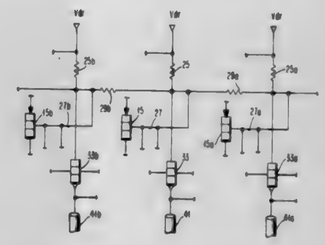


4,435,634

THERMAL PRINTER EDGE COMPENSATION

Frank J. Horlander, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,347
Int. Cl.³ B41J *3/20*; H05B *3/00*
U.S. Cl. 219—216 **24 Claims**



1. Circuitry for driving electrodes in selected combinations comprising:

a plurality of said electrodes positioned side-by-side;

separate, current-drive circuits, each connected to drive one of said electrodes, each said current-drive circuit having one point connected to carry a first voltage, a first resistance element, and a second point, said resistance element being connected across said first point and said second point, said second point being driven to a second voltage and being connected to drive a first electrode when said current-drive circuit is selected and being isolated from voltages other than said first voltage and disconnected from said first electrode when said current-drive circuit is not selected, and

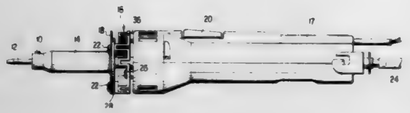
a second resistance element connected across the second point of one of said current-drive circuits and the second point of a second current-drive circuit which drives an electrode contiguous to the electrode driven by said one current-drive circuit.

4,435,635

HEAT BARRIER FOR DESOLDERER AND HEATER ASSEMBLY

Oscar E. Parker, Glen Burnie, Md., assignor to Pace Incorporated, Laurel, Md.

Filed Apr. 6, 1982, Ser. No. 366,002
Int. Cl.³ B23K *3/02*; H05B *3/06*
U.S. Cl. 219—227 **5 Claims**



1. An improved thermal barrier for rigidly connecting an elongate heater assembly with an elongate handle assembly, each assembly having a longitudinal axis which is substantially coincident with the axis of the other assembly, said heater assembly including a generally circular mounting plate and said handle assembly including spacers thereon, said thermal barrier comprising:

a plurality of slotted spacer portions, equiangularly disposed around said longitudinal axis, comprising a means for connecting said thermal barrier to said mounting plate;

a plurality of generally arcuate, coplanar mounting sections, equiangularly disposed around said longitudinal axis and axially displaced from said mounting plate comprising a means for connecting said thermal barrier to said handle assembly spacers; and

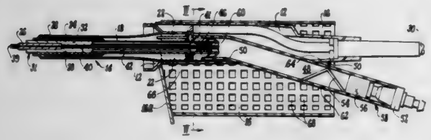
means, connecting each of said spacer portions to an adjacent mounting section, for defining an indirect conduction path between each of said connecting means.

4,435,636

DESOLDERING TOOL

Alan L. Royston, Canterbury, Australia, assignor to Royel International Pty. Ltd., Victoria, Australia

Filed Feb. 22, 1982, Ser. No. 351,305
Claims priority, application Australia, Feb. 23, 1981, PE7718
Int. Cl.³ B23K *3/04*; B25G *1/10*; H05B *1/00*
U.S. Cl. 219—230 **12 Claims**



1. A desoldering tool having an elongate handle; an elongate housing defining a bore therethrough, and extending from one end of the handle; a collecting chamber having at least an inlet portion thereof within the handle, which portion defines an inlet to the chamber; a heating bit assembly having a hollow heating bit, and a bit holder; and a connector associated with said chamber for connecting the tool to means for developing suction in the chamber; the holder having a body portion, around which is provided an electric heating element connectable to a source of electric current for heating the body portion and bit, and an elongate tubular portion; the holder being mounted longitudinally in the bore of the housing with its body portion adjacent the end of said bore remote from the handle and with the tubular portion terminating in the chamber inlet, and the holder defining a longitudinal passage therethrough with the bit received in the end of the passage at said remote end of the housing so that the bit is in communication with the chamber; the tubular portion of the bit holder being of lesser wall thickness than the body portion, and the holder further including an imperforate sleeve through which the tubular portion extends and which has one end mounted on the body portion and its other end extending into the chamber inlet so as to enclose, and to define around the tubular portion, an insulating air space extending along the length of the tubular portion; said lesser wall thickness of the tubular portion and the air space enabling substantially the full length of the tubular portion to be maintained at a temperature above the liquidus temperature for solder melted by the bit during a desoldering operation, which heat loss from the body portion to the tubular portion such as to impair desoldering, so that the melted solder can be drawn through the tubular portion and into the chamber prior to solidification.

4,435,637

APPARATUS FOR HEATING A SHEET- OR WEB-LIKE MATERIAL

Jacob de Vries, Insulindeweg 10, 1462 MJ Middenbeemster, Netherlands

Continuation of Ser. No. 244,510, Mar. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 210,382, Nov. 26, 1980. This application Sep. 30, 1982, Ser. No. 428,551
Claims priority, application Netherlands, Apr. 2, 1980, 8001944
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—358 **7 Claims**



1. Apparatus for heating a sheet- or web-like material during its transport through a processing machine, comprising at least one infrared heating panel facing the path of transport of the material and connected to an ac-source through a semiconductor switching means, a controlling circuit for delivering ignition impulses to the semiconductor switching means, wherein the ignition time within each half period of the supply voltage is determined by a control signal provided by a control means to the controlling circuit, which can be switched on and off by a monitoring circuit coupled to a detector means reacting to the transport speed, wherein said monitoring circuit comprises two or more zone detector means reacting to the presence of the material within a given zone extending transversely to the transport direction of the material on either side of the desired path of transport, and an AND-input circuit and/or an OR-input circuit, said input circuits controlling a switching means through a time-delay means for switching the controlling circuit on and off, wherein the controlling circuit is switched off if the material leaves said zone.

4,435,638

ELECTRIC RANGE SURFACE ELEMENT

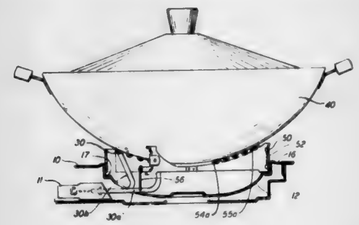
Donald J. Simon, Indianapolis, and Thomas R. Field, Noblesville, both of Ind., assignors to Jenn-Air Corporation, Indianapolis, Ind.

Filed Aug. 20, 1981, Ser. No. 294,582
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—460 **7 Claims**

1. In an electric range or the like having a top cooking surface defining an opening having ledge means therein, an electric surface unit for heating a utensil having a large convex bottom surface by conduction comprising:

support means supported by said ledge means and having an elevated support surface disposed substantially above said top surface and including a generally spherical portion;

heating element means formed in a spiral pattern to a generally spherical radius and adapted to be supported in a generally predetermined non-deformable posture on said elevated support surface, said support means positioning the underside of said heating element means spaced vertically above said top surface for permitting a cooling cross flow of air therebetween, said heating element means being operable for providing a heat conducting relationship with a complementary configured utensil when in an



operative condition and for being supported by said support means with the large convex bottom surface extending radially beyond the limits of said heating element means; and

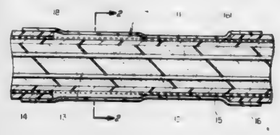
a perforate element generally enclosing said heating element means and the vertical space between said heating element means and said top surface, said perforate element permitting airflow into and out of said air space while effectively shielding the adjacent top surfaces from radiation heating whereby when said heating element means is in an operative condition heat is provided for said utensil while heating of the subjacent top surface is inhibited.

4,435,639

ELECTRICAL DEVICES WITH WATER-BLOCKING INSULATION

Boris Gurevich, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 15, 1982, Ser. No. 418,354
Int. Cl.³ H05B *3/56*
U.S. Cl. 219—544 **7 Claims**





1. An elongated heater which comprises:

(a) an elongate electrical heating element;

(b) an inner waterproof electrically insulating jacket surrounding the electrical element; and

(c) an outer waterproof electrically insulating jacket surrounding but spaced apart from the inner jacket so that water entering the space between the jackets can wick along the heater between the jackets,

the heater comprising, at at least one intermediate point along its length, a water-blocking section through which the electrical element and the inner jacket pass without interruption but in which the outer jacket has been removed to provide an exposed length of the inner jacket, said water-blocking section further comprising

(d) a waterproof electrically insulating sleeve which surrounds the exposed length of the inner jacket and the ends of the outer insulating jacket, and

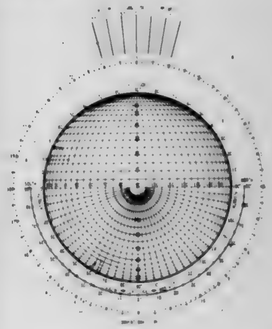
(e) a sealing material which secures the sleeve around the inner and outer jackets and provides a waterproof seal between the sleeve and around part only of the exposed length of the inner jacket.

4,435,640

MULTIFUNCTIONAL INSTRUMENT FOR DETERMINING THE POSITION AND COURSE OF THE SUN, THE INCLINATION FOR MAXIMAL INSOLATION OF A PLANE AND THE CORRESPONDENCE FROM SOLAR AND CONVENTIONAL TIME

Renato Micheletto, Via Asiago 34, Conegliano, Italy

Filed Mar. 25, 1982, Ser. No. 361,962
Claims priority, application Italy, Apr. 21, 1981, 35763/81[U]
Int. Cl.³ G06C *3/00*
U.S. Cl. 235—78 M **7 Claims**



1. An instrument for determining the position and course of the sun, the inclination for maximum insolation of a planar surface, and the relationship between solar time and conventional time, said instrument comprising:

a fixed first planar member having a center and a surface having thereon, concentrically with respect to said center:

a circle;

a straight line passing through said center and dividing said circle into first and second semicircles, said straight line being representative of the horizon;

said first semicircle having therein plural straight lines parallel to said horizon and representative of angular altitude therefrom, and plural elliptical lines intersecting said plural straight lines and representative of angular azimuth along said horizon;

said second semicircle having therein an orthogonal projection of said plural straight lines and said plural elliptical lines;

along a semicircumference outwardly of said second semicircle, indicia representative of south and north latitude values;

along a ring outwardly of said circle, indicia representative of conventional daily time; and

along a segment of said ring, indicia representative of east-west longitude values;

a pivotable, transparent second planar member having a center and a surface having thereon:

a straight line passing through said center of said second planar member and forming a median line representative of the 6AM–6PM time period;

plural straight lines parallel to said median line and representative of the equinoxes, the solstices and days of the year therebetween; and

plural curved lines concentric to said center of said second planar member and intersecting said plural straight lines thereof, said plural curved lines being representative of solar times of the day;

a pivotable, transparent third planar member having a center and a surface having thereon:

a ring having therearound indicia the same as said indicia along said ring on said surface of said first planar member and representative of solar time; and

at a position outwardly of said ring, a curve representative of the time egation during the course of the year; and

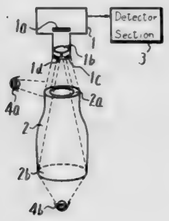
said first, second and third planar members being assembled for relative coaxial rotation about said respective centers, with said second planar member being positioned between and in contact with said first and third planar surfaces.

4,435,641

INSPECTION APPARATUS FOR INSPECTING AN OBJECT TO DETERMINE WHETHER OR NOT IT CONTAINS AN ABNORMALITY, DEFECT OR THE LIKE

Yoshida Hajime, Tokyo, Japan, assignor to Hajime Industries Ltd., Japan

Filed May 20, 1981, Ser. No. 265,652
Claims priority, application Japan, Oct. 15, 1980, 55-144046
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—223 B **8 Claims**



1. An inspection apparatus for inspecting an object to determine whether or not it contains an abnormality, defect or the like, comprising:

(a) a photo-sensor having a target screen, receiving an image of a portion of the object to be inspected and producing a corresponding electrical signal; and

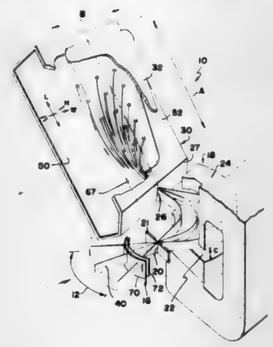
(b) a detector section receiving the electrical signal from said photo-sensor to determine whether or not said object contains abnormalities defects or the like, said photo-sensor having an optical lens arrangement which can simultaneously focus images of at least two different portions of said object disposed at different distances from said optical lens arrangement on first and second separate portions of said target screen of said photo-sensor.

4,435,642

ION MASS SPECTROMETER

Marcia M. Neugebauer, Altadena; Douglas R. Clay, La Crescenta; Bruce E. Goldstein, Pasadena, and Raymond Goldstein, Monrovia, all of Calif., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 24, 1982, Ser. No. 361,216
Int. Cl.³ B01D *59/48*; H01J *49/26*
U.S. Cl. 250—296 **6 Claims**



1. An ion mass spectrometer apparatus comprising;

a magnetic analyzer which includes entrance and exit openings, and a sector magnet that passes ions of selected momentum characteristics along a wide range of paths that extend between the openings while preserving the angle of their velocity vector with respect to a centerline of said path, at said openings; and

an electrostatic analyzer located downpath of said magnetic analyzer exit opening and positioned to receive ions leaving therefrom, said analyzer including walls forming a chamber having width, length, and height dimensions, said analyzer also having means for applying an electrical potential that deflects ions moving largely lengthwise of the chamber, along the height dimension in accordance with at least the mass to charge ratio of the ion;

said electrostatic analyzer also including an ion sensor which senses ions along a wall of said chamber, said sensor constructed to detect the position of an ion along the width dimension of the chamber as well as along another dimension.

4,435,643

GAMMANETRIC THICKNESS MEASURING APPARATUS

Guy Junck, Esch, Luxembourg, assignor to Arbed S. A., Luxembourg, Luxembourg

Filed Jan. 21, 1982, Ser. No. 341,231
Claims priority, application Luxembourg, Jan. 23, 1981, 83083
Int. Cl.³ G01M *23/00*
U.S. Cl. 250—358.1 **6 Claims**

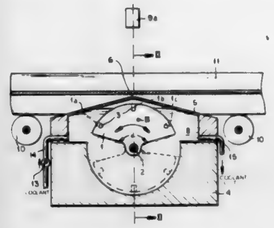
1. An apparatus for the gammametric measurement of an article, comprising:

a block rotatable about an axis and having a center of gravity offset therefrom while being provided along its periphery with a plurality of spaced apart radiation sources;

a radiation-absorbing body formed with a trough adapted to receive said block;

means connected to said block for swinging same from an inoperative position wherein said radiation sources are disposed within said trough into an operative position wherein said radiation sources are disposed at a location remote from the bottom of said trough;

a cover mounted on said body and enclosing said block in the operative position thereof, said cover having at least one window alignable with said radiation sources selectively; and



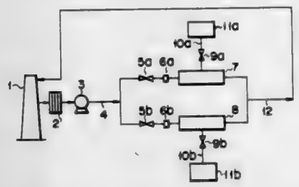
a radiation detector spaced from said cover and aligned with said window for detecting radiation traversing said window and passing through an article disposed between said cover and said detector.

4,435,644

RADIOACTIVE EFFLUENT GAS MONITORING APPARATUS

Hideaki Heki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 13, 1981, Ser. No. 283,105
Int. Cl.³ G01N *21/01*
U.S. Cl. 250—435 **11 Claims**



1. A radioactive effluent gas monitoring apparatus for detecting radioactive nuclides contained in radioactive effluent gas from a nuclear facility, comprising:

a guide line for discharging effluent gas from the nuclear facility;

a water recovery section for recovering ^3H in the effluent gas in the form of H_2O;

carbon dioxide recovery section connected parallel to said water recovery section and recovering ^{14}C in the effluent gas in the form of CO_2;

branch lines for separately feeding the effluent gas from said guide line to said water recovery section and said carbon dioxide recovery section;

a line for joining output gases from said water recovery section and said carbon dioxide recovery section to return the joined gas to the nuclear facility; and

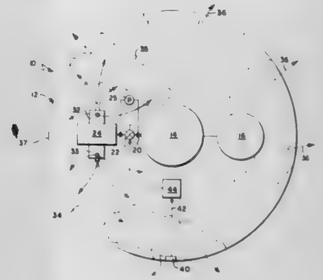
detecting means for detecting radioactivities in the recovered H_2O and CO_2.

4,435,645

INFRARED RADIATION SIGNATURE GENERATION SYSTEM

Richard S. Bartle, Andover, Mass., assignor to Avco Corporation, Wilmington, Mass.

Filed May 14, 1982, Ser. No. 378,061
Int. Cl.³ G21G *4/00*
U.S. Cl. 250—493.1 **12 Claims**



1. Infrared radiation signature generation system comprising:

means defining an enclosed chamber,

means for generating a hot vapor at selected rates, the temperature of the vapor being greater than the ambient temperature surrounding said chamber,

means for distributing said hot vapor to the interior of said chamber at a pressure higher than ambient pressure,

the wall of said chamber being formed of material which allows percolation of vapor therethrough, said percolating vapor transferring heat to said chamber wall and causing a temperature rise therein whereby said chamber wall emits an infrared radiation signature in response to such temperature rise,

temperature transducer feedback means interrelated with the wall of said chamber and responsive to the temperature thereof for generating a signal whose amplitude varies in relation to such temperature, and

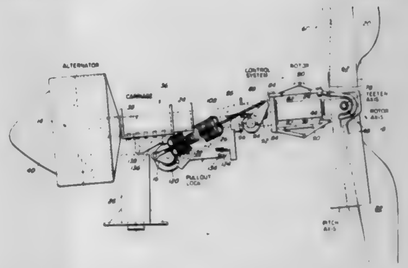
rate controller means responsive to said signal for controlling the generation rate of hot vapor to maintain said chamber wall at a steady state temperature whereby a continuous infrared radiation signature is generated.

4,435,646

WIND TURBINE ROTOR CONTROL SYSTEM

Clint Coleman, Warren, Vt., and Hugh D. Currin, Klamath Falls, Oreg., assignors to North Wind Power Company, Inc., Waitsfield, Vt.

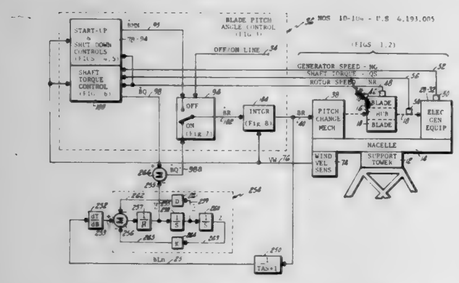
Filed Feb. 24, 1982, Ser. No. 351,896
Int. Cl.³ F03D *7/04*
U.S. Cl. 290—44 **16 Claims**



1. A constant speed wind turbine of the type comprising

a tower-mounted free yawing carriage having vane means for aligning said carriage with the wind,
a drive shaft defining a substantially horizontal rotor axis mounted for rotation in said carriage, and
a wind-powered electrical generator operatively coupled to one end of said drive shaft having electrical terminals adapted to be connected to an electrical power grid, wherein the improvement comprises
a rotor with variable pitch blades drivingly coupled coaxially to the other end of said drive shaft, and
mechanical control means connected between said rotor and said carriage for establishing the pitch angle of said rotor blades collectively as a direct predetermined function of the blade pitch moment.

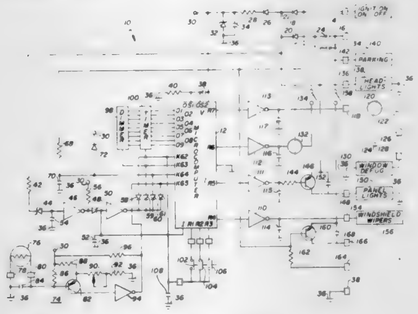
4,435,647
PREDICTED MOTION WIND TURBINE TOWER DAMPING
Kermit I. Harner, Windsor; John P. Patrick, South Windsor, both of Conn., and Joseph M. Kos, Holyoke, Mass., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 2, 1982, Ser. No. 364,707
Int. Cl.³ F03D *9/00, 7/04*
U.S. Cl. 290—44 **3 Claims**



1. A wind turbine system for generating electric power, comprising:
a tower;
a rotor disposed on said tower including blades disposed for rotation about an axis and a blade pitch angle change mechanism;
means for providing an actual torque/power signal indicative of actual torque/power generated by said wind turbine system; and
signal processing means for providing a reference torque/-power signal indicative of desired generated torque/-power, and for providing a blade pitch angle reference signal as a function of the difference between said actual torque/power signal and said reference torque/power signal;
characterized by:
said signal processing comprising means for providing said blade pitch angle reference signal as a combination of a damping signal component related to a filtered function of said blade pitch angle reference signal and a torque/power control signal component which is said function of the difference between said actual torque/power signal and said reference torque/power signal.

4,435,648
AUTOMOTIVE ACCESSORY CONTROL SYSTEM
Joseph W. Goode, III, Carmel, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.
Filed Dec. 22, 1982, Ser. No. 452,071
Int. Cl.³ H02J *1/00*
U.S. Cl. 307—10 R **5 Claims**

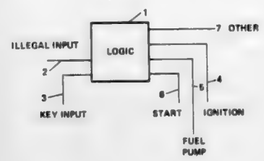
1. An automotive accessory control system for a vehicle having an on-off switch, exterior lighting means, windshield wiper means, electrical window defogger means and instrument panel lighting means, comprising:
first relay means for energizing said exterior lighting means;
second relay means for energizing said windshield wiper means;
third relay means for energizing said electrical window defogger means;
semiconductor switch means for determining the amount of electrical energy coupled to said instrument panel lighting means;
light detector means for monitoring ambient light conditions around said vehicle;
first switch means for selecting automatic activation and deactivation of said exterior lighting means in response to said light detector means;
second switch means for selecting a delay period for said automatic activation and deactivation of said exterior lighting means;
third switch means for selecting intermittent operation of said windshield wiper means;
fourth switch means for selecting operation of said window defogger means;



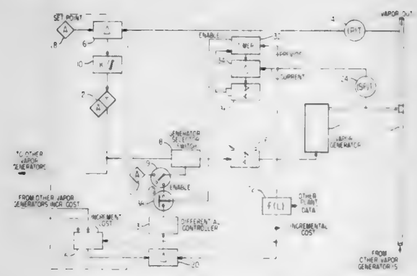
fifth switch means for selecting a brightness level for said instrument panel lighting means; and
microcomputer control means for activating and deactivating said first relay means in response to the ambient light conditions monitored by said light detector means and in response to said first and second switch means, and said on-off switch, for momentarily activating said second relay means in response to a first activation of said third switch means, for determining a period for intermittent operation of said windshield wiper means in response to said first and a second activation of said third switch means, for momentarily activating said second relay means periodically in accordance with said period for intermittent operation, for activating said third relay means for a predetermined period of time in response to activation of said fourth switch means, and for activating said semiconductor switch means to determine the amount of electrical energy coupled to said instrument panel lighting means in response to the brightness level selected by said fifth switch means.

4,435,649
AUTOMOTIVE CONTROL CIRCUIT
John F. Vandigriff, Box 179, Mansfield, Tex. 76063
Filed Dec. 7, 1981, Ser. No. 328,031
Int. Cl.³ B60R *25/04*
U.S. Cl. 307—10 AT **4 Claims**

1. An antitheft circuit for detecting nonstandard connections to an automobile electrical system comprising, means including a key circuit for supplying power and control signals to the electrical system, a logic circuit, said logic circuit upon receipt of said control signals enabling the electrical system of the automobile, and a circuit for disabling the electrical system upon detecting nonstandard connections to the electrical system when the logic circuit is not in receipt of control signals.

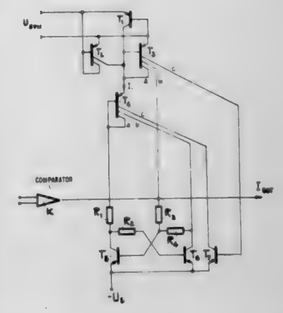


4,435,650
LOAD CONTROL FOR ENERGY CONVERTERS
Donald J. Dziubakowski, Seven Hills; Azmi Kaya, Akron; Marion A. Keyes, Chagrin Falls; Theodore N. Matsko, Chesterland; William H. Moss, Willoughby, and Thomas J. Scheib, Chesterland, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Dec. 15, 1981, Ser. No. 331,060
Int. Cl.³ H02J *3/00*
U.S. Cl. 307—32 **3 Claims**



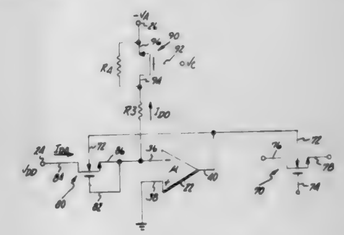
1. A load control for a system comprised of a plurality of energy converters, comprising, means generating a system control signal corresponding to the system load for adjusting in parallel the energy output of each of said converters in accordance with changes in the system control signal, means producing an individual incremental cost signal for each of said plurality of converters, means responsive to all of said incremental cost signals generating a system incremental cost signal, means generating a third signal for each of said generators corresponding to the difference between the system incremental cost signal and the individual incremental cost signal for each generator, means under the control of the third signal biasing the energy output of each converter as required to maintain a predetermined relationship between the system incremental cost signal and the individual incremental cost signal and means inhibiting said third signal from biasing the output of a converter, if during predetermined periods of time, the rate of energy output of said one converter fluctuates beyond predetermined limits.

4,435,651
ZERO VOLTAGE SWITCH
Karl-Diether Nutz, Oedheim, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany
Filed Oct. 7, 1981, Ser. No. 309,516
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3037794
Int. Cl.³ H03K *17/72, 17/13, 5/153*
U.S. Cl. 307—252 UA **11 Claims**



1. A zero voltage switch connected to an AC voltage source which produces an AC voltage, said switch comprising a DC current source producing a DC current, first and second parallel connected current branches connected to said DC current source and the AC voltage source for taking over the DC current from said DC current source in half cycles of the AC voltage, a third current branch connected to said first and second parallel connected branches and said DC current source for blocking said first and second current branches in zero axis crossing phases of the AC voltage to produce control pulses and a logic unit connected to said DC current source for controlling said DC current source to provide an extremely small current up to the beginning of a first control pulse, an increased current during said control pulses and a current between said extremely small current and said increased current between the control pulses.

4,435,652
THRESHOLD VOLTAGE CONTROL NETWORK FOR INTEGRATED CIRCUIT FIELD-EFFECT TRRANSISTORS
Emsley H. Stevens, Plymouth, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed May 26, 1981, Ser. No. 267,213
Int. Cl.³ H03K *17/693, 17/30*
U.S. Cl. 307—297 **6 Claims**



1. A threshold voltage control circuit for controlling threshold voltages of selected field-effect transistors formed as part of an integrated circuit and having respective drains, sources and gates thereof electrically interconnected in said integrated

circuit in any desired manner including a first field-effect transistor, said threshold voltage control circuit comprising:

a reference field-effect transistor formed as part of said integrated circuit having a drain, a source and a first gate with said first gate and source electrically connected together, with said reference field-effect transistor being electrically connected to said first field-effect transistor such that said reference field-effect transistor has a threshold voltage which determines that threshold voltage associated with said first field-effect transistor, said reference field-effect transistor drain being electrically connected to a first terminal means characterized as being connectible to a first voltage source;

an impedance means electrically connected to a second terminal means characterized as being connectible to a second voltage source and electrically connected to said reference field-effect transistor source wherein said impedance means has a first or a second impedance value depending on values of a control signal; and

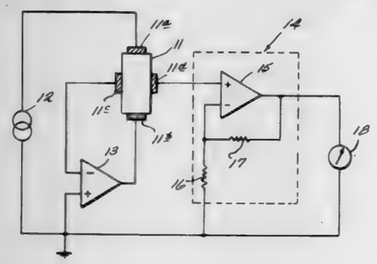
means for providing threshold voltage control to said reference field-effect transistor depending on impedance values taken by said impedance means to cause said threshold voltage of said reference field-effect transistor to attain a value which maintains current flowing between source and drain of said reference field-effect transistor substantially equal to that flowing through said impedance means, said threshold voltage of said reference field-effect transistor having a first value when said impedance means has said first impedance value and having a second value when said impedance means has said second impedance value.

4,435,653

IN-PHASE VOLTAGE ELIMINATION CIRCUIT FOR HALL ELEMENT

Kunihiko Matui, Komukainishi, and Shikei Tanaka, Chigasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 6, 1981, Ser. No. 318,852
Claims priority, application Japan, Nov. 26, 1980, 55-166409; Apr. 15, 1981, 56-56714
Int. Cl.³ H03K *17/60, 7/10*
U.S. Cl. 307—309 **11 Claims**



1. An in-phase voltage elimination circuit comprising:

a Hall element having first and second control current input terminals and first and second output terminals, said second control current input terminal being connected to neither of said first and second output terminals;

means for supplying a control current to said first control current input terminal of said Hall element; and

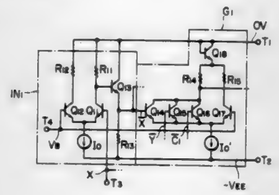
an operational amplifier having a first input terminal connected to reference potential, a second input terminal connected to said first input terminal of said Hall element, and an output terminal connected to second control current input terminal of said Hall element; wherein said Hall element produces a Hall output at said second output terminal of said Hall element.

4,435,654

OUTPUT LEVEL ADJUSTMENT MEANS FOR LOW FANOUT ECL LACKING EMITTER FOLLOWER OUTPUT

Kazuo Koide, Fuchu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,470
Claims priority, application Japan, May 2, 1980, 55-57814
Int. Cl.³ H03K *19/086, 19/092*
U.S. Cl. 307—455 **7 Claims**



1. A complex logic circuit comprising a plurality of emitter coupled logic circuits commonly connected to a reference potential for comparing with input signals respectively received by said emitter coupled logic circuits, said complex logic circuit comprising:

a first emitter coupled logic circuit having first and second load resistors, a first current source, a first current switch transistor having its base electrode connected to a signal input terminal, its emitter electrode connected to said first current source and its collector electrode connected to a point of operation potential through said first load resistor, a second current switch transistor having its base electrode connected to a reference potential point which is supplied with said reference potential, its emitter electrode connected to said first current source and its collector electrode connected to said point of operation potential through said second load resistor, and an emitter follower output circuit having its input connected to an electrode selected from said collector electrodes of said first and second current switch transistors and its output coupled to an output terminal of said first emitter coupled logic circuit, and

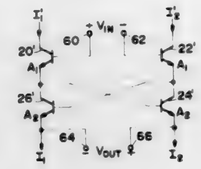
a second emitter coupled logic circuit having third and forth load resistors, a second current source, a third current switch transistor having its base electrode connected to a signal input terminal, its emitter electrode connected to said second current source and its collector electrode connected to a node through said third load resistor, a fourth current switch transistor having its base electrode connected to a reference potential point which is supplied with the same reference potential as that supplied to the reference potential point of said second current switch transistor, its emitter electrode connected to said second current source and its collector electrode connected to said node through said fourth load resistor and a level shift element which is connected between said point of operation potential and said node, wherein at least one collector electrode of said third and fourth current switch transistors is connected to an output terminal of said second emitter coupled logic circuit, and wherein the voltage drop across said level shift element is set to be substantially equal to a voltage across the base and emitter of an emitter follower output transistor of said emitter follower output circuit so that said first and second emitter coupled logic circuits can operate using the same reference potential for comparison with their respective input signals and so that said output signals at said output terminals of said first and second emitter coupled logic circuits have substantially identical voltage levels for high and low level output signals provided at said respective output terminals.

4,435,655

LOG-CONFORMANCE ERROR CORRECTION CIRCUIT FOR SEMICONDUCTOR DEVICES

Max W. Hauser, Cambridge, Mass., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 18, 1981, Ser. No. 264,366
Int. Cl.³ G06G *7/12*
U.S. Cl. 307—490 **4 Claims**



1. A circuit for correcting log-conformance error in a prototype circuit which includes semiconductor junctions, comprising:

a first pair of semiconductor devices; and

a second pair of semiconductor devices operatively associated with said first pair of semiconductor devices such that the current densities of said second pair are cross-proportional with the current densities of said first pair and of a different magnitude;

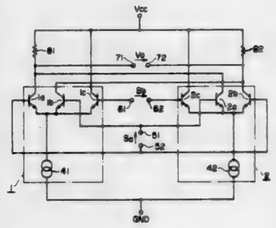
wherein signal-dependent current derived from said prototype circuit flows through said first and second pairs of semiconductor devices and a correction voltage is generated thereby for correcting said log-conformance error.

4,435,656

PHASE INVERTER CIRCUIT

Yasuta Tomuro, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,874
Claims priority, application Japan, Mar. 23, 1981, 56-42788
Int. Cl.³ H03L *7/00;* H03F *3/45*
U.S. Cl. 307—513 **5 Claims**



1. A phase inverter circuit, comprising:

a first differential current gate including first, second and third active elements and a first constant current source;

a second differential current gate including fourth, fifth and sixth active elements and a second constant current source;

a first output terminal connected to the output terminals of said first and fourth active elements;

a second output terminal connected to the output terminals of said second and fifth active elements;

a first input terminal connected to the input terminals of said first and fifth active elements; and

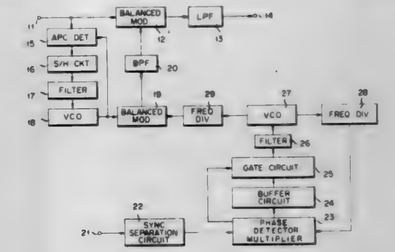
a second input terminal connected to the input terminals of said second and fourth active elements, an input signal being applied across said first and second input terminals, and a phase switching signal being applied across input terminals of said third and sixth active elements.

4,435,657

PHASE DETECTOR CIRCUIT

Shinichiro Taguchi; Nobuya Nagao, and Yutaka Ogihara, all of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 27, 1981, Ser. No. 238,951
Int. Cl.³ H03D *13/00;* G01R *25/00*
U.S. Cl. 307—516 **3 Claims**



1. A phase detector circuit comprising:

a phase detector including a first differential amplifier and a second differential amplifier, a reference pulse signal and a comparison pulse signal being applied to first input terminals of said respective first and second differential amplifiers, preset bias voltages of first and second DC bias voltage sources being applied to second input terminals of said respective first and second differential amplifiers, said second differential amplifier providing from an output terminal thereof a phase detection pulse of a pulse width proportional to the phase difference between the reference pulse and comparison pulse,

a buffer circuit connected to the output terminal of said second differential amplifier, for extracting said phase detection pulse output,

a gate circuit connected to an output terminal of said buffer circuit, a current path of said buffer circuit between a phase detection pulse input terminal and an output terminal being controlled to on or off by said reference pulse signal, said buffer circuit providing an output pulse while said current path is in the "on" state, the pulse duty of said output pulse varying according to the pulse width of said phase detection pulse, and

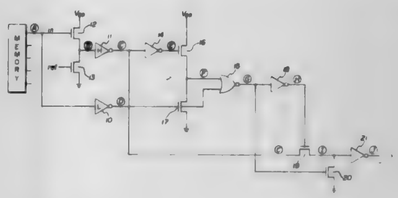
a filter for receiving the output of said gate circuit.

4,435,658

TWO-LEVEL THRESHOLD CIRCUITRY FOR LARGE SCALE INTEGRATED CIRCUIT MEMORIES

Lance R. Murray, and Ta-Ming Wu, both of San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 17, 1981, Ser. No. 235,040
Int. Cl.³ G01R *19/165;* H03K *5/24, 19/017*
U.S. Cl. 307—530 **8 Claims**



1. A threshold detector circuit coupled to a sense line for sensing a signal on said line, said detector circuit comprising:

a low threshold detector means having an input terminal coupled to said sense line and having an output terminal;

a high threshold detector means having an input terminal coupled to said sense line and having an output terminal, said high threshold detector means being formed of an inverter circuit with a high threshold driving transistor and said low threshold detector means being formed of an inverter circuit with a driving transistor which is formed by an implantation technique so as to have a low threshold; and,

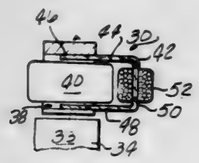
an output means having input terminals coupled to said respective output terminals of said low threshold detector means and high threshold detector means and having an output terminal without any feedback circuitry coupled thereto for providing a first level output signal on an output terminal of said detector circuit when said signal on said sense line rises above said low threshold, said first level output signal remaining until said signal on said sense line rises above and then declines below said high threshold whereupon said output means provides a second level output signal on said detector circuit output terminal.

4,435,659

SPEED SENSOR FOR AN ELECTROMAGNETIC MACHINE

Arnold D. Peterson, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 30, 1982, Ser. No. 431,863
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 R 28 Claims



1. In a speed sensor for an electromagnetic machine of the type including the combination of a stator having a plurality of stator coils, a plurality of stator teeth, and a plurality of stator slots respectively between said teeth, and a rotor separated from said stator by an air gap, said rotor being adapted to rotate relative to said stator and generating a magnetic field inducing magnetic flux in said stator, the improvement comprising:

a magnetic core having at least one leg extending into one of said stator slots and adapted to be magnetically coupled with the magnetic field generated by said rotor upon rotation of said rotor;

a winding magnetically coupled with said core and within which there is induced an alternating electrical signal having a frequency proportional to the speed of said rotor relative to said stator; and

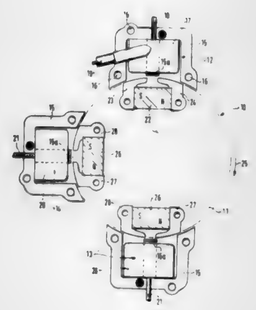
means for mounting said one leg within said one stator slot, said mounting means including an insulative medium substantially filling said one stator slot and surrounding said one leg.

4,435,660

MAGNETO GENERATOR FOR A CONTACTLESS IGNITION SYSTEM

Armin Willer, Heilsbronn, and Herbert Roderer, Nuremberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 213,646, Dec. 5, 1980, abandoned. This application Nov. 4, 1982, Ser. No. 439,313
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951326
Int. Cl.³ H02K *39/00*
U.S. Cl. 310—70 R 6 Claims



1. In an internal combustion engine having a contactless ignition system and an electrical load, a magneto generator comprising:

a rotor (**11**) for operation in a single predetermined direction of rotation;

a first and second (**22,26**) permanent magnet set in said rotor, spaced apart circumferentially from each other, each having a polarity perpendicular to a radius of said rotor passing through the magnet and each having a magnetic system comprising a first and second pole piece respectively abutting opposite poles of the magnet, said first and second magnets being mounted with opposite polarity with reference to direction of rotation of said rotor;

a first armature (**15**) fixedly mounted relative to the path of said first and second permanent magnets for magnetic interaction therewith, and having a winding connected to said ignition system so that a spark is generated only upon said interaction with said first permanent magnet when said rotor is rotating in said single predetermined direction of rotation;

a third permanent magnet set in said rotor, spaced apart circumferentially from said first and second magnets, having a polarity perpendicular to a radius of said rotor passing through said third magnet, which polarity is the same as that of said second magnet with reference to direction of rotation, said third magnet also having a magnetic system comprising first and second pole pieces respectively abutting opposite poles of said third magnet;

and second and third armatures (**15',15''**) spaced apart from said first armature and fixedly mounted relative to the path of said first, second and third permanent magnets for magnetic interaction therewith and for generating electrical energy in response to said magnetic interaction with said first, second and third magnets.

4,435,661

SUBMERSIBLE PUMP MOTOR FLEXIBLE BEARING

Raymond L. Witten, Claremore, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed May 10, 1982, Ser. No. 376,791
Int. Cl.³ H02K *7/08*
U.S. Cl. 310—90 5 Claims

1. In a submersible pump electrical motor having a rotor shaft with laminations placed in sections and rotated within a stator, an improved bearing means between the sections for supporting the shaft, comprising in combination:

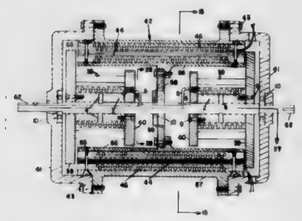
a symmetrical bearing member including at least one sleeve having a cylindrical bore containing the sleeve through which the shaft passes and a plurality of fingers engaging inner periphery of the stator, each finger inclining considering the direction of rotation of the shaft.

4,435,662

AXIAL AIR GAP ALTERNATORS/GENERATORS OF MODULAR CONSTRUCTION

Ian S. Tawse, Weston, Canada, assignor to Gen-Tech, Inc., Miami, Fla.

Division of Ser. No. 38,251, May 11, 1979, Pat. No. 4,297,605. This application Oct. 20, 1981, Ser. No. 313,122
Int. Cl.³ H02K *21/38*
U.S. Cl. 310—168 6 Claims



1. An electric generator comprising:

(a) a rotatable shaft,

(b) a rotor mounted on said shaft for rotation therewith and carrying a plurality of magnets on at least one face of said rotor, said magnets being arranged around the axis of said rotor,

(c) a pair of stator plates spaced from said rotor, said plates being so positioned as to place one on each side of the rotor and in a plane parallel to the plane of said rotor,

(d) an annular casing serving to maintain said stator plates in spaced apart relationship and to support said rotatable shaft and rotor,

(e) a ring of magnetic material incorporating a plurality of projecting poles, said ring comprising a continuously wound spiral of magnetic material and being carried by at least one side of at least one stator plate, and said ring being arranged around the axis of said shaft for cooperating with said magnets of said rotor,

whereby a linkage of magnetic flux is established between said poles and said magnets, and

(f) a plurality of induction coils would about and affixed to said poles for cooperation with said poles,

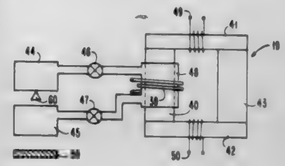
whereby as said shaft and rotor rotate, the cooperation between said magnets, said poles, and said induction coils combine to generate electric current in said induction coils.

4,435,663

THERMOCHEMICAL MAGNETIC GENERATOR

Richard J. Gambino, Thalwil, Switzerland, and Ralph R. Ruf, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,655
Int. Cl.³ H01J *45/00*
U.S. Cl. 310—306 15 Claims



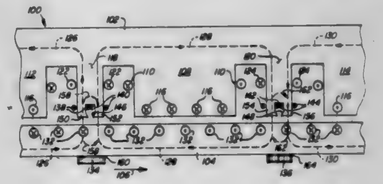
1. In a thermomagnetic generator employing a magnetic material in a predetermined environment cycled between a state of high magnetization and a state of low magnetization positioned in a magnetic circuit, with solenoid coils wound about said circuit, for generating an electrical voltage in response to a variation in the magnetization of said magnetic material, the improvement comprising varying said magnetization by means of a thermochemical reaction.

4,435,664

MAGNETIC INTERPOLE APPARATUS FOR IMPROVING COMMUTATION CHARACTERISTICS OF A DYNAMOELECTRIC MACHINE

Walter F. Boesel, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 13, 1981, Ser. No. 253,450
Int. Cl.³ H02K *27/22*
U.S. Cl. 310—186 34 Claims



1. Magnetic interpole apparatus for improving commutation characteristics of a dynamoelectric machine comprising:

(a) magnetizable interpole means having one end arranged for coupling to the yoke of said dynamoelectric machine and the other end providing a pole tip extending radially toward the axis of said machine, said pole tip having a first pole tip portion including a leading edge and a second pole tip portion including a trailing edge and winding slot means traversing in an axial direction from one side to another of said pole tip between said first and second pole tip portions;

(b) magnetizable force means associated with said magnetizable interpole means and arranged to establish therein a first magnetic flux defining a magnetic pole on said pole tip;

(c) flux shift winding means disposed in said winding slot means and encompassing one of said first and second pole tip portions; and

(d) means for coupling said flux shift winding means to an electric current source to generate in said one of said first and second pole tip portions a second magnetic flux for altering the flux distribution therein of said magnetic

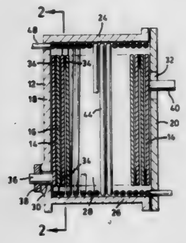
interpole means established by said magnetizing force means.

4,435,665

THERMAL LINEAR ACTUATOR

Kent Farrell, 93 Churchill Rd., Baie D'Urfe, Quebec, Canada

Filed Jun. 21, 1982, Ser. No. 390,269
Int. Cl.³ H02N *10/00*
U.S. Cl. 310—307 **4 Claims**



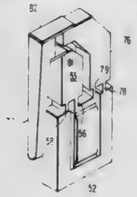
1. A thermal linear actuator assembly comprising;
(a) a plurality of primary linear expansion members,
(b) a plurality of secondary linear expansion members having a substantially different coefficient of expansion to that of said primary members,
(c) said primary and secondary members being alternately arranged in a side-by-side array and serially connected at opposite ends thereof, said array including first and last members each having a free end for attachment to opposite actuator attachment points whereby the thermal linear motion of the free ends in use is equal to the total linear expansion/contraction of the primary members less the total linear expansion/contraction of the secondary members of the array.

4,435,666

LEVER ACTUATOR COMPRISING A LONGITUDINAL-EFFECT ELECTROEXPANSIVE TRANSDUCER AND DESIGNED TO PREVENT ACTUATION FROM DEGRADING THE ACTUATOR

Izumu Fukui; Takeshi Yano, and Takeshige Hamatsuki, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,479
Claims priority, application Japan, May 26, 1981, 56-79531; May 26, 1981, 56-79532; Jul. 17, 1981, 56-111975; Jul. 17, 1981, 56-111976; Mar. 25, 1982, 57-46210; Mar. 25, 1982, 57-46211; Apr. 13, 1982, 57-61218; Apr. 30, 1982, 57-73119
Int. Cl.³ H01V *7/00*
U.S. Cl. 310—328 **9 Claims**



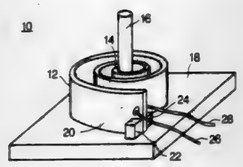
1. In a lever actuator comprising a frame member, an elongated longitudinal-effect electroexpansive transducer block having a block axis and first and second end surfaces orthogonally of said axis, and field generating means for generating an electric field having a direction in said transducer block parallel to said axis to produce a reversible strain in said transducer block and thereby to give rise to a translational displacement of said first end surface relative to said second end surface in a direction parallel to said axis, said frame member comprising a base portion, a lever portion having fulcrum, power, and weight points with said fulcrum and said power points disposed on a median plane including said axis, a resilient portion connecting said fulcrum point to said base portion, coupling means for operatively coupling said first end surfce to said power point, and connecting means for connecting said second end surface to said base portion to make said displacement actuate said lever portion and thereby to move said weight point, the improvement characterized in that:
said coupling means comprises a substantially plate-shaped primary portion which is lengthwise rigid and thicknesswise resilient and which operatively couples said first end surface to said power point and has a pair of primary principal surfaces disposed perpendicular to said plane and substantially parallel to said axis;
and
said frame member further comprises a first arm portion having first, second, and third predetermined points with said first and said second predetermined points disposed on said plane, a second arm portion having fourth and fifth predetermined points, a springy portion connecting said first predetermined point to said base portion, a substantially plate-shaped secondary portion which has a pair of secondary principal surfaces disposed substantially parallel to said primary principal surfaces and operatively couples said first end surface to said predetermined point with said primary principal surface pair and said secondary principal surface pair disposed on both sides of said axis, a first additional portion which has a first portion axis and connects said weight point to said fourth predetermined point with said first portion axis interposed between said weight point and said fourth predetermined point, and a second additional portion which has a second portion axis and connects said third and said fifth predetermined points with said second portion axis interposed between said third and said fifth predetermined points, said translational displacement moving said third predetermined point substantially in a direction of movement of said weight point with a different sense.

4,435,667

SPIRAL PIEZOELECTRIC ROTARY ACTUATOR

Henry H. Kolm, Wayland, and Eric A. Kolm, Brookline, both of Mass., assignors to Peizo Electric Products, Inc., Cambridge, Mass.

Filed Apr. 28, 1982, Ser. No. 372,636
Int. Cl.³ H04R *17/00*
U.S. Cl. 310—367 **12 Claims**



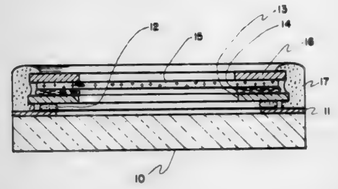
1. A piezoelectric rotary actuator comprising: a rotatable member; a fixed member; a spiral leaf spring attached at one end to said rotatable member and at the other end to said fixed member; a piezoelectric layer attached on one side to said spiral leaf spring; and electrode means for applying a voltage across said piezoelectric layer to bend said spiral leaf spring and rotate said rotatable member.

4,435,668

METHOD OF MAKING RUGGED VIDICON

Ferdinand C. Petito, Alexandria, and Gerald Klauber, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1981, Ser. No. 335,927
Int. Cl.³ H01J *31/49*
U.S. Cl. 313—388 **2 Claims**



1. A method of making a rugged vidicon including the steps of:
preparing an envelope for such vidicon;
inserting grids and a rugged electron gun in said envelope;
making a retina for said vidicon wherein this step includes the steps of:
preparing a transparent faceplate;
depositing an annular electrode on one side of said faceplate;
depositing an annular bead of adhesive on said annular electrode;
placing a thin annular conductive washer on said bead;
depositing an annulus of liquid electrode material on said washer;
placing a pyroelectric retina on said liquid electrode;
placing a thin annular conductive washer on said retina;
depositing an adhesive to join said washers to each other and to said annular electrode;
mounting the faceplate to the front of said envelope with said retina inside;
pumping a vacuum in said envelope, degassing, getting and tipping off said envelope.

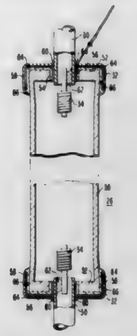
4,435,669

ARC TUBE CONSTRUCTION

Vernon L. Plagge, East Orange, and Ranbir S. Bhalla, Pine Brook, both of N.J., assignors to North American Philips Electric Corp., New York, N.Y.

Filed May 7, 1979, Ser. No. 36,949
Int. Cl.³ H01J *17/16*
U.S. Cl. 313—634 **6 Claims**

1. A sealed high pressure sodium discharge lamp arc tube, said arc tube comprising:
an elongated monolithic alumina arc tube body having circular apertures in the ends thereof of a diameter substantially less than the diameter of the arc tube body;
a refractory metal end cap including a flat disc portion and a cylindrical skirt portion having refractory metal tubulation extending through the center thereof, said tubulation extending through said circular apertures in the ends of said arc tube body and said skirt portion of said end cap surrounding the end portions of the side wall of said arc tube body; and
a glassy sealing frit disposed between the interior surface of said end cap and said arc tube body and between the portion of said tubulation extending through said circular apertures and the interior surfaces of said circular apertures.

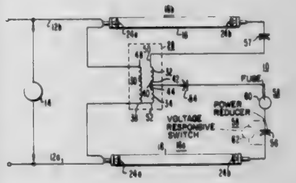


4,435,670

ENERGY CONSERVING INSTANT-START SERIES-SEQUENCE FLUORESCENT LAMP SYSTEM WITH OVERCURRENT PROTECTION

George S. Evans, Caldwell; John F. Gilmore, Verona, and Edward W. Morton, Teaneck, all of N.J., assignors to North American Philips Electric Corp., Bloomfield, N.J.

Filed Sep. 8, 1981, Ser. No. 300,319
Int. Cl.³ H01J *7/44*
U.S. Cl. 315—58 **2 Claims**



1. In combination with an instant-start series-sequence fluorescent lamp system including a pair of input terminal means for connecting said system to a power source, a pair of fluorescent lamp means each comprising a elongated tubular vitreous envelope enclosing a discharge-sustaining filling and carrying phosphor means on the inner surface thereof, substantially hollow vitreous re-entrant stem presses sealed to each end portion of said envelope, and having lead-in means sealed therethrough and operatively supporting electrodes within said envelope proximate each end portion thereof, transformer means including a primary winding, a secondary winding and an auxiliary winding, a first of said lamp means having one of said electrodes in circuit between one of said input terminal means and one end of said primary winding, the other of said electrodes of said first lamp means in circuit with a point common to one end of said secondary winding and one end of said auxiliary winding, the second of said lamp means having one of said electrodes in circuit between the other of said input terminals and the other end of said primary winding, the other of said electrodes of said second lamp means in circuit with the other end of said secondary winding, the other end of said auxiliary winding in circuit with said one end of said primary winding, intermediate capacitor means in circuit between said common point and said other electrode of said first lamp means, the improvement which comprises:
a power reducing capacitor means of predetermined capacitance in series circuit with said first lamp means and a

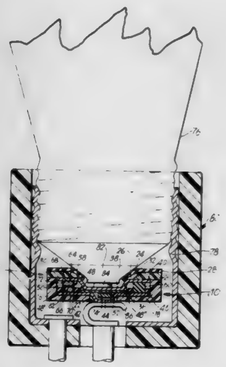
protective device comprising one of (1) a current-responsive fusible member which is in series circuit with said power-reducing capacitor means and is responsive to a current overload to render said lamp inoperative, and (2) a voltage-responsive switch means which is connected in parallel with said power-reducing capacitor means and which normally displays a high impedance, said high voltage-responsive switch means is responsive to a predetermined voltage developed across said power-reducing capacitor to switch to a low-impedance state and effectively remove said power-reducing capacitor means from circuit, whereby said lamp system is protected from overload conditions encountered upon failure of either said first or second lamp means.

4,435,671

DEVICE FOR PROLONGING THE LIFE OF AN INCANDESCENT LAMP

Victor Wouk, New York, N.Y., assignor to Eli, Inc., Cedar Grove, N.J.

Filed Apr. 26, 1982, Ser. No. 371,827
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—200 R **12 Claims**



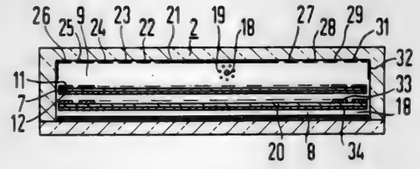
1. A device for prolonging the life of an incandescent lamp, comprising a rectifier unit sized and shaped for insertion into a lamp socket, said rectifier unit including a housing having a first opening provided in one side of said housing and a second opening provided in an opposite side of said housing, said second opening being in general alignment with said first opening, a first electrical contact positioned within said housing, said first electrical contact having an outer portion and an inner portion recessed relative to said outer portion of said first electrical contact and arranged in general alignment with said first opening in said housing, said inner portion of said first electrical contact being sized and shaped so as to engage a bottom contact of a lamp extending into said housing through said first opening therein, a second electrical contact positioned within said housing, said second electrical contact having an outer portion arranged in general alignment with said outer portion of said first electrical contact and an inner portion recessed relative to said outer portion of said second electrical contact and projecting outwardly from said housing through said second opening therein, said inner portion of said second electrical contact being sized and shaped so as to engage a spring leaf contact of a lamp socket, an electrical insulator positioned within said housing between said first and second electrical contacts, and a leadless diode chip positioned off center within said housing, said diode chip having a first contact surface arranged at one end of said diode chip, said first contact surface being in direct and substantially complete electrical engagement with said outer portion of said first electrical contact, and a second contact surface arranged at an opposite end of said diode chip, said second contact surface being in direct and substantially complete electrical engagement with said outer portion of said second electrical contact.

4,435,672

FLAT PICTURE TUBE

Hinrich Heynisch, Gräfelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,386
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112200
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—366 **12 Claims**



1. Flat picture tube, comprising a front plate and a back plate vacuum-tightly connected to said front plate defining an evacuated envelope, a control matrix of line conductors and column conductors respectively extended in planes parallel to said front plate dividing the evacuated envelope into a forward post acceleration space and a rear electron storage space having electrically conducting rear and side walls, said control matrix of conductors having crossings with electron passage openings formed in the vicinity thereof, at least one thermal cathode in said rear electron storage space having an emission surface, at least one grid-shaped pulling anode each being associated with a respective one of said at least one thermal cathode and each covering said emission surface of said respective at least one thermal cathode at a substantially constant spacing, at least one other anode disposed in said forward post acceleration space, a fluorescent-material layer disposed on said other anode being excitable by electrons and being at a positive potential of several kV relative to the cathode potential in operation of the tube, at least some of said conductors of said control matrix being disposed so as to face said rear electron storage space and being addressed sequentially, information for an addressed line conductor being simultaneously given to all of said column conductors, and in operation of the tube said rear and side walls of said rear electron storage space and unaddressed line conductors being at potentials preventing electrons emitted into said rear electron storage space from reaching or passing said read and side walls and unaddressed line conductors.

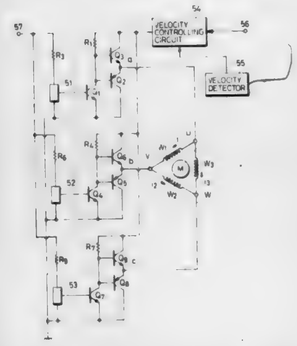
4,435,673

DC BRUSHLESS MOTOR AND ITS DRIVING CONTROL SYSTEM

Hiroshi Hagino, Omiya; Kuniyoshi Nakamura, and Eiichi Kotake, both of Yono, all of Japan, assignors to Japan Servo Co., Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 240,225
Claims priority, application Japan, Jun. 11, 1980, 55-78520
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 A **4 Claims**

1. A drive system for a D.C. brushless motor comprising:
a motor base;
a rotor shaft pivotally mounted in said motor base;
rotor magnets operatively connected to said rotor shaft for rotation therewith and equiangularly spaced thereabout;
stator windings insulatively mounted to said motor base and equiangularly arranged about said rotor shaft, said stator windings being spaced from said rotor magnets by an air gap, said stator windings numbering 3N where N is an integer and being wired into first, second and third winding groups connected in a delta configuration;
first, second and third magnetic induction means for monitoring the magnetic field produced by the rotation of said rotor shaft and magnets and producing respective outputs upon the detection of positive values, each of said first, second and third magnetic induction means being mounted to said motor base in a position $\pi/6$ radians advanced in the direction of motor rotation from the center of a winding of a respective first, second or third winding group;
amplifier means connected to said first, second and third magnetic induction means for amplifying said detected outputs to apply current to said stator windings groups.

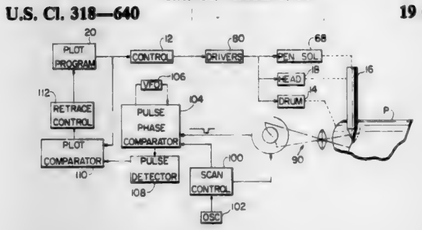


4,435,674

METHOD AND APPARATUS FOR GENERATING A VERIFIED PLOT

Charles M. Hevenor, Bolton, Conn., and David L. Wilson, Bowie, Md., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Oct. 5, 1981, Ser. No. 308,667
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—640 **19 Claims**



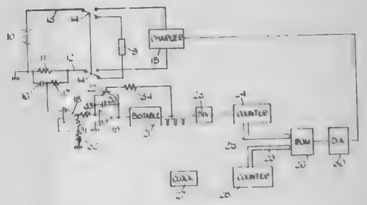
1. In a plotting apparatus having a plotting instrument, a programmable controller, and means for moving the plotting instrument in line marking relationship to a recording medium in response to plotting commands received from the controller to produce an actual plot on the recording medium corresponding to a plot program in the controller, the instrument being in the form of a marking instrument moved into contact with a recording medium where line marks are programmed for generation of marks and moved out of contact with the recording medium where no marks are programmed, the plot program including instrument command signals for moving the instrument into and out of contact with the medium, the improvement comprising plot verifying means including a sensing means movable relative to the recording medium for detecting the presence and absence of marks on the recording medium, the sensing means having a sensing axis extending generally perpendicular to the recording medium and being responsive to the presence or absence of marks on the recording medium at the locus of points where the axis of the movable sensing means and the recording medium intersect, means for moving the axis of the sensing means in tracking relationship to the actual plot on the recording medium while the sensing means detects the presence and absence of marks on the medium, comparator means connected with the sensing means and responsive to the instrument command signals in the plot program for comparing the sensed presence and absence of marks in the actual plot on the recording medium with the plot defined in the program and producing an error signal when the actual plot and the programmed plot are not consistent with one another.

4,435,675

BATTERY CHARGING SYSTEM

Derek S. Adams, Solihull, England, assignor to Lucas Industries plc., Birmingham, England

Filed May 20, 1982, Ser. No. 380,258
Claims priority, application United Kingdom, May 30, 1981, 8116598
Int. Cl.³ H01M *10/44*
U.S. Cl. 320—22 **6 Claims**



1. A battery charging system comprising a battery, means for determining the state of charge of the battery at the commencement of charging, means for supplying current to the battery, and means for controlling the current supply means, said control means being responsive to the state of charge determining means and being programmed so that during at least the last part of a particular charging cycle the charging current follows a schedule which is selected from a set of charging schedules each of which corresponds to a particular state of charge at the commencement of the charging cycle and each of which is is arranged so that the duration of the entire charging cycle is equal to a desired period of time.

4,435,676

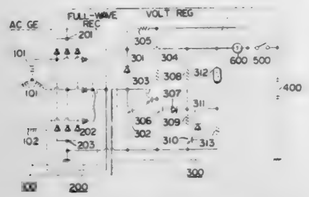
REGULATOR FOR CONTROLLING OUTPUT FROM GENERATOR HAVING AMBIENT TEMPERATURE OVERRIDE

Mitsuharu Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,474
Claims priority, application Japan, Mar. 16, 1982, 57-43582
Int. Cl.³ H02J *7/14*; H02P *9/30*
U.S. Cl. 322—33 **2 Claims**

1. A control device for controlling an output from an AC generator, comprising an AC generator including a field coil, a full-wave rectifier connected to said AC generator and including a first, a second, and a third output terminal, a field current control circuit for controlling a field current through said field coil of said AC generator to maintain an output from said AC generator to a predetermined magnitude, a voltage sensing circuit connected between said second and third output terminals of said full-wave rectifier to sense rectified output between said second and third output terminals to apply a first control signal to said field current control circuit in accordance with

the sensed rectified output, and a temperature sensing circuit connected between said second and third output terminals of said full-wave rectifier to sense an ambient temperature for said AC generator, said temperature sensing circuit being responsive to the ambient temperature in excess of a predetermined magnitude to apply a second control signal for interupting said field current to said field current control circuit in parallel



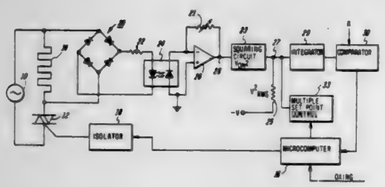
circuit relationship with said voltage sensing circuit, said field current control circuit including an input terminal connected only to said voltage sensing circuit, said temperature sensing circuit being connected to said voltage sensing circuit so that said temperature sensing circuit is responsive to the ambient temperature in excess of said predetermined magnitude set therefor to cause said voltage sensing circuit to apply said second control signal to said field current control circuit.

4,435,677

RMS VOLTAGE CONTROLLER

Dale C. Thomas, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,533
Int. Cl.³ G05F 1/45
U.S. Cl. 323—235 **8 Claims**



1. A circuit for monitoring and controlling voltage across a load, the voltage being applied from an alternating source and having a zero crossing point for each half cycle of its alternating waveform, said circuit comprising:

(a) means for sampling the voltage across the load;

(b) means coupled to said sampling means for providing a load square signal representing the square of the sampled load voltage;

(c) means for providing a set point signal representing the square of a desired control voltage;

(d) means for continuously combining said load square signal and said set point signal to provide a third signal representing the difference therebetween;

(e) means for continuously integrating said third signal to produce an integrated third signal, the third signal being integrated either toward or away from a predetermined value, so that any voltage errors generated because the load voltage is interrupted only at a one of the zero crossing points are automatically corrected during subsequent load voltage interruption;

(f) means for comparing said integrated third signal with a predetermined reference signal and generating either an on-state or an off-state signal; the on-state signal being generated while the integrated third signal is being integrated toward the predetermined value and the off-state signal being generated when the integrated third signal is at or is being integrated away from the predetermined value;

(g) control means for receiving the on-state or off-state signals from the comparing means and for concurrently receiving an input signal indicating when the applied alternating load voltage is at a zero crossing point, the control means producing an output signal for interrupting half cycles of the alternating voltage to the load for a fixed number of zero crossings or half cycles and then automatically producing an output signal for re-applying the load voltage in response to receipt of an off-state signal at a zero crossing point; and

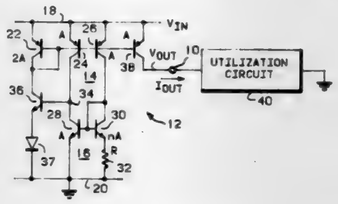
(h) means for interrupting and re-applying the application of voltage to said load in response to the output signal from the control means.

4,435,678

LOW VOLTAGE PRECISION CURRENT SOURCE

Eric D. Joseph, Mesa, and Robert B. Davies, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1982, Ser. No. 352,901
Int. Cl.³ G05F 1/56
U.S. Cl. 323—273 **4 Claims**



1. A precision current source, comprising:

first and second power supply conductors adapted to receive a supply voltage thereacross;

first and second complementary current mirror circuits interconnected to each other between said first and second power supply conductors, said first current mirror circuit sourcing currents to said second current mirror circuit;

feedback circuit means for sensing a difference current between said first and second complementary current mirror circuits caused by variations in said supply voltage to provide a feedback signal to inhibit said difference current, said feedback circuit means including a first transistor of a first conductive type having an emitter, a collector and a base, said emitter being coupled to said second power supply conductor, said collector being coupled to said first current mirror circuit to sink current sourced thereto, said base being coupled both to said first and second complementary current mirror circuits at a first circuit node; and

output circuit means coupled with said first current mirror circuit having an output adapted to be coupled to an utilization means for sourcing a predetermined and substantially constant current thereto.

4,435,679

PROGRAMMABLE SIGNAL AMPLITUDE CONTROL CIRCUITS

James F. Bedard; Charles W. Eichelberger, both of Schenectady, and Salvatore F. Nati, Jr., Syracuse, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 267,274, May 26, 1981, Pat. No. 4,414,501. This application May 12, 1983, Ser. No. 479,048
Int. Cl.³ G05B 24/02
U.S. Cl. 323—350 **19 Claims**

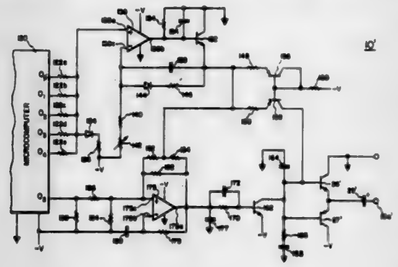
1. A circuit for providing an output signal of controllable amplitude responsive to the data contained in at least one externally-provided digital control signal, comprising:

feedback oscillator means for providing a periodic output waveform having a selected frequency and a variable amplitude responsive to the magnitude of a first voltage applied to a control input of said oscillator means;

a circuit output terminal at which appears the circuit output signal with said oscillator means output waveform frequency and said controllable amplitude;

first and second sources of circuit operating potential;

a plurality of resistance elements each having a first terminal



thereof connected in parallel to the first terminals of all other resistance elements, and each having a second terminal; said resistance element second terminal being individually connectable to one of said first and second sources of circuit operating potential responsive to said digital control signal data; and

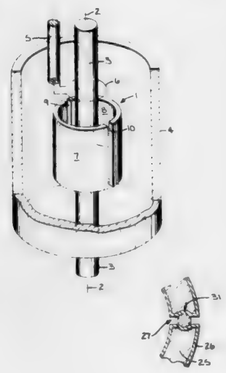
means connected between said resistance element first terminals and said oscillator means control input for supplying to said oscillator means control input said first voltage at an amplitude established by the particular combination of said resistance element second terminals connected respectively to said first and second operating potentials.

4,435,680

MICROWAVE RESONATOR STRUCTURE

Wojciech Froncisz, Krakow, Poland, and James S. Hyde, Dousman, Wis., assignors to Medical College of Wisconsin, Milwaukee, Wis.

Continuation-in-part of Ser. No. 310,231, Oct. 9, 1981. This application Mar. 25, 1982, Ser. No. 361,595
Int. Cl.³ G01R 33/08
U.S. Cl. 324—316 **1 Claim**



1. A lumped circuit resonator for a gyromagnetic resonance spectrometer which resonates when high frequency electromagnetic energy is applied thereto, and which comprises:

a loop formed from an electrically insulating base material which is disposed around a central longitudinal axis, said loop having a gap formed along its entire length which is dimensioned to provide a desired resonant frequency,

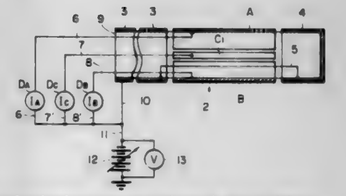
an electrically conductive layer deposited on the surface of the loop, including the surfaces formed by said gap to shield the base material from the applied high frequency electromagnetic energy, and in which a dielectric rod having a very low thermal coefficient of expansion is inserted in the gap to maintain the dimensions of the gap relatively constant.

4,435,681

BIPOLAR IONIC CURRENT PROBE UNIT AND METHOD FOR MEASURING POSITIVE AND NEGATIVE CURRENT DENSITIES BY MEANS OF THE SAME PROBE UNIT

Senichi Masuda, No. 605, Nishigahara 1-40-10, Kita-ku, Tokyo-to, and Yutaka Nonogaki, 2-61-1-702, Denenchofu, Ohta-ku, Tokyo-to, both of Japan

Filed Sep. 28, 1981, Ser. No. 306,515
Int. Cl.³ G01N 27/62
U.S. Cl. 324—459 **4 Claims**



1. A bipolar ionic current probe unit comprising:

a tri-electrode probe, which includes

a narrow elongated central electrode insulatively disposed on an imaginary surface of a small shape having a plane of symmetry along a line of intersection between said imaginary surface and said plane of symmetry, and

a pair of measuring electrodes insulatively disposed on said imaginary surface portions on the opposite sides of said central electrode in a symmetric manner with respect to said line of intersection so as to cover substantially the entire imaginary surface portions on the opposite sides with a small fixed gap clearance spaced from said central electrode;

a hollow metallic support post for insulatively supporting said tri-electrode probe; and

a measuring system which includes

individual electric conductors respectively connected to said said central electrode and said measuring electrodes and extending through the hollow space in said hollow metallic support post as insulated from said hollow metallic support post and from each other,

means for measuring minute electric currents with one end connected to said individual electric conductors and the other end connected through a common electric conductor to said hollow metallic support post, and

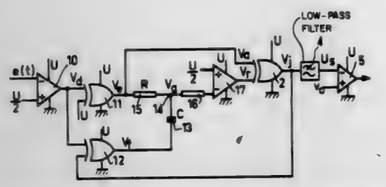
a variable D.C. voltage source connected between said common electric conductor and a reference potential point.

4,435,682

FREQUENCY DEMODULATOR EMPLOYING A CIRCUIT HAVING A DELAY VARYING WITH THE RECEIVED FREQUENCY

Robert Boudault, Limours, and Gerard Pouzoullic, Gif sur Yvette, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1981, Ser. No. 276,600
Claims priority, application France, Jun. 23, 1980, 80 13866
Int. Cl.³ H03K *9/06*; H03D *3/02*
U.S. Cl. 329—107 **5 Claims**



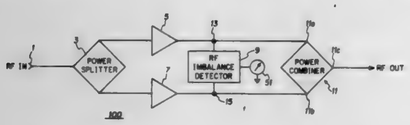
1. A frequency demodulator comprising a first gate circuit having an "exclusive-OR" function and receiving at its two inputs square-wave signals each having a frequency corresponding to a frequency modulated signal, delay means for delaying one of said square-wave signals relative to the other before application to said first gate circuit, and a low-pass filter connected to the output of the first gate circuit, said delay means producing a delay varying with frequency in an inversely proportional sense such that the phase difference between said square-wave signals varies at most from 0° to 180°, characterized in that said delay means comprises an integrating circuit receiving the non-delayed signal and producing an output signal, and a comparator for comparing said output signal of the integrating circuit with a threshold signal and producing a comparator output signal, the delayed signal being derived from said comparator output signal.

4,435,683

RF IMBALANCE DETECTOR

Alan R. Erickson, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 9, 1981, Ser. No. 252,522
Int. Cl.³ G01R *19/00*
U.S. Cl. 330—2 **11 Claims**



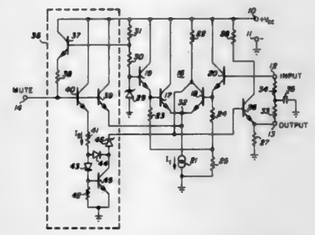
1. A radio frequency imbalance detection system for detecting degradation in the performance of a plurality of radio frequency amplifiers comprising:
- means for monitoring a first radio frequency output signal from a first radio frequency amplifier, and a second radio frequency output signal from a second radio frequency amplifier;
- means for comparing said first radio frequency output signal with said second radio frequency output signal to obtain a difference signal; and
- means for detecting said difference signal for providing an imbalance indication signal when said different signal exceeds a reference signal.

4,435,684

VIDEO AMPLIFIER MUTE CIRCUIT

Ronald W. Page, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 9, 1982, Ser. No. 366,944
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—51 **4 Claims**



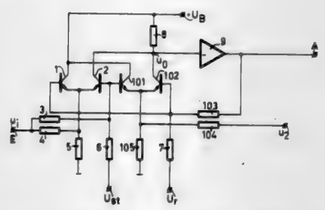
1. A wide bandwidth amplifier circuit which includes a high gain amplifier capable of being muted in response to a muting signal without changing its d-c output level, said circuit comprising:
- a differential amplifier having a source of tail current, an inverting input terminal, a noninverting input terminal, and an output;
- means for returning said noninverting input to a source of constant bias potential;
- means for coupling said inverting input to a source of signal to be amplified;
- means for shunting said tail current around said differential amplifier in response to said muting signal; and
- means for clamping said output to a d-c level, equal to the normal output level of said differential amplifier in its active state, in response to said muting signal.

4,435,685

AMPLIFIER ARRANGEMENT

Wolfgang Eckert, Reinfeld; Bernd Holtkamp, and Ernst A. Kilian, both of Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,921
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026551
Int. Cl.³ H03F *3/45, 1/26*
U.S. Cl. 330—261 **16 Claims**



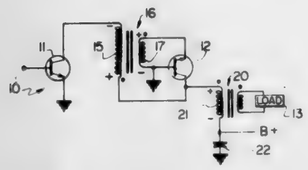
1. An amplifier arrangement comprising at least one pair of transistors having their emitters connected to each other and to a signal source that supplies an input signal to said interconnected emitters, an output signal being derived from the collector current of at least one transistor, at least one compensation circuit which derives a compensation signal from at least one of the two signals comprising the input signal supplied by the signal source and the output signal, and means for applying the compensation signal to the base of at least one of the transistors of the pair and with a phase and an amplitude such that the second harmonic of the signal wave in the output signal is at least partly compensated.

4,435,686

EXTENDED CASCODE AMPLIFIER

William F. Griffith, 920 Jefferson St., Apt. 3, Rochester, Ind. 46975

Filed May 26, 1981, Ser. No. 267,341
Int. Cl.³ H03F *1/00*
U.S. Cl. 330—311 **2 Claims**



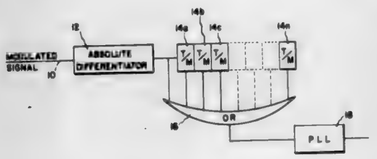
1. An extended cascode amplifier circuit comprising a driver transistor having a base, emitter and collector, the emitter being connected to ground, the base being connectable to a signal source and the collector being connected to one end of a primary winding of a transformer, the other end of the primary winding being connected to the collector of an output transistor, said output transistor having a base and an emitter, the base being connected to ground and, through a secondary winding of the transformer, to the emitter of said output transistor, the transformer windings being phased such that a large driver current is forced through a high impedance of the primary winding which is a multiple of the common base input impedance of the driver transistor.

4,435,687

CLOCK SIGNAL RECOVERY CIRCUIT

Joseph S. Nadan, Ossining, N.Y.; George C. Kenney, II, Stamford, Conn., and Marino G. Carasso, Son, Netherlands, assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 30,259, Apr. 16, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,527
Int. Cl.³ H03L *7/06*
U.S. Cl. 331—23 **7 Claims**



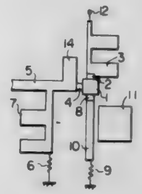
1. A method of recovering a clock signal from a self-clocking digital signal comprising absolute differentiating said digital signal; time delaying said differentiated signal through a plurality of serially coupled delay elements, and providing an output clock signal upon an output from the combined outputs of each of said delay elements and said absolute differentiated signal.

4,435,688

FET MICROWAVE OSCILLATOR BEING FREQUENCY STABILIZED BY CAPACITIVE REACTANCE MICRO-STRIP STUB LINE

Keiro Shinkawa; Masaki Noda, and Chuichi Sodeyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1981, Ser. No. 286,511
Claims priority, application Japan, Jul. 25, 1980, 55-101309
Int. Cl.³ H03B *5/18*
U.S. Cl. 331—99 **15 Claims**



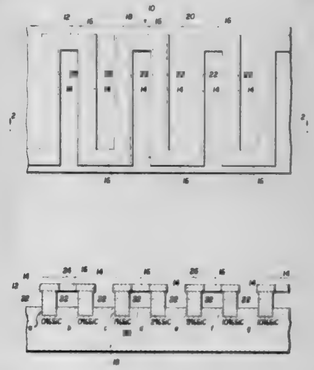
1. A microwave oscillator comprising:
- a FET having source, drain and gate terminals;
- a micro-strip line connected to said drain terminal, said micro-strip line being grounded at microwave frequencies;
- an output line made of a micro-strip line, said output line being connected to the source terminal of said FET;
- a gate line made of a micro-strip line, said gate line being connected to the gate terminal of said FET;
- a dielectric resonator disposed adjacent to said gate line and electrically coupled therewith and;
- a capacitive stub disposed adjacent to said FET and formed by
- a micro-strip line of which one end is connected to the source terminal of said FET and the other end is opened, said capacitive stub being a source terminal ground at microwave frequencies.

4,435,689

BROADBAND SLOW WAVE STRUCTURE ATTENUATOR

Hunter L. McDowell, Concord, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 10, 1982, Ser. No. 376,314
Int. Cl.³ H01P *1/22*
U.S. Cl. 333—81 A **18 Claims**



1. A broadband slow wave structure for propagating electrical energy including an attenuator section, comprising in combination:

dielectric substrate means having an upper conductive surface;

meander line circuit means including a serpentine electrical conductor pattern supported on said substrate means; and

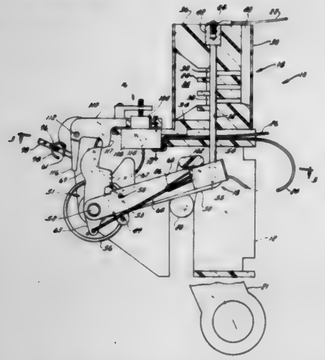
support means in the region of said attenuator section consisting of a plurality of attenuator elements intermediate said conductor pattern and said substrate means.

4,435,690

PRIMARY CIRCUIT BREAKER

Edwin A. Link, Waukesha, and Harvey W. Mikulecky, Oconomowoc, both of Wis., assignors to RTE Corporation, Waukesha, Wis.

Filed Apr. 26, 1982, Ser. No. 371,776
Int. Cl.³ H01H *75/12*
U.S. Cl. 335—37 **16 Claims**



1. In a fluid distribution transformer, a circuit breaker connected in series with the primary winding of the transformer and adapted to be immersed in the transformer dielectric fluid, said breaker including a frame, a housing mounted on said frame and including a fixed contact, a movable contact mounted on said frame for movement into said housing to engage said fixed contact, first means for biasing said movable contact away from said fixed contact, second means for biasing said movable contact toward said fixed contact, latch means connecting said second biasing means to said first biasing means whereby said contact is held in engagement with said fixed contact by said second biasing means and temperature controlled trip means mounted on said frame in a position to disengage said latch means from said first biasing means when predetermined electrical and temperature conditions exist in the transformer whereby said first biasing means will be released from said second biasing means allowing said first biasing means to move the movable contact away from the fixed contact to open the circuit breaker.

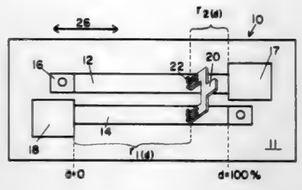
4,435,691

DUAL TRACK RESISTOR ELEMENT HAVING NONLINEAR OUTPUT

Steven N. Ginn, Mishawaka, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Mar. 22, 1982, Ser. No. 360,373
Int. Cl.³ H01C *10/16*
U.S. Cl. 338—125 **17 Claims**

1. A process for producing a variable voltage output, comprising the steps of disposing two resistance layers electrically insulated one from another on an electrically insulated substrate and each resistance layer having a different resistivity, positioning a selectively movable contactor for engagement with the respective surfaces of said layers, and selectively



positioning said slidable contactor to develop a nonlinear voltage output.

4,435,692

LOW ELECTROSTATIC CAPACITY WIRE-WOUND TYPE IGNITION CABLE

Yoshimi Miyamoto; Naotaka Nakamura, both of Aichi; Fumiyoshi Akaku, Mie; Katsumi Koto, Mie, and Tsutomu Kosaka, Mie, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippondenso Co., Ltd., Aichi, both of, Japan

Filed Dec. 28, 1982, Ser. No. 453,976
Claims priority, application Japan, Dec. 31, 1981, 56-197606[U]
Int. Cl.³ H01C *3/06*
U.S. Cl. 338—214 **12 Claims**



1. A low electrostatic capacity wire-wound type ignition cable, comprising:

a central reinforcing string;

a ferrite core having a diameter of 1.3 mm or less formed on said central reinforcing string;

a resistance wire, said wire being wound on said ferrite core to form a coil having 8,000 to 14,000 turns/m, said coil having an inductance of about 800 μH/m; and

an insulating layer formed on said coil, said insulating layer comprising a first material having a low dielectric constant.

4,435,693

ELECTRICAL INSULATING REFRACTORY COMPOSITION

Walter R. Johnson, Chuckey, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 7, 1982, Ser. No. 385,343
Int. Cl.³ H01C *1/03*
U.S. Cl. 338—238 **3 Claims**

1. A MgO heat conductive electrical insulating embedding composition for sheathing electrical heating elements and having a density of at least 2.385 g/cm^3, a static flow at least 45.0 g, and an electrical resistivity of at least 5.85 Megohm-inches measured after two hours at 885° C. consisting essentially of in admixture:

a. from 97.0 to 99.97 weight % MgO, said MgO being minus 40 mesh and having been calcined at a temperature in excess of 1200° C.;

b. from 0.025 to 2.0 weight % of a clay having a soluble salt content less than 0.5% by weight; and

c. from 0.005 to 1.0 weight % fumed silica having a particle size of from 0.2 to 0.7 microns.

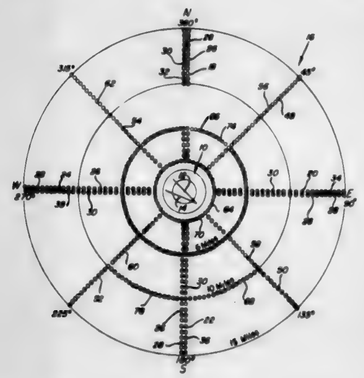
2. A sheathed electrical heating element comprising an electrical resistance element, a metal sheath surrounding said electrical resistance element and an improved heat conductive electrical insulating composition embedding said electrical resistance element within said sheath consisting of the composition of claim 1.

4,435,694

AIR TERMINAL GUIDANCE SYSTEM

Elbert M. Riebold, P.O. Box 479, Columbus, Mont. 59019

Filed Jul. 28, 1981, Ser. No. 287,708
Int. Cl.³ G08G *5/00*; B64F *1/18*
U.S. Cl. 340—953 **3 Claims**



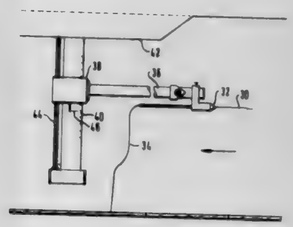
1. In combination with an airport area including various relatively angled runways disposed within said area and subject to use by different aircraft with various sophistication levels of guidance equipment and piloted by persons having various levels of experience, a guidance lighting system including a plurality of generally radially arranged base paths spaced and extending outward from said airport area at substantially ground level and having first approach light means spaced therealong for guidance of aircraft along said base paths when aproaching said airport, said approach light means spaced along each base path emitting the same color distinctive light, the light means of each of said base paths being distinctly different in light emitting color from the color light emitted from the light means spaced along the other base paths, each path of distinctive color light emitting lights means extending outward from said airport area in a predetermined compass direction from said airport area, said base paths equalling four in number and being equally angularly displaced about said airport area, said system also including intermediate radial paths of spaced additional light means, said intermediate paths being equally angularly spaced between adjacent base paths and extending generally radially of said airport area, the light means of each of said base paths includes pairs of lights spaced therealong and disposed in side-by-side rows of lights extending along the corresponding base path, a first row of each pair of rows of lights comprising said first approach light means, the second rows of each pair of rows of lights emitting the same color light distinctively different from colors of the first rows of lights, each row of one set of corresponding rows of lights being disposed to the right of the corresponding other row when viewed while moving along side-by-side rows of lights radially inwardly along the corresponding radial base path, the light means of each intermediate path emitting the same color light corresponding in color to the color light emitted from the distinctive color light emitted from the adjacent base path row of distinctive color lights.

4,435,695

METHOD OF PREDICTING THE APPROACHING STALL OF AN AIRCRAFT WING

John M. Maris, E.R.A.U. Box 2188, Daytona Beach, Regional Airport, Daytona Beach, Fla. 32014

Filed Dec. 22, 1980, Ser. No. 219,188
Claims priority, application United Kingdom, Dec. 24, 1979, 7944397
Int. Cl.³ G08G *5/00*
U.S. Cl. 340—966 **14 Claims**



1. A method of predicting the approaching stall of an aircraft wing, comprising:

sensing air speed over the wing at a predetermined location spaced above the top surface of the wing to thereby produce input signals representative of air speed fluctuations at said location, said fluctuations being caused by air turbulence over the wing;

using said input signals to produce a signal represensative of a ratio of the air speed fluctuations to an average air speed; and

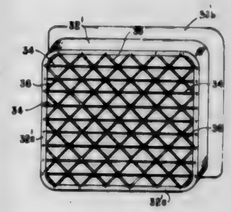
using said ratio signal to produce a signal indicative of imminent stalling.

4,435,696

VISOR ASSEMBLY FOR PEDESTRIAN TRAFFIC SIGNAL

Samuel Gould, San Pedro, and James S. Gould, Los Alamitos, both of Calif., assignors to Indicator Controls Corporation, Gardena, Calif.

Filed Sep. 25, 1981, Ser. No. 305,452
Int. Cl.³ E01F *9/00*; F21V *17/00*
U.S. Cl. 340—119 **5 Claims**



1. In combination with a pedestrian traffic signal having a housing, and having legends selectively illuminated by light sources within the housing; a frame mounted on the housing in front of the legends, said frame having a forward end and having a rim portion extending inwardly in coplanar relationship with the forward end of the frame; and a visor mounted in the frame composed of a set of straight strips extending across the frame in mutually spaced and parallel relationship, said straight strips having ends extending under said rim portion, and a plurality of zigzag strips extending across said frame between corresponding ones of said straight strips and between the top and bottom of said frame and said straight strips, said

zigzag strips having ends and apexes, the ends of said zigzag strips extending under said rim portions of said frame, and the apexes of certain ones of said zigzag strips extending under said rim portion at the top and bottom of said frame, said zigzag strips and said straight strips being attached to one another.

4,435,697

ANALOG-DIGITAL CONVERTER

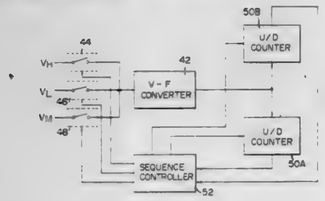
Yukiharu Takahashi, Yokohama, Japan, assignor to Tokyo Shibaura Electric, Japan

Division of Ser. No. 135,662, Mar. 31, 1980, which is a continuation of Ser. No. 855,785, Mar. 10, 1978. This application Aug. 11, 1982, Ser. No. 407,101

Claims priority, application Japan, Mar. 12, 1977, 52-27470; Mar. 12, 1977, 52-27471

Int. Cl.³ H03K *13/20*

U.S. Cl. 340—347 AD **3 Claims**



1. An analog-to-digital conversion method using a voltage-to-frequency converter comprising the steps of:

counting for a first time period in a first counting device set to a first counting mode first pulse signals having a frequency corresponding to a voltage level of a first reference input signal to generate a first count defining a reference point on a voltage-to-frequency characteristic curve of the voltage-to-frequency converter;

setting a second counting device to the first count at the end of the first time period;

counting for a second time period in the second counting device set to a second counting mode second pulse signals having a frequency corresponding to a voltage level of a second reference input signal to generate a second count defining a graduation point of the voltage-to-frequency characteristic curve;

counting for a third time period in the first counting device set to the first count and to the second counting mode third pulse signals having a frequency corresponding to an analog input signal to generate a third count; and

determining the voltage level of the analog input signal from the second count and the third count.

4,435,698

CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF MEASUREMENTS TO A CENTRAL, ESPECIALLY IN A FIRE ALARM SYSTEM

Werner Klett, Ehrenkirchen, Fed. Rep. of Germany, assignor to Hekatron GmbH, Sulzburg, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,258

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1980, 3021920

Int. Cl.³ G08B *29/00, 17/06*

U.S. Cl. 340—512 **8 Claims**

1. Apparatus for the transmission of alarm signals to a detector, comprising

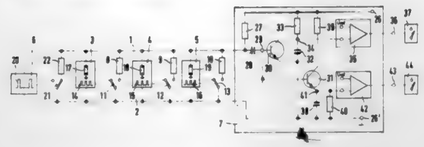
a signaling channel,

means for energizing said signaling channel,

means for applying monitoring signals to said channel at a first frequency,

means for applying alarm signals to said channel at a second frequency greater than that of said first frequency, and

means connected to said channel for detecting the monitoring and alarm signals,



wherein the duration of said monitoring signals is no longer than the interval between said alarm signals.

4,435,699

PROCESS AND INSTALLATION FOR THE REMOTE CONTROL OF A PREMISES WATCH RADAR APPARATUS

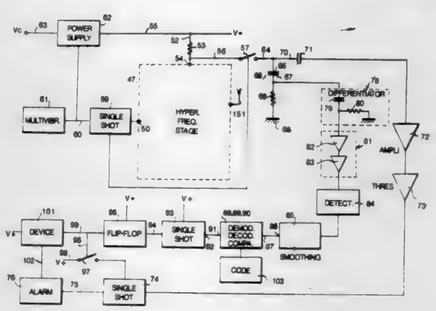
Maurice Tacussel, 105 bis, rue de Point de Jour, 92100 Boulogne-Billancourt, France

Continuation of Ser. No. 739,022, Nov. 4, 1976, abandoned. This application Aug. 7, 1978, Ser. No. 931,433

Claims priority, application France, Nov. 7, 1975, 75 34214

Int. Cl.³ G08B *1/08, 13/26*

U.S. Cl. 340—539 **16 Claims**



6. A premises watch radar controlled by a portable transmitting device, said radar comprising:

radar means for detecting intrusions including means for transmitting and receiving radiations of energy;

alarm means coupled to said radar means for producing a warning in response to said radar means detecting an intrusion, and having two stable states: an operative state wherein said alarm means is capable of providing a warning in response to intrusions detected by said radar apparatus and an inoperative state wherein said alarm means is inhibited from providing such a warning; said alarm means including means responsive to a switching signal produced by the actuation of a portable transmitting device by an operator for alternatively switching said alarm means from said inoperative state to said operative state and from said operative state to said inoperative state; and

means for temporarily inhibiting said switching means from responding to the switching signal upon a first change of state of said alarm means in response to said switching means, to prevent repeated actuations of said transmitting device by an operator from causing repeated changes of state of said alarm means during a predetermined time period following such first change of state.

4,435,700

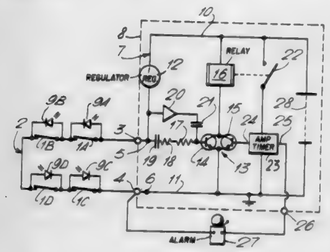
EVENT DETECTION AND INDICATION SYSTEM

Patrick H. Alley, Squirrel Leap, Hagley Rd., Fleet, Hampshire, GU13 8LH, England

Continuation of Ser. No. 197,773, filed as PCT/GB79/00204, Nov. 30, 1979, published as WO80/01214, Jun. 12, 1980, § 102(e) date Jul. 29, 1980, abandoned. This application Sep. 7, 1982, Ser. No. 415,594

Int. Cl.³ G08B *1/08;* H04Q *7/00*

U.S. Cl. 340—539 **15 Claims**



1. An event detection and indication system, comprising a loop circuit incorporating a series of event-responsive switches, each such switch having associated therewith means for maintaining electrical continuity within the loop circuit whenever its associated switch is operated to interrupt the loop circuit, the means producing an electrical signal pulse of predetermined characteristic in the loop circuit upon operation of an associated event-responsive switch, remote indication means for indicating a switch has been operated, and a control means for controlling operation of the indication means operationally interposed between the loop circuit and the indication means and exclusively responsive to the operation of an event-responsive switch to produce a control signal which initiates a predetermined operational cycle of the indication means, the indication means responding to such a control signal by completing the predetermined operational cycle irrespective of the restoration of the event-responsive switch which gave rise to the signal to its initial non-operated condition, the control means remaining responsive after completion of the predetermined operational cycle of the indication means to subsequent operation of any other event-responsive switch even though any previously operated event-responsive switch is in its operated condition.

4,435,701

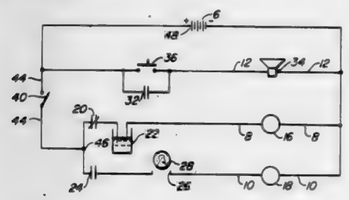
PORTABLE INTRUSION ALARM

Carlos P. Baon, 1763 Geneva Ave., San Francisco, Calif. 94134

Continuation-in-part of Ser. No. 288,606, Jul. 30, 1981, abandoned. This application Oct. 20, 1982, Ser. No. 435,421

Int. Cl.³ G08B *13/14*

U.S. Cl. 340—546 **9 Claims**



1. A portable, tippable alarm comprising:

an electrical source having first and second terminals;

an electric warning device;

a latch relay comprising:

first and second latching actuators;

first, second and third switches; and

operating means, operably coupled to said actuators, for closing said second and third switches and opening said first switch when in a first position and for opening said second and third switches and closing said first switch when in a second position;

a position sensitive switch;

first conductor means for electrically connecting said first switch, said position sensitive switch and said first actuator in series with one another and in parallel with said electrical source;

second conductor means for electrically connecting said second switch and said second actuator in series with one another and in parallel with said electrical source;

a normally open silencing switch connected in series along said second conductor means;

third conductor means for electrically connecting said third switch and said warning device in series with each other and in parallel with said electrical source; and

housing means for housing said warning device, said latch relay, said first, second and third conductor means and said position sensitive switch, said position sensitive switch being mounted in said housing means so when said housing means is upright said position sensitive switch is open and when said housing means is displaced substantially from being upright said position sensitive switch is closed.

4,435,702

CAPACITIVELY COUPLED ROTATIONAL SPEED DETECTOR

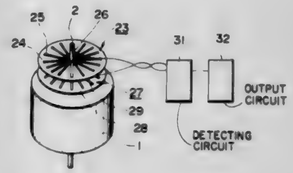
Youg Imai, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 293,944

Claims priority, application Japan, Aug. 19, 1980, 55-116942[U]

Int. Cl.³ G01P *3/54*

U.S. Cl. 340—671 **4 Claims**



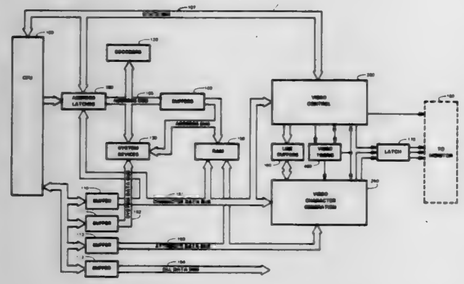
1. A rotational speed detector comprising: a rotating body of a rotating machine having an axis so that said body rotates about the axis, a light-weight rotating member secured to said rotating body and having a first surface encircling said rotating body with a plurality of electrodes arranged on said first surface at a predetermined pitch and forming a continuous circle of alternating electrodes and spaces between said electrodes around said rotating body; a light-weight stationary member having a second surface extending around said rotating body and disposed in opposed facing relation to said first surface of said rotating member, and said second surface having a plurality of electrodes extending around said rotating body at the same pitch as that of the said electrodes of said rotating member with said electrodes on said second surface forming a continuous circle of alternating electrodes and spaces between said electrodes with said electrodes on said rotating member being simultaneously alignable with said electrodes on said stationary member during rotation; and means for detecting a variation in electrostatic capacity between said electrodes of said rotating member and said electrodes of said stationary member, and for producing an output corresponding to a rotational speed of said rotating body in accordance with the variation in electrostatic capacity.

4,435,703

APPARATUS AND METHOD FOR SIMULTANEOUS DISPLAY OF CHARACTERS OF VARIABLE SIZE AND DENSITY

Glenn E. Hunt; Michael C. Alexander; Gerald L. Lozano, and Gerald O. Manktelow, all of Austin, Tex., assignors to Data General Corporation, Westboro, Mass.

Filed Jul. 6, 1981, Ser. No. 280,613
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—723 **3 Claims**



1. In a raster scan CRT display terminal, the method of providing a dot clock signal and character clock signal of variable frequency to the display logic of said terminal whereby multiple character sizes and densities may be displayed during the same frame, said method comprising the steps of:

providing a first dot clock signal;

providing a second dot clock signal having a frequency different from said first dot clock signal;

providing a character rate signal indicating which of said dot clock signals is to be provided to said display logic during the character row;

if said character rate signal is in a first state, generating said character clock signal responsive to a first plurality of pulses of said first dot clock signal and providing said character clock signal and said first dot clock signal to said display logic during display of said character row;

if said character rate signal is in a second state, generating said character clock signal responsive to a second plurality of pulses of said second dot clock signal and providing said second dot clock signal and said character clock signal to said display logic during display of said character row; and

repeating the above steps for each character row.

4,435,704

LOOP TRANSMISSION SYSTEM

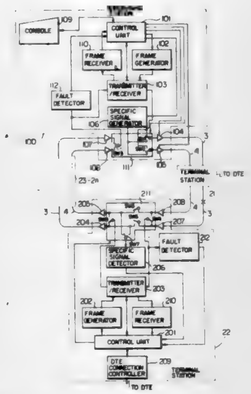
Toyokazu Hashimoto, Kanagawa; Hiroyuki Wada, Hadano; Masahiko Kida, Hadano; Hisashi Matsumura, Hadano, and Susumu Nakayashiki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 354,918
Claims priority, application Japan, Mar. 13, 1981, 56/35337; Sep. 7, 1981, 56/139715
Int. Cl.³ H04Q *9/00*; G06F *11/00*
U.S. Cl. 340—825.01 **14 Claims**

1. A loop transmission system including a plurality of stations connected in series in a pair of looped transmission lines, wherein said plurality of stations include a supervising station and at least one terminal station,

said supervising station comprising specific signal sending means for sending out a specific signal selected one of said pair of transmission lines which is to be operated as a spare line not used for data transmission, and

said terminal station comprising specific signal detection means capable of detecting said specific signal from said specific signal sending means through either one of said pair of transmission lines, and discrimination means for controlling the transmission line through which said specific signal is detected by said detection means to operate as a spare transmission line which is not used for data



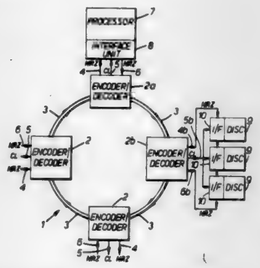
transmission and for controlling the transmission line through which said specific signal is not detected to operate as a currently used transmission line for data transmission.

4,435,705

DATA TRANSMISSION SYSTEMS

Reginald W. Stevens, Stockport, England, assignor to International Computers Limited, Stevenage, England

Filed Feb. 16, 1982, Ser. No. 348,942
Claims priority, application United Kingdom, Feb. 18, 1981, 8105133
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.05 **7 Claims**



1. A data transmission system comprising a plurality of encoder/decoders and a plurality of transmission links each for the transmission of a signal combining a carrier and a data signal, each encoder/decoder being connected between an incoming one and an outgoing one of the said transmission links and the said transmission links connecting the encoder/decoders in a closed ring;

each encoder/decoder comprising means for recovering an input data signal and the carrier from the signal received from its incoming transmission link and means connected to receive the recovered carrier and an output data signal for combining the carrier and the output data signal for output onto its outgoing transmission link, the encoder/decoder thereby providing a path for the carrier from its incoming to its outgoing transmission link;

each such path together with the transmission links providing a single closed path for circulation of the carrier which path is subject to variation in its length; and

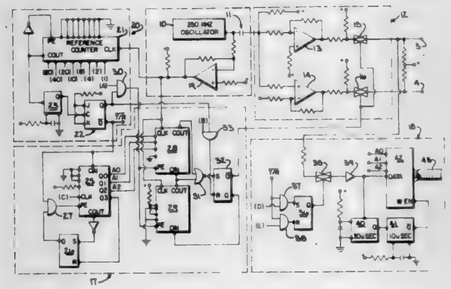
the ring as a whole forming a single oscillatory system which sustains the carrier once initiated without the simultaneous injection of carrier into the said closed path from a source outside the said closed path at a frequency constant around the ring but free to vary with time in dependence of the length of the closed path and such as to give an integral number of carrier cycles around the ring.

4,435,706

SWITCH NETWORK

John E. Callan, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Nov. 2, 1981, Ser. No. 317,474
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.08 **3 Claims**



1. A network for ascertaining the state of a plurality of sensing devices, which comprises:

a communications line;

a master controller connected to the communications line for generating address signals thereon, the master controller including,

(a) address generator means for establishing a sequence of station numbers,

(b) oscillator means for generating sinusoidal waveforms,

(c) analog switch means for coupling the oscillator means to the communications line, the analog switch means being operated by the address generator means to sequentially generate series of sinusoidal waveforms on the communications line, the number of such waveforms in each series being determined by the station number established by the address generator means, and

(d) a receiver circuit coupled to the communications line and being operable to read the voltage level of the communications line a predetermined time interval after each series of sinusoidal waveforms is generated; and a remote station connected to the communications line and connected to an associated sensing device, the remote station including:

(e) counter means for counting the number of sinusoidal waveforms in each series,

(f) comparator means coupled to the counter means and being operable to generate an enabling signal when the counted number of sinusoidal waveforms corresponds to a preset station number, and

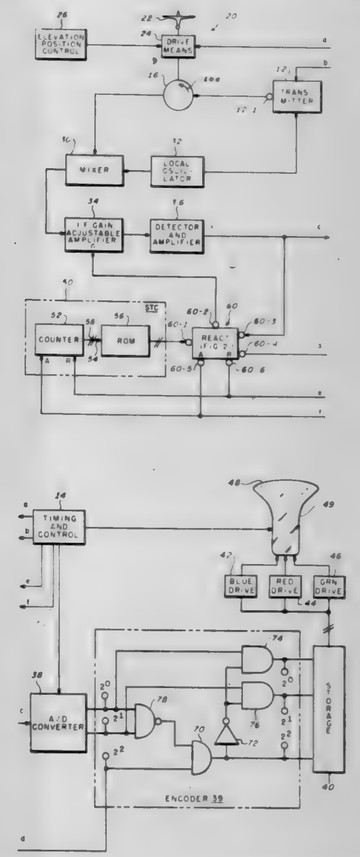
(g) response means coupled to the comparator means and the station's associated sensing device for generating a preselected voltage level on the communications line during the predetermined time interval after the series of sinusoidal waveforms is generated when the enabling signal is present, the voltage level being indicative of the state of the station's associated sensing device.

4,435,707

WEATHER RADAR WITH SIGNAL COMPENSATION FOR PRECIPITATION

John F. Clark, Princeton, N.J., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 9, 1981, Ser. No. 241,782
Int. Cl.³ G01S *13/95*
U.S. Cl. 343—5 W **3 Claims**



1. In a weather radar of the type including a sensitivity time control (STC) circuit coupled to an IF amplifier in a receiver which in turn is coupled to an antenna for receiving pulses reflected from precipitation in the path of pulses radiated from the antenna, the STC for providing a signal as a function of time to vary the gain of the IF amplifier and an analog-to-digital (A/D) converter coupled between the IF amplifier and an addressable memory having an output coupled to a display device, the improvement comprising:

means coupled to receive amplified siganls from said IF amplifier for integrating said amplified signals over a preselected time interval to obtain an integrated signal value and provide a signal representative of said integrated signal value after said time interval has expired;

summing means coupled to receive said signal representative of said integrated signal at said expiration of said time interval and to receive said STC signal at a time substantially in coincidence with said expiration time for providing a signal at an output terminal representative of a sum of said integrated signal value and said STC signal, said

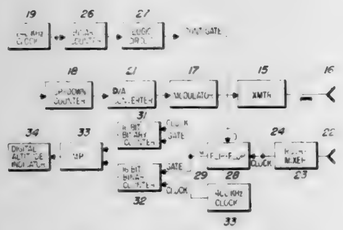
sum representative signal coupled to cause said IF amplifier to exhibit a variable gain in accordance therewith; and means coupled between said summing means output terminal and said IF amplifier for limiting variable gain control signals coupled to said IF amplifier to levels that insure that said IF amplifier operates at gains that are no greater than a preselected maximum.

4,435,708

MEANS FOR ELIMINATING STEP ERROR IN FM/CW RADIO ALTIMETERS

Constantinos S. Kyriakos, Deerfield Beach, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 10, 1981, Ser. No. 291,854
Int. Cl.³ G01S 9/04
U.S. Cl. 343—12 A **6 Claims**



1. In a radio altimeter of the FM/CW type having a radio transmitter modulated in frequency by a cyclic modulating wave, portions of which vary linearly with time, a receiver for receiving reflections from an object of signals transmitted by said transmitter and a mixer to which signals received by said receiver and a portion of the signal transmitted by said transmitter is applied to produce a frequency difference signal the frequency of which is indicative of the distance between said transmitter and the object reflecting signals from said transmitter,

means for eliminating step error in the output indication of the altimeter, comprising,

means for generating a first gate signal having a logic "1" level during times said modulating wave varies linearly with time and a logic "0" level at other times;

logic means to which said first said gate signal and said frequency difference signal are applied, said logic means being responsive to said logic "1" level of said first gate signal and said frequency difference signal to produce a second gate signal having a logic "1" level of duration beginning with the coincident appearance of said logic "1" level of said first gate signal and the beginning of a cycle of said difference frequency signal and extending for an integral number of cycles of said frequency difference signal while said first gate signal remains at said logic "1" level;

means controlled by said logic "1" level of second gate signal for determining the frequency of said difference frequency signal during the period of said logic "1" level of said second gate signal; and

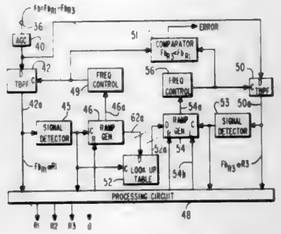
means for numerically processing said frequency of said difference frequency signal to provide a distance indication as the output of said altimeter.

4,435,709

RADAR RANGING SYSTEM FOR USE WITH SLOPING TARGET

Ronald W. Kipp, Croydon, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 26, 1981, Ser. No. 266,983
Int. Cl.³ G01S 13/32
U.S. Cl. 343—14 **14 Claims**



1. A signal processing system for use with a radar range measuring system which transmits a radio frequency beam of known finite angle toward a target which is at not greater than a known non-normal angle to the beam to illuminate a portion thereof and receives a return reflected signal therefrom and produces therefrom a beat frequency signal having various frequency components corresponding to various ranges between said target and said range measuring system, said signal processing system comprising in combination:

means responsive to said beat frequency signal for determining the lowest frequency value F_L thereof;

means responsive to frequency F_L and to a knowledge of the maximum angle said target can attain and to said angle of said transmitted beam for determining the maximum frequency F_X associated with the maximum distance to said target; and

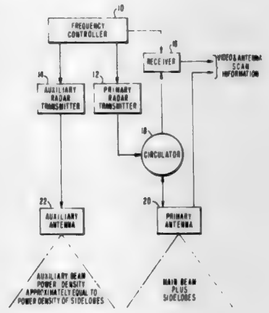
means responsive to frequency F_X and to said beat frequency signal for determining the actual maximum frequency F_H contained in said beat frequency signal.

4,435,710

SYSTEM FOR OBSCURING ANTENNA SIDELOBE SIGNALS

Norman F. Powell, Howard, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 31, 1981, Ser. No. 253,322
Int. Cl.³ G01S 7/36
U.S. Cl. 343—18 E **4 Claims**



1. A radar system comprising:

(a) first means for producing a first pulsed radar signal which is coupled to an antenna to transmit a radar beam having a predominant main beam and sidelobes;

(b) a receiver coupled to an antenna to receive signals, having a frequency spectrum substantially equal to the frequency spectrum of said main beam;

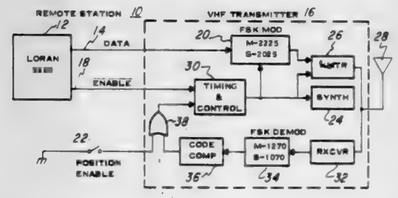
(c) second means for producing and transmitting a second pulsed radar signal having a power density which is at least substantially equal to the power density of said sidelobes of said radar beam and a frequency spectrum which at least includes the frequency spectrum of said first pulsed radar signal.

4,435,711

RADIO TELEPHONE WITH POSITION TRANSMISSION CAPABILITY

Cecil C. Ho, Irving; Claude A. Sharpe, Plano; Bruce A. Butcher, Dallas, and Alexander G. Bell, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 15, 1980, Ser. No. 187,253
Int. Cl.³ G01S 1/24
U.S. Cl. 343—389 **4 Claims**



1. A communication data link system comprising:

(a) a base radio transceiver station including a receiver for receiving incoming messages, a polling generator means for generating a carrier identification code signal, a transmitter operatively connected to the polling generator means for transmitting the code signal and a display means for displaying the messages; and

(b) a remote radio transceiver for a carrier including a LORAN-C navigation system for outputting signals representative of the carrier's position, a transmitter of the transceiver connected to the navigation system output for transmitting the carrier position signals, a receiver means for receiving the carrier identification code signal transmitted by the base radio transceiver station and a switching means for controlling selectively the automatic and manual transmittal of the carrier position whereby the carrier position may be transmitted in response to receipt of the carrier identification code signal or to manual actuation of the switching means for single transmission or continuous transmission.

4,435,712

FM-CW RADAR RANGING SYSTEM WITH SIGNAL DRIFT COMPENSATION

Ronald W. Kipp, Croydon, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 13, 1981, Ser. No. 292,573
Int. Cl.³ G01S 7/40
U.S. Cl. 343—17.7 **10 Claims**

1. A frequency modulated-continuous wave (FM-CW) ranging system including a calibration means for simulating a target of known electrical length R_C, said system determining range R_T to a real target comprising in combination:

means for producing an FM-CW radio frequency signal;

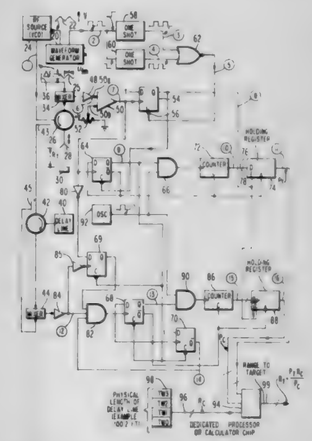
means for transmitting said FM-CW signal to said real target and for receiving return signals therefrom delayed in accordance with the target range;

means for transmitting said FM-CW signal to said calibration means concurrently with its transmission to said target and for receiving return signals from said calibration means delayed in accordance with the simulated range thereof;

means for mixing the transmission signal and return signal from said real target to produce a real target beat frequency signal, the frequency of which is indicative of range to said target;

means for mixing the transmission signal and return signal from said calibration means to produce a calibration beat frequency signal, the frequency of which is indicative of range simulated by said calibration means;

means responsive to the real target beat frequency signal representative of said real target range for producing a control signal only when said real target beat signal is of at least a given quality;



means responsive to said control signal and to a given cycle of said real target beat frequency signal for determining a signal of value P_T indicative of the period of said real target beat frequency signal only when said control signal is present;

means responsive to at least a selected cycle of said calibration beat frequency signal occurring during the same time said given cycle of real target beat frequency occurs for determining a signal of value P_C indicative of a period of the calibration beat frequency signal; and

means responsive to said signal of value P_T, signal of value P_C and calibrated range R_C for determining said target range R_T.

4,435,713

WHIP ANTENNA CONSTRUCTION

Bernard Gasparaitis, Tamarac; Thomas W. Long, Jr., and Charles P. Richardson, both of Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 20, 1981, Ser. No. 323,220
Int. Cl.³ H01Q 1/36
U.S. Cl. 343—702 **4 Claims**

1. A whip antenna assembly for attachment to a receptacle in a communications device comprising:

a highly flexible conductive antenna cable having a first and second end,

a conductive metal base section injection cast onto said antenna cable first end,

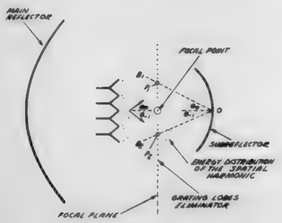
a knob injection cast onto said cable second end, and

an environmental cover injection molded over said antenna cable and base section to provide protection and support



for said whip antenna assembly without substantially reducing the flexibility of said assembly.

4,435,714
GRATING LOBE ELIMINATOR
Howard H. Luh, Sunnyvale, Calif., assignor to Ford Aerospace & Communications Corp., Dearborn, Mich.
Filed Dec. 29, 1980, Ser. No. 220,633
Int. Cl.³ H01Q *15/02, 19/19*
U.S. Cl. 343—753 **6 Claims**



1. An antenna system for radiating energy having a radiating array, a secondary energy convergence aperture means, and a main energy convergence aperture means, said antenna system including:

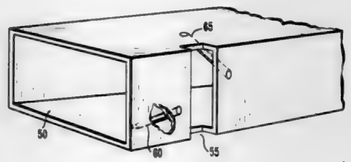
orthogonally linearly polarized feed elements;

a grid of parallel conducting strips placed in the focal plane of said antenna system, said strips being oriented in the direction of the uplink wave polarization thereby eliminating the grating lobes at the uplink frequency band by reflecting the energy of the particular spatial harmonic components which give rise to the grating lobes;

said grid of conducting strips being positioned between said secondary energy convergence aperture means and said main convergence aperture means, and the spacing between adjacent parallel conducting strips being greater than zero and less than one-tenth of the wavelength of the radiated energy; and

said grid of parallel conducting strips having a first segment and a second segment spaced from one another by an opening and centered about said main energy convergence aperture means so that a substantial portion of the beam from said secondary energy convergence aperture means to said main energy convergence aperture means can pass through said opening between said first and second segments.

4,435,715
ROD-EXCITED WAVEGUIDE SLOT ANTENNA
James S. Ajioka, Fullerton, and Dick M. Joe, Anaheim, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.
Filed Sep. 29, 1980, Ser. No. 191,880
Int. Cl.³ H01Q *13/18*
U.S. Cl. 343—771 **3 Claims**



1. In a power-radiating slotted waveguide having a rectangular waveguide which has first and second broad walls and first and second narrow walls, the first one of said narrow walls having a substantially non-inclined slot formed therein, the improvement comprising:

(a) a first substantially linear conducting rod having one end rigidly connected to said first narrow wall adjacent to one long edge of said slot and having the second end rigidly connected to the first broad wall; and

(b) a second substantially linear conducting rod having one end rigidly connected to said first narrow wall adjacent to the opposite long edge of said slot as said first rod and having the second end rigidly connected to the second broad wall.

4,435,716
METHOD OF MAKING A CONICAL SPIRAL ANTENNA
Adrian Zandbergen, 28 Camano La., Port Ludlow, Wash. 98365
Filed Sep. 14, 1981, Ser. No. 301,925
Int. Cl.³ H01Q *1/36*
U.S. Cl. 343—895 **3 Claims**

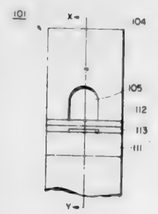
1. The method of making a freestanding antenna which comprises placing a conductor wire coil tapered from a base end portion thereof to a tip end portion thereof in substantially axial alignment with the interior of a preformed elongated casing having an interior tapered in the same direction as the taper of the coil, with the major portion of the casing interior length of a cross section larger than the external cross section of the tip end portion of the coil but smaller than the external cross section of the base end portion coil, and the interior of the casing having a smaller degree of lengthwise taper than the degree of taper of the coil, elongating the coil within the casing and simultaneously thereby decreasing its degree of taper to match the degree of taper of the casing interior and to lodge convolutions of the coil against the interior of the casing in





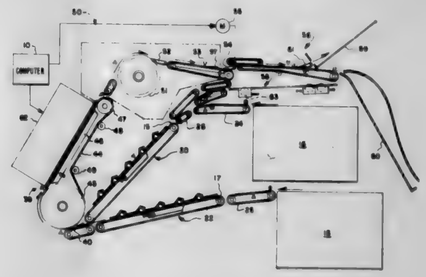
spaced relationship lengthwise of the casing, and bonding the elongated coil to the interior of the casing.

4,435,717
LIQUID JET RECORDING PROCESS AND RECORDING LIQUID THEREFOR
Tsuyoshi Eida, Chiba, and Masatsune Kobayashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 22, 1982, Ser. No. 360,645
Claims priority, application Japan, Apr. 10, 1981, 56-54562
Int. Cl.³ G01D *9/00, 15/16*
U.S. Cl. 346—1.1 **12 Claims**



1. A liquid jet recording process comprising exerting thermal energy to a recording liquid to form liquid droplets and performing recording with these liquid droplets, which is characterized in that said recording liquid comprises at least a dye having in the molecule 1 to 6 hydroxyl groups and no amino group and 1 to 3 members selected from the group consisting of a sulfo group and a carboxyl group, 1 to 4 azo groups, and 0 to 2 imino groups, and a thermal decomposition point of 250° C. or more and a liquid medium therefor.

4,435,718
INK DROP PRINTING SYSTEM
Frederic L. Clark, Plano; Orville A. Kaffenberger, Jr.; Suresh C. Paranjpe, both of Dallas; David W. Smith, Richardson, and Jack D. Ames, Irving, all of Tex., assignors to The Mead Corporation, Dayton, Ohio
Filed Mar. 8, 1982, Ser. No. 355,424
Int. Cl.³ G01D *15/18;* **B65H** *3/30*
U.S. Cl. 346—75 **6 Claims**



1. An ink drop printing system comprising:

a pair of storage trays for storing separate supplies of printing sheets,

feed means for feeding said printing sheets from said storage trays,

sheet delivery means for receiving said sheets from said feed means and delivering said sheets along generally converging delivery paths toward a common reception point,

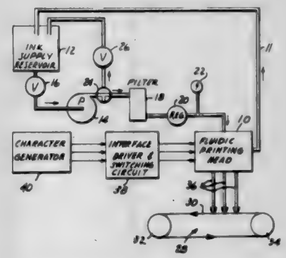
transport means for transporting said printing sheets along a printing path which is folded backwardly and upwardly from said common reception point,

at least one inclined and angularly extending jet drop printing head supported adjacent said transport means for progressively printing said sheets as they are transported therepast,

sheet registraton means for registering the edges of said sheets prior to passage beneath said printing head, and

inverting means for receiving printed sheets from said transport means, inverting said sheets, and delivering said sheets to said sheet delivery means for redelivery to said transport means and printing on the reverse sides thereof.

4,435,719
FLUIDIC MATRIX PRINTER
Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107
Filed Mar. 30, 1982, Ser. No. 363,461
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **9 Claims**

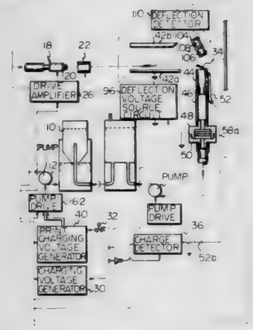


1. A fluidic printing apparatus comprising;

a plurality of fluidic printing elements arranged in an array; said fluidic printing elements being biased beam deflecting type fluidic flip-flop elements;

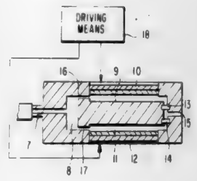
a fluid circulating means for circulating printing fluid through said array of fluidic printing elements;
paper transport means for transporting paper past said array of fluidic elements; and
electronic means for selective electronic activation of said beam deflecting fluidic printing elements to discharge said printing fluid unto said paper in a predetermined pattern.

4,435,720
DEFLECTION CONTROL TYPE INK JET PRINTING APPARATUS
Masanori Horike, and Yutaka Ebi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed May 14, 1982, Ser. No. 378,450
Claims priority, application Japan, May 21, 1981, 56-76926; May 21, 1981, 56-76925
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **9 Claims**



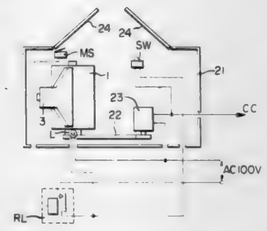
1. A deflection control type ink jet printing apparatus comprising:
an ink ejection head for ejecting a jet of ink;
charging means for electrostatically and selectively charging ink droplets separated from the jet of ink;
deflection means for electrostatically deflecting the charged ink droplets to a plurality of predetermined steps in accordance with the electrostatic charges on the ink droplets;
deflection detecting means for detecting a deviation from a reference deflection of a deflection of the charged ink droplets which are deflected to predetermined one of the plurality of steps;
ink supply means for supplying an ink under a predetermined variable pressure to the head; and
control means for controlling the ink supply means to vary the pressure to be applied to the ink in accordance with a deviation detected by said deflection detecting means;
the deflection detecting means comprising electrode means for sensing an amount of charge on each deflected ink droplet, and computing means for computing the deviation in response to the sensed amount of the charge on the deflected ink droplet;
the electrode means comprising first and second electrodes disposed parallel to each other and downstream of the deflection means, an ink deflection path through which the ink droplets of the reference deflection are to pass being defined intermediate between the first and second electrodes, the electrodes being constructed to sense voltages induced by the deflected ink droplets passing through said ink deflection path.

4,435,721
PRINT HEAD FOR AN ON-DEMAND TYPE INK-JET PRINTER
Mitsuo Tsuzuki, and Michihisa Suga, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed May 5, 1982, Ser. No. 375,147
Claims priority, application Japan, May 6, 1981, 56-67966
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **11 Claims**



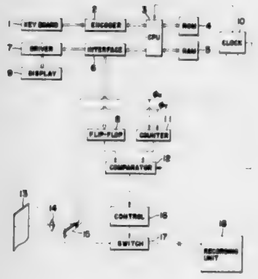
1. A print head for an on-demand type ink-jet printer for jetting ink droplets on a printing medium, said print head comprising:
a plurality of pressure chambers filled with ink;
a plurality of pressure exertion means for exerting pressures on said ink filled in said pressure chambers in response to driving signals;
a nozzle for jetting said ink droplets;
means for communicating said pressure chambers with said nozzle; and
a plurality of first fluid control means disposed in ink passages between said pressure chambers and said nozzle for controlling the flow of ink in response to the ink pressure.

4,435,722
ELECTROPHOTOGRAPHIC RECORDING APPARATUS
Hideaki Kato, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Apr. 14, 1981, Ser. No. 254,464
Claims priority, application Japan, Apr. 15, 1980, 55-51535[U]
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—153.1 **5 Claims**



1. In an electrophotographic recording apparatus including a housing, a rotatable charge carrying drum in the housing, an electrostatic recording head disposed in closely spaced gap-defining proximity to the surface of the drum for impressing an electrostatic latent image thereon, a door of the housing movable between closed and open conditions to enable access to the interior of the housing, and means for effecting operative rotation of the drum and for normally disabling drum rotation when the housing door is open, the improvement comprising:
light means in the housing,
means for illuminating said light means when the housing door is in its open condition,
said light means being so disposed adjacent the closely spaced proximity of the drum and recording head and at a location remote from the housing door that, when the door is open, said light means illuminates the gap between the drum and recording head for ready viewing from the open housing door, and
manually operable means for enabling selective rotation of the drum only when the housing door is in its open condition so that, when the housing door is open and the gap between the drum and recording head is illuminated by said light means, operation of said manual means to selectively rotate the drum enables ready viewing of the gap throughout the full rotative circumference of the drum to thereby facilitate servicing of the recording apparatus.

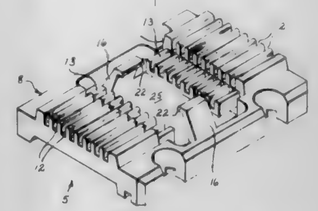
4,435,723
RECORDING APPARATUS WITH EDITING CAPABILITY
Ryubun Seimiya; Shigeru Inowa, both of Hino; Noriyoshi Tarumi, Hachioji; Masahiko Matsunawa, Hachioji, and Hiroshi Tokunaga, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Aug. 18, 1981, Ser. No. 293,865
Claims priority, application Japan, Aug. 8, 1980, 55-123525; Sep. 8, 1980, 55-123523
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—154 **6 Claims**



1. A document editing apparatus comprising means determining the spatial coordinates of that portion of a document image to be extracted or erased, means translating said coordinates into electrical signals, means storing such coordinate signals, means scanning a document to be edited, means converting the optical image of said document into electric image signals, means recording the edited document, means producing control signals from said stored coordinate signals, including switching means determining whether the selected portions of the document image should be extracted or erased, image signal switching means for actuating said recording means, and means applying said electric image signals and said control signals to said image signal switching means.

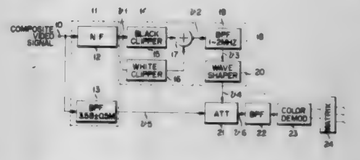
4,435,724
SINGLE PIECE CARRIER FOR INTEGRATED CIRCUIT DEVICES
Donald E. Ralstin, South Bend, Ind., assignor to Wells Electronics, Inc., South Bend, Ind.
Filed Sep. 10, 1981, Ser. No. 301,001
Int. Cl.³ H01L *23/42, 39/02*; H02G *13/08*
U.S. Cl. 357—79 **5 Claims**

1. A single piece carrier for an integrated circuit device having a body with leads extending therefrom, said carrier comprising a frame having upper and lower faces, said frame having a device-receiving opening extending from said upper face to said lower face, said upper face including spaced grooves, said frame opening for accommodating the body of said device and said frame grooves for receiving the leads of said device, at least two spaced apart arms projecing above said frame upper face, the lower end of each arm connected to a bar means extending between spaced sections of said frame adjacent the periphery of said frame opening, each bar means being rotatable about its longitudinal dimension for pivotally moving its connected arm between an open position wherein the leads of said device can be located within said frame



grooves and a closed position wherein said device can be engaged by said connected arm to secure the device with its leads in said frame grooves to the carrier, each bar means being biased to urge its connected arm into its said closed position.

4,435,725
COLOR SIGNAL PROCESSING CIRCUIT TO REDUCE CROSS-COLOR DISTURBANCE AND COLOR FRINGING
Nobuya Nagao, and Teturou Sakai, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Oct. 13, 1981, Ser. No. 310,725
Claims priority, application Japan, Oct. 16, 1980, 55-143619
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—36 **3 Claims**



1. A color signal processing circuit comprising:
a signal separating circuit means for separating a composite video signal including a luminance signal and a carrier chrominance signal multiplexed with the luminance signal to the carrier chrominance signal and the luminance signal;
a clipping circuit means coupled to receive the luminance signal from said signal separating circuit means for clipping the luminance signal at levels near its black and white peak levels to produce a signal containing level transitions indicative of large luminance signal transitions;
a control pulse generating circuit means coupled to said clipping circuit means for generating control pulses corresponding to said level transitions;
a signal transmission path coupled to receive the carrier chrominance signal from said signal separating circuit means, and including a signal attentuating circuit means for attenuating the carrier chrominance signal applied thereto in response to application of control pulses from said control pulse generating circuit means.

4,435,726

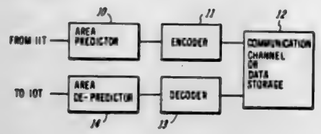
ONE SHOT PREDICTOR FOR MIXED MODE DOCUMENTS

Henry H. Liso, Rossmoor, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 161,474, Jun. 20, 1980. This application Aug. 24, 1981, Ser. No. 295,902

Int. Cl.³ H04N 7/12

U.S. Cl. 358—135 **4 Claims**



1. The method of using an m bit pattern of video data of the previous and current scan lines to predict each current bit in each n bit nibble of data of a raster input scanner bit stream, and to produce an n bit nibble of predicted output per clock comprising the steps of:

first, during a first clock period, using all m bits of video except the z bits immediately preceding each current bit to produce all possible predicter outputs for each of the n bits in the current nibble,

second during a second clock period using said n bit data nibble and the z bits immediately preceding each of said n bits to produce the final n predicted output bits, and

concurrently performing said first step on the current nibble and said second step on the preceding nibble so that n bits of predicted data are produced for each clock.

4,435,727

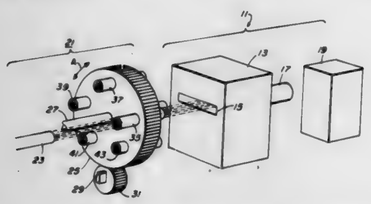
APPARATUS AND METHOD FOR USE IN CALIBRATING THE TIME AXIS AND INTENSITY LINEARITY OF A STREAK CAMERA

Norman H. Schiller, Queens, and Robert R. Alfano, Bronx, both of N.Y., assignors to Hamamatsu Corporation, Middlesex, N.J.

Filed May 27, 1982, Ser. No. 382,803

Int. Cl.³ H04N 7/18

U.S. Cl. 358—139 **9 Claims**



1. Apparatus for use in calibrating the time axis and intensity linearity of a streak camera over at least one time scale, said streak camera having an input slit, said apparatus comprising:

a. light means for producing a pulse of light,

b. at least one bundle of optical fibers, each bundle of optical fibers comprising a plurality of optical fibers of different lengths with the difference in lengths of the fibers in each bundle being uniform, the difference in length of the fibers in one bundle being different from the difference in length of the fibers in each other bundle, the fibers in each bundle being arranged so that one end thereof terminates in an input plane adapted to be positioned to receive said light pulse and the other end thereof terminates in an output plane adapted to be positioned at the input slit of the streak camera, and

c. means for supporting said bundles of fibers,

d. whereby a pulse of light from said light means impinging on any one of said bundles at said input plane end will produce at the output plane end of said bundle a plurality of light pulses of equal intensity each delayed uniformly in time in proportion to the difference in length of the fibers.

4,435,728

FIELD FREQUENCY-DOUBLING CIRCUIT FOR A TELEVISION SIGNAL

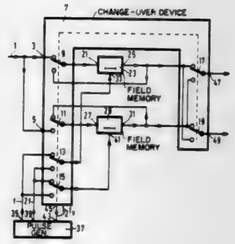
Johannes G. Raven, and Marcellinus J. J. C. Annegarn, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,545

Claims priority, application Netherlands, Feb. 9, 1981, 8100603

Int. Cl.³ H04N 5/02

U.S. Cl. 358—140 **6 Claims**



1. A field frequency-doubling circuit for a television signal having an input for the television signal whose field frequency must be doubled, a first and a second field memory, respectively, a change-over device switching at half the field frequency for writing information into the first and the second field memory, respectively, at a predetermined rate and reading the second and the first field memory, respectively, at a rate of substantially twice the write rate, and an output for the field frequency-doubled television signal, characterized in that the change-over device comprises a portion for supplying to a picture memory output of the circuit a signal which has been alternately delayed two field periods by the first and the second field memory, respectively.

4,435,729

TELEVISION RECEIVER WITH SELECTIVELY DISABLED ON-SCREEN CHARACTER DISPLAY SYSTEM

Leopold A. Harwood, Bridgewater, N.J., and Robert L. Shanley, II, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,884

Int. Cl.³ H04N 5/22

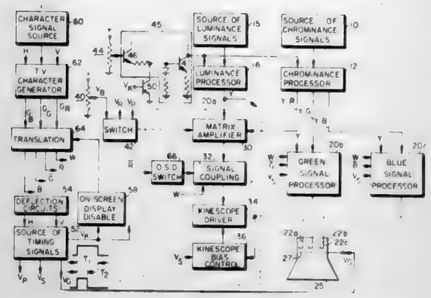
U.S. Cl. 358—183 **5 Claims**

1. In a system for processing image representative video signals comprising an image component occurring during periodic image intervals and a blanking component occurring during periodic blanking intervals, said system including a kinescope for providing an image display in response to signals, including said video signals, applied thereto; apparatus comprising

a source of periodic switching signals occurring during said blanking intervals;

a character generator for providing auxiliary character representative signals to said kinescope during said video signal image intervals, said character generator being undesirably subject to producing false character signals during said blanking intervals; and

control means coupled to said character generator and responsive to said switching signals for automatically rendering said character generator inoperative to produce



character signals including said false character signals during said blanking intervals.

4,435,730

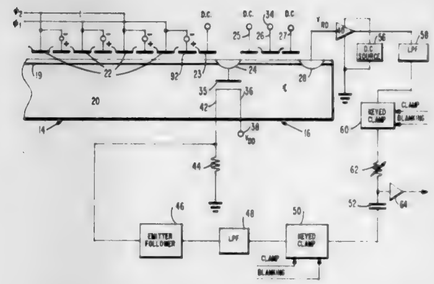
LOW NOISE CCD OUTPUT

Sidney L. Bendell, Riverton, and Peter A. Levine, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 356,212

Int. Cl.³ H04N 3/14

U.S. Cl. 358—213 **8 Claims**



1. Apparatus for processing first and second video signals from first and second signal sources, said signals having opposite noise versus frequency characteristics, said apparatus comprising filtering means for filtering each of said signals with complementary low and high pass filters, respectively, to produce filtered signals having reduced noise, combining means for combining said filtered signals together; and

a pair of circuit means for clamping and blanking each of said video signals respectively.

4,435,731

TELEVISION RECEIVER DISABLING CIRCUIT

Ravadee Kliebphipat; Ronald E. Fernsler, both of Indianapolis, and James E. Hicks, New Palestine, all of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1981, Ser. No. 298,389

Int. Cl.³ H04N 5/44; H01J 29/70

U.S. Cl. 358—243 **13 Claims**

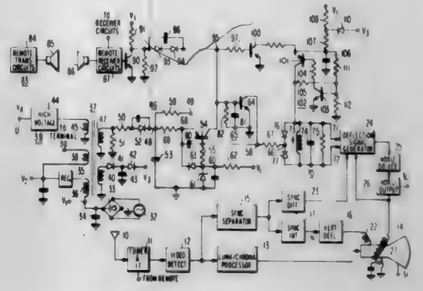
1. A television receiver disabling means comprising:

means for disabling a television receiver when said disabling means is energized;

means for detecting a receiver fault condition;

first means coupled to said fault detecting means for energizing said disabling means in the presence of a detected receiver fault condition, said first means incorporating a latch for maintaining said disabling means energized when said latch is set;

means for providing user activated receiver on and off command signals;



second means coupled to said disabling means and responsive to said receiver off command signals for energizing said disabling means in order to disable said television receiver, said second means incorporating means coupled to said first means for resetting said latch in response to one of said command signals when said latch is set.

4,435,732

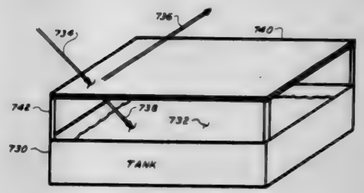
ELECTRO-OPTICAL ILLUMINATION CONTROL SYSTEM

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Filed Jul. 16, 1980, Ser. No. 169,257

Int. Cl.³ H04J 5/64

U.S. Cl. 358—254 **37 Claims**



1. An illumination control system comprising:

an illumination source for generating source illumination;

an illumination filter for generating filtered illumination in response to the source illumination from said illumination source;

an electrical control circuit for generating an electrical control signal;

an illumination control device for controlling the filtered illumination from said illumination filter in response to the electrical control signal from said electrical control circuit; and

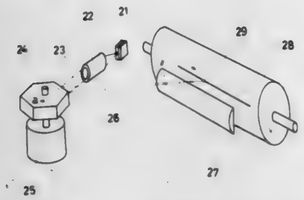
cooling means for conducting heat away from said illumination control device.

4,435,733

FLYING SPOT SCANNER FOR LASER PRINTER

Takao Tagawa, Kashihara, and Toshio Urakawa, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1982, Ser. No. 352,151
Claims priority, application Japan, Feb. 27, 1981, 56-29033
Int. Cl.³ H04N *1/24*
U.S. Cl. 358—302 **11 Claims**



1. Apparatus for recording the information content of an electrical signal on the surface of a light-sensitive medium by means of a plurality of scan traces across said medium, said apparatus consisting essentially of:

a semiconductor laser diode for providing a light beam of high intensity modulated in accordance with the electrical signal supplied thereto, said semiconductor laser diode comprising a junction plane oriented in a first direction and emitting a beam having an elliptical cross section;

reflector means comprising a plurality of contiguous reflecting facets rotatable about a central axis;

means for rotating said reflector means about said central axis;

focusing lens means disposed between said semiconductor laser diode and said reflector means for focusing said elliptical beam and passing said elliptical beam to said reflector means;

wherein said reflector means reflects said elliptical beam toward said medium, and rotation of said reflector means causes said beam to scan across said medium in a second direction orthogonal to said first direction; and

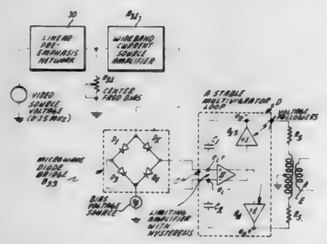
cylindrical lens means disposed between said reflector means and said medium and having a longitudinal axis parallel to said second direction for receiving said elliptical beam, for modifying the cross section of said elliptical beam into substantially a focused circular beam, and for directing said circular beam to a selected scan line on said medium.

4,435,734

FM VIDEO RECORDING AND REPRODUCING SYSTEM

David J. Hedberg, Ranchos Palos Verdes, and C. Gary Nilsson, Redondo Beach, both of Calif., assignors to VAS Corporation, Torrance, Calif.

Filed Nov. 12, 1981, Ser. No. 320,620
Int. Cl.³ H04N *5/91, 9/491, 5/76*; G11B *5/04*
U.S. Cl. 358—335 **4 Claims**



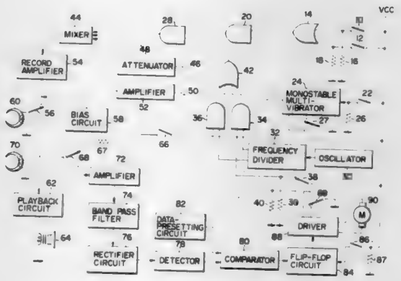
4. In a video reproducing system in which a video signal is converted into a wideband FM signal and impressed upon a medium, a discriminator for receiving the signal from said medium and converting it into a video signal corresponding to the original comprising a wideband balanced pulse discriminator including means forming a wideband balanced limiter amplifier to convert signals into a current square wave a balanced transformer coupled to the output of said limiting amplifier and connected in a double-ended, balanced configuration to also form a high pass filter for differentiating said current square wave signal to produce a wideband FM demodulated signal, a full wave rectifier connected to the output of said transformer to derive a video signal therefrom, a balanced voltage follower circuit for driving said rectifier, and a baseband filter for eliminating frequencies above the video baseband from the output of said rectifier.

4,435,735

MAGNETIC RECORDING-REPRODUCING APPARATUS WITH CONSTANT LENGTH CUE SIGNAL

Kenji Furuta, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 171,533, Jul. 23, 1980, abandoned. This application Feb. 12, 1982, Ser. No. 348,187
Claims priority, application Japan, Aug. 1, 1979, 54-106677
Int. Cl.³ G11B *15/52, 27/28*
U.S. Cl. 360—74.4 **4 Claims**



1. A magnetic recording-reproducing apparatus which comprises:

means for driving a magnetic tape at one of a plurality of speeds during the recording or reproducing mode, and, during the fast forward or rewind mode, driving the magnetic tape at a higher speed than during the recording or reproducing mode;

means for recording a cue signal having a lower frequency than that of a sound signal on the magnetic tape during the recording mode with the sound signal, the cue signal having a frequency proportionate to the running speed of the magnetic tape and being recorded in a length of time inversely proportionate to the running speed of the magnetic tape; and

means for the reproducing the cue signal recorded on the magnetic tape during the fast forward or rewind mode.

4,435,736

ISOLATED MULTIPLE CORE MAGNETIC TRANSDUCER ASSEMBLY

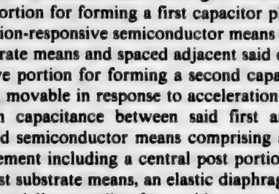
Robert W. Herman, Laguna Beach, Calif., assignor to New World Computer Company, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 44,534, Jun. 1, 1979, abandoned. This application Aug. 21, 1981, Ser. No. 295,105
Int. Cl.³ G11B *5/60, 5/20*
U.S. Cl. 360—103 **26 Claims**

1. A magnetic transducer assembly adapted for recording or retrieving information from a moving magnetic surface, comprising:

a slider of non-magnetic material having a slider bearing surface adapted to be disposed adjacent to said moving magnetic surface, said slider bearing surface adapted to cooperate with said moving magnetic surface and a fluid within which said moving magnetic surface moves to form a fluid bearing between said slider bearing surface and said moving magnetic surface, said fluid bearing adapted to support said magnetic transducer assembly, and said slider having mounting surface means opposite said slider bearing surface for mounting said slider to suspension means; and

a plurality of magnetic cores each individually supported by said slider to substantially magnetically isolate each of said



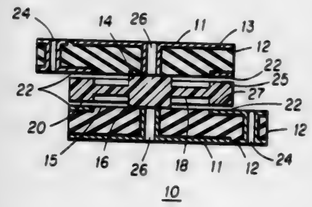
magnetic cores from the other of the magnetic cores, each of said magnetic cores including a core bearing surface adjoining said slider bearing surface and adapted to be disposed adjacent said moving magnetic surface, said core bearing surface adapted to cooperate with said moving magnetic surface and said fluid to form a fluid bearing between said core bearing surface of each of said plurality of cores and said moving magnetic surface, each of said core bearing surfaces further including a gap adapted to be proximate said moving magnetic surface when said magnetic transducer assembly is supported by said fluid bearing with respect to said moving magnetic surface.

4,435,737

LOW COST CAPACITIVE ACCELEROMETER

Russell F. Colton, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 16, 1981, Ser. No. 331,416
Int. Cl.³ G01P *15/125*; H01G *5/16*
U.S. Cl. 361—280 **12 Claims**



1. A semiconductor acceleration transducer comprising:

at least one first substrate means having an electrically conductive portion for forming a first capacitor plate; and

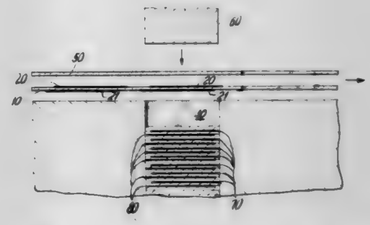
an acceleration-responsive semiconductor means coupled to said substrate means and spaced adjacent said electrically conductive portion for forming a second capacitor plate and being movable in response to acceleration to cause a change in capacitance between said first and second plates, said semiconductor means comprising a semiconductor element including a central post portion attached to said first substrate means, an elastic diaphragm portion circumferentially extending from said post portion and an acceleration-responsive mass ring portion circumferentially extending from said diaphragm portion.

4,435,738

MULTILAYER CERAMIC CAPACITORS

Flavil Barber, Jr., Simpsonville; Emmanuel E. Karam, Greenville; Richard Dunaway, Mauldin, and Ray L. Rogers, Williamston, all of S.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 27, 1981, Ser. No. 267,443
Int. Cl.³ H01G *4/12, 13/00*
U.S. Cl. 361—321 **2 Claims**



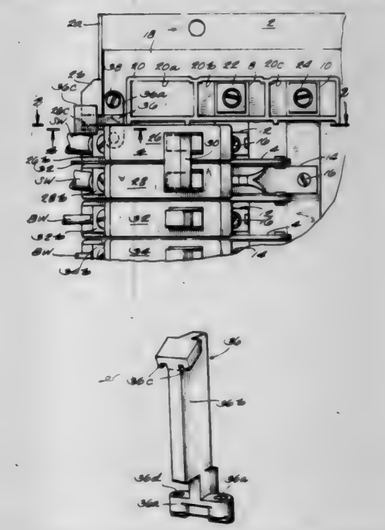
2. An unfired green ceramic capacitor body comprising a stack of separate green ceramic plates of the same thickness, alternate plates having opposing electrodes thereon and said alternate plates being separated by a plate of non-electroded green ceramic.

4,435,739

HOLD-DOWN BRACKET FOR PLUG-IN CIRCUIT BREAKER

Bertrum S. Shelvik, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 3, 1982, Ser. No. 373,913
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—346 **13 Claims**



1. In an electrical panelboard having a plurality of plug-in circuit breakers, the combination comprising:

a panel;

a mounting rail on said panel for mounting one end of said circuit breakers;

insulating means mounted on said panel;

a plurality of bus bars supported by said insulating means, said bus bars being transversely spaced with respect to

said mounting rail extending along said panel parallel to said mounting rail and said bus bars having first plug-in connector means spaced at intervals along their length;

a multi-pole main circuit breaker having a plurality of second plug-in connector means cooperably engagable with respective ones of said first plug-in connector means, one end of said multi-pole main circuit breaker being mounted to said mounting rail and said second plug-in connector means being engaged with respective ones of said first plug-in connector means, said main circuit breaker having wire receiving terminals for connecting said main circuit breaker to a source of electrical power; and

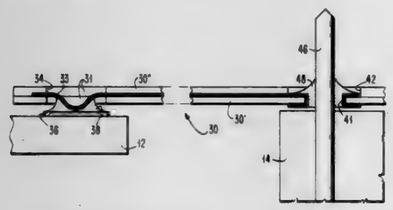
hold-down means secured to said panel, said hold-down means having a first portion overlying said mounting rail and a second portion overlying a forward portion of said main circuit breaker, said second portion being positioned with respect to said first portion such that force exerted on said second portion by movement of said main circuit breaker in a direction to effect separation of said first and second plug-in connector means causes said first portion to be compressed against said mounting rail, thereby resisting said movement of said circuit breaker.

4,435,740

ELECTRIC CIRCUIT PACKAGING MEMBER

Bill F. Huckabee, Santa Cruz, and William L. Wright, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,573
Int. Cl.³ H05K *1/18*
U.S. Cl. 361—398 **4 Claims**



1. A thin, flat compliant member for selectively interconnecting a first plurality of electrical pretinned connecting pads arranged in a first predetermined pattern on the surface of a ceramic substrate to a second plurality of pretinned electrical connecting pins arranged in a second predetermined pattern adjacent said ceramic substrate, said member comprising:

(a) a first flat compliant film having a third plurality of apertures corresponding substantially to said first plurality and arranged in said first predetermined pattern to permit registering each of said apertures with one of said electrical connecting pads, and a fourth plurality of other apertures corresponding to said second plurality and arranged in said second predetermined pattern to permit registering each of said other apertures concentric with one of said electrical connecting pins;

(b) a plurality of conductors affixed to said film, each of which extends from one of said apertures of said third plurality to one of said other apertures of said fourth plurality, each conductor having a first end portion including an opening therein concentric with a different said other aperture of said fourth plurality and a second end portion which extends over a different one of said apertures of said third plurality, each of said apertures of said first plurality having a dimension which corresponds substantially to the widest dimension of one of said pretinned connecting pads, the portion of each of said conductors that extends over said aperture having a width which is less than the width of said pad and substantially half the diameter of said aperture, said portion of said conductor which extends over said aperture being formed to present a bottom surface of said conductor below the bottom surface of said member to permit precise intimate contact with a predetermined one of said pretinned pads when said member is positioned accurately on said substrate to control the flow of solder from each pretinned connecting pad to only its associated conductor during gang soldering of said member to said substrate; and

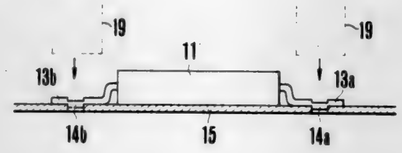
(c) a compliant protective layer disposed over said conductors on said first flat compliant film to allow at least two spaced-apart apertures which are located at different corners of said first predetermined pattern to be visually aligned with associated pads so that the respective edges of each said aligned apertures are equidistant from the sides of said associated pads whereby each of said apertures of said first and second predetermined patterns are accurately aligned respectively with their associated connecting pads and connecting pins.

4,435,741

ELECTRICAL CIRCUIT ELEMENTS COMBINATION

Masami Shimizu, Tokyo, and Masanori Uchidoi, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha

Filed Aug. 26, 1981, Ser. No. 296,571
Claims priority, application Japan, Sep. 3, 1980, 55-122174; Nov. 13, 1980, 55-162244[U]
Int. Cl.³ H05K *1/18*
U.S. Cl. 361—401 **6 Claims**



1. A combination of an integrated circuit element and a printed circuit board which provides an electrical connection, comprising:

(a) an integrated circuit element having a plurality of external leads extended from sides thereof, wherein holes for positioning are provided at said external leads;

(b) a printed circuit board having an opening to embed said integrated circuit element and conductor patterns to be connected to said external leads, wherein the conductor patterns to be connected to said external leads having said holes provided therein have holes having the same diameters as those of said external leads; and

(c) whereby a positioning of said integrated circuit element and said printed circuit board is made based on the holes provided respectively on the external leads and on the conductor patterns.

4,435,742

ELECTROCHEMICAL TRANSISTOR STRUCTURE WITH TWO SPACED ELECTROCHEMICAL CELLS

Robert E. Hetrick, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 117,176, Jan. 31, 1980, Pat. No. 4,332,003. This application Feb. 1, 1982, Ser. No. 344,891
Int. Cl.³ H01G *9/00*; B01J *17/00*; H01G *9/18*
U.S. Cl. 361—433 **5 Claims**

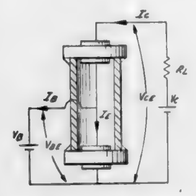
1. An electrochemical structure having a collector region, an emitter region and a base region which are arranged with respect to one another so as to facilitate transistor action and each of said collector emitter and base regions having electrodes in communication with reservoirs of an appropriate active species in electrically neutral form so that said electrochemical structures exhibits electrical characteristics and features commonly known as transistor action and can be used to provide alternating current voltage, current and power gain;

said collector and emitter regions each containing liquid electrolyte with two coupled electrodes to form a collector and an emitter electrochemical cells, respectively, suitable to conduct said appropriate active species available from the reservoirs adjacent to said collector and emitter electrochemical cells;

said base region being an enclosed region which can take up the electrically active species in neutral form;

said emitter and collector electrochemical cells each having one electrode exposed to the active species in neutral form in said base region;

the other electrode of each of said emitter and collector



electrochemical cells being exposed to the reservoir of the active species in neutral form;

said electrochemical cells being adapted so that transistor action can occur when there is electrochemical withdrawal of the active species from the reservoir adjacent to said emitter electrochemical cell and there is injection of the active species into said base region, while simultaneously the action of said collector electrochemical cell will be to withdraw the active species injected into said base region and deliver it to the reservoir adjacent to said collector electrochemical cell; and

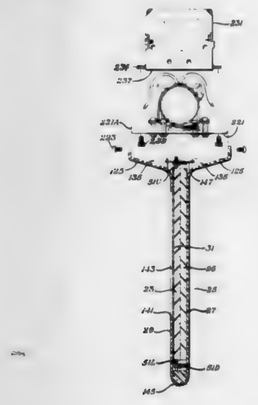
said reservoir adjacent to one electrode of each of said collector and emitter electrochemical cells shall, when the neutral form of the active species is a gas, be a space or a region for containing the gas.

4,435,743

EDGE LIGHTED SIGN

George W. Plumly, 1601 Dakar Rd. W., Fort Worth, Tex. 76116

Filed Jun. 22, 1981, Ser. No. 275,613
Int. Cl.³ F21V *19/04*
U.S. Cl. 362—20 **39 Claims**



1. A panel to be illuminated comprising:

a light transmitting plate having a viewing side and an edge onto which light can be projected for transmission into said plate for viewing from said viewing side,

a plurality of sub-miniature incandescent light bulbs located close to said edge of said plate along its length at spaced apart positions for producing light when energized for projection onto said edge of said plate for transmission into said plate for viewing from said viewing side,

each of said bulbs being rated at a given voltage level,

power means for normally applying an operating voltage to said plurality of sub-miniature incandescent light bulbs at a voltage level significantly less than said given voltage level for normally energizing said bulbs at said operating voltage level significantly less than said given voltage level thereby increasing the lifetime of said bulbs over that obtainable if said bulbs were normally energized at said given voltage level,

emergency power means for applying an emergency voltage to said plurality of sub-miniature incandescent light bulbs in the event that said operating voltage fails,

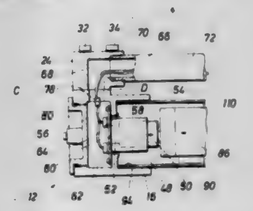
said emergency voltage being at a level significantly greater than said given voltage level thereby increasing the brightness of said bulbs in the event of an emergency.

4,435,744

EXPLOSION-PROOF FLUORESCENT LIGHT FIXTURE

Salvatore V. Russo, Pearland, Tex., assignor to Pauluhn Electric Manufacturing Co., Inc., Pearland, Tex.

Filed Aug. 10, 1981, Ser. No. 291,259
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—219 **8 Claims**



1. An explosion-proof lighting assembly comprising a terminal block and wire raceways for supplying power to a plurality of tubular lamps, first and second yoke members each for being supported to opposite ends of said raceways respectively and having a lower portion including means for supporting a plurality of lamps thereto, said yoke portion defining a first portion for engaging a raceway in explosion-proof sealing relationship and an area for engaging lamp support means in sealing relationship, the interior of each said yoke means comprising a wire channel communicating one said raceway to each portion of said yoke to which one said globe is to be supported, a plurality of end supports, each end support having an upper portion for mating with a yoke and a flange portion for receiving an end of a globe, each globe for surrounding a lamp, and for alignment in axial registration with another end support for receiving an opposite end of the globe said end support comprising a portion rearwardly disposed with respect to the said globe defining a compartment having a first wall including an end cap in releaseable, explosion-proof sealing relationship and in axial registration with said globe and to provide for access into said fixture, electrical connection means for coupling to conductor means in said raceway and for bearing against an end of lamp, said electrical connection means being removeably supported to said flange means and covering an aperture between said compartment and said flange means and in registration with said end cap through which a lamp is removeable when said electrical connection means is removed, said upper portion further having an opening for communicating said compartment with one said wire channel.

4,435,745

DEVICE FOR GENERATING SPECIFIC ELECTRICAL VOLTAGE VALUES FOR CONSUMERS ASSOCIATED WITH AN INTERNAL COMBUSTION ENGINE

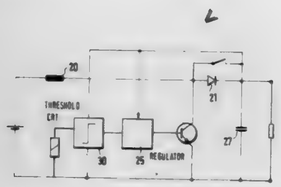
Hermann Eisele, Vaihingen; Martin Hill, Stuttgart, and Hartmut Schweizer, Korntal, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,637

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110685

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **5 Claims**



1. A device for generating specific electrical voltage values for electrical consumers of an internal combustion engine having means to detect predetermined minimum voltages and having a voltage source and a voltage elevating circuit comprising,

an input and output voltage and includes a regulating means which has a threshold value and is connected such that the regulating means closes the switch to activate the voltage elevating circuit when the input voltage is below the threshold value, and such that the output voltage is regulated to a specific set-point value,

wherein the regulating means has a current limiting circuit with an output connected to the switch to limit current in the switch and a first comparator connected to receive the current limiting circuit output and connected to activate the switch according to the current limiting circuit output,

wherein the switch is connected to and controlled by an AND gate with an input side connected to the voltage source and the first comparator, wherein the voltage elevating circuit also includes: a second comparator connected to receive and compare the input voltage to a reference voltage, and a third comparator connected to receive and compare the output voltage to a reference voltage, and wherein the input side of the AND gate is also connected to the second and third comparators such that the switch is controlled via the AND gate by the voltage source and the first, second and third comparators, and

wherein the voltage elevating circuit is connected to the means to detect predetermined minimum voltages to be switched on at a predetermined minimum voltage.

4,435,746

INDUCTIVE REACTIVE VOLTAGE REGULATOR

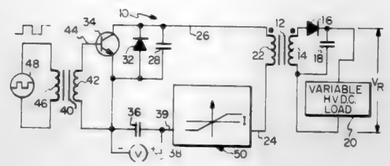
Ralph M. Barnett, Brownsville, Tex., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Apr. 16, 1982, Ser. No. 369,292

Int. Cl.³ H02M *3/335*; H02P *13/10*

U.S. Cl. 363—21 **13 Claims**

1. In a pulse-charged direct-current power supply apparatus, said apparatus comprising a secondary circuit, a primary circuit and a transformer having a secondary winding coupled to said secondary circuit and a primary winding coupled to said primary circuit, said secondary circuit comprising rectifying means coupled in series to said secondary winding, first charge storing means coupled across said secondary winding, and a direct current load subject to variable current draw, said load being coupled across said first charge storing means, said primary circuit comprising second charge storing means, switching means and third charge storing means, said second charge storing means and said third charge storing means being coupled in series with said primary winding, and said switching means being coupled across said third charge storing means and in series with said second charge storing means, said switching means including means for driving said switching



means at a predetermined duty cycle and frequency to generate a reversal in current through said primary circuit, said reversal in current causing a voltage pulse to appear across said transformer, an apparatus for regulating secondary voltage comprising a saturable reactor means coupled in series with said primary winding for bucking said voltage pulse in accordance with the current loading of said primary circuit.

4,435,747

HIGH VOLTAGE SUPPLY SYSTEM FOR MEDICAL EQUIPMENT

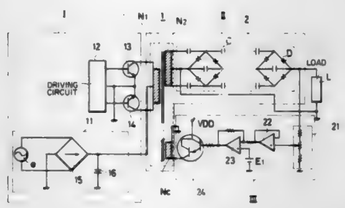
Shuhei Furuichi, Shiga; Toshiaki Ikeda, and Masakazu Suzuki, both of Kyoto, all of Japan, assignors to Kabushiki Kaisha Moritu Seisakusho, Kyoto, Japan

Continuation-in-part of Ser. No. 276,696, Jun. 23, 1981, abandoned. This application Dec. 22, 1982, Ser. No. 452,392

Claims priority, application Japan, Jun. 27, 1980, 55-88057

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—25 **1 Claim**



1. A DC high voltage generation system for medical equipment comprising:

a variable magnetic leakage transformer including primary, secondary and control windings;

a capacitor type multiple boosting circuit comprising a plurality of capacitors cascaded through diodes to each other, said capacitor type multiple boosting circuit being coupled to said secondary of said variable magnetic leakage transformer and forming a resonant circuit with said variable magnetic leakage transformer;

a driving circuit coupled to said primary winding of said variable magnetic leakage transformer for driving said system at a resonant frequency of the resonant circuit formed by said capacitor type multiple boosting circuit and said variable magnetic leakage transformer; and

a pulse-amplitude feedback control circuit coupled to said control winding and a load of said DC high voltage generation system for pulse-amplitude controlling an output voltage of said DC high voltage generation system, said pulse-amplitude feedback control circuit comprising:

a means for detecting a magnitude of said output voltage to said load;

a means for presetting a reference voltage;

a means for comparing said detected voltage with said reference voltage to produce a deviation voltage; and

control transistors coupled to said control winding to act as a constant current source which in response to said deviation voltage pulse-amplitude control said output voltage.

4,435,748

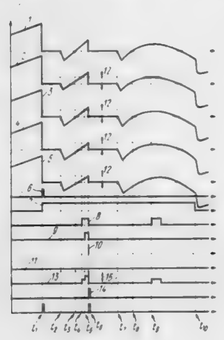
METHOD OF PULSED CONTROL OF HIGH-TENSION THYRISTOR RECTIFYING ARRANGEMENT AND SYSTEM FOR EFFECTING SAME

Rem A. Lytaev; Khristofor F. Barakaev; Igor P. Taratuta, and Sergei V. Krainov, all of Moscow, U.S.S.R., assignors to Vsesojuzny Elektrotekhnickesky Institut Imeni V.I. Lenina, Moscow, U.S.S.R.

Filed May 7, 1982, Ser. No. 375,717

Int. Cl.³ H02M *1/08*

U.S. Cl. 363—54 **4 Claims**



1. A method of pulsed control of a high-tension rectifying arrangement including thyristors and working as part of an n-phase converter, comprising the steps as follows:

a. applying at the beginning of the conduction interval of said arrangement a narrow pulse to said thyristors of said arrangement;

b. selecting a given number of monitored thyristors from said thyristors of said arrangement to measure on them the value of positive voltage in the forward direction or selecting a given number of monitored thyristor groups from said thyristors of said arrangement to measure on them the value of positive voltage in the forward direction;

c. selecting a present level exceeded by said value of positive voltage in the forward direction on said monitored thyristors or said monitored thyristor groups;

d. determining the points in time when said value of positive voltage in the forward direction on each of said monitored thyristors or on each of said monitored thyristor groups exceeds said preset level;

e. forming monitor signals at said points in time;

f. counting the number of said monitoring signals and selecting a given number of said monitor signals;

g. applying additional narrow control pulses to said thyristors of said arrangement at the point in time when said number of said monitor signals reaches said given number.

4,435,749

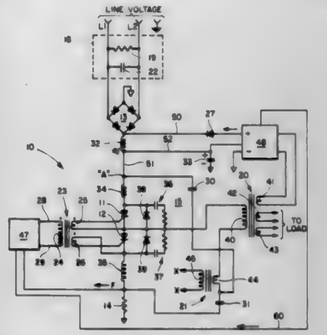
HIGH FREQUENCY INVERTER FAULT PROTECTION SYSTEM

Calvin E. Grubbs, Garland, Tex., assignor to Thomas Industries Inc., Louisville, Ky.

Filed Feb. 26, 1982, Ser. No. 352,955

Int. Cl.³ H02H *7/122*

U.S. Cl. 363—58 **7 Claims**



1. In an inverter circuit including first and second control switching means connected in separate branches of a bridge circuit and energized by a line source and driven by gating signals from control logic means to conduct respectively in alternate half cycles to sustain oscillation and provide an inverter signal, said control logic means providing said gating signals to said first and second control switching means in timed relation with said inverter signal, said bridge circuit further including first and second balanced capacitors connected in separate branches of said bridge circuit and power transformer means connected in the diagonal branch of said bridge circuit and including a plurality of secondary windings, each coupled to an output device with at least one of said secondary windings coupled to a direct current power supply for energizing said control logic means, the frequency of oscillation of said inverter signal being determined by the capacitance of said first and second capacitors, the inductance of said power transformer means and a time delay provided by said control logic means, a fault protection system comprising:

detector circuit means including a resistor coupled to said control switching means and responsive to the current therein for disabling said control logic means when said control switching means current exceeds a predetermined value;

first resonant circuit means including first and second inductances and a capacitor connected in circuit with said first and second control switching means and said line source wherein the discharging and charging of said capacitor across said inverter circuit commutates said first and second control switching means to a non-conducting state following the disabling of said control logic means by said detector circuit means and wherein said first inductance is coupled to said first control switching means and said second inductance couples said second control switching means to said detector circuit means; and

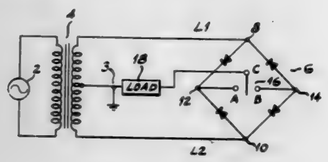
conducting means coupling said line source to said control switching means and said first resonant circuit means for providing circuit isolation therebetween such that the resonant frequency of said first resonant circuit means is much greater than the charging rate of said capacitor by said line source and wherein said direct current power supply is coupled to the junction of said line source and said conducting means for continuously providing at least a predetermined minimum voltage across said first and second control switching means for turning off said first and second control switching means following the disabling of said control logic means.

4,435,750

RECTIFIED AC FREQUENCY CONVERTER

Herman P. Schutten; Robert W. Sackett, both of Milwaukee; Jan K. Sedivy, Elm Grove, and Michael E. Taken, Cedarburg, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 29, 1982, Ser. No. 403,249
Int. Cl.³ H02M 5/34
U.S. Cl. 363—177 **7 Claims**



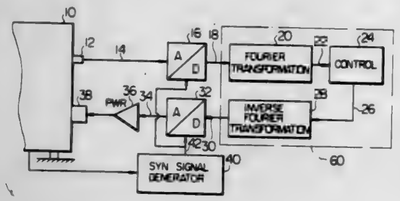
1. A frequency conversion technique for an AC signal, comprising rectifying said AC signal to a positively rectified AC signal and to a negatively rectified AC signal, and chopping said positively and negatively rectified AC signals by alternating switching therebetween to yield a switched output waveform of given frequency having a positive half cycle following a given segment of said positively rectified AC signal, and having a negative half cycle following a given segment of said negatively rectified AC signal.

4,435,751

VIBRATION/NOISE REDUCTION DEVICE FOR ELECTRICAL APPARATUS

Yasuro Hori, Katsuta; Minoru Kanoi, Ibaraki; Kazuyuki Seino, and Syuya Hagiwara, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,814
Claims priority, application Japan, Jul. 3, 1980, 55-89979
Int. Cl.³ H04B 15/00
U.S. Cl. 364—574 **33 Claims**



1. A device for reducing vibrations of an electrical apparatus comprising;

sensor means for sensing said vibrations generated by said electrical apparatus to produce a first analog time-domain signal,

analog-to-digital converter means for converting said first analog time-domain signal to a corresponding first digital time-domain signal,

Fourier transformation means for Fourier-transforming said digital time-domain signal to produce a first digital frequency-domain signal,

control means responsive to said first digital frequency-domain signal to produce a vibration-reducing second digital frequency-domain signal, said control means including first, second and third memory means, comparing means and control signal generating means, wherein a portion of said first digital frequency-domain signal belonging to a $(m+1)$th time section of a unit time interval T is applied to said first memory means and stored therein while a portion of said first digital frequency-domain signal belonging to a m-th time section of the unit time period T is stored in said second memory means, wherein said comparing means compares the contents of said first, and second memory means and said control signal generating means responds to the compare result of said comparing means to modify a portion of said second digital frequency-domain signal previously produced based on the previous compare result and stored in said third memory to produce a next portion of said second digital frequency-domain signal, and wherein the contents of said first, second and third memory means are updated each time when said control signal generating means produces said modified second digital frequency-domain signal portion,

inverse Fourier transformation means for inverse-Fourier-transforming said second digital frequency-domain signal to produce a second digital time-domain signal,

digital-to-analog converter means for converting said second digital time-domain signal to a corresponding second analog time-domain signal,

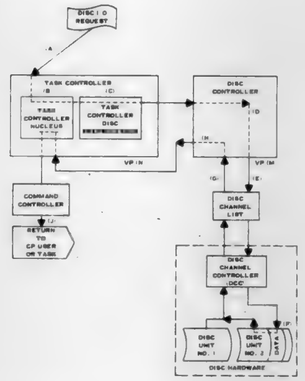
means for amplifying said second analog time-domain signal, and applying vibrations corresponding to said amplified second analog time-domain signal to said electrical apparatus.

4,435,752

ALLOCATION OF ROTATING MEMORY DEVICE STORAGE LOCATIONS

Wayne Winkelman, Leander, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 413,461, Nov. 7, 1973, abandoned, which is a continuation of Ser. No. 252,708, May 12, 1972, abandoned. This application Apr. 9, 1980, Ser. No. 138,783
Int. Cl.³ G06F 3/06, 13/04, 13/08
U.S. Cl. 364—200 **8 Claims**



1. A digital computer system having a control means for allocating memory space for storing a data file in at least one cyclic memory wherein said cyclic memory includes at least one data storage device comprising contiguous storage elements, said cyclic memory being partitioned into a plurality of data storage regions and wherein each of said data storage regions is also partitioned into a plurality of data storage subregions with all subregions within a given region being assigned equal storage capacity of contiguous storage elements and with subregions of different regions being assigned different storage capacities of said contiguous storage elements comprising:

(a) means for generating a list for all data storage subregions of said storage device including a beginning absolute address of each subregion;

(b) means for ordering the list of subregions in order of decreasing memory capacity, said subregions being grouped in their respective regions;

(c) means for indicating the storage capacity and availability of each said subregion group;

(d) first storage means for storing said ordered list as a table, wherein said table includes with each subregion entry, the indicia of the storage capacity and availability of the respective subregions;

(e) means for sequentially searching said table including comparison means for comparing the storage capacity of each available subregion with the memory space required for the data field to be stored in said cyclic memory system;

(f) means for assigning and storing the data file to be stored in the first available subregion having the smallest available storage capacity which will completely contain the data file to be stored, and when no such subregion is available, including means for assigning and storing at least part of the data file to be stored in the first available subregion whose storage capacity is less than or equal to the memory space required for the part of the data file in accordance with the result of the comparison by said comparison means; and

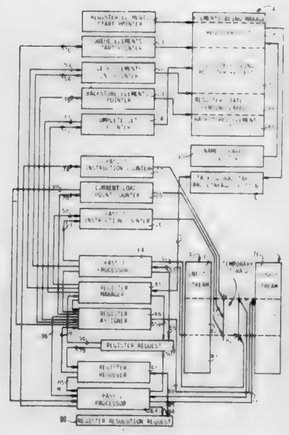
(g) means for reinitiating operation of said searching means until the comparison means indicates an absence of any portion of a data file that has not been stored.

4,435,753

REGISTER ALLOCATION SYSTEM USING RECURSIVE QUEUING DURING SOURCE CODE COMPILATION

John R. Rizzi, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1980, Ser. No. 202,900
Int. Cl.³ G06F 9/00, 9/30, 9/44
U.S. Cl. 364—200 **6 Claims**



1. A method of operating a computing system having a main storage and a plurality of different classes of registers to assign registers to requests serially referenced in an input instruction stream for quantities to be in a register, so as to improve utilization of the registers during execution of a compiled instruction stream, comprising the steps of:

(1) during a serial scan of the input instruction stream, identifying register usage for quantities, including (a) quantities referenced in the input instruction stream which need to be assigned to a register and (b) quantities referenced in the input instruction stream which are either assigned to a register or logged to a set of register quantities awaiting assignment to a register;

(2) upon identifying during step (1) a first quantity which needs to be assigned to a register, logging the first quantity to the set of register quantities awaiting assignment to a register with a control count indicative of the total number of registers for which the first quantity is not a candidate;

(3) upon identifying during step (1) a second quantity either assigned to a register or logged to the set of register quantities awaiting assignment to a register,

incrementing the control counts of quantities in the set of register quantities awaiting assignment to a register which are candidates for the same registers as the second quantity, and

testing for complete sets; and

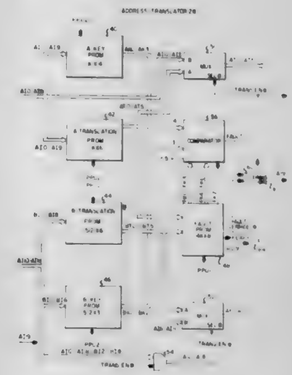
(4) assigning a register to those quantities for which a complete set is detected.

4,435,754

METHOD OF SELECTING PROM DATA FOR SELECTIVE MAPPING SYSTEM

Yiu T. Chow, Kowloon, Hong Kong, and Thomas J. Gilligan, Rolling Hills Estates, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jun. 30, 1981, Ser. No. 279,234
Int. Cl.³ G06F 11/00
U.S. Cl. 364—200 **13 Claims**



1. A computer program for assigning data states to stores defining mapping relationships in a mapping system mapping input states to output states and which assigns each input state to an A superstate within an A group of superstates and to a B superstate within a B group of superstates, each superstate including a plurality of input states, the computer program comprising the steps of:

assigning in succession a plurality of B superstates, each having at least one input state which is to be mapped included therein, to a BK by BT B map having a plurality of BK states and a plurality of BT states orthogonal to and intersecting each of the BK states with not more than a predetermined maximum number of input states to be mapped being assignable to any given BT state, the B superstates being assigned to the B map with at most one B superstate assigned to any given Bk, BT intersection and being preferentially assigned to a BT state having a greatest number of vacancies available to receive input states to be mapped; and

assigning in succession a plurality of A superstates, each having at least one input state which is to be mapped included therein, to an AK by AT A map having a plurality of AK states and a plurality of AT states orthogonal to and intersecting each of the AK states with not more than a predetermined maximum number of input states to be mapped being assignable to any given AT state, the A superstates being assigned to the A map with at most one

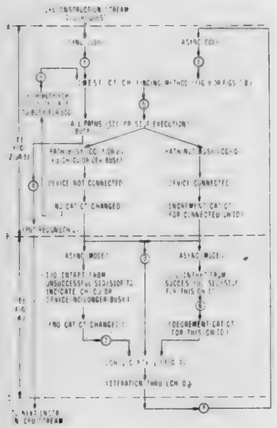
A superstate assigned to any given Ak, AT intersection and with each successive A superstate being preferentially assigned to an AT state having the smallest number of vacancies available to receive input states which are to be mapped.

4,435,755

BALANCED CHANNEL FINDING METHOD

Allan S. Meritt, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,991
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **20 Claims**



1. A method in a data processing system for quickly finding a data path for a requested I/O device, the data path including a channel path and a control unit, the data path being provided between the requested I/O device and a main storage under the control of an I/O request from a central processing unit (CPU) to a channel processor, the method comprising:
- generating an outstanding request (CAT) count for each channel path useable by the system,
- obtaining a set of channel path identifiers (CH IDs) for all channel paths capable of connecting to the requested I/O device,
- finding a candidate channel path identifier (CH ID) for an available CH ID having the lowest CAT count in the set provided by the obtaining step,
- attempting to connect the requested I/O device with the candidate channel path CH ID found by the finding step to obtain a data path,
- repeating the finding step if the attempting step is unsuccessful in connecting the candidate channel path to a data path by finding another candidate channel path.

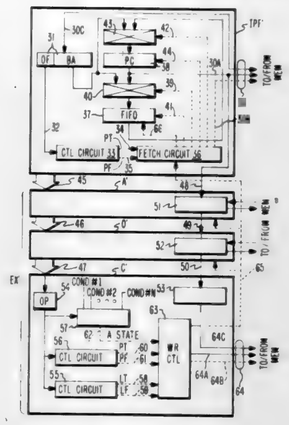
4,435,756

BRANCH PREDICTING COMPUTER

Hanan Potash, La Jolla, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 3, 1981, Ser. No. 326,837
Int. Cl.³ G06F *9/42*
U.S. Cl. 364—200 **9 Claims**

1. An improved digital device including a memory means for storing a plurality of instructions arranged as a program with conditional branch instructions at respective locations in said program specifying conditions to be tested; an instruction prefetch means and an instruction execute means for respectively fetching and executing different instructions of said program at the same time in a pipelined fashion; said conditional branch instruction at each of said locations further having multiple encodings which predict the state of the condition to be tested; and a control means for detecting when said prefetch means has fetched one of said conditional branch



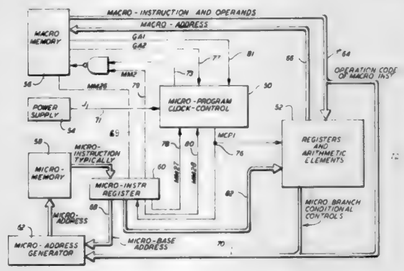
instructions and for fetching the next instruction based on the predicted state of the condition to be tested and encoded in said fetched conditional branch instruction.

4,435,757

CLOCK CONTROL FOR DIGITAL COMPUTER

John W. Pross, Jr., Newfoundland, N.J., assignor to The Singer Company, Little Falls, N.J.

Continuation of Ser. No. 60,259, Jul. 25, 1979, abandoned. This application Jun. 30, 1981, Ser. No. 279,053
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **1 Claim**



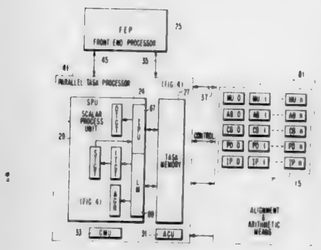
1. In a digital computer including: a central processor; a main memory; and a micro memory, said micro memory containing a number of micro instructions for specifying program steps, a master clock for controlling the timing of the digital computer comprising:
- a. an oscillator providing, as an output, a pulse train having pulses spaced at a basic fixed incremental time period;
- b. a master clock output stage having a data input and a clock input and an output providing pulses, said clock input coupled to the output of said oscillator, said output stage responsive to provide the data at its input to its output in response to the input at its clock input;
- c. timing means having said output of said oscillator as an input and providing a data input to said master clock output stage, the output of said timing means being a pulse train having pulses spread at a multiple of said basic fixed integral incremental time period which is equal to a minimum interval corresponding to the shortest time needed to perform a program step;
- d. adding means having as input signals forming part of a micro instruction and responsive thereto to add, to said minimum interval, increments equal to said basic fixed incremental time period when another part of said micro instruction calls for a program step requiring more than said minimum interval, the interval established after addition being approximately equal to the time required to perform said program step;
- e. means associated with said main memory for providing a first signal indicating that the memory is ready to be read and a second signal indicating that data from the memory is available; and
- f. means associated with said timing means having said signals as inputs and responsive to said first signal to interrupt said master clock output stage and prevent further output pulses from said master clock output stage and to said second signal to re-initiate generation of clock pulses by said master clock output stage.

4,435,758

METHOD FOR CONDITIONAL BRANCH EXECUTION IN SIMD VECTOR PROCESSORS

Raymond A. Lorie, and Hovey R. Strong, Jr., both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 129,148, Mar. 10, 1980, abandoned. This application Aug. 13, 1982, Ser. No. 407,842
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **3 Claims**



1. A two-phase method for controlling the execution of a program consisting of a single entrance, single exit (SESE) program instruction sequences on a single instruction, multiple datastream (SIMD) machine during a second phase, which SESE instruction sequences were previously conditioned from an ordinary program instruction sequence on a single instruction, single datastream (SISD) machine during a first phase,

said SIMD machine includes an array of parallel processors; means for applying independent datastreams to counterpart processors, each processor having an activity mask (active, inactive); and a control unit for applying the program to the processors to interact with the data and for regulating the activity state of each processor by altering its activity mask contents, wherein:

during the first phase, the steps of:
- (a) compiling an ordinary program and decomposing it into SESE instruction sequences, the last instruction in each sequence being either an unconditional or conditional branch;
- (b) priority ordering the sequences according to a depth ordering convention and assigning sequence label numbers thereto linearly; and
- (c) inserting either a ELSE or JOIN instruction at the beginning of sequences selected according to a first predetermined convention; and

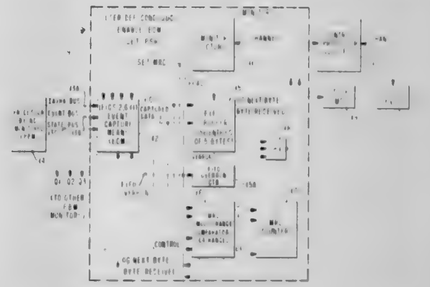
during the second phase, the steps of:
- (d) causing a SESE sequence processed during the first phase to be executed on one or more processors of an SIMD machine in parallel; and causing the designation of the next executable SESE sequence as a function of the matching or mismatching of the SESE sequence targets of the branches of the sequence currently being executed on one or more processors according to a second predetermined convention;
- (e) upon occurrence of a branch instruction, ascertaining the targets and, if there does not exist a target to a successful conditional branch, transferring control to the unique target, otherwise transferring control to the target of the successful conditional branch and masking off as inactive the processors corresponding to the target of the unsuccessful conditional branch;
- (f) upon the occurrence of an ELSE instruction in said current SESE sequence as applied to the SIMD machine, ascertaining the next SESE target sequence having the lowest priority order number; masking on into an active state each inactive processor awaiting execution of the ascertained target SESE sequence; and masking off into an inactive state all other processors waiting to execute other SESE sequences; or
- (g) upon the occurrence of a JOIN instruction in said current SESE sequence as applied to the SIMD machine, masking on into an active state those inactive processors waiting to execute SESE sequences having a priority order number the same as that of the SESE sequence currently being executed by the SIMD machine.

4,435,759

HARDWARE MONITOR FOR OBTAINING PROCESSOR SOFTWARE/HARDWARE INTERRELATIONSHIPS

Richard I. Baum, La Grange, and Frederick E. Sakalay, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,530
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 **22 Claims**



1. A monitor for obtaining measurement data on the software/hardware operation of a data processing system having a processor and a main storage, the processor having an instruction unit with an instruction address register for indicating the address of each instruction being executed by the processor, the processor having latches for registering the occurrence of events in the processor resulting from its execution of an instruction; the monitor comprising:

an event capture switch having a plurality of inputs connected to a set of latches of the processor to be monitored, some of the latches being activated aperiodically in time,

means for presetting the event capture switch to select one of its inputs (representing a preset type of event) as its output, the occurrence of an output signal from the event capture switch being a trigger signal,

capture register means,

means for capturing current input signals by connecting an output of the instruction address register to the capture

register means upon an occurrence of the trigger signal to store an instruction address then being provided by the instruction address register as the address of the instruction causing the trigger signal,

whereby a software operation in the system is related to a hardware operation in the system by the monitor selecting only the addresses of instructions in executing software causing the occurrence of predetermined types of hardware event to provide a required set of captured addresses.

4,435,760

RUNNING POSITION INDICATOR APPARATUS

Akira Kuno, Oobu; Muneaki Matsumoto, Okazaki; Koji Numata, Toyokawa, and Susumu Urano, Oobu, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

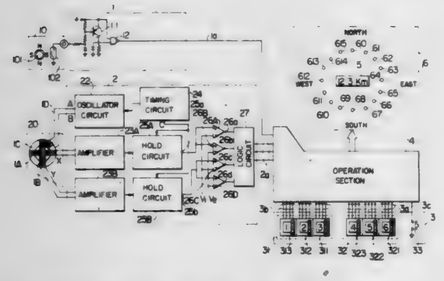
Filed Feb. 4, 1981, Ser. No. 231,441

Claims priority, application Japan, Feb. 8, 1980, 55-15172

The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.

Int. Cl.³ G06F *15/50*; G09B *29/10*

U.S. Cl. 364—444 **9 Claims**



1. A running position indicator apparatus comprising:

distance detector means for generating a distance signal representing the distance covered by an automobile;

direction detector means for generating a direction signal representing the running direction of the automobile;

destination setting means for generating a destination direction signal representing the angle of the direction from the starting point to the destination and a destination distance signal representing the linear distance from the starting point to the destination;

operation means for calculating the vectorial value from the starting point to the destination in response to said destination direction signal and said destination distance signal, calculating the vectorial value from the starting point to the present position from said distance signal and said direction signal, subtracting the vectorial value from the starting point to the present position from the vectorial value from the starting point to the destination thereby to determine a vectorial value from the present position to the destination, and producing a signal representing the direction from the present position to the destination and a signal representing a linear distance from the present position to the destination; and

indicator means for indicating data on the linear distance from the present position to the destination and data on the direction from the present position to the destination in the same indication section in response to the output signal from said operation means.

4,435,761

DATA PROCESSING APPARATUS CAPABLE OF TRANSFERRING SERIAL DATA WITH SMALL POWER CONSUMPTION

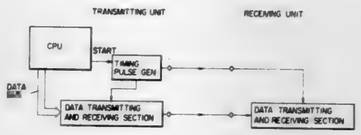
Manabu Kimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 194,874

Claims priority, application Japan, Oct. 8, 1979, 54-129714

Int. Cl.³ G06F *1/04, 13/00*; G11C *7/00*

U.S. Cl. 364—200 **10 Claims**



4. Data processing apparatus comprising:

a data processing means which executes a programmed process and generates a data transfer initiating signal and a signal for halting execution of said programmed process,

a data transfer means coupled to said data processing means for transferring data processed by said data processing means to a receiving unit,

a clock pulse generator for generating a clock pulse,

means for sending said clock pulse to said data processing means,

a first control means coupled to said sending means for inhibiting the sending of said clock pulse to said data processing means in response to said signal for halting execution,

a second control means coupled to said data transfer means and said clock pulse generator for sending said clock pulse to said data transfer means in response to said data transfer initiating signal, and

a third control means coupled to said first control means for sending said clock pulse to said data processing means in response to data transfer termination.

4,435,762

BUFFERED PERIPHERAL SUBSYSTEMS

Charles A. Milligan, St. David; Edwin R. Videki, II, and Winston F. Yates, both of Tucson, all of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,274

Int. Cl.³ G06F *9/18*

U.S. Cl. 364—200 **22 Claims**

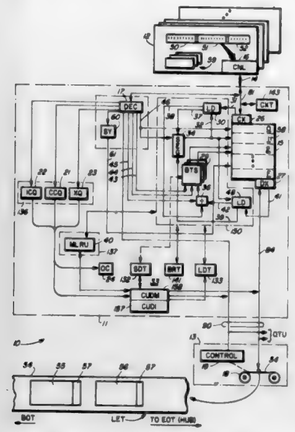
1. The machine-implemented method of buffering data signals between data signal records and a data source-sink, the machine-implemented steps of:

receiving data signal sets (records) by a volatile data buffer having plural data storage registers for later recording on a record member in a given one of said signal recorders;

initially operating the data source-sink as if the received signal sets were in fact recorded by said given one data signal recorder while in fact said received signal sets remain in the said volatile buffer; and

detecting the number of signals contained in a first received signal set (length) and if less than a predetermined length, storing all signals in said buffer before recording said received signal set and each of any ensuing received signal sets having less than said predetermined length on said record member in said one data signal recorder and upon detecting any received signal set having a number of signals greater than said predetermined number, actuating said given one data signal recorder and said volatile data buffer to receive signal sets and to begin recording all of the ensuing received signal sets on said record member in said given one data signal recorder before the entire signal

set has been completely received by said volatile data buffer such that said volatile data buffer acts as a rate



changing buffer whereby for signal sets longer than said predetermined number the data source-sink does not operate in the manner set forth in said initial operating step.

4,435,763

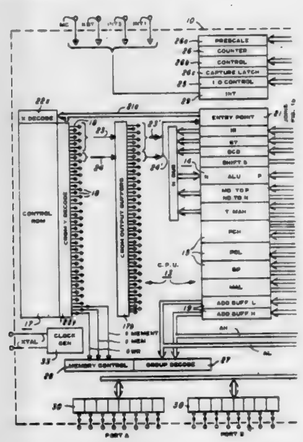
MULTIPROGRAMMABLE INPUT/OUTPUT CIRCUITRY

Jeffrey D. Bellay; Robert C. Thaden; John W. Hayn, and Kevin C. McDonough, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1981, Ser. No. 253,957

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **25 Claims**



1. An electronic digital processor system including a single integrated circuit having input/output circuitry comprising:

a plurality of input/output data ports each having a plurality of bit pads and each having a separate address, at least two of said ports containing: receiving means to receive bit data from a bit pad; transmitting means to transmit bit data to said bit pad; control and interconnect circuitry connected to said receiving and said transmitting means of each of such ports to define a configuration that permits one port to transmit input data and to receive output data from said bit pads of another of such ports and respond to said address of said another port to send input data to and receive output data from within said intergrated circuit thereby allowing said control and interconnect circuitry of said another port to be used to transmit and receive control signals;

a data bus within said integrated circuit connected to said control and interconnected circuitry, to said receiving means and to said transmitting means of each of said ports.

4,435,764

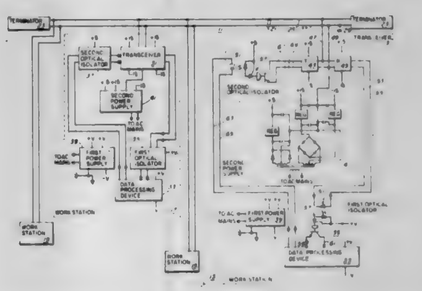
COMPUTER NETWORK HAVING A SINGLE ELECTRICALLY CONTINUOUS BI-DIRECTIONAL BUS

Hussein T. El-Gohary, Harvard, Mass., assignor to Data General Corp., Westboro, Mass.

Filed Aug. 6, 1981, Ser. No. 290,588

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **9 Claims**



1. A computer network comprising:

(a) an electrically continous communications bus,

(b) a plurality of spatially separated computer work stations distributed along said bus, each computer work station including:

(i) a transceiver connected to said bus, said transceiver including a transmitter for transmitting a signal onto said bus and a receiver for receiving a signal communicated onto said bus,

(ii) a data processing device,

(iii) first optical isolation means for coupling said receiver to said data processing device,

(iv) second optical isolation means for coupling said transmitter to said data processing device,

(v) a first power supply for supplying operating power to said data processing device and said first optical isolation means, and

(vi) a second power supply for supplying operating power to said transceiver and said second optical isolation means, said second power supply means being coupled to said communications bus and being floating.

4,435,765

BANK INTERLEAVED VECTOR PROCESSOR HAVING A FIXED RELATIONSHIP BETWEEN START TIMING SIGNALS

Keiichiro Uchida, Yokohama; Hiroshi Tamura, Kawasaki; Tetsuro Okamoto, Machida, and Shigeaki Okutani, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1981, Ser. No. 322,717

Claims priority, application Japan, Nov. 21, 1980, 55-164100; Nov. 26, 1980, 55-166164

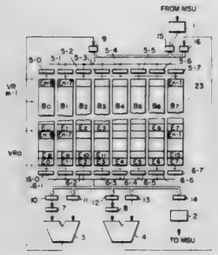
Int. Cl.³ G06F *9/18*

U.S. Cl. 364—200 **9 Claims**

1. A data processing system, having a plurality of processing classes specified by vector processing instructions, where a plurality of vector registers each comprising a plurality of elements are provided between a main memory unit and an operational unit, required data is transferred to said vector registers from the main memory unit and then held therein, and

in the operational unit various processings, such as logical operations, are carried out by sequentially accessing the elements within said vector registers, said data processing system comprising:

a plurality of memory banks to which access can be made independently, respectively, and which include said vector registers, the comprised elements of each vector register, respectively, are interleaved and thus located in different memory banks, each element of each vector register is respectively associated with a number representing that element's position within its comprising vector register, and the elements of different vector registers but having the same associated number are arranged in the same memory bank; and



timing generation means, operatively connected to said vector registers, for starting the access by the operation unit to a series of elements of said vector registers with a start ready timing signal which is specified for and dependent on each of the classes of processing, respectively, the processing classes being divided into an add/multiply class and a load/store class, the start ready timing signals comprise a plurality of first common timing signals which are assigned as vector register start timing signals for the add/multiply class, and a plurality of second common timing signals different from said first common timing signals and which are assigned as vector register access start timng signals for the load/store class, so that each of said vector registers operates at timing dependent on the class associated with the start ready timing signal.

4,435,766

NESTED RESOURCE CONTROL USING LOCKING AND UNLOCKING ROUTINES WITH USE COUNTER FOR PLURAL PROCESSES

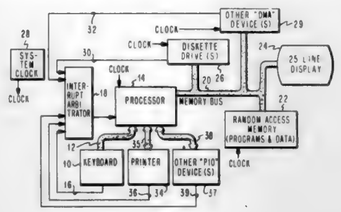
Judith G. Haber; Kenneth L. Jeffries, and Paul J. Kilpatrick, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

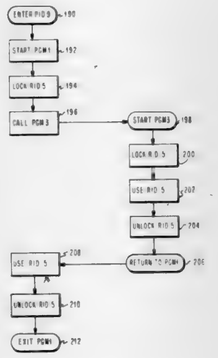
Filed Jun. 16, 1981, Ser. No. 274,113
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—300 **8 Claims**

1. A method of controlling a process lock on a resource, said method comprising:

nesting lock requests within a number of programs comprising a process;

maintaining said process lock through incrementing and decrementing a use counter from the initial process lock, during execution of a program, and calling up other programs within said process until said use counter is restored to its initial state prior to releasing said initial process lock.



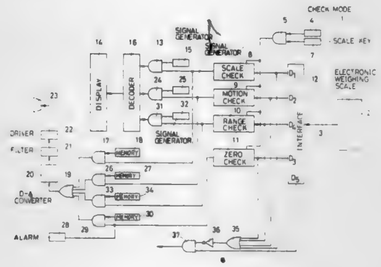


4,435,767

ERROR ALARM SYSTEM FOR DETECTING AN ABNORMAL CONDITION IN A PERIPHERAL SYSTEM OF AN ELECTRONIC CASH REGISTER

Hiroshi Nakatani; Masahide Ishida, both of Yamatokoriyama, and Hachizou Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 147,271, May 6, 1980, Pat. No. 4,325,441. This application Jun. 26, 1981, Ser. No. 277,687
Claims priority, application Japan, May 7, 1979, 54-56125
Int. Cl.³ G06F *3/16*
U.S. Cl. 364—405 **2 Claims**



1. A combined electronic cash register and peripheral system comprising:

an electronic cash register; and

peripheral means electrically interconnected to said cash register via a cable for monitoring a desired external condition as well as abnormal conditions of said peripheral means;

said electronic cash register including,

interface means responsive to the output of said peripheral means on said cable for decoding said information provided thereon and supplying said information to a plurality of outputs, one of said plurality of outputs being an external condition value output, the remainder of said outputs being abnormal conditions monitor outputs,

abnormal condition evaluation means connected to at least one of said abnormal condition monitor outputs for determining whether an abnormal condition exists and producing an abnormal condition detection output associated with the abnormal condition detected,

abnormal condition display signal generator means responsive to said associated abnormal condition detection output for developing a display signal indicative of said abnormal condition,

means responsive to the display signal produced by said display signal generator means for visually displaying said display signal,

a plurality of audible condition memories, each said memory being associated with one of said abnormal condition monitor outputs and having a speech synthesized representation of the associated abnormal condition stored therein,

means for decoding the speech synthesized representation stored in a selected said memory into an analog audio waveform,

means responsive to a said associated abnormal condition detection output for enabling the passage of the speech synthesized representation stored in a selected said memory to said means for decoding, and

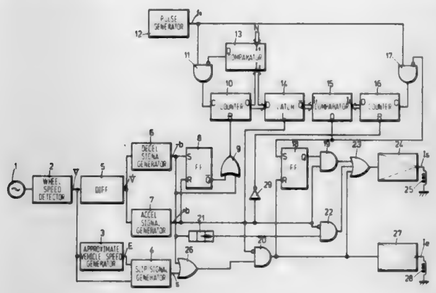
transducer means responsive to said means for decoding for producing an audible speech representation of said abnormal condition.

4,435,768

SKID CONTROL SYSTEM

Tetsuro Arikawa, Kanagawa, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Feb. 3, 1981, Ser. No. 231,095
Int. Cl.³ B60T *8/08*
U.S. Cl. 364—426 **11 Claims**



1. A skid control system for a vehicle having at least one wheel and a brake for the wheel comprising:

(a) wheel speed detecting means for providing an output signal representative of the rotational speed of said wheel with respect to the vehicle;

(b) differentiating means for differentiating said output signal of the wheel speed detecting means and providing an output signal representative of acceleration or deceleration of said wheel;

(c) a deceleration signal generator connected to said differentiating means, said deceleration signal generator generating a deceleration signal when the output signal of said differentiating means exceeds predetermined threshold deceleration;

(d) an acceleration signal generator connected to said differentiating means, said acceleration signal generator generating an acceleration signal when the output signal of said differentiating means exceeds a predetermined threshold acceleration;

(e) brake relieving means for decreasing the brake pressure to the brake for said wheel in response to the deceleration signal of said deceleration signal generator;

(f) first brake control means for maintaining the brake pressure to the brake for said wheel constant, or gradually increasing the brake pressure to the brake for said wheel, in response to the acceleration signal of said acceleration signal generator; and

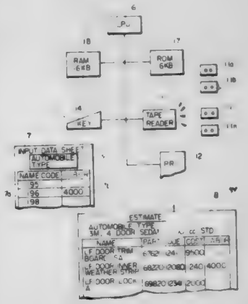
(g) second brake control means for rapidly increasing the brake pressure to the brake for said wheel for a predetermined time in accordance with the slope of the output signal of said differentiating means within the time when said acceleration signal generator generates the acceleration signal.

4,435,769

PORTABLE TYPE AUTOMOBILE REPAIR ESTIMATE ISSUING DEVICE

Susumu Nagano, Tokyo; Seiichi Iruya, Saitama; Yoshinori Yasuda, and Tomoaki Makino, both of Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Japan Audatex Co., Ltd., both of Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,475
Claims priority, application Japan, Mar. 15, 1980, 55-34939
Int. Cl.³ G06F *3/12, 15/06*; G11C *15/02*
U.S. Cl. 364—464 **9 Claims**



1. A portable type automobile repair issuing device comprising: memory means in which at least name coded data corresponding to automobile part names, name data corresponding to said automobile part names, data representing automobile types, and part data corresponding to automobile parts are stored; input means for inputting selected name coded data entries corresponding to said automobile part names and data representing an automobile type; central processing means; printing means for printing an automobile repair estimate in which the part data stored in said memory means is extracted selectively according to name coded data entries and said data representing said automobile type applied to said central processing means to provide estimation data, said printing means printing an estimate according to said estimation data; said memory means being provided with a first file for storing said part data other than said name data and a second file for storing said name data corresponding to said automobile part names;

said central processing means, according to each name coded data entry applied to said central processing means and said data representing said automobile type, combin-

ing corresponding part data stored in said first file and corresponding name data stored in said second file to provide estimation data,

said printing means printing an estimate according to said estimation data.

4,435,770

VIBRATION DIAGNOSING METHOD AND APPARATUS FOR A ROTARY MACHINE

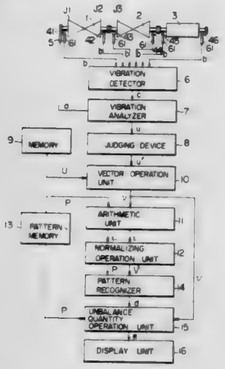
Koki Shiohata, Ibaraki; Fumio Fujisawa, Mito; Motohiro Shiga, Hitachi; Kazuo Sato, Kitaibaraki; Motoji Ohmori, Hitachi, and Masakazu Takasumi, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,517

Claims priority, application Japan, Mar. 19, 1980, 55-34032

Int. Cl.³ G06F *15/46*; G01N *29/00*

U.S. Cl. 364—508 **14 Claims**



1. An apparatus for diagnosing a vibration in a rotor of a rotary machine comprising:

means for sensing the number of rotations of the rotor and providing an output indicative thereof;

vibration detecting means for detecting vibration at a plurality of measuring points disposed at intervals along a direction of the rotor shaft when the rotor is rotating and providing outputs representative thereof;

vibration analyzer means responsive to the outputs of the vibration detector means and the rotation sensor means for extracting vibration components synchronized with the number of rotations of the rotor at the plurality of measuring points;

comparing means for comparing the extracted vibration components with reference values therefor corresponding to normal vibration of the rotor for determining that the detected vibration is abnormal when at least one of the extracted vibration components exceeds the corresponding one of the reference values therefor and that the detected vibration is normal when all of the extracted vibration components do not exceed the corresponding reference value therefor, the comparing means providing an output of the extracted vibration components when the detected vibration is abnormal;

calculating means for calculating abnormal vibration components in accordance with the output of the extracted vibration components and predetermined values representative of respective rotor vibration components in a normal state of the rotor and providing an output of abnormal vibration components; and

pattern comparing means for comparing a pattern of amplitude values of the abnormal vibration components with patterns of previously determined vibration amplitude values at the respective measuring points when an unbalance is provided at different positions of the rotor for determining an unbalance originating position in the rotor according to a selected one of the predetermined unbalanced vibration patterns which is the most similar to the abnormal vibration pattern.

4,435,771

SYSTEM FOR NUMERICALLY CONTROLLING A MACHINE TOOL

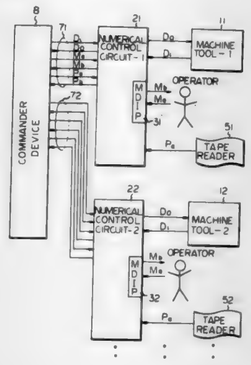
Ryoichiro Nozawa, Tokyo, and Nobuyuki Kiya, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,596

Claims priority, application Japan, Apr. 4, 1980, 55-43446

Int. Cl.³ H02M *1/06*

U.S. Cl. 364—474 **5 Claims**



1. A method for numerically controlling a plurality of machine tools by means of a computer connected in common to a plurality of numerical control circuits, each of which is connected to a different one of said machine tools and each of which has a manual data panel, the operation of said method comprising the steps of:

transmitting from the computer to a numerical control circuit a program editing mode signal;

deciding first whether or not the mode is suitable;

under the condition that the result of the first decision is affirmative, transmitting a manual input data (Ma) from the computer to the numerical control circuit;

transmitting a program input awaiting signal from the numerical control circuit to the computer;

transmitting a numerical control program from the computer to the numerical control circuit;

deciding second whether or not the transmission of the numerical control program is completed;

under the condition that the result of the second decision is affirmative, transmitting a signal for switching the mode into the automatic operation mode from the computer to the numerical control circuit;

deciding third whether or not the mode is suitable;

under the condition that the result of the third decision is affirmative, transmitting a cycle start button signal from the computer to the numerical control circuit;

starting an automatic operation of the machine tool;

transmitting operation state signals from the numerical control circuit to the computer;

monitoring the transmitted operation state signals by the computer;

deciding fourth whether or not the operation of the machine tool is completed; and

terminating the operation of the machine tool when the affirmative result of the fourth decision is obtained.

4,435,772

INTERACTIVE GRAPHIC SYSTEM

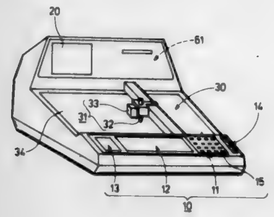
Yoshihiro Suzuki; Shuichi Nakagawa; Nobuhisa Kawamura; Shuichi Kurihara; Osamu Sakuma, and Masahiro Ito, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corp., Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,424

Claims priority, application Japan, Mar. 11, 1981, 56-33984

Int. Cl.³ G06K *15/22*

U.S. Cl. 364—520 **6 Claims**



1. An interactive graphic system comprising:

an X-Y plotter having a recording pen supported on a recording head drivable in response to an input signal for recording lines, symbols or marks on a plotting surface;

a keyboard having a plurality of function keys allotted to a variety of functions related to plotting, full keys bearing characters, numerals and symbols, and control keys for controlling said X-Y plotter;

a memory for storing an operating system with a program required for controlling the execution of a drawing program and a program required for plotting graphic patterns on an interactive basis, said memory including an exchangeable storage medium for storing various forms of fundamental graphic information accessible as desired by a command entered through said keyboard;

a display having a character display function for displaying characters as a guide for the inputting of graphic pattern drawing information via said keyboard and a graphic display function for displaying graphic patterns plotted;

a processor for executing the program stored in said memory for plotting graphic patterns in response to information entered through said keyboard; and

said X-Y plotter, said keyboard, said memory, said display, and said processor being a unitary structure for enabling said X-Y plotter to plot graphic patterns in response to information entered through said keyboard through interaction with said display.

4,435,773

RECEIVER FOR EFFECTING SYNCHRONOUS DEMODULATION

Heinz Göckler; Reinhard Till, both of Backnang, and Heinrich Schenk, Munich, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

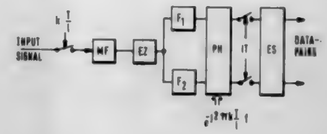
Filed Feb. 20, 1981, Ser. No. 236,823

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006801

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **5 Claims**

1. In a receiver for synchronously demodulating received sampled real bandpass signals composed of successive signal elements, said receiver containing a singal conduction path and including equalizing means connected in the path for equalizing the received signals, a pair of converting means connected in the path and operatively associated with the equalizing means for converting the signals provided by the equalizing means to analytical signals consisting of a pair of signals, a pair of sampling means connected in the path for sampling the analytical signals at time intervals corresponding to the time between successive signal elements, phase shifting means connected in the path and to the pair of sampling means for shifting the sampled signals in phase, and a decider connected in the



path for interrogating the pairs of phase-shifted sampled signals, the improvement comprising a single pair of filters constituting and pair of converting means, said single pair of filters further constituting said equalizing means.

4,435,774

METHOD OF AND ARRANGEMENT FOR CALCULATING THE DISCRETE FOURIER TRANSFORM BY MEANS OF TWO CIRCULAR CONVOLUTIONS

Theodoor A. C. M. Claasen, and Wolfgang F. G. Mecklenbräuker, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,228

Claims priority, application Netherlands, Mar. 17, 1980, 8001559

Int. Cl.³ G06F *15/332*

U.S. Cl. 364—726 **3 Claims**

1. A method of performing the discrete Fourier transform on an input array of N input signal values a(k), k=0, 1, 2, . . . N−1, wherein N is a prime, the metod comprising the steps of:

separating the input signal value a(0) from said input array of N input signal values to generate a modified input array of N−1 input signal values consisting of the input signal values a(1), a(2), . . . , a(N−1);

permuting said modified input array of N−1 input signal values to generate a permuted array of N−1 permutation signal values b(i), i=1, 2, . . . N−1, such permutation signal value b(i) being equal to input signal value $a(g^{N-i} \bmod N)$, wherein g is a positive integer which is equal to a primitive root of a field consisting of the numbers 1, 2, 3, . . . , N−1;

processing said permuted array by adding and substracting first and second signal values selected from said permuted array to produce first and second intermediate arrays of M intermediate first and second signal values $b_1(q)$ and $b_2(q)$ respectively, wherein:

$$m=(N-1)/2$$

$$q=1, 2, 3, \ldots, M$$

$$b_1(q)=b(q)+b(M+q)$$

$$b_2(q)=b(q)-b(M+q)$$

converting the first intermediate array of M intermediate first signal values $b_1(q)$ into a first auxiliary array of M auxiliary first signal values $y_1(p)$, p=1, 2, 3, . . . M, wherein

$$y_1(p) = \alpha \sum_{q=1}^{M} b_1(q) \cos\left(\frac{2\pi}{N} g^{1+((p-q) \bmod M)}\right),$$

in which α represents a constant;

converting the second intermediate array of M intermediate second signal values $b_2(q)$ into a second auxiliary array of M auxiliary second signal values $y_2(p)$, wherein:

$$y_2(p) = j\beta \sum_{q=1}^{p} b_2(q) \sin\left(\frac{2\pi}{N} g^{1+\{(p-q) \bmod M\}}\right) + +$$

$$-j\beta \sum_{q=p+1}^{M} b_2(q) \sin\left(\frac{2\pi}{N} g^{1+\{(p-q) \bmod M\}}\right),$$

in which β represents a constant and wherein $j=\sqrt{-1}$;

processing said first and second auxiliary arrays of M auxiliary first and second signal values to generate an output array of N−1 output signal values z(n)−Aa(0), n−1, 2, 3, . . . N−1 which are each proportional to the discrete Fourier transform of the array of N input signal values and which are defined by the relation

$$z(n)-Aa(0)=y_1(p)+(-1)^S y_2(p)$$

wherein

S=+1, for n=gP mod N.

S=0, for n=gM+p mod N.

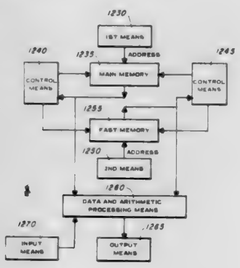
A being a constant.

4,435,775

DATA PROCESSING SYSTEM HAVING INTERLINKED SLOW AND FAST MEMORY MEANS

George L. Brantingham, Tourrettes sur Loup, France, and Ashok H. Someshwar, Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 19, 1981, Ser. No. 221,416
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 3 Claims



1. A data processing system comprising:

first means for providing first address signals,

main memory means coupled to said first means, said main memory means selectively producing data signals responsive to said first address signals,

second means for providing second address signals,

fast memory means coupled to said second means, said fast memory means selectively producing data signals responsive to said second address signals and having a faster response output than said main memory means, said fast memory means being located on the same integrated circuit chip as the main memory means;

means coupled to said main and fast memory means for selectively deactivating said main memory means and for selectively activating said fast memory means in response to particular data signals output from said main memory means; and

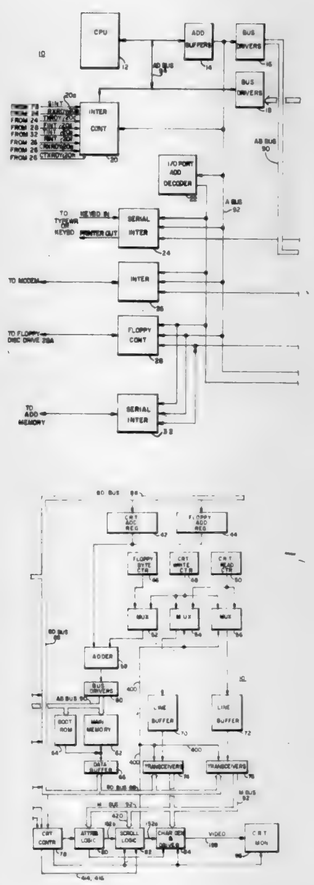
means coupled to said main and fast memory means for selectively deactivating said fast memory means and for selectively activating said main memory means in response to predefined data signals output from said fast memory means.

4,435,776

WORD PROCESSING SYSTEM

David J. Ratcliffe, deceased, late of Mendham, N.J. (by Madli-Ann Ratcliffe, executrix); Richard E. Jones, Holmdel, N.J.; Philip Shevrin, Ocean Township, Monmouth County, N.J., and Charles B. Haley, Watchung, N.J., assignors to Syntrex Incorporated, Eatontown, N.J.

Filed Jan. 27, 1981, Ser. No. 228,904
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—900 23 Claims



1. A word processing system comprising

storage means for storing a plurality of words, each word having character line data and a scroll value,

character generating means for converting said character line data into a sequence of adjacent physical raster line data,

control means for addressinag said character generating means and responsive to said scroll value for varying the sequence of said physical raster line data in said character generator means producing a sequence of vertical raster line data, and

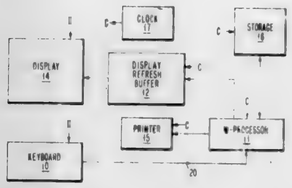
monitor means for displaying the sequence of said vertical raster line data received from said character generating means.

4,435,777

INTERACTIVELY REARRANGING SPATIALLY RELATED DATA

Rex A. McCaskill; John W. McInroy, and Paul D. Waldo, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,387
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 7 Claims



1. An improved method for assisting an operator of an interactive text processing system in interactively entering instructional data into said system which defines to said system desired changes to be made to each spatially related vector formatted data record stored in an existing file which includes a header record having a plurality of named fields, the location of which in said header record establishes the spatial relationship of data in each said record, comprising the steps of:

(a) displaying to said operator said header record as a horizontal row of said named fields, each of which is disposed at a location in said row determined in accordance with said vector format;

(b) displaying to said operator a cursor disposed at a predetermined position in said horizontal row;

(c) moving said cursor to a position in said horizontal row which corresponds to a field location involved in one of said changes;

(d) initiating an edit operation corresponding to said one of said changes after the cursor is moved to said position in said horizontal row which corresponds to said one of said changes;

(e) storing in said system said instructional data defining said edit operation performed in step (d) by said operator and said position in said header of said cursor when said edit operation was initiated; and

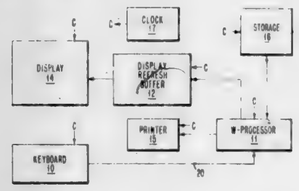
(f) repeating steps (c), (d) and (e) for each desired said change to permit said system to subsequently edit each of said data records in said existing file in accordance with said stored instructional data.

4,435,778

METHOD FOR EDITING SPATIALLY RELATED DATA IN AN INTERACTIVE TEXT PROCESSING SYSTEM

William C. Cason; Rex A. McCaskill, both of Austin, and Francisco A. Karner, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,368
Int. Cl.³ G06F *3/153*
U.S. Cl. 364—900 8 Claims



1. In a method of interactively editing text data displayed on a display screen of an interactive test processing system having a keyboard and a microprocessor including a memory for storing (1) programs; (2) conventional text data in one format; and (3) spatially related text type data in a second format, said spatially related text type data being stored in said memory in said second format as a plurality of vector formatted records to permit data processing type operations to be performed by said system on said records in either an interactive or non-interactive mode, said method including the step of displaying on said screen at least one line of text data stored in said system in said one format to permit the operator of said system to interactively edit said one line of displayed text data in accordance with a prescribed set of interactions of said operator with said screen and said keyboard, the improvement characterized by the steps of:

(A) converting with said microprocessor at least one portion of one of said vector formatted records of spatially related text type data stored in said memory from said second format to said one format;

(B) displaying to said operator said converted one portion on said display screen; and

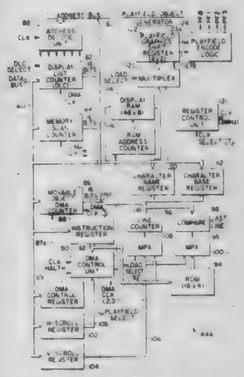
(C) editing said displayed converted one portion interactively by said prescribed set of operator interactions involving said operator, said keyboard and said display screen.

4,435,779

DATA PROCESSING SYSTEM WITH PROGRAMMABLE GRAPHICS GENERATOR

Steven T. Mayer, Auburn; Jay G. Miner, Sunnyvale; Douglas G. Neubauer, Santa Clara, and Joseph C. Decuir, Mountain View, all of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Division of Ser. No. 1,497, Jan. 8, 1979, Pat. No. 4,296,476. This application Jun. 8, 1981, Ser. No. 271,324
Int. Cl.³ G06F *3/153*
U.S. Cl. 364—900 13 Claims



1. A raster graphics generator circuit having two modes of operation, a map mode and a character mode. the circuit comprising:

a digital memory for storing a sequence of display instructions, including map and character instructions, and for storing sequential graphics information, sequential character names, and character blocks of graphics information, each character block comprising a number of bytes,

a display list circuit coupled to the digital memory for addresing a sequent display instruction in response to a start signal; and

logic circuitry coupled to the digital memory and responsive to an addressed display instruction for operating in one of two modes; a map mode in response to a map instruction and a character mode in response to a character instruction, the logic circuitry including map means operable in

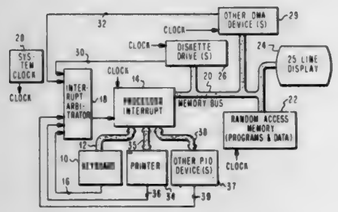
the map mode for sequentially addressing the sequential graphics information and for providing raster graphics signals in response to the addressed sequential graphics information; the logic circuitry further including character means operable in the character mode for addressing the sequential character names, for storing the addressed character names, for addressing character blocks of graphics information in response to the stored character names, and for providing raster graphics signals in response to the addressed character blocks of graphics information.

4,435,780

SEPARATE STACK AREAS FOR PLURAL PROCESSES

Kenneth M. Herrington, and Kenneth L. Jeffries, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,114
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **6 Claims**



1. A method of efficiently handling priority ordered, interrupt driven processor allocation in a multiprocess environment including the step of:

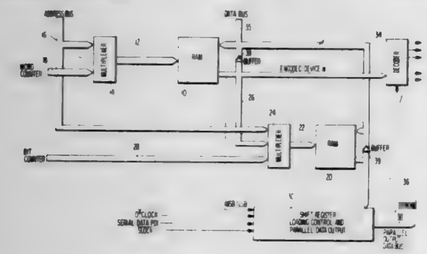
defining an independently indentified and addressable stack storage area for each process to be performed, each stack so defined having a process control block, the beginning of which is coincident with the beginning of the stack storage area.

4,435,781

MEMORY-BASED PARALLEL DATA OUTPUT CONTROLLER

Raymond J. Stattel, Lanham, and James K. Niswander, Silver Spring, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 128,230, Mar. 7, 1980, abandoned. This application Jun. 9, 1983, Ser. No. 501,060
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **3 Claims**



1. A memory-based parallel data output controller for the extraction of predetermined bits from an inputted bit serial digital data stream for use with a frame synchronizer of the type having a word counter, a bit counter, a link synchronization status signal and a reference clock, said output controller receiving said inputted bit serial digital data stream and decommutating said predetermined extracted bits into multiple channels of predetermined parallel telemetry data to a plurality of peripheral devices, comprising:

a first random access memory having address lines and at least as many memory address locations as there are channels, said word counter being connected to said address lines of said first random access memory which provides as its output an encoded peripheral device number and a first flag denoting either most significant bit or least significant bit first operation,

a second random access memory having address lines and for outputting second and third flags to pick out the start and stop of said predetermined extracted bits, said encoded peripheral device number output from said first random access memory and said bit counter being connected to the address lines of said second random access memory,

a serial-in parallel-out shift register for outputting said predetermined extracted bits in a parallel format representing said parallel telemetry data,

shift register control means for receiving said bit serial digital data stream, said first, second and third flags, said link synchronization status signal and said reference clock and, therefrom, for developing and outputting a strobe pulse, a mode pulse, a shift pulse, and serial data pulse stream all of which output pulses being inputted into said shift register,

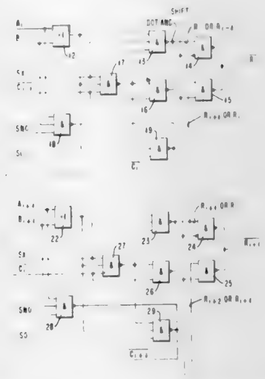
decoding means connected to receive said encoded peripheral device number output from said first random access memory and receiving and being enabled by said output strobe pulse for selecting one of said plurality of peripheral devices to receive said parallel telemetry data from said shift register.

4,435,782

DATA PROCESSING SYSTEM WITH HIGH DENSITY ARITHMETIC AND LOGIC UNIT

Dan R. Kaufman, Kingston, and Gerhard R. Thompson, Wappingers Falls, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,794
Int. Cl.³ G06F *7/48, 7/50*
U.S. Cl. 364—716 **6 Claims**



1. A processor chip having means for supplying two multi-bit data words on which arithmetic and logic operations are to be performed and having means supplying control signals defining an operation to be performed, a multi-stage arithmetic and logic unit having for each stage a sum output and a carry output, two inputs for receiving the corresponding bits of the two multi-bit data words and an input for receiving a carry output from a preceeding stage, comprising,

means responsive to the data inputs and to control signals defining a predetermined logic function to form at the carry output of the stage a logic function of the data input bits to the stage and to form at the sum output of the stage a logic function of the carry input to the stage, the two functions combining in two adjacent stages to produce said predetermined function, and

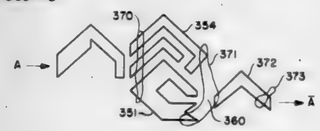
means for shifting the sum outputs of the arithmetic and logic unit one bit position to the right to realign the output bits.

4,435,783

MAGNETIC BUBBLE LOGIC APPARATUS

Richard P. Williams, Columbia, Md., assignor to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,664
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—5 **2 Claims**



1. An apparatus for propagation of magnetic bubbles comprising:

an input stage including inuts for receiving one or more bubbles;

a strip-former stage adjacent the input stage and including a plurality of propagating elements vertically spaced so as to selectively form bubbles or strips of variable height dependent upon the combination of bubbles provided to the first stage, at least one of said propagating elements being an idler element and at least one of said combinations producing a strip extending the full-height of said strip-former stage, and

a decoding stage having a first output propagating element spaced apart from said strip former a distance sufficient to prevent propagation of all but said full-height strip onto said first output element.

4,435,784

MULTI-REPLICATOR STRETCHER DETECTOR

Isoris S. Gergis, Yorba Linda, and Wai-Tak P. Lee, Santa Ana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 27, 1980, Ser. No. 200,816
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—8 **12 Claims**

1. A detector for magnetic bubble domain devices comprising:

a propagation path comprising a dual conductor propagation track for magnetic bubble domains;

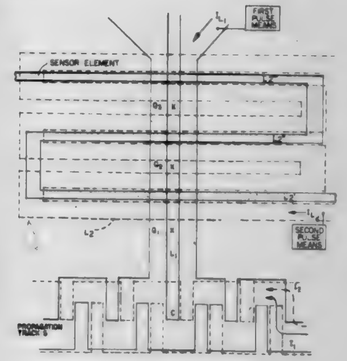
first and second current means connected to said dual conductor propagation track for applying a time varying current thereto;

the current applied to said first conductor track being different in phase than the current applied to said second conductor track so that a magnetic bubble domain is propagated along the dual conductor;

expander means disposed adjacent said propagation path and functioning to expand a bubble domain on said path in a first direction, said expander means comprises a hairpin loop intersecting said propagation path at a substantially right angle;

replication means disposed adjacent said expander means and functioning to cut said expanded bubble into a plurality of magnetic bubble domains and to expand the bubble domains in a second direction different from said first direction;

said replication means comprises a multi-loop conductor track intersecting said expander means at approximately a right angle; and



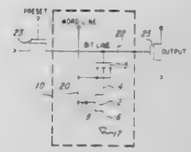
detection means disposed along said second direction and functioning to detect said plurality of magnetic bubble domains, said detection means being formed by elongated strips of a magnetoresistive sensor element extending essentially parallel to and between the turns of said multi-loop conductor track.

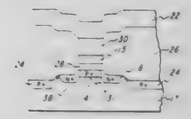
4,435,785

UNIPOLAR VOLTAGE NON-VOLATILE JRAM CELL

Richard A. Chapman, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1981, Ser. No. 269,201
Int. Cl.³ G11C *11/24*; H01L *29/80*
U.S. Cl. 365—147 **9 Claims**





1. A non-volatile data storage cell having a P-channel JFET as the addressing element for the non-volatile storage element of said cell, said P-channel JFET having a source region of a higher level of impurity concentration for changing voltage breakdown threshold, wherein writing and erasing data in said cell is accomplished by voltages of the same polarity.

5. A non-volatile data storage cell comprising:

a semiconductor substrate of one conductivity type;

a first region of conductivity opposite that of the substrate, extending to the surface of said substrate, wherein said first region surrounds an enclosed region of said substrate, said enclosed region of substrate having a higher level of

impurity concentration of the same conductivity type as said substrate for changing the breakdown voltage between said substrate and said first region of opposite conductivity;

an insulating layer covering the surface of said substrate, said first region of opposite conductivity, and said enclosed region of substrate;

a multidielectric structure overlying said enclosed substrate region and recessed into said insulating layer such that a reduced thickness of said insulating layer is present between said dielectric structure and said enclosed substrate region, than is present between said substrate and subsequent structure parts;

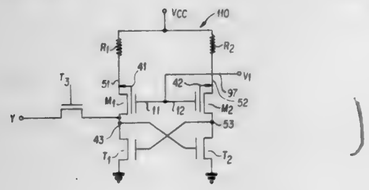
a conductor arranged on the surface of said insulating layer to be in contact with said multilayer dielectric structure.

4,435,786

SELF-REFRESHING MEMORY CELL

Andrew C. Tickle, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Nov. 23, 1981, Ser. No. 324,344
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—154 **4 Claims**



1. A memory cell comprising:

a first MOS transistor and a second MOS transistor, each of said first and second MOS transistors possessing a source, a drain, and a control gate;

a third MOS transistor and a fourth MOS transistor, each of said third and fourth MOS transistors possessing a source, a drain, and a control gate;

a pair of resistive elements, one lead of each resistive element being connected to a corresponding drain of one of said third and fourth MOS transistors, the other lead of each resistive element being connected to a voltage source;

a first floating gate positioned between the gate and the channel of said third MOS transistor but insulated therefrom and having a portion extending above but separated by dielectric from the drain of said third MOS transistor, said dielectric having a portion thereof sufficiently thin to allow electrons to tunnel therethrough between the drain of said third MOS transistor and said first floating gate;

a second floating gate positioned between the gate and the channel of said fourth MOS transistor but insulated therefrom and having a portion extending above but separated by dielectric from the drain of said fourth MOS transistor, said dielectric having a portion thereof sufficiently thin to allow electrons to tunnel therethrough between the drain of said fourth MOS transistor and said second floating gate;

means connecting the control gates of said third and fourth MOS transistors to a source of gate potential;

means connecting the control gate of said first MOS transistor to the drain of said second MOS transistor; and

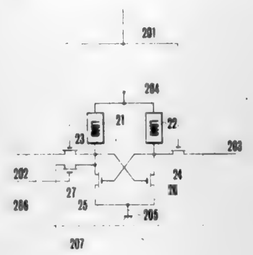
means connecting the control gate of said second MOS transistor to the drain of said first MOS transistor.

4,435,787

SEMICONDUCTOR MEMORY CIRCUIT

Nobuyuki Yasuoka, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,106
Claims priority, application Japan, Oct. 21, 1980, 55-147142
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—174 **6 Claims**



6. A semiconductor memory array having a plurality of memory circuits wherein each said memory circuit comprises:

a memory cell;

a first word line coupled to said memory cell;

a first digit line coupled to said memory cell for receiving data from said memory cell when a signal of a first potential is coupled to said first word line;

a second word line coupled to said memory cell and extending from said memory cell in a direction perpendicular to said first word line; and

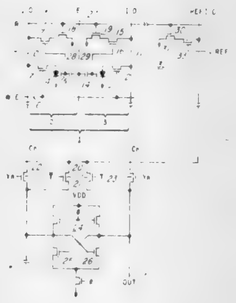
a second digit line coupled to said memory cell and extending from said memory cell in a direction perpendicular to said first digit line, for receiving data when a signal of a second potential is coupled to said second word line; whereby an array of memory circuits is realized having first word lines crossing second word lines at right angles, and first digit lines crossing second digit lines at right angles.

4,435,788

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Norihisa Kitagawa, Tokyo, and Hiroji Asahi, Zama, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 30, 1981, Ser. No. 230,162
Int. Cl.³ G11C *11/40, 7/00*
U.S. Cl. 365—185 **3 Claims**



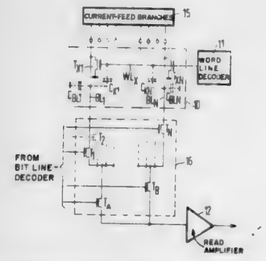
1. A non-volatile semiconductor memory device comprising a plurality of memory cells arranged in a matrix pattern of rows and columns and row address means including separate row lines for read and write for each row and separate true and complement column lines for each column, sense amplifier means connected to the column lines for sensing data stored in said memory cells, characterized in that each of said memory cells comprises a pair of symmetrical submemory cells, each submemory cell containing a floating gate and injector means, and the pair of said submemory cells can store logic states opposite to each other on said floating gates.

4,435,789

CIRCUIT FOR A READ-ONLY MEMORY ORGANIZED IN ROWS AND COLUMNS TO PREVENT BIT LINE POTENTIALS FROM DROPPING

Burkhard Giebel, Munich; Hans Moormann, Haar, and Lothar Schrader, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 6, 1981, Ser. No. 290,515
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030867
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—203 **7 Claims**



1. Circuit arrangement for a read-only memory organized in rows and columns, including bit lines having potentials applied thereto, and selection circuits being connected to the bit lines, being addressed by a bit line decoder and containing at least one selection transistor having a cut-off voltage and a gate potential, for preventing bit line potentials from dropping below a given value at which the selection circuits become conducting without having been selected by the bit line decoder, comprising current-feed lines each being connected to a different one of the bit lines for feeding current to the bit lines and for ensuring that for each of the selection circuits not selected by the bit line decoder the difference between at least one gate potential of the participating selection transistors and the respective bit line potential is smaller that the cut-off voltage of the respective section transistors, and including first and second potential sources, said current-feed lines each including an MOS transistor having a source-drain path connected between a different respective bit line and said first potential source and a gate connected to said second potential source, said potential sources being chosen so as to prevent current from flowing in non-selected selection circuits.

4,435,790

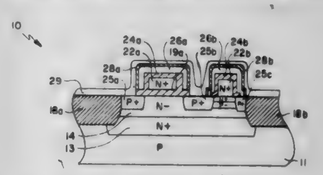
HIGH SPEED, NONVOLATILE, ELECTRICALLY ERASABLE MEMORY CELL AND SYSTEM

Andrew C. Tickle, Los Altos, and Madhukar B. Vora, Los Gatos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Division of Ser. No. 219,784, Dec. 24, 1980. This application Mar. 14, 1983, Ser. No. 474,929
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—218 **7 Claims**

1. A method for encoding binary data into an electrically erasable memory, said memory comprising a matrix of memory cells formed as a plurality of rows and a plurality of columns of said cells each of said cells comprising a floating gate field effect pMOS transistor for storage of binary data and an npn bipolar transistor for selective access to stored data, a plurality of X write lines the control gate of each said storage transistor in a row of said memory cells being connected to an X write line corresponding to said row, a plurality of X sense lines the emitter of each said bipolar transistor in a row of said memory cells being connected to an X sense line corresponding to said row, a plurality of source lines the source of each said bipolar transistor in a row of said memory cells being connected to a source line corresponding to said row, and a plurality of Y sense lines the collector of each said bipolar transistor in a column of said memory cells being connected to a Y sense line corresponding to said column, the method comprising:

(a) applying an erase voltage to each of said Y sense lines and, simultaneously, maintaining each of said X sense lines



at said erase voltage, maintaining each of said X write lines at ground and applying said erase voltage to each of said source lines such that each of said storage transistors assumes a relatively negative threshold state; and

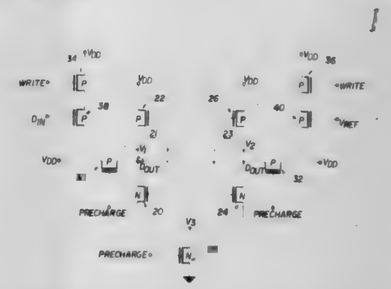
(b) applying a write voltage to selected X write lines while maintaining unselected X write lines at ground and, simultaneously, maintaining selected Y sense lines at ground and unselected Y sense lines at an inhibit voltage which is less than said write voltage and maintaining each of said X sense lines at an intermediate voltage which is equal to or less than the base/emitter breakdown voltage of said bipolar transistors such that the storage transistors of memory cells located at the intersections of said selected X write lines and said selected Y sense lines assume a relatively positive threshold state.

4,435,791

CMOS ADDRESS BUFFER FOR A SEMICONDUCTOR MEMORY

Benjamin L. Gingerich, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 9, 1981, Ser. No. 300,616
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—230 **30 Claims**



1. In a buffer circuit for an address input of a semiconductor memory comprising regenerative latch means having first and second input/output voltage nodes, said regenerative latch means connected to a supply voltage and including a pair of cross-coupled inverter circuits for providing output signals in response to a data input signal, the improvement comprising an input circuit including:

a write transistor having a gate for receiving a write signal, a source connected to said supply voltage, and a drain;

a data input transistor having a gate for receiving said data input signal, a source connected to said drain of said write transistor and a drain connected to said first input/output voltage node;

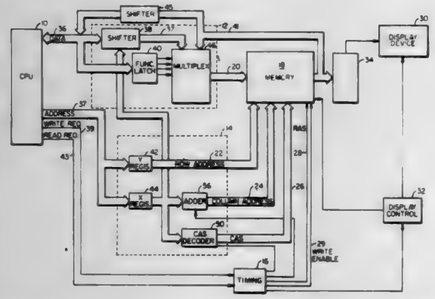
said input circuit applying said supply voltage to said first input/output voltage node in response to said data input and said write signals.

4,435,792

RASTER MEMORY MANIPULATION APPARATUS

Andreas Bechtolsheim, Stanford, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 30, 1982, Ser. No. 393,599
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—230 **21 Claims**



18. A Boolean modifiable memory apparatus in which data stored within memory are modified in accordance with input data and function data, comprising

memory means for supplying stored data from a specified location during a memory read cycle and responsive to modified data for storing modified data at a specified location during a memory write cycle; and

multiplexer means, responsive to the modified data supplied from the memory means, to the input data, and to the function data, for supplying the modified data to the memory means for storage,

wherein the multiplexer means have a plurality of data lines and a plurality of control lines and are operable to supply, as an output, data which are present on one of the plurality of data lines, in accordance with the combination of data present on the plurality of control lines, and

furtherwherein the function data are supplied to the data lines of the multiplexer means, the stored data are applied to ones of the plurality of control lines, and the input data are supplied to different ones of the plurality of control lines, so that the output of the multiplexer means corresponds to a Boolean function of the stored data and the input data, the Boolean function being specified by the function data;

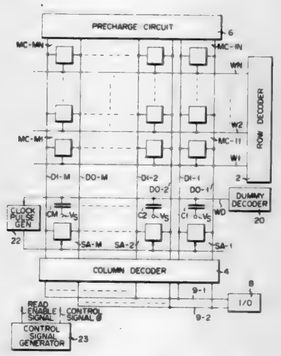
whereby the stored data and the input data are supplied to the control lines and the function data are supplied to the data lines all during the memory read cycle, and the modified data, which is the result of the specified Boolean operation upon the stored data and input data, are supplied to the memory means for storage during the memory write cycle.

4,435,793

SEMICONDUCTOR MEMORY DEVICE WITH DUMMY WORD LINE/SENSE AMPLIFIER ACTIVATION

Kiyofumi Ochii, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 171,264, Jul. 22, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,624
Claims priority, application Japan, Jul. 26, 1979, 54-95527; European Pat. Off., Jul. 18, 1980, 80104251.6
Int. Cl.³ G11C *7/00, 8/00*
U.S. Cl. 365—233 **27 Claims**



1. A semiconductor memory device comprising:

a plurality of semiconductor memory cells;

at least one word line coupled to said plurality of semiconductor memory cells for selectively transmitting an access signal thereto;

at least one pair of data lines coupled to said plurality of semiconductor memory cells for transferring data with respect thereto;

sense amplifier means coupled to said at least one pair of data lines for amplifying a data signal transferred therethrough;

a dummy word line having a signal transfer property corresponding to that of said at least one word line;

a dummy selection signal generating means coupled to said dummy word line for supplying a dummy selection signal to said dummy word line every time an addressing operation is effected; and

energizing signal generating means coupled to said dummy word line for generating a first energizing signal for a preset period of time in each operation cycle to activate said sense amplifier means in response to a dummy selection signal transmitted through said dummy word line.

4,435,794

WALL-DRIVEN OVAL RING TRANSDUCER

William J. Marshall, Jr., and Gerald A. Brigham, both of Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

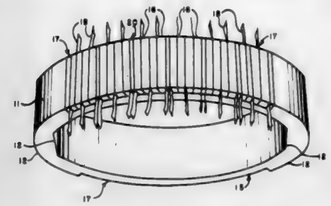
Filed Jul. 6, 1981, Ser. No. 280,749
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—155 **10 Claims**

1. A wall-driven oval ring transducer comprising:

(a) an oval cylindrical shell comprised of walls having a thickness with inner and outer side walls and having major and miner axes in cross-section and being symmetrical about said axes, the thickness of said walls in two opposed regions having said major axis passing therethrough being sized in relationship to the thickness of said walls in two opposed regions having said minor axis passing therethrough so as to place the fundamental frequency of the transducer at a preselected level; and,

(b) extension means disposed circumferentially within a pair

of cut out sections in opposed portions of said walls and connectable to a source of a driving signal for simulta-



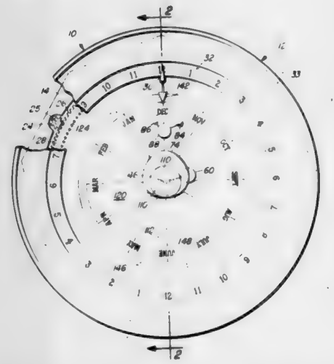
neously applying an outward flexing force to said walls in said regions having said minor axis passing therethrough.

4,435,795

CELESTIAL CLOCK

John Frank, Anchorage, Ak., assignor to A.I.M. Services, Anchorage, Ak.

Filed Apr. 7, 1981, Ser. No. 251,880
Int. Cl.³ G04B *19/26*
U.S. Cl. 368—16 **27 Claims**



1. A clock for indicating daily time and the relative positions of at least two celestial bodies of the earth's solar system with respect to the earth, comprising:

an axis;

a center hub representative of the earth centered on said axis;

hour indicator means rotatable about said axis one revolution per day;

sun indicator means representative of the sun rotatable about said axis one revolution per day, said sun indicator means and said hour indicator means superimposed with respect to each other, and said sun indicator means rotatable relative to said hour indicator means;

planet indicator means representative of a planet rotatable about said sun indicator means at a rate substantially equal to the planet's natural period of revolution about the sun; and

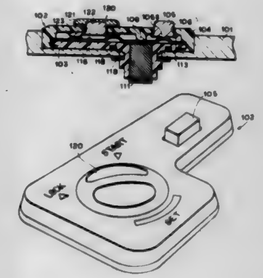
drive means for automatically rotating said indicator means at their prescribed rates.

4,435,796

ELECTRICAL CONNECTION CONSTRUCTION FOR ELECTRONIC TIMEPIECE

Motoyuki Saito, and Hideo Hatanaka, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Division of Ser. No. 159,446, Jun. 13, 1980, Pat. No. 4,403,315. This application Jul. 8, 1982, Ser. No. 396,440
Claims priority, application Japan, Jul. 23, 1979, 54-100605
Int. Cl.³ G04B *29/00*
U.S. Cl. 368—321 **5 Claims**



1. An electronic timepiece assembly comprising a switch upper plate having a contact pattern formed on the lower surface thereof, said contact pattern including a plurality of spaced terminals, a connector having a plurality of spaced electrical conductors engaging said terminals at the upper ends of said conductors and adapted to engage a module at the lower ends of said conductors, said switch upper plate contact pattern further including a plurality of spaced terminal portions, a switch lower base having a plurality of spaced electrically conductive elements on the upper surface thereof, each of said conductive elements being disposed in alignment with a corresponding pair of said terminal portions on said switch upper plate, and a plurality of projections operable from the outside so as to be resiliently deformed and bring a selected pair of said spaced terminal portions and a corresponding one of said conductive elements into engagement to complete a selected circuit, said electronic timepiece assembly further including a case within which said switch upper plate and said switch lower plate are disposed, a plurality of actuating members extending externally of said case for effecting deformation of said projections, one of said actuating members being arranged to move generally parallel to said switch upper plate.

4,435,797

OPTICAL MEMORY SYSTEM HAVING TRACK FOLLOWING AND SEEKING CAPABILITIES

Der-Chang Hsieh, Thousand Oaks, and Edward V. LaBudde, Newbury Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 17, 1982, Ser. No. 349,535
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—32 **11 Claims**

1. In a high density storage system including a recording medium having a large plurality of closely spaced tracks, the combination comprising:

means including a radiation beam for reading data recorded in a track;

means providing for relative movement of said radiation beam along said track;

means for deriving a track following signal indicative of the deviation of said radiation beam from a track being followed;

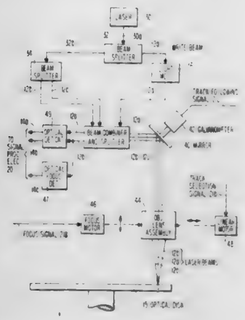
first position control means coupled to said track following signal for moving said radiation beam to provide track following operation such that said radiation beam follows said track;

detecting means for detecting the movement of said first

position control means during said track following operation;

second position control means coupled to said detecting means and operating concurrently with said first position control means during said track following operation, said second position control means being responsive to said detecting means for providing movement of said first position control means so as to reduce the movement required thereby for maintaining said radiation beam following said track; and

track seeking control means for causing movement of said beam from a current track being followed to a new track, said track seeking control means including short seek control means and long seek control means, said short



seek control means being operative to control movement of said beam when the number of tracks to be moved is equal to or less than a predetermined value and said long seek control means being operative to control movement of said beam when the number of tracks to be moved is greater than said predetermined value;

said short seek control means being operative to temporarily disable said track following operation during which time said first position control means is used for performing a short seek operation; and

said long seek control means being operative to temporarily disable said track following operation for a temporary time period during which said second position control means is used for performing a long seek operation.

4,435,798

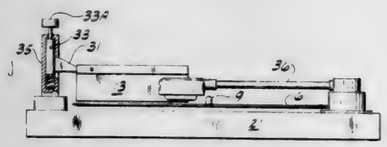
METHOD AND APPARATUS FOR CLEANING DISKS CONTAINING ENCODED INFORMATION

Stanley Taub, 465 W. Broadway, New York, N.Y. 10012

Filed Mar. 24, 1982, Ser. No. 361,140

Int. Cl.³ G11B *3/58*; A47L *13/40*

U.S. Cl. 369—72 **22 Claims**



1. The method of cleaning disks containing encoded information, such as phonorecords and videodiscs, comprising:

mechanically charging in a charging area to a voltage sufficient to remove dust particles from the surface of a disk to be cleaned, an electrostatically activatable elongate body of soft flexible material by pressing it against a surface coated with a pressure sensitive adhesive, and then separating the body from said adhesive coated surface thereby simultaneously cleaning and charging said body, said voltage being substantially uniform along the longitudinal axis of the body, the body being capable of retaining a voltage of said level at least long enough to permit passing said body over one entire side of the disk before recharging;

moving said body from the charging area to the surface of the disk to be cleaned; and

passing the body over at least a portion of the surface of the disk to be cleaned to remove dust particles therefrom.

4,435,799

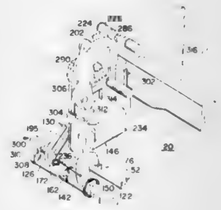
DISC RECORD PLAYER HAVING SHUTOFF SWITCH ACTUATING APPARATUS

Thomas F. Kirschner, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,463

Int. Cl.³ G11B *19/10*, *17/00*, *1/00*

U.S. Cl. 369—77.2 **5 Claims**



1. In a record player for use with a record enclosed in a protective caddy; said caddy consisting of a record retaining spine removably located within an outer sleeve; said retaining spine having an opening in which said record is received forming a record/spine assembly; said player having an input slot near the front end thereof through which said caddy is inserted to load a record therein; said player having a record extraction mechanism for removing said record/spine assembly from said sleeve and retaining it in said player on a set of front and rear receiving pads when said sleeve is extracted from said player after the insertion of a full caddy therein; said player including a turntable for rotatably supporting a retained record during playback; an empty sleeve being reinserted into said player to recapture said record/spine assembly; a shutoff switch actuating apparatus comprising:

a shutoff switch;

a cam member movably mounted in said player for motion between a first location and a second location;

means coupled to said shutoff switch for driving said cam member between said first location and said second location;

a shutoff switch actuating member movably mounted in said player for motion between a first position and a second position, respectively, in response to the absence of and the presence of a record/spine assembly in said player;

the location of said actuating member being such that said actuating member is disposed in and out of the path of a portion arranged on said cam member when said actuating member respectively occupies said first position and said second position during said motion of said cam member between said locations; and

said portion on said cam member engaging and deflecting said actuating member to activate said shutoff switch to turn off said cam member driving means when said actuating member is occupying said first position in response to the absence of said record/spine assembly in said player during said motion of said cam member away from said first location.

4,435,800

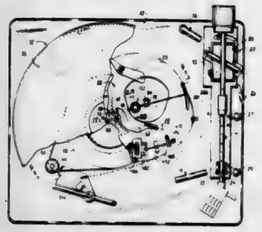
AUTOMATIC RECORD PLAYER

James T. Dennis, P.O. Box 15100, Oklahoma City, Okla. 73155, and George Kolomayets, Chicago, Ill., assignors to James T. Dennis, Oklahoma City, Okla.

Division of Ser. No. 211,837, Dec. 1, 1980, Pat. No. 4,352,177, Division of Ser. No. 9,254, Feb. 5, 1979, Pat. No. 4,291,886, which is a continuation of Ser. No. 813,225, Jul. 5, 1977, abandoned. This application May 12, 1982, Ser. No. 377,150

Int. Cl.³ G11B *17/08*

U.S. Cl. 369—225 **11 Claims**



1. In an automatic record player, the combination of, a turntable, a tone arm, means for mounting said tone arm for rotation about a fixed point beyond said turntable, a main cycling gear, cam means carried by said gear, means for rotating said gear one revolution during an automatic cycle, a rest post for said tone arm, tone arm retaining means positioned to be engaged by said tone arm, means controlled by movement of said gear during the first half of an automatic cycle for moving said tone arm outwardly into engagement with said rest post, means controlled by movement of said gear during the last half of an automatic cycle for moving said tone arm inwardly to a point over the lead-in groove of a record positioned on said turntable, means responsive to movement of said cam means during an automatic cycle for raising and lowering said tone arm, and means operable independently of said cam means during an automatic shutoff cycle for lowering said tone arm into engagement with said tone arm retaining means while said tone arm is in engagement with said rest post, said tone arm retaining means being effective to restrain said tone arm from inward movement during the remaining portion of said automatic shutoff cycle.

4,435,801

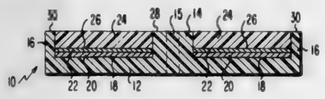
INFORMATION RECORD WITH A THICK OVERCOAT

Leonard J. Levin, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 108,030, Dec. 28, 1979, Pat. No. 4,340,959. This application Mar. 31, 1982, Ser. No. 363,790.

Int. Cl.³ G11B *7/24*

U.S. Cl. 369—275 **8 Claims**



1. In an information record, having an information track therein, for use in an optical recording and readout system employing a light beam of a certain wavelength which comprises:

a substrate having a major surface;

a light reflective layer, which reflects a substantial portion of light incident thereon at said wavelength, overlying at least a portion of said major surface;

a light absorptive layer, which absorbs light at said wavelength, overlying said light reflective layer;

an overcoat layer, which is substantially transmissive of light at said wavelength, overlying said light absorptive layer;

wherein said information track comprises a sequence of openings in said absorptive layer with variations in either or both the length of the openings along the track and the spacing between successive openings being representative of the recorded information;

the improvement which comprises a substrate having a major surface which has a center portion and a portion extending about said substrate periphery raised a distance above said major surface,

wherein said light reflective layer, and said light absorptive layer overlie at least a portion of the major surface which is not raised and said overcoat layer overlies said major surface which is not raised.

4,435,802

SYNTHETIC RESIN MATERIAL, PARTICULARLY SURFACE MATERIAL FOR PHONOGRAPH RECORDS WITH A PHOTOGRAPH OR PICTURE

Masahisa Sakamoto, 1-1-7, Nijo-cho, Nara-shi, Nara; Yoshio Tamura, 1370, Ohsawa, Mutaka-shi, Tokyo, and Tadashi Sakamoto, 1-1-3, Saidaiji-Nogami, Nara-shi, Nara, all of Japan, assignors to Masahisa Sakamoto, Nara; Yoshio Tamura, Tokyo; Tadashi Sakamoto, Nara and Hiroji Kawamura, Shizuoka, all of, Japan

Filed Sep. 2, 1981, Ser. No. 298,772

Claims priority, application Japan, Feb. 17, 1981, 56-22464

Int. Cl.³ C08J *3/12*

U.S. Cl. 369—286 **2 Claims**

1. A process for preparing a non-recorded phonograph record disc, comprising:

subjecting a copolymeric vinyl chloride powder incorporated with a small amount of a stabilizer to a hot blending treatment;

melt-kneading the product under heating;

cooling the same to ambient temperature to form a mass;

granulating the mass;

freezing the resulting granules;

grinding the frozen granules into powders;

applying said powders to a core sheet having a photograph or picture thereon, by means of an adhesive; and

pressing the resin material under heating to form a transparent surface film of a uniform thickness.

4,435,803

ANALOG SUBSCRIBER/TRUNK MODULE WITH SHARED RINGING SOURCE AND RING-TRIP

Santanu Das, Huntington; Ramon C. W. Chea, Jr., Monroe, and Russ C. Casterline, Trumbul, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 135,756, Mar. 31, 1980, abandoned. This application Nov. 18, 1981, Ser. No. 322,606

Int. Cl.³ H04J *3/12*; H04M *19/02*; H04Q *1/22*

U.S. Cl. 370—16 **21 Claims**

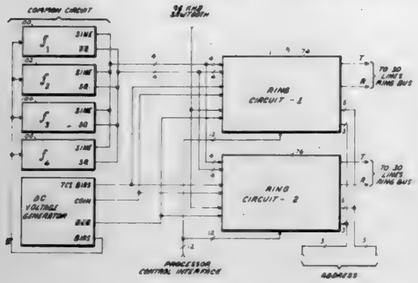
1. A telephone signaling system comprising:

means for providing line termination for a plurality of analog telephone subscriber lines or trunks carrying bidirectional analog communication signals, said means including multiplex means for digitally multiplexing analog information from said analog lines or trunks into multi-channel frames of time division multiplexed data on digital transmission links;

digital signal processing means for deriving ringing control signals;

a source of ringing signals including a plurality of different frequency generators, selected in accordance with said ringing control signals for application to one or more of said plurality of subscriber lines to provide multifrequency ringing, said ringing signals having an active and a silent period during each ringing cycle;

shared ring-trip circuit means coupled to said line termination means for sensing an OFF-HOOK condition during the active period of the ringing interval providing shared ringing for a plurality of said lines or trunks and that plural lines or trunks can be rung simultaneously during the active period of a ringing cycle by coupling said selected



ringing signals to said analog lines or trunks in response to said ringing control signals; and

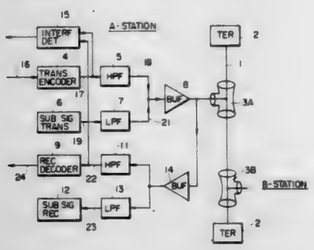
logic means responsive to said control signals for enabling said ringing signals to be coupled from said source of ringing signals to selected ones of said plurality of subscriber lines or trunks to provide immediate ringing to said selected lines or trunks.

4,435,804

SUB-SIGNAL TRANSMITTING SYSTEM

Yoichi Tan, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1982, Ser. No. 357,449
Claims priority, application Japan, Mar. 13, 1981, 56-35243
Int. Cl.³ H04J *1/14*
U.S. Cl. 370—69.1 **7 Claims**



1. A data transmission system wherein data is transmitted in packet form between multiple stations, comprising:

main signal transmitting means for a main signal to be transmitted in the form of a packet, said main signal being directed along a transmission path including an encoder, said encoder converting said main signal into a transmission waveform having a power spectrum with significantly attenuated low frequency components;

sub-signal transmitting means for a sub-signal to be transmitted, said sub-signal being independent of said main signal and being in the low frequency region of said encoder;

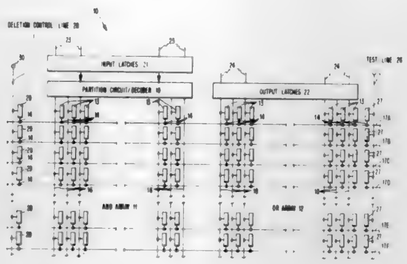
means for superimposing said main signal and sub-signal and transmitting the combined signals.

4,435,805

TESTING OF LOGIC ARRAYS

John C. Hsieh, and Wei-Wha Wu, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,435
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—25 **8 Claims**



1. A programmable logic array comprising:

a plurality of input columns for accepting digital input signals;

a plurality of output columns for providing digital output signals which are a predetermined logical function of said input signals;

a plurality of rows intersecting said input columns and said output columns;

a matrix of logic performing elements located at the intersection of at least some of said input and output columns and said rows for generating said predetermined logical function;

a deletion control line intersecting said rows;

means for connecting said deletion control line to selected rows to thereby prevent the logic performing elements connected to said selected rows from contributing to said predetermined logical function upon activation of the logic performing elements connected to said selected rows by an appropriate digital input signal at said input columns, and thereby permit testing of a row which is not connected to said deletion control line without interference from said selected rows; and

means for disabling said deletion control line to thereby permit the logic performing elements connected to said selected rows to contribute to said predetermined logical function, notwithstanding the connection of said selected rows to said deletion control line;

whereby the proper operation of the logic performing elements in a row which is not connected to said deletion control line may be verified without interference from the logic performing elements connected to said selected rows.

4,435,806

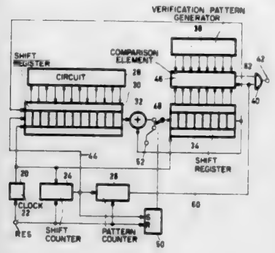
DEVICE FOR TESTING A CIRCUIT COMPRISING SEQUENTIAL AND COMBINATORIAL LOGIC ELEMENTS

Marinus T. M. Segers; Cornelis Niessen, and Krijn Kuiper, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,625
Claims priority, application Netherlands, Jul. 21, 1980, 8004176
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—25 **4 Claims**

1. A digital signal processing device comprising a plurality of binary storage elements provided with control means to constitute a first shift register; said shift register having a first series input for receiving a test pattern, a first parallel output

connected to signal processing elements in the device for presenting thereto said test pattern, a first parallel input connected to said signal processing elements for receiving therefrom a result pattern, and a first series output for outputting said result pattern; said digital signal processing device comprising a second shift register, said second shift register having a second serial output feeding said first serial input and feed-



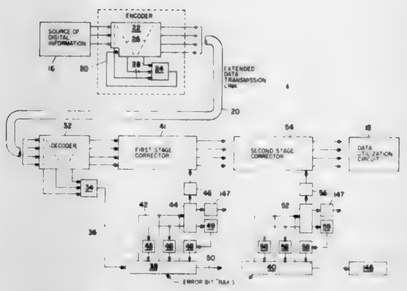
back means; said feedback means comprising a retrocoupled connection for effecting an EXCLUSIVE-Or-function with at least one stage input of said second shift register; said second shift register having a verification output for feeding a verification means; and wherein said first and second shift registers have initializing means for receiving an initial signal pattern before the start of a test.

4,435,807

ORCHARD ERROR CORRECTION SYSTEM

Edward W. Scott, 1843 Lake St., Glendale, Calif. 91201, and Daniel B. Goetschel, 2106 Massachusetts Ave., #3C, Troy, N.Y. 12180

Continuation-in-part of Ser. No. 163,322, Jun. 26, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,109
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—50 **14 Claims**



1. A system for the transmission or processing of digital information with the correction of errors comprising:

a source of digital information;

a digital data handling system subject to the introduction of errors into the transmitted data;

means for arranging the information from said source of digital information in a series of parallel words;

means for forming one or more parity correction bits, associated with each word, with each correction bit being chosen to make the entire sum of the bits along at least two different vectors through the digital information, either odd or even, with every data bit being included in at least two such vectors;

means for transmitting the digital information including the correction bits over the data handling system, wherein occasional bits are reversed, thereby introducing errors into the digital information;

means for subsequently forming the sum along said vectors through the information and said parity correction bits and for forming an error flag bit pattern identifying vector sums including parity correction bits which do not conform to the established parity;

first error correction circuit means for correcting single errors within the digital information and correction bit pattern covered by said vectors, in accordance with said error flag bit pattern;

second error correction circuit means for correcting multiple errors within the digital information and correction bit pattern covered by said vectors in accordance with error flag bit patterns representing such multiple errors; and

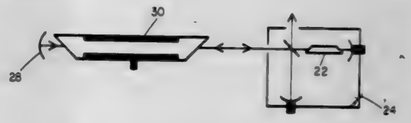
a data utilization circuit connected to receive and utilize the corrected digital information.

4,435,808

PRODUCTION OF RADIATION AT FREQUENCIES OF PRESELECTED ABSORBING RESONANCES AND METHODS USING SAME

Ali Javan, 12 Hawthorn St., Cambridge, Mass. 02139

Filed Jan. 22, 1981, Ser. No. 227,156
Int. Cl.³ H01S *3/113*
U.S. Cl. 372—11 **14 Claims**



1. An apparatus for producing radiation at a narrow frequency corresponding to a prescribed absorbing resonance, comprising,

a laser including a resonator cavity, an active laser medium within said cavity, laser pumping means and means to extract energy from said cavity,

an optical assembly having interfering optical paths, said assembly including beam splitting and recombining means for splitting a beam and for subsequently recombining the split beam thereby to provide transmitted and reflected rays, and

an absorption medium located in one of said interfering optical paths,

molecules of said absorption medium having at least one absorption resonance with a characteristically narrow absorption profile in a region of desired laser oscillation,

said optical paths being of substantially equal length whereby near white light interference occurs except for radiation in another of said optical paths lying at frequencies within said narrow profile of said absorption resonance because of the presence of said absorption medium,

said laser together with said optical assembly being arranged to introduce said radiation within said narrow profile into said resonator cavity of said laser during initial oscillation build up time and to cause laser oscillation to occur in a mode lying within said narrow profile while modes lying outside of said profile are inhibited.

4,435,809

PASSIVELY MODE LOCKED LASER HAVING A SATURABLE ABSORBER

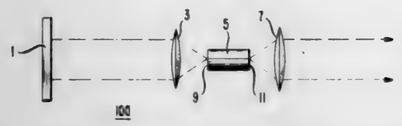
Won-Tien Tsang, New Providence, and Jan P. van der Ziel, Short Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 14, 1981, Ser. No. 302,028
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—49 **9 Claims**

1. A semiconductor laser having an active layer, first and

second cladding layers on opposed surfaces of said active layer,

characterized in that



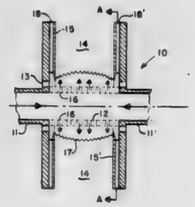
said active layer further comprises a saturable absorption region, said saturable absorber region being a proton bombarded region.

4,435,810

SELF-SUPPORTING LASER DIFFUSER FLOW ENERGIZER

Siegfried H. Hasinger, Dayton, Ohio; James M. Howard, Wales, Wis., and David K. Miller, Camp Springs, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 10, 1981, Ser. No. 300,763
Int. Cl.³ H01S 3/22
U.S. Cl. 372—58 **4 Claims**



1. In a radial flow gas laser having means defining a laser cavity and means adjacent said cavity for supplying gaseous laser medium to said cavity at supersonic velocity directed radially outward and transverse of said cavity and means defining a diffuser chamber adjacent said laser cavity for diffusing said supersonic flow to an exhaust, said chamber defining means including a pair of spaced end walls defining a space therebetween for confining said radially outward flow therebetween, an improvement, comprising, means, adjacent each said end wall, defining a plurality of radially outwardly directed channels through which said cavity communicates directly with said exhaust.

4,435,811

CURRENT DISTRIBUTION FOR GLASS-MELTING FURNACES

Eugene C. Varrasso, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 26, 1982, Ser. No. 342,869
Int. Cl.³ C03B 5/027
U.S. Cl. 373—39 **17 Claims**

1. An electrical furnace comprising:

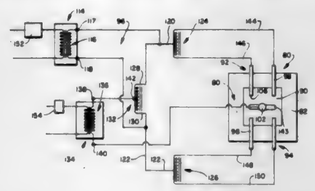
(a) a chamber adapted for holding a body of molten glass, said chamber having a bottom and a plurality of sides which contain said molten glass, and an opening in the top for supplying batch thereto to be melted into said glass;

(b) a first array of n spaced apart electrodes, wherein n is an integer greater than two, disposed within said chamber in electrical contact with said glass;

(c) a second array of n spaced apart electrodes disposed within said chamber in electrical contact with said glass, said second array being opposed to said first array,

(d) first means for supplying electrical current to said first and second arrays of electrodes to cause electrical current to flow between said arrays of electrodes through said glass to cause heating thereof;

(e) means for causing the flow of a substantially equal amount of current within each of said n electrodes within each array, said means comprising a first array of n−1 center tapped magnetic inductors, wherein n is an integer greater than two, each having two ends, the ends of each of the inductors within the first array being coupled to a different one of said n electrodes directly or indirectly through cascaded inductors within said first array of electrodes and the center tap of each inductor within the first array of inductors being coupled to a first output of said means for supplying electrical current and a second array of n−1 center tapped magnetic inductors, each having two ends, the ends of each of the inductors within the second array being coupled to a different one of said n electrodes directly or indirectly through cascaded induc-



tors within the second array of inductors and the center tap of each inductor within the second array of inductors being coupled to a second output of said means for applying electrical current;

(f) a current splitting inductor having a center tap and two ends, the ends of the current splitting inductor being respectively coupled to the first and second arrays of n−1 center tapped inductors;

(g) an arc electrode disposed above said glass for the purpose of causing electrical current to flow through the batch for melting the batch and heating the glass;

(h) second means for supplying electrical current to cause current to flow between said arc electrode and said arrays of electrodes through said glass, the center tap of said current splitting inductor being coupled to said second means for supplying electrical current; and

i means disposed in the bottom of said chamber for forming fibers from said molten glass.

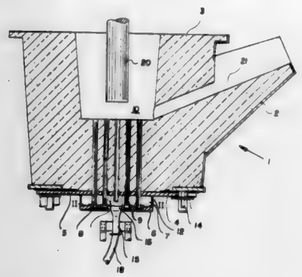
4,435,812

ELECTRIC FURNACE CONSTRUCTION

Heinz Guido, Duisburg, and Hubert Wolfgarten, Oberhausen, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 9, 1982, Ser. No. 347,329
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106741
Int. Cl.³ F27D 1/00
U.S. Cl. 373—72 **7 Claims**

1. An electric arc furnace comprising a housing, refractory within said housing defining a furnace hearth in said housing, a plurality of electrodes extending through said refractory into said hearth and having ends extending out of said housing, plate means including a plate spaced away from said housing and connected to the ends of said electrodes and defining a cooling space outside of said housing surrounding said electrodes, means for circulating a cooling fluid into said space to cool the electrodes, and a plurality of air baffles disposed in



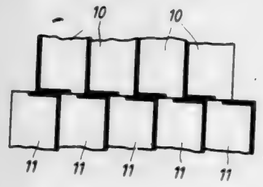
said cooling space for the directing air in a plurality of paths over said electrodes.

4,435,813

DC ARC FURNACE COMPONENT

Sven-Einar Stenkvist, Västerås, Sweden, assignor to ASEA Aktieboiag, Västerås, Sweden

Filed May 20, 1982, Ser. No. 380,442
Claims priority, application Sweden, May 25, 1981, 8103268
Int. Cl.³ F27D 1/08
U.S. Cl. 373—72 **4 Claims**



1. A DC arc furnace hearth at least partly comprising a brickwork formed by partially metal-cased bricks each having a metal casing covering only a part of the brick's surface, the surface having a recess formed in it and in which the casing is positioned flush with the surface so as to leave the balance of the brick's surface uncased, the bricks being laid so that throughout the brickwork the metal casings intercontact so as to cause the brickwork to be electrically conductive from its top to its bottom, and so that the bricks' uncased surfaces also intercontact so as to support the bricks in their layed positions in the event the metal casings become molten.

4,435,814

ELECTRIC FURNACE HAVING LIQUID COOLED VESSEL WALLS

Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 24, 1983, Ser. No. 460,302
Claims priority, application Switzerland, Jan. 29, 1982, 552/82
Int. Cl.³ F27D 1/12
U.S. Cl. 373—76 **9 Claims**

1. An electric furnace comprising:

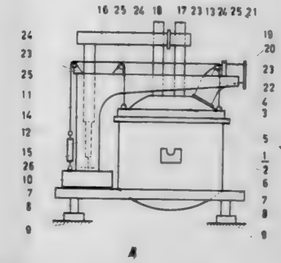
a furnace vessel having wall parts;

liquid cooling means for cooling said wall parts, comprising,

cooling conduits extending substantially vertically in said wall parts, said cooling conduits connected in series in groups and having a cooling liquid flowing therein,

said cooling conduits arranged in two layers including an inner layer facing said furnace vessel and an outer layer disposed behind said inner layer relative to said vessel,

said conduits of said inner layer having U-shaped upper and lower ends to which the conduits of the outer layer are connected,



a distributing chamber communicating with the conduits of said outer layer and including at least one bypass opening for at least partially bypassing cooling fluid from at least one outer layer conduit to another outer layer conduit; and

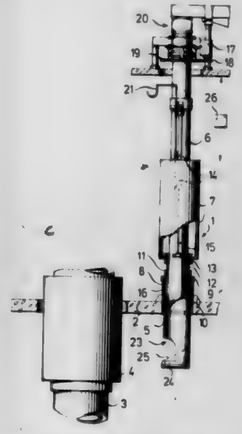
said conduits of said inner layer embedded in and supported by a fireproof construction material.

4,435,815

METHOD AND APPARATUS FOR CHARGING A FURNACE

Knut Evensen, Oslo, Norway, assignor to Elkem a/s, Oslo, Norway

Filed Apr. 14, 1982, Ser. No. 368,396
Claims priority, application Norway, Apr. 27, 1981, 811425
Int. Cl.³ F27D 3/10
U.S. Cl. 373—81 **13 Claims**



11. A method for batchwise charging a furnace pot through a cover comprising the steps of:

(a) accumulating charge material in a charging tube having an opening therein, said charging tube being withdrawn from said furnace pot for receiving said charge material, said opening being sealed when said charge tube is in said withdrawn position;

(b) lowering at least a lower section of the charging tube through the cover and into the furnace pot, said opening being unsealed by the lowering of said tube thereby allow-

ing the accumulated material to flow into the furnace pot through said opening; and

(c) drawing said charge tube upwardly to its withdrawn position for receiving a subsequent batch of charge material.

4,435,816

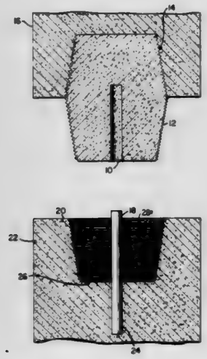
METHOD AND ARTICLE FOR PROTECTING TAPERED THREADED ELECTRODE JOINTS BY USE OF AN ALIGNMENT MECHANISM

Herman M. Belz, and Harry C. Stieber, both of Berea, Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1982, Ser. No. 393,989

Int. Cl.³ H05B 7/14

U.S. Cl. 373—91 **13 Claims**



1. A method for joining two electrode sections to form or extend a carbon or graphite electrode column wherein each of said electrode sections is provided with a mating male nipple at one end and a female recess at the end opposite said nipple, which method comprises providing one of said electrode sections with a consumable centering pin axially disposed along the center line of said electrode section and providing the second electrode section which is to be joined to the first electrode section in a male to female engagement with a hole axially disposed along the center line of said second electrode section with the overall length of the centering pin being equal to or less than the depth of the hole and which hole is adapted to engage said centering pin when said electrode sections which are to be threaded together are brought together but prior to actual engagement of said threaded portions of said electrode sections.

4,435,817

CONTACT ASSEMBLY

Harald Krogsrud, Gjettum, Norway, assignor to Elkem a/s, Oslo, Norway

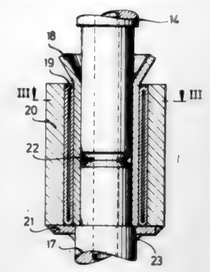
Filed Jul. 9, 1981, Ser. No. 281,689

Claims priority, application Norway, Jul. 25, 1980, 802266

Int. Cl.³ H05B 7/11

U.S. Cl. 373—103 **8 Claims**

1. In combination with an electrode holder assembly in which contact clamps are suspended by electrically-conducting pipes which are also adapted for transport of fluid therethrough; connection means for joining corresponding ends of said electrically-conducting pipes for continuity of electrical current conduction and fluid transport therethrough, said connection means comprising a sleeve of electrically-conductive material, said sleeve being adapted for receiving at each end thereof end portions of pipes to be joined; a hydraulically



activated cylindrical hose surrounding said sleeve; and an external casing disposed around said cylindrical hose.

4,435,818

METHOD AND APPARATUS FOR MONITORING THE MELTING PROCESS IN VACUUM ARC FURNACES

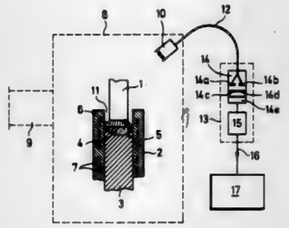
Otto Stenzel, Grundau, and Pierre Flecker, Alzenau, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,983

Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120856

Int. Cl.³ H05B 7/144

U.S. Cl. 373—104 **10 Claims**



4. In a vacuum arc furnace having a vacuum housing, a crucible and an electrode in the vacuum housing, and means producing at least one arc between the electrode and a melt of the electrode material in the crucible for melting the electrode into melt, apparatus for monitoring radiation from the arc for melting the electrode to prevent breaking the crucible with the arc if it flashes over from the melt to the crucible, comprising:

analyzing means detecting at least one line in the spectrum of the radiation from the arc which is characteristic of the material of the crucible and not the melt for indicating vaporization of the crucible from the arc flashing over to the crucible; and

means responsive to the indicated vaporization of the crucible for quenching the arc to the crucible.

4,435,819

ELECTRICAL RESISTANCE FURNACES

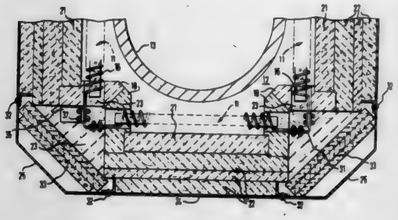
Alan W. Plume, Weybridge, England, assignor to A. W. Plume Limited, England

Filed Mar. 18, 1982, Ser. No. 359,580

Claims priority, application United Kingdom, Mar. 18, 1981, 8108444

Int. Cl.³ H05B 3/06

U.S. Cl. 373—119 **3 Claims**



1. An electrical resistance furnace comprising:

(a) an outer casing having four removable corner covers,

(b) corner fire-brick supports located in the casing adjacent its corners and having support apertures,

(c) a plurality of electrical resistance heating elements, each comprising a conductor wound upon a ceramic tube and having plates welded to both ends of the conductor,

(d) the heating elements extending horizontally between adjacent corner supports with the ends of the tubes supported in said support apertures in the corner supports and the plates located outside the corner supports,

(e) electrical connections between the plates,

(f) a crucible surrounded on all four sides by the heating elements,

(g) heat insulation located between the outer casing and the heating elements so as to surround the heating elements,

(h) said heat insulation having removable corner portions, and

(i) the arrangement being such that by removal of the appropriate corner covers of the casing and the corner portions of the insulation access may be gained from the exterior of the furnace to the said electrical connections and to both ends of any element to permit removal of the element.

4,435,820

CHANNEL INDUCTION FURNACES

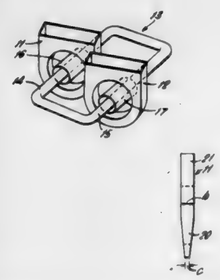
Christopher J. Edgerley, Northwich, England, assignor to The Electricity Council, London, England

Filed Sep. 21, 1981, Ser. No. 304,408

Claims priority, application United Kingdom, Sep. 24, 1980, 8030813

Int. Cl.³ H05B 5/02

U.S. Cl. 373—161 **16 Claims**



1. A channel induction furnace having a bath for containing molten metal with a channel forming a loop extending downwardly from the bath, a ferromagnetic core forming a closed magnetic circuit linked with the channel and an alternating-current energized coil on the core, wherein the channel is shaped so as to extend in an arcuate path around the coil and core at least in the region below the plane of the axis of the core, the channel having a radial width, measured outwardly from the axis of the core, which is several times the penetration depth in the molten metal for a current of the energizing frequency and wherein the width of the channel measured parallel to the axis of the core is tapered in the region where the channel is below the plane of the axis of the core, the tapering being such that the channel is wider near the core and narrower away from the core.

4,435,821

RECEIVER IN A FREQUENCY HOPPING COMMUNICATION SYSTEM

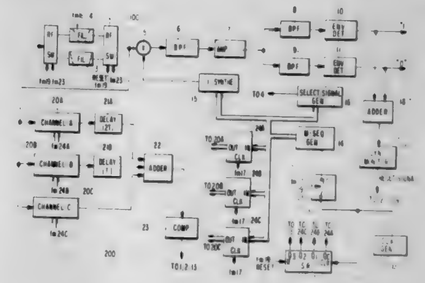
Satoaki Ito, and Hiroshi Harada, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,536

Claims priority, application Japan, Mar. 24, 1981, 56-42952; Mar. 24, 1981, 56-42953; Dec. 15, 1981, 56-202160; Dec. 15, 1981, 56-202161

Int. Cl.³ H04K 1/00; H04L 9/00

U.S. Cl. 375—1 **13 Claims**



1. A receiver in a frequency hopping communication system comprising:

filter means having a broad band-pass filter with a band characteristic including a spread spectrum bandwidth, a narrow band-pass filter having selectable band characteristics including bandwidths into which said spread spectrum bandwidth is divided, a band characteristic of said narrow band-pass filter being selected in response to a selection signal applied thereto, and means for making switch-over from said broad band-pass filter to said narrow band-pass filter in response to a synchronization detected signal applied thereto;

a code generator for generating code patterns to determine a time-sequential pattern of predetermined hopping frequencies;

a clock source for generating clock pulses for driving said code generator;

a frequency synthesizer for producing a signal of a frequency determined by an output signal from said code generator;

synchronization acquisition means for synchronizing the output signal from said frequency synthesizer and the output signal from said filter means to produce said synchronization detected signal when synchronization is set up;

selection signal generating means for generating said selection signal in response to the output signal from said code generator;

correlating means for correlating the output signals from

said filter means and said frequency synthesizer to remove the modulation of said frequency hopping; and

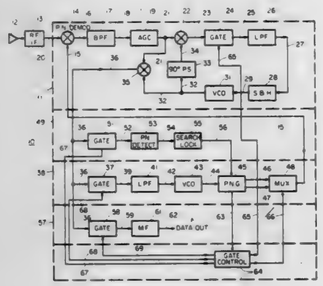
demodulating means for extracting an information signal from the output of said correlating means.

4,435,822

COHERENT SPREAD SPECTRUM RECEIVING APPARATUS

Billie M. Spencer; William S. Cady, both of Bountiful, and John W. Zscheile, Jr., Farmington, all of Utah, assignors to Sperry Corporation, New York, N.Y.

Filed May 19, 1982, Ser. No. 379,595
Int. Cl.³ H04B *12/00*
U.S. Cl. 375—1 **9 Claims**



1. A coherent direct sequence spread spectrum receiver of the type adapted to receive a carrier signal that has been modulated by data and a pseudonoise code, comprising:

signal receiving means

carrier tracking loop means connected to said receiver means for coherently tracking the carrier signal,

said carrier tracking loop means comprising a pseudonoise demodulator at the input and a coherent detector at the output,

said pseudonoise demodulator having an input connected to said signal receiving means and having an output coupled to said coherent detector of said carrier tracking loop,

an output line coupled to said coherent detector for providing thereon detected pseudonoise code signals and data signals,

a code tracking branch coupled to said output line for coherently tracking the received pseudonoise code and for generating a clock signal and a replica signal of said received pseudonoise code,

a continuous running pseudonoise generator in said code tracking branch for generating said replica signals coupled to said pseudonoise demodulator,

first gating means in said carrier tracking loop means,

second gating means in said code tracking branch, and

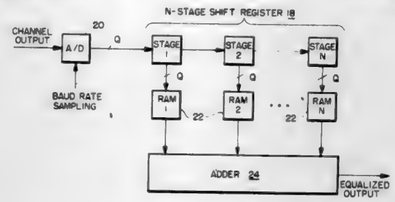
gate control means coupled to said code tracking branch for enabling said first gating means when said carrier tracking loop is tracking said carrier signal and for enabling said second gating means when said pseudonoise generator is tracking said received pseudonoise generated code on said output line.

4,435,823

ADAPTIVE EQUALIZER CAPABLE OF LINEAR AND NONLINEAR WEIGHTING

Robert C. Davis, Indialantic, and Gautam H. Thaker, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 29, 1980, Ser. No. 221,020
Int. Cl.³ H04B *3/18*
U.S. Cl. 375—14 **23 Claims**



1. An equalizer for reducing intersymbol interference in a signal received over a transmission channel comprising:

delay means for receiving said transmission channel signal and providing sequential Q-bit samples of said received transmission channel signal;

weighting means comprising a memory coupled to receive the Q-bit samples from said delay means, said memory having stored therein adaptive equalizing weighting values which are accessed in accordance with the Q-bit samples to provide weighted memory output words in response to the received Q-bit sample; and

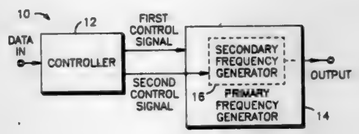
combining means for combining said weighted memory output words accessed from said memory, so as to equalize the received transmission channel signal.

4,435,824

COMMUNICATION SYSTEM HAVING IMPROVED DIFFERENTIAL PHASE SHIFT KEYING MODULATION

Brian W. Dellande, Austin, and Henry Wurzburg, Round Rock, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1982, Ser. No. 380,322
Int. Cl.³ H04L *27/10, 27/18*
U.S. Cl. 375—46 **9 Claims**



1. A communication system for generating an output signal of a selected primary frequency and having a plurality of bursts of digital data bits serially modulated thereon at said primary frequency during respective predetermined bit periods in order to provide differential phase encoding of an input signal while frequency modulating the output signal, comprising:

first control means for receiving the serial digital data bits and providing a start control signal and for providing a stop control signal in response to the failure to receive a digital data bit within the first half of any of the bit periods;

second control means for providing, during a control period corresponding to a respective one of said bit periods but preceding said one bit period by at least one-half said one bit period, a data control signal for each control period in response to each received digital datum having a first predetermined value or no data control signal in response to each received digital datum having a second predetermined value; and

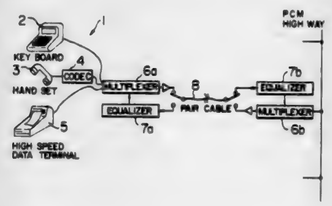
frequency generator means coupled to the control means, for generating a half cycle of the output signal having the same frequency as a last half bit of an immediately preceding burst of data bits in response to the start control signal, for generating a full cycle of said output signal at said primary frequency and in phase with the preceding half cycle of said output signal in response to the presence of each of said data control signals, for generating a half cycle of said output signal at a secondary frequency one-half said primary frequency and in phase with the preceding half cycle of said output signal in response to the absence of a data control signal during a control period, and for generating a stop control signal in response to the failure to receive a digital datum within a first half of any of the bit periods, wherein the output signal has a zero direct current component bit by bit.

4,435,825

CLOCK SIGNAL EXTRACTING CIRCUIT

Keiji Tomooka, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,379
Claims priority, application Japan, Feb. 27, 1981, 56-26956
Int. Cl.³ H04L *7/04*
U.S. Cl. 375—113 **6 Claims**



1. A clock signal extracting circuit comprising:

means for sampling and holding an input data signal in accordance with a predetermined sampling frequency to produce a train of sampled values;

means for supplying a signal at said sampling frequency to said sampling and holding means to control the timing of said sampling and holding operation;

means for subjecting the train of sampled values from said sampling and holding means to equalization and amplification;

means connected to receive the equalized and amplified train of sampled values from said equalization and amplification means for extracting and reproducing a clock signal therefrom;

means connected between said equalization and amplification means and said extracting and reproducing means for detecting a difference in voltage amplitude between a pair of those values of the equalized and amplified train of sampled values which appear immediately before and after the time when the sampled-value train has a peak value;

means for controlling said sampling frequency supplied from said sampling frequency supplying means to said sampling and holding means in accordance with the output of said difference voltage detecting means so that said difference voltage is made zero, thereby providing a clock signal frequency-synchronized with said input data signal as said clock signal from said extracting and reproducing means; and

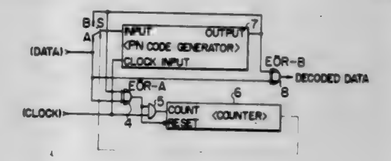
means connected to receive an output of said sampling frequency supplying means varying in accordance with the output of said difference voltage detecting means for determining the phase of said input data signal at which a peak of said input data signal is to appear, said phase determining means including means for applying information of the phase of said peak to said extracting and reproducing means so that said clock signal from said extracting and reproducing means is produced as a signal phase-synchronized with the peak of said input data signal.

4,435,826

FRAME SYNCHRONIZER

Yasuo Matsui, Yokosuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,509
Claims priority, application Japan, Sep. 5, 1980, 55-122257
Int. Cl.³ H04L *7/08*
U.S. Cl. 375—115 **6 Claims**



1. A frame synchronizer comprising:

a PN code generator having a feedback path for circulating the output of the generator therethrough to thereby generate a PN code cyclically in response to a data input to the frame synchronizer, said data input containing a PN code, said feedback path including switch means for enabling said PN code generator to alternately receive said data input and the output of said PN code generator;

a comparator for comparing said data input and said cyclically generated PN code from said PN code generator and generating an equal signal when the PN code in said data input is identical with said cyclically generated PN code;

a counter responsive to the output of said comparator for determining whether the time of continuation of said equal signal is as long as a predetermined time period and for generating a control signal when said equal signal is determined to continue for said predetermined time period, said switch means being responsive to said control signal from said counter for enabling said PN code generator to receive the output thereof for said cyclic generation of the PN code by said PN code generator; and

a coincidence circuit for comparing said data input and the output of said PN code generator and for producing a decoded data when said data input and the output of said PN code generator are coincident with each other.

4,435,827

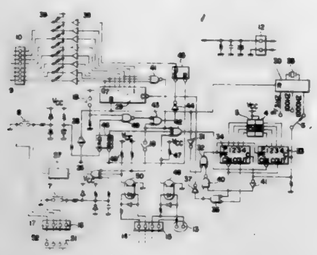
READ CLOCK PULSE CONTROLLER

Yoshikazu Kuze, 31-3, Higashimagome 1-chome, Ohta-ku, Tokyo, Japan (143)

PCT No. PCT/JP79/00277, § 371 Date Jun. 26, 1981, § 102(e) Date Jun. 26, 1981, PCT Pub. No. WO81/01339, PCT Pub. Date May 14, 1981
PCT Filed Oct. 30, 1979, Ser. No. 279,979
Int. Cl.³ H03K *21/30*
U.S. Cl. 377—44 **2 Claims**

1. A read clock pulse controller for a read only sequence controller for a read-only memory comprising: a read clock pulse generating circuit (30); a select switch (6) for selecting the frequency of the read clock pulse; a presettable counter (33, 34) for counting the read clock pulse; a preset code switch (4, 5) for selecting the number of the read clock pulses counted by said presettable counter; a binary counter (29) connected to the output of said presettable counter; said presettable counter increments said binary counter by one whenever the presetted number of read clock pulses have been counted and the output of said binary counter is connected to the address lines of said read-only memory; a start switch (7) to initiate counting by applying a signal to a gate circuit (26); said gate circuit generating a signal to reset said binary counter to the zero state, to

reset said clock pulse generating circuit to the zero state, and to preset the value in said presettable counter; a circuit means connected to an outer abnormality detecting circuit for gener-



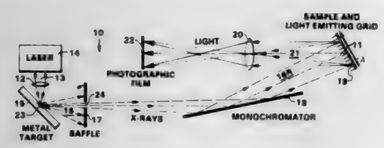
ating a signal for inhibiting the counting operation of said presettable counter when an abnormality is detected by said outer abnormality detecting circuit.

4,435,828

FLUORESCENCE LASER EXAFS

Harold M. Epstein; Robert E. Schwerzel, both of Columbus, and Paul G. Andrus, Powell, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Apr. 14, 1982, Ser. No. 368,256
Int. Cl.³ G01N *23/22*
U.S. Cl. 378—49 **28 Claims**



1. Apparatus for obtaining EXAFS data of a material, comprising:

means for directing radiant energy from a laser onto a target in such manner as to produce X-rays at said target of a selected spectrum and intensity suitable for obtaining a fluorescence EXAFS spectrum of a material;

means for directing said X-rays from the target onto spectral-dispersive means so located as to direct spectrally-resolved X-rays therefrom onto a sample of material;

means for absorbing fluorescence X-rays emitted from said sample of material and for emitting light that is resolved spatially so as to correspond to the wavelength of the spectrally-resolved X-rays striking said sample and whose intensity at any point along the spatial light distribution corresponds to the intensity of said fluorescence X-rays produced by a particular wavelength of said incoming X-rays;

means for directing said emitted light onto recording means so as to obtain a spectrum of the emitted light; and

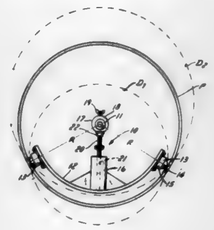
means for obtaining a reference spectrum of said spectrally-resolved X-rays.

4,435,829

APPARATUS FOR RADIOGRAPHIC EXAMINATION OF PIPE WELDS

Dan R. Siler, Clinton, and Harold D. Trimble, Riverdale, both of Utah, assignors to Johnson Service Company, Milwaukee, Wis.

Continuation of Ser. No. 265,419, May 19, 1981, abandoned. This application May 12, 1983, Ser. No. 492,692
Int. Cl.³ B62B *13/16*; G01N *23/02*
U.S. Cl. 378—60 **5 Claims**



1. An apparatus for transporting and locating a probe for examination of a circumferential weld joining two sections of cylindrical pipe comprising:

a. a carriage for supporting the examination probe;

b. a pair of ball transfers attached to the underside and adjacent each lateral edge of the carriage, with the line defined by each pair of ball transfers lying parallel to the pipe centerline, to support the carriage for longitudinal movement along the bottom inside surface of a pipe section;

c. a probe fixture centrally mounted on the carriage and having a probe holder adjustably attached thereto; and,

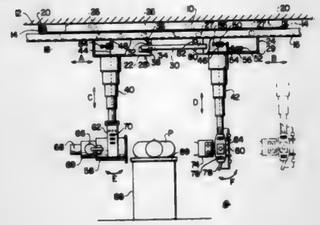
d. probe height adjustment means attached to and extending downwardly from the probe holder into the probe fixture, the height adjustment means being manually operable for vertical movement with respect to the probe fixture for selective positioning in a plane through the pipe centerline equidistant from the ball transfers.

4,435,830

X-RAY APPARATUS

Hirotsugu Suzuki, Ootawara; Sigeru Urata, and Kanichi Okabe, both of Nasu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 20, 1981, Ser. No. 323,499
Claims priority, application Japan, Nov. 21, 1980, 55-164325
Int. Cl.³ A61B *6/02*
U.S. Cl. 378—197 **15 Claims**



1. An X-ray apparatus, comprising:

an X-ray source;

an X-ray imaging device in confronting relation to said X-ray source;

a first longitudinally movable support, said X-ray source being coupled with and supported by said first support;

a second longitudinally movable support, said X-ray imaging device being coupled with and supported by said second support;

a first movable base on which said first support is mounted;

a second movable base independent of said first movable base on which said second support is mounted, each of said first and second movable bases having a mounting base for mounting each of said first and second supports, a plurality of wheels and a guide for moving said mounting base by said wheels; and

a connector releasably interconnecting said supports at a predetermined distance apart for allowing said supports to be operated in unison when interconnected.

4,435,831

METHOD AND APPARATUS FOR TIME DOMAIN COMPRESSION AND SYNTHESIS OF UNVOICED AUDIBLE SIGNALS

Forrest S. Mozer, 38 Somerset Pl., Berkeley, Calif. 94707

Filed Dec. 28, 1981, Ser. No. 335,310
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—30 **12 Claims**



1. A method for synthesizing a unit of time domain information signal substantially lacking periodic characteristics and having a power spectrum substantially invariant over the duration of said unit, said method comprising the steps of:

storing in memory means a representative small segment of said information signal unit; and

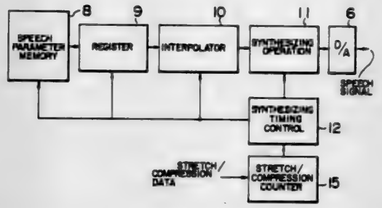
repetitively reproducing at least a portion of said segment a sufficient number of times to reconstruct said information signal unit from said small segment, said reproducing step commencing and terminating with different points in said segment at each repetition thereby to provide a unit substantially free of noticeable periodicity.

4,435,832

SPEECH SYNTHESIZER HAVING SPEECH TIME STRETCH AND COMPRESSION FUNCTIONS

Akihiro Asada; Kazuhiro Umemura; Tadashi Saito, and Tohru Sampei, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,222
Claims priority, application Japan, Oct. 1, 1979, 54-125416
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—34 **14 Claims**



1. A speech synthesizer comprising:

(a) speech parameter providing means for providing n-linear predictive coefficients sampled from segmental waveforms truncated from natural speech at a given time interval, voice/unvoice judging information, pitch information, and volume information;

(b) speech reconstruction means including a speech synthesizing filter whose coefficients change at given intervals on the basis of the linear predictive coefficients to synthesize and provide speech in accordance with the speech parameters delivered from speech parameter providing means;

(c) interpolating means provided between said speech reconstruction means and said speech parameter providing means, for interpolating the linear predictive coefficients inputted at given intervals, at a time interval of at least 10 ms or less and for supplying the interpolated linear predictive coefficients to said speech reconstruction means; and

(d) timing control means for producing a synthesizing timing signal responsive to a signal for setting a speech reproduction speed and supplying the synthesizing timing signal to said speech parameter providing means and said interpolating means for changing the time interval of interpolation of the interpolating means;

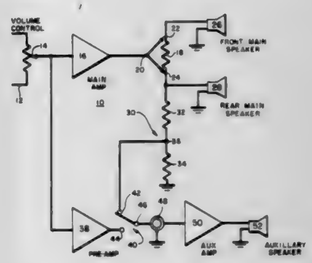
whereby the speech outputting time is stretchable and compressible without changing the pitch information provided by said speech parameter providing means while ensuring reconstruction of a smooth speech.

4,435,833

FADE CONTROL CIRCUIT FOR AUXILIARY AMPLIFIER

Narendra C. Thakkar, Roselle, Ill., assignor to International Jensen Incorporated, Schiller Park, Ill.

Filed Jun. 2, 1982, Ser. No. 384,404
Int. Cl.³ H03G *3/02*
U.S. Cl. 381—109 **9 Claims**



1. In a second reproduction system comprising a signal source, a main amplifier coupled to the signal source, first and second main speakers, an auxiliary amplifier, and an auxiliary speaker coupled to and driven by the auxiliary amplifier, the improvement comprising:

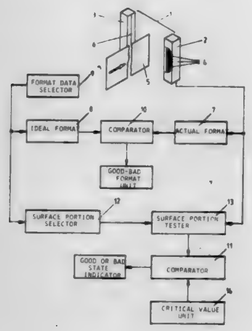
a fader control variable resistor having a first terminal coupled to the main amplifier, a second terminal coupled to the first main speaker, and a third terminal coupled to the second main speaker, said fader control variable resistor comprising means for selectively varying the resistance between the first and second terminals and between the first and third terminals in order to control the power distribution between the first and second main speakers;

a voltage divider coupled to the second terminal of the fader control variable resistor, said voltage divider having an intermediate node coupled to an input terminal of the auxiliary amplifier such that power distribution to the auxiliary speaker is proportional to power distribution to the first main speaker.

4,435,834
METHOD AND MEANS FOR DETERMINING THE STATE AND/OR GENUINENESS OF FLAT ARTICLES

Günter Pauli, Eichenau; Günter Krause, and Erwin Lob, both of Munich, all of Fed. Rep. of Germany, assignors to Gao Gesellschaft für Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 45,802, Jun. 5, 1979, abandoned. This application Apr. 23, 1982, Ser. No. 371,425
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824849
Int. Cl.³ G06K 9/00
U.S. Cl. 382—7 36 Claims



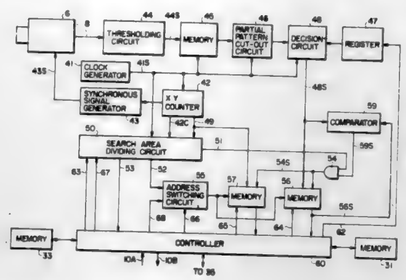
1. Apparatus for determining the characteristics of a generally rectangular bank note or the like having a pair of end edges and a pair of side edges, scanning means including a plurality of sensor means, said scanning means being operable for sensing the characteristics of a bank note at a plurality of points within a segmental surface area thereof arranged in rows parallel to one of said pair of edges and columns parallel to the other of said pair of edges, reference means for establishing threshold signal levels corresponding to thresholds between acceptable and unacceptable characteristics at points within a certain segmental rectangular surface area of the bank note, comparison means for comparing signals produced by said scanning means with signal levels established by said reference means to generate an output signal when an unacceptable bank note is scanned, and means for controlling said reference means and said scanning means to select for scanning a predetermined segmental area of the bank note.

4,435,835
METHOD AND DEVICE FOR DETECTING THE POSITION OF AN OBJECT

Hiroshi Sakow, and Seiji Kashioka, both of Hachiouji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1981, Ser. No. 247,073
Claims priority, application Japan, Mar. 24, 1980, 55-36070
Int. Cl.³ G06K 9/32
U.S. Cl. 382—8 4 Claims

1. A position detecting method for detecting the position of an object by scanning of the object with an image pickup device comprising:
storing in advance of scanning of the object positional information of at least one type of standard pattern which exists in a whole region including all pickup regions scanned by the image pickup device at respective supply deviations of the object, said whole region being composed of a plurality of said pickup regions;
scanning a pickup region by the image pickup device at a supply position of the object;
extracting positional information of the at least one standard pattern from the image obtained by the scanning of said pickup region; and
comparing the positional information extracted from the scanned pickup region with positional information of the whole region stored in advance of the scanning of the object to determine which part of the whole region the

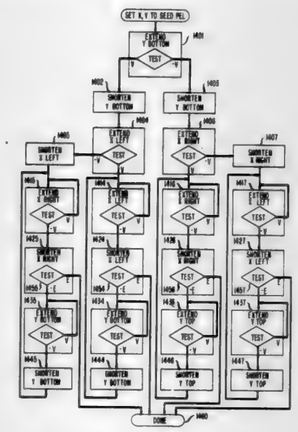


said pickup region lies in and to detect the position of the object from positional relationship of said scanned pickup region within the whole region.

4,435,836
TECHNIQUE FOR EXTRACTING FEATURES FROM IMAGES

Steven M. Rubin, Los Altos, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1981, Ser. No. 311,791
Int. Cl.³ G06K 9/12
U.S. Cl. 382—27 15 Claims

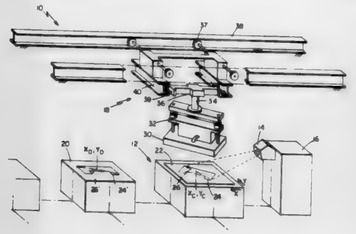


1. A method of representing the features of a portion of a picture by one or more strokes, said picture including a rectilinear array of picture elements, each of said strokes including a contiguous group of picture elements having similar attributes, including the steps of:
(a) hypothesizing the existence of a stroke including a beginning pel and at least one additional pel;
(b) simultaneously testing a group of at least two pels contained in the hypothesized stroke defined in step (a) to generate a success indication if all of the pels in said group possess similar attributes; and
(c) repeating step (a) for other hypothesized strokes.

4,435,837
PATTERN RECOGNITION AND ORIENTATION SYSTEM

Frederick H. Abernathy, Auburndale, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Mar. 5, 1981, Ser. No. 240,878
Int. Cl.³ G06K 9/32
U.S. Cl. 382—41 4 Claims

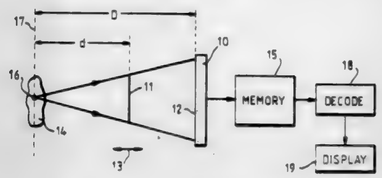


1. A method for recognizing a flat piece of cloth comprising
placing said piece on a viewing surface within a field of interest having perpendicular coordinate axes,
generating image signals corresponding to the existence or nonexistence of said piece in discrete areas of said field, said discrete areas being arranged in rows and columns along said axes,
processing said image signals to obtain observed moment signals representative of the first (area) and the second (sum of the products of inertia I_{xx}, I_{yy}) moments of said piece,
generating desired signals for the corresponding first and second moments of a desired piece,
identifying said piece by comparing said observed moment signals with said desired moment signals, and
generating a default signal when a difference between said observed and desired signals exceeds a certain limit.

4,435,838
METHOD AND APPARATUS FOR TOMOGRAPHICAL IMAGING

Alexander R. Gourlay, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,349
Claims priority, application European Pat. Off., Mar. 30, 1981, 81301382.8
Int. Cl.³ G01T 1/00; G03B 41/16
U.S. Cl. 382—68 10 Claims

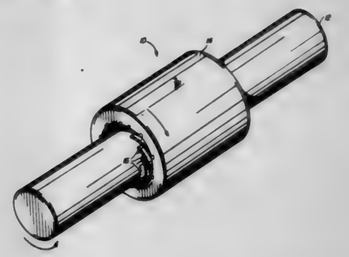


6. In an apparatus for tomographically imaging different selected planes of a three-dimensional object by detecting radiation from said object after the passage of the radiation through a coded aperture mask, wherein an image of the radiation of a selected plane sensed by a detector over a period of time is stored, and the decoding of said selected plane is by a correlation process appropriate to the size of the shadow of said mask cast on said detector by points in said selected plane, the improvement comprises:
means for adjusting the position of at least one of said object, said mask, or said detector to select each of said different selected planes of said object to be imaged in such a manner that the ratio D/d is a constant, where D is the distance from said selected plane to the plane of said detector, and d is the distance from said selected plane to the plane of said mask; and
means for decoding, using a fixed decoding process, each of said selected planes of said object.

4,435,839
FOIL BEARING RUBBING SURFACE COATING APPLICATION METHODS

Alston L. Gu, Huntington Beach, and Alexander Silver, Tarzana, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 21, 1982, Ser. No. 420,663
Int. Cl.³ F16C 1/24, 33/00; B05D 3/02, 3/12
U.S. Cl. 384—103 29 Claims



1. A method of applying a dry lubricant coating to a rubbing contact surface of a bearing, said method comprising the steps of:
(a) providing a coating mixture comprising a dry lubricant material and a liquid binder;
(b) applying a multiplicity of subcoats of said mixture to the rubbing contact surface to form a multilayered lubricant coating thereon;
(c) curing each successive subcoat at a first temperature to individually solidify the subcoats;
(d) deroughening the surfaces of selected ones of the subcoats positioned at predetermined thickness intervals of said multilayered coating; and
(e) curing the multilayered coating at a second temperature substantially higher than said first temperature.

2. The method of claim 1 further comprising the step of (f) applying a dry lubricant material upon the surface of the cured multilayered coating.

3. The method of claim 2 wherein said step (d) includes deroughening the surface of the last-applied subcoat, and wherein said step (f) is performed by burnishing a dry lubricant powder into said last-applied subcoat prior to the deroughening of its surface.

4. The method of claim 1 wherein said step (a) is performed by providing a coating mixture comprising graphite fluoride (CFx) powder and polyimide varnish.

5. The method of claim 1 wherein said step (a) is performed by providing a coating mixture comprising graphite fluoride (CFx) powder, polyimide varnish, an N-methylpyrrolidone and xylene thinning liquid, and a fluorocarbon solution wetting agent.

4,435,834
METHOD AND MEANS FOR DETERMINING THE STATE AND/OR GENUINENESS OF FLAT ARTICLES

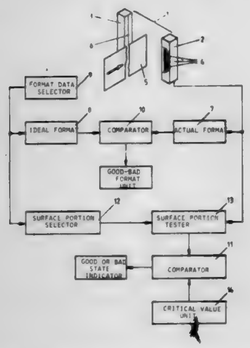
Günter Pauli, Eichenau; Günter Krause, and Erwin Lob, both of Munich, all of Fed. Rep. of Germany, assignors to Gao Gesellschaft für Automation and Organisation mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 45,802, Jun. 5, 1979, abandoned. This application Apr. 23, 1982, Ser. No. 371,425

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824849

Int. Cl.³ G06K 9/00

U.S. Cl. 382—7 36 Claims



1. Apparatus for determining the characteristics of a generally rectangular bank note or the like having a pair of end edges and a pair of side edges, scanning means including a plurality of sensor means, said scanning means being operable for sensing the characteristics of a bank note at a plurality of points within a segmental surface area thereof arranged in rows parallel to one of said pair of edges and columns parallel to the other of said pair of edges, reference means for establishing threshold signal levels corresponding to thresholds between acceptable and unacceptable characteristics at points within a certain segmental rectangular surface area of the bank note, comparison means for comparing signals produced by said scanning means with signal levels established by said reference means to generate an output signal when an unacceptable bank note is scanned, and means for controlling said reference means and said scanning means to select for scanning a predetermined segmental area of the bank note.

4,435,835
METHOD AND DEVICE FOR DETECTING THE POSITION OF AN OBJECT

Hiroshi Sakow, and Seiji Kashioka, both of Hachiouji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1981, Ser. No. 247,073

Claims priority, application Japan, Mar. 24, 1980, 55-36070

Int. Cl.³ G06K 9/32

U.S. Cl. 382—8 4 Claims

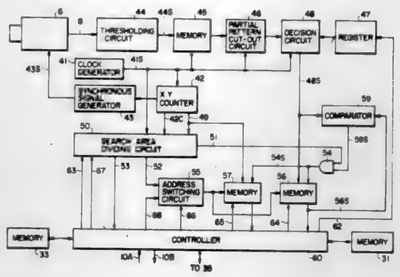
1. A position detecting method for detecting the position of an object by scanning of the object with an image pickup device comprising:

storing in advance of scanning of the object positional information of at least one type of standard pattern which exists in a whole region including all pickup regions scanned by the image pickup device at respective supply deviations of the object, said whole region being composed of a plurality of said pickup regions;

scanning a pickup region by the image pickup device at a supply position of the object;

extracting positional information of the at least one standard pattern from the image obtained by the scanning of said pickup region; and

comparing the positional information extracted from the scanned pickup region with positional information of the whole region stored in advance of the scanning of the object to determine which part of the whole region the



said pickup region lies in and to detect the position of the object from positional relationship of said scanned pickup region within the whole region.

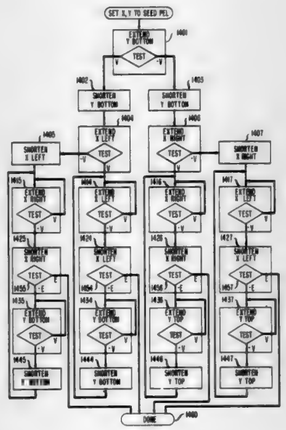
4,435,836
TECHNIQUE FOR EXTRACTING FEATURES FROM IMAGES

Steven M. Rubin, Los Altos, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1981, Ser. No. 311,791

Int. Cl.³ G06K 9/12

U.S. Cl. 382—27 15 Claims



1. A method of representing the features of a portion of a picture by one or more strokes, said picture including a rectilinear array of picture elements, each of said strokes including a contiguous group of picture elements having similar attributes, including the steps of:

(a) hypothesizing the existence of a stroke including a beginning pel and at least one additional pel;

(b) simultaneously testing a group of at least two pels contained in the hypothesized stroke defined in step (a) to generate a success indication if all of the pels in said group possess similar attributes; and

(c) repeating step (a) for other hypothesized strokes.

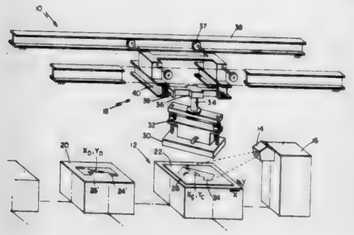
4,435,837
PATTERN RECOGNITION AND ORIENTATION SYSTEM

Frederick H. Abernathy, Auburndale, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Mar. 5, 1981, Ser. No. 240,878

Int. Cl.³ G06K 9/32

U.S. Cl. 382—41 4 Claims



1. A method for recognizing a flat piece of cloth comprising

placing said piece on a viewing surface within a field of interest having perpendicular coordinate axes,

generating image signals corresponding to the existence or nonexistence of said piece in discrete areas of said field, said discrete areas being arranged in rows and columns along said axes,

processing said image signals to obtain observed moment signals representative of the first (area) and the second (sum of the products of inertia I_{xx}, I_{yy}) moments of said piece,

generating desired signals for the corresponding first and second moments of a desired piece,

identifying said piece by comparing said observed moment signals with said desired moment signals, and

generating a default signal when a difference between said observed and desired signals exceeds a certain limit.

4,435,838
METHOD AND APPARATUS FOR TOMOGRAPHICAL IMAGING

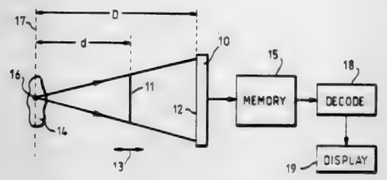
Alexander R. Gourlay, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,349

Claims priority, application European Pat. Off., Mar. 30, 1981, 81301382.8

Int. Cl.³ G01T 1/00; G03B 41/16

U.S. Cl. 382—68 10 Claims



6. In an apparatus for tomographically imaging different selected planes of a three-dimensional object by detecting radiation from said object after the passage of the radiation through a coded aperture mask, wherein an image of the radiation of a selected plane sensed by a detector over a period of time is stored, and the decoding of said selected plane is by a correlation process appropriate to the size of the shadow of said mask cast on said detector by points in said selected plane, the improvement comprises:

means for adjusting the position of at least one of said object, said mask, or said detector to select each of said different selected planes of said object to be imaged in such a manner that the ratio D/d is a constant, where D is the distance from said selected plane to the plane of said detector, and d is the distance from said selected plane to the plane of said mask; and

means for decoding, using a fixed decoding process, each of said selected planes of said object.

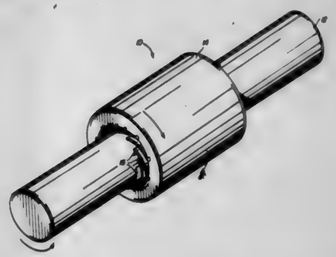
4,435,839
FOIL BEARING RUBBING SURFACE COATING APPLICATION METHODS

Alston L. Gu, Huntington Beach, and Alexander Silver, Tarzana, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 21, 1982, Ser. No. 420,663

Int. Cl.³ F16C 1/24, 33/00; B05D 3/02, 3/12

U.S. Cl. 384—103 29 Claims



1. A method of applying a dry lubricant coating to a rubbing contact surface of a bearing, said method comprising the steps of:

(a) providing a coating mixture comprising a dry lubricant material and a liquid binder;

(b) applying a multiplicity of subcoats of said mixture to the rubbing contact surface to form a multilayered lubricant coating thereon;

(c) curing each successive subcoat at a first temperature to individually solidify the subcoats;

(d) deroughening the surfaces of selected ones of the subcoats positioned at predetermined thickness intervals of said multilayered coating; and

(e) curing the multilayered coating at a second temperature substantially higher than said first temperature.

2. The method of claim 1 further comprising the step of (f) applying a dry lubricant material upon the surface of the cured multilayered coating.

3. The method of claim 2 wherein said step (d) includes deroughening the surface of the last-applied subcoat, and wherein said step (f) is performed by burnishing a dry lubricant powder into said last-applied subcoat prior to the deroughening of its surface.

4. The method of claim 1 wherein said step (a) is performed by providing a coating mixture comprising graphite fluoride (CFx) powder and polyimide varnish.

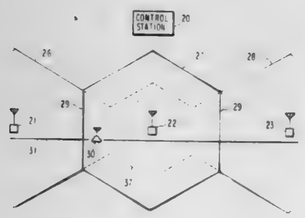
5. The method of claim 1 wherein said step (a) is performed by providing a coating mixture comprising graphite fluoride (CFx) powder, polyimide varnish, an N-methylpyrrolidone and xylene thinning liquid, and a fluorocarbon solution wetting agent.

4,435,840

RADIO MOBILE COMMUNICATION SYSTEM WHEREIN PROBABILITY OF LOSS OF CALLS IS REDUCED WITHOUT A SURPLUS OF BASE STATION EQUIPMENT

Junichiroh Kojima, and Kenji Mizoe, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,367
Claims priority, application Japan, Jun. 22, 1981, 56-95196; Mar. 19, 1982, 57-44897; Apr. 5, 1982, 57-57071
Int. Cl.³ H04B 1/00
U.S. Cl. 455—33 5 Claims



1. In a mobile radio communication system comprising a control station and a plurality of base stations controlled by said control station and having service areas, respectively, each service area partly overlapping at least one of the other service areas, each base station being allotted with a plurality of channels for use in radio communication with a plurality of mobile stations which are present in the service area of said each base station and each of which has a communicable distance, the number of channels currently used in the radio communication defining a current traffic for said each base station, the improvement wherein:

said control station comprises:

threshold means for generating a threshold signal representative of a threshold traffic predetermined for each base station;

measuring means coupled to said base stations for measuring the current traffics for the respective base stations to produce a plurality of traffic signals representative of the measured current traffics, respectively; and

monitoring means coupled to said base stations and responsive to said threshold signal and said traffic signals for monitoring the measured current traffics with at least one threshold traffic predetermined for said base stations to supply a traffic adjusting signal to a particular one of said base stations when the current traffic defined for said particular base station exceeds the threshold traffic predetermined therefor and furthermore when the current traffic defined for an adjacent one of said base stations, the service area of whichpartly overlaps the service area of said particular base station, does not exceed the threshold traffic for said adjacent base station;

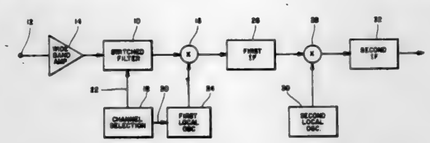
said system further comprising varying means operable in at least a predetermined one of first and second modes of operation in response to said traffic adjusting signal, said varying means varying the service area of said particular base station in said first mode of operation, said service area being defined by each base station's transmission output power, said varying means varying, in said second mode of operation, the communicable distance of each mobile station present in the service area of said particular base station.

4,435,841

COMMUNICATIONS RECEIVER HAVING A SWITCHABLE FILTER INPUT STAGE

Pierre Dobrovolny, North Riverside, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 1, 1982, Ser. No. 353,694
Int. Cl.³ H04B 1/26; H03H 7/00
U.S. Cl. 455—180 17 Claims



1. A multichannel communications receiver characterized by a reduced level of nonlinear distortion comprising:

an input terminal for receiving signals broadcast over a plurality of communication channels;

channel selection means developing a first control signal representing a selected one of said plurality of channels and a second control signal representing a band of channels encompassing said selected channel, said band of channels having a bandwidth less than said plurality of channels;

an input stage coupled to said input terminal comprising a plurality of non-tunable circuit components including switchable filter means responsive to said second control signal for assuming a highpass filter characteristic or a lowpass filter characteristic, said filter means comprising an arrangement of inductors and capacitors, a first switching means and a second switching means being responsive to said second control signal for causing said inductors and capacitors to assume said highpass filter characteristic or said lowpass filter characteristic, at least one of said switching means being characterized by a parasitic reactance coupled across said filter means, said receiver comprising compensating means coupled across said filter means for reducing the effect of said parasitic reactance; and

frequency conversion means coupled to the output of said input stage and responsive to said first control signal for processing the passed band of channels so as to develop an output signal having a predetermined frequency representing only said selected channel.

4,435,842

PROGRAMMABLE CHANNEL SELECTING APPARATUS

Kuzuaki Mayumi, Joyo; Yoshihiro Fujiwara, Hirakata; Toshio Tokuda, Hirakata, and Toshiaki Suzuki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 192,489, Oct. 1, 1980, abandoned, which is a continuation of Ser. No. 5,178, Jan. 22, 1979, abandoned. This application Mar. 11, 1982, Ser. No. 357,092
Claims priority, application Japan, Jan. 26, 1978, 53-8157; Jul. 7, 1978, 53-83385; Jul. 7, 1978, 53-83392
Int. Cl.³ H04N 5/76; H04B 1/16
U.S. Cl. 455—181 2 Claims

1. A programmable channel selecting apparatus for enabling a channel preselecting and an instant channel selecting operation for an electronic tuner, comprising:

a plurality of manually-operable channel-selecting switches and a channel indicator means corresponding respectively to a plurality of channels to be selected;

a channel selection circuit;

a channel preselecting means;

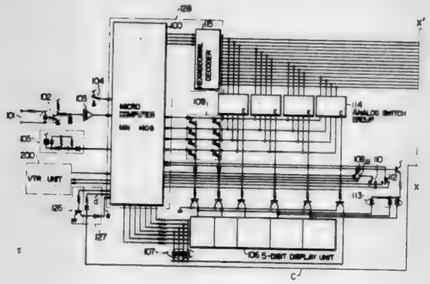
an inhibit means for preventing disturbance of a selected channel;

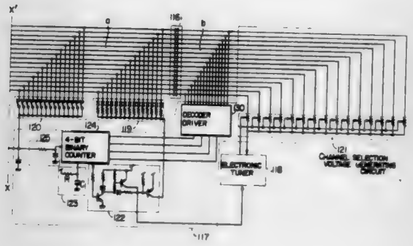
common signal lines connecting said channel-selecting switches, said channel selection circuit and said channel indicator means respectively, and said channel-selecting switches, said channel preselecting means and said channel indicator means respectively and,

clock means for providing data representing current time;

said channel selection circuit including means for generating and holding a channel selecting signal corresponding to any one of said switches which is manually operated, said channel selecting signal being immediately applied to said electronic tuner when generated;

said channel preselecting means including a manually-operable input switch means for inputting a channel preselecting time, and microcomputer means including memory means for storing data representing a channel preselecting time inputted by said input switch means together with a





signal indicative of a channel preselected by any one of said channel-selecting switches, said microcomputer means detecting when a current time from said clock means is coincident with data representing a channel preselecting time stored in said memory means and for causing said channel selection circuit to generate and hold a channel selecting signal corresponding to the preselected channel;

said inhibit means being responsive to said microcomputer means for preventing said channel selection circuit from being influenced by the channel preselecting operation; and,

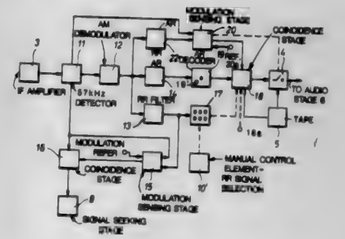
said channel indicator means differentially indicating at least one channel corresponding to and according to at least one of the channel selecting signals held by said channel selection circuit and the preselected channel indicating signal stored by said memory means.

4,435,843

FM RECEIVER FOR GENERAL PROGRAMS AND SPECIAL ANNOUNCEMENTS

Norbert Ellers, Hildesheim, and Peter Brügss, Itzum, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,654
Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121088
Int. Cl.³ H04B 1/16
U.S. Cl. 455—205 31 Claims



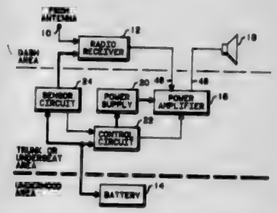
26. For use in an FM radio receiver having a tuner, an RF stage, an output audio stage including switching means switchable among various audio signal sources in addition to the FM receiver, the improvement comprising means for detecting total amplitude modulation of an auxiliary subcarrier of a preselected frequency value by at least two distinct recognition signals at two distinct frequencies and for producing an output when the modulation by the two recognition signals exceeds a predetermined value, and means responsive to the output from said means for detecting for controlling said switching means to connect the receiver to its audio stage when said modulation above a predetermined value is detected.

4,435,844

REMOTE CONTROL CIRCUIT

Jerome D. Meyerhoff, Buffalo Grove, Ill., and Steven E. Forshay, Ardmore, Pa., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 14, 1981, Ser. No. 301,868
Int. Cl.³ H04B 1/10, 1/16
U.S. Cl. 455—218 8 Claims



1. A control system for controlling the operation of a remote unit by detecting a change of operational mode of a control unit, the system comprising:

a control unit;

a power supply line for supplying power from an external source to the control unit; and

a remote unit including;

a free-running oscillator having a tuned circuit, said control unit power line being coupled through the tuned circuit to the control unit, the operational mode of the control unit as indicated by the operative condition of the power supply line affecting the function of the oscillator;

a detection circuit coupled to the tuned circuit for detecting changes in oscillator functioning and providing a control signal in response to said changes; a controlled power supply coupled to the external power source; and

a control stage responsive to said control signal and coupled to the controlled power supply for controlling the provision of power to a portion of the remote unit.

4,435,845

AUTOMOBILE RADIO AND TAPE CASSETTE SWITCHING APPARATUS

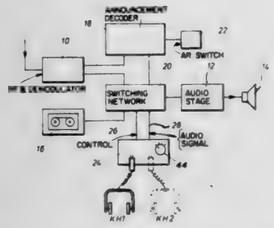
Horst Timm, Hildesheim, and H. Eckard Kruger, Hildesheim-Sorsum, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jun. 29, 1982, Ser. No. 393,417

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126117

Int. Cl.³ H04B *1/20*

U.S. Cl. 455—228 **8 Claims**



1. Automobile radio-tape reproducing equipment combination having

a radio frequency and demodulation stage (**10**) providing radio audio signals;

a magnetic tape system (**16**) providing tape audio signals;

an announcement information decoder (**18**) coupled to said radio frequency and demodulation stage for decoding special announcement code signals and providing an announcement recognition (AR) signal;

an audio stage (**12**);

a loudspeaker (**14**) coupled to said audio stage;

and a multiple switching network (**20**) coupled to said radio frequency and demodulation stage and said magnetic tape system and connected to and controlled by the announcement information decoder and coupled to the audio stage for providing output signals controlling audio reproduction of special announcement upon decoding of the announcement recognition code, and comprising, in accordance with the invention,

an accessory stage (**24**) having at least one earphone connecting plug (KH1, KH2);

and a switching network (20_{11}) forming part of the multiple switching network, and a selector switch (**44**), the switching network being controlled by selectively enabled switching signals from the selector switch and the special announcement information decoder (**18**) to control, selectively, circuit paths for application of radio audio signals, or tape audio signals, to the at least one earphone plug, independently of reproduction of special announcements by said loudspeaker upon recognition of an announcement recognition (AR) signal.

4,435,846

AUTOMATIC GAIN CONTROL OF A SINGLE GATE GAAS FET AMPLIFIER

Volker B. Weise, Redwood City, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Apr. 8, 1982, Ser. No. 366,495

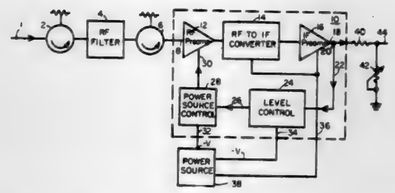
Int. Cl.³ H04B *1/16*; H03G *3/20*

U.S. Cl. 455—253 **4 Claims**

1. In a radio receiver operating in the GHz radio frequency (RF) range, and adapted to receive a modulated RF input signal, an automatic gain control (AGC) circuit comprising;

a controllable power source having a control input and including means for supplying direct current (DC) operating voltage between a supply line and a ground plane, said DC operating voltage having a magnitude;

an RF preamplifier which includes a single GaAs FET having gate, drain and source electrodes, and biasing means connected to said DC operating voltage, said gate electrode being adapted to receive said RF input signal, said drain electrode being AC isolated and DC connected to said ground plane, and said source electrode being connected to said biasing means, said FET providing an amplified RF signal at the drain electrode, the RF preamplified gain varying in response to variations in the magnitude of the DC operating voltage supplied by said controllable power source;



circuit means having an input adapted to receive said amplified RF signal, said circuit means including a fixed gain amplifier, and providing an amplified IF signal at an output;

a level control circuit having an input adapted for connection to the output of said circuit means, said level control circuit being responsive to the amplitude of said amplified IF signal so as to provide a variable DC control signal to the control input of said controllable power source, whereby the gain of the RF preamplifier is varied inversely to the amplitude of said amplified IF signal, so as to substantially maintain the amplitude of said amplified IF signal constant over a predetermined range of RF input signal amplitudes.

4,435,847

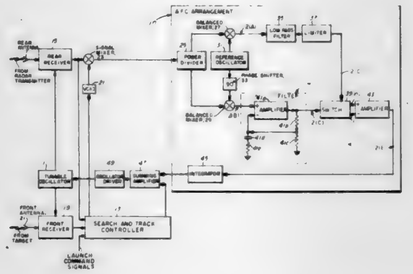
AUTOMATIC FREQUENCY CONTROL CIRCUITRY

James Williamson, Franklin, and Paul G. Crete, Chelmsford, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 16, 1976, Ser. No. 650,521

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—260 **5 Claims**



1. In a heterodyne receiver wherein the frequency of a tunable first local oscillator is to be maintained at a frequency offset by a predetermined amount from the frequency of a

received signal, improved frequency control circuitry for such oscillator comprising:

(a) quadrature detection means, responsive to an intermediate frequency signal corresponding to a received signal and to the output of a reference oscillator, for producing a first and a second difference signal, each one being indicative of a difference in phase between the intermediate frequency signal and the output of the reference oscillator;

(b) filter means, responsive to the first and the second difference signals out of the quadrature detection means, for converting the first and the second difference signals to, respectively, a control signal and an error signal having the same sense as the control signal;

(c) correction signal generating means, responsive to the control signal and to the error signal out of the filter means, for producing a correction signal having an amplitude and sense determined by the error signal; and,

(d) means, responsive to the correction signal out of the correction signal generating means, for changing the phase of the tunable first local oscillator until the second difference signal is indicative of a difference in phase of 90° between the intermediate frequency signal and the output of the reference oscillator.

4,435,848

STRIPLINE MICROWAVE BALANCED MIXER CIRCUIT

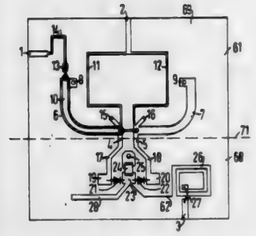
Siegfried Sedlmair, Groebenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 21, 1982, Ser. No. 370,515

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117080

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—327 **16 Claims**



1. A microwave balanced or push-pull mixer circuit for an operating frequency formed in stripline technology having first and second input terminals and an intermediate frequency signal terminal each having an impedance Z_0 comprising, a differential transformer which for applying two input voltages to be mixed through said first and second input terminals with said first one connected through two quarter wave length striplines to first and second transformer output terminals and said second input terminal connected to said second transformer output terminal through the inner conductor of an arcuate-shaped coaxial line, an arcuate-shaped stripline connected to the second transformer output terminal and with one end connected by a through-contact to a ground plate, and the other outer end connected to the first transformer output terminal, first and second semi-conductor diodes connected together with a common terminal, with said first one mounted between the first transformer output terminal and an intermediate frequency signal output terminal and said second diode mounted between the second transformer output terminal and the intermediate frequency signal output terminal and poled differently than said first diode relative to the intermediate frequency signal output, means for blocking the frequency range of the two input voltages connected ahead of said diodes and for matching to the impedance Z_0, two symmetrical striplines (**17, 18**) connected between said first and second transformer output terminals (**4, 5**) and the non-common terminals (**19, 20**) of said first and second diodes, and said striplines being enlarged near the noncommon terminals so that parallel capacitances are formed in the area of said diode terminals (**19, 20**), and the arcuate-shaped coaxial line (**10**) and the stripline (**7**) extending symmetrically relative thereto and which extend from said first and second differential transformer output terminals (**4, 5**) are designed to be shorter than a quarter wave length at the operating frequency so that parallel inductances are formed, and tuned such that the impedances of said first and second diodes at the differential transformer output terminals (**4, 5**) are respectively transformed to the impedance Z_0, the width of said two quarter wave length striplines (**11, 12**) is selected such that they have an impedance of $Z_0 \cdot \sqrt{2}$, another stripline (**14**) mounted between said inner conductor (**13**) of the coaxial line (**10**) on the end away from the differential transformer output terminals (**4, 5**) and the second input terminal (**1**), so that the overall length of the coaxial line (**10**) and of said another strip-line (**14**) equals a quarter wave length and the impedance of these two lines is equal to $Z_0 \cdot \sqrt{2}$, and blocking the frequency range of the two input signals, a blocking circuit composed of a stripline coil (**26**) mounted between said common diode terminal (**23**) adjacent the intermediate frequency signal output terminal (**3**), said blocking circuit selected such that, at the desired intermediate frequency, the impedance Z_0 occurs at the intermediate frequency signal output terminal (**3**).

4,435,849

OPTICAL TRANSMISSION SYSTEM

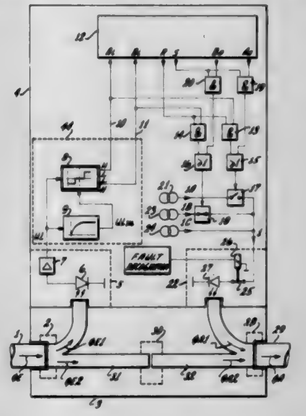
Herwig Ilgner, Roebach, and Utz W. Barth, Frankfurt, both of Fed. Rep. of Germany, assignors to Hartmann & Braun AG, Frankfurt, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,987

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007958

Int. Cl.³ G02B *5/14*

U.S. Cl. 455—601 **14 Claims**



1. In an optical transmission system, having a plurality of signal-regenerating units, at least one of said units including:

an optical branching unit having a first portion in order to provide attenuated through-transmission of a portion of an optical signal received, this through-transmission continuing irrespective of failure of said unit; a second portion extracting a component from the received optical signal; and a third portion for reintroducing an optical signal and combining it with the through-transmitted signal, there being first circuit means for convertinng the extracted portion into an electrical signal, there further being a

source for producing radiation, the radiation being a reconstituted signal, the improvement comprising:

second circuit means connected to the first circuit means and responsive to the contour of the electrical signal representing a three-level-per-bit code, the middle level corresponding to nonzero light, but also to a zero data flow condition when persisting, and producing multi-bit logic signals wherein a particular bit combination represents said middle level, the second circuit means including threshold means providing two threshold levels against which said electrical signal is referenced and having values respectively larger and smaller than an average of said electrical signal which average corresponds to a signal produced in the absence of data, in order to distinguish between three ranges for the electrical signals, resulting in three distinct logic states, the second circuit means further including circuit means (i) responsive to the average of said signal, and circuit means (ii) for shifting the threshold values up or down, corresponding to changes in the average; and

third circuit means connected to be responsive to the logic signals as sequentially provided and

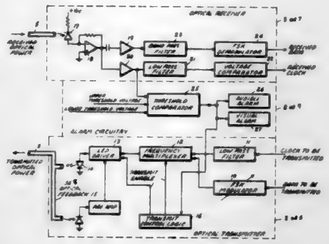
producing a three-level control for the radiation as produced by the said source, the middle level when persisting representing absence of reconstituted data.

4,435,850

SECURE FIBER OPTIC DATA TRANSMISSION SYSTEM

James H. Bowen, Williamsburg; David L. Baldwin, and Philip R. Couch, both of Roanoke, all of Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,147
Int. Cl.³ H04B 9/00
U.S. Cl. 455—606 **14 Claims**



1. A secure fiber optic data transmission system comprising:

an optical fiber means to provide two way optical communication between two spaced terminals;

each of said two terminals including

first means coupled to an adjacent end of said optical fiber means to receive optical energy modulated by data transmitted from the other of said two terminals;

second means coupled to said adjacent end of said optical fiber means to transmit modulated optical energy to said other of said two terminals, said transmitted optical energy having a predetermined average optical power and data modulated thereon with a modulation index; and

third means coupled to said first and second means resonsive to said received optical energy to activate an alarm means and to deactivate said second means when said received optical energy has an amplitude outside of a given amplitude region,

said third means including

a threshold comparator coupled to said first and second means having two spaced threshold values to define said given amplitude region.

DESIGNS

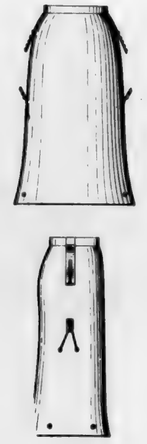
MARCH 6, 1984

272,864

MULTIHEM-HEIGHT SKIRT

William A. Skewis, 171 W. Spruce, Sequim, Wash. 98382

Filed Nov. 29, 1982, Ser. No. 445,007
U.S. Cl. D2—223

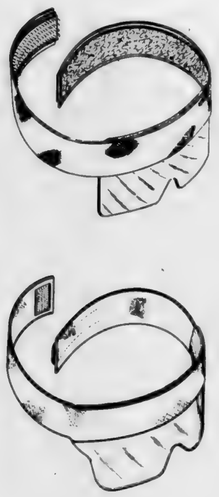


272,865

COMBINED SWEAT BAND AND EYE SHIELD

Paul H. Edelmann, 10461 SW. 132nd St., Miami, Fla. 33176

Continuation-in-part of Ser. No. 161,852, Jun. 23, 1980. This application Apr. 5, 1982, Ser. No. 365,870
Term of patent 14 years
Int. Cl. D02—03
U.S. Cl. D2—241

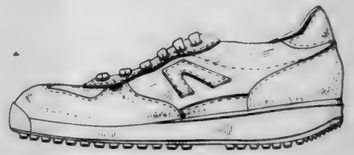


272,866

SPORT SHOE

Gino Casetta, Pontelongo, Italy, assignor to Simod Patents N.A.N.V., Curacao, Netherlands Antilles

Filed Nov. 12, 1980, Ser. No. 206,166
Claims priority, application Italy, May 16, 1980, 619338/80[U]
Term of patent 14 years
Int. Cl. D2—04
U.S. Cl. D2—309

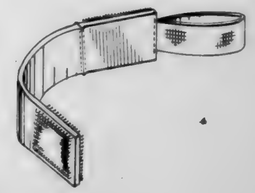


272,867

HIDDEN MOUNTABLE STRAP FOR BILLFOLD OR THE LIKE

Madison W. Gwaltney, P.O. Box 12D, and Goodrich W. Longserre, P.O. Box 8, both of Thompsons, Tex. 77481

Filed May 20, 1981, Ser. No. 265,505
Term of patent 14 years
Int. Cl. D02—99
U.S. Cl. D2—400

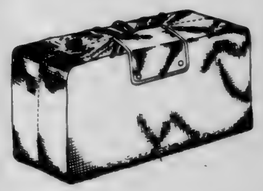


272,868

LUGGAGE COVER

Max Jaffee, 1240 Homan Ave., Chicago, Ill. 60651

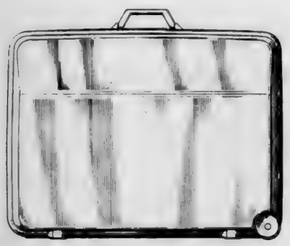
Filed Jun. 13, 1980, Ser. No. 159,178
Term of patent 14 years
Int. Cl. D3—02
U.S. Cl. D3—41



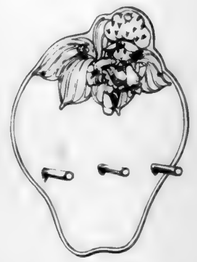
272,869
CARRYING CASE FOR CASH
Paul Davis, Kettering, England, assignor to Loach Manufacturing Co. Ltd., Lye, England
Filed Jan. 15, 1981, Ser. No. 225,346
Claims priority, application United Kingdom, Jul. 16, 1980, 995754
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73



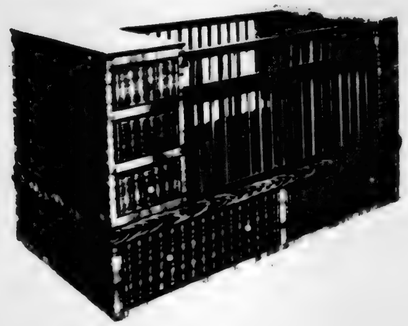
272,870
LUGGAGE CASE
Richard Miles, Guilford, and Adrian D. Stokes, Colbrook, both of England, assignors to Samsonite Corporation, Denver, Colo.
Filed Nov. 23, 1981, Ser. No. 323,722
Claims priority, application United Kingdom, May 26, 1981, 811000672
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—76



272,871
CHILD'S CLOTHES RACK
Gerald M. Rapaport, 5933 N. Lincoln Ave., Chicago, Ill. 60659
Filed Feb. 8, 1982, Ser. No. 346,524
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—5



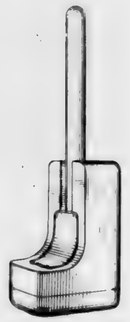
272,872
COMBINED CRIB AND STORAGE UNIT
Norberto Moreno, 1404 Queen Summit Dr., West Covina, Calif. 91791
Filed May 21, 1981, Ser. No. 265,972
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—16



272,873
CHAIR
Hans C. Mengshoel, Bygdöy Alle 12, Oslo 2, and Oddvin Rykken, 5610 Øystese, Øystese, both of Norway
Filed Oct. 21, 1981, Ser. No. 313,247
Claims priority, application Norway, Apr. 29, 1981, 61.946
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



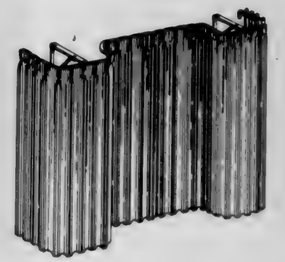
272,874
BRUSH HOLDER AND BRUSH FOR TOILET
Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal
Filed Nov. 4, 1980, Ser. No. 204,028
Claims priority, application Portugal, May 9, 1980, 15080
Term of patent 14 years
Int. Cl. D4—*01*; D6—*04*
U.S. Cl. D6—86



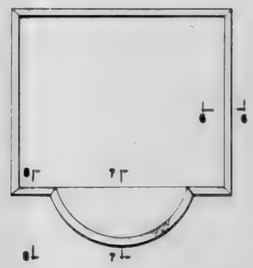
272,875
SOAP STAND
Brian M. Johnston, 114 W. 42 Ave., Vancouver, B.C., Canada
Continuation-in-part of Ser. No. 50,775, Jun. 12, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,508
Claims priority, application Canada, Apr. 23, 1979, 14-02-79-2
Term of patent 14 years
Int. Cl. D23—*02*; D6—*06*
U.S. Cl. D6—89



272,876
DRAPERY FOR FRAMING FURNITURE OR THE LIKE
William A. Hand, 3161 Sullivant Ave., Columbus, Ohio 43204
Filed Jan. 19, 1981, Ser. No. 226,424
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D6—205



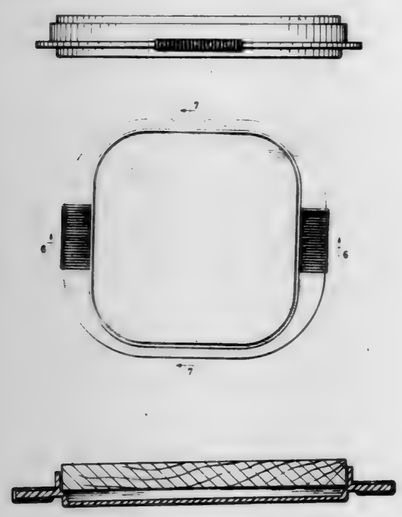
272,877
DOOR MAT BASE PLATE OR SIMILAR ARTICLE
Yosuke Yamamoto; Takehisa Kinoyama, and Kinichi Sasagawa, all of Osaka, Japan, assignors to Duskin Franchise Kabushiki Kaisha (Duskin Franchise Co., Ltd.), Tokyo, Japan
Filed May 8, 1980, Ser. No. 147,718
Claims priority, application Japan, Dec. 11, 1979, 54-51723
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



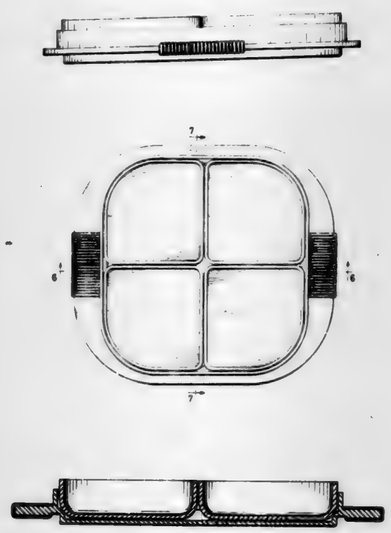
272,878
CUP
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Nov. 30, 1981, Ser. No. 325,920
Claims priority, application Switzerland, May 29, 1981, 71465
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—6



272,879
SERVING PLATTER
Ambrogio Pozzi, Gallarate, Italy, assignor to F. LLI Guzzini S.p.A., Recanati, Italy
Filed Mar. 30, 1981, Ser. No. 248,889
Claims priority, application Italy, Sep. 29, 1980, 22951 B/80[U]
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—21



272,880
HORS-D'OEUVRE DISH
Ambrogio Pozzi, Gallarate, Italy, assignor to F. LLI Guzzini S.p.A., Recanati, Italy
Filed Mar. 30, 1981, Ser. No. 248,888
Claims priority, application Italy, Sep. 29, 1980, 22951 B/80[U]
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—21



272,881
FINGER-BOWL
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Nov. 30, 1981, Ser. No. 325,919
Claims priority, application Hague, May 29, 1981, 71465
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—28

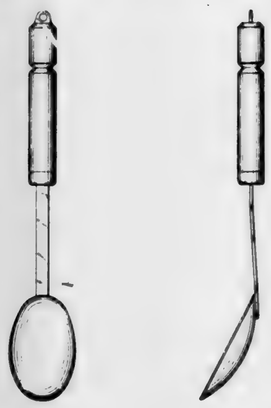


272,882
SERVER FOR A WINE BOTTLE OR THE LIKE
James H. Gardner, and Noel H. de Nevers, both of Salt Lake City, Utah, assignors to Aurora Design Associates, Inc., Salt Lake City, Utah
Filed Oct. 26, 1981, Ser. No. 314,952
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—70





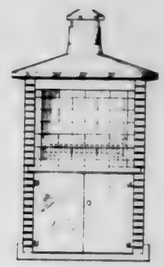
272,883
SPOON
Fred S. Steiner, 154 Combs Ave., Woodmere, N.Y. 11598
Filed May 21, 1981, Ser. No. 265,831
Term of patent 14 years
Int. Cl. D07—*04, 03*
U.S. Cl. D7—104



272,884
TEA KETTLE OR SIMILAR ARTICLE
Ben Seibel, New York, N.Y., assignor to S.F.C. Associates, Inc., New York, N.Y.
Filed Jan. 8, 1982, Ser. No. 337,810
Term of patent 14 years
Int. Cl. D07—*01, 02*
U.S. Cl. D7—321



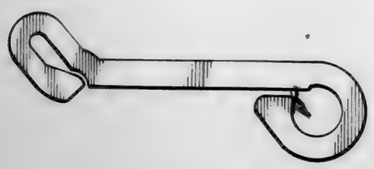
272,885
BARBECUE STOVE
Angelo Famiglietti, 26 Monroe Rd., Enfield, Conn. 06082
Filed Jan. 8, 1981, Ser. No. 223,363
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—333



272,886
INSULATION SUPPORT
J. L. Holcombe, Dallas, Tex., assignor to Emerson H. Mizell, Atlanta, Ga.
Division of Ser. No. 146,288, May 5, 1980. This application Aug. 26, 1982, Ser. No. 411,980
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—380



272,887
CLIP FOR GAME GOAL NETS
Denis Parton, 5 Enfield Grove, Leigh, County of Lancaster, England
Filed Oct. 30, 1981, Ser. No. 316,655
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—395



272,888
BOTTLE
Harold T. Wells, Medinah, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed Jul. 31, 1981, Ser. No. 289,081
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—352



272,889
BOTTLE OR SIMILAR ARTICLE
Benn C. Walton, Stone Mountain, Ga., assignor to Sewell Plastics, Inc., Atlanta, Ga.
Filed Jul. 27, 1981, Ser. No. 287,184
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370



272,890
BUTTON
Kathleen A. Stratton, 9640 Wells Pkwy., Norfolk, Va. 23503
Filed Jan. 7, 1982, Ser. No. 337,834
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—55



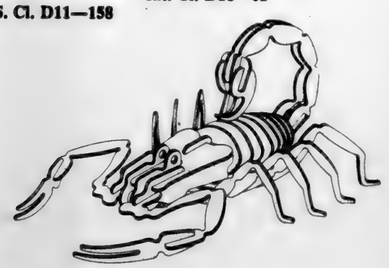
272,891
JEWELRY PENDANT OR THE LIKE
Marilyn M. Bruce, 1206 Dover Dr., Newport Beach, Calif. 92660
Filed Sep. 14, 1981, Ser. No. 302,056
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—78



272,892
ORNAMENT
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002
Filed Nov. 24, 1981, Ser. No. 324,560
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—125



272,893
SCORPION FIGURE
Tatsuya Kodaka, 25-6, Wakamiya 1-chome, Nakano-ku, Tokyo, Japan
Filed Nov. 12, 1981, Ser. No. 320,726
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158



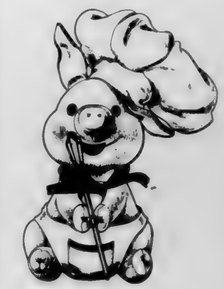
272,894
TARANTULA FIGURE
Tatsuya Kodaka, 25-6, Wakamiya 1-chome, Nakanu-ku, Tokyo, Japan
Filed Nov. 12, 1981, Ser. No. 320,727
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

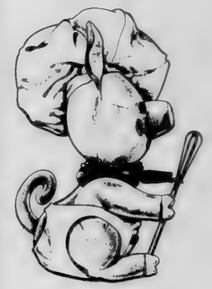


272,895
TABLE ORNAMENT
Jean W. Heap, Pwllheli, Wales, assignor to Pendelfin Studios Limited, Lancashire, England
Filed Apr. 28, 1982, Ser. No. 372,768
Claims priority, application United Kingdom, Mar. 13, 1982, 1005603
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158



272,896
NOVELTY PIG FIGURE
Dana P. H. Kobashigawa, 475 Atkinson Dr., #1707, Honolulu, Hi. 96814
Filed May 20, 1982, Ser. No. 380,296
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

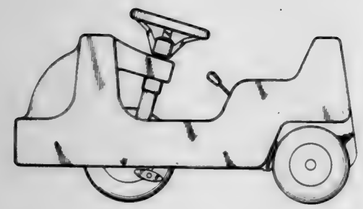




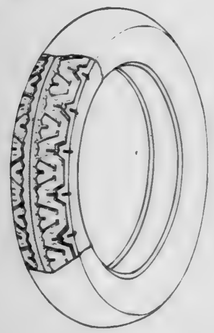
272,897
VEHICLE WHEEL COVER
Leif H. Chapman, Sylvan Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 12, 1981, Ser. No. 320,175
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



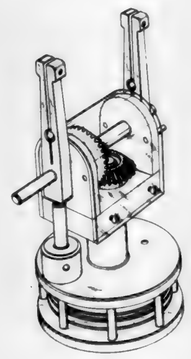
272,898
TOY CAR WITH PEDAL DRIVE
Heinz Kuchenbecker, Parkstr. 17; Hans J. L. Kuchenbecker, Parkstr. 15, and Rolf Kuchenbecker, Parkstr. 17, all of, D-5657 Haan 2, Fed. Rep. of Germany
Filed Jul. 29, 1980, Ser. No. 173,663
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—108



272,899
TIRE FOR A VEHICLE WHEEL
Hiroshi Tomoda, Ashiya, Japan, assignor to Dunlop Limited, London, England
Filed Jan. 14, 1981, Ser. No. 224,898
Claims priority, application Japan, Jul. 18, 1980, 55-29250
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—141



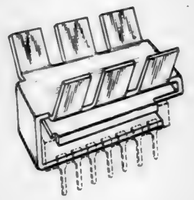
272,900
WIND VANE STEERING CONTROL FOR BOATS
Charles J. Obst, West Barrington, R.I., assignor to Joseph J. Vastano, Warwick, R.I., a part interest
Filed Dec. 28, 1981, Ser. No. 335,289
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—317



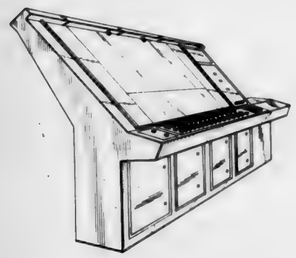
272,901
MODEL HOBBY GLOWPLUG POWER SOURCE WITH NEGATIVE TERMINAL HEADLOCK
Robert E. McDaniel, 2303 Victoria Ave., Bellevue, Nebr. 68005
Filed Mar. 9, 1981, Ser. No. 241,764
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—8



272,902
SELF-FASTENED HEAT SINK
Philip A. Johnson, Kingston, and Alfred F. McCarthy, Belmount, both of N.H., assignors to Aavid Engineering, Inc., Laconia, N.H.
Filed Dec. 9, 1981, Ser. No. 328,947
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



272,903
MACHINE CONTROL CONSOLE
Ludwig Friedrich, Dresden; Hans Johne, Radebeul; Karl-Heinz Förster, Dresden; Alfred Schott, Radebeul; Peter Reinhardt, Leipzig; Dieter Simon, Leipzig, and Arno Stockmann, Leipzig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz", Leipzig, German Democratic Rep.
Filed Jan. 2, 1981, Ser. No. 222,511
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—40

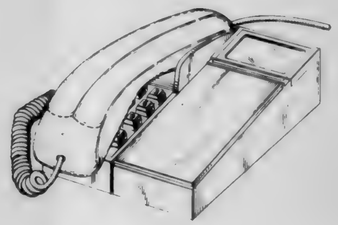


272,904
EARPHONE
Takeyoshi Kawano, Kunitachi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 17, 1981, Ser. No. 293,609
Claims priority, application Japan, Feb. 17, 1981, 56-6077
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—30

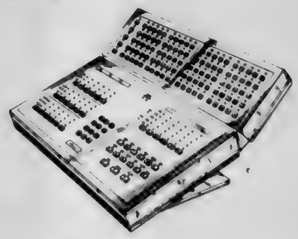


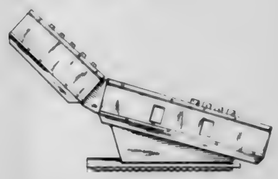


272,905
TELEPHONE INSTRUMENT
Knut H. Blomberg, Lokattsvagen 39, S 161 37 Bromma, Sweden
Division of Ser. No. 900,278, Apr. 26, 1978, Pat. No. Des. 259,260. This application Mar. 2, 1981, Ser. No. 239,506
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

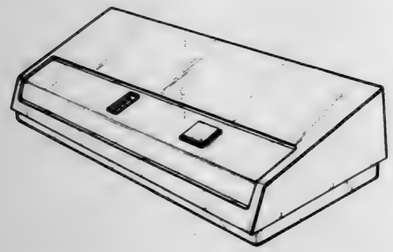


272,906
TELEPHONE CONSOLE
Bert D. Heinzelman, North Bergen, N.J.; Malcolm J. Brookes, and Douglas M. Spranger, both of New York, N.Y., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 21, 1981, Ser. No. 294,938
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58



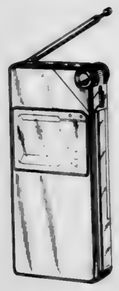


272,907
TELEPHONE BASE STATION
John C. Coons, and Jean M. Beirise, both of Cincinnati, Ohio, assignors to Masco Corporation of Indiana, Taylor, Mich.
Filed May 1, 1981, Ser. No. 259,619
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58

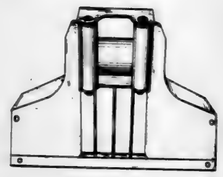




272,908
TELEVISION RECEIVER
Toshiyuki Matsuo, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 6, 1981, Ser. No. 309,025
Claims priority, application Japan, Apr. 7, 1981, 56-14639
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—77

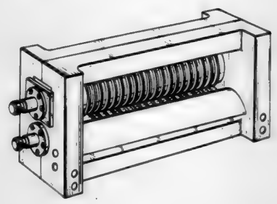


272,909
FAIRLEAD MOUNTING FOR A SKIDDER VEHICLE
Stanley Witczak, St. Thomas, Canada, assignor to Clark Equipment Company, Buchanan, Mich.
Filed Mar. 6, 1981, Ser. No. 241,177
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—28

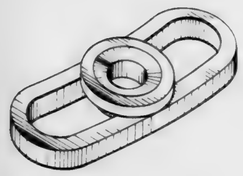


272,910
FEEDHORN FOR PARABOLIC ANTENNAE
Robert B. Taggart, Portola Valley, and Howard H. Taylor, San Andreas, both of Calif., assignors to Chaparral Communications, Inc., San Jose, Calif.
Filed Jun. 8, 1981, Ser. No. 271,815
U.S. Cl. D14—90

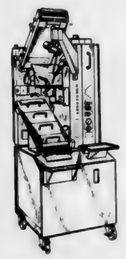
272,911
TAPE SLITTER
James C. Bolton, Ojai, Calif., assignor to Industrial Tools, Inc., Ojai, Calif.
Filed Nov. 20, 1981, Ser. No. 323,195
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—127



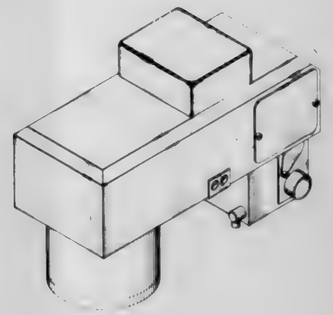
272,912
PROPELLER COUNTERWEIGHT BEARING ASSEMBLY
Kerry G. Dawes, Palo Cedro, Calif., assignor to Dennis A. Praegitzer, Palo Cedro, Calif.
Filed Oct. 30, 1981, Ser. No. 316,452
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—143



272,913
COMBINED HANDLING, TESTING, AND SORTING MACHINE FOR INTEGRATED CIRCUITS
Claude M. Boissicat, Cupertino, Calif., assignor to Contrel, Sunnyvale, Calif.
Filed Jun. 16, 1980, Ser. No. 159,673
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—147



272,914
WIDE FIELD ILLUMINATOR
Ronald E. Sheets, Santa Ana, Calif., assignor to Tamarack Scientific Co., Inc., Anaheim, Calif.
Filed Oct. 13, 1981, Ser. No. 310,443
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32

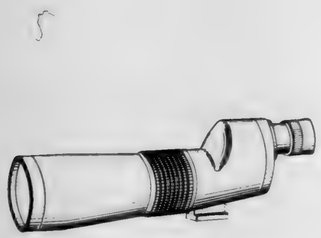


272,915
OPTICAL COUPLER PHOTOGRAPHIC ACCESSORY
Richard E. Feinbloom, New York; Richard Lepczynski, Brooklyn, and Wladyslaw Oleksy, New York, all of N.Y., assignors to Designs for Vision, Inc., New York, N.Y.
Filed Nov. 5, 1981, Ser. No. 318,392
Term of patent 14 years
Int. Cl. D16—*05, 05*
U.S. Cl. D16—130





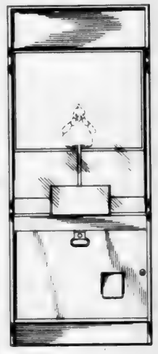
272,916
MONOCULAR
Masakazu Tomatsuri, Naka, and Chiyoji Takahashi, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Apr. 16, 1981, Ser. No. 254,609
Claims priority, application Japan, Oct. 29, 1980, 55-45216
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—132

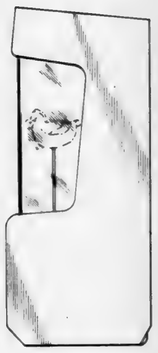


272,917
COMBINED PAPER AND PENCIL CADDY
Joseph M. Micucci, Longmeadow, Mass., assignor to Olympic Sales Club, Inc., Enfield, Conn.
Filed Jul. 23, 1981, Ser. No. 285,994
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—78

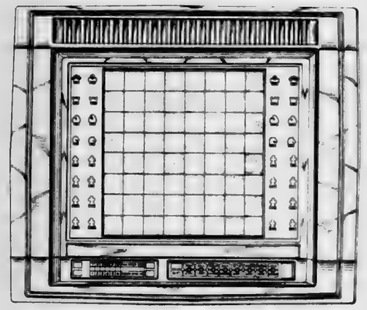


272,918
VENDING MACHINE
Robert L. Glaser, Deerfield, Ill., assignor to L. M. Becker & Co., Inc., Appleton, Wis.
Filed Jun. 22, 1981, Ser. No. 275,757
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—1

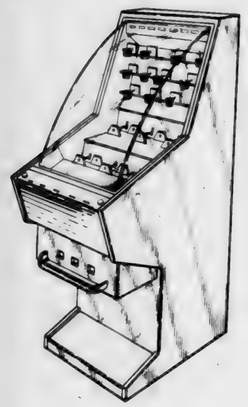




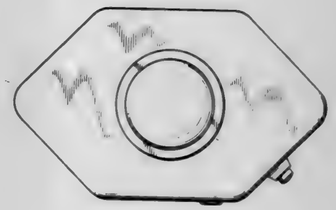
272,919
ELECTRONIC GAME BOARD
Jeffrey M. Chambers, Wilbraham, Mass., and Joseph Kata, Meriden, Conn., assignors to Milton Bradley International, Inc., Springfield, Mass.
Filed Feb. 1, 1982, Ser. No. 344,598
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—24



272,920
GAMING MACHINE
Michael Wichinsky, and Leroy Gutkneht, both of 2607 S. Highland, Las Vegas, Nev. 89109
Filed Nov. 18, 1980, Ser. No. 208,048
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—37



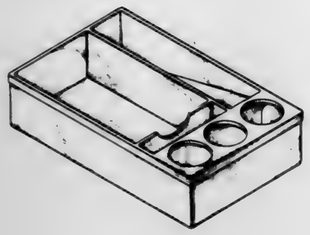
272,921
CONTROL FOR A VIDEO GAME OR THE LIKE
Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.
Filed Feb. 4, 1982, Ser. No. 345,934
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—48



272,922
CHESS SET
Peter R. Rewald, 45575 Spring La. Bldg. #4 Apt. 207, Utica, Mich. 48087
Filed Aug. 12, 1980, Ser. No. 177,520
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—52



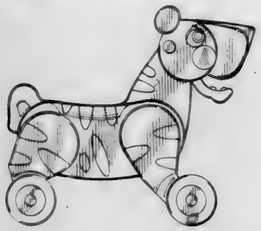
272,923
BINGO EQUIPMENT CONTAINER
Ronald B. Quinn; Mark Hudson, and Sharon Belson, all of 5450 Ethel Ave., Van Nuys, Calif. 91401
Filed Sep. 18, 1981, Ser. No. 303,364
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—55



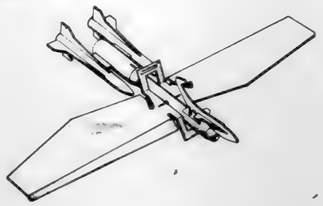
272,924
TOY PERISCOPE
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,743
U.S. Cl. D21—59



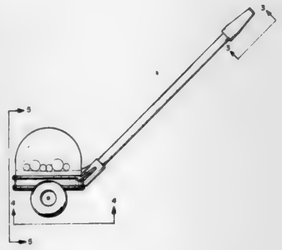
272,925
SIMULATIVE TOY VEHICLE
Lawrence T. Jones, Playa Del Rey; Anson Sims, Granada Hills; Ashley G. Howden; Mark S. Knighton, both of Los Angeles, and L. C. James Kingsbury, Fountain Valley, all of Calif., assignors to California R&D, Culver City, Calif.
Filed Feb. 12, 1982, Ser. No. 348,302
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74



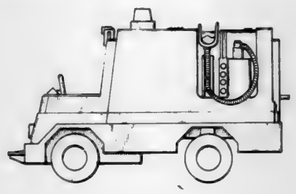
272,926
FLYABLE TOY ROTOR FOR KITE
Kenneth F. Guinn, 7513 Briley Dr., Forth Worth, Tex. 76118
Filed Dec. 10, 1981, Ser. No. 329,316
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—91



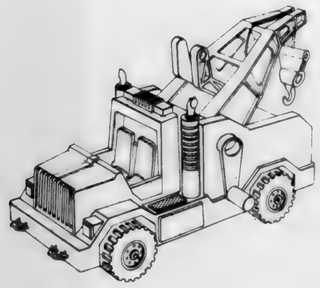
272,927
PUSH TOY
Martin J. Dropik, Cheektowaga, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Nov. 12, 1981, Ser. No. 320,705
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—92



272,928
TOY TRUCK
Robert C. Fisher, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,627
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—133



272,929
TOY TRUCK
Steven E. Hilko, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,183
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—139



272,930
TOY CLOCK
Kenneth J. Anderson, Barrington Hills, Ill., assignor to Milton Bradley International, Inc., Springfield, Mass.
Filed Mar. 19, 1981, Ser. No. 245,616
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—144



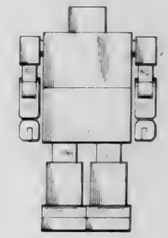
272,931
TOY WORM OR SIMILAR ARTICLE
William Burgi, 42 Male Rd., Clifton Park, N.Y. 12065, and Thomas DePartout, 2273 Connell Ter., Baldwinsville, N.Y. 13027
Filed Nov. 30, 1981, Ser. No. 325,863
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148

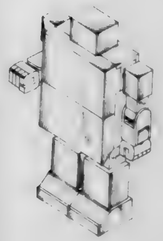


272,932
TOY ALLIGATOR
John J. Sassak, 36855 Schoolcraft, Livonia, Mich. 48150
Filed Sep. 21, 1981, Ser. No. 304,225
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—157



272,933
TOY ROBOT
Katsuji Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai, Tokyo, Japan
Filed Jun. 9, 1981, Ser. No. 272,073
Claims priority, application Japan, Dec. 29, 1980, 55/55337
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166

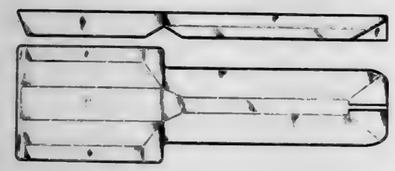




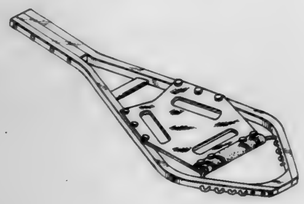
272,934
SHUTTLECOCK
Frank W. Popplewell, Saffron Walden, England, assignor to Dunlop Limited, London, England
Filed Nov. 16, 1979, Ser. No. 95,075
Claims priority, application United Kingdom, May 18, 1979, 989953
The portion of the term of this patent subsequent to Sep. 16, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—207



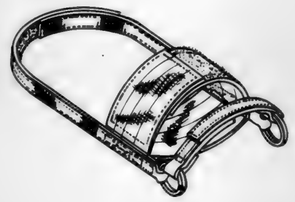
272,935
MARINE RESCUE AND RECREATIONAL BOARD
Charles D. Corey, 5 Jones La., Huntington, N.Y. 11743, and Francesco A. Pia, 3 Boulder Brae La., Larchmont, N.Y. 10538
Filed Oct. 9, 1981, Ser. No. 309,995
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228



272,936
SNOWSHOE
Barney J. Klecker, 1144 S. Landmark Trail, Hopkins, Minn. 55343
Filed Dec. 28, 1981, Ser. No. 334,743
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228



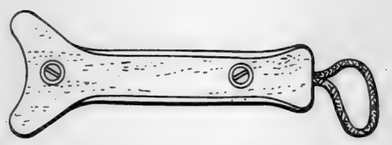
272,937
BINDING FOR A SNOWSHOE
Barney J. Klecker, 1144 S. Landmark Trail, Hopkins, Minn. 55343
Filed Dec. 28, 1981, Ser. No. 334,744
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230



272,938
PISTOL GRIP PART
Herman W. Mueschke, Jr., 1003 Columbia St., Houston, Tex. 77008
Filed Mar. 1, 1982, Ser. No. 353,564
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1



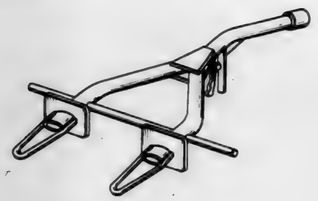
272,939
FISH NET HANDLE
Paul J. Readly, 316 Webster St., Ranshaw, Pa. 17866
Filed Sep. 21, 1981, Ser. No. 304,330
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



272,940
HIGH PRESSURE COVER
Tord G. I. Johansson, Heimdalsgatan 35, S-261 62 Glumslöv, Sweden
Filed Aug. 3, 1981, Ser. No. 289,149
Claims priority, application Sweden, Feb. 2, 1981, 1981-222
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—01



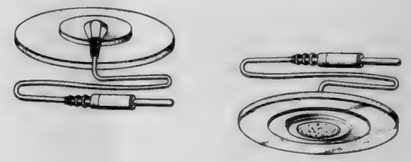
272,941
DUAL LIQUID ICE PROBE
Daniel E. Burns, 1805 Onda, Camarillo, Calif. 93010
Filed Aug. 17, 1981, Ser. No. 293,530
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1



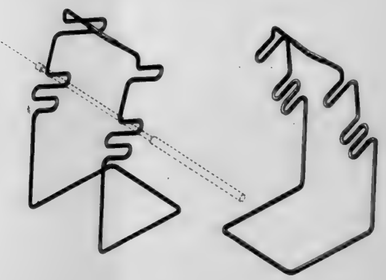
272,942
SANITARY FITTING FOR A BIDET
Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, Assignor to American Standard, Inc., New York, N.Y.
Division of Ser. No. 92,874, Nov. 9, 1979. This application May 14, 1982, Ser. No. 378,365
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 79/3
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23



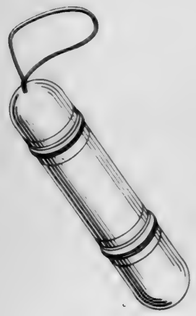
272,943
ELECTRODE FOR BIOMEDICAL SIGNALS
Robert D. Stone, 23641 Cremona St., Laguna Hills, Calif. 92653, and Kenneth L. Dufour, 440 Desola Ter., Corona Del Mar, Calif. 92625
Filed Jun. 22, 1981, Ser. No. 275,808
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29



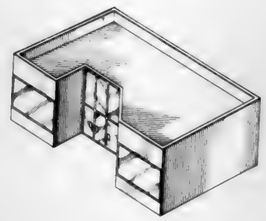
272,944
BACTERIOLOGICAL LOOP HOLDER
Vincent D. Coughlin, 108 High St., P.O. Box 428, Hackettstown, N.J. 07840
Filed Nov. 2, 1981, Ser. No. 317,065
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31



272,945
DEVICE FOR THE STIMULATION OF VAGINAL MUSCLES
Peter Suhel; Bozo Kralj, both of Ljubljana; Danijel Knez, Celje, and Janez Povse, Recica ob Paki, all of Yugoslavia, assignors to Gorenje Tgo N.Sol.O, Velenje, Velenje, Yugoslavia
Filed Mar. 23, 1981, Ser. No. 246,188
Claims priority, application Yugoslavia, Sep. 29, 1980, 361/80
Term of patent 14 years
Int. Cl. D28—*03, 01*
U.S. Cl. D24—36



272,947
BUILDING
Rex W. Beasley, III, 32 Springwood, Irvine, Calif. 92714
Filed Apr. 8, 1981, Ser. No. 252,176
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—1



272,948
COMMUNION RAIL
LaVera R. Bull, 3804 - 6th St., East Moline, Ill. 61244
Continuation-in-part of Ser. No. 113,712, Jan. 21, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,393
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—38

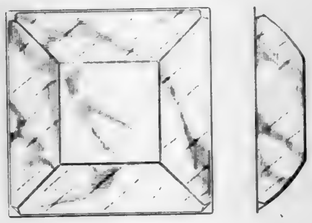


272,946
EAR PROTECTOR
Thomas A. Scanlon, Barrington, R.I., assignor to Tasco Corp., East Providence, R.I.
Filed Aug. 24, 1981, Ser. No. 295,911
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—67

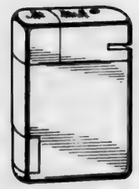




272,949
ONE PIECE DOME CEILING
John E. Beaty, Sr., 107 Miami Gardens Rd., Hollywood, Fla. 33023
Filed Dec. 21, 1981, Ser. No. 332,448
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—92



272,950
COMBINED LIGHTER AND CIGAR/CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain
Filed Jun. 29, 1981, Ser. No. 278,573
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—38



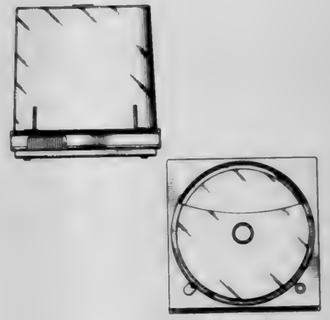
272,951
COMBINED LIGHTER AND CIGAR/CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain
Filed Jun. 29, 1981, Ser. No. 278,380
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—38



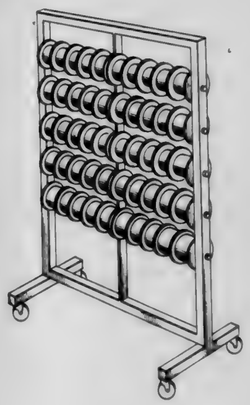
272,952
COSMETIC CONTAINER
Thomas F. Holloway, Southbury, Conn., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Feb. 11, 1982, Ser. No. 348,100
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—89



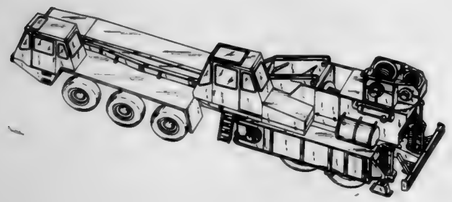
272,953
DISHWASHER
Frank Taylor, 2000 W, Ocean Front, Newport Beach, Calif. 92663
Filed Oct. 7, 1981, Ser. No. 309,178
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—2



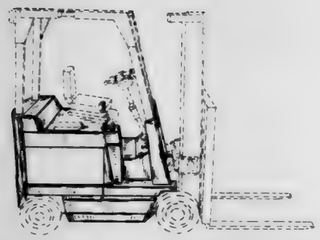
272,954
MOBILE RACK FOR HOLDING WIRE
James Sparks, Fitchburg, Mass., assignor to Electronic Assemblies, Inc., N. Billerica, Mass.
Filed Aug. 14, 1981, Ser. No. 292,876
Term of patent 14 years
Int. Cl. D06—*99*
U.S. Cl. D34—21



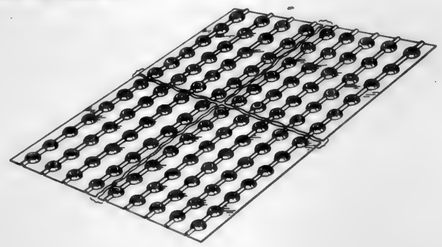
272,955
MOBILE CRANE
David C. Dowrick, Cedar Rapids, and John M. Lanning, Solon, both of Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.
Filed Apr. 20, 1981, Ser. No. 255,755
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—34

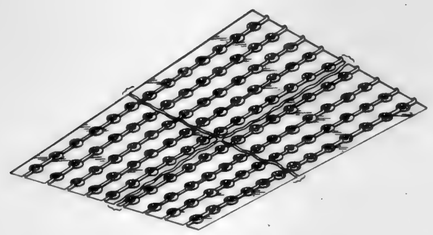


272,956
LIFT TRUCK BODY
Robert L. Kirby; Warner K. Brown, both of Battle Creek, Mich., and Dennis M. Lanci, Renton, Wash., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Jun. 22, 1981, Ser. No. 276,438
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—37



272,957
FOUNDATION WALL OUTER MOISTURE BAR SHEET OR BASEMENT INNER WALL OR FLOOR HUMIDITY CONTROLLING LINING SHEET OR THE LIKE
Jon Bergaland, Charlotte Andersens vei 11 B, Oslo 3, Norway
Filed Sep. 3, 1981, Ser. No. 299,018
Claims priority, application Norway, Mar. 11, 1981, 61,801
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D92—31





272,958
FONT OR THE LIKE
C. Esteban Valencia, 495 Mariposa Dr., Ventura, Calif. 93001
Filed Sep. 14, 1981, Ser. No. 302,292
Term of patent 14 years
Int. Cl. D99—*25*
U.S. Cl. D99—25



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Niskanen, Toivo; Sundman, Frey; and Tuomaala, Jorma, 4,435,122, Cl. 415-121.00B.
A. B. Dick Company: *See*—
McHenry, Max D., 4,434,715, Cl. 101-76.000.
A. E. Staley Manufacturing Company: *See*—
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,435,438, Cl. 426-656.000.
A.I.M. Services: *See*—
Frank, John, 4,435,795, Cl. 368-16.000.
A.R.M.I.N.E.S.: *See*—
Trottier, Jean-Pierre; and Jeandin, Michel, 4,435,360, Cl. 419-49.000.
A/S Haustrup Plastic: *See*—
Ingemann, Ole, 4,434,907, Cl. 220-276.000.
A. W. Plume Limited: *See*—
Plume, Alan W., 4,435,819, Cl. 373-119.000.
AB Tesi: *See*—
Silander, Torsten, 4,434,797, Cl. 128-343.000.
Abadi, Khodabandeh. Descaling composition. 4,435,303, Cl. 252-80.000.
Abbott Laboratories: *See*—
Lee, Cheuk M.; and Parks, James A., 4,435,422, Cl. 424-285.000.
Abe, Kenichi: *See*—
Ishimaru, Kimio; and Abe, Kenichi, 4,435,629, Cl. 219-10.55A.
Abe, Mitsuo: *See*—
Dohya, Akihiro; Hino, Yasuhiko; and Abe, Mitsuo, 4,434,544, Cl. 29-578.000.
Abe, Shinya: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.
Abelard Management Services Limited: *See*—
Wooler, Alan M., 4,435,526, Cl. 521-107.000.
Abernathy, Frederick H., to President and Fellows of Harvard College. Pattern recognition and orientation system. 4,435,837, Cl. 382-41.000.
Abidin, Anwar: *See*—
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.
Abrams, Gerald. Rolling pin with gauge wheels. 4,435,145, Cl. 425-458.000.
Abramson, Allen P.; and Stiles, Theodore R., to Challenger Circle F, Inc. Terminal connector with safety device. 4,435,032, Cl. 339-36.000.
Abramson, Edward A.; and Townsend, Peter K., to Du Pont de Nemours, E. I., and Company. Fiber optic connector with deformable mounting post. 4,435,037, Cl. 350-96.200.
AccuRay Corporation: *See*—
Williams, Paul, 4,434,649, Cl. 73-37.700.
Ace Polymers, Inc.: *See*—
Roellchen, Thomas A., 4,435,463, Cl. 428-158.000.
Acorn Engineering Company: *See*—
Morris, Earl L.; and Hafner, V. Walter, 4,434,516, Cl. 4-252.00R.
Adachi, Hiroyuki; and Hosono, Nagao, to Canon Kabushiki Kaisha. Image recording apparatus with leakage preventing microwave fixing device. 4,435,072, Cl. 355-3.0FU.
Adams, Derek S., to Lucas Industries plc. Battery charging system. 4,435,675, Cl. 320-22.000.
Adell, Robert, to U.S. Product Development Company. Decorative moldings. 4,434,598, Cl. 52-716.000.
Adolfsson, Morgan; Goransson, Sture; and Hok, Bertil, to ASEA Aktiebolag. Integrated capacitive transducer. 4,434,665, Cl. 73-724.000.
Advanced Technology Laboratories: *See*—
McAusland, Robert R., 4,435,614, Cl. 174-117.0PC.
Aeroquip Corporation: *See*—
Boland, John D.; and Kresky, Fred C., 4,434,970, Cl. 254-108.000.
Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Sorbier, Pierre, 4,435,347, Cl. 264-118.000.
AGFA-Gevaert Aktiengesellschaft: *See*—
Payrhammer, Bernd; and Weinert, Volker, 4,435,075, Cl. 355-35.000.
Agreda, Victor H.; and Partin, Lee R., to Eastman Kodak Company. Reactive distillation process for the production of methyl acetate. 4,435,595, Cl. 560-234.000.
AHI Operations Limited: *See*—
Millar, Thomas D., 4,434,744, Cl. 119-14.020.
Ahslund, Christer; Andersson, Karl H. T.; and Bergh, Sven S., to Nyby Uddeholm Powder Aktiebolag. Loose sintering of spherical ferritic-austenitic stainless steel powder and porous body. 4,435,483, Cl. 428-566.000.
Aida Engineering, Ltd.: *See*—
Maeda, Nobuyoshi; Itakura, Hideo; and Yagi, Takashi, 4,434,646, Cl. 72-451.000.
Air Products & Chemicals, Inc.: *See*—
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.
Aisen Seiki Kabushiki Kaisha: *See*—
Kobayashi, Hideyuki, 4,434,619, Cl. 60-547.100.
Ajioka, James S.; and Joe, Dick M., to Hughes Aircraft Company. Rod-excited waveguide slot antenna. 4,435,715, Cl. 343-771.000.
Akaku, Fumiyoshi: *See*—
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.
Akatsuka, Shin-ichiro, to Eisai Company, Limited. Elimination of rancid odor in fermented milk products. 4,435,431, Cl. 426-36.000.
Akimoto, Hiroshi: *See*—
Nishimura, Susumu; and Akimoto, Hiroshi, 4,435,570, Cl. 544-280.000.
Akiyoshi, Yuji: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Akkapeddi, Murali K.: *See*—
Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,435,561, Cl. 528-193.000.
Akkerman, Neil H.: *See*—
Vazquez, Gonzalo; and Akkerman, Neil H., 4,434,847, Cl. 166-117.500.
Aktiengesellschaft Adolf Saurer: *See*—
Comploi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, 4,434,728, Cl. 112-84.000.
Al-Khazraji, Yousif A. H.: *See*—
Hemp, John; and Al-Khazraji, Yousif A. H., 4,434,666, Cl. 73-861.120.
Alan Cobham Engineering Limited: *See*—
Coffin, Christopher J., 4,435,626, Cl. 200-81.90R.
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Shaft seal with magnetically controlled gap between rotating ring and surrounding non-rotating ring. 4,434,987, Cl. 277-80.000.
Albert Handtmann GmbH & Co.: *See*—
Staudenrausch, Georg; and Weerth, Hans-Ernst, 4,434,527, Cl. 17-33.000.
Albini, Giovanni: *See*—
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,434,916, Cl. 222-321.000.
Albright, Jay D.: *See*—
McEvoy, Francis J.; and Albright, Jay D., 4,435,329, Cl. 260-455.00R.
Alexander, David C.: *See*—
Simons, Leslie H.; and Alexander, David C., 4,435,517, Cl. 502-74.000.
Alexander, Michael C.: *See*—
Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., 4,435,703, Cl. 340-723.000.
Alfano, Robert R.: *See*—
Schiller, Norman H.; and Alfano, Robert R., 4,435,727, Cl. 358-139.000.
Alford, Arthur L., to International Environmental Manufacturing Co. Heat exchanger apparatus. 4,434,843, Cl. 165-150.000.
Allen-Bradley Company: *See*—
Callan, John E., 4,435,706, Cl. 340-825.080.
Allen, Joseph C., to Heavy Oil Process, Inc. Method and apparatus for recovering high viscosity oils. 4,434,849, Cl. 166-252.000.
Alley, Patrick H. Event detection and indication system. 4,435,700, Cl. 340-539.000.
Allied Corporation: *See*—
Holt, Harley R., 4,434,551, Cl. 29-861.000.
Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,435,561, Cl. 528-193.000.
Oxenrider, Bryce C.; and Long, David J., 4,435,294, Cl. 252-8.600.
Allis-Chalmers Corporation: *See*—
Nolt, James R., Jr., 4,435,448, Cl. 427-234.000.
Alloy Surfaces Company, Inc.: *See*—
Baldi, Alfonso L., 4,435,481, Cl. 428-550.000.
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Photo-assisted CVD. 4,435,445, Cl. 427-54.100.

Almqvist, Christer; and Lindahl, Lars, to ReHeat AB. Method and a device for embossing heat exchanger plates. 4,434,643, Cl. 72-379.000.

Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., to General Electric Company. Automated ammunition mixer. 4,434,700, Cl. 89-34.000.

Aluminium de Grece: *See—*
Casdas, Spyridon, 4,435,255, Cl. 204-67.000.

Aluminum Company of America: *See—*
Hildeman, Gregory J.; Kuli, John C., Jr.; and Vivola, Leo A., 4,435,213, Cl. 75-249.000.

ALZA Corporation: *See—*
Leeper, Harold M., 4,435,180, Cl. 604-896.000.

Am Fab, Inc.: *See—*
Solomon, Robert A.; and Dellinger, John J., 4,434,722, Cl. 108-8.000.

Ambros, Rainer: *See—*
Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, 4,435,184, Cl. 23-300.000.

Amchem Products, Inc.: *See—*
Dollman, David Y., 4,435,223, Cl. 134-3.000.

American Cyanamid Company: *See—*
Cesark, Frank F.; and Thomas, Daniel W., 4,435,002, Cl. 282-27.500.
Epstein, Joseph W.; Osterberg, Arnold C.; and Brabander, Herbert J., 4,435,419, Cl. 424-274.000.
Loffelman, Frank F.; and Brady, Thomas E., 4,435,555, Cl. 526-261.000.
McEvoy, Francis J.; and Albright, Jay D., 4,435,329, Cl. 260-455.00R.
Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, 4,435,387, Cl. 424-180.000.

American Hoechst Corporation: *See—*
Walls, John E.; and Duyal, Tulay, 4,435,496, Cl. 430-285.000.

American Hospital Supply Corporation: *See—*
Hudspith, Sydney, 4,434,823, Cl. 141-329.000.
Redmond, Russell J.; and Hannula, Donald L., 4,435,174, Cl. 604-174.000.

American Optical Corporation: *See—*
Hennick, Robert P., 4,435,079, Cl. 356-123.000.

American Screen Printing Equipment Company: *See—*
Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, 4,434,562, Cl. 34-4.000.

American Standard Inc.: *See—*
Mills, Larry E.; and Dove, Thomas D., 4,435,001, Cl. 282-11.50A.

Ames, Jack D.: *See—*
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.

AMF Incorporated: *See—*
Rose, John A.; and Dyer, Keith, 4,434,730, Cl. 112-121.120.

AMP Incorporated: *See—*
Berry, Donald A.; Fabian, David J.; and Lucius, John E., 4,435,035, Cl. 339-99.00R.
Soes, Lucas; and Ten Berge, Eduardus F. A., 4,435,038, Cl. 350-96.210.

Ampex Corporation: *See—*
Chow, Yiu T.; and Gilligan, Thomas J., 4,435,754, Cl. 364-200.000.
Ryan, Dennis M., 4,434,686, Cl. 81-3.00R.
Ryan, Dennis M., 4,434,954, Cl. 242-189.000.

AMSTED Industries Incorporated: *See—*
Mulcahy, Harry W.; and Kaufhold, Horst T., 4,434,720, Cl. 105-199.0CB.

Ancher, Jean-Francois R.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Andersson, Karl H. T.: *See—*
Ahslund, Christer; Andersson, Karl H. T.; and Bergh, Sven S., 4,435,483, Cl. 428-566.000.

Ando, Hideo; and Suzuki, Isao, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing an information memory disk. 4,435,343, Cl. 264-22.000.

Andrejasich, Raymond J.: *See—*
Perry, Ralph A.; and Andrejasich, Raymond J., 4,434,650, Cl. 73-61.10R.

Andros, John H.: *See—*
Tsoukalas, Skevos N.; and Andros, John H., 4,435,305, Cl. 252-158.000.

Andrus, Paul G.: *See—*
Epstein, Harold M.; Schwerzel, Robert E.; and Andrus, Paul G., 4,435,828, Cl. 378-49.000.

Anne, Lenin: *See—*
Marston, Alan D.; and Anne, Lenin, 4,435,446, Cl. 427-93.000.

Annegarn, Marcellinus J. J. C.: *See—*
Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., 4,435,728, Cl. 358-140.000.

Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Hydrocortisone derivatives, the preparation and use thereof. 4,435,390, Cl. 424-243.000.

Anritsu Electric Company Limited: *See—*
Sasakawa, Tomio, 4,435,036, Cl. 350-96.200.

Anson, Michael; Pinder, Andrew C.; and Palmer, Alan R., to National Research Development Corporation. Tympanometric apparatus. 4,434,800, Cl. 128-665.000.

Antonazzi, Frank J., to Bendix Corporation, The. Pressure ratio measurement system. 4,434,664, Cl. 73-701.000.

Aoki, Hiroyuki: *See—*
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, 4,434,976, Cl. 266-268.000.

Aono, Masami, to Tokico Ltd. Deceleration detecting valve responsive to failure in front brake circuit. 4,435,020, Cl. 303-6.00C.

Aoyagi, Edward I., to Chevron Research Company. Fungicidal and algicidal 1-methyl-3,4-dihalo-5-substituted thio-, sulfoxyl-, or sulfonyl-pyrazoles. 4,435,416, Cl. 424-273.00P.

Aoyagi, Yoshiaki: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,435,397, Cl. 424-250.000.

Apache Powder Company: *See—*
Ciaramitaro, David A.; and Moore, Jack M., 4,435,232, Cl. 149-2.000.

Arai, Isao: *See—*
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, 4,434,588, Cl. 51-344.000.

Arakawa, Shun, to Fuji Photo Film Co., Ltd. Process for producing photographic paper. 4,435,248, Cl. 162-12.000.

Araki, Kazuhiro: *See—*
Matsumoto, Akio; and Araki, Kazuhiro, 4,435,087, Cl. 368-76.000.

Arbed S. A.: *See—*
Junck, Guy, 4,435,643, Cl. 250-358.100.

Arihara, Takumi, to Ikeda Bussan Co., Ltd. Recliner-back tilting mechanism. 4,435,013, Cl. 297-364.000.

Arikawa, Tetsuro, to Nippon Air Brake Co., Ltd. Skid control system. 4,435,768, Cl. 364-426.000.

Arlt, Dieter, to Bayer Aktiengesellschaft. Preparation of caronaldehyde acid and derivatives thereof. 4,435,597, Cl. 562-506.000.

Armco Inc.: *See—*
Cordrey, Richard N., 4,434,971, Cl. 254-273.000.

Armour Food Company: *See—*
Theiler, Richard F., 4,435,433, Cl. 426-266.000.

Armstrong World Industries, Inc.: *See—*
Forry, John S.; and Garrick, John R., 4,435,353, Cl. 264-518.000.

Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, to Hitachi, Ltd. Speech synthesizer having speech time stretch and compression functions. 4,435,832, Cl. 381-34.000.

Asada, Eiji: *See—*
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,435,482, Cl. 428-553.000.

Asahi Glass Company Ltd.: *See—*
Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Nagai, Junichi, 4,435,048, Cl. 350-357.000.

Asahi, Hiroji: *See—*
Kitagawa, Norihisa; and Asahi, Hiroji, 4,435,788, Cl. 365-185.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Takumi, 4,435,060, Cl. 354-173.100.

Asami, Hajime: *See—*
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, 4,435,215, Cl. 106-84.000.

Aschenbruck, Emil: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,434,987, Cl. 277-80.000.

ASEA Aktiebolag: *See—*
Adolfsson, Morgan; Goransson, Sture; and Hok, Bertil, 4,434,665, Cl. 73-724.000.
Stenkvist, Sven-Einar, 4,435,813, Cl. 373-72.000.

Ashland Oil, Inc.: *See—*
Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., 4,435,279, Cl. 208-111.000.
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,435,515, Cl. 502-65.000.

Assirelli, Antonietta: *See—*
Petracchi, Ida; Assirelli, Antonietta; Pacini, Carlo; and Pacini, Cesare, 4,434,612, Cl. 57-331.000.

Astberg, Ake, to Svenska Rotor Maskiner Aktiebolag. Screw rotor machine and rotor profile therefor. 4,435,139, Cl. 418-201.000.

Astheimer, Robert W., to Barnes Engineering Company. Method and apparatus for monitoring the burning efficiency of a furnace. 4,435,149, Cl. 431-12.000.

Atari, Inc.: *See—*
Barnett, Ralph M., 4,435,746, Cl. 363-21.000.
Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., 4,435,779, Cl. 364-900.000.

Atkinson, Alan W.; and Lancaster, Janet M., to T&N Materials Research Limited. Gasket manufacture. 4,435,235, Cl. 156-62.200.

Atkinson, Gordon E., to Vernay Laboratories, Inc. Bi-directional pressure relief valve. 4,434,810, Cl. 137-493.000.

Atkinson, Ronald E.: *See—*
Gerritsen, Jan; Atkinson, Ronald E.; and Martin, Anthony F., 4,435,317, Cl. 252-547.000.

Atwood, Robert G.: *See—*
Skinner, James R.; and Atwood, Robert G., 4,434,891, Cl. 206-444.000.

Audeh, Costandi A., to Mobil Oil Corporation. Re-refining lubricating oil in a bed of oil shale. 4,435,270, Cl. 208-11.00R.

August, Charles; and Myers, Harry J., to United States of America, Energy. Permanent magnet flowmeter having improved output terminal means. 4,434,667, Cl. 73-861.120.

Aujla, Sharanjit S.; and Lee, John D., to Northern Telecom Limited. Connectors with insulation-displacing terminals. 4,435,034, Cl. 339-98.000.

Ausonia Farmaceutici s.r.l.: *See—*
De Vincentiis, Leonardo, 4,435,591, Cl. 560-73.000.

Austin, Stephen R.: *See—*
Mosely, John F.; and Austin, Stephen R., 4,435,113, Cl. 414-347.000.

Automated Optic, Inc.: *See—*
Spriggs, Robert G., 4,434,581, Cl. 51-67.000.

AVA International Corporation: *See—*
Vazquez, Gonzalo; and Akkerman, Neil H., 4,434,847, Cl. 166-117.500.

Avco Corporation: *See—*
Bartle, Richard S., 4,435,645, Cl. 250-493.100.

Avera, William W.: *See—*
Nijhawan, Pramodh; and Avera, William W., 4,435,197, Cl. 55-341.00R.

Axelson, Inc.: *See—*
Vanderburg, Ralph W., 4,434,967, Cl. 251-328.000.

Axford, Theodore G.: *See—*
Sheldon, William W.; and Axford, Theodore G., 4,434,572, Cl. 43-6.500.

Aylward, David E., to Cities Service Co. Catalyst composition. 4,435,520, Cl. 502-107.000.

Azeez, Syed A.; Leipelt, Paul A.; and Morello, Herbert, to Diebold, Incorporated. Deposit information labeling mechanism for ATM envelope depositing equipment. 4,435,243, Cl. 156-361.000.

B. F. Goodrich Company, The: *See—*
Dinbergs, Kornelius, 4,435,524, Cl. 521-65.000.
Fisher, John M., 4,434,870, Cl. 182-48.000.

Baba, Yutaka: *See—*
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.

Babcock & Wilcox Company, The: *See—*
Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 4,434,537, Cl. 24-380.000.
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.
Matsko, Theodore N., 4,435,291, Cl. 210-739.000.

Babineaux, Bernard J. Boxing device that fights back. 4,434,980, Cl. 272-78.000.

Bach, Hanswilhelm: *See—*
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, 4,435,603, Cl. 568-701.000.

Bachmann, William V. Internal combustion engine. 4,434,752, Cl. 123-50.00B.

Backman, Henrik A. Method for fixing the ends of concrete columns in concrete bases and device for carrying out said method. 4,434,600, Cl. 52-741.000.

Bacroix, Marcel A., to Service de Propriete Indust. Centre de Recherches de Pont a Mousson. Device for the automatic filling of bottles and installation containing same. 4,434,821, Cl. 141-44.000.

Badger Company, Inc., The: *See—*
Miserlis, Constantine D., 4,435,580, Cl. 549-248.000.
Miserlis, Constantine D., 4,435,581, Cl. 549-248.000.

Baehr, Donald O., to United States Gypsum Company. Process for rapid dewatering and drying of calcium sulfate hemihydrate. 4,435,183, Cl. 23-293.00R.

Bahary, William S.; and Griffin, Rowland A., to Duracell Inc. Gelling agent for alkaline cells. 4,435,488, Cl. 429-212.000.

Bahnson Company, The: *See—*
Nijhawan, Pramodh; and Avera, William W., 4,435,197, Cl. 55-341.00R.

Bailey, Alfred J., to Massey-Ferguson Services N.V. Mower-conditioner. 4,434,605, Cl. 56-16.400.

Bailey, John M., to Caterpillar Tractor Co. Method and apparatus for flattening corrugated heat exchanger plate. 4,434,637, Cl. 72-17.000.

Baillie, Alan G., to Burroughs Corporation. Manufacture of wafer-scale integrated circuits. 4,435,498, Cl. 430-318.000.

Baines, Kerry D.: *See—*
Berdat, Henry F.; and Baines, Kerry D., 4,435,055, Cl. 354-4.000.

Baker, Kenneth D.; and Scheider, Hans, to OMI International Corporation. Gold sulphite electroplating solutions and methods. 4,435,253, Cl. 204-43.00G.

Balcke-Duerr AG: *See—*
Fickelscher, Kurt G., 4,434,682, Cl. 74-805.000.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Pyrophoric foil and article, and pyrophoric technique. 4,435,481, Cl. 428-550.000.

Baldwin, David L.: *See—*
Bowen, James H.; Baldwin, David L.; and Couch, Philip R., 4,435,850, Cl. 455-606.000.

Ball Corporation: *See—*
Nguyen, Tuan A., 4,434,641, Cl. 72-354.000.

Ballato, Arthur: *See—*
Mariani, Elio; and Ballato, Arthur, 4,435,441, Cl. 427-10.000.

Balzers Aktiengesellschaft: *See—*
Winkler, Otto, 4,434,622, Cl. 62-6.000.

Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, to Sanwa Kagaku Kenkyusho Co. Ltd. 2,5-Benzodiazocine derivatives and salts thereof, as well as pharmaceutical agent comprising as effective component at least one of the derivatives and salts. 4,435,392, Cl. 424-244.000.

Bankston, Ben F.: *See—*
Kurtz, George W.; and Bankston, Ben F., 4,434,659, Cl. 73-620.000.

Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, to Gedeon Vegyeszeti Gyar Rt. Process for the extraction of solid material from solution by crystallization. 4,435,182, Cl. 23-295.00R.

Baon, Carlos P. Portable intrusion alarm. 4,435,701, Cl. 340-546.000.

Barakaev, Khristofor F.: *See—*
Lytsev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., 4,435,748, Cl. 363-54.000.

Barbeau, Dennis E., to Teledyne Industries, Inc. Engine fuel system. 4,434,621, Cl. 60-734.000.

Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., to Union Carbide Corporation. Multilayer ceramic capacitors. 4,435,738, Cl. 361-321.000.

Barbeagaard, Peder O.; Jensen, Georg W.; and Holm, Poul, to Novo Industri A/S. Detergent cellulase. 4,435,307, Cl. 252-174.120.

Barbin, William W.: *See—*
Koch, Russell W.; and Barbin, William W., 4,434,832, Cl. 152-370.000.

Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased (by Haglid, Britt I., executrix), to Du Pont de Nemours, E. I., and Company. Thiol methylation process-reaction, recycle and regeneration of methyl bromide. 4,435,568, Cl. 544-182.000.

Barch, Herbert W.: *See—*
Martin, Emil; Barch, Herbert W.; and Greer, S. Thomas, 4,434,521, Cl. 15-230.110.

Barkemeyer, Wolfgang K. W., to Jastram-Werke GmbH & Co. KG. Rudder for watercraft. 4,434,738, Cl. 114-162.000.

Barlow, Gordon A., to Gordon Barlow Design. Tamper evident packaging. 4,434,893, Cl. 206-522.000.

Barnard, Robert L. Collapsible yard pan. 4,434,829, Cl. 150-49.000.

Barnes Engineering Company: *See—*
Astheimer, Robert W., 4,435,149, Cl. 431-12.000.

Barnes, John F.: *See—*
Melka, James P., Jr.; and Barnes, John F., 4,435,258, Cl. 204-109.000.

Barnett, Ralph M., to Atari, Inc. Inductive reactive voltage regulator. 4,435,746, Cl. 363-21.000.

Barry Wright Corporation: *See—*
Peterson, Robert R., 4,435,097, Cl. 384-221.000.

Barta nee Szalai, Gizella: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Barth, Not-Duri; and Gaupp, Osvin, to BBC Brown, Boveri & Company, Limited. High tension circuit breaker. 4,435,627, Cl. 200-148.00R.

Barth, Utz W.: *See—*
Ilgner, Herwig; and Barth, Utz W., 4,435,849, Cl. 455-601.000.

Bartholic, David B.; and Flanders, Robert L., to Engelhard Corporation. Process for upgrading crude oil and residual fractions thereof by vaporizing the charge in a falling curtain of contact particles. 4,435,272, Cl. 208-127.000.

Bartle, Richard S., to Avco Corporation. Infrared radiation signature generation system. 4,435,645, Cl. 250-493.100.

Bascou, Jacques, to Regie Nationale des Usines Renault. Locking device for pivoting window. 4,435,007, Cl. 292-268.000.

BASF Aktiengesellschaft: *See—*
Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, 4,435,427, Cl. 424-356.000.
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.

BASF Wyandotte Corporation: *See—*
Reichel, Curtis J., 4,435,592, Cl. 560-91.000.

Basi, Jagtar S.; and Mendel, Eric, to International Business Machines Corporation. Method for polishing titanium carbide. 4,435,247, Cl. 156-636.000.

Basrai, Habil S., to Ford Motor Company. Tractor and implement coupled thereto with hydraulic lift system including phasing valve. 4,434,857, Cl. 172-328.000.

Battelle Development Corporation: *See—*
Epstein, Harold M.; Schwerzel, Robert E.; and Andrus, Paul G., 4,435,828, Cl. 378-49.000.

Batzold, John S.; and Savas, Judith C., to Exxon Research and Engineering Co. Gas percolation barrier for gas fed electrode. 4,435,267, Cl. 204-284.000.

Bauer, Wilfried; and Pless, Janos, to Sandoz Ltd. N-Acyl-polypeptides and processes for the production thereof. 4,435,385, Cl. 424-177.000.

Baum, Richard I.; and Sakalay, Frederick E., to International Business Machines Corporation. Hardware monitor for obtaining processor software/hardware interrelationships. 4,435,759, Cl. 364-200.000.

Baxter Travenol Laboratories, Inc.: *See—*
Bellamy, David; and Smith, Dale A., 4,434,822, Cl. 141-98.000.
D'Amico, Richard; Fowles, Thomas A.; and Winchell, David A., 4,434,904, Cl. 215-232.000.
Russell, Pat, 4,434,963, Cl. 251-7.000.

Bayer Aktiengesellschaft: *See—*
Arlt, Dieter, 4,435,597, Cl. 562-506.000.
Bier, Peter; and Binsack, Rudolf, 4,435,546, Cl. 525-418.000.
Ebneth, Harold; Fitzky, Hans G.; and Oberkirch, Wolfgang, 4,435,465, Cl. 428-195.000.
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,435,336, Cl. 260-508.000.
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert, 4,435,208, Cl. 71-105.000.

Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.
Miessen, Ralf; Wilsing, Hans; and Schultze-Gebhardt, Fritz, 4,434,530, Cl. 19-0.460.
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.
Reubke, Karl-Julius, 4,435,324, Cl. 260-378.000.
Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, 4,435,589, Cl. 560-48.000.
Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.
Stohr, Frank-Michael; Wild, Peter; and Nickel, Horst, 4,435,334, Cl. 260-501.120.
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, 4,435,532, Cl. 524-92.000.

Bayerische Motoren Werke A.G.: *See—*
Brenner, Horst; and Hinsberg, Rene, 4,434,868, Cl. 180-226.000.

Bazell, Seymour: *See—*
Goldberg, Edward M.; and Bazell, Seymour, 4,435,171, Cl. 604-49.000.

BBC Brown, Boveri & Company, Limited: *See—*
Barth, Not-Duri; and Gaupp, Osvin, 4,435,627, Cl. 200-148.00R.
Buhler, Karl, 4,435,814, Cl. 373-76.000.

Beach, Lynne B.: *See—*
Lewin, David F.; Haynes, Louie J.; and Beach, Lynne B., 4,434,946, Cl. 242-18.00G.

Beach-Thomas, Anthony W., to Hughes, John Rhys. Trolley for use in transporting a boat. 4,434,992, Cl. 280-47.13B.

Beair, Charles E.: *See—*
Ou, Sam A.; and Beair, Charles E., 4,434,905, Cl. 220-89.00A.

Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., to Babcock & Wilcox Company, The. Integral latching mechanism for module front plate. 4,434,537, Cl. 24-380.000.

Bearint, Beryl I. Puzzle-game utilizing movable discs to attain specified arrangement. 4,434,982, Cl. 273-153.00S.

Bechthold, Horst, to Buckau-Walther AG. Method of manufacturing ammonium sulfate granules. 4,435,341, Cl. 264-7.000.

Bechtolsheim, Andreas, to Sun Microsystems, Inc. Raster memory manipulation apparatus. 4,435,792, Cl. 365-230.000.

Beck, Hubert W.: *See—*
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,435,515, Cl. 502-65.000.

Beck, Martin H.; Krishnakumar, Suppayan M.; and Harry, Ieuan L., to Continental Group, Inc., The. Reciprocating clamp apparatus for thermoforming plastic containers. 4,435,244, Cl. 156-379.800.

Becker, Norbert; and Hildebrandt, Norbert. Connection for furniture frame parts, particularly office furniture. 4,435,103, Cl. 403-292.000.

Becker, Philip D., to Buell Industries, Inc. Fastener assembly. 4,435,112, Cl. 411-368.000.

Becton, Dickinson and Company: *See—*
Hill, Charles E., 4,435,458, Cl. 428-91.000.

Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., to General Electric Company. Programmable signal amplitude control circuits. 4,435,679, Cl. 323-350.000.

Beecham Group Limited: *See—*
Greenway, Michael J., 4,435,414, Cl. 424-271.000.
Stirling, Irene; and Clarke, Brian P., 4,435,565, Cl. 542-416.000.

Beecham Group p.l.c.: *See—*
Rogers, Norman H.; and Crimmin, Michael J., 4,435,583, Cl. 549-414.000.

Behrend, Volkmar; and Roder, Eckhard, to O & K Orenstein & Koppel Aktiengesellschaft. Method of controlling horizontal motion of a load application point on an articulated crane. 4,435,118, Cl. 414-744.00R.

Beisler, Alfons, to Beisler Gesellschaft mit beschrankter Haftung. Arrangement for sewing separate successive seams along different directions in a fabric material. 4,434,731, Cl. 112-121.140.

Beisler Gesellschaft mit beschrankter Haftung: *See—*
Beisler, Alfons, 4,434,731, Cl. 112-121.140.

Belanger, Patrice C.; Williams, Haydn W. R.; and Roksch, Joshua, to Merck & Co., Inc. Resolution of substituted dibenzo[b,f]thiepin-3-carboxylic acid-5-oxides with ephedrine. 4,435,579, Cl. 549-12.000.

Belcher, Samuel L.: *See—*
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,435,146, Cl. 425-534.000.

Bell, Alexander G.: *See—*
Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., 4,435,711, Cl. 343-389.000.

Bell, Anthony J.; and Beyersdorff, Leland E., to Goodyear Tire & Rubber Company, The. Emulsion polymerization process using monobasic alkali phosphate. 4,435,554, Cl. 526-229.000.

Bell, Curtis H.: *See—*
Olsen, Roy W.; and Bell, Curtis H., 4,435,352, Cl. 264-504.000.

Bell Helmets Inc.: *See—*
Sundahl, James G.; and Broerama, Lester V., 4,434,514, Cl. 2-425.000.

Bell Industries, Inc.: *See—*
Kaye, Peter D., 4,434,683, Cl. 76-37.000.
Nixon, Keith L., 4,434,684, Cl. 76-37.000.

Bell Telephone Laboratories, Incorporated: *See—*
Cohen, Leonard G.; and Mammel, Wanda L., 4,435,040, Cl. 350-96.330.
Rubin, Steven M., 4,435,836, Cl. 382-27.000.
Tsang, Won-Tien; and van der Ziel, Jan P., 4,435,809, Cl. 372-49.000.

Bellamy, David; and Smith, Dale A., to Baxter Travenol Laboratories, Inc. System for the sterile mixing of materials. 4,434,822, Cl. 141-98.000.

Bellay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., to Texas Instruments Incorporated. Multiprogrammable input/output circuitry. 4,435,763, Cl. 364-200.000.

Beloate, Mickey R.; Erb, Harley E.; and Shelton, Charles W., to Plough, Inc. Tamper-resistant reclosable package. 4,434,896, Cl. 206-621.000.

Beloit Corporation: *See—*
Karr, Gerald W., 4,434,949, Cl. 242-66.000.

Belz, Herman M.; and Stieber, Harry C., to Union Carbide Corporation. Method and article for protecting tapered threaded electrode joints by use of an alignment mechanism. 4,435,816, Cl. 373-91.000.

Bendell, Sidney L.; and Levine, Peter A., to RCA Corporation. Low noise CCD output. 4,435,730, Cl. 358-213.000.

Bendix Corporation, The: *See—*
Antonazzi, Frank J., 4,434,664, Cl. 73-701.000.
Brush, Robert W., Sr.; and Piscitelli, R. Amelia, 4,434,552, Cl. 29-876.000.
Kyriakos, Constantinos S., 4,435,708, Cl. 343-12.00A.
Martin, Gordon W.; and Strohl, John, 4,435,268, Cl. 204-408.000.
Peterson, Arnold D., 4,435,659, Cl. 310-68.00R.

Benito, Calvin G. Bird environmental inspection trap. 4,434,574, Cl. 43-63.000.

Benn, Otto: *See—*
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, 4,435,532, Cl. 524-92.000.

Berdat, Henry F.; and Baines, Kerry D., to Gerber Scientific Instrument Company, The. Multiple frequency ranging apparatus for focus control. 4,435,055, Cl. 354-4.000.

Beres-Deak, Laszlo: *See—*
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo, 4,435,129, Cl. 417-151.000.

Berger Industries, Inc.: *See—*
Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, 4,435,005, Cl. 285-31.000.

Berger, Konrad: *See—*
Krauss, Theo; Herrmann, Ludwig; and Berger, Konrad, 4,434,566, Cl. 38-8.000.

Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, to Berger Industries, Inc. Joint for conduit with single threaded end. 4,435,005, Cl. 285-31.000.

Bergh, Sven S.: *See—*
Ahslund, Christer; Andersson, Karl H. T.; and Bergh, Sven S., 4,435,483, Cl. 428-566.000.

Bergmann, Roland: *See—*
Diehl, Manfred; and Bergmann, Roland, 4,435,216, Cl. 106-97.000.

Bergstrom, Carl D. Sailboat race board game apparatus. 4,434,984, Cl. 273-246.000.

Bernhard Beumer Maschinenfabrik KG: *See—*
Beumer, Bernhard, 4,434,603, Cl. 53-557.000.

Bernstein, Seymour: *See—*
Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, 4,435,387, Cl. 424-180.000.

Berry, Buford E. Apertured display board and hook. 4,434,960, Cl. 248-220.400.

Berry, Donald A.; Fabian, David J.; and Lucius, John E., to AMP Incorporated. Mass terminatable single row connector assembly. 4,435,035, Cl. 339-99.00R.

Berry, Robert L.: *See—*
Shideler, Jay A.; and Berry, Robert L., 4,435,225, Cl. 148-1.500.

Berthold, Fritz; and Kubisiak, Helmut, to Laboratorium Prof. Dr. Rudolf Berthold. Assays, including immunoassays with FITC label activated by sodium hypochlorite. 4,435,509, Cl. 436-518.000.

Bertin, Patrice, to Valeo, Societe Anonyme. Power-assisted steering device for a vehicle. 4,434,706, Cl. 91-375.00A.

Bertolacini, Ralph J.; and Forsythe, William L., Jr., to Standard Oil Company, (Indiana). Catalytic cracking using a cracking catalyst in admixture with particles of platinum group metal or rhenium on a substrate regenerated to up to about 0.1% coke. 4,435,282, Cl. 208-113.000.

Bertram, Hans H.: *See—*
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, 4,435,532, Cl. 524-92.000.

Best, Lance E.: *See—*
Dunphy, Gerald F.; and Best, Lance E., 4,434,634, Cl. 70-89.000.

Beswick, David G. E., to Kenneth E. Beswick Limited. Method of manufacturing plug-in electrical fuses. 4,434,548, Cl. 29-623.000.

Bethlehem Steel Corporation: *See—*
Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., 4,435,093, Cl. 374-129.000.

Beumer, Bernhard, to Bernhard Beumer Maschinenfabrik KG. Plant for producing palletless stacks of piece goods, particularly sacks around which is shrunk a sheet. 4,434,603, Cl. 53-557.000.

Bey, Philippe: *See—*
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.

Beyer, Horst; Lonne, Klaus; and Majewski, Klaus-Peter, to Goetze AG. Sealing gasket. 4,434,989, Cl. 277-235.00B.

Beyersdorff, Leland E.: *See—*
Bell, Anthony J.; and Beyersdorff, Leland E., 4,435,554, Cl. 526-229.000.

Bhalla, Ranbir S.: *See—*
Plagge, Vernon L.; and Bhalla, Ranbir S., 4,435,669, Cl. 313-634.000.

Bianchi, Giuseppe; and Sburlino, Roberto, to Industrie Zanussi S.p.A. Washing machine with electrochemical cell. 4,434,629, Cl. 68-13.00A.

Bianchi, Valerio: *See—*
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Bianco, Frank J.: *See—*
Jiminez, Oscar; and Bianco, Frank J., 4,434,801, Cl. 128-689.000.

Bier, Peter; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Polyesters compositions which crystallize rapidly. 4,435,546, Cl. 525-418.000.

Bing, David H.: *See—*
Pabst, Patrea L.; and Bing, David H., 4,435,318, Cl. 260-112.00B.

Binsack, Rudolf: *See—*
Bier, Peter; and Binsack, Rudolf, 4,435,546, Cl. 525-418.000.

Biotechnology, Inc.: *See—*
Jiminez, Oscar; and Bianco, Frank J., 4,434,801, Cl. 128-689.000.

Biotest-Serum-Institut GmbH: *See—*
Walker, Wolfram H., 4,435,179, Cl. 604-410.000.

Bird, Elizabeth A. Strap. 4,434,604, Cl. 54-23.000.

Birkle, Siegfried; Gehring, Johann; and Stoger, Klaus, to Siemens Aktiengesellschaft. Device for electro-deposition of aluminum. 4,435,265, Cl. 204-198.000.

Bishop, Robert J. Rotary drum mixing device. 4,435,082, Cl. 366-47.000.

Bisler, Kenneth E.: *See—*
McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., 4,434,596, Cl. 52-243.100.

Black Clawson Co., The: *See—*
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.

Black & Decker Inc.: *See—*
McDougall, Robert J., 4,434,587, Cl. 51-170.0MT.

Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., to Holmberg Electronics Corporation. Connector block with snap latch. 4,435,031, Cl. 339-17.00C.

Black, William R. Police gripper. 4,435,008, Cl. 294-25.000.

Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., to Imperial Chemical Industries PLC. Quinoline derivatives which are 5-hydroxytryptamine antagonists. 4,435,405, Cl. 424-258.000.

Blackshaw, Andrew L.: *See—*
Sanborn, David M.; and Blackshaw, Andrew L., 4,434,539, Cl. 29-157.30V.

Blank, Heinz U.: *See—*
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,435,336, Cl. 260-508.000.

Blaupunkt-Werke GmbH: *See—*
Eilers, Norbert; and Bragas, Peter, 4,435,843, Cl. 455-205.000.
Timm, Horst; and Kruger, H. Eckard, 4,435,845, Cl. 455-228.000.
Wilke, Heinz; and Fonck, Klaus-Uwe, 4,434,550, Cl. 29-837.000.

Blazek, Vladislav: *See—*
Maly, Zdenek; and Blazek, Vladislav, 4,435,080, Cl. 356-426.000.

Blechinger, Chester J., to Ford Motor Company. Mass air flow sensor. 4,434,656, Cl. 73-204.000.

Bleuel, Felix; and Bosshard, Christian, to Ciba-Geigy Corporation. Flange having an outer and an inner circumferential sealing face and apparatus, comprising such flange, for producing enveloping casts about elongated bodies. 4,434,962, Cl. 249-65.000.

Bliss, Robert H., to Bliss Steel Products Corp. Window frame or door frame section. 4,434,594, Cl. 52-209.000.

Bliss Steel Products Corp.: *See—*
Bliss, Robert H., 4,434,594, Cl. 52-209.000.

Blomqvist, Thomas H.; and Lidstom, Thorbjorn G. Firewood cleaving apparatus. 4,434,825, Cl. 144-193.00A.

Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Use in augmenting or enhancing the aroma or taste of foodstuff or chewing gum with the methyl carbonate of 1-hydroxymethyl-2-heptanoyl cyclopropane. 4,435,428, Cl. 426-3.000.

Boden, Richard M.: *See—*
Licciardello, Michael; and Boden, Richard M., 4,435,331, Cl. 260-463.000.

Bodine, Albert G. Mass (inductive) reactance vibratory mill or crusher employing mechanical drive force. 4,434,944, Cl. 241-258.000.

Bodnar, Janos: *See—*
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Boeckmann, Eduard F. B.: *See—*
Grantland, Gary; and Boeckmann, Eduard F. B., 4,435,622, Cl. 179-81.00R.

Boeing Company, The: *See—*
Rudolph, Peter K. C., 4,434,959, Cl. 244-215.000.

Boesel, Walter F., to Garrett Corporation, The. Magnetic interpole apparatus for improving commutation characteristics of a dynamoelectric machine. 4,435,664, Cl. 310-186.000.

Boise Cascade Corporation: *See—*
Hoelzinger, Walther J., 4,435,237, Cl. 156-157.000.

Boland, John D.; and Kresky, Fred C., to Aeroquip Corporation. Adjustable load bracing bar. 4,434,970, Cl. 254-108.000.

Boldt, Allyn L., to Exxon Nuclear Company, Inc. Continuous countercurrent liquid-solids contactor. 4,435,363, Cl. 422-270.000.

Bolner, Thomas E., to Thiokol Corporation. Internally actuated spherical bearing. 4,435,023, Cl. 308-2.00R.

Bolt, Anthony J. N.; and Chard, Brian C., to Imperial Group Limited. Smoking article. 4,434,804, Cl. 131-309.000.

Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., to Carrier Corporation. Grille mounting means and method. 4,434,710, Cl. 98-94.0AC.

Bonansea, Hubert: *See—*
Divoux, Michel; Bonansea, Hubert; and Constant, Bernard, 4,434,888, Cl. 198-466.000.

Bonaparte, Ennio; and Mosca, Virgilio, to Italtel Societa Italiana Telecomunicazioni S.p.A. Switching network interfacing telephone-exchange equipment with two-subscriber party line. 4,435,619, Cl. 179-17.00R.

Bondioli, Edi. Guard made up of sectional units for cardan shafts. 4,435,166, Cl. 464-172.000.

Borgato, Augusto, to F.A.M.A. di Sandra Borgato & C., S.n.c. Manually and electrically commanded automatic hooklock. 4,434,635, Cl. 70-279.000.

Bosch & Pierburg System OHG: *See—*
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Bosits, Gyula: *See—*
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.

Bosshard, Christian: *See—*
Bleuel, Felix; and Bosshard, Christian, 4,434,962, Cl. 249-65.000.

Boudault, Robert; and Pouzoullic, Gerard, to U.S. Philips Corporation. Frequency demodulator employing a circuit having a delay varying with the received frequency. 4,435,682, Cl. 329-107.000.

Bourgeois, Dale M., to Bourgeois, Wayne; and Hebert, LeRoy, part interest to each. Oil well blow out control valve. 4,434,853, Cl. 166-285.000.

Bourgeois, Wayne: *See—*
Bourgeois, Dale M., 4,434,853, Cl. 166-285.000.

Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., to Delalande S.A. N-Aryl oxazolidinones, oxazolidinethiones, pyrrolidinones, pyrrolidines and thiazolidinones. 4,435,415, Cl. 424-272.000.

Bovenkerk, Harold P., to General Electric Company. Method of preparing rough textured metal coated abrasives and product resulting therefrom. 4,435,189, Cl. 51-295.000.

Bowden, Charles J., to General Signal Corporation. Control valve for double-acting piston and valve assemblies. 4,434,708, Cl. 91-436.000.

Bowen, James H.; Baldwin, David L.; and Couch, Philip R., to International Telephone and Telegraph Corporation. Secure fiber optic data transmission system. 4,435,850, Cl. 455-606.000.

Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, to Raytheon Company. Seed heating microwave appliance. 4,435,628, Cl. 219-10.55M.

Bowles, Corwin. Screwdriver. 4,434,688, Cl. 81-451.000.

Brabander, Herbert J.: *See—*
Epstein, Joseph W.; Osterberg, Arnold C.; and Brabander, Herbert J., 4,435,419, Cl. 424-274.000.

Brady, Thomas E.: *See—*
Loffelman, Frank F.; and Brady, Thomas E., 4,435,555, Cl. 526-261.000.

Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, to Schering Aktiengesellschaft. Pharmacologically active 3-substituted beta-carbolines. 4,435,403, Cl. 424-256.000.

Bragas, Peter: *See—*
Eilers, Norbert; and Bragas, Peter, 4,435,843, Cl. 455-205.000.

Braggins, John C., Jr. Heat recovery system for clothes dryers and the like. 4,434,564, Cl. 34-86.000.

Brandenstein, Manfred: *See—*
Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, 4,434,882, Cl. 192-98.000.
Walter, Lothar; Brandenstein, Manfred; and Olschewski, Armin, 4,434,640, Cl. 72-348.000.

Brandes, Wilhelm: *See—*
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.

Brandon, Maurits J.: *See—*
Terink, Johannes L.; and Brandon, Maurits J., 4,435,436, Cl. 426-631.000.

Brandsen, Donald H.; and Hoerner, Griffith L. Flexibly-supported, pivotable load carrier for vehicles. 4,434,922, Cl. 224-314.000.

Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., to Dr. Beck & Co. AG. Antistatic thermoplastic molding masses containing styrene-acrylonitrile grafted polyether. 4,435,541, Cl. 525-64.000.

Brannegan, Daniel P.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,435,584, Cl. 549-415.000.

Brannen, Cecil G.; and Hunt, Mack W., to Standard Oil Company, (Indiana). Preparation of overbased magnesium phenates. 4,435,301, Cl. 252-33.200.

Brantingham, George L.; and Someshwar, Ashok H., to Texas Instruments Incorporated. Data processing system having interlinked slow and fast memory means. 4,435,775, Cl. 364-900.000.

Brealey, Leslie; Wilson, John H.; and Demircan, Niyazi, to Northern Engineering Industries, Plc. Fluidized-bed combustion apparatus. 4,434,723, Cl. 110-245.000.

Bredow, Walter, to C. Behrens AG. Arrangement for producing drawn formations on workpieces, particularly in a cutting and pressing machine. 4,434,639, Cl. 72-344.000.

Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., to U.S. Philips Corporation. Device for propagating magnetic domains. 4,435,484, Cl. 428-693.000.

Brennan, John J.: *See—*
Prewo, Karl M.; and Brennan, John J., 4,435,455, Cl. 428-36.000.

Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., to Pfizer Inc. Preparation of gamma-pyrones. 4,435,584, Cl. 549-415.000.

Brenner, Horst; and Hinsberg, Rene, to Bayerische Motoren Werke A.G. Rear wheel control unit for two-wheeled vehicles with universal drive mechanism. 4,434,868, Cl. 180-226.000.

Brenner, Norbert: *See—*
Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, 4,435,184, Cl. 23-300.000.

Breslau, Barry R., to Romicon, Inc. Series ultrafiltration with pressurized permeate. 4,435,289, Cl. 210-637.000.

Brigham, Gerald A.: *See—*
Marshall, William J., Jr.; and Brigham, Gerald A., 4,435,794, Cl. 367-155.000.

Bristol Composite Materials Engineering Limited: *See—*
McNulty, John P., 4,435,242, Cl. 156-264.000.

Bristol-Myers Company: *See—*
Shin, Chung T.; and Geria, Navin, 4,435,382, Cl. 424-66.000.

British Petroleum Company Limited, The: *See—*
Brooks, Christopher P.; Dodson, Stanley C.; and Newman, Robert H., 4,435,296, Cl. 252-28.000.

Brix, Joachim; and Weiss, Friedrich, to Jastram-Werke GmbH KG. Fin rudder for ships. 4,434,739, Cl. 114-162.000.

Broersma, Lester V.: *See—*
Sundahl, James G.; and Broersma, Lester V., 4,434,514, Cl. 2-425.000.

Brohltal-Deumag AG fur feuerfeste Erzeugnisse: *See—*
Buhler, Hans-Eugen; and Kalfa, Horst, 4,435,157, Cl. 432-30.000.

Brooks, Christopher P.; Dodson, Stanley C.; and Newman, Robert H., to British Petroleum Company Limited, The. Lubricating grease. 4,435,296, Cl. 252-28.000.

Brooks, George D.: *See—*
Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., 4,434,700, Cl. 89-34.000.

Brower, Boyd G., to GTE Products Corporation. Subminiature array with normally closed and normally open switches. 4,435,156, Cl. 431-359.000.

Brugman, Martin; and Van Schaik, Herman, to S. C. Johnson & Sons, Inc. Overcap orienting apparatus. 4,434,885, Cl. 198-388.000.

Bruns, Klaus: *See—*
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,435,315, Cl. 252-522.00R.

Brusewitz, Gerhard: *See—*
Sieck, Reinhard; and Brusewitz, Gerhard, 4,434,890, Cl. 206-443.000.

Brush, Robert W., Sr.; and Piscitelli, R. Amelia, to Bendix Corporation, The. Method of making a pin type electrical connector contact. 4,434,552, Cl. 29-876.000.

BS&B Safety Systems, Inc.: *See—*
Ou, Sam A.; and Beair, Charles E., 4,434,905, Cl. 220-89.00A.

Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, to American Screen Printing Equipment Company. Curing apparatus and method. 4,434,562, Cl. 34-4.000.

Buchel, Karl: *See—*
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.

Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, to Robert Bosch GmbH. Pneumatically operable switch unit for monitoring tire pressure. 4,435,625, Cl. 200-61.220.

Buck Chemisch-Technische Werke GmbH & Co.: *See—*
Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.

Buckau-Walther AG: *See—*
Bechthold, Horst, 4,435,341, Cl. 264-7.000.

Buckeye Molding Company: *See—*
French, William L., 4,434,908, Cl. 220-276.000.

Buda, Salvatore: *See—*
Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, 4,435,005, Cl. 285-31.000.

Budd Company, The: *See—*
Mekosh, George, Jr., 4,434,719, Cl. 105-168.000.

Buell Industries, Inc.: *See—*
Becker, Philip D., 4,435,112, Cl. 411-368.000.

Buhler, Hans-Eugen; and Kalfa, Horst, to Brohltal-Deumag AG fur feuerfeste Erzeugnisse. Heat exchanger, especially blast preheater (or cowper) for blast furnaces, process for the temperature regulation of gas and blast for the blast furnace, as well as use of the process. 4,435,157, Cl. 432-30.000.

Buhler, Karl, to BBC Brown, Boveri & Company, Limited. Liquid-cooled vessel walls for arc furnaces. 4,435,814, Cl. 373-76.000.

Burak, Mark G. Anti-skid device for a cane, crutch, or the like. 4,434,808, Cl. 135-80.000.

Burba, Christian; Lucas, Hermann-Josef; and Neffgen, Bernd, to Schering AG. Hardenable urethane-epoxy resin mixtures. 4,435,558, Cl. 528-45.000.

Burgess, Anthony J.; and Gardner, David L., to Imperial Chemical Industries PLC. Vinylidene chloride co-polymer compositions. 4,435,478, Cl. 428-463.000.

Burgess, Warren C., Jr. Automatically adjustable workpiece guide and feed mechanism. 4,434,583, Cl. 51-103.0TF.

Burkel, Rainer: *See—*
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.

Burroughs Corporation: *See—*
Baillie, Alan G., 4,435,498, Cl. 430-318.000.
Hsieh, Der-Chang; and LaBudde, Edward V., 4,435,797, Cl. 369-32.000.
Murray, Lance R.; and Wu, Ta-Ming, 4,435,658, Cl. 307-530.000.
Potash, Hanan, 4,435,756, Cl. 364-200.000.

Burroughs Wellcome Co.: *See—*
Stern, Warren C., 4,435,449, Cl. 424-330.000.

Burrows, Vernon D.; Fulcher, Royce G.; and Paton, David, to Canadian Patents and Development Limited. Processing aqueous treated cereals. 4,435,429, Cl. 426-18.000.

Busch, Helmut: *See—*
Kupper, Heinz; and Busch, Helmut, 4,434,940, Cl. 239-397.500.

Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., to Ashland Oil, Inc. Method and apparatus for converting oil feeds. 4,435,279, Cl. 208-111.000.

Buss, Waldeen C.; and Hughes, Thomas R., to Chevron Research Company. Method of dehydrocyclizing alkanes. 4,435,283, Cl. 208-138.000.

Bussey, Patrick D. Router guide. 4,434,824, Cl. 144-134.00D.

Butcher, Bruce A.: *See—*
Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., 4,435,711, Cl. 343-389.000.

Butler, John R.; Shock, Gerald D.; and Saunders, Norman J., to United States of America, Navy. Penetrator interface adapter concept. 4,434,927, Cl. 227-9.000.

Butler, John V.: *See—*
Whitcomb, William T.; and Butler, John V., 4,434,647, Cl. 73-1.00R.

Butts, Susan B.; and Hartwell, George E., to Dow Chemical Company, The. Process for preparation of 2-phenylethyl alcohols from aromatic aldehydes. 4,435,605, Cl. 568-878.000.

C. Behrens AG: *See—*
Bredow, Walter, 4,434,639, Cl. 72-344.000.

Cacaofabrik DeZaan B.V.: *See—*
Terink, Johannes L.; and Brandon, Maurits J., 4,435,436, Cl. 426-631.000.

Cady, William S.: *See—*
Spencer, Billie M.; Cady, William S.; and Zscheile, John W., Jr., 4,435,822, Cl. 375-1.000.

Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, to Montedison S.p.A. Process for preparing carboxylated organic compounds. 4,435,575, Cl. 546-341.000.

Calhoun, Bill L.: *See—*
Calhoun, Tom L.; and Calhoun, Bill L., 4,435,084, Cl. 366-130.000.

Calhoun, Tom L.; and Calhoun, Bill L. Automatic stirrer for cup. 4,435,084, Cl. 366-130.000.

Callan, John E., to Allen-Bradley Company. Switch network. 4,435,706, Cl. 340-825.080.

Calvert, James W.: *See—*
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,435,146, Cl. 425-534.000.

Campbell, Simon F.; and Plews, Rhona M., to Pfizer Inc. 4-Amino-6,7-dimethoxy-2-(4-heteroaryl-piperazino)quinazoline antihypertensives. 4,435,401, Cl. 424-251.000.

Campbell, Willis R., to Sperry Corporation. Overfill protection apparatus for roll baling machine. 4,434,607, Cl. 56-341.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy: *See—*
Ranganathan, Ramaswami; Patmore, David J.; and Silva, Adolfo E., 4,435,280, Cl. 208-112.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Perlman, Martin M.; and Filion, Andre Y., 4,435,610, Cl. 136-255.000.

Canadian Patents and Development Limited: *See—*
Burrows, Vernon D.; Fulcher, Royce G.; and Paton, David, 4,435,429, Cl. 426-18.000.

Caniglia, Joseph E. Eyeglass wiping device. 4,434,520, Cl. 15-214.000.

Canon Kabushiki Kaisha: *See—*
Adachi, Hiroyuki; and Hosono, Nagao, 4,435,072, Cl. 355-3.0FU.
Eida, Tsuyoshi; and Kobayashi, Masatsune, 4,435,717, Cl. 346-1.100.
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.
Kitajima, Tadayuki, 4,435,070, Cl. 355-8.000.
Shimizu, Masami; and Uchidoi, Masanori, 4,435,741, Cl. 361-401.000.

Cantrell John L.: *See—*
Ribi, Edgar E.; and Cantrell John L., 4,435,386, Cl. 424-177.000.

Caporaso, John A., to Nabisco Brands, Inc. Packaging system for fully baked, unfilled pastry shells. 4,435,434, Cl. 426-108.000.

Cappelli, Romano, to USS Engineers and Consultants, Inc. Process for repairing or modifying refractory plates of ladle casting cassettes. 4,434,540, Cl. 29-402.110.

Caputo, William R., to Westinghouse Electric Corp. Elevator system. 4,434,874, Cl. 187-29.00R.

Carasso, Marino G.: *See—*
Nadan, Joseph S.; Kenney, George C., II; and Carasso, Marino G., 4,435,687, Cl. 331-23.000.

Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, to Montedison S.p.A. Method

for the recovery of pentaerythritol from the residual mixtures of the synthesis from acetaldehyde and formaldehyde. 4,435,604, Cl. 568-854.000.

Cardini, Jean-Louis, to Societe Metallurgique Le Nickels-S.L.N. Process and apparatus for attrition carried out in a humid medium. 4,434,942, Cl. 241-21.000.

Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., to Texaco Inc. Preparation of high dropping point lithium complex soap grease. 4,435,299, Cl. 252-41.000.

Carlsmith, Lawrence A.: *See—*
Luthi, Oscar; and Carlsmith, Lawrence A., 4,435,085, Cl. 366-155.000.

Carr, Albert A.; Farr, Robert A.; and Kane, John M., to Richardson Merrell Inc. 5-(Substituted benzyl)-6-oxo-2-piperazine carboxylic acids and esters. 4,435,571, Cl. 544-384.000.

Carrier Corporation: *See—*
Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., 4,434,710, Cl. 98-94.0AC.
Jackson, Dale; and McManus, John R., 4,434,841, Cl. 165-125.000.

Carter, John W.: *See—*
Rhodes, Lawrence G.; and Carter, John W., 4,434,606, Cl. 56-106.000.

Casaceli, Frank B.: *See—*
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,434,754, Cl. 123-146.50A.

Cascade Corporation: *See—*
House, Marshall K., 4,435,117, Cl. 414-620.000.
House, Marshall K., 4,435,119, Cl. 414-620.000.

Casdas, Spyridon, to Aluminium de Grece. Process and apparatus for controlled feed of alumina and halogen additives into electrolysis vats for the production of aluminum. 4,435,255, Cl. 204-67.000.

Cason, William C.; McCaskill, Rex A.; and Karner, Francisco A., to International Business Machines Corporation. Method for editing spatially related data in an interactive text processing system. 4,435,778, Cl. 364-900.000.

Castellucci, Nicholas T.: *See—*
Kaylo, Alan J.; and Castellucci, Nicholas T., 4,435,529, Cl. 523-426.000.

Casterline, Russ C.: *See—*
Das, Santanu; Chea, Ramon C. W., Jr.; and Casterline, Russ C., 4,435,803, Cl. 370-16.000.

Castle & Cooke Techniculture: *See—*
Sowerwine, Owen D., 4,434,576, Cl. 47-39.000.

Caterpillar Tractor Co.: *See—*
Bailey, John M., 4,434,637, Cl. 72-17.000.
Riediger, Craig W.; and Winzeler, James E., 4,434,680, Cl. 74-682.000.

Centre National d'Etudes Spatiales: *See—*
Rougeron, Michel; and Simon, Jacques, 4,434,958, Cl. 244-126.000.

Cesark, Frank F.; and Thomas, Daniel W., to American Cyanamid Company. Oxime ethers of 4,4'-bis(N,N-diethylamino)benzhydrol and pressure-sensitive recording systems containing them. 4,435,002, Cl. 282-27.500.

Chachowski, Rosemary K.: *See—*
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,435,293, Cl. 210-772.000.

Chadshay, Roman, to Combustion Engineering, Inc. Burner-tilt drive apparatus for a pulverized coal fired steam generator. 4,434,747, Cl. 122-449.000.

Chaki, Takao, to Clarion Co., Ltd. Cross arm structure for use in a pushbutton tuner. 4,434,673, Cl. 74-10.330.

Challenger Caribbean Corporation: *See—*
Sepulveda, Luis F., 4,435,624, Cl. 200-42.00T.

Challenger Circle F, Inc.: *See—*
Abramson, Allen P.; and Stiles, Theodore R., 4,435,032, Cl. 339-36.000.

Challenger Products Corporation: *See—*
Sepulveda, Luis F., 4,435,624, Cl. 200-42.00T.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Activity enhancement of high silica zeolites. 4,435,516, Cl. 502-71.000.

Chang, Mike S. H., to Pitney Bowes Inc. Radiation cursble composition of vinyl polysiloxane and hydrogen polysiloxane with photosensitizer. 4,435,259, Cl. 204-159.130.

Chapman, Arthur S.: *See—*
Rozner, Marvin J.; and Chapman, Arthur S., 4,434,702, Cl. 89-36.00L.

Chapman, John A.; and Sherwin, Owen W., to Valmont Industries, Inc. Irrigation system. 4,434,936, Cl. 239-178.000.

Chapman, Richard A., to Texas Instruments Incorporated. Unipolar voltage non-volatile JRAM cell. 4,435,785, Cl. 365-147.000.

Chard, Brian C.: *See—*
Bolt, Anthony J. N.; and Chard, Brian C., 4,434,804, Cl. 131-309.000.

Charles, Georges M., to Potain Poclain Materiel (P.P.M.). Hoisting winch. 4,434,972, Cl. 254-340.000.

Chea, Ramon C. W., Jr.: *See—*
Das, Santanu; Chea, Ramon C. W., Jr.; and Casterline, Russ C., 4,435,803, Cl. 370-16.000.

Chen, Hong C., to Chezon Research Co. Hydroprocessing with a catalyst having bimodal pore distribution. 4,435,278, Cl. 208-251.00H.

Chen, Shu-Chang: *See—*
Yeh, Jaw S., 4,434,818, Cl. 140-82.000.

Chevron Research Company: *See—*
Aoyagi, Edward I., 4,435,416, Cl. 424-273.00P.
Buss, Waldeen C.; and Hughes, Thomas R., 4,435,283, Cl. 208-138.000.
Ferm, Richard L.; and Kray, Louis R., 4,435,273, Cl. 208-48.0AA.
Woo, Gar L.; and Parker, Phillip H., 4,435,547, Cl. 525-420.000.

Chezon Research Co.: *See—*
Chen, Hong C., 4,435,278, Cl. 208-251.00H.

Chiba, Kazuo; and Nakamura, Iwao, to Nissan Motor Company, Limited. Strut type suspension for a vehicle. 4,434,977, Cl. 267-33.000.

Chiba, Masakazu; and Matsuoka, Fumio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt tightening device. 4,435,000, Cl. 280-806.000.

Chihara, Hiroyuki; and Kitano, Masuo, to Kabushiki Kaisha Suwa Seikosha; and Shimauchi Seiki Kabushiki Kaisha. Power circuit for an electronic timepiece. 4,435,089, Cl. 368-204.000.

Childs, John M. Wind-scoop for small boats. 4,434,740, Cl. 114-211.000.

Chimica Bulciago S.r.l.: *See—*
Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, 4,435,333, Cl. 260-465.00D.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R. T.: *See—*
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Chomerics, Inc.: *See—*
Powers, Donald H., Jr., 4,434,541, Cl. 29-526.00R.

Chow, Alfred W., to SmithKline Beckman Corporation. 5-Phenylethenylbenzimidazoles. 4,435,418, Cl. 424-273.00B.

Chow, Yiu T.; and Gilligan, Thomas J., to Ampex Corporation. Method of selecting PROM data for selective mapping system. 4,435,754, Cl. 364-200.000.

Christensen, Jogen A.: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Christian, Jerry B.: *See—*
Sipos, George G.; and Christian, Jerry B., 4,435,173, Cl. 609-155.000.

Christie, William C., to Goodyear Tire & Rubber Company, The. Automated tire measurement techniques. 4,434,652, Cl. 73-146.000.

Christopher, Terry M.; and Nelson, Randolph J., to FMC Corporation. Hydraulic winch speed control with pressure-responsive override. 4,434,616, Cl. 60-451.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Ciaramitaro, David A.; and Moore, Jack M., to Apache Powder Company. Explosive composition. 4,435,232, Cl. 149-2.000.

Ciba-Geigy AG: *See—*
Muller, Beat; and Roth, Martin, 4,435,489, Cl. 430-17.000.

Ciba-Geigy Corporation: *See—*
Bleuel, Felix; and Bosshard, Christian, 4,434,962, Cl. 249-65.000.
Falk, Robert A., 4,435,330, Cl. 260-458.00F.
Fletcher, Ian J., 4,435,003, Cl. 282-27.500.
Irving, Edward, 4,435,497, Cl. 430-288.000.
Michaelis, Klaus-Peter; and Schneider, Rainer, 4,435,338, Cl. 260-929.000.
Walker, Gordon N., 4,435,407, Cl. 424-263.000.

Ciminiello, Francisco J.: *See—*
Di Giovanni, Bernard A.; and Ciminiello, Francisco J., 4,434,816, Cl. 138-109.000.

Cincinnati Milacron Inc.: *See—*
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,435,146, Cl. 425-534.000.

Cities Service Co.: *See—*
Aylward, David E., 4,435,520, Cl. 502-107.000.
Pennington, B. Timothy; Roling, Paul V.; and Hsieh, John T. T., 4,435,518, Cl. 502-107.000.
Veazey, Richard L.; and Pennington, B. Timothy, 4,435,519, Cl. 502-107.000.

Citizen Watch Company Limited: *See—*
Kato, Yoshiaki, 4,435,086, Cl. 368-22.000.
Nishimura, Katsuo, 4,435,046, Cl. 350-334.000.
Saito, Motoyuki; and Hatanaka, Hideo, 4,435,796, Cl. 368-321.000.

CKD Controls Limited: *See—*
Tamura, Akira, 4,434,933, Cl. 236-75.000.

Claasen, Theodoor A. C. M.; and Mecklenbrauker, Wolfgang F. G., to U.S. Philips Corporation. Method of and arrangement for calculating the discrete Fourier transform by means of two circular convolutions. 4,435,774, Cl. 364-726.000.

Clarion Co., Ltd.: *See—*
Chaki, Takao, 4,434,673, Cl. 74-10.330.

Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., to Mead Corporation, The. Ink drop printing system. 4,435,718, Cl. 346-75.000.

Clark, John F., to Sperry Corporation. Weather radar with signal compensation for precipitation. 4,435,707, Cl. 343-5.00W.

Clarke, Brian P.: *See—*
Stirling, Irene; and Clarke, Brian P., 4,435,565, Cl. 542-416.000.

Clatworthy, Edward F.: *See—*
Eiselstein, Herbert L.; Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,435,359, Cl. 419-3.000.

Clay, Douglas R.: *See—*
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, 4,435,642, Cl. 250-296.000.

Clean-Tex A/S: *See—*
Neubert, Robert, 4,435,451, Cl. 428-15.000.

Cless, Richard D.: *See—*
Rapoport, Henry; Weller, Dwight D.; and Cless, Richard D., 4,435,572, Cl. 546-228.000.

Cleveland, William E., to SCM Corporation. Office machine escapement disengagement and automatic engagement mechanism. 4,435,098, Cl. 400-674.000.

Cocco, Vincent L., to Polaroid Corporation. Film processing apparatus. 4,435,062, Cl. 354-303.000.

Coffin, Christopher J., to Alan Cobham Engineering Limited. Pressure responsive switch actuating mechanism. 4,435,626, Cl. 200-81.90R.

Cohen, Leonard G.; and Mammel, Wanda L., to Bell Telephone Laboratories, Incorporated. Double-clad optical fiberguide. 4,435,040, Cl. 350-96.330.

Coleman, Charles: *See—*
Smith, Peter R.; and Coleman, Charles, 4,434,549, Cl. 29-832.000.

Coleman, Charles R., to PPG Industries, Inc. Method for applying abrasion resistant thin polyurethane coatings. 4,435,450, Cl. 427-385.500.

Coleman, Clint; and Currin, Hugh D., to North Wind Power Company, Inc. Wind turbine rotor control system. 4,435,646, Cl. 290-44.000.

Colgate-Palmolive Company: *See—*
Fitzgerald, Harry G., 4,435,178, Cl. 604-365.000.

Colombo, Giancarlo: *See—*
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.

Colombo, Roberto, to Lavorazione Materie Plastiche L.M.P. S.p.A. Process for the production of a continuous sheet of foamed synthetic, thermoplastic polymer by extrusion. 4,435,345, Cl. 264-53.000.

Colt Industries Operating Corp.: *See—*
Eshelman, Philip V., 4,434,765, Cl. 123-472.000.
McCabe, Ralph P., 4,434,762, Cl. 123-438.000.
McCabe, Ralph P.; and Marsh, Keith D., 4,434,763, Cl. 123-440.000.

Colton, Russell F., to Rockwell International Corporation. Low cost capacitive accelerometer. 4,435,737, Cl. 361-280.000.

Combeau, Guy. Apparatus for screen printing bottles. 4,434,714, Cl. 101-38.00A.

Combustion Engineering, Inc.: *See—*
Chadshay, Roman, 4,434,747, Cl. 122-449.000.
Johnson, Walter R., 4,435,693, Cl. 338-238.000.
Jones, Brian C., 4,434,726, Cl. 110-347.000.
Kunkel, Robert C., Jr., 4,434,724, Cl. 110-269.000.
McCartney, Michael S., 4,434,727, Cl. 110-347.000.

Comeyne, Robert G., to United States of America, Army. Aiming aid for an aiming device in a low light level environment. 4,434,560, Cl. 33-241.000.

Commander Electrical Equipment, Inc.: *See—*
Sepulveda, Luis F., 4,435,624, Cl. 200-42.00T.

Commissariat a l'Energie Atomique: *See—*
Pascal, Daniel; and Duret, Denis, 4,434,547, Cl. 29-599.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Pearce, Robert J., 4,435,319, Cl. 260-123.500.

Communication Technology Corporation: *See—*
Smith, Donald J., 4,435,612, Cl. 174-92.000.

Comploi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, to Aktiengesellschaft Adolf Saurer. Electromagnetic pattern selector for an embroidery machine. 4,434,728, Cl. 112-84.000.

Compur-Electronic GmbH: *See—*
Stower, Reinhard, 4,435,167, Cl. 494-16.000.

Comstock, James F.: *See—*
Gargrave, Robert J.; Thompson, John K.; and Comstock, James F., 4,434,644, Cl. 72-387.000.

Conklin, Jerry R.: *See—*
Tomalia, Donald A.; Wilson, Larry R.; and Conklin, Jerry R., 4,435,548, Cl. 525-451.000.

Conoco Inc.: *See—*
Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., 4,435,606, Cl. 585-324.000.
Stokke, Olaf M.; and Sias, Roy C., 4,435,295, Cl. 252-8.55D.

Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Atkien. Use of alkyl-substituted 1,3-dioxolanes as perfuming agents. 4,435,315, Cl. 252-522.00R.

Constant, Bernard: *See—*
Divoux, Michel; Bonansea, Hubert; and Constant, Bernard, 4,434,888, Cl. 198-466.000.

Continental Group, Inc., The: *See—*
Beck, Martin H.; Krishnakumar, Suppayan M.; and Harry, Ieuan L., 4,435,244, Cl. 156-379.800.

Control Data Corporation: *See—*
Cree, Roger W., 4,434,625, Cl. 62-199.000.

Conviser, Harry. Instrument for comparing equal temperament and just intonation. 4,434,696, Cl. 84-1.010.

Cook, Gregory E., to Windpowered Machines Ltd. Wind turbine spindle assembly with spindle constraint. 4,435,125, Cl. 416-132.00B.

Cook, Melvin W., to Masonite Corporation. Free standing article display apparatus. 4,434,900, Cl. 211-189.000.

Cook, Russell P., Sr.: *See—*
Roop, Michael R.; and Cook, Russell P., Sr., 4,434,869, Cl. 182-10.000.

Cooke, Carl W. Safety closure and container. 4,434,903, Cl. 215-222.000.

Cooper Industries, Inc.: *See—*
LaCount, Kenneth H., 4,434,974, Cl. 254-360.000.

Corbett, Herbert O., to National Distillers and Chemical Corporation. Method of extruding laminated film. 4,435,241, Cl. 156-244.110.

Cordrey, Richard N., to Armco Inc. Drilling rig drawworks hook load overspeed preventing system. 4,434,971, Cl. 254-273.000.

Cornell Research Foundation, Inc.: *See—*
Drost, Cornelis J.; and Milanowski, G. Jan, 4,434,648, Cl. 73-1.0DV.

Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, to Ruhrchemie Aktiengesellschaft. Method for preventing caking of polyols. 4,435,603, Cl. 568-701.000.

Cotton Incorporated: *See—*
Winch, Allen R.; and Rearick, William A., 4,434,633, Cl. 68-267.000.

Couch, Philip R.: *See—*
Bowen, James H.; Baldwin, David L.; and Couch, Philip R., 4,435,850, Cl. 455-606.000.

Coulson Heel Inc.: *See—*
Ponzielli, Giuseppe, 4,435,523, Cl. 521-51.000.

Cox, Barry: *See—*
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.

Cox, James W., Jr.: *See—*
Goode, Frederick R.; Evans, John D.; and Cox, James W., Jr., 4,434,902, Cl. 212-268.000.

Cox, Ronald L., to McDonnell Douglas Corporation. Fail-safe zero-load hinge/pivot. 4,435,100, Cl. 403-27.000.

Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, to Givaudan Corporation. Process for the preparation of dihydrocinnamaldehyde derivatives. 4,435,585, Cl. 549-446.000.

Crane, Foy Aline, executrix: *See—*
Crane, John H., deceased; and Crane, Foy Aline, executrix, 4,434,856, Cl. 172-256.000.

Crane, John H., deceased; and Crane, Foy Aline, executrix. Garden plow with support means operative to inversely angularly displace earthworking tool. 4,434,856, Cl. 172-256.000.

Cree, Roger W., to Control Data Corporation. Computer cooling system. 4,434,625, Cl. 62-199.000.

Crete, Paul G.: *See—*
Williamson, James; and Crete, Paul G., 4,435,847, Cl. 455-260.000.

Creusot-Loire: *See—*
Voillot, Herve, 4,434,701, Cl. 89-36.00K.

Crimmin, Michael J.: *See—*
Rogers, Norman H.; and Crimmin, Michael J., 4,435,583, Cl. 549-414.000.

Cronin, Michael J.; and Seid, Gordon, to Lockheed Corporation. Energy-efficient all-electric ECS for aircraft. 4,434,624, Cl. 62-172.000.

Csako, Denes: *See—*
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo, 4,435,129, Cl. 417-151.000.

CTS Corporation: *See—*
Ginn, Steven N., 4,435,691, Cl. 338-125.000.

Cue, Berkeley W., Jr.; and Moore, Bernard S., to Pfizer Inc. Sorbinil by optical resolution of precursor 6-fluoro-4-ureidochroman-4-carboxylic acid. 4,435,578, Cl. 548-309.000.

Culpepper, Will L., to Mead Corporation, The. Tray loading machine. 4,434,602, Cl. 53-473.000.

Culver, Larry J.: *See—*
Jones, Glenn C.; and Culver, Larry J., 4,435,534, Cl. 524-292.000.

Currin, Hugh D.: *See—*
Coleman, Clint; and Currin, Hugh D., 4,435,646, Cl. 290-44.000.

Curry, Daniel L., Vice-President of St. Joseph Bank and Trust Company, executor: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,435,323, Cl. 548-473.000.

Curtis, Stanley F., to Pollution Controls Industries, Inc. Assembly for attachment to a vehicle for performing a work operation. 4,434,993, Cl. 280-402.000.

Cuscurida, Michael, to Texaco Inc. Polyester polymer polyols made with polyester polycarbonates and polyurethanes therefrom. 4,435,527, Cl. 521-173.000.

Cutter Laboratories, Inc.: *See—*
Kuhlemann, Bruce N.; Horvath, Kalman; and Wharff, Prentice C., 4,435,177, Cl. 604-263.000.

Czerwinski, Frank G.; and Rutty, Edward C., to Stanley Works, The. Power returnable coilable rule cartridge and coil rule assembly employing same. 4,434,952, Cl. 242-107.000.

DaGue, Michael G.; and Valone, Frederick W., to Texaco Inc. Corrosion inhibition system containing dicyclopentadiene sulfonate salts. 4,435,361, Cl. 422-12.000.

Dahms, Francis A., to Emhart Industries, Inc. Piston and cylinder mechanism. 4,434,674, Cl. 74-99.00A.

Daicel Chemical Industries, Ltd.: *See—*
Watanabe, Morio, 4,434,518, Cl. 12-142.0RS.
Watanabe, Shoji; and Miho, Takuya, 4,435,542, Cl. 525-118.000.

Daikin Kogyo Co., Ltd.: *See—*
Sakitani, Katsumi; Uemura, Shigehiro; and Yajima, Ryuzaburo, 4,434,844, Cl. 165-151.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Tatsunosuke, Masuda, 4,435,076, Cl. 355-41.000.

D'Alelio, Gaetano F., deceased (by Curry, Daniel L., Vice-President of St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Vinylacetylene-terminated polymide derivatives. 4,435,323, Cl. 548-473.000.

D'Amico, Richard; Fowles, Thomas A.; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Bottle closure. 4,434,904, Cl. 215-232.000.

Damon Corporation: *See—*
Kennedy, A. Terence, 4,435,168, Cl. 494-20.000.

Danamps, Jean: *See—*
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.

Danfoss A/S: *See—*
Ohrberg, Carl V.; and Hansen, Gunnar L., 4,435,130, Cl. 417-310.000.

Daniels, Llewellyn R., Jr. Vehicle lift. 4,434,872, Cl. 187-8.740.

Dantzig, Jonathan A.: *See—*
Winter, Joseph; Dantzig, Jonathan A.; and Tyler, Derek E., 4,434,837, Cl. 164-468.000.

Darnell, W. Dale, to Humboldt Products Corp. Surgical retractor array system. 4,434,791, Cl. 128-20.000.

Das, Balbhadra; and Moore, L. Dow, to PPG Industries, Inc. Aqueous sizing composition and sized glass fibers and method. 4,435,474, Cl. 428-391.000.

Das, Santanu; Chea, Ramon C. W., Jr.; and Casterline, Russ C., to International Telephone and Telegraph Corporation. Analog subscriber/trunk module with shared ringing source and ring-trip. 4,435,803, Cl. 370-16.000.

Data General Corp.: *See—*
El-Gohary, Hussein T., 4,435,764, Cl. 364-200.000.
Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., 4,435,703, Cl. 340-723.000.

Davidson, Donald R., to Singer Company, The. Continuous monogrammer. 4,434,729, Cl. 112-121.120.

Davies, Robert B.: *See—*
Joseph, Eric D.; and Davies, Robert B., 4,435,678, Cl. 323-273.000.

Davis, James A., to Firestone Tire & Rubber Company, The. Rubber compositions and articles thereof having improved metal adhesion and metal adhesion retention. 4,435,477, Cl. 428-462.000.

Davis, Robert C.; and Thaker, Gautam H., to Harris Corporation. Adaptive equalizer capable of linear and nonlinear weighting. 4,435,823, Cl. 375-14.000.

Dayco Corporation: *See—*
Standley, Paul M., 4,435,348, Cl. 264-174.000.

Deal, Troy M. Pump intake cutter head. 4,434,943, Cl. 241-46.080.

DeBona, Bruce T.: *See—*
Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,435,561, Cl. 528-193.000.

de Brabander, Louis F.; and Van Linthout, Luc K., to Fonds d'Etudes pour la Securite Routiere A.s.b.l. Electronic light beam tester. 4,435,078, Cl. 356-121.000.

de Brabant, Jean. Building structure. 4,434,595, Cl. 52-236.200.

Decuir, Joseph C.: *See—*
Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., 4,435,779, Cl. 364-900.000.

Dedenon, Jean-Marie; and Rassak, Denis. Installation for preparing combustible gases through fermentation. 4,435,188, Cl. 48-111.000.

Deeks, Peter C.: *See—*
Williamson, Vivien R.; and Deeks, Peter C., 4,434,672, Cl. 73-864.220.

Deering, Roland F.; and Duir, John H., to Union Oil Company of California. Oil shale retorting process with a moving bed pressure letdown stage. 4,435,271, Cl. 208-11.00R.

Degremont: *See—*
Louboutin, Robert; and Riotte, Michel, 4,435,286, Cl. 210-116.000.

Degussa Aktiengesellschaft: *See—*
Diehl, Manfred; and Bergmann, Roland, 4,435,216, Cl. 106-97.000.
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.
Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, 4,435,378, Cl. 423-461.000.
Rothbuhr, Lothar, 4,435,377, Cl. 423-460.000.

Deininger, J. Paul, to Olin Corporation. Process for making potassium ferrate [Fe(VI)] by the electrochemical formation of sodium ferrate. 4,435,256, Cl. 204-86.000.

Deininger, J. Paul; and Dotson, Ronald L., to Olin Corporation. Process for the electrochemical production of sodium ferrate [Fe(VI)]. 4,435,257, Cl. 204-86.000.

Delagi, Richard G.: *See—*
Trenkler, George; and Delagi, Richard G., 4,434,930, Cl. 228-118.000.

Delalande S.A.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Del Fabbro, Dino, to Officine Riunite Udine Spa. Concrete mixing plants with elevator wheel. 4,435,081, Cl. 366-18.000.

Dellande, Brian W.; and Wurzburg, Henry, to Motorola, Inc. Communication system having improved differential phase shift keying modulation. 4,435,824, Cl. 375-46.000.

Dellinger, John J.: *See—*
Solomon, Robert A.; and Dellinger, John J., 4,434,722, Cl. 108-8.000.

Delta Medical Industries: *See—*
Sipos, George G.; and Christian, Jerry B., 4,435,173, Cl. 609-155.000.

Demarne, Henri; and Wagnon, Jean, to Societe Anonyme dite: Sanofi. Ethers of phenol active on the cardiovascular system, process for preparing same and use thereof in drugs. 4,435,426, Cl. 424-324.000.

Demarthe, Jean-Michel; Fossi, Paolo; and Gandon, Louis, to Mitsubishi Rayon Co., Ltd. Hydrometallurgical process for selective dissolution of mixtures of oxy compounds. 4,435,368, Cl. 423-40.000.

Dematex Development & Investment Establishment: *See—*
Rilliet, Francois, 4,434,802, Cl. 128-764.000.

Demircan, Niyazi: *See—*
Brealey, Leslie; Wilson, John H.; and Demircan, Niyazi, 4,434,723, Cl. 110-245.000.

Dempsey, Edmond N., to Peerless Machine & Tool Corporation. Small blank feeder and tray former. 4,435,143, Cl. 425-150.000.

Denk, Jpseph; and Martin, William B., to Garrett Corporation, The. High speed accessory disconnect apparatus and methods. 4,434,881, Cl. 192-89.00A.

Dennis, James T.; and Kolomayets, George, to Dennis, James T. Automatic record player. 4,435,800, Cl. 369-225.000.

de Putter, Jan A.; and Tummers, Paul J. H., to Oce-Nederland B.V. Porous reusable ZnO electrophotographic element. 4,435,493, Cl. 430-87.000.

Derr, Walter R.; and Sarli, Michael S., to Mobil Oil Corporation. Hydrocracking process for aromatics production. 4,435,275, Cl. 208-89.000.

Desert, Jean-Marie G.; and Walrave, Franciskus J. Grid-type bread-slicing machine. 4,434,692, Cl. 83-62.000.

Desplats, Andre, to Tractel, S.A. Electric hoist. 4,434,973, Cl. 254-344.000.

Desvard, Alain: *See—*
Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, 4,435,277, Cl. 208-108.000.

Detexomat Machinery Limited: *See—*
Hodges, Michael J., 4,434,918, Cl. 223-75.000.

De Vincentiis, Leonardo, to Ausonia Farmaceutici s.r.l. Compound with analgesic, antiinflammatory and antipyretic activity, and pharmaceutical compositions therefrom. 4,435,591, Cl. 560-73.000.

de Vries, Jacob. Apparatus for heating a sheet- or web-like material. 4,435,637, Cl. 219-358.000.

Dewilde, Francois: *See—*
Rouy, Noel; and Dewilde, Francois, 4,435,577, Cl. 548-221.000.

Deyo, Bruce, to Dresser Industries, Inc. Hoist pull down system for blast hole drill. 4,434,860, Cl. 173-147.000.

Dhein, Rolf: *See—*
Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.

Diamond Shamrock Corporation: *See—*
Katz, Michael; Hinden, Jean M.; and Gauger, Jurgen F., 4,435,313, Cl. 502-101.000.

Diebold, Incorporated: *See—*
Azeez, Syed A.; Leipelt, Paul A.; and Morello, Herbert, 4,435,243, Cl. 156-361.000.

Diehl, Manfred; and Bergmann, Roland, to Degussa Aktiengesellschaft. Process for the accelerated solidification of hydraulic cement mixture. 4,435,216, Cl. 106-97.000.

Dienes Werke fur Maschinenteile GmbH & Co. KG: *See—*
Wingen, Peter, 4,434,695, Cl. 83-482.000.

Di Giovanni, Bernard A.; and Ciminiello, Francisco J. Service line interior by-pass fitting. 4,434,816, Cl. 138-109.000.

Dillard, Ewell F.: *See—*
Frazier, Alva W.; and Dillard, Ewell F., 4,435,372, Cl. 423-321.00R.

Dillon, Corbett L. Engine construction. 4,434,618, Cl. 60-528.000.

Dinbergs, Kornelius, to B. F. Goodrich Company, The. Process for preparing spherical and porous vinyl resin particles. 4,435,524, Cl. 521-65.000.

Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, to Institut Francais du Petrole. Process for the hydrotreatment of heavy hydrocarbons in the presence of reduced metals. 4,435,277, Cl. 208-108.000.

Dipper, Barry: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.

Disa A/S (Dansk Industri Syndifat A/S): *See—*
Fog, Jorgen L.; and Nielsen, Jorgen, 4,434,703, Cl. 89-37.00B.

Divoux, Michel; Bonansea, Hubert; and Constant, Bernard, to Hotchkiss-Brandt Sogeme H.B.S. Apparatus for supplying an article sorting machine conveyor, a method for using this apparatus. 4,434,888, Cl. 198-466.000.

Dobrovolny, Pierre, to Zenith Radio Corporation. Communications receiver having a switchable filter input stage. 4,435,841, Cl. 455-180.000.

Dr. Beck & Co. AG: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Dr. C. Otto & Comp. GmbH: *See—*
Struck, Carl-Heinz; and Schumacher, Ralf, 4,435,152, Cl. 431-170.000.

Dr. Madaus & Co.: *See—*
Sieck, Reinhard; and Brusewitz, Gerhard, 4,434,890, Cl. 206-443.000.

Dodson, Stanley C.: *See—*
Brooks, Christopher P.; Dodson, Stanley C.; and Newman, Robert H., 4,435,296, Cl. 252-28.000.

Doerr, Kermit W.: *See—*
Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., 4,435,299, Cl. 252-41.000.

Doherty, Niall S.: *See—*
Harrison, Boyd L.; and Doherty, Niall S., 4,435,420, Cl. 424-277.000.

Dohya, Akihiro; Hino, Yasuhiko; and Abe, Mitsuo, to Nippon Electric Co., Ltd. Multilayer circuit and process for manufacturing the same. 4,434,544, Cl. 29-578.000.

Doi, Haruo: *See—*
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.

Doleschall, Gabor: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Dollman, David Y., to Amchem Products, Inc. Non-fluoride acid compositions for cleaning aluminum surfaces. 4,435,223, Cl. 134-3.000.

Domina, William G., to Dow Chemical Company, The. Concentrated emulsions of water-soluble polymers. 4,435,528, Cl. 523-332.000.

Dominquez, Richard J. G.; and Rice, Doris M., to Texaco Inc. Method for making a reinforced rim elastomer. 4,435,349, Cl. 264-257.000.

Donnelly Mirrors, Inc.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.

Doody, Jeffrey S.: *See—*
Gray, Lorin S., III; and Doody, Jeffrey S., 4,435,461, Cl. 428-141.000.

Dorfman, Leonard M., to Timex Corporation. Battery switch plate for a timepiece. 4,435,088, Cl. 368-88.000.

Dorris, Gordon L. Invalid's bathtub. 4,434,517, Cl. 4-585.000.

Dorville, Georges: *See—*
Gill, George; Souchier, Alain; and Dorville, Georges, 4,434,614, Cl. 60-271.000.

Dostert, Philippe L.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Dotson, Ronald L.: *See—*
Deininger, J. Paul; and Dotson, Ronald L., 4,435,257, Cl. 204-86.000.

Douzon, Colette A.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Dove, Thomas D.: *See—*
Mills, Larry E.; and Dove, Thomas D., 4,435,001, Cl. 282-11.50A.

Dow Chemical Company, The: *See—*
Butts, Susan B.; and Hartwell, George E., 4,435,605, Cl. 568-878.000.
Domina, William G., 4,435,528, Cl. 523-332.000.
Flagg, Edward E., 4,435,381, Cl. 424-54.000.
Gross, James R., 4,435,172, Cl. 604-368.000.
Hefner, Robert E., Jr., 4,435,530, Cl. 523-512.000.
Lau, Philip Y., 4,435,263, Cl. 204-197.000.
Lau, Philip Y., 4,435,264, Cl. 204-197.000.
Lysenko, Zenon; and Pews, Richard G., 4,435,573, Cl. 546-250.000.
McKinney, Linda D.; and Jenkines, Randall C., 4,435,459, Cl. 428-95.000.
Olson, Robert S.; Surls, Joseph P., Jr.; and West, Ben F., 4,435,379, Cl. 423-472.000.
Tomalia, Donald A.; Wilson, Larry R.; and Conklin, Jerry R., 4,435,548, Cl. 525-451.000.

Drasi, Willem T.; Pleyers, Jozef J. A.; and Kuin, Nicolaas P. J., to Oce-Nederland B.V. Method and apparatus for transferring and fixing powder images. 4,435,067, Cl. 355-3.0TR.

Drechsel, Erhart K.: *See—*
Holcomb, Dysart E.; Drechsel, Erhart K.; and Sardisco, John B., 4,435,370, Cl. 423-158.000.

Dresser Europe S.A.: *See—*
Parrott, George A., 4,435,018, Cl. 299-43.000.

Dresser Industries, Inc.: *See—*
Deyo, Bruce, 4,434,860, Cl. 173-147.000.
Montgomery, Marshall N., 4,434,653, Cl. 73-151.000.

Droitsch, Lutz: *See—*
Kranzle, Josef; and Droitsch, Lutz, 4,435,127, Cl. 417-26.000.

Drost, Cornelis J.; and Milanowski, G. Jan, to Cornell Research Foundation, Inc. Electroacoustic transducer calibration method and apparatus. 4,434,648, Cl. 73-1.0DV.

Drouet, Michel G.; and Nadeau, Francois, to Hydro Quebec. Method and device for controlling the length of an electrical arc in an arc generating machine. 4,435,631, Cl. 219-124.020.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Biocidal sulfur-containing bis-imino carbamate compounds. 4,435,421, Cl. 424-277.000.

Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., to Pharmindustrie. Derivatives of 10-(1-azabicyclo[2.2.2]oct-3-yl)-N,N dimethyl-10H-phenothiazine-2-sulfonamide as medicaments. 4,435,393, Cl. 424-246.000.

Dubur, Gunar Y.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.

Duffy, James J., to Ford Motor Company. Speed-sensitive power steering system. 4,434,866, Cl. 180-143.000.

Duir, John H.: *See—*
Deering, Roland F.; and Duir, John H., 4,435,271, Cl. 208-11.00R.

Dumont, Claude: *See—*
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,435,408, Cl. 424-263.000.

Dunaway, Richard: *See—*
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., 4,435,738, Cl. 361-321.000.

Dundas, Dennis L.: *See—*
Myers, William H.; and Dundas, Dennis L., 4,435,147, Cl. 425-577.000.

Dunkelmann, Dietger: *See—*
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.

Dunphy, Gerald F.; and Best, Lance E., to Ogden Industries Pty. Limited. Lock. 4,434,634, Cl. 70-89.000.

Du Pont de Nemours, E. I., and Company: *See—*
Abramson, Edward A.; and Townsend, Peter K., 4,435,037, Cl. 350-96.200.
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased, 4,435,568, Cl. 544-182.000.
Levitt, George, 4,435,206, Cl. 71-92.000.
Reap, James J., 4,435,205, Cl. 71-92.000.
Romanauskas, William A., 4,435,169, Cl. 494-20.000.
Wysong, Robert D., 4,435,383, Cl. 424-78.000.

Duracell Inc.: *See—*
Bahary, William S.; and Griffin, Rowland A., 4,435,488, Cl. 429-212.000.

Durand, Alain, to Societe Anonyme de Telecommunications. Process for preparing homogeneous layers of composition $Hg_{1-x}Cd_xTe$. 4,435,224, Cl. 148-1.500.

Duret, Denis: *See—*
Pascal, Daniel; and Duret, Denis, 4,434,547, Cl. 29-599.000.

Durot, Jean-Pierre: *See—*
Pivoteau, Jean; and Durot, Jean-Pierre, 4,435,479, Cl. 428-542.800.

Duyal, Tulay: *See—*
Walls, John E.; and Duyal, Tulay, 4,435,496, Cl. 430-285.000.

Dyer, Keith: *See—*
Rose, John A.; and Dyer, Keith, 4,434,730, Cl. 112-121.120.

Dynamit Nobel Aktiengesellschaft: *See—*
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,435,466, Cl. 428-215.000.

Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., to Babcock & Wilcox Company, The. Load control for energy converters. 4,435,650, Cl. 307-32.000.

E. R. Squibb & Sons, Inc.: *See—*
Varma, Ravi K., 4,435,326, Cl. 260-397.300.

E-Tech, Inc.: *See—*
Sanborn, David M.; and Blackshaw, Andrew L., 4,434,539, Cl. 29-157.30V.

Eastin, John A. Manufacturing and using nitrogen fertilizer solutions on a farm. 4,435,201, Cl. 71-54.000.

Eastman Kodak Company: *See—*
Agreda, Victor H.; and Partin, Lee R., 4,435,595, Cl. 560-234.000.
Gourley, Robert N., 4,435,320, Cl. 260-152.000.
Harris, James E., 4,435,239, Cl. 156-180.000.
Jones, Glenn C.; and Culver, Larry J., 4,435,534, Cl. 524-292.000.
Lau, Philip T. S., 4,435,495, Cl. 430-218.000.
Lelental, Mark; and Steklenski, David J., 4,435,490, Cl. 430-45.000.
Maskasky, Joe E., 4,435,501, Cl. 430-434.000.
Reeves, John W., 4,435,499, Cl. 430-350.000.
Stryjewski, Walter A., 4,435,633, Cl. 219-216.000.
Vanier, Noel R., 4,435,502, Cl. 430-489.000.

Eaton Corporation: *See—*
Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., 4,435,750, Cl. 363-177.000.
Shelvik, Bertrum S., 4,435,739, Cl. 361-346.000.
Swanson, Glen E.; and Garstick, Larry A., 4,434,833, Cl. 152-417.000.

Ebara Corporation: *See—*
Koichi, Yamada; Keita, Kawamura; and Shinji, Aoki, 4,435,260, Cl. 204-164.000.

Ebi, Yutaka: *See—*
Horike, Masanori; and Ebi, Yutaka, 4,435,720, Cl. 346-75.000.

Ebneth, Harold; Fitzky, Hans G.; and Oberkirch, Wolfgang, to Bayer Aktiengesellschaft. Composite material for shielding against electromagnetic radiation. 4,435,465, Cl. 428-195.000.

Eckel Industries, Inc.: *See—*
Gilchrist, Henry R., 4,434,524, Cl. 16-250.000.

Eckert, Wolfgang; Holtkamp, Bernd; and Kilian, Ernst A., to U.S. Philips Corporation. Amplifier arrangement. 4,435,685, Cl. 330-261.000.

Edelmann, Karl R. Thermostat housing assembly. 4,434,750, Cl. 123-41.020.

Eder, Ulrich: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Edgerley, Christopher J., to Electricity Council, The. Channel induction furnaces. 4,435,820, Cl. 373-161.000.

Edson Tool & Manufacturing Co., Inc.: *See—*
Prather, Joseph E.; Khalifa, Ramzl A.; and Wenzler, Peter B., 4,435,027, Cl. 312-222.000.

Egami, Tsuneyuki: *See—*
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.

Egan, William E.: *See—*
Landers, Samuel P.; and Egan, William E., 4,434,830, Cl. 152-209.00R.

Egawa, Takeshi: *See—*
Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, 4,435,058, Cl. 354-403.000.

Ehrreich, John E., to Ercon, Inc. Conductive compositions. 4,435,214, Cl. 75-251.000.

Eichelberger, Charles W.: *See—*
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,435,679, Cl. 323-350.000.

Eida, Tsuyoshi; and Kobayashi, Masatsune, to Canon Kabushiki Kaisha. Liquid jet recording process and recording liquid therefor. 4,435,717, Cl. 346-1.100.

Eilers, Norbert; and Bragas, Peter, to Blaupunkt-Werke GmbH. FM Receiver for general programs and special announcements. 4,435,843, Cl. 455-205.000.

Eisai Company, Limited: *See—*
Akatsuka, Shin-ichiro, 4,435,431, Cl. 426-36.000.
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

Eisele, Hermann; Hill, Martin; and Schweizer, Hartmut, to Robert Bosch GmbH. Device for generating specific electrical voltage values for consumers associated with an internal combustion engine. 4,435,745, Cl. 363-21.000.

Eiselstein, Herbert L.; Smith, Darrell F., Jr.; and Clatworthy, Edward F., to Huntington Alloys, Inc. Apparatus and method for fabricating tubes from powder. 4,435,359, Cl. 419-3.000.

Eisenhuth, Warren V. Device for lubricating muzzle-loading bullets and method for handling and loading the bullets. 4,434,571, Cl. 42-90.000.

Elbe, Hans-Ludwig: *See—*
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.

Electricity Council, The: *See—*
Edgerley, Christopher J., 4,435,820, Cl. 373-161.000.

El-Gohary, Hussein T., to Data General Corp. Computer network having a single electrically continuous bi-directional bus. 4,435,764, Cl. 364-200.000.

Eli, Inc.: *See—*
Wouk, Victor, 4,435,671, Cl. 315-200.00R.

Elkem a/s: *See—*
Evensen, Knut, 4,435,815, Cl. 373-81.000.
Krogsrud, Harald, 4,435,817, Cl. 373-103.000.

Elton, Edward F.: *See—*
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.

Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, to Mitsui Toatsu Chemicals, Inc. Phenolic resin compositions. 4,435,543, Cl. 525-143.000.

EMAB Electrolux Motor Aktiebolag: *See—*
Nilsson, Ralph L.; and Rangert, Bo R., 4,434,756, Cl. 123-195.00R.

Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, to Bayer Aktiengesellschaft. Process for the preparation of aromatic aminosulphonic acids. 4,435,336, Cl. 260-508.000.

Emerson Electric Co.: *See—*
Rippelmeyer, Dennis M., 4,435,150, Cl. 431-46.000.

Emhart Industries, Inc.: *See—*
Dahms, Francis A., 4,434,674, Cl. 74-99.00A.
Goode, Joseph W., III, 4,435,648, Cl. 307-10.00R.
Perry, Ralph A.; and Andrejasich, Raymond J., 4,434,650, Cl. 73-61.10R.

EMI Limited: *See—*
Johnston, Samuel J. B., 4,435,266, Cl. 204-276.000.

Emmrich, Bodo: *See—*
Nitschmann, Karl; Weyda, Gunther; Emmrich, Bodo; and Stimpfig, Karl O., 4,434,556, Cl. 30-123.400.

Endo, Kiyoshi: *See—*
Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, 4,435,587, Cl. 556-410.000.

Endo, Shuzo: *See—*
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.

Endo, Toshiaki: *See—*
Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,434,593, Cl. 52-208.000.

Energy Conversion Devices, Inc.: *See—*
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., 4,435,445, Cl. 427-54.100.

Energy Equipment Company Limited, The: *See—*
Harman, Maurice, 4,435,158, Cl. 432-58.000.

Engel, Jurgen: *See—*
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.

Engelhard Corporation: *See—*
Bartholic, David B.; and Flanders, Robert L., 4,435,272, Cl. 208-127.000.

Engelsberger, Ernst; and Schulz, Ralf-Thilo, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Door, especially for motor vehicles. 4,434,580, Cl. 49-502.000.

Engelstoft, Mogens: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Ennes, John P. Vertical louver system. 4,434,834, Cl. 160-166.00A.

Enomoto, Hiroshi: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,435,397, Cl. 424-250.000.

Epstein, Harold M.; Schwerzel, Robert E.; and Andrus, Paul G., to Battelle Development Corporation. Fluorescence laser EXAFS. 4,435,828, Cl. 378-49.000.

Epstein, Joseph W.; Osterberg, Arnold C.; and Brabander, Herbert J., to American Cyanamid Company. Method of treating depression using azabicyclohexanes. 4,435,419, Cl. 424-274.000.

Erb, Harley E.: *See—*
Beloate, Mickey R.; Erb, Harley E.; and Shelton, Charles W., 4,434,896, Cl. 206-621.000.

Ercon, Inc.: *See—*
Ehrreich, John E., 4,435,214, Cl. 75-251.000.

Erich Schultze KG: *See—*
Schmidt, Manfred, 4,434,626, Cl. 62-470.000.

Erickson, Alan R., to Rockwell International Corporation. RF Imbalance detector. 4,435,683, Cl. 330-2.000.

Erickson, Lawrence F., to United States of America, Navy. Hybrid fuse triggering device. 4,434,717, Cl. 102-210.000.

Eshelman, Philip V., to Colt Industries Operating Corp. Fuel injection apparatus and system. 4,434,765, Cl. 123-472.000.

Esselte Pendaflex Corporation: *See—*
Holland-Letz, Gunter, 4,435,245, Cl. 156-384.000.

Ethicon, Inc.: *See—*
Mericle, Robert W., 4,434,795, Cl. 128-303.00R.
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,435,590, Cl. 560-61.000.

Ethyl Products Company: *See—*
Kirk, Donald C., Jr., 4,434,915, Cl. 222-153.000.

Etou, Hironori: *See—*
Matumoto, Michiaki; Etou, Hironori; and Nakamoto, Hidekazu, 4,435,151, Cl. 431-90.000.

Eue, Ludwig: *See—*
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert, 4,435,208, Cl. 71-105.000.

Evans, George S.; Gilmore, John F.; and Morton, Edward W., to North American Philips Electric Corp. Energy conserving instant-start series-sequence fluorescent lamp system with overcurrent protection. 4,435,670, Cl. 315-58.000.

Evans, John D.: *See—*
Goode, Frederick R.; Evans, John D.; and Cox, James W., Jr., 4,434,902, Cl. 212-268.000.

Evens, Georges G., to Stamicarbon B.V. Process for the preparation of copolymers of ethylene with at least one other 1-alkene. 4,435,552, Cl. 526-140.000.

Evensen, Knut, to Elkem a/s. Method and apparatus for charging a furnace. 4,435,815, Cl. 373-81.000.

Eves, E. Eugene, II: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.

EVOG - Etablissement fur Verwaltung und Organisation: *See—*
Klupsch, Hans J., 4,435,432, Cl. 426-43.000.

FVVA-Werk Spezialerzeugung von Zylinder-und Sicherheitsschlossern GmbH & Co. KG: *See—*
Prunbauer, Kurt, 4,434,636, Cl. 70-358.000.

Excelermatic Inc.: *See—*
Horton, Paul L., 4,434,676, Cl. 74-200.000.
Kraus, Charles E., 4,434,675, Cl. 74-200.000.

Exxon Nuclear Company, Inc.: *See—*
Boldt, Allyn L., 4,435,363, Cl. 422-270.000.

Exxon Research and Engineering Co.: *See—*
Batzold, John S.; and Savas, Judith C., 4,435,267, Cl. 204-284.000.
Gschwendtner, Wolfgang W. J., 4,435,609, Cl. 585-670.000.
Koetsier, Wicher T.; and Verduijn, Johannes P., 4,435,608, Cl. 585-480.000.
Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., 4,435,261, Cl. 204-168.000.
Moss, Gerald, 4,435,148, Cl. 431-7.000.
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,435,521, Cl. 502-209.000.

F.A.M.A. di Sandra Borgato & C., S.n.c.: *See—*
Borgato, Augusto, 4,434,635, Cl. 70-279.000.

F. L. Smidth & Co.: *See—*
Knudsen, Hans B., 4,435,159, Cl. 432-106.000.

Fabian, David J.: *See—*
Berry, Donald A.; Fabian, David J.; and Lucius, John E., 4,435,035, Cl. 339-99.00R.

Fabrico Manufacturing Corp.: *See—*
Ross, Ashley M.; and McKee, James A., 4,434,712, Cl. 99-646.00S.

Face, Samuel A., Jr.; and Face, Samuel A., III. Surface profile measuring apparatus and method. 4,434,558, Cl. 33-174.00P.

Face, Samuel A., III: *See—*
Face, Samuel A., Jr.; and Face, Samuel A., III, 4,434,558, Cl. 33-174.00P.
Fairchild Camera & Instrument Corporation: *See—*
Shideler, Jay A.; and Berry, Robert L., 4,435,225, Cl. 148-1.500.
Tickle, Andrew C., 4,435,786, Cl. 365-154.000.
Tickle, Andrew C.; and Vora, Madhukar B., 4,435,790, Cl. 365-218.000.
Fajt, John, to Xenell Corporation. Apparatus and methods for positioning electrical components. 4,434,886, Cl. 198-389.000.
Falk, Robert A., to Ciba-Geigy Corporation. Perfluoroalkyl-alkylene branched amphoteric sulfato betaines. 4,435,330, Cl. 260-458.00F.
Fardin, Carlos, to Van Dam Machine Corporation of America. Container lid separating assembly. 4,435,114, Cl. 414-330.000.
Farr, Robert A.: *See—*
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,435,571, Cl. 544-384.000.
Farrell, Kent. Thermal linear actuator. 4,435,665, Cl. 310-307.000.
Fasiczka, Ray G.: *See—*
Porowski, Janek S.; O'Donnell, William J.; and Fasiczka, Ray G., 4,434,840, Cl. 165-82.000.
Faulkner, Gene M.: *See—*
Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, 4,434,562, Cl. 34-4.000.
Favennec, Jean L.: *See—*
Henaff, Louis; Morel, Michel; and Favennec, Jean L., 4,434,742, Cl. 118-723.000.
Favie, Claude; and Mercadier, Michel, to Societe Nationale Elf Aquitaine (Production). Method of preparing cosmetological polymers. 4,435,545, Cl. 525-344.000.
Fay, Ralph M., to Manville Service Corporation. Hot melt adhesive for bonding paper to glass fiber. 4,435,469, Cl. 428-285.000.
Fechalos, William A.; and Stehman, Carl J., to Rockwell International Corporation. Dial pulse delay circuit. 4,435,620, Cl. 179-18.0EB.
Feldkamper, Richard, to Windmoller & Holscher. Apparatus for producing overlapping band rolls from superposed overlapping flat workpieces. 4,434,948, Cl. 242-59.000.
Felmeri, Jozsef: *See—*
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.
Fergason, James L., to Manchester R & D Partnership. Encapsulated liquid crystal and method. 4,435,047, Cl. 350-334.000.
Ferm, Richard L.; and Kray, Louis R., to Chevron Research Company. Heat exchanger antifoulant. 4,435,273, Cl. 208-48.0AA.
Fernsler, Ronald E.: *See—*
Kliebphipat, Ravadee; Fernsler, Ronald E.; and Hicks, James E., 4,435,731, Cl. 358-243.000.
Fery, Guy A. Greeting card construction. 4,434,889, Cl. 206-216.000.
Fetter, Jozsef: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.
Fickelscher, Kurt G., to Balcke-Duerr AG. Planetary gear. 4,434,682, Cl. 74-805.000.
Field, Thomas R.: *See—*
Simon, Donald J.; and Field, Thomas R., 4,435,638, Cl. 219-460.000.
Fields: Ellis K.; and Nimry, Tayseer S., to Standard Oil Company (Indiana). Adducts of 1-cyclohexene-1,2-dicarboxylic anhydride with olefins. 4,435,593, Cl. 560-119.000.
Filion, Andre Y.: *See—*
Perlman, Martin M.; and Filion, Andre Y., 4,435,610, Cl. 136-255.000.
Filipic, Dusan: *See—*
Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, 4,434,798, Cl. 128-421.000.
Firestone Tire & Rubber Company, The: *See—*
Davis, James A., 4,435,477, Cl. 428-462.000.
Gemar, Charles; and Meisch, Robert L., 4,434,953, Cl. 242-107.000.
Hausch, Walter R., 4,435,456, Cl. 428-36.000.
Kay, Edward L.; and Gutierrez, Richard, 4,435,337, Cl. 528-493.000.
Koch, Russell W.; and Barbin, William W., 4,434,832, Cl. 152-370.000.
Fischer, Artur. Fastening device. 4,434,597, Cl. 52-681.000.
Fischer, Peter: *See—*
Schwartz, Werner; and Fischer, Peter, 4,435,211, Cl. 75-62.000.
Fisher, John M., to B. F. Goodrich Company, The. Evacuation slide device. 4,434,870, Cl. 182-48.000.
Fitzgerald, Harry G., to Colgate-Palmolive Company. Disposable absorbent product having an embossed pad containing a gel forming compound. 4,435,178, Cl. 604-365.000.
Fitzky, Hans G.: *See—*
Ebneth, Harold; Fitzky, Hans G.; and Oberkirch, Wolfgang, 4,435,465, Cl. 428-195.000.
Flagg, Edward E., to Dow Chemical Company, The. Thiouronium phosphonates for use in dental treatments. 4,435,381, Cl. 424-54.000.
Flaherty, Thomas; and Price, Richard H., to John Kennedy (Civil Engineering) Limited. Pipework. 4,434,815, Cl. 138-97.000.
Flanders, Robert L.: *See—*
Bartholic, David B.; and Flanders, Robert L., 4,435,272, Cl. 208-127.000.
Flecker, Pierre: *See—*
Stenzel, Otto; and Flecker, Pierre, 4,435,818, Cl. 373-104.000.
Fletcher, Ian J., to Ciba-Geigy Corporation. Chromogenic quinazolines. 4,435,003, Cl. 282-27.500.
Florczyk, Rolf; and Krischik, Reinhold. Container having resealable opening means. 4,434,906, Cl. 220-268.000.
Flot, Regis; and Zoppi, Michel, to Raychem Pontoise S. A. Recoverable article. 4,435,454, Cl. 428-36.000.
Flowers, Allan L., to Nissan Design International, Inc. Multiple-position spare tire mount. 4,434,919, Cl. 224-42.210.
Fluckiger, Raymond W.: *See—*
Hulber, Loren J.; and Fluckiger, Raymond W., 4,435,464, Cl. 428-167.000.
FMC Corporation: *See—*
Christopher, Terry M.; and Nelson, Randolph J., 4,434,616, Cl. 60-451.000.
Goode, Frederick R.; Evans, John D.; and Cox, James W., Jr., 4,434,902, Cl. 212-268.000.
Foa', Marco: *See—*
Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, 4,435,575, Cl. 546-341.000.
Focke & Co.: *See—*
Focke, Heinz H., 4,434,947, Cl. 242-57.100.
Focke, Heinz H., to Focke & Co. Axially displaceable reel holder for packing machine webs. 4,434,947, Cl. 242-57.100.
Fog, Jorgen L.; and Nielsen, Jorgen, to Disa A/S (Dansk Industri Syndifat A/S). Gun-mount for a machine gun supported by a fork or for a weapon of a similar kind with means for continuously variable adjustment of the elevation of the upper swivel arm. 4,434,703, Cl. 89-37.00B.
Foggini, Giovanni, to Lear S.n.c. di Foggini & C. Sun visors of the type having a cell structure particularly for automobile vehicles. 4,435,009, Cl. 296-97.00H.
Fonck, Klaus-Uwe: *See—*
Wilke, Heinz; and Fonck, Klaus-Uwe, 4,434,550, Cl. 29-837.000.
Fonds d'Etudes pour la Securite Routiere A.s.b.l.: *See—*
de Brabander, Louis F.; and Van Linthout, Luc K., 4,435,078, Cl. 356-121.000.
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, to Krone GmbH. Tool for electrically connecting insulated wires. 4,434,542, Cl. 29-566.400.
Ford Aerospace & Communications Corp.: *See—*
Luh, Howard H., 4,435,714, Cl. 343-753.000.
Ford Motor Company: *See—*
Basrai, Habil S., 4,434,857, Cl. 172-328.000.
Blechinger, Chester J., 4,434,656, Cl. 73-204.000.
Duffy, James J., 4,434,866, Cl. 180-143.000.
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,434,754, Cl. 123-146.50A.
Hetrick, Robert E., 4,435,742, Cl. 361-433.000.
Foresto, Samuel. Mass burning self-cleaning incinerator. 4,434,725, Cl. 110-346.000.
Formanek, Karel; Michelet, Daniel; and Petre, Dominique, to Rhone-Poulenc Industries. Preparation of polyphenols by oxidation of hydroxybenzaldehydes. 4,435,601, Cl. 568-430.000.
Formica Corp.: *See—*
Hunt, James E. B., 4,435,234, Cl. 156-62.400.
Forry, John S.; and Garrick, John R., to Armstrong World Industries, Inc. Processes for forming building materials comprising non-woven webs. 4,435,353, Cl. 264-518.000.
Forsberg, John W., to Lubrizol Corporation, The. Carboxylic acid derivatives of alkanol tertiary monoamines. 4,435,297, Cl. 252-34.700.
Forshay, Steven E.: *See—*
Meyerhoff, Jerome D.; and Forshay, Steven E., 4,435,844, Cl. 455-218.000.
Forster, Gunther; and Gresser, German. Directing-barrier for a roadway. 4,435,106, Cl. 404-6.000.
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert, to Bayer Aktiengesellschaft. Herbicidally active substituted phenoxycinnamic acid derivatives. 4,435,208, Cl. 71-105.000.
Forsythe, William L., Jr.: *See—*
Bertolacini, Ralph J.; and Forsythe, William L., Jr., 4,435,282, Cl. 208-113.000.
Foseco Trading A.G.: *See—*
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.
Fossi, Paolo: *See—*
Demarthe, Jean-Michel; Fossi, Paolo; and Gandon, Louis, 4,435,068, Cl. 423-40.000.
Foster Grant Corporation: *See—*
Phillips, Richard A.; and Haddad, Theodore A., 4,435,476, Cl. 428-412.000.
Fowles, Thomas A.: *See—*
D'Amico, Richard; Fowles, Thomas A.; and Winchell, David A., 4,434,904, Cl. 215-232.000.
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., to Ford Motor Company. Method of on site charging of distributor magnet. 4,434,754, Cl. 123-146.50A.
Franchise Mailing Systems: *See—*
Green, Ronald J., 4,435,246, Cl. 156-542.000.
Franck, Jean-Pierre: *See—*
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.
Frank, John, to A.I.M. Services. Celestial clock. 4,435,795, Cl. 368-16.000.
Franklin, Gordon S. Tree feller-buncher. 4,434,827, Cl. 144-336.000.

Franklin Steel Company: *See—*
Sweeney, Lawrence J., 4,435,107, Cl. 404-10.000.
Franz, John E., to Monsanto Company. N-Organo-phosphonomethylglycine-N-oxides and the use thereof to increase the sucrose content of sugarcane. 4,435,204, Cl. 71-86.000.
Frater, Georg; Suchy, Milos; Wenger, Jean; and Winternitz, Paul, to Hoffmann-La Roche Inc. Quinyloxy-phenyloxy-oxime ester compounds having herbicidal activity. 4,435,207, Cl. 71-94.000.
Frazier, Alva W.; and Dillard, Ewell F., to Tennessee Valley Authority. Production of purified strong wet-process phosphoric acid. 4,435,372, Cl. 423-321.00R.
Frech, Kenneth J.; and Tazuma, James J., to Goodyear Tire & Rubber Company, The. Sulfur removal from a gas stream. 4,435,371, Cl. 423-228.000.
Freedman, George: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.
Freiborg, Bennie. Asphalt composition hip and ridge cover. 4,434,589, Cl. 52-57.000.
French, William L., to Buckeye Molding Company. Container having integral opening means. 4,434,908, Cl. 220-276.000.
Frenznick, Anton: *See—*
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, to Robert Bosch GmbH. Apparatus for ascertaining a predetermined rotary position of a rotational body. 4,435,128, Cl. 417-63.000.
Friden, G. Burton. Infusion needle carrier. 4,435,175, Cl. 604-177.000.
Fried, Lawrence, to United States of America, Navy. Built-up mirror with reduced temperature gradient. 4,435,045, Cl. 350-310.000.
Friedrich, Ehrlinger; and Meyerle, Michael, to Zahnradfabrik Friedrichshafen AG. Hydromechanical drive. 4,434,681, Cl. 74-687.000.
Frohberger, Paul-Ernst: *See—*
Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,435,411, Cl. 424-269.000.
Fronciaz, Wojciech; and Hyde, James S., to Medical College of Wisconsin. Microwave resonator structure. 4,435,680, Cl. 324-316.000.
Fueki, Shimetomo: *See—*
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.
Fuji Photo Film Co., Ltd.: *See—*
Arakawa, Shun, 4,435,248, Cl. 162-12.000.
Kitamura, Takashi; and Kokado, Hiroshi, 4,435,491, Cl. 430-49.000.
Mihayashi, Keiji; Ogawa, Tadashi; and Yagihara, Morio, 4,435,503, Cl. 430-548.000.
Okutsu, Eiichi; Iwasaki, Nobuyuki; and Takada, Shunji, 4,435,500, Cl. 430-419.000.
Sato, Masamichi, 4,435,069, Cl. 355-3.0FU.
Fuji Shashin Film Kabushiki Kaisha: *See—*
Katsuyama, Harumi; and Terashima, Masaaki, 4,435,362, Cl. 422-56.000.
Fuji Xerox Co., Ltd.: *See—*
Suzuki, Kazuhiro; and Takahashi, Toshikatsu, 4,435,077, Cl. 355-51.000.
Tan, Yoichi, 4,435,804, Cl. 370-69.100.
Fujii, Katsutoshi: *See—*
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Fujikura, Chozo, to Furukawa Aluminum Co., Ltd. Aluminum alloy printing plate and method for manufacturing same. 4,435,230, Cl. 148-11.50A.
Fujimura, Hajime: *See—*
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.
Fujino, Masahisa: *See—*
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.
Fujisawa, Fumio: *See—*
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.
Fujishima, Masakazu, to Nippon Gakki Seizo Kabushiki Kaisha. Adjacent station interference rejecting circuit. 4,435,618, Cl. 381-7.000.
Fujitsu Fanuc Limited: *See—*
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,435,771, Cl. 364-474.000.
Fujitsu Limited: *See—*
Imai, Hajime; Morimoto, Masahiro; and Fujiwara, Takao, 4,435,443, Cl. 427-38.000.
Ito, Takashi; and Nozaki, Takao, 4,435,447, Cl. 427-94.000.
Miwa, Hirohide; and Shimura, Takaki, 4,434,661, Cl. 73-625.000.
Miyazaki, Junji; Miwa, Hirohide; and Shimura, Takaki, 4,434,658, Cl. 73-618.000.
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, 4,435,765, Cl. 364-200.000.
Fujiwara, Takao: *See—*
Imai, Hajime; Morimoto, Masahiro; and Fujiwara, Takao, 4,435,443, Cl. 427-38.000.
Fujiwara, Yoshihiro: *See—*
Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, 4,435,842, Cl. 455-181.000.
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, to Canon Kabushiki Kaisha. Electric motor drive device for camera. 4,435,061, Cl. 354-173.110.
Fukui, Akira: *See—*
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.
Fukui, Izumu; Yano, Takeshi; and Hamatsuki, Takeshige, to Nippon Electric Co., Ltd. Lever actuator comprising a longitudinal-effect electroexpansive transducer and designed to prevent actuation from degrading the actuator. 4,435,666, Cl. 310-328.000.
Fukumura, Takumi: *See—*
Ishigaki, Katsumi; Sasaki, Kazuo; and Fukumura, Takumi, 4,435,006, Cl. 285-119.000.
Fukuoka, Tatsuhiko: *See—*
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,435,482, Cl. 428-553.000.
Fukushima, Nobuo; Saitou, Teruo; and Hayashida, Haruo, to Sumitomo Chemical Co., Ltd. Method for the orientation of thermoplastic polyether ether ketone films. 4,435,350, Cl. 264-280.000.
Fulcher, Royce G.: *See—*
Burrows, Vernon D.; Fulcher, Royce G.; and Paton, David, 4,435,429, Cl. 426-18.000.
Fulger, Charles V.; and Gum, Ernest K., to General Foods Corporation. Enzyme-saccharified all natural, ready-to-eat cereal from whole cereal grain. 4,435,430, Cl. 426-18.000.
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, to Sumitomo Chemical Company, Limited. Optical isomer of triazolylpentenols, and their production and use as fungicide, herbicide and/or plant growth regulant. 4,435,203, Cl. 71-76.000.
Furuichi, Shuhei; Ikeda, Toshiaki; and Suzuki, Masakazu, to Kabushiki Kaisha Morita Seisakusho. High voltage supply system for medical equipment. 4,435,747, Cl. 363-25.000.
Furukawa Aluminum Co., Ltd.: *See—*
Fujikura, Chozo, 4,435,230, Cl. 148-11.50A.
Furukawa Electric Company Ltd., The: *See—*
Ueshima, Norio; Okawa, Nobuo; and Takayanagi, Kiyoshi, 4,435,212, Cl. 75-124.000.
Furukawa, Hisao: *See—*
Kato, Yasushi; and Furukawa, Hisao, 4,435,536, Cl. 524-378.000.
Furuta, Kenji, to Olympus Optical Co., Ltd. Magnetic recording-reproducing apparatus with constant length cue signal. 4,435,735, Cl. 360-74.400.
Furuya, Haruo: *See—*
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, to Taiho Kogyo Co., Ltd. Sliding member and process for producing the same. 4,435,482, Cl. 428-553.000.
Gabridge, Michael G. Tissue culture vessel. 4,435,508, Cl. 435-284.000.
GAF Corporation: *See—*
Liu, Kou-chang, 4,435,588, Cl. 500-21.000.
Gambino, Richard J.; and Ruf, Ralph R., to International Business Machines Corporation. Thermochemical magnetic generator. 4,435,663, Cl. 310-306.000.
Gandon, Louis: *See—*
Demarthe, Jean-Michel; Fossi, Paolo; and Gandon, Louis, 4,435,368, Cl. 423-40.000.
Ganguly, Ashit K.; Mallams, Allan K.; and Liu, Yi-Tsung, to Schering Corporation. Tylosin 20-imino-20-deoxo-4''-acyl derivatives, pharmaceutical compositions and method of use. 4,435,388, Cl. 424-180.000.
Ganguly, Ashit K.: *See—*
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,435,412, Cl. 424-270.000.
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, to Robert Bosch GmbH. Two-part separable electrical connection arrangement. 4,435,033, Cl. 339-45.00M.
Gao Gesellschaft fur Automation and Organisation mbH: *See—*
Pauli, Gunter; Krause, Gunter; and Lob, Erwin, 4,435,834, Cl. 382-7.000.
Gardano, Andrea: *See—*
Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, 4,435,575, Cl. 546-341.000.
Gardner, David L.: *See—*
Burgess, Anthony J.; and Gardner, David L., 4,435,478, Cl. 428-463.000.
Gargrave, Robert J.; Thompson, John K.; and Comstock, James F., to READY Tools, Inc. Rotary bending and forming devices. 4,434,644, Cl. 72-387.000.
Garrett Corporation, The: *See—*
Boesel, Walter F., 4,435,664, Cl. 310-186.000.
Denk, Jpseph; and Martin, William B., 4,434,881, Cl. 192-89.00A.
Gu, Alston L.; and Silver, Alexander, 4,435,839, Cl. 384-103.000.
Garrett, William R., to Smith International, Inc. Drill string splined resilient tubular telescopic joint for balanced load drilling of deep holes. 4,434,863, Cl. 175-321.000.
Garrick, John R.: *See—*
Forry, John S.; and Garrick, John R., 4,435,353, Cl. 264-518.000.
Garstick, Larry A.: *See—*
Swanson, Glen E.; and Garstick, Larry A., 4,434,833, Cl. 152-417.000.

Gartner, Roderich: *See—*
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, 4,435,603, Cl. 568-701.000.
Gaspar, Michael E. Level indicator. 4,434,561, Cl. 33-366.000.
Gasparaitis, Bernard; Long, Thomas W., Jr.; and Richardson, Charles P., to Motorola, Inc. Whip antenna construction. 4,435,713, Cl. 343-702.000.
Gaubert, Jean, to Les Cables de Lyon. Semiconductor packing composition for an undersea cable, a cable containing said substance and a method of manufacturing such a cable. 4,435,613, Cl. 174-102.0SC.
Gauger, Jurgen F.: *See—*
Katz, Michael; Hinden, Jean M.; and Gauger, Jurgen F., 4,435,313, Cl. 502-101.000.
Gaupp, Osvin: *See—*
Barth, Not-Duri; and Gaupp, Osvin, 4,435,627, Cl. 200-148.00R.
Gavella, Giulio: *See—*
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.
Gebruder Buhler AG: *See—*
Linzberger, Robert, 4,434,522, Cl. 15-256.510.
Gedeon Vegyeszeti Gyar Rt.: *See—*
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.
Gehl, Paul O. Safety apparatus for cranes. 4,434,901, Cl. 212-153.000.
Gehring, Johann: *See—*
Birkle, Siegfried; Gehring, Johann; and Stoger, Klaus, 4,435,265, Cl. 204-198.000.
Geigle, William L.: *See—*
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased, 4,435,568, Cl. 544-182.000.
Gelhaus, Ralph B. Clothes drying rack. 4,434,897, Cl. 211-1.300.
Gemar, Charles; and Meisch, Robert L., to Firestone Tire & Rubber Company, The. Dual spool pretensioner. 4,434,953, Cl. 242-107.000.
Gen-Tech, Inc.: *See—*
Tawse, Ian S., 4,435,662, Cl. 310-168.000.
General Director of the Agency of Industrial Science and Technology, Seiichi Ishizaka: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.
General Electric Company: *See—*
Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., 4,434,700, Cl. 89-34.000.
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,435,679, Cl. 323-350.000.
Bovenkerk, Harold P., 4,435,189, Cl. 51-295.000.
Hershberger, Doran D., 4,434,546, Cl. 29-598.000.
Stahl, Charles R., 4,434,613, Cl. 60-39.070.
Tassie, Douglas P., 4,434,699, Cl. 89-12.000.
Tomson, James M., 4,434,545, Cl. 29-596.000.
Usry, Gerald O., 4,434,814, Cl. 138-44.000.
General Equipment Co.: *See—*
Von Ruden, Dennis, 4,434,969, Cl. 254-29.00R.
General Foods Corporation: *See—*
Fulger, Charles V.; and Gum, Ernest K., 4,435,430, Cl. 426-18.000.
General Motors Corporation: *See—*
Grammes, Gerhard, 4,434,758, Cl. 123-286.000.
Kaltwasser, Helmut, 4,434,998, Cl. 280-721.000.
General Signal Corporation: *See—*
Bowden, Charles J., 4,434,708, Cl. 91-436.000.
Geo Vann, Inc.: *See—*
Vann, Roy R.; Ribble, George W.; and George, R. Flint, 4,434,854, Cl. 166-386.000.
George, R. Flint: *See—*
Vann, Roy R.; Ribble, George W.; and George, R. Flint, 4,434,854, Cl. 166-386.000.
Gerber Garment Technology, Inc.: *See—*
LeBlond, Claude W., 4,434,691, Cl. 83-56.000.
Gerber, Jeremy. Camera with automatic aperture setting and partially color deleted viewfinder selection. 4,435,059, Cl. 354-453.000.
Gerber Scientific Instrument Company, The: *See—*
Berdat, Henry F.; and Baines, Kerry D., 4,435,055, Cl. 354-4.000.
Hevenor, Charles M.; and Wilson, David L., 4,435,674, Cl. 318-640.000.
Gergis, Isoris S.; and Lee, Wai-Tak P., to Rockwell International Corporation. Multi-replicator stretcher detector. 4,435,784, Cl. 365-8.000.
Gerhart, Fritz: *See—*
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.
Geria, Navin: *See—*
Shin, Chung T.; and Geria, Navin, 4,435,382, Cl. 424-66.000.
Gerritsen, Jan; Atkinson, Ronald E.; and Martin, Anthony F., to Procter & Gamble Company, The. Dishwashing liquid including alkyl sulfate, alkyl ether sulfate, alkylbenzene sulfonate and magnesium. 4,435,317, Cl. 252-547.000.
Gestioni Riunite Toscana Gomma S.p.A.: *See—*
Gilardi, Enrico, 4,435,014, Cl. 297-452.000.
Gg. Noell GmbH: *See—*
Krieger, Friedrich, 4,435,357, Cl. 376-272.000.
Krieger, Friedrich, 4,435,358, Cl. 376-272.000.
Giacomuzzo, Silvano: *See—*
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.
Gianetti, Franco: *See—*
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.
Gick, Wilhelm: *See—*
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, 4,435,603, Cl. 568-701.000.
Giebel, Burkhard; Moormann, Hans; and Schrader, Lothar, to Siemens Aktiengesellschaft. Circuit for a read-only memory organized in rows and columns to prevent bit line potentials from dropping. 4,435,789, Cl. 365-203.000.
Gilardi, Enrico, to Gestioni Riunite Toscana Gomma S.p.A. Elastic insert for seats, in particular for motor vehicle seats. 4,435,014, Cl. 297-452.000.
Gilchrist, Henry R., to Eckel Industries, Inc. Magnetic door hardware. 4,434,524, Cl. 16-250.000.
Gill, George; Souchier, Alain; and Dorville, Georges. Combustion chamber in a rocket propulsion system with multiple divergent portion. 4,434,614, Cl. 60-271.000.
Gilligan, Thomas J.: *See—*
Chow, Yiu T.; and Gilligan, Thomas J., 4,435,754, Cl. 364-200.000.
Gilmore, Brian J., to Goodyear Tire & Rubber Company, The. Method of breaking loose vulcanized hose from a rigid mandrel. 4,435,351, Cl. 264-335.000.
Gilmore, John F.: *See—*
Evans, George S.; Gilmore, John F.; and Morton, Edward W., 4,435,670, Cl. 315-58.000.
Gingerich, Benjamin L., to Harris Corporation. CMOS Address buffer for a semiconductor memory. 4,435,791, Cl. 365-230.000.
Ginn, Steven N., to CTS Corporation. Dual track resistor element having nonlinear output. 4,435,691, Cl. 338-125.000.
Giolitti, Nicolo, to Vigorelli Genova S.p.A. Motion conversion mechanism for effecting sewing machine feed dog control. 4,434,735, Cl. 112-220.000.
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., to Schering Corporation. 5R,6S,8R-2-(1-Methyl-2-imidazolylmethylthio)-6-(1-hydroxyethyl)penem-3-carboxylic acid. 4,435,412, Cl. 424-270.000.
Gits Brothers Mfg. Co.: *See—*
Warner, Dale J., 4,434,986, Cl. 277-42.000.
Warner, Dale J., 4,434,988, Cl. 277-81.00R.
Givaudan Corporation: *See—*
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, 4,435,585, Cl. 549-446.000.
Given, George R., Jr., to United States of America, Navy. Sprinkler valve. 4,434,855, Cl. 169-37.000.
Givens, James M. Dental floss holder. 4,434,806, Cl. 132-91.000.
GK Technologies, Incorporated: *See—*
Korbelak, Kenneth N., 4,434,554, Cl. 30-90.800.
Glass, John P. Syringe loader and method. 4,434,820, Cl. 141-2.000.
Glaverbel: *See—*
Mertens, Guy; and Laroche, Pierre, 4,435,043, Cl. 350-288.000.
Gleason, Anthony M.: *See—*
Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., 4,435,261, Cl. 204-168.000.
Gleason Works, The: *See—*
Hunkeler, Ernst J., 4,435,110, Cl. 409-11.000.
Gockler, Heinz; Till, Reinhard; and Schenk, Heinrich, to Licentia Patent-Verwaltungs-GmbH. Receiver for effecting synchronous demodulation. 4,435,773, Cl. 364-724.000.
Goetschel, Daniel B.: *See—*
Scott, Edward W.; and Goetschel, Daniel B., 4,435,807, Cl. 371-50.000.
Goetze AG: *See—*
Beyer, Horst; Lonne, Klaus; and Majewski, Klaus-Peter, 4,434,989, Cl. 277-235.00B.
Neuhauser, Hans J.; and Veutgen, Hans-Jurgen, 4,435,226, Cl. 148-3.000.
Goetzke, Siegfried: *See—*
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.
Gold, Inc.: *See—*
Welch, Marilyn L., 4,434,513, Cl. 2-410.000.
Goldberg, Edward M.; and Bazell, Seymour. Apparatus to be worn and method for removing fluid from a living subject. 4,435,171, Cl. 604-49.000.
Goldberger, William; and Reed, A. K., to Superior Graphite Co. Method of making ultra-microcrystallite silicon carbide product. 4,435,444, Cl. 427-49.000.
Goldstein, Bruce E.: *See—*
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, 4,435,642, Cl. 250-296.000.
Goldstein, Raymond: *See—*
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, 4,435,642, Cl. 250-296.000.
Gomory, Paul L., to Phillips Petroleum Company. Conversion of lignite to higher quality fuels. 4,435,269, Cl. 208-8.00R.
Gonzales, Gilbert R. Flexible helicopter rotor and pitch control mechanism. 4,434,956, Cl. 244-17.250.
Goode, Frederick R.; Evans, John D.; and Cox, James W., Jr., to FMC Corporation. Apparatus for extending and retracting a manual boom section. 4,434,902, Cl. 212-268.000.

Goode, Joseph W., III, to Emhart Industries, Inc. Automotive accessory control system. 4,435,648, Cl. 307-10.00R.
Goodyear Aerospace Corporation: *See—*
Knaus, Ernest; Namsick, Raymond J.; and Smith, Herbert D., 4,435,240, Cl. 156-242.000.
Goodyear Tire & Rubber Company, The: *See—*
Bell, Anthony J.; and Beyersdorff, Leland E., 4,435,554, Cl. 526-229.000.
Christie, William C., 4,434,652, Cl. 73-146.000.
Frech, Kenneth J.; and Tazuma, James J., 4,435,371, Cl. 423-228.000.
Gilmore, Brian J., 4,435,351, Cl. 264-335.000.
Grimm, Donald C., 4,435,535, Cl. 524-321.000.
Landers, Samuel P.; and Egan, William E., 4,434,830, Cl. 152-209.00R.
Olsen, Roy W.; and Bell, Curtis H., 4,435,352, Cl. 264-504.000.
Sturm, Budd H., 4,435,599, Cl. 564-433.000.
Sullivan, Carl M.; and Kelley, Mellis M., 4,435,562, Cl. 528-272.000.
Throckmorton, Morford C.; and Lal, Joginder, 4,435,553, Cl. 526-201.000.
Goransson, Sture: *See—*
Adolfsson, Morgan; Goransson, Sture; and Hok, Bertil, 4,434,665, Cl. 73-724.000.
Gordon Barlow Design: *See—*
Barlow, Gordon A., 4,434,893, Cl. 206-522.000.
Gorenje Tovarna Gospodinjske Opreme N.Sol.O. Velenj: *See—*
Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, 4,434,798, Cl. 128-421.000.
Goto, Ryuji; Yamashita, Keitaro; and Noguchi, Koji, to Hitachi Metals, Ltd. Process for depositing magnetic toner material on electrostatic latent images. 4,435,494, Cl. 430-122.000.
Goto, Tukasa: *See—*
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.
Gould Inc.: *See—*
Supelak, Lawrence S.; Specht, Steven J.; and Hills, Richard C., 4,435,487, Cl. 429-70.000.
Gould, James S.: *See—*
Gould, Samuel; and Gould, James S., 4,435,696, Cl. 340-119.000.
Gould, Samuel; and Gould, James S., to Indicator Controls Corporation. Visor assembly for pedestrian traffic signal. 4,435,696, Cl. 340-119.000.
Gourlay, Alexander R., to International Business Machines Corporation. Method and apparatus for tomographical imaging. 4,435,838, Cl. 382-6E.000.
Gourley, Robert N., to Eastman Kodak Company. Disperse azo dyes from 2-amino-3,5-bisfluorosulphonyl thiophene and aniline, tetrahydroquinoline, and benzomorpholine couplers. 4,435,320, Cl. 260-152.000.
Graalmann, Gerhard; and Niehues, Heiko, to Hauni-Werke Korber & Co. KG. Method and apparatus for drying tobacco. 4,434,563, Cl. 34-28.000.
Graber, Jay: *See—*
Kopsch, Paul J.; Ward, Donald F.; Graber, Jay; and Nichols, Omer, 4,434,718, Cl. 102-522.000.
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., to Ortho Diagnostic Systems Inc. Particle washing system and method of use. 4,435,293, Cl. 210-772.000.
Graham, Tommy E., to Monsanto Company. Process for separating aggressive gases from gas mixtures. 4,435,191, Cl. 55-16.000.
Graiff, L. B.; and Kiovsky, T. E., to Shell Oil Company. Fuel and lubricant compositions for octane requirement reduction. 4,435,187, Cl. 44-63.000.
Grammes, Gerhard, to General Motors Corporation. Diesel engine. 4,434,758, Cl. 123-286.000.
Granetzke, Dennis C., to Modine Manufacturing Company. Valve controlled fuel heater with self-adjusting valve. 4,434,773, Cl. 123-557.000.
Grantland, Gary; and Boeckmann, Eduard F. B., to GTE Automatic Electric Inc. Latching relay hold circuit for a telephone instrument. 4,435,622, Cl. 179-81.00R.
Grass, Alfred. Door hinge for furniture doors or the like. 4,434,523, Cl. 16-242.000.
Gray, Lorin S., III; and Doody, Jeffrey S., to Scott Paper Company. Method of providing a surface effect in a release paper product. 4,435,461, Cl. 428-141.000.
Gray, Michael L., to Phillips Petroleum Company. Separation of nitrogen from natural gas. 4,435,198, Cl. 62-28.000.
Green, Philip S., to Siemens Corporation. Ultrasonic image generating apparatus. 4,434,662, Cl. 73-641.000.
Green, Ronald J., to Franchise Mailing Systems. Label dispensing and applying apparatus. 4,435,246, Cl. 156-542.000.
Green, William B.: *See—*
Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., 4,435,299, Cl. 252-41.000.
Greenamith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, to Foseco Trading A.G. Protection of graphite electrodes. 4,435,510, Cl. 501-90.000.
Greenway, Michael J., to Beecham Group Limited. Injectable penicillin composition. 4,435,414, Cl. 424-271.000.
Greer, S. Thomas: *See—*
Martin, Emil; Barch, Herbert W.; and Greer, S. Thomas, 4,434,521, Cl. 15-230.110.
Gregory, Edward J., to IMI Marston Limited. Plate fin heat exchanger. 4,434,842, Cl. 165-133.000.
Greigger, Paul P., to PPG Industries, Inc. Stable inorganic coating composition for adherent, inorganic coatings. 4,435,219, Cl. 106-287.160.
Grelsson, Bo L. Axial piston pump. 4,434,709, Cl. 91-506.000.
Gresser, German: *See—*
Forster, Gunther; and Gresser, German, 4,435,106, Cl. 404-6.000.
Gretsch-Unitas GmbH: *See—*
Maus, Julius, 4,434,678, Cl. 74-471.00R.
Griffin, Rowland A.: *See—*
Bahary, William S.; and Griffin, Rowland A., 4,435,488, Cl. 429-212.000.
Griffith, William F. Extended cascode amplifier. 4,435,686, Cl. 330-311.000.
Griggs, David T. Speech-controlled phonetic typewriter or display device using two-tier approach. 4,435,617, Cl. 381-44.000.
Grimm, Donald C., to Goodyear Tire & Rubber Company, The. Adipic acid as a scorch inhibitor for carboxylated rubbers. 4,435,535, Cl. 524-321.000.
Grinde, James E., to Yamaha Hatsudoki Kabushiki Kaisha. Drive belt for snow vehicle and suspension therefor. 4,434,867, Cl. 180-190.000.
Grosbois, Jean: *See—*
Thomas, Maryvonne; and Grosbois, Jean, 4,435,308, Cl. 252-181.000.
Gross, James R., to Dow Chemical Company, The. Absorbent article having enhanced blood absorption. 4,435,172, Cl. 604-368.000.
Grotenhuis, Paulus A. M.: *See—*
Krijnen, Wilhelmus J.; and Grotenhuis, Paulus A. M., 4,435,582, Cl. 549-352.000.
Groult, Jacques, to Safet-Embamet Lethias. Sealing device and process for a metal pack. 4,434,910, Cl. 220-358.000.
Grow, Harry N.: *See—*
Zboralski, Jon A.; and Grow, Harry N., 4,434,711, Cl. 98-116.0LH.
Grubbs, Calvin E., to Thomas Industries Inc. High frequency inverter fault protection system. 4,435,749, Cl. 363-58.000.
Gruber, Walter, to Sulzer Brothers Ltd. Edge yarn clamp for a weaving machine. 4,434,817, Cl. 139-429.000.
Gruppo Lepetit S.p.A.: *See—*
Toja, Emilio; Omodei-Sale', Amedeo; and Selva, Domenica, 4,435,417, Cl. 424-273.00B.
Gschwendtner, Wolfgang W. J., to Exxon Research & Engineering Co. Isomerization of butene-1 to butene-2 in isobutylene. 4,435,609, Cl. 585-670.000.
GTE Automatic Electric Inc.: *See—*
Grantland, Gary; and Boeckmann, Eduard F. B., 4,435,622, Cl. 179-81.00R.
Weise, Volker B., 4,435,846, Cl. 455-253.000.
GTE Products Corporation: *See—*
Brower, Boyd G., 4,435,156, Cl. 431-359.000.
Mizuhara, Howard, 4,435,480, Cl. 428-548.000.
Gu, Alston L.; and Silver, Alexander, to Garrett Corporation, The. Foil bearing rubbing surface coating application methods. 4,435,839, Cl. 384-103.000.
Guerrero Q., Emilio C. Graphic display assembly for dynamic program presentation. 4,434,568, Cl. 40-518.000.
Guerret, Patrick G.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.
Guido, Heinz; and Wolfgarten, Hubert, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Electric furnace construction. 4,435,812, Cl. 373-72.000.
Guildford, Allen J.: *See—*
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.
Guillaume, Jacques: *See—*
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,435,408, Cl. 424-263.000.
Gulf Canada Limited: *See—*
Wright, Brian D.; McBeth, Raymond A.; and Wessels, Egon, 4,434,741, Cl. 114-264.000.
Gulf Oil Corp.: *See—*
Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., 4,435,016, Cl. 299-2.000.
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, to Kamyr AB. Controlling operation of a centrifugal pump. 4,435,193, Cl. 55-21.000.
Gum, Ernest K.: *See—*
Fulger, Charles V.; and Gum, Ernest K., 4,435,430, Cl. 426-18.000.
Gunduz, Dincer H.: *See—*
Gunduz, Nurten N.; and Gunduz, Dincer H., 4,435,063, Cl. 354-315.000.
Gunduz, Nurten N.; and Gunduz, Dincer H., to University of Pittsburgh. Autoradiography method using a slide rack. 4,435,063, Cl. 354-315.000.
Gurevich, Boris, to Raychem Corporation. Electrical devices with water-blocking insulation. 4,435,639, Cl. 219-544.000.
Guth, Jacob J.; Spilatro, Diane L.; and Verdicchio, Robert J., to Johnson & Johnson Baby Products Company. Detergent compositions. 4,435,300, Cl. 252-117.000.
Guthmann, Alfred: *See—*
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.

Gutierrez, Richard: *See—*
Kay, Edward L.; and Gutierrez, Richard, 4,435,337, Cl. 528-493.000.

Guyton, David L. Ophthalmic test apparatus having magnification compensation. 4,435,052, Cl. 351-239.000.

Gymer, Geoffrey E.: *See—*
Richardson, Kenneth; and Gymer, Geoffrey E., 4,435,399, Cl. 424-250.000.

H. D. Baumann Assoc., Ltd.: *See—*
St. Martin, Leo I., Jr., 4,434,965, Cl. 251-121.000.

Haber, Judith G.; Jeffries, Kenneth L.; and Kilpatrick, Paul J., to International Business Machines Corporation. Nested resource control using locking and unlocking routines with use counter for plural processes. 4,435,766, Cl. 364-300.000.

Hachiro, Nobuaki: *See—*
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,434,707, Cl. 91-376.00R.

Hadady Corp.: *See—*
Swander, Kenneth D., 4,434,877, Cl. 188-52.000.

Haddad, Theodore A.: *See—*
Phillips, Richard A.; and Haddad, Theodore A., 4,435,476, Cl. 428-412.000.

Haesloop, William G.; Mann, Melvin S.; and Jones, James W., to International Telephone & Telegraph Corporation. Submersible pumping system. 4,435,132, Cl. 417-360.000.

Hafner, V. Walter: *See—*
Morris, Earl L.; and Hafner, V. Walter, 4,434,516, Cl. 4-252.00R.

Hagino, Hiroshi; Nakamura, Kuniyoshi; and Kotake, Eiichi, to Japan Servo Co. DC Brushless motor and its driving control system. 4,435,673, Cl. 318-254.00A.

Hagiwara, Syuya: *See—*
Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, 4,435,751, Cl. 364-574.000.

Haglid, Britt I., executrix: *See—*
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased, 4,435,568, Cl. 544-182.000.

Haglid, Frank R., deceased: *See—*
Barbour, Kenneth L.; Geigle, William L.; and Haglid, Frank R., deceased, 4,435,568, Cl. 544-182.000.

Haisma, Jan: *See—*
Joormann, Hendrik J. M.; Verweij, Henrik; and Haisma, Jan, 4,435,200, Cl. 65-64.000.

Hajime Industries Ltd.: *See—*
Hajime, Yoshida, 4,435,641, Cl. 250-223.00B.

Hajime, Yoshida, to Hajime Industries Ltd. Inspection apparatus for inspecting an object to determine whether or not it contains an abnormality, defect or the like. 4,435,641, Cl. 250-223.00B.

Hajok, Dieter: *See—*
Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, 4,434,935, Cl. 239-85.000.

Hakamata, Hitoshi, to Nissan Motor Company, Limited. Seat with a dual-adjustable armrest. 4,435,011, Cl. 297-113.000.

Haley, Charles B.: *See—*
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Haley, Robert D. Non-slip overshoe. 4,434,565, Cl. 36-7.300.

Hall, Floyd V., to Liggett Group Inc. Applicator for applying glue to a travelling stream of tipping paper. 4,434,805, Cl. 131-362.000.

Halliburton Company: *See—*
Surjaatmadja, Jim B., 4,434,704, Cl. 91-25.000.

Hallmark, Billy B.: *See—*
Voso, Philip T.; Halimark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., 4,434,895, Cl. 206-554.000.

Hallmark Cards, Inc.: *See—*
LeVeau, Robert, 4,434,567, Cl. 40-157.000.

Hamamatsu Corporation: *See—*
Schiller, Norman H.; and Alfano, Robert R., 4,435,727, Cl. 358-139.000.

Hamane, Tokuhito; and Tasai, Masaaki, to Matsushita Electric Industrial Co., Ltd. Winding apparatus. 4,434,945, Cl. 242-7.140.

Hamane, Tokuhito: *See—*
Kubota, Tadashi; Hamane, Tokuhito; and Tsai, Masaaki, 4,434,819, Cl. 140-92.100.

Hamatsuki, Takeshige: *See—*
Fukui, Izumu; Yano, Takeshi; and Hamatsuki, Takeshige, 4,435,666, Cl. 310-328.000.

Hambrecht, Juergen: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Hamilton Equipment Co., Inc.: *See—*
Matson, Carl G., 4,435,083, Cl. 366-114.000.

Hamilton Industries, Inc.: *See—*
Zboralski, Jon A.; and Grow, Harry N., 4,434,711, Cl. 98-116.0LH.

Hammerton, Roderic H.: *See—*
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.

Hampel, Heinrich: *See—*
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.

Hampton, James E., to SEDCO, Inc. Method of installing sub-sea templates. 4,435,108, Cl. 405-209.000.

Handler, Anthony. Holding-down and clamping device for shackle mechanisms. 4,434,534, Cl. 24-67.100.

Hanin, Elliott, to IRV Hanin. Rear view mirror assembly. 4,435,044, Cl. 350-302.000.

Hanna, Marie R.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,435,428, Cl. 426-3.000.

Hannula, Donald L.: *See—*
Redmond, Russell J.; and Hannula, Donald L., 4,435,174, Cl. 604-174.000.

Hansen, Gunnar L.: *See—*
Ohrberg, Carl V.; and Hansen, Gunnar L., 4,435,130, Cl. 417-310.000.

Hansen, Vagn A., to Warnaco of Canada Limited. Stayless shirt collar. 4,434,512, Cl. 2-129.000.

Hara, Junji: *See—*
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.

Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Air-conditioner control system for automobiles. 4,434,932, Cl. 236-49.000.

Hara, Syuji: *See—*
Hasegawa, Yoichi; Nakagawa, Mineo; and Hara, Syuji, 4,435,600, Cl. 564-464.000.

Harada, Hiroshi: *See—*
Ito, Satoaki; and Harada, Hiroshi, 4,435,821, Cl. 375-1.000.

Harkonen, Esko: *See—*
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.

Harman, Maurice, to Energy Equipment Company Limited, The. Heated chamber walls. 4,435,158, Cl. 432-58.000.

Harner, Kermit I.; Patrick, John P.; and Kos, Joseph M., to United Technologies Corporation. Predicted motion wind turbine tower damping. 4,435,647, Cl. 290-44.000.

Harris Corporation: *See—*
Davis, Robert C.; and Thaker, Gautam H., 4,435,823, Cl. 375-14.000.
Gingerich, Benjamin L., 4,435,791, Cl. 365-230.000.

Harris, James E., to Eastman Kodak Company. Pneumatic tow blooming process. 4,435,239, Cl. 156-180.000.

Harrison, Boyd L.; and Doherty, Niall S., to Merrell Dow Pharmaceuticals. Anti-inflammatory agents and antiasthmatic agents. 4,435,420, Cl. 424-277.000.

Harry, Ieuan L.: *See—*
Beck, Martin H.; Krishnakumar, Suppayan M.; and Harry, Ieuan L., 4,435,244, Cl. 156-379.800.

Harsanyi, Kalman: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, to Bosch & Pierburg System OHG. Combustion mixture generator for internal combustion engines. 4,434,772, Cl. 123-549.000.

Hartline, Stephen D., to Norton Company. Chromia magnesia refractory. 4,435,514, Cl. 501-117.000.

Hartman, George D., to Merck & Co., Inc. Amino and alkylaminoalkenoate ester derivatives of aminochloronitropyrazine. 4,435,400, Cl. 424-250.000.

Hartmann & Braun AG: *See—*
Ilgner, Herwig; and Barth, Utz W., 4,435,849, Cl. 455-601.000.

Hartmann, Helmut, to Trefilarbed Drahtwerk Koln GmbH. Method and an apparatus for manufacturing strands from wires or ropes from strands. 4,434,608, Cl. 57-58.520.

Hartwell, George E.: *See—*
Butta, Susan B.; and Hartwell, George E., 4,435,605, Cl. 568-878.000.

Hartwich, Gerhard; Pav, Josef; and Preuss, Dieter, to Kleinewefers GmbH. Calender. 4,434,713, Cl. 100-168.000.

Harvey, William A.: *See—*
Torok, Ernest J.; and Harvey, William A., 4,435,041, Cl. 350-162.240.

Harwood, Leopold A.; and Shanley, Robert L., II, to RCA Corporation. Television receiver with selectively disabled on-screen character display system. 4,435,729, Cl. 358-183.000.

Hasegawa, Junzo; Kawabata, Susumu; and Niimi, Hiroshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Pneumatic twisting spinning apparatus. 4,434,611, Cl. 57-328.000.

Hasegawa, Shumpei; Narasaka, Shin; and Otsuka, Kazuo, to Honda Motor Co., Ltd. Air/fuel ratio feedback control system for internal combustion engines, having atmospheric pressure-dependent fail safe function for O_2 sensor. 4,434,764, Cl. 123-440.000.

Hasegawa, Shumpei: *See—*
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.

Hasegawa, Yoichi; Nakagawa, Mineo; and Hara, Syuji, to Japan Hydrazine Co., Inc. Process for preparation of tertiary butyl hydrazine. 4,435,600, Cl. 564-464.000.

Hashimoto, Shunichi: *See—*
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.

Hashimoto, Takashi; and Yamazaki, Shigeyuki, to Hitachi, Ltd. Low Btu gas burner. 4,435,153, Cl. 431-208.000.

Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, to Hitachi, Ltd. Loop transmission system. 4,435,704, Cl. 340-825.010.

Hasinger, Siegfried H.; Howard, James M.; and Miller, David K., to United States of America, Air Force. Self-supporting laser diffuser flow energizer. 4,435,810, Cl. 372-58.000.

Hata, Shun-ichi: *See—*
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Hatanaka, Hideo: *See—*
Saito, Motoyuki; and Hatanaka, Hideo, 4,435,796, Cl. 368-321.000.

Hattori, Tadashi: *See—*
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.

Hauni-Werke Korber & Co. KG: *See—*
Graalmann, Gerhard; and Niehues, Heiko, 4,434,563, Cl. 34-28.000.

Hausch, Walter R., to Firestone Tire & Rubber Company, The. Application of ambient temperature cured polymers or prepolymers to a cured elastomer. 4,435,456, Cl. 428-36.000.

Hauser, Max W., to Tektronix, Inc. Log-conformance error correction circuit for semiconductor devices. 4,435,655, Cl. 307-490.000.

Hauserman, Inc.: *See—*
McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., 4,434,596, Cl. 52-243.100.

Haven, James T. Bar soap holder and dispenser. 4,435,030, Cl. 312-351.000.

Hawk, Johnna B.: *See—*
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,435,293, Cl. 210-772.000.

Hayashida, Haruo: *See—*
Fukushima, Nobuo; Saitou, Teruo; and Hayashida, Haruo, 4,435,350, Cl. 264-280.000.

Hayashida, Yoshihiro, to Tokico Ltd. Brake pressure control valve. 4,435,019, Cl. 303-6.00A.

Hayn, John W.: *See—*
Bellay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., 4,435,763, Cl. 364-200.000.

Haynes, Louie J.: *See—*
Lewin, David F.; Haynes, Louie J.; and Beach, Lynne B., 4,434,946, Cl. 242-18.00G.

Haynes, Stewart, Jr.; and Mims, Donald S., to Texaco Inc. Method for steam injection in steeply dipping formations. 4,434,851, Cl. 166-272.000.

Haynes, Stewart, Jr.: *See—*
Morel, Thomas J.; Haynes, Stewart, Jr.; and Park, Jack H., 4,434,852, Cl. 166-273.000.

Heath Manufacturing Company: *See—*
Rampley, Neil, 4,435,105, Cl. 403-109.000.

Heavy Oil Process, Inc.: *See—*
Allen, Joseph C., 4,434,849, Cl. 166-252.000.

Hebert, LeRoy: *See—*
Bourgeois, Dale M., 4,434,853, Cl. 166-285.000.

Heckmann, Walter: *See—*
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.

Hedberg, David J.; and Nilsson, C. Gary, to VAS Corporation. FM Video recording and reproducing system. 4,435,734, Cl. 358-335.000.

Hefele, Josef, to Kufner Textilwerke KG. Method and apparatus for reinforcing face fabric materials for garments. 4,435,442, Cl. 427-14.100.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Heat resistant resin composition. 4,435,530, Cl. 523-512.000.

Hegner, Gunter: *See—*
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, 4,434,542, Cl. 29-566.400.

Heimgartner, Roland: *See—*
Comploi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, 4,434,728, Cl. 112-84.000.

Heitkamp, Dieter; and Wagener, Klaus, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method and apparatus for concentration of trace material from large water volumes. 4,435,366, Cl. 423-6.000.

Hekatron GmbH: *See—*
Klett, Werner, 4,435,698, Cl. 340-512.000.

Heki, Hideaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Radioactive effluent gas monitoring apparatus. 4,435,644, Cl. 250-435.000.

Held, Kurt. Ring wedge joint for solid or laminated wood sections. 4,435,104, Cl. 403-332.000.

Helm, John L., Jr. Method of producing carbon monoxide and hydrogen by gasification of solid carbonaceous material involving microwave irradiation. 4,435,374, Cl. 423-415.00A.

Hemp, John; and Al-Khazraji, Yousif A. H., to National Research Development Corporation. Electromagnetic flowmeters and methods for measuring flow. 4,434,666, Cl. 73-861.120.

Henaff, Louis; Morel, Michel; and Favennec, Jean L. Installation for depositing thin layers in the reactive vapor phase. 4,434,742, Cl. 118-723.000.

Henderson, Gerald O.: *See—*
Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., 4,435,279, Cl. 208-111.000.

Henkel Kommanditgesellschaft auf Atkien: *See—*
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,435,315, Cl. 252-522.00R.

Hennick, Robert P., to American Optical Corporation. Apparatus for testing lenses by determining best focus. 4,435,079, Cl. 356-123.000.

Hepner, Glen L. Extendible grill. 4,434,780, Cl. 126-9.00B.

Herfort, Hermann: *See—*
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, 4,434,542, Cl. 29-566.400.

Herman, Robert W., to New World Computer Company, Inc. Isolated multiple core magnetic transducer assembly. 4,435,736, Cl. 360-103.000.

Hernandez, Freda M.: *See—*
Hernandez, Ruben R.; and Hernandez, Freda M., 4,435,452, Cl. 428-17.000.

Hernandez, Ruben R.; and Hernandez, Freda M. Lil golden pine novelty display device. 4,435,452, Cl. 428-17.000.

Herrington, Kenneth M.; and Jeffries, Kenneth L., to International Business Machines Corporation. Separate stack areas for plural processes. 4,435,780, Cl. 364-900.000.

Herrmann, Ludwig: *See—*
Krauss, Theo; Herrmann, Ludwig; and Berger, Konrad, 4,434,566, Cl. 38-8.000.

Hershberger, Doran D., to General Electric Company. Method of making a core. 4,434,546, Cl. 29-598.000.

Hesse, Anton: *See—*
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.

Hetrick, Robert E., to Ford Motor Company. Electrochemical transistor structure with two spaced electrochemical cells. 4,435,742, Cl. 361-433.000.

Hettinger, William P., Jr.: *See—*
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,435,515, Cl. 502-65.000.

Hevenor, Charles M.; and Wilson, David L., to Gerber Scientific Instrument Company, The. Method and apparatus for generating a verified plot. 4,435,674, Cl. 318-640.000.

Hewlett-Packard Company: *See—*
Marston, Alan D.; and Anne, Lenin, 4,435,446, Cl. 427-93.000.

Heynisch, Hinrich, to Siemens Aktiengesellschaft. Flat picture tube. 4,435,672, Cl. 315-366.000.

Heytmeijer, Herman R., to North American Philips Electric Corp. Recovery of mercury from scrap glass. 4,435,284, Cl. 209-3.000.

Hicks, James E.: *See—*
Kliebphipat, Ravadee; Fernsler, Ronald E.; and Hicks, James E., 4,435,731, Cl. 358-243.000.

Hildebrandt, Norbert: *See—*
Becker, Norbert; and Hildebrandt, Norbert, 4,435,103, Cl. 403-292.000.

Hildeman, Gregory J.; Kuli, John C., Jr.; and Vivola, Leo A., to Aluminum Company of America. Method for producing aluminum powder alloy products having improved strength properties. 4,435,213, Cl. 75-249.000.

Hill, Charles E., to Becton, Dickinson and Company. Laminate for wearing apparel and methods for the manufacture of the laminate. 4,435,458, Cl. 428-91.000.

Hill, Martin: *See—*
Eisele, Hermann; Hill, Martin; and Schweizer, Hartmut, 4,435,745, Cl. 363-21.000.

Hills, Richard C.: *See—*
Supelak, Lawrence S.; Specht, Steven J.; and Hills, Richard C., 4,435,487, Cl. 429-70.000.

Hilti Aktiengesellschaft: *See—*
Rumpp, Gerhard; Scholz, Dieter; and Spieth, Manfred, 4,434,859, Cl. 173-48.000.

Hinden, Jean M.: *See—*
Katz, Michael; Hinden, Jean M.; and Gauger, Jurgen F., 4,435,313, Cl. 502-101.000.

Hinnenkamp, James A., to National Distillers and Chemical Corporation. Process for the catalytic oxidation of propylene to acrylic acid. 4,435,598, Cl. 562-546.000.

Hino, Yasuhiko: *See—*
Dohya, Akihiro; Hino, Yasuhiko; and Abe, Mitsuo, 4,434,544, Cl. 29-578.000.

Hinsberg, Rene: *See—*
Brenner, Horst; and Hinsberg, Rene, 4,434,868, Cl. 180-226.000.

Hiraishi, Shigetoshi: *See—*
Matsushita, Toshihiko; Hiraishi, Shigetoshi; and Morishita, Sadao, 4,435,471, Cl. 428-320.800.

Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, to Showa Denko Kabushiki Kaisha. Refining agent of molten metal and methods for producing the same. 4,435,210, Cl. 75-53.000.

Hirose, Yoshiharu: *See—*
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.

Hitachi Engineering Co., Ltd.: *See—*
Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, 4,434,620, Cl. 60-657.000.

Hitachi, Ltd.: *See—*
Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, 4,435,832, Cl. 381-34.000.
Hashimoto, Takashi; and Yamazaki, Shigeyuki, 4,435,153, Cl. 431-208.000.
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.
Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, 4,435,751, Cl. 364-574.000.
Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, 4,434,620, Cl. 60-657.000.

Koide, Kazuo, 4,435,654, Cl. 307-455.000.
Matsui, Yasuo, 4,435,826, Cl. 375-115.000.
Matumoto, Michiaki; Etou, Hironori; and Nakamoto, Hidekazu, 4,435,151, Cl. 431-90.000.
Niiyama, Eisuke; and Kodama, Hideyo, 4,434,836, Cl. 164-429.000.
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.
Sakow, Hiroshi; and Kashioka, Seiji, 4,435,835, Cl. 382-8.000.
Shinkawa, Keiro; Noda, Masaki; and Sodeyama, Chuichi, 4,435,688, Cl. 331-99.000.
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.
Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,435,492, Cl. 430-58.000.
Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, 4,435,560, Cl. 528-170.000.
Tomooka, Keiji, 4,435,825, Cl. 375-113.000.

Hitachi Metals, Ltd.: *See—*
Goto, Ryuji; Yamashita, Keitaro; and Noguchi, Koji, 4,435,494, Cl. 430-122.000.

Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., to Texas Instruments Incorporated. Radio telephone with position transmission capability. 4,435,711, Cl. 343-389.000.

Hobart Brothers Company: *See—*
Risberg, Robert L., 4,435,632, Cl. 219-130.510.

Hobart Corporation: *See—*
Scharsig, Hans-Hermann, 4,434,694, Cl. 83-411.00R.

Hodges, Michael J., to Detexomat Machinery Limited. Boarding apparatus and method. 4,434,918, Cl. 223-75.000.

Hodshire, Vincent B. Fishing apparatus. 4,434,573, Cl. 43-15.000.

Hoelzinger, Walther J., to Boise Cascade Corporation. Method for forming multi-flute-layer corrugated board. 4,435,237, Cl. 156-157.000.

Hoenick, Hermann H., to Lucas Industries Limited. Vehicle brake actuator and braking system. 4,435,021, Cl. 303-10.000.

Hoerner, Griffith L.: *See—*
Brandsen, Donald H.; and Hoerner, Griffith L., 4,434,922, Cl. 224-314.000.

Hoffmann-La Roche Inc.: *See—*
Frater, Georg; Suchy, Milos; Wenger, Jean; and Winternitz, Paul, 4,435,207, Cl. 71-94.000.
Krasso, Anna; and Ramuz, Henri, 4,435,406, Cl. 424-263.000.

Hofmeister, Helmut: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,435,390, Cl. 424-243.000.

Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, to Mobay Chemical Corporation; and Bayer Aktiengesellschaft. Concentrated flowable storage stable aqueous formulations of cold dyeing fiber reactive dyestuffs. 4,435,181, Cl. 8-527.000.

Hok, Bertil: *See—*
Adolfsson, Morgan; Goransson, Sture; and Hok, Bertil, 4,434,665, Cl. 73-724.000.

Holcomb, Dysart E.; Drechsel, Erhart K.; and Sardisco, John B., to Pennzoil Company. Preparation of monocalcium phosphate and/or phosphoric acid from phosphate rock. 4,435,370, Cl. 423-158.000.

Holland-Letz, Gunter, to Esselte Pendaflex Corporation. Apparatus for imprinting and dispensing pressure-sensitive labels adhering to a carrier tape. 4,435,245, Cl. 156-384.000.

Holm, Poul: *See—*
Barbesgaard, Peder O.; Jensen, Georg W.; and Holm, Poul, 4,435,307, Cl. 252-174.120.

Holmberg Electronics Corporation: *See—*
Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., 4,435,031, Cl. 339-17.00C.

Holt, Harley R., to Allied Corporation. Conductor termination apparatus. 4,434,551, Cl. 29-861.000.

Holtkamp, Bernd: *See—*
Eckert, Wolfgang; Holtkamp, Bernd; and Kilian, Ernst A., 4,435,685, Cl. 330-261.000.

Holtkamp, Reinhold. Capillary disc and support therefor. 4,434,577, Cl. 47-81.000.

Honda Giken Kabushiki Kaisha: *See—*
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ikenoya, Yasuo; and Ishida, Yoichi, 4,434,615, Cl. 60-293.000.
Okubo, Kiyokazu, 4,434,878, Cl. 192-48.920.
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, 4,434,588, Cl. 51-344.000.

Honda, Masamitsu: *See—*
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Honda Motor Co., Ltd.: *See—*
Hasegawa, Shumpei; Narasaka, Shin; and Otsuka, Kazuo, 4,434,764, Cl. 123-440.000.
Otobe, Yutaka; Yamato, Akihiro; and Umesaki, Shigeo, 4,434,769, Cl. 123-493.000.

Honda, Takeo: *See—*
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Honeywell, Inc.: *See—*
Stevens, Emsley H., 4,435,652, Cl. 307-297.000.

Honkawa, Yoshinori: *See—*
Ishii, Koji; and Honkawa, Yoshinori, 4,434,716, Cl. 101-142.000.

Hoover Company, The: *See—*
Tschudy, Donald B.; and Morrow, Charles R., 4,434,865, Cl. 180-19.00H.

Hoover Universal, Inc.: *See—*
Myers, William H.; and Dundas, Dennis L., 4,435,147, Cl. 425-577.000.

Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, to BASF Aktiengesellschaft. Stable injectable β-carotene micellar solutions and their preparation. 4,435,427, Cl. 424-356.000.

Horey, Leonard I.: *See—*
Salge, Edward A.; and Horey, Leonard I., 4,434,732, Cl. 112-158.00E.

Hori, Mikio: *See—*
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.

Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, to Hitachi, Ltd. Vibration/noise reduction device for electrical apparatus. 4,435,751, Cl. 364-574.000.

Horiike, Tetsuro; Kuroda, Takio; and Shiozaki, Tomoharu, to Kanzaki Paper Manufacturing Company Limited. Process for preparing microcapsules for pressure sensitive manifold paper. 4,435,340, Cl. 264-4.700.

Horikawa, Yoshiaki; and Imai, Toshihiro, to Olympus Optical Co., Ltd. Telephoto lens system. 4,435,049, Cl. 350-454.000.

Horike, Masanori; and Ebi, Yutaka, to Ricoh Company, Ltd. Deflection control type ink jet printing apparatus. 4,435,720, Cl. 346-75.000.

Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, to Nissan Motor Company, Limited. Window structure of a vehicle body. 4,434,593, Cl. 52-208.000.

Horiuchi, Tomofusa, to Nissan Motor Company, Limited. Vaporizer for a liquefied petroleum gas engine. 4,434,774, Cl. 123-557.000.

Horizon Chemical, Inc.: *See—*
Kenny, Thomas C.; and Plunkett, John P., 4,435,185, Cl. 44-68.000.

Horlander, Frank J., to International Business Machines Corporation. Thermal printer edge compensation. 4,435,634, Cl. 219-216.000.

Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, to BASF Aktiengesellschaft. Storage stable dispersions of aromatic polyesters in polyhydroxyl compounds and their preparation. 4,435,537, Cl. 524-391.000.

Hornyak, Gyula: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Horton Manufacturing Co., Inc.: *See—*
Raines, Charles D., 4,434,883, Cl. 192-110.00R.

Horton, Paul L., to Excelermatic Inc. Traction roller transmission with mechanical transmission ratio control. 4,434,676, Cl. 74-200.000.

Horvath, Kalman: *See—*
Kuhlemann, Bruce N.; Horvath, Kalman; and Wharff, Prentice C., 4,435,177, Cl. 604-263.000.

Horvath, Vincent V.: *See—*
Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., 4,435,093, Cl. 374-129.000.

Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, to Nihon Early Kabushiki Kaisha. Plate positioning apparatus. 4,434,693, Cl. 83-71.000.

Hosono, Nagao: *See—*
Adachi, Hiroyuki; and Hosono, Nagao, 4,435,072, Cl. 355-3.0FU.

Hotchkiss-Brandt Sogeme H.B.S.: *See—*
Divoux, Michel; Bonansea, Hubert; and Constant, Bernard, 4,434,888, Cl. 198-466.000.

Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., to Tate & Lyle Limited. Sweeteners. 4,435,440, Cl. 426-658.000.

House, Marshall K., to Cascade Corporation. Lift truck paper roll clamp having automatically adjustable roll of different diameters. 4,435,117, Cl. 414-620.000.

House, Marshall K., to Cascade Corporation. Lift truck load clamp having power-actuated pivotal subframe for handling paper rolls. 4,435,119, Cl. 414-620.000.

House, Roy F., to Venture Innovations, Inc. Concentrated hydrophilic polymer suspensions. 4,435,217, Cl. 106-171.000.

House, Roy F., to Venture Innovations, Inc. Method of liquifying waxy materials. 4,435,309, Cl. 252-314.000.

House, Roy F., to Venture Innovations, Inc. Compositions and processes for using hydroxyethyl cellulose in heavy brines. 4,435,564, Cl. 536-87.000.

Howa Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Takeo, 4,434,990, Cl. 279-4.000.

Howard, James M.: *See—*
Hasinger, Siegfried H.; Howard, James M.; and Miller, David K., 4,435,810, Cl. 372-58.000.

Howeth, D. Franklin. Dust conveying and collecting system and method. 4,434,861, Cl. 175-66.000.

Hoye, Thomas M. Universal pivoting and folding beverage holder apparatus. 4,434,961, Cl. 248-311.200.

Hsieh, Der-Chang; and LaBudde, Edward V., to Burroughs Corporation. Optical memory system having track following and seeking capabilities. 4,435,797, Cl. 369-32.000.

Hsieh, John C.; and Wu, Wei-Wha, to International Business Machines Corporation. Testing of logic arrays. 4,435,805, Cl. 371-25.000.

Hsieh, John T. T.: *See—*
Pennington, B. Timothy; Roling, Paul V.; and Hsieh, John T. T., 4,435,518, Cl. 502-107.000.

Hsu, Jau Y., to Societe d'Assistance Technique pour Produits Nestle S.A. Rice pasta composition. 4,435,435, Cl. 426-557.000.

Huang, I-der: *See—*
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,435,521, Cl. 502-209.000.

Huber, Kurt: *See—*
Comploi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, 4,434,728, Cl. 112-84.000.

Huckabee, Bill F.; and Wright, William L., to International Business Machines Corporation. Electric circuit packaging member. 4,435,740, Cl. 361-398.000.

Hudon, Paul. Self-closing cylindrical gate for hydraulic turbo-machine. 4,434,964, Cl. 251-62.000.

Hudspith, Sydney, to American Hospital Supply Corporation. Liquid transfer device. 4,434,823, Cl. 141-329.000.

Huey Company: *See—*
Shelton, Huey G.; and Zack, Leonard N., 4,434,721, Cl. 108-4.000.

Hughes Aircraft Company: *See—*
Ajioka, James S.; and Joe, Dick M., 4,435,715, Cl. 343-771.000.

Hughes, John Rhys: *See—*
Beach-Thomas, Anthony W., 4,434,992, Cl. 280-47.13B.

Hughes, Thomas R.: *See—*
Buss, Waldeen C.; and Hughes, Thomas R., 4,435,283, Cl. 208-138.000.

Hughes Tool Company: *See—*
Witten, Raymond L., 4,435,661, Cl. 310-90.000.

Hulber, Loren J.; and Fluckiger, Raymond W., to Jostens, Inc. Hinge for thermoplastic material. 4,435,464, Cl. 428-167.000.

Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., to Sundstrand Data Control, Inc. Borehole orientation detection system employing polarized radiation. 4,434,654, Cl. 73-151.000.

Humboldt Products Corp.: *See—*
Darnell, W. Dale, 4,434,791, Cl. 128-20.000.

Hunkeler, Ernst J., to Gleason Works, The. Drive train for gear hobbing machine. 4,435,110, Cl. 409-11.000.

Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., to Data General Corporation. Apparatus and method for simultaneous display of characters of variable size and density. 4,435,703, Cl. 340-723.000.

Hunt, James E. B., to Formica Corp. Method of producing high pressure decorative laminates containing an air-laid web. 4,435,234, Cl. 156-62.400.

Hunt, James W.; and Johnson, Raymond A., to UMC Industries, Inc. Cash box for paper currency. 4,434,931, Cl. 232-15.000.

Hunt, Mack W.: *See—*
Brannen, Cecil G.; and Hunt, Mack W., 4,435,301, Cl. 252-33.200.

Huntington Alloys, Inc.: *See—*
Eiselstein, Herbert L.; Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,435,359, Cl. 419-3.000.

Hurnik, Helmut: *See—*
Thormer, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, 4,435,532, Cl. 524-92.000.

Huskey, Joseph E. Dental flossing aid. 4,434,807, Cl. 132-92.00R.

Huth, Andreas: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Huzino, Seizi: *See—*
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.

Hyatt, Gilbert P. Electro-optical illumination control system. 4,435,732, Cl. 358-254.000.

Hyde, James S.: *See—*
Froncisz, Wojciech; and Hyde, James S., 4,435,680, Cl. 324-316.000.

Hydro Quebec: *See—*
Drouet, Michel G.; and Nadeau, Francois, 4,435,631, Cl. 219-124.020.

Iaccino, Alex: *See—*
Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, 4,434,562, Cl. 34-4.000.

Ichiyanagi, Toshikazu: *See—*
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.

Iezuka, Isamu; and Nakano, Kazuo, to Toyota Jidosha Kabushiki Kaisha. Fuel supply cut control device of an internal combustion engine. 4,434,759, Cl. 123-325.000.

Iguchi, Takao: *See—*
Tagawa, Kenichi; and Iguchi, Takao, 4,435,024, Cl. 308-217.000.

Iioka, Akira, to Nihon Dixie Company, Limited. Method for producing a heat-insulating paper container from a paper coated or laminated with a thermoplastic synthetic resin film. 4,435,344, Cl. 264-45.100.

Ikado, Shuhei: *See—*
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.

Ikai, Shigeru: *See—*
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.

Ikeda Bussan Co., Ltd.: *See—*
Arihara, Takumi, 4,435,013, Cl. 297-364.000.

Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, to Tokico Ltd. Arm for a programme controlled manipulator. 4,435,120, Cl. 414-735.000.

Ikeda, Toshiaki: *See—*
Furuichi, Shuhei; Ikeda, Toshiaki; and Suzuki, Masakazu, 4,435,747, Cl. 363-25.000.

Ikeda, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Washer-dehydrator. 4,434,630, Cl. 68-18.00F.

Ikenoya, Yasuo; and Ishida, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning device of internal combustion engines. 4,434,615, Cl. 60-293.000.

Ikezaki, Eiji: *See—*
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, 4,434,976, Cl. 266-268.000.

Ilgner, Herwig; and Barth, Utz W., to Hartmann & Braun AG. Optical transmission system. 4,435,849, Cl. 455-601.000.

Imai, Hajime; Morimoto, Masahiro; and Fujiwara, Takao, to Fujitsu Limited. Method for forming a protecting film on side walls of a semiconductor device. 4,435,443, Cl. 427-38.000.

Imai, Tamotsu, to UOP Inc. Dehydrogenation of dehydrogenatable hydrocarbons. 4,435,607, Cl. 585-443.000.

Imai, Toshihiro: *See—*
Horikawa, Yoshiaki; and Imai, Toshihiro, 4,435,049, Cl. 350-454.000.

Imai, Youg, to Olympus Optical Company Limited. Capacitively coupled rotational speed detector. 4,435,702, Cl. 340-671.000.

IMI Marston Limited: *See—*
Gregory, Edward J., 4,434,842, Cl. 165-133.000.

Imperial Chemical Industries PLC: *See—*
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.
Burgess, Anthony J.; and Gardner, David L., 4,435,478, Cl. 428-463.000.

Imperial Group Limited: *See—*
Bolt, Anthony J. N.; and Chard, Brian C., 4,434,804, Cl. 131-309.000.

Inae, Shoji; and Okamoto, Harunori, to Mitsuboshi Belting Ltd. Method of manufacturing a foldable bicycle tire having flexible beads. 4,435,236, Cl. 156-132.000.

Inagaki, Mitsuo; and Sasaya, Hideaki, to Nippon Soken, Inc. Compressor having rotor rotating without contracting side plates. 4,435,140, Cl. 418-259.000.

Incerti Baldi, Andrea: *See—*
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,434,916, Cl. 222-321.000.

Indicator Controls Corporation: *See—*
Gould, Samuel; and Gould, James S., 4,435,696, Cl. 340-119.000.

Industrial Parts Depot: *See—*
Rasmussen, Robert, 4,434,642, Cl. 72-356.000.

Industrie Zanussi S.p.A.: *See—*
Bianchi, Giuseppe; and Sburlino, Roberto, 4,434,629, Cl. 68-13.00A.

Ingemann, Ole, to A/S Haustrup Plastic. Container having an originally sealed condition which can be opened and thereafter closed. 4,434,907, Cl. 220-276.000.

Ingersoll-Rand Company: *See—*
Luthi, Oscar; and Carlamith, Lawrence A., 4,435,085, Cl. 366-155.000.

Ingram, Larry S.: *See—*
Summerfield, Martin; Messina, Neale A.; and Ingram, Larry S., 4,434,655, Cl. 73-167.000.

Inokuchi, Hiroo: *See—*
Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, 4,435,375, Cl. 423-439.000.

Inoue, Hiroshi: *See—*
Komeya, Katsutoshi; Tsuge, Akihiko; and Inoue, Hiroshi, 4,435,513, Cl. 501-96.000.

Inoue, Tokuji: *See—*
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.

Inoue, Yoshio: *See—*
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.

Inowa, Shigeru: *See—*
Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.

Institut Francais du Petrole: *See—*
Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, 4,435,277, Cl. 208-108.000.
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.

Institute of Gas Technology: *See—*
Vorres, Karl S., 4,435,364, Cl. 422-145.000.

International Business Machines Corporation: *See—*
Basi, Jagtar S.; and Mendel, Eric, 4,435,247, Cl. 156-636.000.
Baum, Richard I.; and Sakalay, Frederick E., 4,435,759, Cl. 364-200.000.
Cason, William C.; McCaskill, Rex A.; and Karner, Francisco A., 4,435,778, Cl. 364-900.000.
Gambino, Richard J.; and Ruf, Ralph R., 4,435,663, Cl. 310-306.000.
Gourlay, Alexander R., 4,435,838, Cl. 382-68.000.

Haber, Judith G.; Jeffries, Kenneth L.; and Kilpatrick, Paul J., 4,435,766, Cl. 364-300.000.
Herrington, Kenneth M.; and Jeffries, Kenneth L., 4,435,780, Cl. 364-900.000.
Horlander, Frank J., 4,435,634, Cl. 219-216.000.
Hsieh, John C.; and Wu, Wei-Wha, 4,435,805, Cl. 371-25.000.
Huckabee, Bill F.; and Wright, William L., 4,435,740, Cl. 361-398.000.
Kaufman, Dan R.; and Thompson, Gerhard R., 4,435,782, Cl. 364-716.000.
Lorie, Raymond A.; and Strong, Hovey R., Jr., 4,435,758, Cl. 364-200.000.
McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,435,777, Cl. 364-900.000.
Meritt, Allan S., 4,435,755, Cl. 364-200.000.
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,435,762, Cl. 364-200.000.
Rizzi, John R., 4,435,753, Cl. 364-200.000.

International Computers Limited: *See—*
Stevens, Reginald W., 4,435,705, Cl. 340-825.050.

International Environmental Manufacturing Co.: *See—*
Alford, Arthur L., 4,434,843, Cl. 165-150.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,435,428, Cl. 426-3.000.
Licciardello, Michael; and Boden, Richard M., 4,435,331, Cl. 260-463.000.
Sprecker, Mark A., 4,435,316, Cl. 252-522.00R.

International Jensen Incorporated: *See—*
Thakkar, Narendra C., 4,435,833, Cl. 381-109.000.

International Paper Company: *See—*
Paoli, Bruno, 4,434,926, Cl. 226-172.000.

International Telephone and Telegraph Corporation: *See—*
Bowen, James H.; Baldwin, David L.; and Couch, Philip R., 4,435,850, Cl. 455-606.000.
Das, Santanu; Chea, Ramon C. W., Jr.; and Casterline, Russ C., 4,435,803, Cl. 370-16.000.
Haesloop, William G.; Mann, Melvin S.; and Jones, James W., 4,435,132, Cl. 417-360.000.
Smith, John C., 4,435,238, Cl. 156-171.000.
Winter, Joseph; Dantzig, Jonathan A.; and Tyler, Derek E., 4,434,837, Cl. 164-468.000.

Ionics, Incorporated: *See—*
Pabst, Patrea L.; and Bing, David H., 4,435,318, Cl. 260-112.00B.

Irie, Michiyuki: *See—*
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, 4,435,215, Cl. 106-84.000.

Iruya, Seiichi: *See—*
Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, 4,435,769, Cl. 364-464.000.

IRV Hanin: *See—*
Hanin, Elliott, 4,435,044, Cl. 350-302.000.

Irving, Edward, to Ciba-Geigy Corporation. Carboxyl-containing compositions and their polymerization. 4,435,497, Cl. 430-288.000.

Isaac, Otto: *See—*
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.

Ise, Yukihiko: *See—*
Yamashita, Ichiro; and Ise, Yukihiko, 4,434,671, Cl. 73-862.480.

Ishida, Masahide: *See—*
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,435,767, Cl. 364-405.000.

Ishida, Yoichi: *See—*
Ikenoya, Yasuo; and Ishida, Yoichi, 4,434,615, Cl. 60-293.000.

Ishigaki, Katsumi; Sasaki, Kazuo; and Fukumura, Takumi, to Kabushiki Kaisha Yamamoto Suiatsu Kogyosho. Automatic pressurized connecting device. 4,435,006, Cl. 285-119.000.

Ishiguri, Yukio: *See—*
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, 4,435,203, Cl. 71-76.000.

Ishii, Koji; and Honkawa, Yoshinori, to Ryobi Ltd. Operating lever device for printing machine. 4,434,716, Cl. 101-142.000.

Ishii, Susumu: *See—*
Nagata, Kazuo; and Ishii, Susumu, 4,434,923, Cl. 225-97.000.

Ishikawa, Soji. Needle assembly. 4,435,176, Cl. 604-190.000.

Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Condensation system for power plant. 4,434,620, Cl. 60-657.000.

Ishimaru, Kimio; and Abe, Kenichi, to Osaka Gas Co., Ltd. Combination heating apparatus. 4,435,629, Cl. 219-10.55A.

Itakura, Hideo: *See—*
Maeda, Nobuyoshi; Itakura, Hideo; and Yagi, Takashi, 4,434,646, Cl. 72-451.000.

Italtel Societa Italiana Telecomunicazioni S.p.A.: *See—*
Bonaparte, Ennio; and Mosca, Virgilio, 4,435,619, Cl. 179-17.00R.

Ito, Hiroo; Kasanami, Takeo; and Miura, Shuji, to Sanwa Kako Company, Limited. Method of producing open-cell foamed articles of cross-linked polyolefins. 4,435,346, Cl. 264-54.000.

Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, to Nippondenso Co., Ltd.; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Process for producing cordierite ceramic products. 4,435,512, Cl. 501-32.000.

Ito, Masahiro: *See—*
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.

Ito, Satoaki; and Harada, Hiroshi, to Nippon Electric Co., Ltd. Receiver in a frequency hopping communication system. 4,435,821, Cl. 375-1.000.

Ito, Takao: *See—*
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.

Ito, Takashi; and Nozaki, Takao, to Fujitsu Limited. Method for forming an insulating film on a semiconductor substrate surface. 4,435,447, Cl. 427-94.000.

Itoh, Hiroshi: *See—*
Kobayashi, Nobuyuki; and Itoh, Hiroshi, 4,434,760, Cl. 123-339.000.

Iuchi, Tohru, to Nippon Steel Corporation. Surface temperature measuring apparatus for object within furnace. 4,435,092, Cl. 374-129.000.

Ivanova, Tatyana L.: *See—*
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.

Iwahashi, Haruo: *See—*
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,066, Cl. 355-3.0SC.

Iwane, Yoshitaka: *See—*
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.

Iwasa, Yoshio: *See—*
Morita, Hideo; and Iwasa, Yoshio, 4,434,778, Cl. 123-587.000.

Iwasaki, Nobuyuki: *See—*
Okutsu, Eiichi; Iwasaki, Nobuyuki; and Takada, Shunji, 4,435,500, Cl. 430-419.000.

Iwashita, Tomonori: *See—*
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.

Iwata, Minoru: *See—*
Matsuoka, Hiroki; Kato, Yuichi; and Iwata, Minoru, 4,434,766, Cl. 123-472.000.

Iwata, Noriyuki: *See—*
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.

Izumi, Kazuo: *See—*
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, 4,435,203, Cl. 71-76.000.

J. E. Johnson & Sons (Engineers) Limited: *See—*
Johnson, James E., 4,435,165, Cl. 441-130.000.

Jaccard, Pierre-Ernest, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Static pick-up for timepiece. 4,435,090, Cl. 368-320.000.

Jackson, Dale; and McManus, John R., to Carrier Corporation. Variably spaced wrapped fin heat exchanger. 4,434,841, Cl. 165-125.000.

Jackson, David E.; and Mannuzza, Frank J., to Miles Laboratories, Inc. Isolation of superoxide dismutase. 4,435,506, Cl. 435-189.000.

Jacobs, Erwin: *See—*
Schwabe, Ulrich; and Jacobs, Erwin, 4,434,543, Cl. 29-576.00B.

Jacobs, Joseph M. Strip solder feeding and re-winding device. 4,434,925, Cl. 226-127.000.

Jacquin, Yves: *See—*
Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, 4,435,277, Cl. 208-108.000.
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.

Jagenberg Werke AG: *See—*
Wohlfeil, Gerhard, 4,434,941, Cl. 239-587.000.

Jakob, Claus P.: *See—*
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.

Jakob, Gert: *See—*
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.

Jamiolkowski, Dennis D.: *See—*
Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,435,590, Cl. 560-61.000.

Jan-Held, Wilhelm: *See—*
Lindorfer, Walter; and Jan-Held, Wilhelm, 4,435,290, Cl. 210-708.000.

Japan Audatex Co., Ltd.: *See—*
Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, 4,435,769, Cl. 364-464.000.

Japan Hydrazine Co., Inc.: *See—*
Hasegawa, Yoichi; Nakagawa, Mineo; and Hara, Syuji, 4,435,600, Cl. 564-464.000.

Japan Servo Co.: *See—*
Hagino, Hiroshi; Nakamura, Kuniyoshi; and Kotake, Eiichi, 4,435,673, Cl. 318-254.00A.

Jastram-Werke GmbH & Co. KG: *See—*
Barkemeyer, Wolfgang K. W., 4,434,738, Cl. 114-162.000.

Jastram-Werke GmbH KG: *See—*
Brix, Joachim; and Weiss, Friedrich, 4,434,739, Cl. 114-162.000.

Jaunich, Helmut: *See—*
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.

Javan, Ali. Production of radiation at frequencies of preselected absorbing resonances and methods using same. 4,435,808, Cl. 372-11.000.

Jeandin, Michel: *See—*
Trottier, Jean-Pierre; and Jeandin, Michel, 4,435,360, Cl. 419-49.000.

Jeanty, Philippe, to Laboratoires Biotrol S.A. Device for foetal blood sampling in utero. 4,434,803, Cl. 128-770.000.

Jeffries, Kenneth L.: *See—*
Haber, Judith G.; Jeffries, Kenneth L.; and Kilpatrick, Paul J., 4,435,766, Cl. 364-300.000.
Herrington, Kenneth M.; and Jeffries, Kenneth L., 4,435,780, Cl. 364-900.000.

Jenkines, Randall C.: *See—*
McKinney, Linda D.; and Jenkines, Randall C., 4,435,459, Cl. 428-95.000.

Jenn-Air Corporation: *See—*
Simon, Donald J.; and Field, Thomas R., 4,435,638, Cl. 219-460.000.

Jenner, Michael R.: *See—*
Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., 4,435,440, Cl. 426-658.000.

Jensen, Georg W.: *See—*
Barbesgaard, Peder O.; Jensen, Georg W.; and Holm, Poul, 4,435,307, Cl. 252-174.120.

Jensen, Ronald W., to Oscar Mayer Foods Corporation. Sausage diameter monitoring apparatus and method. 4,434,529, Cl. 17-49.000.

Jiminez, Oscar; and Bianco, Frank J., to Biotechnology, Inc. Apparatus for testing physical condition of a self-propelled vehicle rider. 4,434,801, Cl. 128-689.000.

Joe, Dick M.: *See—*
Ajioka, James S.; and Joe, Dick M., 4,435,715, Cl. 343-771.000.

Johansson, Lars O., to Studsvik Energiteknik AB. Method and an apparatus for monitoring the period of a nuclear reactor. 4,435,356, Cl. 376-216.000.

Johansson, Thomas, to Kemanord AB. Process for the preparation of silicon or ferrosilicon. 4,435,209, Cl. 75-11.000.

John Kennedy (Civil Engineering) Limited: *See—*
Flaherty, Thomas; and Price, Richard H., 4,434,815, Cl. 138-97.000.

Johnson, Alfred D. Method of preparing a two-way shape memory alloy. 4,435,229, Cl. 148-11.50R.

Johnson, Howard B. Rotary vane machine with rotating end sealing plates. 4,435,138, Cl. 418-131.000.

Johnson, James E., to J. E. Johnson & Sons (Engineers) Limited. Flotation device for supporting a person in water. 4,435,165, Cl. 441-130.000.

Johnson & Johnson Baby Products Company: *See—*
Guth, Jacob J.; Spilatro, Diane L.; and Verdicchio, Robert J., 4,435,300, Cl. 252-117.000.

Johnson, Matthey & Co., Limited: *See—*
Knapton, Arthur G.; and Selman, Gordon L., 4,435,373, Cl. 423-403.000.

Johnson, Michael R. Modular stacking trays. 4,435,026, Cl. 312-45.000.

Johnson, Raymond A.: *See—*
Hunt, James W.; and Johnson, Raymond A., 4,434,931, Cl. 232-15.000.

Johnson Service Company: *See—*
Siler, Dan R.; and Trimble, Harold D., 4,435,829, Cl. 378-60.000.

Johnson, Timothy W.: *See—*
Reed, Jerry O.; and Johnson, Timothy W., 4,435,222, Cl. 134-2.000.

Johnson, Walter R., to Combustion Engineering, Inc. Electrical insulating refractory composition. 4,435,693, Cl. 338-238.000.

Johnston, Samuel J. B., to EMI Limited. Electroplating arrangements. 4,435,266, Cl. 204-276.000.

Jolly, Jean; Rizzi, Primo; and Taillardat, Jean, to Roussel Uclaf. 1α,25α-Dihydroxy-cholecalciferol and methods for the production thereof. 4,435,325, Cl. 260-397.200.

Jones, Brian C., to Combustion Engineering, Inc. Fine particulate feed system for fluidized bed furnace. 4,434,726, Cl. 110-347.000.

Jones, Glenn C.; and Culver, Larry J., to Eastman Kodak Company. Coalescent-containing coating composition. 4,435,534, Cl. 524-292.000.

Jones, Howard: *See—*
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,435,395, Cl. 424-248.500.

Jones, James B.; and Soyka, Ron B., to Jones, James B. Hot tub thermometer. 4,435,095, Cl. 374-194.000.

Jones, James W.: *See—*
Haesloop, William G.; Mann, Melvin S.; and Jones, James W., 4,435,132, Cl. 417-360.000.

Jones, Richard E.: *See—*
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Joormann, Hendrik J. M.; Verweij, Henrik; and Haisma, Jan, to U.S. Philips Corporation. Method of preparing precision pressed glass object. 4,435,200, Cl. 65-64.000.

Jordan, Ernst G., to Obo Bettermann OHG, Firma. Stud welding apparatus. 4,435,630, Cl. 219-98.000.

Joseph, Eric D.; and Davies, Robert B., to Motorola, Inc. Low voltage precision current source. 4,435,678, Cl. 323-273.000.

Jostens, Inc.: *See—*
Hulber, Loren J.; and Fluckiger, Raymond W., 4,435,464, Cl. 428-167.000.

Jubanowsky, Louis J. Viscosity increasing additive for non-aqueous fluid systems. 4,435,218, Cl. 106-266.000.

Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, to Institut Francais du Petrole. Process for manufacturing gasoline with upgrading of hydrocarbon oils. 4,435,274, Cl. 208-80.000.

Junck, Guy, to Arbed S. A. Gammanetric thickness measuring apparatus. 4,435,643, Cl. 250-358.100.

Jung, Michel: *See—*
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.

Jung, Rudolf H.: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Junker, Erwin. Apparatus for cutting saw teeth into saw blades or saw bands. 4,434,685, Cl. 76-38.000.

Kabushiki Kaisha Morita Seisakusho: *See—*
Furuichi, Shuhei; Ikeda, Toshiaki; and Suzuki, Masakazu, 4,435,747, Cl. 363-25.000.

Kabushiki Kaisha Sumimoto Kagaku Kenkyusho: *See—*
Sumimoto, Morio, 4,435,287, Cl. 210-131.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Chihara, Hiroyuki; and Kitano, Masuo, 4,435,089, Cl. 368-204.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Hasegawa, Junzo; Kawabata, Susumu; and Niimi, Hiroshi, 4,434,611, Cl. 57-328.000.
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.

Kabushiki Kaisha Yakult Honsha: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Kabushiki Kaisha Yamamoto Suiatsu Kogyosho: *See—*
Ishigaki, Katsumi; Sasaki, Kazuo; and Fukumura, Takumi, 4,435,006, Cl. 285-119.000.

Kaczerginski, Alexandre; and Willem, Michel, to Societe Anonyme dite: CERAVER. Sealed end cap mounting for laminated insulator core. 4,435,615, Cl. 174-189.000.

Kadija, Igor V., to Olin Corporation. Method for producing a reticulate electrode for electrolytic cells. 4,435,252, Cl. 204-11.000.

Kaffenberger, Orville A., Jr.: *See—*
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.

Kai, Yoshiyuki: *See—*
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.

Kaitoh, Mitsumasa: *See—*
Takeda, Makoto; Miyoshi, Kazuhito; Kaitoh, Mitsumasa; and Omori, Hiroyuki, 4,435,251, Cl. 203-50.000.

Kakuta, Atsushi: *See—*
Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,435,492, Cl. 430-58.000.

Kakuta, Yoshiyuki: *See—*
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.

Kalab, Zdenek: *See—*
Svercl, Josef; Novak, Jan; and Kalab, Zdenek, 4,434,645, Cl. 72-402.000.

Kalfa, Horst: *See—*
Buhler, Hans-Eugen; and Kalfa, Horst, 4,435,157, Cl. 432-30.000.

Kaltwasser, Helmut, to General Motors Corporation. Rear axle for vehicles especially motor vehicles. 4,434,998, Cl. 280-721.000.

Kalz, Dietmar: *See—*
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.

Kamens, Ernest R., to Pennwalt Corporation. Reaction of carbonylhydrazines and organic peroxides to foam unsaturated polyester resins. 4,435,525, Cl. 521-92.000.

Kamigaito, Osami: *See—*
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.

Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Nagai, Junichi, to Asahi Glass Company Ltd. Electro-optical device and electro-optical light controlling device. 4,435,048, Cl. 350-357.000.

Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, to Fujisawa Pharmaceutical Co., Ltd. Azetidinone 4-disulfides. 4,435,321, Cl. 260-239.00A.

Kamoshita, Katsuzo: *See—*
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.

Kamyr AB: *See—*
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.

Kanazawa, Tatsuo; and Suyama, Tsuneo, to Kubota, Ltd. Holding device for nested pipes. 4,434,892, Cl. 206-446.000.

Kane, John M.: *See—*
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,435,571, Cl. 544-384.000.

Kanebo, Ltd.: *See—*
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,434,631, Cl. 68-171.000.

Kanebo Synthetic Fibers Ltd.: *See—*
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,434,631, Cl. 68-171.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Kato, Yasushi; and Furukawa, Hisao, 4,435,536, Cl. 524-378.000.

Kaneko, Shinji: *See—*
Sugiyama, Minoru; and Kaneko, Shinji, 4,435,101, Cl. 403-122.000.
Kaneuchi, Tetsuro: *See—*
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.
Kanoi, Minoru: *See—*
Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, 4,435,751, Cl. 364-574.000.
Kansai Paint Co., Ltd.: *See—*
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.
Kanzaki Paper Manufacturing Company Limited: *See—*
Horiike, Tetsuro; Kuroda, Takio; and Shiozaki, Tomoharu, 4,435,340, Cl. 264-4.700.
Kapitanov, Nikolai N.: *See—*
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.
Karam, Emmanuel E.: *See—*
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., 4,435,738, Cl. 361-321.000.
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki. Surgical staple, a method of and forceps for its removal. 4,434,796, Cl. 128-335.000.
Karlson, Eskil: *See—*
Schmitt, Oscar A.; Nedreski, Robert J.; and Karlson, Eskil, 4,435,163, Cl. 434-263.000.
Karner, Francisco A.: *See—*
Cason, William C.; McCaskill, Rex A.; and Karner, Francisco A., 4,435,778, Cl. 364-900.000.
Karr, Gerald W., to Beloit Corporation. Winder rider roll control. 4,434,949, Cl. 242-66.000.
Kasanami, Takeo: *See—*
Ito, Hiroo; Kasanami, Takeo; and Miura, Shuji, 4,435,346, Cl. 264-54.000.
Kashioka, Seiji: *See—*
Sakow, Hiroshi; and Kashioka, Seiji, 4,435,835, Cl. 382-8.000.
Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,435,012, Cl. 297-355.000.
Kassai, Kenzou, to Kassai Kabushikikaisha. Seat assembly for baby carriages. 4,435,012, Cl. 297-355.000.
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M. 2,6-Dimethyl-3,5-dicarbomethoxy-4-(ortho-di-fluoromethylthiophenyl)-1,4-dihydropyridine. 4,435,574, Cl. 546-321.000.
Katayama, Masayoshi: *See—*
Shinoda, Kazuichi; and Katayama, Masayoshi, 4,434,668, Cl. 73-861.220.
Kato, Hideaki, to Konishiroku Photo Industry Co., Ltd. Electrophotographic recording apparatus. 4,435,722, Cl. 346-153.100.
Kato, Yasushi; and Furukawa, Hisao, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. One-pack composition. 4,435,536, Cl. 524-378.000.
Kato, Yoshiaki, to Citizen Watch Company Limited. Liquid crystal display device for world time wristwatch. 4,435,086, Cl. 368-22.000.
Kato, Yuichi: *See—*
Matsuoka, Hiroki; Kato, Yuichi; and Iwata, Minoru, 4,434,766, Cl. 123-472.000.
Katsma, William L.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.
Katsuyama, Harumi; and Terashima, Masaaki, to Fuji Shashin Film Kabushiki Kaisha. Integral multilayer analytical element for the assay of total protein. 4,435,362, Cl. 422-56.000.
Katz, Michael; Hinden, Jean M.; and Gauger, Jurgen F., to Diamond Shamrock Corporation. Electrode with outer coating for effecting an electrolytic process and protective intermediate coating on a conductive base, and method of making same. 4,435,313, Cl. 302-101.000.
Kaufhold, Horst T.: *See—*
Mulcahy, Harry W.; and Kaufhold, Horst T., 4,434,720, Cl. 105-199.0CB.
Kaufman, Benjamin J.: *See—*
Sung, Rodney L.; Kaufman, Benjamin J.; and Sweeney, William M., 4,435,186, Cl. 44-53.000.
Kaufman, Dan R.; and Thompson, Gerhard R., to International Business Machines Corp. Data processing system with high density arithmetic and logic unit. 4,435,782, Cl. 364-716.000.
Kawabata, Susumu: *See—*
Hasegawa, Junzo; Kawabata, Susumu; and Niimi, Hiroshi, 4,434,611, Cl. 57-328.000.
Kawachi, Tsuneo: *See—*
Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, 4,435,210, Cl. 75-53.000.
Kawai, Hisasi: *See—*
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.
Kawai, Yasunari: *See—*
Kazuta, Hisashi; Kawai, Yasunari; and Tsuchida, Naoki, 4,434,755, Cl. 123-195.00C.
Kawamura, Hiroji: *See—*
Sakamoto, Masahisa; Tamura, Yoshio; and Sakamoto, Tadashi, 4,435,802, Cl. 369-286.000.
Kawamura, Nobuhisa: *See—*
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,792, Cl. 364-520.000.
Kawashima, Hideo: *See—*
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.
Kay, Edward L.; and Gutierrez, Richard, to Firestone Tire & Rubber Company, The. Process for extracting rubber and by-products from guayule and guayule-like shrubs. 4,435,337, Cl. 528-493.000.
Kaya, Azmi: *See—*
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.
Kaye, Peter D., to Bell Industries, Inc. Saw-advancing means with edge engaging pad. 4,434,683, Cl. 76-37.000.
Kaylo, Alan J.; and Castellucci, Nicholas T., to PPG Industries, Inc. Tannin-epoxy reaction products and compositions thereof. 4,435,529, Cl. 523-426.000.
Kazuta, Hisashi; Kawai, Yasunari; and Tsuchida, Naoki, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle with closeable engine intake and exhaust passages. 4,434,755, Cl. 123-195.00C.
KBI Corp.: *See—*
Kirk, James L.; and Ohneck, Robert J., 4,435,292, Cl. 210-747.000.
Keener, Neil F. Hammer with magazine nail feed. 4,434,929, Cl. 227-115.000.
Kehr, Wolfgang: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Keita, Kawamura: *See—*
Koichi, Yamada; Keita, Kawamura; and Shinji, Aoki, 4,435,260, Cl. 204-164.000.
Kelley, Mellis M.: *See—*
Sullivan, Carl M.; and Kelley, Mellis M., 4,435,562, Cl. 528-272.000.
Kelly, Arnold J.: *See—*
Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., 4,435,261, Cl. 204-168.000.
Kemanord AB: *See—*
Johansson, Thomas, 4,435,209, Cl. 75-11.000.
Kemper, Kate. Apparatus for shaping dough. 4,435,144, Cl. 425-332.000.
Kennecott Corp.: *See—*
TenEyck, John D., 4,435,468, Cl. 428-285.000.
Kennedy, A. Terence, to Damon Corporation. Centrifuge rotor apparatus with sling arms. 4,435,168, Cl. 494-20.000.
Kenneth E. Beswick Limited: *See—*
Beswick, David G. E., 4,434,548, Cl. 29-623.000.
Kenney, George C., II: *See—*
Nadan, Joseph S.; Kenney, George C., II; and Carasso, Marino G., 4,435,687, Cl. 331-23.000.
Kenny, Thomas C.; and Plunkett, John P., to Horizon Chemical, Inc. Furnace fuel. 4,435,185, Cl. 44-68.000.
Kerey, Gyorgy: *See—*
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Heitkamp, Dieter; and Wagener, Klaus, 4,435,366, Cl. 423-6.000.
Kerr-McGee Chemical Corporation: *See—*
Morris, Alan J., 4,435,365, Cl. 423-76.000.
Kettle, John L., to Otis Elevator Company. Spiral escalator. 4,434,884, Cl. 198-328.000.
Keyes, Marion A.: *See—*
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.
Khalafalla, Sanaa E.: *See—*
Reimers, George W.; and Khalafalla, Sanaa E., 4,435,302, Cl. 252-62.510.
Khalifa, Ramzl A.: *See—*
Prather, Joseph E.; Khalifa, Ramzl A.; and Wenzler, Peter B., 4,435,027, Cl. 312-222.000.
Khan, Riaz A.: *See—*
Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., 4,435,440, Cl. 426-658.000.
Kida, Masahiko: *See—*
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.
Kijima, Shizumasa: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.
Kilian, Ernst A.: *See—*
Eckert, Wolfgang; Holtkamp, Bernd; and Kilian, Ernst A., 4,435,685, Cl. 330-261.000.
Kilpatrick, Paul J.: *See—*
Haber, Judith G.; Jeffries, Kenneth L.; and Kilpatrick, Paul J., 4,435,766, Cl. 364-300.000.

Kimble, James B.: *See—*
Lindstrom, Merlin R.; Parlman, Robert M.; and Kimble, James B., 4,435,304, Cl. 252-156.000.
Kimoto, Manabu, to Nippon Electric Co., Ltd. Data processing apparatus capable of transferring serial data with small power consumption. 4,435,761, Cl. 364-200.000.
Kiovsky, T. E.: *See—*
Graiff, L. B.; and Kiovsky, T. E., 4,435,187, Cl. 44-63.000.
Kipp, Ronald W., to RCA Corporation. Radar ranging system for use with sloping target. 4,435,709, Cl. 343-14.000.
Kipp, Ronald W., to RCA Corporation. FM-CW Radar ranging system with signal drift compensation. 4,435,712, Cl. 343-17.700.
Kirayoglu, Erol M.: *See—*
Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., 4,435,031, Cl. 339-17.00C.
Kirk, Donald C., Jr., to Ethyl Products Company. Child-resistant finger pump dispenser. 4,434,915, Cl. 222-153.000.
Kirk, James L.; and Ohneck, Robert J., to KBI Corp. Portable method for decontaminating earth. 4,435,292, Cl. 210-747.000.
Kirschner, Thomas F., to RCA Corporation. Disc record player having shutoff switch actuating apparatus. 4,435,799, Cl. 369-77.200.
Kish, Richard D.: *See—*
McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., 4,434,596, Cl. 52-243.100.
Kishida, Kazuo; Sasaki, Isao; and Mukai, Nobuhiro, to Mitsubishi Rayon Co., Ltd. Novel polymer composition. 4,435,540, Cl. 524-780.000.
Kitagawa, Norihisa; and Asahi, Hiroji, to Texas Instruments Incorporated. Nonvolatile semiconductor memory device. 4,435,788, Cl. 365-185.000.
Kitajima, Tadayuki, to Canon Kabushiki Kaisha. Variable magnification copying apparatus. 4,435,070, Cl. 355-8.000.
Kitamura, Shigeyoshi: *See—*
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.
Kitamura, Takashi; and Kokado, Hiroshi, to Fuji Photo Film Co., Ltd. Electrophotographic process for the production of lithographic printing plates and light-sensitive materials for use therein. 4,435,491, Cl. 430-49.000.
Kitano, Masuo: *See—*
Chihara, Hiroyuki; and Kitano, Masuo, 4,435,089, Cl. 368-204.000.
Kiya, Nobuyuki: *See—*
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,435,771, Cl. 364-474.000.
Klauber, Gerald: *See—*
Petito, Ferdinand C.; and Klauber, Gerald, 4,435,668, Cl. 313-388.000.
Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Schneider, Wolfgang, 4,435,126, Cl. 416-186.00R.
Kleinewefers GmbH: *See—*
Hartwich, Gerhard; Pav, Josef; and Preuss, Dieter, 4,434,713, Cl. 100-168.000.
Kleinschmit, Peter: *See—*
Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, 4,435,378, Cl. 423-461.000.
Klett, Werner, to Hekatron GmbH. Circuit arrangement for the transmission of measurements to a central, especially in a fire alarm system. 4,435,698, Cl. 340-512.000.
Kley, Victor B. Graphical data entry apparatus. 4,435,616, Cl. 178-18.000.
Kliebphipat, Ravadee; Fernsler, Ronald E.; and Hicks, James E., to RCA Corporation. Television receiver disabling circuit. 4,435,731, Cl. 358-243.000.
Klockner-Humboldt-Deutz AG: *See—*
Kupper, Heinz; and Busch, Helmut, 4,434,940, Cl. 239-397.500.
Moser, Gottfried; Nau, Walter; and Neumann, Ernst-Dieter, 4,434,934, Cl. 237-12.30R.
Kloster, Kenneth D. Vise. 4,434,978, Cl. 269-69.000.
Klupsch, Hans J., to EVOG - Etablissement fur Verwaltung und Organisation. Process for the production of stable curdled milk products. 4,435,432, Cl. 426-43.000.
Knapton, Arthur G.; and Selman, Gordon L., to Johnson, Matthey & Co., Limited. Fibre packs for ammonia oxidation. 4,435,373, Cl. 423-403.000.
Knaus, Ernest; Namsick, Raymond J.; and Smith, Herbert D., to Goodyear Aerospace Corporation. Fabric-reinforced, flexible-walled container and method of making said container. 4,435,240, Cl. 156-242.000.
Kness, Werner, to U.S. Philips Corporation. Dry-shaving apparatus having a trimmer. 4,434,553, Cl. 30-34.100.
Knickerbocker, Michael G., to Seaquist Valve Company. Pump assembly with improved seal. 4,435,135, Cl. 417-511.000.
Knudsen, Hans B., to F. L. Smidth & Co. Apparatus for thermally treating pulverous materials such as cement raw material. 4,435,159, Cl. 432-106.000.
Knudsen, Niels K. Heat accumulator. 4,434,785, Cl. 126-400.000.
Koal, Inc.: *See—*
Kovacs, Geza L., 4,435,306, Cl. 252-173.000.
Kobayashi, Hideyuki, to Aisen Seiki Kabushiki Kaisha. Brake master cylinder assembly. 4,434,619, Cl. 60-547.100.
Kobayashi, Hisao: *See—*
Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, 4,434,693, Cl. 83-71.000.
Kobayashi, Masatsune: *See—*
Eida, Tsuyoshi; and Kobayashi, Masatsune, 4,435,717, Cl. 346-1.100.
Kobayashi, Nobuyuki; and Itoh, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the idling speed of an engine. 4,434,760, Cl. 123-339.000.
Kobayashi, Takashi: *See—*
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Kobayashi, Takeo, to Howa Kogyo Kabushiki Kaisha. Fluid-actuated hollow power chuck. 4,434,990, Cl. 279-4.000.
Kobayashi, Takumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic film wind-up camera. 4,435,060, Cl. 354-173.100.
Kobler, Ingo; and Mische, Hans-Jurgen, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printed goods removal apparatus. 4,434,979, Cl. 271-307.000.
Koch, Russell W.; and Barbin, William W., to Firestone Tire & Rubber Company, The. Room temperature curable tire patch. 4,434,832, Cl. 152-370.000.
Kodama, Hideyo: *See—*
Niiyama, Eisuke; and Kodama, Hideyo, 4,434,836, Cl. 164-429.000.
Koetsier, Wicher T.; and Verduijn, Johannes P., to Exxon Research & Engineering Co. Xylene isomerization. 4,435,608, Cl. 585-480.000.
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, to Nippon Soken, Inc. Output control system for multicylinder internal combustion engine. 4,434,767, Cl. 123-481.000.
Koichi, Yamada; Keita, Kawamura; and Shinji, Aoki, to Ebara Corporation. Method and apparatus for desulfurization and denitrification of waste gas by multi-stage electron beam irradiation. 4,435,260, Cl. 204-164.000.
Koide, Kazuo, to Hitachi, Ltd. Output level adjustment means for low fanout ECL lacking emitter follower output. 4,435,654, Cl. 307-455.000.
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, to Chugai Seiyaku Kabushiki Kaisha. Plant growth regulator. 4,435,202, Cl. 71-76.000.
Koizumi, Masuo: *See—*
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.
Kojima, Junichiroh; and Mizoe, Kenji, to Nippon Electric Co., Ltd. Radio mobile communication system wherein probability of loss of calls is reduced without a surplus of base station equipment. 4,435,840, Cl. 455-33.000.
Kojima, Kenji: *See—*
Midorikawa, Akira; Kojima, Kenji; and Uchimura, Kazuo, 4,435,074, Cl. 355-15.000.
Kojima, Mikio: *See—*
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Kojima, Yasufumi: *See—*
Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, 4,434,932, Cl. 236-49.000.
Kokado, Hiroshi: *See—*
Kitamura, Takashi; and Kokado, Hiroshi, 4,435,491, Cl. 430-49.000.
Kolm, Eric A.: *See—*
Kolm, Henry H.; and Kolm, Eric A., 4,435,667, Cl. 310-367.000.
Kolm, Henry H.; and Kolm, Eric A., to Peizo Electric Products, Inc. Spiral piezoelectric rotary actuator. 4,435,667, Cl. 310-367.000.
Kolomayets, George: *See—*
Dennis, James T.; and Kolomayets, George, 4,435,800, Cl. 369-225.000.
Kolomeitsev, Alexandr A.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.
Komatsu, Osamu: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, 4,435,566, Cl. 544-117.000.
Komatsuzawa, Toshiki: *See—*
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.
Komeya, Katsutoshi; Tsuge, Akihiko; and Inoue, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Sintered bodies of aluminum nitride. 4,435,513, Cl. 501-96.000.
Konaka, Daijiro: *See—*
Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, 4,434,693, Cl. 83-71.000.
Kondo, Takehisa: *See—*
Shirase, Haruya; and Kondo, Takehisa, 4,434,776, Cl. 123-568.000.
Kondratenko, Natalya V.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.
Kong, Ah S.: *See—*
Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, 4,435,409, Cl. 424-266.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Kato, Hideaki, 4,435,722, Cl. 346-153.100.

Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,066, Cl. 355-3.0SC.

Koppers Company Inc.: *See—*
Lindgren, Carl, 4,435,250, Cl. 202-239.000.

Kopsch, Paul J.; Ward, Donald F.; Graber, Jay; and Nichols, Omer. Sabot and projectile. 4,434,718, Cl. 102-522.000.

Korbelak, Kenneth N., to GK Technologies, Incorporated. Optical fiber stripping device. 4,434,554, Cl. 30-90.800.

Korenko, Michael K., to United States of America, Energy. Cold worked ferritic alloys and components. 4,435,231, Cl. 148-12.0EA.

Kornatowski, Boleslaw, to Singer Company, The. Handwheel clutch for sewing machines. 4,434,880, Cl. 192-67.00R.

Korolkov, Ivan A.: *See—*
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.

Kos, Joseph M.: *See—*
Harner, Kermit I.; Patrick, John P.; and Kos, Joseph M., 4,435,647, Cl. 290-44.000.

Kosaka, Tsutomu: *See—*
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.

Koshelev, Jury I.: *See—*
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.

Kosova, Lyana I.: *See—*
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.

Kostan, Charles C.: *See—*
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,434,754, Cl. 123-146.50A.

Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I. Composition for the preparation of carbonaceous base use in the manufacture of siliconized antifriction materials. 4,435,538, Cl. 524-492.000.

Kotake, Eiichi: *See—*
Hagino, Hiroshi; Nakamura, Kuniyoshi; and Kotake, Eiichi, 4,435,673, Cl. 318-254.00A.

Koto, Katsumi: *See—*
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.

Kotzur, Joachim: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,434,987, Cl. 277-80.000.

Kovach, Stephen M.: *See—*
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,435,515, Cl. 502-65.000.

Kovacs, Geza L., to Koal, Inc. Stable coal-water suspensions and their preparation. 4,435,306, Cl. 252-173.000.

Koziol, Walter. Thermally efficient barbecue grill. 4,434,781, Cl. 126-25.00R.

Krabbe, Wilfried: *See—*
Zerna, Wolfgang; Krabbe, Wilfried; and Schafer, Hans, 4,434,591, Cl. 52-73.000.

Kragh, Loren G., to Tower Systems, Inc. Falling film heat exchanger. 4,435,339, Cl. 261-153.000.

Krainov, Sergei V.: *See—*
Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., 4,435,748, Cl. 363-54.000.

Kranzle, Josef; and Droitsch, Lutz. Apparatus with latching effect for limiting pressure in liquid feeding systems. 4,435,127, Cl. 417-26.000.

Krasso, Anna; and Ramuz, Henri, to Hoffmann-La Roche Inc. Imidazole derivatives. 4,435,406, Cl. 424-263.000.

Kraus, Charles E., to Excelermatic Inc. Transmission ratio control arrangement for a precess cam controlled infinitely variable traction roller transmission. 4,434,675, Cl. 74-200.000.

Krause, Gunter: *See—*
Pauli, Gunter; Krause, Gunter; and Lob, Erwin, 4,435,834, Cl. 382-7.000.

Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., to Bethlehem Steel Corporation. Pyrometer with sighting window cleanliness monitor. 4,435,093, Cl. 374-129.000.

Krauss, Theo; Herrmann, Ludwig; and Berger, Konrad, to VEB Kombinat Textima. Laundry mangle with roll covering reel. 4,434,566, Cl. 38-8.000.

Kray, Louis R.: *See—*
Ferm, Richard L.; and Kray, Louis R., 4,435,273, Cl. 208-48.0AA.

Kresky, Fred C.: *See—*
Boland, John D.; and Kresky, Fred C., 4,434,970, Cl. 254-108.000.

Krieger, Friedrich, to Gg. Noell GmbH. Support for used fuel rods in nuclear installations. 4,435,357, Cl. 376-272.000.

Krieger, Friedrich, to Gg. Noell GmbH. Means for fixation of spent nuclear elements. 4,435,358, Cl. 376-272.000.

Krijnen, Wilhelmus J.; and Grotenhuis, Paulus A. M., to Shell Oil Company. Manufacture of macrocyclic polyethers. 4,435,582, Cl. 549-352.000.

Krischik, Reinhold: *See—*
Florczyk, Rolf; and Krischik, Reinhold, 4,434,906, Cl. 220-268.000.

Krishnakumar, Suppayan M.: *See—*
Beck, Martin H.; Krishnakumar, Suppayan M.; and Harry, Ieuan L., 4,435,244, Cl. 156-379.800.

Krogsrud, Harald, to Elkem a/s. Contact assembly. 4,435,817, Cl. 373-103.000.

Krone GmbH: *See—*
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, 4,434,542, Cl. 29-566.400.

Krone, Hartmut: *See—*
Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.

Kruger, H. Eckard: *See—*
Timm, Horst; and Kruger, H. Eckard, 4,435,845, Cl. 455-228.000.

Kruse, Walter M.; and Stephen, John F. Etherification process for hexitols and anhydrohexitols. 4,435,586, Cl. 549-464.000.

Kubisiak, Helmut: *See—*
Berthold, Fritz; and Kubisiak, Helmut, 4,435,509, Cl. 436-518.000.

Kubota, Ltd.: *See—*
Kanazawa, Tatsuo; and Suyama, Tsuneo, 4,434,892, Cl. 206-446.000.

Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, to Matsushita Electric Industrial Co., Ltd. Coil forming machine. 4,434,819, Cl. 140-92.100.

Kuehnle, Manfred R. Method and means for reducing frame effect in electrographic images on microfiche. 4,435,071, Cl. 355-10.000.

Kufner Textilwerke KG: *See—*
Hefele, Josef, 4,435,442, Cl. 427-14.100.

Kuhla, Donald E.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,435,584, Cl. 549-415.000.

Kuhlemann, Bruce N.; Horvath, Kalman; and Wharff, Prentice C., to Cutter Laboratories, Inc. Needle assembly. 4,435,177, Cl. 604-263.000.

Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, to Dynamit Nobel Aktiengesellschaft. Multi-layered sealing sheet of elastomeric synthetic resin. 4,435,466, Cl. 428-215.000.

Kuhner, Gerhard: *See—*
Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, 4,435,378, Cl. 423-461.000.

Kuin, Nicolaas P. J.: *See—*
Draai, Willem T.; Pleyers, Jozef J. A.; and Kuin, Nicolaas P. J., 4,435,067, Cl. 355-3.0TR.

Kuiper, Krijn: *See—*
Segers, Marinus T. M.; Niessen, Cornelis; and Kuiper, Krijn, 4,435,806, Cl. 371-25.000.

Kujala, Jaakko: *See—*
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.

Kuli, John C., Jr.: *See—*
Hildeman, Gregory J.; Kuli, John C., Jr.; and Vivola, Leo A., 4,435,213, Cl. 75-249.000.

Kumar, Pullatikurthi P., to University of Nebraska, The Board of Regents of the. Apparatus for treating carcinoma of the uterine cervix. 4,434,789, Cl. 128-1.200.

Kunkel, Robert C., Jr., to Combustion Engineering, Inc. Overbed distributor for feeding dual solid fuels to a stoker furnace. 4,434,724, Cl. 110-269.000.

Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Running position indicator apparatus. 4,435,760, Cl. 364-444.000.

Kunou, Yasuo: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, 4,435,566, Cl. 544-117.000.

Kupper, Heinz; and Busch, Helmut, to Klockner-Humboldt-Deutz AG. Insulated fuel injection nozzle device and method for manufacturing same. 4,434,940, Cl. 239-397.500.

Kurata, Keiji: *See—*
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, 4,435,475, Cl. 428-409.000.

Kurihara, Shuichi: *See—*
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.

Kurita Machinery Manufacturing Company Limited: *See—*
Miyano, Muneyuki, 4,435,288, Cl. 210-227.000.

Kuroda, Akio: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Kuroda, Takio: *See—*
Horiike, Tetsuro; Kuroda, Takio; and Shiozaki, Tomoharu, 4,435,340, Cl. 264-4.700.

Kuroda, Tsukasa: *See—*
Yoshii, Tsuneo; Ueda, Toshitaka; and Kuroda, Tsukasa, 4,435,522, Cl. 502-319.000.

Kurtz, George W.; and Bankston, Ben F., to United States of America, National Aeronautics and Space Administration. Two-dimensional scanner apparatus. 4,434,659, Cl. 73-620.000.

Kuwana, Noriaki: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

Kuze, Yoshikazu. Read clock pulse controller. 4,435,827, Cl. 377-44.000.

Kyriakos, Constantinos S., to Bendix Corporation, The. Means for eliminating step error in FM/CW radio altimeters. 4,435,708, Cl. 343-12.00A.

La Calhene: *See—*
Picard, Claude; and Saint Martin, Bernard, 4,435,194, Cl. 55-96.000.

Labelle, Henri M. R., to Martinray Industries Ltd. Hinge having open curved portions. 4,434,525, Cl. 16-355.000.

Laboratoires Biotrol S.A.: *See—*
Jeanty, Philippe, 4,434,803, Cl. 128-770.000.

Laboratorium Prof. Dr. Rudolf Berthold: *See—*
Berthold, Fritz; and Kubisiak, Helmut, 4,435,509, Cl. 436-518.000.

LaBudde, Edward V.: *See—*
Hsieh, Der-Chang; and LaBudde, Edward V., 4,435,797, Cl. 369-32.000.

LaCount, Kenneth H., to Cooper Industries, Inc. Pneutmatic hoist brake and control. 4,434,974, Cl. 254-360.000.

Lacour, Alain P.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., to Allied Corporation. Temperature stable thermotropic poly(ester carbonate) containing high amounts of readily available diols. 4,435,561, Cl. 528-193.000.

Lal, Joginder: *See—*
Throckmorton, Morford C.; and Lal, Joginder, 4,435,553, Cl. 526-201.000.

Lama, William L.; and Rees, James D., to Xerox Corporation. Method and apparatus for improving image quality of a reduction/enlargement gradient index lens array. 4,435,039, Cl. 350-96.250.

LaMattina, John L.; and Lipinski, Christopher A., to Pfizer Inc. Antiulcer 2-guanidino-4-(2-substituted-amino-4-imidazolyl)thiazoles and process therefor. 4,435,396, Cl. 424-248.510.

Lamberti, Vincent; and Pease, Wilder F., to Lever Brothers Company. Preparation and use of alkali metal isethionates from ethionic acid. 4,435,328, Cl. 260-400.000.

Lancaster, Janet M.: *See—*
Atkinson, Alan W.; and Lancaster, Janet M., 4,435,235, Cl. 156-62.200.

Lanciault, Joseph A. Adjustable solar heat collector. 4,434,786, Cl. 126-424.000.

Landa, Benzion, to Savin Corporation. Apparatus for electrophotography. 4,435,068, Cl. 355-3.00R.

Landers, Samuel P.; and Egan, William E., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 4,434,830, Cl. 152-209.00R.

Lang, Richard D.: *See—*
Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., 4,434,710, Cl. 98-94.0AC.

Langlois, Michel: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Philippe L., 4,435,415, Cl. 424-272.000.

Larigaldie, Serge: *See—*
Taillet, Joseph; and Larigaldie, Serge, 4,435,190, Cl. 55-5.000.

Laroche, Pierre: *See—*
Mertens, Guy; and Laroche, Pierre, 4,435,043, Cl. 350-288.000.

Larson, Charles L., deceased; and by Larson, Rocket L., executor. Accumulator for veneer feeder. 4,434,912, Cl. 221-227.000.

Larson, Rocket L., executor: *See—*
Larson, Charles L., deceased; and Larson, Rocket L., executor, 4,434,912, Cl. 221-227.000.

Laszczower, Max, to Solco Basel AG. Assembly for receiving and discharging a collection of blood. 4,435,170, Cl. 604-4.000.

Lau, Philip T. S., to Eastman Kodak Company. Release of photographic reagents with 3-pyrazolidone developing agents. 4,435,495, Cl. 430-218.000.

Lau, Philip Y., to Dow Chemical Company, The. Backfill for magnesium galvanic anodes. 4,435,263, Cl. 204-197.000.

Lau, Philip Y., to Dow Chemical Company, The. Magnesium anode backfills. 4,435,264, Cl. 204-197.000.

Lauer, Gerhard; Morawiez, Alfred; and Wild, Jurgen. Tool for gauging the corners of workpieces of sheet metal or the like. 4,434,559, Cl. 33-174.00L.

Laurent, Henry: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,435,390, Cl. 424-243.000.
Petzoldt, Karl; Laurent, Henry; and Wiechert, Rudolf, 4,435,327, Cl. 260-397.500.

Lavorazione Materie Plastiche L.M.P. S.p.A.: *See—*
Colombo, Roberto, 4,435,345, Cl. 264-53.000.

Leah, George R., to Pennwalt Corporation. Adherent, acid cured resin protective coatings for concrete and steel. 4,435,472, Cl. 428-333.000.

Lear S.n.c. di Foggini & C.: *See—*
Foggini, Giovanni, 4,435,009, Cl. 296-97.00H.

Lebert, Ulrich: *See—*
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.

LeBlond, Claude W., to Gerber Garment Technology, Inc. Method and apparatus for sealing out sheet material. 4,434,691, Cl. 83-56.000.

Lecolier, Serge; and Raynal, Serge, to Societe Nationale des Poudres et Explosifs. Associations of bases, resulting from the combination of a lithium alkyl or aryl with an alkali metal amide or hydride, polymerization process in which they are used, and product obtained. 4,435,312, Cl. 502-157.000.

Le Count, David J.: *See—*
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.

Lee, Cheuk M.; and Parks, James A., to Abbott Laboratories. 3-Substituted 2,3-dihydrobenzofuran-2-carboxylic acids and their use in diuretic compositions. 4,435,422, Cl. 424-285.000.

Lee, Chong H., to Suh Won America, Inc. Dual purpose pallet sheet. 4,434,894, Cl. 206-526.000.

Lee, John D.: *See—*
Aujla, Sharanjit S.; and Lee, John D., 4,435,034, Cl. 339-98.000.

Lee, Wai-Tak P.: *See—*
Gergis, Isoris S.; and Lee, Wai-Tak P., 4,435,784, Cl. 365-8.000.

Leech, Brad G.: *See—*
Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., 4,434,710, Cl. 98-94.0AC.

Leeper, Harold M., to ALZA Corporation. Elastomeric active agent delivery system and method of use. 4,435,180, Cl. 604-896.000.

Le Fur, Gerard R.; and Renault, Christian L. A., to Pharmindustrie. 3-[2-(3-Alkyl and alkenyl-4-piperidyl)-ethyl]-indoles for inhibiting serotonin uptake and for releasing serotonin. 4,435,410, Cl. 424-267.000.

Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., to A. E. Staley Manufacturing Company. Soy isolate suitable for use in imitation cheese. 4,435,438, Cl. 426-656.000.

Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, to USV Pharmaceutical Corporation. Method of stimulating production of IgM antibodies. 4,435,409, Cl. 424-266.000.

Leight, Howard S. Disposable ear plug. 4,434,794, Cl. 128-152.000.

Leipelt, Paul A.: *See—*
Azeez, Syed A.; Leipelt, Paul A.; and Morello, Herbert, 4,435,243, Cl. 156-361.000.

Leiter, Harold E.: *See—*
Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., 4,435,031, Cl. 339-17.00C.

Lelental, Mark; and Steklenski, David J., to Eastman Kodak Company. Electrically activatable recording element and process. 4,435,490, Cl. 430-45.000.

Lemke, Kenneth W., to M&T Chemicals Inc. Bright nickel electroplating. 4,435,254, Cl. 204-49.000.

Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, to Richter Gedeon Vegyeszeti Gyar Rt. Heterocyclic compounds containing an alkoxycarbonyl and a substituted methyl group. 4,435,322, Cl. 260-239.00A.

Les Cables de Lyon: *See—*
Gaubert, Jean, 4,435,613, Cl. 174-102.0SC.

LeVeau, Robert, to Hallmark Cards, Inc. Memorabilia repository. 4,434,567, Cl. 40-157.000.

Lever Brothers Company: *See—*
Lamberti, Vincent; and Pease, Wilder F., 4,435,328, Cl. 260-400.000.
Lowry, Michael R., 4,435,310, Cl. 252-370.000.
Pader, Morton, 4,435,380, Cl. 424-49.000.

Levin, Leonard J., to RCA Corporation. Information record with a thick overcoat. 4,435,801, Cl. 369-275.000.

Levine, Peter A.: *See—*
Bendell, Sidney L.; and Levine, Peter A., 4,435,730, Cl. 358-213.000.

Levine, Richard, to United Technologies Corporation. Cooling system for turbines. 4,435,123, Cl. 416-95.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Agricultural pyridinesulfonamides. 4,435,206, Cl. 71-92.000.

Lewin, David F.; Haynes, Louie J.; and Beach, Lynne B., to Owens-Corning Fiberglas Corporation. Strand guide for packaging apparatus. 4,434,946, Cl. 242-18.00G.

Lewis, Robert M.; and Slaugh, Lynn H., to Shell Oil Company. Conversion of dimethyl ether to formaldehyde. 4,435,602, Cl. 568-470.000.

Leybold-Heraeus GmbH: *See—*
Stenzel, Otto; and Flecker, Pierre, 4,435,818, Cl. 373-104.000.

Liao, Henry H., to Xerox Corporation. One shot predictor for mixed mode documents. 4,435,726, Cl. 358-135.000.

Liberty Carton Co.: *See—*
Rivkin, Eric M., 4,434,899, Cl. 211-41.000.
Rivkin, Eric M., 4,435,028, Cl. 312-258.000.

Licciardello, Michael; and Boden, Richard M., to International Flavors & Fragrances Inc. Methyl carbonate of α,3,3-trimethyl cyclohexane methanol, organoleptic uses thereof and process for preparing same. 4,435,331, Cl. 260-463.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Gockler, Heinz; Till, Reinhard; and Schenk, Heinrich, 4,435,773, Cl. 364-724.000.

Lidstom, Thorbjorn G.: *See—*
Blomqvist, Thomas H.; and Lidstom, Thorbjorn G., 4,434,825, Cl. 144-193.00A.

Liggett Group Inc.: *See—*
Hall, Floyd V., 4,434,805, Cl. 131-362.000.

Lin, Shiow-Ching, to W. R. Grace & Co. N-Cyano amide compositions and adducts thereof. 4,435,549, Cl. 525-504.000.

Lindahl, Lars: *See—*
Almqvist, Christer; and Lindahl, Lars, 4,434,643, Cl. 72-379.000.

Lindenschmidt, Gerhard: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Lindgren, Carl, to Koppers Company, Inc. Device for adjusting the position of a track mounted car. 4,435,250, Cl. 202-239.000.

Lindorfer, Walter; and Jan-Held, Wilhelm, to Wintershall AG. Process for the temporary storage of recyclable liquid wastes in underground salt caverns. 4,435,290, Cl. 210-708.000.

Lindstrom, Merlin R.; Parlman, Robert M.; and Kimble, James B., to Phillips Petroleum Company. Sulfur based metal cleaners. 4,435,304, Cl. 252-156.000.

Link, Edwin A.; and Mikulecky, Harvey W., to RTE Corporation. Primary circuit breaker. 4,435,690, Cl. 335-37.000.

Linley, Francis M., Jr., to Universal Thread Grinding Company. Anti-backlash spring-mounted nut. 4,434,677, Cl. 74-409.000.

Linzberger, Robert, to Gebruder Buhler AG. Knife scraper for drums, particularly the drums of a cylinder mill. 4,434,522, Cl. 15-256.510.

Lipinski, Christopher A.: *See—*
LaMattina, John L.; and Lipinski, Christopher A., 4,435,396, Cl. 424-248.510.

Litman, David J.: *See—*
Zuk, Robert F.; and Litman, David J., 4,435,504, Cl. 435-7.000.

Liu, Kou-chang, to GAF Corporation. Herbicidal compounds, compositions, and method of use. 4,435,588, Cl. 500-21.000.

Liu, Yi-Tsung: *See—*
Ganguly, Ashit K.; Mallams, Allan K.; and Liu, Yi-Tsung, 4,435,388, Cl. 424-180.000.

Loacker, Artur: *See—*
Comploi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, 4,434,728, Cl. 112-84.000.

Lob, Erwin: *See—*
Pauli, Gunter; Krause, Gunter; and Lob, Erwin, 4,435,834, Cl. 382-7.000.

Lockheed Corporation: *See—*
Cronin, Michael J.; and Seid, Gordon, 4,434,624, Cl. 62-172.000.
Whitcomb, William T.; and Butler, John V., 4,434,647, Cl. 73-1.00R.

Loev, Bernard; Jones, Howard; and Shroff, James R., to USV Pharmaceutical Corporation. N-Substituted 1,4-dihydropyridazines and pharmaceutical compositions. 4,435,395, Cl. 424-248.500.

Loffelman, Frank F.; and Brady, Thomas E., to American Cyanamid Company. Novel polymeric light stabilizers for polymers. 4,435,555, Cl. 526-261.000.

Long, David J.: *See—*
Oxenrider, Bryce C.; and Long, David J., 4,435,294, Cl. 252-8.600.

Long, Thomas W., Jr.: *See—*
Gasparaitis, Bernard; Long, Thomas W., Jr.; and Richardson, Charles P., 4,435,713, Cl. 343-702.000.

Lonne, Klaus: *See—*
Beyer, Horst; Lonne, Klaus; and Majewski, Klaus-Peter, 4,434,989, Cl. 277-235.00B.

Lonza Ltd.: *See—*
Squaratti, Armand, 4,435,576, Cl. 548-164.000.

Lorie, Raymond A.; and Strong, Hovey R., Jr., to International Business Machines Corporation. Method for conditional branch execution in SIMD vector processors. 4,435,758, Cl. 364-200.000.

Louboutin, Robert; and Riotte, Michel, to Degremont. Liquid filter device. 4,435,286, Cl. 210-116.000.

Lowry, Michael R., to Lever Brothers Company. Manufacture of multicolored detergent bars having sinusoidal striping. 4,435,310, Cl. 252-370.000.

Lozano, Gerald L.: *See—*
Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., 4,435,703, Cl. 340-723.000.

Lu, James W. B., to McQuay Inc. Patterned heat exchanger fin. 4,434,846, Cl. 165-161.000.

Lubrizol Corporation, The: *See—*
Forsberg, John W., 4,435,297, Cl. 252-34.700.

Lucas, Hermann-Josef: *See—*
Burba, Christian; Lucas, Hermann-Josef; and Neffgen, Bernd, 4,435,558, Cl. 528-45.000.

Lucas Industries Limited: *See—*
Hoenick, Hermann H., 4,435,021, Cl. 303-10.000.

Lucas Industries plc.: *See—*
Adams, Derek S., 4,435,675, Cl. 320-22.000.

Lucius, John E.: *See—*
Berry, Donald A.; Fabian, David J.; and Lucius, John E., 4,435,035, Cl. 339-99.00R.

Ludwig, George C., to Tom McGuane Industries, Inc. Fuel flow regulator control for a diesel engine with exhaust gas driven turbocharger. 4,434,761, Cl. 123-383.000.

Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R. T. Process for preparing substituted urea derivatives. 4,435,567, Cl. 544-165.000.

Luh, Howard H., to Ford Aerospace & Communications Corp. Grating lobe eliminator. 4,435,714, Cl. 343-753.000.

Lupo, Frank V. Roof bolter vehicle and wheels therefor. 4,434,864, Cl. 180-6.200.

Luthi, Oscar; and Carlsmith, Lawrence A., to Ingersoll-Rand Company. Mixer for use in pulp processes. 4,435,085, Cl. 366-155.000.

Lutz, Dieter; Nagler, Franz; Thicler, Wolfgang; and Tellert, Rudy, to Sachs-Systemtechnik GmbH. System for automatic actuation of a motor vehicle clutch. 4,434,879, Cl. 192-0.052.

Lynell Medical Technology Inc.: *See—*
Poler, Stanley, 4,434,515, Cl. 3-13.000.

Lyons, William C. Downhole turbine rotary drilling device. 4,434,862, Cl. 175-103.000.

Lysenko, Zenon; and Pews, Richard G., to Dow Chemical Company, The. Process for the preparation of substituted pyridines. 4,435,573, Cl. 546-250.000.

Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., to Vsesojuzny Elektrotekhnickesky Institut Imeni V.I. Lenina. Method of pulsed control of high-tension thyristor rectifying arrangement and system for effecting same. 4,435,748, Cl. 363-54.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,434,987, Cl. 277-80.000.
Guido, Heinz; and Wolfgarten, Hubert, 4,435,812, Cl. 373-72.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Kobler, Ingo; and Mische, Hans-Jurgen, 4,434,979, Cl. 271-307.000.

M&T Chemicals Inc.: *See—*
Lemke, Kenneth W., 4,435,254, Cl. 204-49.000.

M.U. Engineering & Mfg., Inc.: *See—*
Skinner, James R.; and Atwood, Robert G., 4,434,891, Cl. 206-444.000.

Maeda, Nobuyoshi; Itakura, Hideo; and Yagi, Takashi, to Aida Engineering, Ltd. C-Frame press. 4,434,646, Cl. 72-451.000.

Maggi, Gian P.: *See—*
Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, 4,435,333, Cl. 260-465.00D.

Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, to Chimica Bulciago S.r.l. Acetonitrile solvate of an α-aminoacyl chloride hydrochloride. 4,435,333, Cl. 260-465.00D.

Magnotta, Vincent L.: *See—*
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.

Majewski, Klaus-Peter: *See—*
Beyer, Horst; Lonne, Klaus; and Majewski, Klaus-Peter, 4,434,989, Cl. 277-235.00B.

Makino, Tomoaki: *See—*
Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, 4,435,769, Cl. 364-464.000.

Makino, Tomoatsu: *See—*
Yamamoto, Norboru; Makino, Tomoatsu; and Okuda, Ryoichi, 4,434,779, Cl. 123-609.000.

Mallams, Allan K.: *See—*
Ganguly, Ashit K.; Mallams, Allan K.; and Liu, Yi-Tsung, 4,435,388, Cl. 424-180.000.

Maly, Zdenek; and Blazek, Vladislav. Arrangement for measurement of dynamic properties of microparticles. 4,435,080, Cl. 356-426.000.

Mammel, Wanda L.: *See—*
Cohen, Leonard G.; and Mammel, Wanda L., 4,435,040, Cl. 350-96.330.

Manchester R & D Partnership: *See—*
Fergason, James L., 4,435,047, Cl. 350-334.000.

Mandel, Richard M. Overhead access assembly. 4,435,010, Cl. 296-100.000.

Mangartz, Karl-Heinz: *See—*
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.

Manktelow, Gerald O.: *See—*
Hunt, Glenn E.; Alexander, Michael C.; Lozano, Gerald L.; and Manktelow, Gerald O., 4,435,703, Cl. 340-723.000.

Mann, Melvin S.: *See—*
Haesloop, William G.; Mann, Melvin S.; and Jones, James W., 4,435,132, Cl. 417-360.000.

Mannuzza, Frank J.: *See—*
Jackson, David E.; and Mannuzza, Frank J., 4,435,506, Cl. 435-189.000.

Manville Service Corporation: *See—*
Fay, Ralph M., 4,435,469, Cl. 428-285.000.

Marcilly, Christian: *See—*
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.

Marcon, Giuliano: *See—*
Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, 4,435,333, Cl. 260-465.00D.

Mariani, Elio; and Ballato, Arthur, to United States of America, Army. Method of frequency trimming surface acoustic wave devices. 4,435,441, Cl. 427-10.000.

Maris, John M. Method of predicting the approaching stall of an aircraft wing. 4,435,695, Cl. 340-966.000.

Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., to Black Clawson Co., The; and Air Products & Chemicals, Inc. Process for the oxygen delignification of pulp mill rejects. 4,435,249, Cl. 162-24.000.

Marsh, Keith D.: *See—*
McCabe, Ralph P.; and Marsh, Keith D., 4,434,763, Cl. 123-440.000.

Marshall, William J., Jr.; and Brigham, Gerald A., to Sanders Associates, Inc. Wall-driven oval ring transducer. 4,435,794, Cl. 367-155.000.

Marston, Alan D.; and Anne, Lenin, to Hewlett-Packard Company. Edge seal with polysilicon in LOCOS process. 4,435,446, Cl. 427-93.000.

Martel, Thomas J.: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.

Martin, Andrew C.: *See—*
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.

Martin, Anthony F.: *See—*
Gerritsen, Jan; Atkinson, Ronald E.; and Martin, Anthony F., 4,435,317, Cl. 252-547.000.

Martin, Emil; Barch, Herbert W.; and Greer, S. Thomas, to PPG Industries, Inc. Applicator for applying a coating to a surface. 4,434,521, Cl. 15-230.110.

Martin, Gordon W.; and Strohl, John, to Bendix Corporation, The. Oxygen sensing cell. 4,435,268, Cl. 204-408.000.

Martin, William B.: *See—*
Denk, Jpseph; and Martin, William B., 4,434,881, Cl. 192-89.00A.

Martino, Germain: *See—*
Dinh, Chan T.; Desvard, Alain; Jacquin, Yves; and Martino, Germain, 4,435,277, Cl. 208-108.000.
Juguin, Bernard; Franck, Jean-Pierre; Jacquin, Yves; Marcilly, Christian; and Martino, Germain, 4,435,274, Cl. 208-80.000.

Martinray Industries Ltd.: *See—*
Labelle, Henri M. R., 4,434,525, Cl. 16-355.000.

Maruko Seiyaku Co., Ltd.: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, 4,435,566, Cl. 544-117.000.

Marx, Matthias: *See—*
Horn, Peter; Hesse, Anton; Heckmann, Walter; Lebert, Ulrich; Guthmann, Alfred; and Marx, Matthias, 4,435,537, Cl. 524-391.000.

Mashimo, Yukio: *See—*
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.

Maskasky, Joe E., to Eastman Kodak Company. Controlled site epitaxial sensitization. 4,435,501, Cl. 430-434.000.

Masler, William F., III. Method of making and using novel scale inhibiting terpolymer. 4,435,556, Cl. 526-317.000.

Masonite Corporation: *See—*
Cook, Melvin W., 4,434,900, Cl. 211-189.000.

Massachusetts Institute of Technology: *See—*
Wurtman, Richard J., 4,435,424, Cl. 424-319.000.

Massey-Ferguson Services N.V.: *See—*
Bailey, Alfred J., 4,434,605, Cl. 56-16.400.

Masuda, Senichi; and Nonogaki, Yutaka. Bipolar ionic current probe unit and method for measuring positive and negative current densities by means of the same probe unit. 4,435,681, Cl. 324-459.000.

Masuda, Toyohiko: *See—*
Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, 4,434,620, Cl. 60-657.000.

Mathis, Ronald D.; and Reed, Jerry O., to Phillips Petroleum Company. Process for cleaning metal surfaces of poly(arylene sulfide) deposits. 4,435,221, Cl. 134-2.000.

Matsko, Theodore N., to Babcock & Wilcox Company, The. Breakpoint chlorination control system. 4,435,291, Cl. 210-739.000.

Matsko, Theodore N.: *See—*
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.

Matson, Carl G., to Hamilton Equipment Co., Inc. Self-clamping rotary vibrator and mount therefor. 4,435,083, Cl. 366-114.000.

Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, to Kanebo, Ltd.; and Kanebo Synthetic Fibers Ltd. Apparatus for treating pile articles. 4,434,631, Cl. 68-171.000.

Matsui, Yasuo, to Hitachi, Ltd. Frame synchronizer. 4,435,826, Cl. 375-115.000.

Matsumiya, Saburo; Washimi, Koichi; and Tanji, Tsuneo, to Toyo Engineering Corporation. Method of treating heavy oil. 4,435,276, Cl. 208-96.000.

Matsumoto, Akio; and Araki, Kazuhiro, to Matsushita Electric Works, Ltd. Motor-driven movement for timepiece. 4,435,087, Cl. 368-76.000.

Matsumoto, Keisuke: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Matsumoto, Muneaki: *See—*
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.

Matsumoto Seiyaku Kogyo Kabushiki Kaisha: *See—*
Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, 4,435,587, Cl. 556-410.000.

Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, to Tokyo Tatsuno Co., Ltd. Liquid quantity measuring apparatus. 4,434,657, Cl. 73-304.00C.

Matsumura, Hiroshi; Murakami, Fumiki; and Sonobe, Hiroshi, to Minemet Recherche. Process for the preparation of methacrylic acid esters. 4,435,594, Cl. 560-205.000.

Matsumura, Hisashi: *See—*
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, to Nippon Shinyaku Co., Ltd. Carbamylpiperazine compounds. 4,435,397, Cl. 424-250.000.

Matsunawa, Masahiko: *See—*
Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,066, Cl. 355-3.0SC.

Matsuo, Saburo: *See—*
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, 4,434,976, Cl. 266-268.000.

Matsuo, Takashi: *See—*
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.

Matsuoka, Fumio: *See—*
Chiba, Masakazu; and Matsuoka, Fumio, 4,435,000, Cl. 280-806.000.

Matsuoka, Hiroki; Kato, Yuichi; and Iwata, Minoru, to Toyota Jidosha Kabushiki Kaisha. Air assist device of fuel injection type internal combustion engine. 4,434,766, Cl. 123-472.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hamane, Tokuhito; and Tasai, Masaaki, 4,434,945, Cl. 242-7.140.
Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, 4,434,819, Cl. 140-92.100.
Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, 4,435,842, Cl. 455-181.000.
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.
Yamashita, Ichiro; and Ise, Yukihiko, 4,434,671, Cl. 73-862.480.

Matsushita Electric Works, Ltd.: *See—*
Matsumoto, Akio; and Araki, Kazuhiro, 4,435,087, Cl. 368-76.000.

Matsushita, Hiroshi: *See—*
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Matsushita, Toshihiko; Hiraishi, Shigetoshi; and Morishita, Sadao, to Mitsubishi Paper Mills, Ltd. Transfer-onto-plain paper type of pressure-sensitive copying paper. 4,435,471, Cl. 428-320.800.

Matsuura, Masahiko: *See—*
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, 4,434,749, Cl. 123-41.020.

Matui, Kunihiko; and Tanaka, Shikei, to Tokyo Shibaura Denki Kabushiki Kaisha. In-phase voltage elimination circuit for Hall element. 4,435,653, Cl. 307-309.000.

Matumoto, Michiaki; Etou, Hironori; and Nakamoto, Hidekazu, to Hitachi, Ltd. Fuel supply control system. 4,435,151, Cl. 431-90.000.

Mauer, Richard L., to Rapid Ring Co., Inc. Rotary press punch ring and method of changing punches carried thereby. 4,434,690, Cl. 83-13.000.

Maus, Julius, to Gretsch-Unitas GmbH. Control mechaniam for a window or door. 4,434,678, Cl. 74-471.00R.

Mayer, James M., to Monsanto Company. Substituted-butanediperoxoic acids and process for bleaching. 4,435,335, Cl. 260-502.00R.

Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., to Atari, Inc. Data processing system with programmable graphics generator. 4,435,779, Cl. 364-900.000.

Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Programmable channel selecting apparatus. 4,435,842, Cl. 455-181.000.

McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., to Hauserman, Inc. Partition head assembly for partition wall panels. 4,434,596, Cl. 52-243.100.

McAusland, Robert R., to Advanced Technology Laboratories. Elongated printed circuit flexible cables and method of making the same. 4,435,614, Cl. 174-117.0PC.

McBeth, Raymond A.: *See—*
Wright, Brian D.; McBeth, Raymond A.; and Wessels, Egon, 4,434,741, Cl. 114-264.000.

McCabe, Ralph P., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine. 4,434,762, Cl. 123-438.000.

McCabe, Ralph P.; and Marsh, Keith D., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine. 4,434,763, Cl. 123-440.000.

McCall, Francis L., to Specified Ceiling Systems. Drop ceiling frame construction. 4,434,599, Cl. 52-729.000.

McCarthy, Patrick J. Clothesline mast. 4,434,898, Cl. 211-1.300.

McCartney, Michael S., to Combustion Engineering, Inc. Method for low load operation of a coal-fired furnace. 4,434,727, Cl. 110-347.000.

McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., to International Business Machines Corporation. Interactively rearranging spatially related data. 4,435,777, Cl. 364-900.000.

McCaskill, Rex A.: *See—*
Cason, William C.; McCaskill, Rex A.; and Karner, Francisco A., 4,435,778, Cl. 364-900.000.

McCollough, John K., Jr.; and O'Neill, John H., Jr., to Milliken Research Corporation. Apparatus for the application of liquids to moving materials. 4,434,632, Cl. 68-205.00R.

McCombie, Stuart W., to Schering Corporation. (5R-6S,8R)-6-(1-Hydroxyethyl)-2-(2-glycylaminoethylthio)-penem-3-carboxylic acid. 4,435,413, Cl. 424-270.000.

McCoy, David R., to Texaco Inc. Method for demulsification of bitumen emulsions using polyalkylene polyamine salts. 4,434,850, Cl. 166-267.000.

McDonnell Douglas Corporation: *See—*
Cox, Ronald L., 4,435,100, Cl. 403-27.000.
Wilder, Vernon H., 4,435,109, Cl. 408-14.000.

McDonough, Kevin C.: *See—*
Bellay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., 4,435,763, Cl. 364-200.000.
McDougall, Robert J., to Black & Decker Inc. Dust shroud for an abrading tool. 4,434,587, Cl. 51-170.0MT.
McDowell, Hunter L., to United States of America, Army. Broadband slow wave structure attenuator. 4,435,689, Cl. 333-81.00A.
McEvoy, Francis J.; and Albright, Jay D., to American Cyanamid Company. Substituted N-(ω-aroylpropionyl) derivatives of α-amino acids and esters thereof. 4,435,329, Cl. 260-455.00R.
McHenry, Max D., to A. B. Dick Company. Printing apparatus including serial printing means. 4,434,715, Cl. 101-76.000.
McInroy, John W.: *See—*
McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,435,777, Cl. 364-900.000.
McKechnie, Ronald M. K., to Vaal Reefs Exploration and Mining Company Limited. Guide roller for skip or cage. 4,434,876, Cl. 187-95.000.
McKee, James A.: *See—*
Ross, Ashley M.; and McKee, James A., 4,434,712, Cl. 99-646.00S.
McKenzie, Robert W., to Rockwell International Corporation. Slide lock handle. 4,435,029, Cl. 312-320.000.
McKinney, Linda D.; and Jenkines, Randall C., to Dow Chemical Co., The. Carpet backed with fire suppressant polyurethane composition. 4,435,459, Cl. 428-95.000.
McManus, John R.: *See—*
Jackson, Dale; and McManus, John R., 4,434,841, Cl. 165-125.000.
McNulty, John P., to Bristol Composite Materials Engineering Limited. Elongate structure. 4,435,242, Cl. 156-264.000.
McQuay Inc.: *See—*
Lu, James W. B., 4,434,846, Cl. 165-161.000.
Mead Corporation, The: *See—*
Clark, Frederic L.; Kaffenberger; Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.
Culpepper, Will L., 4,434,602, Cl. 53-473.000.
Mech, Stephen J., Jr.: *See—*
Michaels, Jennifer E.; Michaels, Thomas E.; and Mech, Stephen J., Jr., 4,434,660, Cl. 73-622.000.
Mechanical Technology Incorporated: *See—*
Walsh, Michael M., 4,434,617, Cl. 60-520.000.
Mecklenbrauker, Wolfgang F. G.: *See—*
Claasen, Theodoor A. C. M.; and Mecklenbrauker, Wolfgang F. G., 4,435,774, Cl. 364-726.000.
Medem, Harald: *See—*
Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.
Medical College of Wisconsin: *See—*
Froncisz, Wojciech; and Hyde, James S., 4,435,680, Cl. 324-316.000.
Meisch, Robert L.: *See—*
Gemar, Charles; and Meisch, Robert L., 4,434,953, Cl. 242-107.000.
Mekosh, George, Jr., to Budd Company, The. Steering motorized truck. 4,434,719, Cl. 105-168.000.
Melka, James P., Jr.; and Barnes, John F., to Western Electric Co., Inc. Method and apparatus for the recovery of palladium from spent electroless catalytic baths. 4,435,258, Cl. 204-109.000.
Mendel, Eric: *See—*
Basi, Jagtar S.; and Mendel, Eric, 4,435,247, Cl. 156-636.000.
Menzel, Julian M., to Rib Loc (Hong Kong) Ltd. Plastic tubular objects. 4,435,460, Cl. 428-129.000.
Mercadier, Michel: *See—*
Favie, Claude; and Mercadier, Michel, 4,435,545, Cl. 525-344.000.
Merck & Co., Inc.: *See—*
Belanger, Patrice C.; Williams, Haydn W. R.; and Rokach, Joshua, 4,435,579, Cl. 549-12.000.
Hartman, George D., 4,435,400, Cl. 424-250.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Watanabe, Takaji; and Noguchi, Tamio, 4,435,220, Cl. 106-291.000.
Mericle, Robert W., to Ethicon, Inc. Instrument for applying ligating clips. 4,434,795, Cl. 128-303.00R.
Meritt, Allan S., to International Business Machines Corporation. Balanced channel finding method. 4,435,755, Cl. 364-200.000.
Merrell Dow Pharmaceuticals: *See—*
Harrison, Boyd L.; and Doherty, Niall S., 4,435,420, Cl. 424-277.000.
Merrell Toraude et Compagnie: *See—*
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.
Mertens, Guy; and Laroche, Pierre, to Glaverbel. Composite mirror panels. 4,435,043, Cl. 350-288.000.
Meshberg, Philip. Personal defense actuator. 4,434,914, Cl. 222-153.000.
Messer Griesheim GmbH: *See—*
Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, 4,434,935, Cl. 239-85.000.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Engelsberger, Ernst; and Schulz, Ralf-Thilo, 4,434,580, Cl. 49-502.000.
Messina, Neale A.: *See—*
Summerfield, Martin; Messina, Neale A.; and Ingram, Larry S., 4,434,655, Cl. 73-167.000.
Mesta Machine Company: *See—*
Petros, Andrew J., 4,435,096, Cl. 384-147.000.
Metallgesellschaft Aktiengesellschaft: *See—*
Schwartz, Werner; and Fischer, Peter, 4,435,211, Cl. 75-62.000.
Meulendyk, John W., to Pneumo Corporation. Free piston engine pump with energy rate smoothing. 4,435,133, Cl. 417-364.000.
Meyer, Franklin, Jr. Indicator snap gage assemblies. 4,434,557, Cl. 33-148.00R.
Meyerhoff, Jerome D.; and Forshay, Steven E., to Motorola, Inc. Remote control circuit. 4,435,844, Cl. 455-218.000.
Meyerle, Michael: *See—*
Friedrich, Ehrlinger; and Meyerle, Michael, 4,434,681, Cl. 74-687.000.
Miale, Joseph N.: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,435,516, Cl. 502-71.000.
Michaelis, Klaus-Peter; and Schneider, Rainer, to Ciba-Geigy Corporation. Dithiophosphates. 4,435,338, Cl. 260-929.000.
Michaels, Jennifer E.; Michaels, Thomas E.; and Mech, Stephen J., Jr., to United States of America, Energy. Ultrasonic inspection and deployment apparatus. 4,434,660, Cl. 73-622.000.
Michaels, Thomas E.: *See—*
Michaels, Jennifer E.; Michaels, Thomas E.; and Mech, Stephen J., Jr., 4,434,660, Cl. 73-622.000.
Michelet, Daniel: *See—*
Formanek, Karel; Michelet, Daniel; and Petre, Dominique, 4,435,601, Cl. 568-430.000.
Micheletto, Renato. Multifunctional instrument for determining the position and course of the sun, the inclination for maximal insolation of a plane and the correspondence from solar and conventional time. 4,435,640, Cl. 235-78.00M.
Midorikawa, Akira; Kojima, Kenji; and Uchimura, Kazuo, to Ricoh Company, Ltd. Cleaning apparatus for electrophotography comprising lubricant film applicator means. 4,435,074, Cl. 355-15.000.
Miessen, Ralf; Wilsing, Hans; and Schultze-Gebhardt, Fritz, to Bayer Aktiengesellschaft. Process for the production of highly shrinkable split tows of acrylonitrile polymers. 4,434,530, Cl. 19-0.460.
Mihayashi, Keiji; Ogawa, Tadashi; and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,435,503, Cl. 430-548.000.
Miho, Takuya: *See—*
Watanabe, Shoji; and Miho, Takuya, 4,435,542, Cl. 525-118.000.
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo. Vortex injector. 4,435,129, Cl. 417-151.000.
Miki, Yukio: *See—*
Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, 4,435,058, Cl. 354-403.000.
Mikroyannidis, Ioannis A.: *See—*
Tsolis, Alexandros K.; and Mikroyannidis, Ioannis A., 4,435,533, Cl. 524-106.000.
Mikulecky, Harvey W.: *See—*
Link, Edwin A.; and Mikulecky, Harvey W., 4,435,690, Cl. 335-37.000.
Milanowski, G. Jan: *See—*
Drost, Cornelis J.; and Milanowski, G. Jan, 4,434,648, Cl. 73-1.0DV.
Miles Laboratories, Inc.: *See—*
Jackson, David E.; and Mannuzza, Frank J., 4,435,506, Cl. 435-189.000.
Millar, Thomas D., to AHI Operations Limited. Methods of and/or apparatus for milking animals. 4,434,744, Cl. 119-14.020.
Miller, David K.: *See—*
Hasinger, Siegfried H.; Howard, James M.; and Miller, David K., 4,435,810, Cl. 372-58.000.
Miller, Richard: *See—*
Nall, Lawson H.; and Miller, Richard, 4,434,689, Cl. 82-4.00C.
Miller, Richard L., to Xerox Corporation. Toner removal apparatus. 4,435,073, Cl. 355-15.000.
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., to International Business Machines Corporation. Buffered peripheral subsystems. 4,435,762, Cl. 364-200.000.
Milliken Research Corporation: *See—*
McCollough, John K., Jr.; and O'Neill, John H., Jr., 4,434,632, Cl. 68-205.00R.
Rogers, Jack S., 4,435,467, Cl. 428-254.000.
Mills, Larry E.; and Dove, Thomas D., to American Standard Inc. Envelope assembly. 4,435,001, Cl. 282-11.50A.
Mims, Donald S.: *See—*
Haynes, Stewart, Jr.; and Mims, Donald S., 4,434,851, Cl. 166-272.000.
Mine, Akihiko: *See—*
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.
Minemet Recherche: *See—*
Matsumura, Hiroshi; Murakami, Fumiki; and Sonobe, Hiroshi, 4,435,594, Cl. 560-205.000.
Miner, Jay G.: *See—*
Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., 4,435,779, Cl. 364-900.000.
Minnesota Mining and Manufacturing Company: *See—*
Randklev, Ronald M., 4,435,160, Cl. 433-9.000.
Minogue, Robert W. Connector housing for neon tubing. 4,434,569, Cl. 40-545.000.
Minolta Camera Kabushiki Kaisha: *See—*
Nakai, Masaaki; and Sahara, Masayoshi, 4,435,057, Cl. 354-426.000.
Wada, Kenichi, 4,435,065, Cl. 355-3.0DD.
Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, 4,435,058, Cl. 354-403.000.

Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., to Exxon Research and Engineering Co. Polymerization reaction by charge injection. 4,435,261, Cl. 204-168.000.
Mische, Hans-Jurgen: *See—*
Kobler, Ingo; and Mische, Hans-Jurgen, 4,434,979, Cl. 271-307.000.
Miserlis, Constantine D., to Badger Company, Inc., The. Process for the production of phthalic anhydride. 4,435,580, Cl. 549-248.000.
Miserlis, Constantine D., to Badger Company, Inc., The. Process for the production of phthalic anhydride. 4,435,581, Cl. 549-248.000.
Mishkin, Ronald H.: *See—*
Oberlander, Charles N., 4,434,698, Cl. 84-483.00A.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Morishita, Mitsuharu, 4,435,676, Cl. 322-33.000.
Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, 4,435,769, Cl. 364-464.000.
Ohta, Kazutoshi; and Watanabe, Eiki, 4,434,873, Cl. 187-28.000.
Tomuro, Yasuta, 4,435,656, Cl. 307-513.000.
Mitsubishi Paper Mills, Ltd.: *See—*
Matsushita, Toshihiko; Hiraishi, Shigetoshi; and Morishita, Sadao, 4,435,471, Cl. 428-320.800.
Mitsubishi Petrochemical Company Limited: *See—*
Takeda, Makoto; Miyoshi, Kazuhito; Kaitoh, Mitsumasa; and Omori, Hiroyuki, 4,435,251, Cl. 203-50.000.
Mitsubishi Rayon Co., Ltd.: *See—*
Demarthe, Jean-Michel; Fossi, Paolo; and Gandon, Louis, 4,435,368, Cl. 423-40.000.
Kishida, Kazuo; Sasaki, Isao; and Mukai, Nobuhiro, 4,435,540, Cl. 524-780.000.
Mitsuboshi Belting Ltd.: *See—*
Inae, Shoji; and Okamoto, Harunori, 4,435,236, Cl. 156-132.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.
Miura, Kenji: *See—*
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.
Miura, Shuji: *See—*
Ito, Hiroo; Kasanami, Takeo; and Miura, Shuji, 4,435,346, Cl. 264-54.000.
Miwa, Hirohide; and Shimura, Takaki, to Fujitsu Limited. Ultrasonic diagnostic system. 4,434,661, Cl. 73-625.000.
Miwa, Hirohide: *See—*
Miyazaki, Junji; Miwa, Hirohide; and Shimura, Takaki, 4,434,658, Cl. 73-618.000.
Miwa, Naoto: *See—*
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.
Miyai, Masahiko: *See—*
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, to Sumitomo Electric Industries, Ltd.; and Nippondenso Co., Ltd. Low electrostatic capacity wire-wound type ignition cable. 4,435,692, Cl. 338-214.000.
Miyano, Muneyuki, to Kurita Machinery Manufacturing Company Limited. Expressing plate assembly for filter press. 4,435,288, Cl. 210-227.000.
Miyazaki, Junji; Miwa, Hirohide; and Shimura, Takaki, to Fujitsu Limited. Ultrasonic wave tomographic imaging system. 4,434,658, Cl. 73-618.000.
Miyazaki, Yoshihisa: *See—*
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,434,707, Cl. 91-376.00R.
Miyoshi, Kazuhito: *See—*
Takeda, Makoto; Miyoshi, Kazuhito; Kaitoh, Mitsumasa; and Omori, Hiroyuki, 4,435,251, Cl. 203-50.000.
Mizoe, Kenji: *See—*
Kojima, Junichiroh; and Mizoe, Kenji, 4,435,840, Cl. 455-33.000.
Mizuhara, Howard, to GTE Products Corporation. Pressed and sintered composite body comprising a thin tape cast layer and a thick base layer. 4,435,480, Cl. 428-548.000.
Mizuhashi, Mamoru: *See—*
Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Nagai, Junichi, 4,435,048, Cl. 350-357.000.
Mizukoshi, Kiyoshi: *See—*
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, 4,435,566, Cl. 544-117.000.
Mizuno, Toru: *See—*
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.
Mizusawa, Akira, to Nifco Inc. Nut. 4,435,111, Cl. 411-437.000.
Mobay Chemical Corporation: *See—*
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.
Mobil Oil Corporation: *See—*
Audeh, Costandi A., 4,435,270, Cl. 208-11.00R.
Chang, Clarence D.; and Miale, Joseph N., 4,435,516, Cl. 502-71.000.
Derr, Walter R.; and Sarli, Michael S., 4,435,275, Cl. 208-89.000.
Modine Manufacturing Company: *See—*
Granetzke, Dennis C., 4,434,773, Cl. 123-557.000.
Mon, George, to United States of America, Army. Laminar proportional amplifier and laminar jet angular rate sensor with rotating splitter for null adjustment. 4,434,813, Cl. 137-829.000.
Mondini, Giancarlo, to Rieter Machine Works, Ltd. Apparatus for controlling the working conditions in a processing machine of the staple fiber spinning plant. 4,434,531, Cl. 19-99.000.
Monsanto Company: *See—*
Franz, John E., 4,435,204, Cl. 71-86.000.
Graham, Tommy E., 4,435,191, Cl. 55-16.000.
Mayer, James M., 4,435,335, Cl. 260-502.00R.
Montedison S.p.A.: *See—*
Cainelli, Gianfranco; Fos', Marco; Ronchi, Achille U.; and Gardano, Andrea, 4,435,575, Cl. 546-341.000.
Carazzolo, Gianalvise; Colombo, Giancarlo; Gavella, Giulio; Giacomuzzo, Silvano; and Gianetti, Franco, 4,435,604, Cl. 568-854.000.
Montgomery, Marshall N., to Dresser Industries, Inc. Apparatus for testing earth formations. 4,434,653, Cl. 73-151.000.
Moore, Ann A., to Snugli, Inc. Soft orthopedic pouch-type infant carrier. 4,434,920, Cl. 224-160.000.
Moore, Bernard S.: *See—*
Cue, Berkeley W., Jr.; and Moore, Bernard S., 4,435,578, Cl. 548-309.000.
Moore, Jack M.: *See—*
Ciaramitaro, David A.; and Moore, Jack M., 4,435,232, Cl. 149-2.000.
Moore, L. Dow: *See—*
Das, Balbhadra; and Moore, L. Dow, 4,435,474, Cl. 428-391.000.
Moormann, Hans: *See—*
Giebel, Burkhard; Moormann, Hans; and Schrader, Lothar, 4,435,789, Cl. 365-203.000.
Morawiez, Alfred: *See—*
Lauer, Gerhard; Morawiez, Alfred; and Wild, Jurgen, 4,434,559, Cl. 33-174.00L.
Morel, Michel: *See—*
Henaff, Louis; Morel, Michel; and Favennec, Jean L., 4,434,742, Cl. 118-723.000.
Morel, Thomas J.; Haynes, Stewart, Jr.; and Park, Jack H., to Texaco Inc. Method of enhanced oil recovery employing nitrogen injection. 4,434,852, Cl. 166-273.000.
Morello, Herbert: *See—*
Azeez, Syed A.; Leipelt, Paul A.; and Morello, Herbert, 4,435,243, Cl. 156-361.000.
Mori, Yasuki: *See—*
Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,435,492, Cl. 430-58.000.
Mori, Yoshiaki: *See—*
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, 4,434,588, Cl. 51-344.000.
Morimoto, Masahiro: *See—*
Imai, Hajime; Morimoto, Masahiro; and Fujiwara, Takao, 4,435,443, Cl. 427-38.000.
Morinaga, Kazuo: *See—*
Tsukada, Toshiji; and Morinaga, Kazuo, 4,435,064, Cl. 355-1.000.
Morishita, Hirosada: *See—*
Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,435,492, Cl. 430-58.000.
Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, 4,435,560, Cl. 528-170.000.
Morishita, Mitsuharu, to Mitsubishi Denki Kabushiki Kaisha. Regulator for controlling output from generator having ambient temperature override. 4,435,676, Cl. 322-33.000.
Morishita, Sadao: *See—*
Matsushita, Toshihiko; Hiraishi, Shigetoshi; and Morishita, Sadao, 4,435,471, Cl. 428-320.800.
Morita, Akiyoshi; and Sato, Mitsuyoshi, to Toyota Jidosha Kabushiki Kaisha. Screw in-line type injection molding method and apparatus for low-pressure injection molding. 4,435,142, Cl. 425-145.000.
Morita, Hideo; and Iwasa, Yoshio, to Nissan Motor Co., Ltd. Air induction control device for internal combustion engine. 4,434,778, Cl. 123-587.000.
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, to Toyo Kogyo Co., Ltd. Cooling system for liquid-cooled internal combustion engines. 4,434,749, Cl. 123-41.020.
Moritz, Robert R., to Rolls-Royce Incorporated. Low drag surface. 4,434,957, Cl. 244-35.00R.
Morris, Alan J., to Kerr-McGee Chemical Corporation. Process for producing titanium tetrachloride. 4,435,365, Cl. 423-76.000.
Morris, Earl L.; and Hafner, V. Walter, to Acorn Engineering Company. Wall sleeve and installation jig for multiple adjacent fixture mounting. 4,434,516, Cl. 4-252.00R.
Morris, John D. Frozen dessert. 4,435,439, Cl. 426-565.000.
Morrow, Charles R.: *See—*
Tschudy, Donald B.; and Morrow, Charles R., 4,434,865, Cl. 180-19.00H.
Morton, Edward W.: *See—*
Evans, George S.; Gilmore, John F.; and Morton, Edward W., 4,435,670, Cl. 315-58.000.
Mosca, Virgilio: *See—*
Bonaparte, Ennio; and Mosca, Virgilio, 4,435,619, Cl. 179-17.00R.
Mosely, John F.; and Austin, Stephen R., to Superior Handling Equipment, Inc. Self-propelled freight handling truck. 4,435,113, Cl. 414-347.000.
Moser, Gottfried; Nau, Walter; and Neumann, Ernst-Dieter, to Klockner-Humboldt-Deutz AG. System for heating the operators cabin of a

machine powered by an internal combustion engine. 4,434,934, Cl. 237-12.30R.
Mosimann, David. Dental turbine. 4,435,161, Cl. 433-132.000.
Moss, Gerald, to Exxon Research and Engineering Co. Low pollution method of burning fuels. 4,435,148, Cl. 431-7.000.
Moss, William H.: *See—*
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.
Motorola, Inc.: *See—*
Dellande, Brian W.; and Wurzburg, Henry, 4,435,824, Cl. 375-46.000.
Gasparaitis, Bernard; Long, Thomas W., Jr.; and Richardson, Charles P., 4,435,713, Cl. 343-702.000.
Joseph, Eric D.; and Davies, Robert B., 4,435,678, Cl. 323-273.000.
Meyerhoff, Jerome D.; and Forshay, Steven E., 4,435,844, Cl. 455-218.000.
Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., to Conoco Inc. Process for the preparation of linear olefins from triethylaluminum and tripropylaluminum via growth, isomerization and metathesis. 4,435,606, Cl. 585-324.000.
Mozer, Forrest S. Method and apparatus for time domain compresion and synthesis of unvoiced audible signals. 4,435,831, Cl. 381-30.000.
Mukai, Nobuhiro: *See—*
Kishida, Kazuo; Sasaki, Isao; and Mukai, Nobuhiro, 4,435,540, Cl. 524-780.000.
Mukai, Yasuteru: *See—*
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Ignition apparatus for internal combustion engine. 4,434,753, Cl. 123-143.00B.
Mulcahy, Harry W.; and Kaufhold, Horst T., to AMSTED Industries Incorporated. Multi-rate side bearing for a railway truck. 4,434,720, Cl. 105-199.0CB.
Muller, Beat; and Roth, Martin, to Ciba-Geigy AG. Cationic hydrazone derivatives, processes for their preparation and their use. 4,435,489, Cl. 430-17.000.
Muller, Leo: *See—*
Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, 4,434,882, Cl. 192-98.000.
Muller, Manfred: *See—*
Forberg, Horst; Herfort, Hermann; Hegner, Gunter; and Muller, Manfred, 4,434,542, Cl. 29-566.400.
Muller, Peter R.: *See—*
Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.
Muller, Rolf: *See—*
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.
Muller, Thomas; Schadlich, Fritz; and Stabler, Manfred, to Robert Bosch GmbH. Machine tool, especially a hand-held power tool with a turnable clamping element for clamping a tool on the tool spindle. 4,434,586, Cl. 51-170.0PT.
Munakata, Hideo: *See—*
Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, 4,435,475, Cl. 428-409.000.
Munekata, Kenichi; Unno, Kunihiko; and Suzuki, Yasuo, to Toyoda Koki Kabushiki Kaisha. Bed for grinding machine. 4,434,585, Cl. 51-166.00R.
Murahara, Koichi, to Piolt, Man-Nen-Hitsu Kabushiki Kaisha. Fountain pen with motor feed. 4,435,099, Cl. 401-145.000.
Murakami, Fumiki: *See—*
Matsumura, Hiroshi; Murakami, Fumiki; and Sonobe, Hiroshi, 4,435,594, Cl. 560-205.000.
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, to Nippon Steel Corporation. Concentric multi-tube-system nozzle situated beneath the surface of the melt in a refining vessel. 4,434,976, Cl. 266-268.000.
Murakami, Yasushi: *See—*
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.
Murdoch, Ian G., to Oilgear Company, The. Coupling seal and method of assembly. 4,434,811, Cl. 137-515.000.
Murphy, John S. Insulating structure. 4,434,579, Cl. 49-63.000.
Murray, Lance R.; and Wu, Ta-Ming, to Burroughs Corporation. Two-level threshold circuitry for large scale integrated circuit memories. 4,435,658, Cl. 307-530.000.
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, to Kabushiki Kaisha Yakult Honsha. Composition for promoting growth of bifidobacteria. 4,435,389, Cl. 424-181.000.
Myers, Harry J.: *See—*
August, Charles; and Myers, Harry J., 4,434,667, Cl. 73-861.120.
Myers, William H.; and Dundas, Dennis L., to Hoover Universal, Inc. Split injection mold. 4,435,147, Cl. 425-577.000.
Nabeta, Teiichi: *See—*
Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, 4,434,932, Cl. 236-49.000.
Nabisco Brands, Inc.: *See—*
Caporaso, John A., 4,435,434, Cl. 426-108.000.
Nadan, Joseph S.; Kenney, George C., II; and Carasso, Marino G., to North American Philips Corporation. Clock signal recovery circuit. 4,435,687, Cl. 331-23.000.
Nadeau, Francois: *See—*
Drouet, Michel G.; and Nadeau, Francois, 4,435,631, Cl. 219-124.020.
Nafissi-Varchei, M. Mehdi, to Schering Corporation. Guanidine compounds. 4,435,398, Cl. 424-250.000.
Nagai, Junichi: *See—*
Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Nagai, Junichi, 4,435,048, Cl. 350-357.000.
Nagai, Yoji: *See—*
Ishimaru, Hitoshi; Nagai, Yoji; and Masuda, Toyohiko, 4,434,620, Cl. 60-657.000.
Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, to Mitsubishi Denki Kabushiki Kaisha; and Japan Audatex Co., Ltd. Portable type automobile repair estimate issuing device. 4,435,769, Cl. 364-464.000.
Nagao, Nobuya; and Sakai, Teturou, to Tokyo Shibaura Denki Kabushiki Kaisha. Color signal processing circuit to reduce cross-color disturbance and color fringing. 4,435,725, Cl. 358-36.000.
Nagao, Nobuya: *See—*
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,435,657, Cl. 307-516.000.
Nagata, Kazuo; and Ishii, Susumu, to Yoshida Kogyo K. K. Apparatus for separating castings into necessary and unnecessary pieces. 4,434,923, Cl. 225-97.000.
Nagler, Franz: *See—*
Lutz, Dieter; Nagler, Franz; Thieler, Wolfgang; and Tellert, Rudy, 4,434,879, Cl. 192-0.052.
Nakagami, Kazuto: *See—*
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Nakagawa, Kazuyuki: *See—*
Nishi, Takao; Tanaka, Tatsuyoshi; and Nakagawa, Kazuyuki, 4,435,404, Cl. 424-258.000.
Nakagawa, Mineo: *See—*
Hasegawa, Yoichi; Nakagawa, Mineo; and Hara, Syuji, 4,435,600, Cl. 564-464.000.
Nakagawa, Seisakusho Co., Ltd.: *See—*
Ogawa, Goro, 4,434,533, Cl. 19-247.000.
Nakagawa, Shuichi: *See—*
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.
Nakaguti, Osamu: *See—*
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.
Nakai, Masaaki; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Exposure control device for cameras. 4,435,057, Cl. 354-426.000.
Nakajima, Hideki, to Shimano Industrial Company Limited. Fishing reel having a magnetic brake and non-magnetizable bearing. 4,434,951, Cl. 242-84.52B.
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, to Sony Corporation. Magnetic recording medium. 4,435,485, Cl. 428-694.000.
Nakajima, Kenji: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.
Nakakimura, Hiroshi: *See—*
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.
Nakamoto, Hidekazu: *See—*
Matumoto, Michiaki; Etou, Hironori; and Nakamoto, Hidekazu, 4,435,151, Cl. 431-90.000.
Nakamura, Iwao: *See—*
Chiba, Kazuo; and Nakamura, Iwao, 4,434,977, Cl. 267-33.000.
Nakamura, Kuniyoshi: *See—*
Hagino, Hiroshi; Nakamura, Kuniyoshi; and Kotake, Eiichi, 4,435,673, Cl. 318-254.00A.
Nakamura, Naotaka: *See—*
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.
Nakano, Kazuo: *See—*
Iezuka, Isamu; and Nakano, Kazuo, 4,434,759, Cl. 123-325.000.
Nakata, Tokifumi: *See—*
Okada, Akio; Nakata, Tokifumi; and Nemoto, Kiyoshi, 4,435,134, Cl. 417-428.000.
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Error alarm system for detecting an abnormal condition in a peripheral system of an electronic cash register. 4,435,767, Cl. 364-405.000.
Nakatsugawa, Shigekazu, to Yamasa Shoyu Kabushiki Kaisha. Enhancer of anti-tumor effect. 4,434,788, Cl. 128-1.100.
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, to Kansai Paint Co., Ltd. Emulsion composition containing cellulose derivative. 4,435,531, Cl. 524-37.000.

Nakayashiki, Susumu: *See—*
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.
Nall, Lawson H.; and Miller, Richard, to Tri Tool Inc. Cutter head drive shaft for portable tube end preparation tool. 4,434,689, Cl. 82-4.00C.
Namsick, Raymond J.: *See—*
Knaus, Ernest; Namsick, Raymond J.; and Smith, Herbert D., 4,435,240, Cl. 156-242.000.
Narasaka, Shin: *See—*
Hasegawa, Shumpei; Narasaka, Shin; and Otsuka, Kazuo, 4,434,764, Cl. 123-440.000.
Nati, Salvatore F., Jr.: *See—*
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,435,679, Cl. 323-350.000.
National Distillers and Chemical Corporation: *See—*
Corbett, Herbert O., 4,435,241, Cl. 156-244.110.
Hinnenkamp, James A., 4,435,598, Cl. 562-546.000.
National Presto Industries, Inc.: *See—*
Ott, Richrd B., 4,434,909, Cl. 220-316.000.
National Research Development Corporation: *See—*
Anson, Michael; Pinder, Andrew C.; and Palmer, Alan R., 4,434,800, Cl. 128-665.000.
Hemp, John; and Al-Khazraji, Yousif A. H., 4,434,666, Cl. 73-861.120.
Roberts, Victor C.; and Sainz, Antonio J., 4,434,669, Cl. 73-861.250.
National Research Institute for Metals: *See—*
Tachikawa, Kyoji; and Yoshida, Yuji, 4,435,228, Cl. 148-11.50Q.
National Semiconductor Corporation: *See—*
Page, Ronald W., 4,435,684, Cl. 330-51.000.
Nau, Walter: *See—*
Moser, Gottfried; Nau, Walter; and Neumann, Ernst-Dieter, 4,434,934, Cl. 237-12.30R.
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. Dopaminergic stimulating and antianoxic 4-substituted 2H-indole-2-ones. 4,435,408, Cl. 424-263.000.
Nedreski, Robert J. Dew point sensor. 4,435,091, Cl. 374-20.000.
Nedreski, Robert J.: *See—*
Schmitt, Oscar A.; Nedreski, Robert J.; and Karlson, Eskil, 4,435,163, Cl. 434-263.000.
Neef, Gunter: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Neeff, Rutger: *See—*
Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, 4,435,589, Cl. 560-48.000.
Neffgen, Bernd: *See—*
Burba, Christian; Lucas, Hermann-Josef; and Neffgen, Bernd, 4,435,558, Cl. 528-45.000.
Neichi, Tomohiro: *See—*
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.
Nelson, Randolph J.: *See—*
Christopher, Terry M.; and Nelson, Randolph J., 4,434,616, Cl. 60-451.000.
Nemoto, Kiyoshi: *See—*
Okada, Akio; Nakata, Tokifumi; and Nemoto, Kiyoshi, 4,435,134, Cl. 417-428.000.
Neubauer, Douglas G.: *See—*
Mayer, Steven T.; Miner, Jay G.; Neubauer, Douglas G.; and Decuir, Joseph C., 4,435,779, Cl. 364-900.000.
Neubert, Robert, to Clean-Tex A/S. Floor mats of the washable, dirt adsorbing type. 4,435,451, Cl. 428-15.000.
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, to United States of America, National Aeronautics and Space Administration. Ion mass spectrometer. 4,435,642, Cl. 250-296.000.
Neuhaus, Gunter: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,434,987, Cl. 277-80.000.
Neuhauser, Hans J.; and Veutgen, Hans-Jurgen, to Goetze AG. Wear resistant cast iron alloy with spheroidal graphite separation and manufacturing method therefor. 4,435,226, Cl. 148-3.000.
Neumann, Ernst-Dieter: *See—*
Moser, Gottfried; Nau, Walter; and Neumann, Ernst-Dieter, 4,434,934, Cl. 237-12.30R.
New World Computer Company, Inc.: *See—*
Herman, Robert W., 4,435,736, Cl. 360-103.000.
Newman, Albert L.: *See—*
Szostak, Jan; and Newman, Albert L., 4,434,736, Cl. 112-258.000.
Newman, Robert H.: *See—*
Brooks, Christopher P.; Dodson, Stanley C.; and Newman, Robert H., 4,435,296, Cl. 252-28.000.
Nguyen, Tuan A., to Ball Corporation. Buckle resistance for metal container closures. 4,434,641, Cl. 72-354.000.
Nianbilla Company Limited: *See—*
Zheng, Yea K., 4,435,124, Cl. 416-119.000.
Nichols, Omer: *See—*
Kopech, Paul J.; Ward, Donald F.; Graber, Jay; and Nichols, Omer, 4,434,718, Cl. 102-522.000.
Nickel, Horst: *See—*
Stohr, Frank-Michael; Wild, Peter; and Nickel, Horst, 4,435,334, Cl. 260-501.120.
Nickel, William F. Shellfish mariculture apparatus. 4,434,743, Cl. 119-4.000.
Nicolas, Guy R. Method of treating steel surfaces to prevent wear, and coating obtained thereby. 4,435,227, Cl. 148-6.240.
Niconchuk, Alec W., to North Shore Laboratories Corporation. Repair material for tubeless tires. 4,435,470, Cl. 428-294.000.
Niedecker, Herbert. Process and apparatus for making partially filled air-free sausage casings. 4,434,528, Cl. 17-49.000.
Niedworok, Johannes F. Emergency escape ladder. 4,434,871, Cl. 182-198.000.
Niehues, Heiko: *See—*
Graalmann, Gerhard; and Niehues, Heiko, 4,434,563, Cl. 34-28.000.
Nielsen, Jorgen: *See—*
Fog, Jorgen L.; and Nielsen, Jorgen, 4,434,703, Cl. 89-37.00B.
Niessen, Cornelis: *See—*
Segers, Marinus T. M.; Niessen, Cornelis; and Kuiper, Krijn, 4,435,806, Cl. 371-25.000.
Nifco Inc.: *See—*
Mizusawa, Akira, 4,435,111, Cl. 411-437.000.
Nihon Dixie Company, Limited: *See—*
Iioka, Akira, 4,435,344, Cl. 264-45.100.
Nihon Early Kabushiki Kaisha: *See—*
Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, 4,434,693, Cl. 83-71.000.
Niimi, Hiroshi: *See—*
Hasegawa, Junzo; Kawabata, Susumu; and Niimi, Hiroshi, 4,434,611, Cl. 57-328.000.
Niiyama, Eisuke; and Kodama, Hideyo, to Hitachi, Ltd. Continuous casting apparatus. 4,434,836, Cl. 164-429.000.
Nijhawan, Pramodh; and Avera, William W., to Bahnson Company, The. Baghouse filter. 4,435,197, Cl. 55-341.00R.
Nilsson, C. Gary: *See—*
Hedberg, David J.; and Nilsson, C. Gary, 4,435,734, Cl. 358-335.000.
Nilsson, Ralph L.; and Rangert, Bo R., to EMAB Electrolux Motor Aktiebolag. Arrangement for bearing of a crankshaft. 4,434,756, Cl. 123-195.00R.
Nimry, Tayseer S.: *See—*
Fields: Ellis K.; and Nimry, Tayseer S., 4,435,593, Cl. 560-119.000.
Ninomiya, Masakazu, to Nippondenso Co., Ltd. Air-fuel ratio control for internal combustion engine. 4,434,768, Cl. 123-489.000.
Nippon Air Brake Co., Ltd.: *See—*
Arikawa, Tetsuro, 4,435,768, Cl. 364-426.000.
Nippon Electric Co., Ltd.: *See—*
Dohya, Akihiro; Hino, Yasuhiko; and Abe, Mitsuo, 4,434,544, Cl. 29-578.000.
Fukui, Izumu; Yano, Takeshi; and Hamatsuki, Takeshige, 4,435,666, Cl. 310-328.000.
Ito, Satoaki; and Harada, Hiroshi, 4,435,821, Cl. 375-1.000.
Kimoto, Manabu, 4,435,761, Cl. 364-200.000.
Kojima, Junichiroh; and Mizoe, Kenji, 4,435,840, Cl. 455-33.000.
Tsuzuki, Mitsuo; and Suga, Michihisa, 4,435,721, Cl. 346-140.00R.
Yasuoka, Nobuyuki, 4,435,787, Cl. 365-174.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Fujishima, Masakazu, 4,435,618, Cl. 381-7.000.
Nippon Seiko Kabushiki Kaisha: *See—*
Tagawa, Kenichi; and Iguchi, Takao, 4,435,024, Cl. 308-217.000.
Nippon Shinyaku Co., Ltd.: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,435,397, Cl. 424-250.000.
Nippon Soken, Inc.: *See—*
Inagaki, Mitsuo; and Sasaya, Hideaki, 4,435,140, Cl. 418-259.000.
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.
Nippon Steel Corporation: *See—*
Iuchi, Tohru, 4,435,092, Cl. 374-129.000.
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, 4,434,976, Cl. 266-268.000.
Nippondenso Co., Ltd.: *See—*
Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, 4,434,932, Cl. 236-49.000.
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.
Ninomiya, Masakazu, 4,434,768, Cl. 123-489.000.
Yamamoto, Norboru; Makino, Tomoatsu; and Okuda, Ryoichi, 4,434,779, Cl. 123-609.000.
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, 4,434,775, Cl. 123-564.000.
Nishi, Takao; Tanaka, Tatsuyoshi; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives. 4,435,404, Cl. 424-258.000.

Nishida, Minoru: *See—*
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,434,753, Cl. 123-143.00B.

Nishikawa, Akio: *See—*
Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, 4,435,560, Cl. 528-170.000.

Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, to Matsushita Electric Industrial Company, Limited; and Honda Giken Kabushiki Kaisha. Fuel injection timing signal and crank angle signal generating apparatus. 4,434,770, Cl. 123-494.000.

Nishimura, Katsuo, to Citizen Watch Company Limited. Liquid crystal display device. 4,435,046, Cl. 350-334.000.

Nishimura, Susumu; and Nomura, Hiroaki, to Takeda Chemical Industries, Ltd. 5-[Substituted amino methyl]pyrrolo[2,3-d]pyrimidine-4-one. 4,435,569, Cl. 544-280.000.

Nishimura, Susumu; and Akimoto, Hiroshi, to Takeda Chemical Industries, Ltd. 5-(Phenyl or benzyl amino)methyl-pyrrolo[2,3-d]pyrimidin-4-one. 4,435,570, Cl. 544-280.000.

Niskanen, Toivo; Sundman, Frey; and Tuomaala, Jorma, to A. Ahlstrom Osakeyhtio. Method and apparatus for pumping fiber suspensions. 4,435,122, Cl. 415-121.00B.

Niskanen, Toivo: *See—*
Gullichsen, Johan E.; Harkonen, Esko; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.

Nissan Design International, Inc.: *See—*
Flowers, Allan L., 4,434,919, Cl. 224-42.210.

Nissan Motor Company, Limited: *See—*
Chiba, Kazuo; and Nakamura, Iwao, 4,434,977, Cl. 267-33.000.
Hakamata, Hitoshi, 4,435,011, Cl. 297-113.000.
Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,434,593, Cl. 52-208.000.
Horiuchi, Tomofusa, 4,434,774, Cl. 123-557.000.
Morita, Hideo; and Iwasa, Yoshio, 4,434,778, Cl. 123-587.000.
Sato, Yoshimi, 4,434,999, Cl. 280-752.000.
Shirase, Haruya; and Kondo, Takehisa, 4,434,776, Cl. 123-568.000.

Nissin Kogyo Kabushiki Kaisha: *See—*
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,434,707, Cl. 91-376.00R.

Niswander, James K.: *See—*
Stattel, Raymond J.; and Niswander, James K., 4,435,781, Cl. 364-900.000.

Nitschko, Theodor, to TMC Corporation. Ski binding jaw. 4,434,997, Cl. 280-625.000.

Nitschmann, Karl; Weyda, Gunther; Emmrich, Bodo; and Stimpfig, Karl O., to Stihl, Andreas. Arrangement for lubricating saw chains of power saws. 4,434,556, Cl. 30-123.400.

Nixon, Keith L., to Bell Industries, Inc. Self-centering saw mount. 4,434,684, Cl. 76-37.000.

Noda, Masaki: *See—*
Shinkawa, Keiro; Noda, Masaki; and Sodeyama, Chuichi, 4,435,688, Cl. 331-99.000.

Noda, Yukifumi: *See—*
Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, 4,435,391, Cl. 424-244.000.

Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. M-Phenoxybenzamide derivatives. 4,435,332, Cl. 260-465.00D.

Noguchi, Koji: *See—*
Goto, Ryuji; Yamashita, Keitaro; and Noguchi, Koji, 4,435,494, Cl. 430-122.000.

Noguchi, Tamio: *See—*
Watanabe, Takaji; and Noguchi, Tamio, 4,435,220, Cl. 106-291.000.

Nojima, Shinichi: *See—*
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, 4,435,120, Cl. 414-735.000.

Nolt, James R., Jr., to Allis-Chalmers Corporation. Method for manufacturing babbitted bearings. 4,435,448, Cl. 427-234.000.

Nomoto, Kazuo: *See—*
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.

Nomura, Hiroaki: *See—*
Nishimura, Susumu; and Nomura, Hiroaki, 4,435,569, Cl. 544-280.000.

Nonn, Konrad: *See—*
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.

Nonogaki, Yutaka: *See—*
Masuda, Senichi; and Nonogaki, Yutaka, 4,435,681, Cl. 324-459.000.

Nooijen, Godefridus A. H.: *See—*
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., 4,435,314, Cl. 502-154.000.
van de Leemput, Lambertus J. M. A.; Nooijen, Godefridus A. H.; and van der Loo, Hendrikus W., 4,435,551, Cl. 526-101.000.

North American Philips Corporation: *See—*
Nadan, Joseph S.; Kenney, George C., II; and Carasso, Marino G., 4,435,687, Cl. 331-23.000.

North American Philips Electric Corp.: *See—*
Evans, George S.; Gilmore, John F.; and Morton, Edward W., 4,435,670, Cl. 315-58.000.
Heytmeijer, Herman R., 4,435,284, Cl. 209-3.000.
Plagge, Vernon L.; and Bhalla, Ranbir S., 4,435,669, Cl. 313-634.000.

North Shore Laboratories Corporation: *See—*
Niconchuk, Alec W., 4,435,470, Cl. 428-294.000.

North Wind Power Company, Inc.: *See—*
Coleman, Clint; and Currin, Hugh D., 4,435,646, Cl. 290-44.000.

Northern Engineering Industries, Plc.: *See—*
Brealey, Leslie; Wilson, John H.; and Demircan, Niyazi, 4,434,723, Cl. 110-245.000.

Northern Telecom Limited: *See—*
Aujla, Sharanjit S.; and Lee, John D., 4,435,034, Cl. 339-98.000.

Norton Company: *See—*
Hartline, Stephen D., 4,435,514, Cl. 501-117.000.

Norton, Desmond H. Cross country skiing simulating exerciser. 4,434,981, Cl. 272-97.000.

Norton, Robert L.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.

Nouvertne, Werner: *See—*
Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., 4,435,544, Cl. 525-146.000.

Novak, Jan: *See—*
Svercl, Josef; Novak, Jan; and Kalab, Zdenek, 4,434,645, Cl. 72-402.000.

Novo Industri A/S: *See—*
Barbesgaard, Peder O.; Jensen, Georg W.; and Holm, Poul, 4,435,307, Cl. 252-174.120.

Novotny, Laszlo: *See—*
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo, 4,435,129, Cl. 417-151.000.

Nozaki, Takao: *See—*
Ito, Takashi; and Nozaki, Takao, 4,435,447, Cl. 427-94.000.

Nozaki, Tetsuo: *See—*
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.

Nozawa, Ryoichiro; and Kiya, Nobuyuki, to Fujitsu Fanuc Limited. System for numerically controlling a machine tool. 4,435,771, Cl. 364-474.000.

Nozawa, Takamitsu: *See—*
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.

Numata, Koji: *See—*
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.

Nunnerich, Wilhelm; and Schmidt, Peter. Winding-on device for paper sheets and lengths of textile. 4,434,950, Cl. 242-67.200.

Nunokawa, Kazuo, to Tokyo Kogaku Kikai Kabushiki Kaisha. Working distance detecting device for ophthalmic apparatus. 4,435,051, Cl. 351-208.000.

Nutz, Karl-Diether, to Telefunken electronic GmbH. Zero voltage switch. 4,435,651, Cl. 307-252.0UA.

Nyby Uddeholm Powder Aktiebolag: *See—*
Ahslund, Christer; Andersson, Karl H. T.; and Bergh, Sven S., 4,435,483, Cl. 428-566.000.

Nyitrai, Jozsef: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

O & K Orenstein & Koppel Aktiengesellschaft: *See—*
Behrend, Volkmar; and Roder, Eckhard, 4,435,118, Cl. 414-744.00R.

Obata, Haruyuki: *See—*
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, 4,434,775, Cl. 123-564.000.

Obata, Tokio: *See—*
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Obayashi, Hideki: *See—*
Kohama, Tokio; Huzino, Seizi; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,434,767, Cl. 123-481.000.

Oberkirch, Wolfgang: *See—*
Ebneth, Harold; Fitzky, Hans G.; and Oberkirch, Wolfgang, 4,435,465, Cl. 428-195.000.

Oberlander, Charles N., to Mishkin, Ronald H.; Pappas, James T.; and Quast, W. Patrick, part interest to each. Transposable sheet music. 4,434,698, Cl. 84-483.00A.

Obo Bettermann OHG, Firma: *See—*
Jordan, Ernst G., 4,435,630, Cl. 219-98.000.

Occidental Oil Shale, Inc.: *See—*
Ricketts, Thomas E., 4,435,017, Cl. 299-19.000.

Oce-Nederland B.V.: *See—*
de Putter, Jan A.; and Tummers, Paul J. H., 4,435,493, Cl. 430-87.000.
Draai, Willem T.; Pleyers, Jozef J. A.; and Kuin, Nicolaas P. J., 4,435,067, Cl. 355-3.0TR.

Ochii, Kiyofumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device with dummy word line/sense amplifier activation. 4,435,793, Cl. 365-233.000.

Ochsner, Paul A.: *See—*
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, 4,435,585, Cl. 549-446.000.

O'Donnell & Associates Inc.: *See—*
Porowski, Janek S.; O'Donnell, William J.; and Fasiczka, Ray G., 4,434,840, Cl. 165-82.000.

O'Donnell, William J.: *See—*
Porowski, Janek S.; O'Donnell, William J.; and Fasiczka, Ray G., 4,434,840, Cl. 165-82.000.

Oehy, Peter, to Rieter Machine Works, Ltd. Apparatus and method for depositing textile fiber sliver. 4,434,532, Cl. 19-159.00R.

Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, to Degussa Aktiengesellschaft. Process for the recovery of pure hellebrin. 4,435,563, Cl. 536-18.100.

Oestreich, Ulrich, to Siemens Aktiengesellschaft. Pipe store for SZ stranding. 4,434,610, Cl. 57-294.000.

Office National d'Etudes et de Recherches Aerospatiales: *See—*
Taillet, Joseph; and Larigaldie, Serge, 4,435,190, Cl. 55-5.000.

Officine Riunite Udine Spa: *See—*
Del Fabbro, Dino, 4,435,081, Cl. 366-18.000.

Ogata, Masaru; and Sato, Kosaburo, to Shionogi & Co., Ltd. 3-Sulfonamido-benzophenonimine derivatives useful for treating virus infections. 4,435,394, Cl. 424-248.500.

Ogawa, Goro, to Nakagawa, Seisakusho Co., Ltd. High draft apparatus for worsted spinning process. 4,434,533, Cl. 19-247.000.

Ogawa, Riichi: *See—*
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.

Ogawa, Tadashi: *See—*
Mihayashi, Keiji; Ogawa, Tadashi; and Yagihara, Morio, 4,435,503, Cl. 430-548.000.

Ogden Industries Pty. Limited: *See—*
Dunphy, Gerald F.; and Best, Lance E., 4,434,634, Cl. 70-89.000.

Ogihara, Yutaka: *See—*
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,435,657, Cl. 307-516.000.

O'Gorman, Michael C. Controlled fireplaces for concurrently varying combustion air and convected air. 4,434,783, Cl. 126-121.000.

Ohmori, Motoji: *See—*
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.

Ohneck, Robert J.: *See—*
Kirk, James L.; and Ohneck, Robert J., 4,435,292, Cl. 210-747.000.

Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, to Maruko Seiyaku Co., Ltd. Thiopyranopyrimidine compounds and acid addition salts thereof. 4,435,566, Cl. 544-117.000.

Ohrberg, Carl V.; and Hansen, Gunnar L., to Danfoss A/S. Hydraulic planetary piston engine having free wheeling valve. 4,435,130, Cl. 417-310.000.

Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, to Sony Corporation. Conductive paste. 4,435,611, Cl. 174-68.500.

Ohta, Kazutoshi; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Electric elevator car driving device. 4,434,873, Cl. 187-28.000.

Ohta, Mitsuru: *See—*
Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, 4,435,475, Cl. 428-409.000.

Ohta, Yasuto: *See—*
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.

Ohtani, Iwao: *See—*
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, 4,435,120, Cl. 414-735.000.

Oilgear Company, The: *See—*
Murdoch, Ian G., 4,434,811, Cl. 137-515.000.

Okabe, Kanichi: *See—*
Suzuki, Hirotsugu; Urata, Sigeru; and Okabe, Kanichi, 4,435,830, Cl. 378-197.000.

Okada, Akio; Nakata, Tokifumi; and Nemoto, Kiyoshi. Flow control valve. 4,435,134, Cl. 417-428.000.

Okada, Masanori: *See—*
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.

Okamoto, Harunori: *See—*
Inae, Shoji; and Okamoto, Harunori, 4,435,236, Cl. 156-132.000.

Okamoto, Kazuo: *See—*
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,434,631, Cl. 68-171.000.

Okamoto, Tetsuro: *See—*
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, 4,435,765, Cl. 364-200.000.

Okawa, Nobuo: *See—*
Ueshima, Norio; Okawa, Nobuo; and Takayanagi, Kiyoshi, 4,435,212, Cl. 75-124.000.

Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, to Hitachi, Ltd. Sorting apparatus. 4,435,285, Cl. 209-250.000.

Oku, Teruo: *See—*
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.

Okubo, Kiyokazu, to Honda Giken Kogyo Kabushiki Kaisha. Clutch mechanism for power transmission system. 4,434,878, Cl. 192-48.920.

Okubo, Takeshi: *See—*
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, 4,434,588, Cl. 51-344.000.

Okuda, Ryoichi: *See—*
Yamamoto, Norboru; Makino, Tomoatsu; and Okuda, Ryoichi, 4,434,779, Cl. 123-609.000.

Okutani, Shigeaki: *See—*
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, 4,435,765, Cl. 364-200.000.

Okutsu, Eiichi; Iwasaki, Nobuyuki; and Takada, Shunji, to Fuji Photo Film Co., Ltd. Method for developing silver halide photographic light-sensitive material. 4,435,500, Cl. 430-419.000.

Olesen, Russell, to Puritan-Bennett Corporation. Vaporizer subsystem for an anesthesia machine. 4,434,790, Cl. 128-200.140.

Olin Corporation: *See—*
Deininger, J. Paul, 4,435,256, Cl. 204-86.000.
Deininger, J. Paul; and Dotson, Ronald L., 4,435,257, Cl. 204-86.000.
Kadija, Igor V., 4,435,252, Cl. 204-11.000.
Sevier, Peter E., 4,434,838, Cl. 164-485.000.

Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, to SKF Kugellagerfabriken GmbH. Clutch release bearing. 4,434,882, Cl. 192-98.000.

Olschewski, Armin: *See—*
Walter, Lothar; Brandenstein, Manfred; and Olschewski, Armin, 4,434,640, Cl. 72-348.000.

Olsen, Roy W.; and Bell, Curtis H., to Goodyear Tire & Rubber Company, The. Method for making a hose having an index mark. 4,435,352, Cl. 264-504.000.

Olson, Robert S.; Surls, Joseph P., Jr.; and West, Ben F., to Dow Chemical Company, The. Process for treating chlorinated hydrocarbons. 4,435,379, Cl. 423-472.000.

Olson, Wayne L.: *See—*
Schmidt, Terrance L.; and Olson, Wayne L., 4,434,536, Cl. 24-241.0PP.

Olympus Optical Co., Ltd.: *See—*
Furuta, Kenji, 4,435,735, Cl. 360-74.400.
Horikawa, Yoshiaki; and Imai, Toshihiro, 4,435,049, Cl. 350-454.000.
Imai, Youg, 4,435,702, Cl. 340-671.000.
Tanikawa, Kowji, 4,435,056, Cl. 354-21.000.

OMI International Corporation: *See—*
Baker, Kenneth D.; and Scheider, Hans, 4,435,253, Cl. 204-43.00G.

Omodei-Sale', Amedeo: *See—*
Toja, Emilio; Omodei-Sale', Amedeo; and Selva, Domenica, 4,435,417, Cl. 424-273.00B.

Omori, Hiroyuki: *See—*
Takeda, Makoto; Miyoshi, Kazuhito; Kaitoh, Mitsumasa; and Omori, Hiroyuki, 4,435,251, Cl. 203-50.000.

O'Neill, John H., Jr.: *See—*
McCollough, John K., Jr.; and O'Neill, John H., Jr., 4,434,632, Cl. 68-205.00R.

Opeka, Joze: *See—*
Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, 4,434,798, Cl. 128-421.000.

Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., to BASF Aktiengesellschaft. Ammonium salts of polymaleic acids, and their use as corrosion inhibitors in mineral oils. 4,435,298, Cl. 252-34.000.

Orstad, Durwood D.: *See—*
Orstad, Russell D.; and Orstad, Durwood D., 4,435,115, Cl. 414-490.000.

Orstad, Russell D.; and Orstad, Durwood D. Dolly for lifting and carrying dead sows and the like. 4,435,115, Cl. 414-490.000.

Ortho Diagnostic Systems Inc.: *See—*
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,435,293, Cl. 210-772.000.

Osagawa, Takao: *See—*
Matsui, Masao; Okamoto, Kazuo; and Osagawa, Takao, 4,434,631, Cl. 68-171.000.

Osaka Gas Co., Ltd.: *See—*
Ishimaru, Kimio; and Abe, Kenichi, 4,435,629, Cl. 219-10.55A.

Osaki, Tatsuo, to Yoshida Kogyo K.K. Bottom stop applying and gapping apparatus for a slide fastener chain. 4,434,538, Cl. 29-33.200.

Osawa, Masayuki: *See—*
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.

Oscar Mayer Foods Corporation: *See—*
Jensen, Ronald W., 4,434,529, Cl. 17-49.000.

Osterberg, Arnold C.: *See—*
Epstein, Joseph W.; Osterberg, Arnold C.; and Brabander, Herbert J., 4,435,419, Cl. 424-274.000.

Otake, Katsumoto: *See—*
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.

Otis Elevator Company: *See—*
Kettle, John L., 4,434,884, Cl. 198-328.000.

Otobe, Yutaka; Yamato, Akihiro; and Umesaki, Shigeo, to Honda Motor Co., Ltd. Deceleration fuel cut device for internal combustion engines. 4,434,769, Cl. 123-493.000.

Otsuka, Kazuo: *See—*
Hasegawa, Shumpei; Narasaka, Shin; and Otsuka, Kazuo, 4,434,764, Cl. 123-440.000.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Nishi, Takao; Tanaka, Tatsuyoshi; and Nakagawa, Kazuyuki, 4,435,404, Cl. 424-258.000.
Ott, Richrd B., to National Presto Industries, Inc. Pressure cooker interlock. 4,434,909, Cl. 220-316.000.
Ou, Sam A.; and Beair, Charles E., to BS&B Safety Systems, Inc. Rupturable low pressure relief apparatus. 4,434,905, Cl. 220-89.00A.
Ouki, Masami: *See—*
Ito, Kazuyuki; Ouki, Masami; Miwa, Naoto; Kamigaito, Osami; Doi, Haruo; and Hirose, Yoshiharu, 4,435,512, Cl. 501-32.000.
Ovaert, Francis: *See—*
Reneault, Patrick; and Ovaert, Francis, 4,434,592, Cl. 52-145.000.
Ovshinsky, Stanford R.: *See—*
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., 4,435,445, Cl. 427-54.100.
Owens-Corning Fiberglas Corporation: *See—*
Lewin, David F.; Haynes, Louie J.; and Beach, Lynne B., 4,434,946, Cl. 242-18.00G.
Varrasso, Eugene C., 4,435,811, Cl. 373-39.000.
Owens-Illinois, Inc.: *See—*
Weaver, Edward A., 4,435,511, Cl. 501-22.000.
Oxenrider, Bryce C.; and Long, David J., to Allied Corporation. Polycyclic pyromellitates and use thereof on polyesters and polyamides. 4,435,294, Cl. 252-8.600.
Pabst, Patrea L.; and Bing, David H., to Ionics, Incorporated. Electrodialysis preparation of purified AHF concentrate. 4,435,318, Cl. 260-112.00B.
Pace Incorporated: *See—*
Parker, Oscar E., 4,435,635, Cl. 219-227.000.
Pacini, Carlo: *See—*
Petracchi, Ida; Assirelli, Antonietta; Pacini, Carlo; and Pacini, Cesare, 4,434,612, Cl. 57-331.000.
Pacini, Cesare: *See—*
Petracchi, Ida; Assirelli, Antonietta; Pacini, Carlo; and Pacini, Cesare, 4,434,612, Cl. 57-331.000.
Paczuk, Laszlo: *See—*
Mika, Gyorgy; Csako, Denes; Paczuk, Laszlo; Beres-Deak, Laszlo; and Novotny, Laszlo, 4,435,129, Cl. 417-151.000.
Pader, Morton, to Lever Brothers Company. Humectants for clear gel dentifrice compositions. 4,435,380, Cl. 424-49.000.
Paffrath, Gottfried: *See—*
Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, 4,435,184, Cl. 23-300.000.
Page, Ronald W., to National Semiconductor Corporation. Video amplifier mute circuit. 4,435,684, Cl. 330-51.000.
Palenschat, Dieter: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Palitex Project Company GmbH: *See—*
Schacht, Dieter, 4,434,609, Cl. 57-58.860.
Palmer, Alan R.: *See—*
Anson, Michael; Pinder, Andrew C.; and Palmer, Alan R., 4,434,800, Cl. 128-665.000.
Palmeter, Charles W.: *See—*
Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., 4,435,279, Cl. 208-111.000.
Paoli, Bruno, to International Paper Company. Transportation device, in particular for shaped, flexible material. 4,434,926, Cl. 226-172.000.
Pappas, James T.: *See—*
Oberlander, Charles N., 4,434,698, Cl. 84-483.00A.
Paranjpe, Suresh C.: *See—*
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.
Park, Jack H.: *See—*
Morel, Thomas J.; Haynes, Stewart, Jr.; and Park, Jack H., 4,434,852, Cl. 166-273.000.
Parker-Hannifin Corporation: *See—*
Zajac, Theodore S., 4,434,966, Cl. 251-205.000.
Parker, Oscar E., to Pace Incorporated. Heat barrier for desolderer and heater assembly. 4,435,635, Cl. 219-227.000.
Parker, Phillip H.: *See—*
Woo, Gar L.; and Parker, Phillip H., 4,435,547, Cl. 525-420.000.
Parks, James A.: *See—*
Lee, Cheuk M.; and Parks, James A., 4,435,422, Cl. 424-285.000.
Parlman, Robert M.: *See—*
Lindstrom, Merlin R.; Parlman, Robert M.; and Kimble, James B., 4,435,304, Cl. 252-156.000.
Parrott, George A., to Dresser Europe S.A. Mineral winning machine for "in web" mining system. 4,435,018, Cl. 299-43.000.
Partin, Lee R.: *See—*
Agreda, Victor H.; and Partin, Lee R., 4,435,595, Cl. 560-234.000.
Pascal, Daniel; and Duret, Denis, to Commissariat a l'Energie Atomique. Process for the manufacture and adjustment of a Josephson effect magnetic flux pick-up. 4,434,547, Cl. 29-599.000.
Patmore, David J.: *See—*
Ranganathan, Ramaswami; Patmore, David J.; and Silva, Adolfo E., 4,435,280, Cl. 208-112.000.
Paton, David: *See—*
Burrows, Vernon D.; Fulcher, Royce G.; and Paton, David, 4,435,429, Cl. 426-18.000.
Patrick, John P.: *See—*
Harner, Kermit I.; Patrick, John P.; and Kos, Joseph M., 4,435,647, Cl. 290-44.000.
Pauli, Gunter; Krause, Gunter; and Lob, Erwin, to Gao Gesellschaft fur Automation and Organisation mbH. Method and means for determining the state and/or genuineness of flat articles. 4,435,834, Cl. 382-7.000.
Pauluhn Electric Manufacturing Co., Inc.: *See—*
Russo, Salvatore V., 4,435,744, Cl. 362-219.000.
Pav, Josef: *See—*
Hartwich, Gerhard; Pav, Josef; and Preuss, Dieter, 4,434,713, Cl. 100-168.000.
Pavincic, Ivan. Rotary piston engine. 4,434,751, Cl. 123-43.00B.
Payrhammer, Bernd; and Weinert, Volker, to AGFA-Gevaert Aktiengesellschaft. Color copier. 4,435,075, Cl. 355-35.000.
Peacock Investments (Proprietary) Limited: *See—*
Raubenheimer, Johann N., 4,434,519, Cl. 15-1.700.
Pearce, Robert J., to Commonwealth Scientific and Industrial Research Organization. Preparation of protein isolate from sunflower seed. 4,435,319, Cl. 260-123.500.
Pearce, Robert J.: *See—*
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.
Pearson, Arthur W. Marine trap sensing system. 4,434,575, Cl. 43-100.000.
Pease, Wilder F.: *See—*
Lamberti, Vincent; and Pease, Wilder F., 4,435,328, Cl. 260-400.000.
Peerless Machine & Tool Corporation: *See—*
Dempsey, Edmond N., 4,435,143, Cl. 425-150.000.
Peizo Electric Products, Inc.: *See—*
Kolm, Henry H.; and Kolm, Eric A., 4,435,667, Cl. 310-367.000.
Pennington, B. Timothy; Roling, Paul V.; and Hsieh, John T. T., to Cities Service Co. Polymerization catalyst. 4,435,518, Cl. 502-107.000.
Pennington, B. Timothy: *See—*
Veazey, Richard L.; and Pennington, B. Timothy, 4,435,519, Cl. 502-107.000.
Pennwalt Corporation: *See—*
Kamens, Ernest R., 4,435,525, Cl. 521-92.000.
Leah, George R., 4,435,472, Cl. 428-333.000.
Pennzoil Company: *See—*
Holcomb, Dysart E.; Drechsel, Erhart K.; and Sardisco, John B., 4,435,370, Cl. 423-158.000.
Pepin, Julien H. Boom axle. 4,434,994, Cl. 280-404.000.
Perkins, Noel; and Perkins, Thomas. Bird feeding device. 4,434,745, Cl. 119-51.00R.
Perkins, Thomas: *See—*
Perkins, Noel; and Perkins, Thomas, 4,434,745, Cl. 119-51.00R.
Perlman, Martin M.; and Filion, Andre Y., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Electret semiconductor solar cell. 4,435,610, Cl. 136-255.000.
Perry, Ralph A.; and Andrejasich, Raymond J., to Emhart Industries, Inc. Hydrocarbon sensor float. 4,434,650, Cl. 73-61.10R.
Peters, Rex B.: *See—*
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., 4,434,654, Cl. 73-151.000.
Peterson, Arnold D., to Bendix Corporation, The. Speed sensor for an electromagnetic machine. 4,435,659, Cl. 310-68.00R.
Peterson, Robert R., to Barry Wright Corporation. Laminated bearing structures. 4,435,097, Cl. 384-221.000.
Peterson, William E.; and Thompson, Robert B., to Rockwell International Corporation. Electromagnetic acoustic transducer. 4,434,663, Cl. 73-643.000.
Petito, Ferdinand C.; and Klauber, Gerald, to United States of America, Army. Method of making rugged vidicon. 4,435,668, Cl. 313-388.000.
Petracchi, Ida; Assirelli, Antonietta; Pacini, Carlo; and Pacini, Cesare. False twist drafting device for continuous working of slubbings of textile materials. 4,434,612, Cl. 57-331.000.
Petre, Dominique: *See—*
Formanek, Karel; Michelet, Daniel; and Petre, Dominique, 4,435,601, Cl. 568-430.000.
Petros, Andrew J., to Mesta Machine Company. Sealing arrangement for a rotatable member. 4,435,096, Cl. 384-147.000.
Petzoldt, Karl; Laurent, Henry; and Wiechert, Rudolf, to Schering, Aktiengesellschaft. 3β,7β,15α-Trihydroxy-5-androsten-17-one, its 3,15-dipivalate, and their preparation. 4,435,327, Cl. 260-397.500.
Pews, Richard G.: *See—*
Lysenko, Zenon; and Pews, Richard G., 4,435,573, Cl. 546-250.000.
Pfeiffer, Thomas J.: *See—*
Krause, Richard H.; Pfeiffer, Thomas J.; and Horvath, Vincent V., 4,435,093, Cl. 374-129.000.
Pfizer Inc.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,435,584, Cl. 549-415.000.
Campbell, Simon F.; and Plews, Rhona M., 4,435,401, Cl. 424-251.000.
Cue, Berkeley W., Jr.; and Moore, Bernard S., 4,435,578, Cl. 548-309.000.
LaMattina, John L.; and Lipinski, Christopher A., 4,435,396, Cl. 424-248.510.
Richardson, Kenneth; and Gymer, Geoffrey E., 4,435,399, Cl. 424-250.000.
Pfrommer, Bruno, to Textilma AG. Stitch forming device for knitting machines. 4,434,627, Cl. 66-120.000.
Phadnis, Shashikant P.: *See—*
Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., 4,435,440, Cl. 426-658.000.

Pharmindustrie: *See—*
Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., 4,435,393, Cl. 424-246.000.
Le Fur, Gerard R.; and Renault, Christian L. A., 4,435,410, Cl. 424-267.000.
Philipp Holzmann AG: *See—*
Zerna, Wolfgang; Krabbe, Wilfried; and Schafer, Hans, 4,434,591, Cl. 52-73.000.
Phillips, Edward L., to Sybron Corporation. Electrically neutral non-permselective porous membrane. 4,435,262, Cl. 204-181.00C.
Phillips Petroleum Company: *See—*
Gomory, Paul L., 4,435,269, Cl. 208-8.00R.
Gray, Michael L., 4,435,198, Cl. 62-28.000.
Lindstrom, Merlin R.; Parlman, Robert M.; and Kimble, James B., 4,435,304, Cl. 252-156.000.
Mathis, Ronald D.; and Reed, Jerry O., 4,435,221, Cl. 134-2.000.
Porter, Randall A.; and Reed, Larry E., 4,435,376, Cl. 423-447.300.
Reed, Jerry O.; and Johnson, Timothy W., 4,435,222, Cl. 134-2.000.
Stewart, William S., 4,434,746, Cl. 122-448.00R.
Stewart, William S., 4,435,192, Cl. 55-19.000.
Wu, Yulin; and Zuech, Ernest A., 4,435,596, Cl. 562-481.000.
Phillips, Richard A.; and Haddad, Theodore A., to Foster Grant Corporation. Method of making an abrasion resistant coating on a solid substrate and articles produced thereby. 4,435,476, Cl. 428-412.000.
Picard, Claude; and Saint Martin, Bernard, to La Calhene. Circuit for ventilating and filtering the medium contained in a confinement enclosure. 4,435,194, Cl. 55-96.000.
Pielkenrood, Jacob, to Pielkenrood-Vinitex Beheer B.V. Multiphase separator. 4,435,196, Cl. 55-174.000.
Pielkenrood-Vinitex Beheer B.V.: *See—*
Pielkenrood, Jacob, 4,435,196, Cl. 55-174.000.
Pinder, Andrew C.: *See—*
Anson, Michael; Pinder, Andrew C.; and Palmer, Alan R., 4,434,800, Cl. 128-665.000.
Pinto, Patrick A.: *See—*
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,435,412, Cl. 424-270.000.
Piolt, Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Murahara, Koichi, 4,435,099, Cl. 401-145.000.
Piscitelli, R. Amelia: *See—*
Brush, Robert W., Sr.; and Piscitelli, R. Amelia, 4,434,552, Cl. 29-876.000.
Pitchford, Edward J., to Rain Bird Sprinkler Mfg. Corp. Reaction drive sprinkler. 4,434,937, Cl. 239-230.000.
Pitney Bowes Inc.: *See—*
Chang, Mike S. H., 4,435,259, Cl. 204-159.130.
Pivoteau, Jean; and Durot, Jean-Pierre, to Vetrotex Saint-Gobain. Packaging for fragile, heavy and/or deformable products. 4,435,479, Cl. 428-542.800.
Plagge, Vernon L.; and Bhalla, Ranbir S., to North American Philips Electric Corp. Arc tube construction. 4,435,669, Cl. 313-634.000.
Plastics Engineering Company: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,435,323, Cl. 548-473.000.
Pless, Janos: *See—*
Bauer, Wilfried; and Pless, Janos, 4,435,385, Cl. 424-177.000.
Plews, Rhona M.: *See—*
Campbell, Simon F.; and Plews, Rhona M., 4,435,401, Cl. 424-251.000.
Pleyers, Jozef J. A.: *See—*
Draai, Willem T.; Pleyers, Jozef J. A.; and Kuin, Nicolaas P. J., 4,435,067, Cl. 355-3.0TR.
Plough, Inc.: *See—*
Beloate, Mickey R.; Erb, Harley E.; and Shelton, Charles W., 4,434,896, Cl. 206-621.000.
Plume, Alan W., to A. W. Plume Limited. Electrical resistance furnaces. 4,435,819, Cl. 373-119.000.
Plumly, George W. Edge lighted sign. 4,435,743, Cl. 362-20.000.
Plunkett, John P.: *See—*
Kenny, Thomas C.; and Plunkett, John P., 4,435,185, Cl. 44-68.000.
Pneumo Corporation: *See—*
Meulendyk, John W., 4,435,133, Cl. 417-364.000
Poe, Ronald L.: *See—*
Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., 4,435,606, Cl. 585-324.000.
Polaroid Corporation: *See—*
Cocco, Vincent L., 4,435,062, Cl. 354-303.000.
Poler, Stanley, to Lynell Medical Technology Inc. Intraocular lens. 4,434,515, Cl. 3-13.000.
Poler, Stanley. Contact lens assembly with haptic and method for making the same. 4,435,050, Cl. 351-160.00R.
Pollution Controls Industries, Inc.: *See—*
Curtis, Stanley F., 4,434,993, Cl. 280-402.000.
Polyloom Corporation of America: *See—*
Weisner, Carl S.; and Raynolds, David W., 4,435,141, Cl. 425-131.100.
Pomaro, Nicholas; Pomaro, Russell; and Stauffer, Louis. Quick disconnect battery installation and charging system. 4,435,486, Cl. 429-1.000.
Pomaro, Russell: *See—*
Pomaro, Nicholas; Pomaro, Russell; and Stauffer, Louis, 4,435,486, Cl. 429-1.000.
Ponzielli, Giuseppe, to Coulson Heel Inc. Process for manufacturing articles of foamed thermoplastic material and article produced thereby. 4,435,523, Cl. 521-51.000.
Popov, Vladimir I.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.
Porowski, Janek S.; O'Donnell, William J.; and Fasiczka, Ray G., to O'Donnell & Associates Inc. Expansion joint for reactor or heat exchanger. 4,434,840, Cl. 165-82.000.
Porter, Darrell D.: *See—*
Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., 4,435,016, Cl. 299-2.000.
Porter, Randall A.; and Reed, Larry E., to Phillips Petroleum Company. Fibrous carbon production. 4,435,376, Cl. 423-447.300.
Potain Poclain Materiel (P.P.M.): *See—*
Charles, Georges M., 4,434,972, Cl. 254-340.000.
Potash, Hanan, to Burroughs Corporation. Branch predicting computer. 4,435,756, Cl. 364-200.000.
Potkay, Eugene, to Western Electric Co., Inc. Exhaust system for a vapor deposition chamber. 4,435,199, Cl. 65-3.120.
Pouzoullic, Gerard: *See—*
Boudault, Robert; and Pouzoullic, Gerard, 4,435,682, Cl. 329-107.000.
Powell, Norman F., to Westinghouse Electric Corp. System for obscuring antenna sidelobe signals. 4,435,710, Cl. 343-18.00E.
Powers, Donald H., Jr., to Chomerics, Inc. Electromagnetic shielding. 4,434,541, Cl. 29-526.00R.
PPG Industries, Inc.: *See—*
Coleman, Charles R., 4,435,450, Cl. 427-385.500.
Das, Balbhadra; and Moore, L. Dow, 4,435,474, Cl. 428-391.000.
Greigger, Paul P., 4,435,219, Cl. 106-287.160.
Kaylo, Alan J.; and Castellucci, Nicholas T., 4,435,529, Cl. 523-426.000.
Martin, Emil; Barch, Herbert W.; and Greer, S. Thomas, 4,434,521, Cl. 15-230.110.
Tamosauskas, Albert E.; and Temple, Chester S., 4,435,473, Cl. 428-378.000.
Valko, Joseph T., 4,435,559, Cl. 528-73.000.
Prather, Joseph E.; Khalifa, Ramzi A.; and Wenzler, Peter B., to Edson Tool & Manufacturing Co., Inc. Self-locking hinged door cabinet and latch for the same. 4,435,027, Cl. 312-222.000.
President and Fellows of Harvard College: *See—*
Abernathy, Frederick H., 4,435,837, Cl. 382-41.000.
Preuss, Dieter: *See—*
Hartwich, Gerhard; Pav, Josef; and Preuss, Dieter, 4,434,713, Cl. 100-168.000.
Prevorsek, Dusan C.: *See—*
Lai, Yu-Chin; DeBona, Bruce T.; Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,435,561, Cl. 528-193.000.
Prewo, Karl M.; and Brennan, John J., to United Technologies Corporation. Compliant composite tubular liners of fiber reinforced glass/-glass-ceramic having utility as gun barrel liners. 4,435,455, Cl. 428-36.000.
Price, Richard H.: *See—*
Flaherty, Thomas; and Price, Richard H., 4,434,815, Cl. 138-97.000.
Prince, Ronald E.: *See—*
Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., 4,434,700, Cl. 89-34.000.
Procter & Gamble Company, The: *See—*
Gerritsen, Jan; Atkinson, Ronald E.; and Martin, Anthony F., 4,435,317, Cl. 252-547.000.
Pross, John W., Jr., to Singer Company, The. Clock control for digital computer. 4,435,757, Cl. 364-200.000.
Prunbauer, Kurt, to EVVA-Werk Spezialerzeugung von Zylinder-und Sicherheitsschlossern GmbH & Co. KG. Lock having a cylinder core and a housing. 4,434,636, Cl. 70-358.000.
Ptacnik, Jerry: *See—*
McAteer, John E.; Bisler, Kenneth E.; Ptacnik, Jerry; and Kish, Richard D., 4,434,596, Cl. 52-243.100.
Puritan-Bennett Corporation: *See—*
Olesen, Russell, 4,434,790, Cl. 128-200.140.
Putz, Peter: *See—*
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,435,466, Cl. 428-215.000.
Quast, W. Patrick: *See—*
Oberlander, Charles N., 4,434,698, Cl. 84-483.00A.
Rahtz, Dieter: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Rain Bird Sprinkler Mfg. Corp.: *See—*
Pitchford, Edward J., 4,434,937, Cl. 239-230.000.
Raines, Charles D., to Horton Manufacturing Co., Inc. Device for shaft alignment in a clutch or brake assembly. 4,434,883, Cl. 192-110.00R.
Ralstin, Donald E., to Wells Electronics, Inc. Single piece carrier for integrated circuit devices. 4,435,724, Cl. 357-79.000.
Rampley, Neil, to Heath Manufacturing Company. Adjustable lock arrangement and method for making same. 4,435,105, Cl. 403-109.000.
Ramuz, Henri: *See—*
Krasso, Anna; and Ramuz, Henri, 4,435,406, Cl. 424-263.000.
Randklev, Ronald M., to Minnesota Mining and Manufacturing Company. Method and manufacture for applying and removal of orthodontic bracket. 4,435,160, Cl. 433-9.000.
Ranganathan, Ramaswami; Patmore, David J.; and Silva, Adolfo E., to Canada, Her Majesty the Queen in right of, as represented by the

Minister of Energy. Hydrocracking of heavy hydrocarbon oils with high pitch conversion. 4,435,280, Cl. 208-112.000.

Rangert, Bo R.: *See—*
Nilsson, Ralph L.; and Rangert, Bo R., 4,434,756, Cl. 123-195.00R.

Rao, Krishna K.: *See—*
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,435,521, Cl. 502-209.000.

Rapid Ring Co., Inc.: *See—*
Mauer, Richard L., 4,434,690, Cl. 83-13.000.

Rapoport, Henry; Weller, Dwight D.; and Cless, Richard D., to United States of America, Health and Human Services. Synthesis of ethyl-4(3'-methoxyphenyl)-1-methyl piperidine-3-carboxylate. 4,435,572, Cl. 546-228.000.

Rasmussen, Aaron P. Turret belt grinder. 4,434,584, Cl. 51-135.00R.

Rasmussen, Robert, to Industrial Parts Depot. Reverse forging or replacement grouser bars. 4,434,642, Cl. 72-356.000.

Rassak, Denis: *See—*
Dedenon, Jean-Marie; and Rassak, Denis, 4,435,188, Cl. 48-111.000.

Rataud, Jean E. M. A.: *See—*
Dubroeucq, Marie-Christine; and Rataud, Jean E. M. A., 4,435,393, Cl. 424-246.000.

Ratcliffe, David J., deceased (by Ratcliffe, Madli-Ann, executrix); Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., to Syntrex Incorporated. Word processing system. 4,435,776, Cl. 364-900.000.

Ratcliffe, Madli-Ann, executrix: *See—*
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Raubenheimer, Johann N., to Peacock Investments (Proprietary) Limited. Apparatus for cleaning submerged surfaces. 4,434,519, Cl. 15-1.700.

Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., to U.S. Philips Corporation. Field frequency-doubling circuit for a television signal. 4,435,728, Cl. 358-140.000.

Raychem Corporation: *See—*
Gurevich, Boris, 4,435,639, Cl. 219-544.000.

Raychem Pontoise S. A.: *See—*
Flot, Regis; and Zoppi, Michel, 4,435,454, Cl. 428-36.000.

Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, to Buck Chemisch-Technische Werke GmbH & Co. Process for the preparation of a smoke composition. 4,435,233, Cl. 149-44.000.

Raynal, Serge: *See—*
Lecolier, Serge; and Raynal, Serge, 4,435,312, Cl. 502-157.000.

Raynolds, David W.: *See—*
Weisner, Carl S.; and Raynolds, David W., 4,435,141, Cl. 425-131.100.

Raytheon Company: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.
Williamson, James; and Crete, Paul G., 4,435,847, Cl. 455-260.000.

RCA Corporation: *See—*
Bendell, Sidney L.; and Levine, Peter A., 4,435,730, Cl. 358-213.000.
Harwood, Leopold A.; and Shanley, Robert L., II, 4,435,729, Cl. 358-183.000.
Kipp, Ronald W., 4,435,709, Cl. 343-14.000.
Kipp, Ronald W., 4,435,712, Cl. 343-17.700.
Kirschner, Thomas F., 4,435,799, Cl. 369-77.200.
Kliebphipat, Ravadee; Fernsler, Ronald E.; and Hicks, James E., 4,435,731, Cl. 358-243.000.
Levin, Leonard J., 4,435,801, Cl. 369-275.000.

READY Tools, Inc.: *See—*
Gargrave, Robert J.; Thompson, John K.; and Comstock, James F., 4,434,644, Cl. 72-387.000.

Reap, James J., to Du Pont de Nemours, E. I., and Company. Herbicidal o-alkylsulfonyloxy- and o-alkylsulfonylaminobenzenesulfonamides. 4,435,205, Cl. 71-92.000.

Rearick, William A.: *See—*
Winch, Allen R.; and Rearick, William A., 4,434,633, Cl. 68-267.000.

Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Process for removing extractable substances from carbon black. 4,435,378, Cl. 423-461.000.

Redmond, Russell J.; and Hannula, Donald L., to American Hospital Supply Corporation. Catheter guide. 4,435,174, Cl. 604-174.000.

Reed, A. K.: *See—*
Goldberger, William; and Reed, A. K., 4,435,444, Cl. 427-49.000.

Reed, Jerry O.; and Johnson, Timothy W., to Phillips Petroleum Company. Process for cleaning metal surfaces of poly(arylene sulfide) deposits. 4,435,222, Cl. 134-2.000.

Reed, Jerry O.: *See—*
Mathis, Ronald D.; and Reed, Jerry O., 4,435,221, Cl. 134-2.000.

Reed, Larry E.: *See—*
Porter, Randall A.; and Reed, Larry E., 4,435,376, Cl. 423-447.300.

Rees, James D.: *See—*
Lama, William L.; and Rees, James D., 4,435,039, Cl. 350-96.250.

Reeves, John W., to Eastman Kodak Company. Photothermographic silver halide material and process. 4,435,499, Cl. 430-350.000.

Regie Nationale des Usines Renault: *See—*
Bascou, Jacques, 4,435,007, Cl. 292-268.000.

ReHeat AB: *See—*
Almqvist, Christer; and Lindahl, Lars, 4,434,643, Cl. 72-379.000.

Reichel, Curtis J., to BASF Wyandotte Corporation. Process for the preparation of polyether-ester polyols. 4,435,592, Cl. 560-91.000.

Reimers, George W.; and Khalafalla, Sanaa E., to United States of America, Interior. Concentrating and reclaiming magnetic fluids. 4,435,302, Cl. 252-62.510.

Reiser, Wolf; Elbe, Hans-Ludwig; Buchel, Karl; Frohberger, Paul-Ernst; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with 1-phenyl-2-(1,2,4-triazol-1-yl)-prop-2-en-1-ones. 4,435,411, Cl. 424-269.000.

Renault, Christian L. A.: *See—*
Le Fur, Gerard R.; and Renault, Christian L. A., 4,435,410, Cl. 424-267.000.

Reneault, Patrick; and Ovaert, Francis, to SMAC Acieroid. Heat and sound insulating structure for boarding or other non-loadbearing wall. 4,434,592, Cl. 52-145.000.

Reponen, Voitto: *See—*
Gullichsen, Johan E.; Harkonen, Eako; Niskanen, Toivo; Kujala, Jaakko; and Reponen, Voitto, 4,435,193, Cl. 55-21.000.

Rescio, Giuseppe: *See—*
Bubley, Henry J.; Faulkner, Gene M.; Iaccino, Alex; and Rescio, Giuseppe, 4,434,562, Cl. 34-4.000.

Reubke, Karl-Julius, to Bayer Aktiengesellschaft. Process for the preparation of 1-alkylaminoanthraquinones. 4,435,324, Cl. 260-378.000.

Reyes, Jaime M.: *See—*
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., 4,435,445, Cl. 427-54.100.

Rheinisch-Westfalisches Elektrizitatswerk AG: *See—*
Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, 4,435,184, Cl. 23-300.000.

Rhodes, Lawrence G.; and Carter, John W., to Superior Gear Box Company. Gear box for corn harvesting unit. 4,434,606, Cl. 56-106.000.

Rhone-Poulenc Agrochimie: *See—*
Rouy, Noel; and Dewilde, Francois, 4,435,577, Cl. 548-221.000.

Rhone-Poulenc Industries: *See—*
Formanek, Karel; Michelet, Daniel; and Petre, Dominique, 4,435,601, Cl. 568-430.000.
Thomas, Maryvonne; and Grosbois, Jean, 4,435,308, Cl. 252-181.000.

Rib Loc (Hong Kong) Ltd.: *See—*
Menzel, Julian M., 4,435,460, Cl. 428-129.000.

Ribble, George W.: *See—*
Vann, Roy R.; Ribble, George W.; and George, R. Flint, 4,434,854, Cl. 166-386.000.

Ribi, Edgar E.; and Cantrell John L., to Ribi ImmunoChem Research, Inc. Refined detoxified endotoxin product. 4,435,386, Cl. 424-177.000.

Ribi ImmunoChem Research, Inc.: *See—*
Ribi, Edgar E.; and Cantrell John L., 4,435,386, Cl. 424-177.000.

Rice, Doris M.: *See—*
Dominquez, Richard J. G.; and Rice, Doris M., 4,435,349, Cl. 264-257.000.

Rice, William M.: *See—*
Busch, Lloyd E.; Palmeter, Charles W.; Henderson, Gerald O.; and Rice, William M., 4,435,279, Cl. 208-111.000.

Richardson, Charles P.: *See—*
Gasparaitis, Bernard; Long, Thomas W., Jr.; and Richardson, Charles P., 4,435,713, Cl. 343-702.000.

Richardson, Kenneth; and Gymer, Geoffrey E., to Pfizer Inc. 2-Aryl-1-(imidazol-1-yl)-8-(4-piperazin-1-ylphenoxy) octan-2-ol antifungal agents. 4,435,399, Cl. 424-250.000.

Richardson Merrell Inc.: *See—*
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,435,571, Cl. 544-384.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Ricketts, Thomas E., to Occidental Oil Shale, Inc. In situ oil shale retort with differing upper and lower void fractions. 4,435,017, Cl. 299-19.000.

Ricoh Company, Ltd.: *See—*
Horike, Masanori; and Ebi, Yutaka, 4,435,720, Cl. 346-75.000.
Midorikawa, Akira; Kojima, Kenji; and Uchimura, Kazuo, 4,435,074, Cl. 355-15.000.
Tsukada, Toshiji; and Morinaga, Kazuo, 4,435,064, Cl. 355-1.000.

Riebold, Elbert M. Air terminal guidance system. 4,435,694, Cl. 340-953.000.

Riediger, Craig W.; and Winzeler, James E., to Caterpillar Tractor Co. Planetary steering differential. 4,434,680, Cl. 74-682.000.

Rieter Machine Works, Ltd.: *See—*
Mondini, Giancarlo, 4,434,531, Cl. 19-99.000.
Oehy, Peter, 4,434,532, Cl. 19-159.00R.

Rilliet, Francois, to Dematex Development & Investment Establishment. Blood collection unit. 4,434,802, Cl. 128-764.000.

Riotte, Michel: *See—*
Louboutin, Robert; and Riotte, Michel, 4,435,286, Cl. 210-116.000.

Rippelmeyer, Dennis M., to Emerson Electric Co. Gas burner control system. 4,435,150, Cl. 431-46.000.

Risberg, Robert L., to Hobart Brothers Company. Three phase square wave welding power supply. 4,435,632, Cl. 219-130.510.

Ritter, Ernst: *See—*
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.

Rivkin, Eric M., to Liberty Carton Co. Adjustable wire tote for printed circuit boards. 4,434,899, Cl. 211-41.000.

Rivkin, Eric M., to Liberty Carton Co. Hinged container for relay racks. 4,435,028, Cl. 312-258.000.

Rizzi, John R., to International Business Machines Corporation. Register allocation system using recursive queuing during source code compilation. 4,435,753, Cl. 364-200.000.

Rizzi, Primo: *See—*
Jolly, Jean; Rizzi, Primo; and Taillardat, Jean, 4,435,325, Cl. 260-397.200.

Robert Bosch GmbH: *See—*
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.
Eisele, Hermann; Hill, Martin; and Schweizer, Hartmut, 4,435,745, Cl. 363-21.000.
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.
Muller, Thomas; Schadlich, Fritz; and Stabler, Manfred, 4,434,586, Cl. 51-170.0PT.
Straubel, Max, 4,434,777, Cl. 123-568.000.
Willer, Armin; and Roderer, Herbert, 4,435,660, Cl. 310-70.00R.

Roberts, Victor C.; and Sainz, Antonio J., to National Research Development Corporation. Apparatus for transmitting and receiving sound. 4,434,669, Cl. 73-861.250.

Robertson, John M.: *See—*
Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., 4,435,484, Cl. 428-693.000.

Rockwell International Corporation: *See—*
Colton, Russell F., 4,435,737, Cl. 361-280.000.
Erickson, Alan R., 4,435,683, Cl. 330-2.000.
Fechalos, William A.; and Stehman, Carl J., 4,435,620, Cl. 179-18.0EB.
Gergis, Isoris S.; and Lee, Wai-Tak P., 4,435,784, Cl. 365-8.000.
McKenzie, Robert W., 4,435,029, Cl. 312-320.000.
Peterson, William E.; and Thompson, Robert B., 4,434,663, Cl. 73-643.000.

Roder, Eckhard: *See—*
Behrend, Volkmar; and Roder, Eckhard, 4,435,118, Cl. 414-744.00R.

Roderer, Herbert: *See—*
Willer, Armin; and Roderer, Herbert, 4,435,660, Cl. 310-70.00R.

Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, to Messer Griesheim GmbH. Powder, especially metallic powder for marking workpieces. 4,434,935, Cl. 239-85.000.

Roellchen, Thomas A., to Ace Polymers, Inc. Supporting and spacing member for web material rolls. 4,435,463, Cl. 428-158.000.

Rogers, Jack S., to Milliken Research Corporation. Athletic support fabric. 4,435,467, Cl. 428-254.000.

Rogers, Norman H.; and Crimmin, Michael J., to Beecham Group p.l.c. 2-Halo-substituted monic acid A useful as antibacterial compounds. 4,435,583, Cl. 549-414.000.

Rogers, Ray L.: *See—*
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., 4,435,738, Cl. 361-321.000.

Rogstadius, John I. F. Pipe coupling. 4,434,809, Cl. 137-318.000.

Rohm and Haas Company: *See—*
Witiak, David, 4,435,539, Cl. 524-558.000.

Rokach, Joshua: *See—*
Belanger, Patrice C.; Williams, Haydn W. R.; and Rokach, Joshua, 4,435,579, Cl. 549-12.000.

Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, to Bayer Aktiengesellschaft. Process for the preparation of dimethyl succinylosuccinate, the disodium salt thereof, dianilinodihydroterephthalic acids, the dimethyl esters and salts thereof, and dianilinoterephthalic acids, and the dimethyl esters and salts thereof. 4,435,589, Cl. 560-48.000.

Roling, Paul V.: *See—*
Pennington, B. Timothy; Roling, Paul V.; and Hsieh, John T. T., 4,435,518, Cl. 502-107.000.

Rollex B.V.: *See—*
Roos, Johannes, 4,434,570, Cl. 40-617.000.

Rolls-Royce Incorporated: *See—*
Moritz, Robert R., 4,434,957, Cl. 244-35.00R.

Rolls-Royce Limited: *See—*
Willgoose, Kenneth, 4,434,835, Cl. 164-34.000.

Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Centrifuge rotor having a closable windshield. 4,435,169, Cl. 494-20.000.

Romicon, Inc.: *See—*
Breslau, Barry R., 4,435,289, Cl. 210-637.000.

Ronchi, Achille U.: *See—*
Cainelli, Gianfranco; Foa', Marco; Ronchi, Achille U.; and Gardano, Andrea, 4,435,575, Cl. 546-341.000.

Roop, Michael R.; and Cook, Russell P., Sr. Rescue apparatus. 4,434,869, Cl. 182-10.000.

Roos, Johannes, to Rollex B.V. Advertising holder. 4,434,570, Cl. 40-617.000.

Roquet Jorda, Pedro. Introduced in the hydraulic actuation for the alternative movements of the swinging arms of petroleum extractor machines. 4,434,705, Cl. 91-50.000.

Rosaen, Borje O. Fluid flow meter. 4,434,670, Cl. 73-861.540.

Rose, John A.; and Dyer, Keith, to AMF Incorporated. Machine for top stitching. 4,434,730, Cl. 112-121.120.

Rose Manufacturing Company: *See—*
Schmidt, Terrance L.; and Olson, Wayne L., 4,434,536, Cl. 24-241.0PP.

Rosenberg, Steven L. Adjustable abduction device for treatment of metatarsus adductus. 4,434,792, Cl. 128-80.00R.

Rosenkrantz, Edward: *See—*
Rosenkrantz, Evelyn S.; and Rosenkrantz, Edward, 4,434,938, Cl. 239-274.000.

Rosenkrantz, Evelyn S.; and Rosenkrantz, Edward. Aroma system. 4,434,938, Cl. 239-274.000.

Roses, Henri. Indicator apparatus for indicating notes emitted by means of a musical instrument. 4,434,697, Cl. 84-454.000.

Ross, Ashley M.; and McKee, James A., to Fabrico Manufacturing Corp. Silo breather bag. 4,434,712, Cl. 99-646.00S.

Roth, Martin: *See—*
Muller, Beat; and Roth, Martin, 4,435,489, Cl. 430-17.000.

Rothbuhr, Lothar, to Degussa Aktiengesellschaft. Oxidative after-treatment of carbon black. 4,435,377, Cl. 423-460.000.

Rougeron, Michel; and Simon, Jacques, to Centre National d'Etudes Spatiales. Method of construction for a container with a symmetrical lobed structure and container constructed according to the said process. 4,434,958, Cl. 244-126.000.

Roussel Uclaf: *See—*
Jolly, Jean; Rizzi, Primo; and Taillardat, Jean, 4,435,325, Cl. 260-397.200.
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,435,408, Cl. 424-263.000.

Rouy, Noel; and Dewilde, Francois, to Rhone-Poulenc Agrochimie. Process for the preparation of chlorinated derivatives of benzoxazolones. 4,435,577, Cl. 548-221.000.

Royel International Pty. Ltd.: *See—*
Royston, Alan L., 4,435,636, Cl. 219-230.000.

Royston, Alan L., to Royel International Pty. Ltd. Desoldering tool. 4,435,636, Cl. 219-230.000.

Rozner, Marvin J.; and Chapman, Arthur S., to United States of America, Army. Telescoping periscope. 4,434,702, Cl. 89-36.00L.

RTE Corporation: *See—*
Link, Edwin A.; and Mikulecky, Harvey W., 4,435,690, Cl. 335-37.000.

Ruben, Zorro. Linear fluid handling, rotary drive, mechanism. 4,435,131, Cl. 417-334.000.

Rubin, Steven M., to Bell Telephone Laboratories, Incorporated. Technique for extracting features from images. 4,435,856, Cl. 382-27.000.

Rudolf, Peter: *See—*
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takaca, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.

Rudolph, Peter K. C., to Boeing Company, The. Airfoil flap assembly with flap track member. 4,434,959, Cl. 244-215.000.

Ruf, Ralph R.: *See—*
Gambino, Richard J.; and Ruf, Ralph R., 4,435,663, Cl. 310-306.000.

Ruhrchemie Aktiengesellschaft: *See—*
Cornils, Boy; Bach, Hanswilhelm; Gartner, Roderich; and Gick, Wilhelm, 4,435,603, Cl. 568-701.000.

Rumpp, Gerhard; Scholz, Dieter; and Spieth, Manfred, to Hilti Aktiengesellschaft. Hammer drill for performing rotary drilling or percussive drilling. 4,434,859, Cl. 173-48.000.

Rumpz, Raphael J. Automatic traffic control gate. 4,434,578, Cl. 49-49.000.

Runzheimer, Hans-Volker: *See—*
Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, 4,435,589, Cl. 560-48.000.

Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, to S.A.R. S.p.A. Manually operated liquid dispensing pump. 4,434,916, Cl. 222-321.000.

Russell, Angus R. T., to Singer Company, The. Anti-spill device for sewing machine bobbin. 4,434,734, Cl. 112-181.000.

Russell, Pat, to Baxter Travenol Laboratories, Inc. Slide clamp including elevation stabilizer. 4,434,963, Cl. 251-7.000.

Russo, Salvatore V., to Pauluhn Electric Manufacturing Co., Inc. Explosion-proof fluorescent light fixture. 4,435,744, Cl. 362-219.000.

Ruttkowski, Lothar: *See—*
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.

Rutty, Edward C.: *See—*
Czerwinski, Frank G.; and Rutty, Edward C., 4,434,952, Cl. 242-107.000.

Ryan, Dennis M., to AMPEX Corporation. Adjusting apparatus. 4,434,686, Cl. 81-3.00R.

Ryan, Dennis M., to Ampex Corporation. Tape tensioning apparatus. 4,434,954, Cl. 242-189.000.

Ryder, Leonard B.: *See—*
Vieth, Wolf R.; and Ryder, Leonard B., 4,435,453, Cl. 428-35.000.

Ryobi Ltd.: *See—*
Ishii, Koji; and Honkawa, Yoshinori, 4,434,716, Cl. 101-142.000.

S.A.R. S.p.A.: *See—*
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,434,916, Cl. 222-321.000.

S. C. Johnson & Sons, Inc.: *See—*
Brugman, Martin; and Van Schaik, Herman, 4,434,885, Cl. 198-388.000.

S.N.E.C.M.A.: *See—*
Trottier, Jean-Pierre; and Jeandin, Michel, 4,435,360, Cl. 419-49.000.

Sachs, Helmut: *See—*
Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, 4,434,935, Cl. 239-85.000.

Sachs-Systemtechnik GmbH: *See—*
Lutz, Dieter; Nagler, Franz; Thieler, Wolfgang; and Tellert, Rudy, 4,434,879, Cl. 192-0.052.

Sack Glastechnik GmbH: *See—*
Strauss, Gottfried; and Schumann, Horst, 4,434,582, Cl. 51-101.00R.

Sackett, Robert W.: *See—*
Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., 4,435,750, Cl. 363-177.000.

Safet-Embamet Lethias: *See—*
Groult, Jacques, 4,434,910, Cl. 220-358.000.

Sahara, Masayoshi: *See—*
Nakai, Masaaki; and Sahara, Masayoshi, 4,435,057, Cl. 354-426.000.

Saint Martin, Bernard: *See—*
Picard, Claude; and Saint Martin, Bernard, 4,435,194, Cl. 55-96.000.

St. Martin, Leo I., Jr., to H. D. Baumann Assoc., Ltd. Low flow control valve. 4,434,965, Cl. 251-121.000.

Sainz, Antonio J.: *See—*
Roberts, Victor C.; and Sainz, Antonio J., 4,434,669, Cl. 73-861.250.

Saito, Hiroshi: *See—*
Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, 4,435,210, Cl. 75-53.000.

Saito, Motoyuki; and Hatanaka, Hideo, to Citizen Watch Co., Ltd. Electrical connection construction for electronic timepiece. 4,435,796, Cl. 368-321.000.

Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, to Yoshino Kogyosho Co., Ltd. Trigger-actuated atomizer. 4,434,917, Cl. 222-383.000.

Saito, Tadashi: *See—*
Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, 4,435,832, Cl. 381-34.000.

Saito, Yoshihisa: *See—*
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.

Saitou, Teruo: *See—*
Fukushima, Nobuo; Saitou, Teruo; and Hayashida, Haruo, 4,435,350, Cl. 264-280.000.

Sakai, Teturou: *See—*
Nagao, Nobuya; and Sakai, Teturou, 4,435,725, Cl. 358-36.000.

Sakalay, Frederick E.: *See—*
Baum, Richard I.; and Sakalay, Frederick E., 4,435,759, Cl. 364-200.000.

Sakamoto, Masahisa; Tamura, Yoshio; and Sakamoto, Tadashi, to Sakamoto, Masahisa; Tamura, Yoshio; Sakamoto, Tadashi; and Kawamura, Hiroji. Synthetic resin material, particularly surface material for phonograph records with a photograph or picture. 4,435,802, Cl. 369-286.000.

Sakamoto, Seiichi: *See—*
Terauchi, Kiyoshi; and Sakamoto, Seiichi, 4,435,136, Cl. 418-55.000.

Sakamoto, Tadashi: *See—*
Sakamoto, Masahisa; Tamura, Yoshio; and Sakamoto, Tadashi, 4,435,802, Cl. 369-286.000.

Sakitani, Katsumi; Uemura, Shigehiro; and Yajima, Ryuzaburo, to Daikin Kogyo Co., Ltd. Cross-fin coil type heat exchanger. 4,434,844, Cl. 165-151.000.

Sakow, Hiroshi; and Kashioka, Seiji, to Hitachi, Ltd. Method and device for detecting the position of an object. 4,435,835, Cl. 382-8.000.

Sakuma, Osamu: *See—*
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.

Sakura, Yasuhiro, to Tokyo Electric Co., Ltd. Label feed control system. 4,434,911, Cl. 221-2.000.

Salge, Edward A.; and Horey, Leonard I., to Singer Company, The. Operation controller for an electronic sewing machine. 4,434,732, Cl. 112-158.00E.

Sampei, Tohru: *See—*
Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, 4,435,832, Cl. 381-34.000.

Sanborn, David M.; and Blackshaw, Andrew L., to E-Tech, Inc. Method of manufacturing a heat exchanger. 4,434,539, Cl. 29-157.30V.

Sanden Corporation: *See—*
Terauchi, Kiyoshi; and Sakamoto, Seiichi, 4,435,136, Cl. 418-55.000.
Terauchi, Kiyoshi, 4,435,137, Cl. 418-55.000.

Sanders Associates, Inc.: *See—*
Marshall, William J., Jr.; and Brigham, Gerald A., 4,435,794, Cl. 367-155.000.

Sandoz Ltd.: *See—*
Bauer, Wilfried; and Pless, Janos, 4,435,385, Cl. 424-177.000.

Sankyo Company, Limited: *See—*
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Sano, Mizuka: *See—*
Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, 4,435,375, Cl. 423-439.000.

Santhoff, Rose G. Handbag and belt carrier. 4,434,921, Cl. 224-253.000.

Sanwa Kagaku Kenkyusho Co. Ltd.: *See—*
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.

Sanwa Kako Company, Limited: *See—*
Ito, Hiroo; Kasanami, Takeo; and Miura, Shuji, 4,435,346, Cl. 264-54.000.

Sardisco, John B.: *See—*
Holcomb, Dysart E.; Drechsel, Erhart K.; and Sardisco, John B., 4,435,370, Cl. 423-158.000.

Sarli, Michael S.: *See—*
Derr, Walter R.; and Sarli, Michael S., 4,435,275, Cl. 208-89.000.

Sasahara, Kazuo; Honda, Masamitsu; Koizumi, Masuo; Murakami, Yasushi; Neichi, Tomohiro; Nakakimura, Hiroshi; Noda, Yukifumi; Matsushita, Hiroshi; and Hata, Shun-ichi, to Chugai Seiyaku Kabushiki Kaisha. Dibenzoxazepine derivative, and pharmaceutical composition comprising the same. 4,435,391, Cl. 424-244.000.

Sasakawa, Tomio, to Anritsu Electric Company Limited. Optical fiber connector with mutually engaging, oppositely tapered surfaces. 4,435,036, Cl. 350-96.200.

Sasaki, Isao: *See—*
Kishida, Kazuo; Sasaki, Isao; and Mukai, Nobuhiro, 4,435,540, Cl. 524-780.000.

Sasaki, Kazuo: *See—*
Ishigaki, Katsumi; Sasaki, Kazuo; and Fukumura, Takumi, 4,435,006, Cl. 285-119.000.

Sasaki, Takuya: *See—*
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.

Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Dielectric film. 4,435,475, Cl. 428-409.000.

Sasaya, Hideaki: *See—*
Inagaki, Mitsuo; and Sasaya, Hideaki, 4,435,140, Cl. 418-259.000.

Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, to Eisai Co., Ltd.; and General Director of the Agency of Industrial Science and Technology, Seiichi Ishizaka. Anti-ulcer composition comprising terpenoid containing two functional groups and method of treating ulcers. 4,435,423, Cl. 424-318.000.

Sato, Kazuo: *See—*
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.

Sato, Kosaburo: *See—*
Ogata, Masaru; and Sato, Kosaburo, 4,435,394, Cl. 424-248.500.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Fixing apparatus for electrophotography. 4,435,069, Cl. 355-3.0FU.

Sato, Mitsuyoshi: *See—*
Morita, Akiyoshi; and Sato, Mitsuyoshi, 4,435,142, Cl. 425-145.000.

Sato, Naoki: *See—*
Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, 4,435,375, Cl. 423-439.000.

Sato, Yoshimi, to Nissan Motor Co., Ltd. Leg protector of automotive vehicle. 4,434,999, Cl. 280-752.000.

Saunders, Norman J.: *See—*
Butler, John R.; Shock, Gerald D.; and Saunders, Norman J., 4,434,927, Cl. 227-9.000.

Savas, Judith C.: *See—*
Batzold, John S.; and Savas, Judith C., 4,435,267, Cl. 204-284.000.

Savin Corporation: *See—*
Landa, Benzion, 4,435,068, Cl. 355-3.00R.

Sburlino, Roberto: *See—*
Bianchi, Giuseppe; and Sburlino, Roberto, 4,434,629, Cl. 68-13.00A.

Scarzella, Sergio. Emergency levelling device for a lift car. 4,434,875, Cl. 187-29.00R.

Schacht, Dieter, to Palitex Project Company GmbH. Yarn brake and process for tensioning at least two yarns in a textile yarn processing machine. 4,434,609, Cl. 57-58.860.

Schadlich, Fritz: *See—*
Muller, Thomas; Schadlich, Fritz; and Stabler, Manfred, 4,434,586, Cl. 51-170.0PT.

Schafer, Hans: *See—*
Zerna, Wolfgang; Krabbe, Wilfried; and Schafer, Hans, 4,434,591, Cl. 52-73.000.

Schaper, Ulf-Armin: *See—*
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,435,315, Cl. 252-522.00R.

Scharf, Bernhard: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Scharsig, Hans-Hermann, to Hobart Corporation. Food material slicing machine. 4,434,694, Cl. 83-411.00R.

Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, to American Cyanamid Company. Poly-cation salts of bis (or tris) 4-O-polyhexose-thio-arylene sulfate derivatives. 4,435,387, Cl. 424-180.000.

Scheib, Thomas J.: *See—*
Dziubakowski, Donald J.; Kaya, Azmi; Keyes, Marion A.; Matsko, Theodore N.; Moss, William H.; and Scheib, Thomas J., 4,435,650, Cl. 307-32.000.

Scheider, Hans: *See—*
Baker, Kenneth D.; and Scheider, Hans, 4,435,253, Cl. 204-43.00G.

Schenk, Heinrich: *See—*
Gockler, Heinz; Till, Reinhard; and Schenk, Heinrich, 4,435,773, Cl. 364-724.000.

Schering AG: *See—*
Burba, Christian; Lucas, Hermann-Josef; and Neffgen, Bernd, 4,435,558, Cl. 528-45.000.

Schering Aktiengesellschaft: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,435,390, Cl. 424-243.000.
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.
Petzoldt, Karl; Laurent, Henry; and Wiechert, Rudolf, 4,435,327, Cl. 260-397.500.

Schering Corporation: *See—*
Ganguly, Ashit K.; Mallams, Allan K.; and Liu, Yi-Tsung, 4,435,388, Cl. 424-180.000.
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,435,412, Cl. 424-270.000.
McCombie, Stuart W., 4,435,413, Cl. 424-270.000.
Nafissi-Varchei, M. Mehdi, 4,435,398, Cl. 424-250.000.

Schiele, Werner: *See—*
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Schiesal, Alois: *See—*
Rayer, Peter; Krone, Hartmut; Schiesal, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.

Schiffarth, Josef: *See—*
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.

Schiller, Norman H.; and Alfano, Robert R., to Hamamatsu Corporation. Apparatus and method for use in calibrating the time axis and intensity linearity of a streak camera. 4,435,727, Cl. 358-139.000.

Schirlin, Daniel: *See—*
Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, 4,435,425, Cl. 424-325.000.

Schmidt, Manfred, to Erich Schultze KG. Maintenance and protection devices for cooling plants. 4,434,626, Cl. 62-470.000.

Schmidt, Peter: *See—*
Nunnerich, Wilhelm; and Schmidt, Peter, 4,434,950, Cl. 242-67.200.

Schmidt, Robert: *See—*
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert, 4,435,208, Cl. 71-105.000.

Schmidt, Terrance L.; and Olson, Wayne L., to Rose Manufacturing Company. Locking snap hook. 4,434,536, Cl. 24-241.0PP.

Schmiechen, Ralph: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Schmitt, Oscar A.; Nedreski, Robert J.; and Karlson, Eskil. Dental technique training device. 4,435,163, Cl. 434-263.000.

Schnegg, Peter: *See—*
Emde, Herbert; Blank, Heinz U.; and Schnegg, Peter, 4,435,336, Cl. 260-508.000.

Schneider, Joachim U.: *See—*
Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, 4,435,427, Cl. 424-356.000.

Schneider, Rainer: *See—*
Michaelis, Klaus-Peter; and Schneider, Rainer, 4,435,338, Cl. 260-929.000.

Schneider, Wolfgang, to Klein, Schanzlin & Becker Aktiengesellschaft. Centrifugal pump impeller with replaceable wear ring. 4,435,126, Cl. 416-186.00R.

Schoenmakers, Johannes J. M., to U.S. Philips Corporation. Magnetic-tape cassette. 4,434,955, Cl. 242-199.000.

Schoenwald, Justin P. Trigonometry visualizers and method of making same. 4,435,162, Cl. 434-215.000.

Scholz, Dieter: *See—*
Rumpp, Gerhard; Scholz, Dieter; and Spieth, Manfred, 4,434,859, Cl. 173-48.000.

Schrader, Hellmut. Film guide assembly. 4,435,054, Cl. 353-95.000.

Schrader, Lothar: *See—*
Giebel, Burkhard; Moormann, Hans; and Schrader, Lothar, 4,435,789, Cl. 365-203.000.

Schreckenberg, Manfred; Nouvertne, Werner; Medem, Harald; Dhein, Rolf; and Muller, Peter R., to Bayer Aktiengesellschaft. Mixtures of polycarbonate elastomers, containing hydrogenated dimeric fatty acid esters as condensed units, and polyolefines and, optionally, other polycarbonates. 4,435,544, Cl. 525-146.000.

Schroeder, Heinrich J.; Ambros, Rainer; Paffrath, Gottfried; and Brenner, Norbert, to Rheinisch-Westfalisches Elektrizitatswerk AG. Method of recovering boric acid from waste-water concentrates of nuclear plants. 4,435,184, Cl. 23-300.000.

Schudel, Peter: *See—*
Crameri, Yvo; Ochsner, Paul A.; and Schudel, Peter, 4,435,585, Cl. 549-446.000.

Schultze-Gebhardt, Fritz: *See—*
Miessen, Ralf; Wilsing, Hans; and Schultze-Gebhardt, Fritz, 4,434,530, Cl. 19-0.460.

Schulz, Bernhard: *See—*
Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, 4,435,427, Cl. 424-356.000.

Schulz, Ralf-Thilo: *See—*
Engelsberger, Ernst; and Schulz, Ralf-Thilo, 4,434,580, Cl. 49-502.000.

Schumacher, Ralf: *See—*
Struck, Carl-Heinz; and Schumacher, Ralf, 4,435,152, Cl. 431-170.000.

Schumann, Horst: *See—*
Strauss, Gottfried; and Schumann, Horst, 4,434,582, Cl. 51-101.00R.

Schurfeld, Armin: *See—*
Hartel, Gunter; Schiele, Werner; Schurfeld, Armin; Bianchi, Valerio; and Abidin, Anwar, 4,434,772, Cl. 123-549.000.

Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., to Eaton Corporation. Rectified AC frequency converter. 4,435,750, Cl. 363-177.000.

Schutze, Detlef-Ingo: *See—*
Rolf, Meinhard; Schutze, Detlef-Ingo; Neeff, Rutger; and Runzheimer, Hans-Volker, 4,435,589, Cl. 560-48.000.

Schwaab, Josef: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Scharf, Bernhard; Lindenschmidt, Gerhard; Schwaab, Josef; and Jung, Rudolf H., 4,435,541, Cl. 525-64.000.

Schwabe, Ulrich; and Jacobs, Erwin, to Siemens Aktiengesellschaft. Process for producing adjacent tubs implanted with dopant ions in the manufacture of LSI complementary MOS field effect transistors. 4,434,543, Cl. 29-576.00B.

Schwartz, Erich: *See—*
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.

Schwartz, Reinhard: *See—*
Frey, Hansjorg; Hampel, Heinrich; Muller, Rolf; Ritter, Ernst; and Schwartz, Reinhard, 4,435,128, Cl. 417-63.000.

Schwartz, Werner; and Fischer, Peter, to Metallgesellschaft Aktiengesellschaft. Process of blowing high-oxygen gases into a molten bath which contains non-ferrous metals. 4,435,211, Cl. 75-62.000.

Schweizer, Hartmut: *See—*
Eisele, Hermann; Hill, Martin; and Schweizer, Hartmut, 4,435,745, Cl. 363-21.000.

Schwerzel, Robert E.: *See—*
Epstein, Harold M.; Schwerzel, Robert E.; and Andrus, Paul G., 4,435,828, Cl. 378-49.000.

SCM Corporation: *See—*
Cleveland, William E., 4,435,098, Cl. 400-674.000.

Scott, Edward W.; and Goetschel, Daniel B. Orchard error correction system. 4,435,807, Cl. 371-50.000.

Scott Paper Company: *See—*
Gray, Lorin S., III; and Doody, Jeffrey S., 4,435,461, Cl. 428-141.000.

Seaquist Valve Company: *See—*
Knickerbocker, Michael G., 4,435,135, Cl. 417-511.000.

Secretary of State in her Brtannic Majesty's Government of the United Kingdom: *See—*
Vogel, Alfredo, 4,434,839, Cl. 164-485.000.

SEDCO, Inc.: *See—*
Hampton, James E., 4,435,108, Cl. 405-209.000.

Sedivy, Jan K.: *See—*
Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., 4,435,750, Cl. 363-177.000.

Sedlmair, Siegfried, to Siemens Aktiengesellschaft. Stripline microwave balanced mixer circuit. 4,435,848, Cl. 455-327.000.

Segers, Marinus T. M.; Niessen, Cornelis; and Kuiper, Krijn, to U.S. Philips Corporation. Device for testing a circuit comprising sequential and combinatorial logic elements. 4,435,806, Cl. 371-25.000.

Seid, Gordon: *See—*
Cronin, Michael J.; and Seid, Gordon, 4,434,624, Cl. 62-172.000.

Seidelmann, Dieter: *See—*
Braestrup, Claus T.; Christensen, Jogen A.; Engelstoft, Mogens; Neef, Gunter; Eder, Ulrich; Schmiechen, Ralph; Huth, Andreas; Rahtz, Dieter; Seidelmann, Dieter; Kehr, Wolfgang; and Palenschat, Dieter, 4,435,403, Cl. 424-256.000.

Seifried, Norbert: *See—*
Oepen, Gerhard; Mangartz, Karl-Heinz; Seifried, Norbert; Engel, Jurgen; and Isaac, Otto, 4,435,563, Cl. 536-18.100.

Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Recording apparatus with editing capability. 4,435,723, Cl. 346-154.000.

Seino, Kazuyuki: *See—*
Hori, Yasuro; Kanoi, Minoru; Seino, Kazuyuki; and Hagiwara, Syuya, 4,435,751, Cl. 364-574.000.

Seki, Fumio, to Yoshida Kogyo K K. Tape feeding device for stapling machines. 4,434,928, Cl. 227-16.000.

Selga, Marita Y.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.

Selman, Gordon L.: *See—*
Knapton, Arthur G.; and Selman, Gordon L., 4,435,373, Cl. 423-403.000.

Selva, Domenica: *See—*
Toja, Emilio; Omodei-Sale', Amedeo; and Selva, Domenica, 4,435,417, Cl. 424-273.00B.

Sepulveda, Luis F., to Challenger Caribbean Corporation; Challenger Products Corporation; and Commander Electrical Equipment, Inc. Lock off-lock on. 4,435,624, Cl. 200-42.00T.

Service de Propriete Indust. Centre de Recherches de Pont a Mousson: *See—*
Bacroix, Marcel A., 4,434,821, Cl. 141-44.000.

Servo, Matti; and Vainio, Matti, to Tamfelt Oy AB. Thermoplastic non-woven fabric seamed by melt-seaming and a method of making such a fabric. 4,435,457, Cl. 428-58.000.

Sevier, Peter E., to Olin Corporation. Apparatus and process for cooling and solidifying continuous or semi-continuously cast material. 4,434,838, Cl. 164-485.000.

Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Radiation sterilizable absorbable polymeric materials and methods for manufacturing the same. 4,435,590, Cl. 560-61.000.

Shanley, Robert L., II: *See*—
Harwood, Leopold A.; and Shanley, Robert L., II, 4,435,729, Cl. 358-183.000.

Shanton, Kenneth J., to Wiggins Teape Group Limited, The. Record material carrying a color developer composition. 4,435,004, Cl. 282-27.500.

Shapiro, Justin J. Thermometer scale magnifier. 4,435,094, Cl. 374-191.000.

Sharp Kabushiki Kaisha: *See*—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,435,767, Cl. 364-405.000.
Tagawa, Takao; and Urakawa, Toshio, 4,435,733, Cl. 358-302.000.

Sharpe, Claude A.: *See*—
Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., 4,435,711, Cl. 343-389.000.

Sheldon, William W.; and Axford, Theodore G., to Sheldon, William W. Retrieval of lobsters and other objects. 4,434,572, Cl. 43-6.500.

Shell Oil Company: *See*—
Graiff, L. B.; and Kiovsky, T. E., 4,435,187, Cl. 44-63.000.
Krijnen, Wilhelmus J.; and Grotenhuis, Paulus A. M., 4,435,582, Cl. 549-352.000.
Lewis, Robert M.; and Slaugh, Lynn H., 4,435,602, Cl. 568-470.000.

Shelton, Charles W.: *See*—
Beloate, Mickey R.; Erb, Harley E.; and Shelton, Charles W., 4,434,896, Cl. 206-621.000.

Shelton, Huey G.; and Zack, Leonard N., to Huey Company. Anti-snap device for drafting board tilting mechanism. 4,434,721, Cl. 108-4.000.

Shelvik, Bertrum S., to Eaton Corporation. Hold-down bracket for plug-in circuit breaker. 4,435,739, Cl. 361-346.000.

Sherwin, Owen W.: *See*—
Chapman, John A.; and Sherwin, Owen W., 4,434,936, Cl. 239-178.000.

Shevrin, Philip: *See*—
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Shideler, Jay A.; and Berry, Robert L., to Fairchild Camera & Instrument Corporation. Method of forming self-aligned lateral bipolar transistor. 4,435,225, Cl. 148-1.500.

Shiga, Motohiro: *See*—
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.

Shimano Industrial Company Limited: *See*—
Nakajima, Hideki, 4,434,951, Cl. 242-84.52B.
Shimano, Keizo, 4,434,679, Cl. 74-491.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Speed-change operating device for a bicycle. 4,434,679, Cl. 74-491.000.

Shimauchi Seiki Kabushiki Kaisha: *See*—
Chihara, Hiroyuki; and Kitano, Masuo, 4,435,089, Cl. 368-204.000.

Shimizu, Makoto: *See*—
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.

Shimizu, Masami; and Uchidoi, Masanori, to Canon Kabushiki Kaisha. Electrical circuit elements combination. 4,435,741, Cl. 361-401.000.

Shimizu, Michimasa: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.

Shimura, Takaki: *See*—
Miwa, Hirohide; and Shimura, Takaki, 4,434,661, Cl. 73-625.000.
Miyazaki, Junji; Miwa, Hirohide; and Shimura, Takaki, 4,434,658, Cl. 73-618.000.

Shin, Chung T.; and Geria, Navin, to Bristol-Myers Company. Anhydrous alcoholic antiperspirant suspension composition containing certain aluminum or aluminum/zirconium salt glycine complexes. 4,435,382, Cl. 424-66.000.

Shinagawa Refractories Co., Ltd.: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, 4,435,215, Cl. 106-84.000.

Shinji, Aoki: *See*—
Koichi, Yamada; Keita, Kawamura; and Shinji, Aoki, 4,435,260, Cl. 204-164.000.

Shinkawa, Keiro; Noda, Masaki; and Sodeyama, Chuichi, to Hitachi, Ltd. FET Microwave oscillator being frequency stabilized by capacitive reactance micro-strip stub line. 4,435,688, Cl. 331-99.000.

Shinoda, Kazuichi; and Katayama, Masayoshi, to Tokico Ltd. Detector for use in measurement of flow speed or flow rate of a fluid. 4,434,668, Cl. 73-861.220.

Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, to Hitachi, Ltd. Vibration diagnosing method and apparatus for a rotary machine. 4,435,770, Cl. 364-508.000.

Shionogi & Co., Ltd.: *See*—
Ogata, Masaru; and Sato, Kosaburo, 4,435,394, Cl. 424-248.500.

Shiozaki, Tomoharu: *See*—
Horiike, Tetsuro; Kuroda, Takio; and Shiozaki, Tomoharu, 4,435,340, Cl. 264-4.700.

Shiraishi, Hideo: *See*—
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, 4,434,749, Cl. 123-41.020.

Shirakawa, Norio: *See*—
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.

Shirase, Haruya; and Kondo, Takehisa, to Nissan Motor Co., Ltd. EGR Control system. 4,434,776, Cl. 123-568.000.

Shock, Gerald D.: *See*—
Butler, John R.; Shock, Gerald D.; and Saunders, Norman J., 4,434,927, Cl. 227-9.000.

Showa Denko Kabushiki Kaisha: *See*—
Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, 4,435,210, Cl. 75-53.000.

Shroff, James R.: *See*—
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,435,395, Cl. 424-248.500.

Sias, Roy C.: *See*—
Stokke, Olaf M.; and Sias, Roy C., 4,435,295, Cl. 252-8.55D.

Sieck, Reinhard; and Brusewitz, Gerhard, to Dr. Madaus & Co. Packaging container for sensitive products. 4,434,890, Cl. 206-443.000.

Siemens AG: *See*—
Taenzer, Jon C., 4,434,799, Cl. 128-660.000.

Siemens Aktiengesellschaft: *See*—
Birkle, Siegfried; Gehring, Johann; and Stoger, Klaus, 4,435,265, Cl. 204-198.000.
Giebel, Burkhard; Moormann, Hans; and Schrader, Lothar, 4,435,789, Cl. 365-203.000.
Heynisch, Hinrich, 4,435,672, Cl. 315-366.000.
Oestreich, Ulrich, 4,434,610, Cl. 57-294.000.
Schwabe, Ulrich; and Jacobs, Erwin, 4,434,543, Cl. 29-576.00B.
Sedlmair, Siegfried, 4,435,848, Cl. 455-327.000.

Siemens Corporation: *See*—
Green, Philip S., 4,434,662, Cl. 73-641.000.

SIGMANKoncern: *See*—
Svercl, Josef; Novak, Jan; and Kalab, Zdenek, 4,434,645, Cl. 72-402.000.

Sikkenga, David L., to Standard Oil Company (Indiana). Continuous reactivation of AMS-1B-containing catalyst systems. 4,435,311, Cl. 502-22.000.

Silander, Torsten, to AB Tesi. Catheter. 4,434,797, Cl. 128-343.000.

Siler, Dan R.; and Trimble, Harold D., to Johnson Service Company. Apparatus for radiographic examination of pipe welds. 4,435,829, Cl. 378-60.000.

Silva, Adolfo E.: *See*—
Ranganathan, Ramaswami; Patmore, David J.; and Silva, Adolfo E., 4,435,280, Cl. 208-112.000.

Silver, Alexander: *See*—
Gu, Alston L.; and Silver, Alexander, 4,435,839, Cl. 384-103.000.

Silver Seiko Ltd.: *See*—
Tsuzuki, Takashi, 4,434,628, Cl. 66-123.000.

Simandi, Laszlo: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Simay, Antal: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Simig, Gyula: *See*—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.

Simm, Manfred: *See*—
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,435,466, Cl. 428-215.000.

Simon, Donald J.; and Field, Thomas R., to Jenn-Air Corporation. Electric range surface element. 4,435,638, Cl. 219-460.000.

Simon, Jacques: *See*—
Rougeron, Michel; and Simon, Jacques, 4,434,958, Cl. 244-126.000.

Simons, Leslie H.; and Alexander, David C., to Texaco Inc. Cobalt hydroformylation catalysts. 4,435,517, Cl. 502-74.000.

Simpson, Charles H. Hydrometallurgical process for extraction of nickel. 4,435,369, Cl. 423-147.000.

Singer Company, The: *See*—
Davidson, Donald R., 4,434,729, Cl. 112-121.120.
Kornatowski, Boleslaw, 4,434,880, Cl. 192-67.00R.
Pross, John W., Jr., 4,435,757, Cl. 364-200.000.
Russell, Angus R. T., 4,434,734, Cl. 112-181.000.
Salge, Edward A.; and Horey, Leonard I., 4,434,732, Cl. 112-158.00E.
Szostak, Jan; and Newman, Albert L., 4,434,736, Cl. 112-258.000.
Weisz, William, 4,434,733, Cl. 112-158.00A.

Sipos, George G.; and Christian, Jerry B., to Delta Medical Industries. Variable rate syringe pump for insulin delivery. 4,435,173, Cl. 609-155.000.

Sivachenko, Eugene W. Method and apparatus for severing corrugated metal products. 4,434,638, Cl. 72-130.000.

Sjoerdsma, Albert; Bey, Philippe; Jung, Michel; Gerhart, Fritz; and Schirlin, Daniel, to Merrell Toraude et Compagnie. Fluorinated diaminobutane derivatives. 4,435,425, Cl. 424-325.000.

SKF Kugellagerfabriken GmbH: *See*—
Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, 4,434,882, Cl. 192-98.000.
Walter, Lothar; Brandenstein, Manfred; and Olschewski, Armin, 4,434,640, Cl. 72-348.000.

Skinner, James R.; and Atwood, Robert G., to M.U. Engineering & Mfg., Inc. Disc package. 4,434,891, Cl. 206-444.000.

Slaugh, Lynn H.: *See*—
Lewis, Robert M.; and Slaugh, Lynn H., 4,435,602, Cl. 568-470.000.

Slomnicki, Israel. Ozone production system. 4,434,771, Cl. 123-539.000.

SMAC Acieroid: *See*—
Reneault, Patrick; and Ovaert, Francis, 4,434,592, Cl. 52-145.000.

Smelser, Bernard C. Water injection control valve. 4,434,748, Cl. 123-25.00L.

Smirnov, Boris A.: *See*—
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.

Smith, Dale A.: *See*—
Bellamy, David; and Smith, Dale A., 4,434,822, Cl. 141-98.000.

Smith, Darrell F., Jr.: *See*—
Eiselstein, Herbert L.; Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,435,359, Cl. 419-3.000.

Smith, David W.: *See*—
Clark, Frederic L.; Kaffenberger, Orville A., Jr.; Paranjpe, Suresh C.; Smith, David W.; and Ames, Jack D., 4,435,718, Cl. 346-75.000.

Smith, Donald J., to Communication Technology Corporation. Cable splice housing. 4,435,612, Cl. 174-92.000.

Smith, Herbert D.: *See*—
Knaus, Ernest; Namsick, Raymond J.; and Smith, Herbert D., 4,435,240, Cl. 156-242.000.

Smith International, Inc.: *See*—
Garrett, William R., 4,434,863, Cl. 175-321.000.

Smith, John C., to International Telephone and Telegraph Corporation. Manufacturing process for a low loss optical fiber cable. 4,435,238, Cl. 156-171.000.

Smith, Michael B., to Standard Oil Company. Maximizing fracture extension in massive hydraulic fracturing. 4,434,848, Cl. 166-250.000.

Smith, Peter R.; and Coleman, Charles, to Statitrol, Inc. Method of making an improved pyroelectric sensor. 4,434,549, Cl. 29-832.000.

Smith, Raymond H. Magnetic jack. 4,434,968, Cl. 254-1.000.

Smith, Richard C.: *See*—
Black, Richard W.; Kirayoglu, Erol M.; Leiter, Harold E.; and Smith, Richard C., 4,435,031, Cl. 339-17.00C.

Smith, Robert G. Tie down connector. 4,435,102, Cl. 403-206.000.

Smith, Roger D.: *See*—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,435,146, Cl. 425-534.000.

SmithKline Beckman Corporation: *See*—
Chow, Alfred W., 4,435,418, Cl. 424-273.00B.

Snaper, Alvin A. Fluidic matrix printer. 4,435,719, Cl. 346-75.000.

Snugli, Inc.: *See*—
Moore, Ann A., 4,434,920, Cl. 224-160.000.

Societe Anonyme de Telecommunications: *See*—
Durand, Alain, 4,435,224, Cl. 148-1.500.

Societe Anonyme dite: CERAVER: *See*—
Kaczerginski, Alexandre; and Willem, Michel, 4,435,615, Cl. 174-189.000.

Societe Anonyme dite: Sanofi: *See*—
Demarne, Henri; and Wagnon, Jean, 4,435,426, Cl. 424-324.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Hsu, Jau Y., 4,435,435, Cl. 426-557.000.

Societe Metallurgique Le Nickels-S.L.N.: *See*—
Cardini, Jean-Louis, 4,434,942, Cl. 241-21.000.

Societe Nationale des Poudres et Explosifs: *See*—
Lecolier, Serge; and Raynal, Serge, 4,435,312, Cl. 502-157.000.

Societe Nationale Elf Aquitaine (Production): *See*—
Favie, Claude; and Mercadier, Michel, 4,435,545, Cl. 525-344.000.

Societe Nouvelle de Roulements: *See*—
Sonnerat, Claude, 4,434,985, Cl. 277-37.000.

Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See*—
Jaccard, Pierre-Ernest, 4,435,090, Cl. 368-320.000.

Sodeyama, Chuichi: *See*—
Shinkawa, Keiro; Noda, Masaki; and Sodeyama, Chuichi, 4,435,688, Cl. 331-99.000.

Soes, Lucas; and Ten Berge, Eduardus F. A., to AMP Incorporated. Connector for use in butt splicing two optical fibres. 4,435,038, Cl. 350-96.210.

Solar Turbines Incorporated: *See*—
Wosika, Leon R., 4,435,121, Cl. 415-56.000.

Solco Basel AG: *See*—
Laszczower, Max, 4,435,170, Cl. 604-4.000.

Solomon, Robert A.; and Dellinger, John J., to Am Fab, Inc. Tilt support for overbed table top and vertical lock assembly therefor. 4,434,722, Cl. 108-8.000.

Someshwar, Ashok H.: *See*—
Brantingham, George L.; and Someshwar, Ashok H., 4,435,775, Cl. 364-900.000.

Somezawa, Masashi: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.

Somfai, Eva: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Simandi, Laszlo; and Somfai, Eva, 4,435,567, Cl. 544-165.000.

Sonnerat, Claude, to Societe Nouvelle de Roulements. Gasket with metal mounting armature rotating between coaxial parts. 4,434,985, Cl. 277-37.000.

Sonnino-Goldman, Paula: *See*—
Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, 4,435,409, Cl. 424-266.000.

Sonobe, Hiroshi: *See*—
Matsumura, Hiroshi; Murakami, Fumiki; and Sonobe, Hiroshi, 4,435,594, Cl. 560-205.000.

Sony Corporation: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.
Ohsawa, Kenji; Ito, Takao; Fueki, Shimetomo; Osawa, Masayuki; and Kurata, Keiji, 4,435,611, Cl. 174-68.500.

Sorbier, Pierre, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the production of molded members from elongated particles of wood. 4,435,347, Cl. 264-118.000.

Souchier, Alain: *See*—
Gill, George; Souchier, Alain; and Dorville, Georges, 4,434,614, Cl. 60-271.000.

Sowerwine, Owen D., to Castle & Cooke Techniculture. Support system for planting trays. 4,434,576, Cl. 47-39.000.

Soyka, Ron B.: *See*—
Jones, James B.; and Soyka, Ron B., 4,435,095, Cl. 374-194.000.

Specht, Steven J.: *See*—
Supelak, Lawrence S.; Specht, Steven J.; and Hills, Richard C., 4,435,487, Cl. 429-70.000.

Specified Ceiling Systems: *See*—
McCall, Francis L., 4,434,599, Cl. 52-729.000.

Spencer, Billie M.; Cady, William S.; and Zacheile, John W., Jr., to Sperry Corporation. Coherent spread spectrum receiving apparatus. 4,435,822, Cl. 375-1.000.

Sperry Corporation: *See*—
Campbell, Willis R., 4,434,607, Cl. 56-341.000.
Clark, John F., 4,435,707, Cl. 343-5.00W.
Spencer, Billie M.; Cady, William S.; and Zscheile, John W., Jr., 4,435,822, Cl. 375-1.000.
Torok, Ernest J.; and Harvey, William A., 4,435,041, Cl. 350-162.240.

Spielau, Paul: *See*—
Kuhnel, Werner; Putz, Peter; Simm, Manfred; and Spielau, Paul, 4,435,466, Cl. 428-215.000.

Spieth, Manfred: *See*—
Rumpp, Gerhard; Scholz, Dieter; and Spieth, Manfred, 4,434,859, Cl. 173-48.000.

Spilatro, Diane L.: *See*—
Guth, Jacob J.; Spilatro, Diane L.; and Verdicchio, Robert J., 4,435,300, Cl. 252-117.000.

Sprecker, Mark A., to International Flavors & Fragrances Inc. Norbornyl esters and uses thereof in augmenting or enhancing the organoleptic properties of a consumable material and process for preparing same. 4,435,316, Cl. 252-522.00R.

Spriggs, Robert G., to Automated Optic, Inc. Apparatus adapted for automatic or semi-automatic fabrication of ultra-precision ophthalmic lenses, e.g., contact lenses. 4,434,581, Cl. 51-67.000.

Squaratti, Armand, to Lonza Ltd. Process for the production of 2-amino-4-methyl-benzothiazole. 4,435,576, Cl. 548-164.000.

Stabler, Manfred: *See*—
Muller, Thomas; Schadlich, Fritz; and Stabler, Manfred, 4,434,586, Cl. 51-170.0PT.

Stahl, Charles R., to General Electric Company. Closed cycle gas turbine for gaseous production. 4,434,613, Cl. 60-39.070.

Stamicarbon B.V.: *See*—
Evens, Georges G., 4,435,552, Cl. 526-140.000.
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., 4,435,314, Cl. 502-154.000.
van de Leemput, Lambertus J. M. A.; Nooijen, Godefridus A. H.; and van der Loo, Hendrikus W., 4,435,551, Cl. 526-101.000.

Stammler, Kurt: *See*—
Gansert, Willi; Jakob, Gert; Ruttkowski, Lothar; Goetzke, Siegfried; and Stammler, Kurt, 4,435,033, Cl. 339-45.00M.

Standard Oil Company: *See*—
Smith, Michael B., 4,434,848, Cl. 166-250.000.

Standard Oil Company, (Indiana): *See*—
Bertolacini, Ralph J.; and Forsythe, William L., Jr., 4,435,282, Cl. 208-113.000.
Brannen, Cecil G.; and Hunt, Mack W., 4,435,301, Cl. 252-33.200.
Fields: Ellis K.; and Nimry, Tayseer S., 4,435,593, Cl. 560-119.000.
Sikkenga, David L., 4,435,311, Cl. 502-22.000.
Vasalos, Iacovos A., 4,435,281, Cl. 208-113.000.
Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., 4,435,016, Cl. 299-2.000.

Standley, Paul M., to Dayco Corporation. Apparatus and method for making flexible load-carrying cord. 4,435,348, Cl. 264-174.000.

Stankowitz, James L. Applicator gun. 4,434,939, Cl. 239-345.000.

Stanley Works, The: *See*—
Czerwinski, Frank G.; and Rutty, Edward C., 4,434,952, Cl. 242-107.000.
Whitehouse, Hugh L., 4,434,858, Cl. 173-12.000.

Static, Inc.: *See*—
Testone, Anthony Q., 4,435,195, Cl. 55-126.000.

Statitrol, Inc.: *See*—
Smith, Peter R.; and Coleman, Charles, 4,434,549, Cl. 29-832.000.

Stattel, Raymond J.; and Niswander, James K., to United States of America, National Aeronautics and Space Administration. Memory-based parallel data output controller. 4,435,781, Cl. 364-900.000.

Staudenrausch, Georg; and Weerth, Hans-Ernst, to Albert Handtmann GmbH & Co. Sausage skin storage and feeder apparatus for a sausage stuffing machine. 4,434,527, Cl. 17-33.000.

Stauffer, Louis: *See—*
Pomaro, Nicholas; Pomaro, Russell; and Stauffer, Louis, 4,435,486, Cl. 429-1.000.

Steck, Edward J., to Wyoming Mineral Corporation. Barren solvent wash by oxidized raffinate acid in the process of uranium extraction from phosphoric acid. 4,435,367, Cl. 423-10.000.

Steeb, Dieter C. Stacked-plate heat exchanger. 4,434,845, Cl. 165-153.000.

Stegenga, Philip D.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.

Stehman, Carl J.: *See—*
Fechalos, William A.; and Stehman, Carl J., 4,435,620, Cl. 179-18.0EB.

Steinicke, Wolfgang: *See—*
Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.

Steinke, Kurt E.: *See—*
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., 4,434,654, Cl. 73-151.000.

Steklenski, David J.: *See—*
Lelental, Mark; and Steklenski, David J., 4,435,490, Cl. 430-45.000.

Stenkvist, Bjorn G. Process and device for preparation of cell samples for cytological tests. 4,435,507, Cl. 435-262.000.

Stenkvist, Sven-Einar, to ASEA Aktiebolag. DC Arc furnace component. 4,435,813, Cl. 373-72.000.

Stenzel, Otto; and Flecker, Pierre, to Leybold-Heraeus GmbH. Method and apparatus for monitoring the melting process in vacuum arc furnaces. 4,435,818, Cl. 373-104.000.

Stephen, John F.: *See—*
Kruse, Walter M.; and Stephen, John F., 4,435,586, Cl. 549-464.000.

Stern, Warren C., to Burroughs Wellcome Co. Treatment of minimal brain dysfunction (MBD). 4,435,449, Cl. 424-330.000.

Stevens, Emsley H., to Honeywell, Inc. Threshold voltage control network for integrated circuit field-effect trransistors. 4,435,652, Cl. 307-297.000.

Stevens, Reginald W., to International Computers Limited. Data transmission systems. 4,435,705, Cl. 340-825.050.

Stewart, William S., to Phillips Petroleum Company. Control of a system for supplying heat. 4,434,746, Cl. 122-448.00R.

Stewart, William S., to Phillips Petroleum Company. Control of a H_2S absorber. 4,435,192, Cl. 55-19.000.

Stieber, Harry C.: *See—*
Beiz, Herman M.; and Stieber, Harry C., 4,435,816, Cl. 373-91.000.

Stihl, Andreas: *See—*
Nitschmann, Karl; Weyda, Gunther; Emmrich, Bodo; and Stimpfig, Karl O., 4,434,556, Cl. 30-123.400.

Stiles, Theodore R.: *See—*
Abramson, Allen P.; and Stiles, Theodore R., 4,435,032, Cl. 339-36.000.

Stimpfig, Karl O.: *See—*
Nitschmann, Karl; Weyda, Gunther; Emmrich, Bodo; and Stimpfig, Karl O., 4,434,556, Cl. 30-123.400.

Stirling, Irene; and Clarke, Brian P., to Beecham Group Limited. 9-Deoxy-9-amino-clavulanate antibacterial agents. 4,435,565, Cl. 542-416.000.

Stockmaster, Edward F.: *See—*
Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 4,434,537, Cl. 24-380.000.

Stoger, Klaus: *See—*
Birkle, Siegfried; Gehring, Johann; and Stoger, Klaus, 4,435,265, Cl. 204-198.000.

Stohr, Frank-Michael; Wild, Peter; and Nickel, Horst, to Bayer Aktiengesellschaft. Naphtholsulphonic acid compounds, their preparation and use as coupling components. 4,435,334, Cl. 260-501.120.

Stokke, Olaf M.; and Sias, Roy C., to Conoco Inc. Sulfonate for waterflooding. 4,435,295, Cl. 252-8.55D.

Stoll, Kurt. Cutter for flexible pipes. 4,434,555, Cl. 30-92.000.

Stopar, Miha: *See—*
Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, 4,434,798, Cl. 128-421.000.

Stork, Karl: *See—*
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.

Stork PMT BV: *See—*
van Mil, Martinus P. G., 4,434,526, Cl. 17-11.000.

Stower, Reinhard, to Compur-Electronic GmbH. Centrifuge. 4,435,167, Cl. 494-16.000.

Stradtmann, Gunther: *See—*
Buchschmid, Emil; Burkel, Rainer; Danamps, Jean; Frenznick, Anton; and Stradtmann, Gunther, 4,435,625, Cl. 200-61.220.

Straubel, Max, to Robert Bosch GmbH. Fuel supply apparatus for internal combustion engines. 4,434,777, Cl. 123-568.000.

Strauss, Gottfried; and Schumann, Horst, to Sack Glastechnik GmbH. Glass trimming cutter with roller conveyor. 4,434,582, Cl. 51-101.00R.

Streaty, Charles E., Jr.: *See—*
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,435,438, Cl. 426-656.000.

Strohl, John: *See—*
Martin, Gordon W.; and Strohl, John, 4,435,268, Cl. 204-408.000.

Strong, Hovey R., Jr.: *See—*
Lorie, Raymond A.; and Strong, Hovey R., Jr., 4,435,758, Cl. 364-200.000.

Struck, Carl-Heinz; and Schumacher, Ralf, to Dr. C. Otto & Comp. GmbH. Apparatus for improving the flow of gases to a combustion chamber of a coke oven or the like. 4,435,152, Cl. 431-170.000.

Stryjewski, Walter A., to Eastman Kodak Company. Flash fusing apparatus. 4,435,633, Cl. 219-216.000.

Studsvik Energiteknik AB: *See—*
Johansson, Lars O., 4,435,356, Cl. 376-216.000.

Sturm, Budd H., to Goodyear Tire & Rubber Company, The. Para-nitrodiphenylamine synthesis. 4,435,599, Cl. 564-433.000.

Suchy, Milos: *See—*
Frater, Georg; Suchy, Milos; Wenger, Jean; and Winternitz, Paul, 4,435,207, Cl. 71-94.000.

Suenaga, Eiichi: *See—*
Ban, Masatoshi; Miura, Kenji; Baba, Yutaka; Iwata, Noriyuki; Fukui, Akira; Hori, Mikio; Fujimura, Hajime; and Suenaga, Eiichi, 4,435,392, Cl. 424-244.000.

Suga, Michihisa: *See—*
Tsuzuki, Mitsuo; and Suga, Michihisa, 4,435,721, Cl. 346-140.00R.

Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, to Matsumoto Seiyaku Kogyo Kabushiki Kaisha. Process for producing silicon isocyanate compounds. 4,435,587, Cl. 556-410.000.

Sugiyama, Minoru; and Kaneko, Shinji, to Tokico Ltd. Ball joint. 4,435,101, Cl. 403-122.000.

Sugizaki, Shigeru: *See—*
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.

Suh Won America, Inc.: *See—*
Lee, Chong H., 4,434,894, Cl. 206-526.000.

Sukejima, Hajime: *See—*
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.

Sullivan, Carl M.; and Kelley, Mellis M., to Goodyear Tire & Rubber Company, The. Process for the production of polyester copolymers. 4,435,562, Cl. 528-272.000.

Sulzer Brothers Ltd.: *See—*
Gruber, Walter, 4,434,817, Cl. 139-429.000.

Sumimoto, Morio, to Kabushiki Kaisha Sumimoto Kagaku Kenkyusho. Apparatus for filtration of lubricating oil for an internal combustion engine. 4,435,287, Cl. 210-131.000.

Sumitomo Chemical Co., Ltd.: *See—*
Fukushima, Nobuo; Saitou, Teruo; and Hayashida, Haruo, 4,435,350, Cl. 264-280.000.
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, 4,435,203, Cl. 71-76.000.
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,435,332, Cl. 260-465.00D.

Sumitomo Electric Industries, Ltd.: *See—*
Miyamoto, Yoshimi; Nakamura, Naotaka; Akaku, Fumiyoshi; Koto, Katsumi; and Kosaka, Tsutomu, 4,435,692, Cl. 338-214.000.

Summerfield, Martin; Messina, Neale A.; and Ingram, Larry S., to United States of America, Army. Black powder flamespread tester. 4,434,655, Cl. 73-167.000.

Sun Microsystems, Inc.: *See—*
Bechtolsheim, Andreas, 4,435,792, Cl. 365-230.000.

Sundahl, James G.; and Broersma, Lester V., to Bell Helmets Inc. Bicyclists helmet with air flow and perspiration control. 4,434,514, Cl. 2-425.000.

Sundman, Frey: *See—*
Niskanen, Toivo; Sundman, Frey; and Tuomaala, Jorma, 4,435,122, Cl. 415-121.00B.

Sundstrand Data Control, Inc.: *See—*
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., 4,434,654, Cl. 73-151.000.

Sung, Rodney L.; Kaufman, Benjamin J.; and Sweeney, William M., to Texaco Inc. Alcohol fuels containing wear-inhibiting amounts of reaction products of amines and phosphate esters of phosphonic acids. 4,435,186, Cl. 44-53.000.

Sunouchi, Akio: *See—*
Fukahori, Hidehiko; Ichiyanagi, Toshikazu; Iwashita, Tomonori; Mashimo, Yukio; Sunouchi, Akio; and Fujino, Masahisa, 4,435,061, Cl. 354-173.110.

Supelak, Lawrence S.; Specht, Steven J.; and Hills, Richard C., to Gould Inc. Primary battery system. 4,435,487, Cl. 429-70.000.

Superior Gear Box Company: *See—*
Rhodes, Lawrence G.; and Carter, John W., 4,434,606, Cl. 56-106.000.

Superior Graphite Co.: *See—*
Goldberger, William; and Reed, A. K., 4,435,444, Cl. 427-49.000.

Superior Handling Equipment, Inc.: *See—*
Mosely, John F.; and Austin, Stephen R., 4,435,113, Cl. 414-347.000.

Surjaatmadja, Jim B., to Halliburton Company. Hydraulic digital stepper actuator. 4,434,704, Cl. 91-25.000.

Surls, Joseph P., Jr.: *See—*
Olson, Robert S.; Surls, Joseph P., Jr.; and West, Ben F., 4,435,379, Cl. 423-472.000.

Suyama, Tsuneo: *See—*
Kanazawa, Tatsuo; and Suyama, Tsuneo, 4,434,892, Cl. 206-446.000.

Suzuki, Hirotsugu; Urata, Sigeru; and Okabe, Kanichi, to Tokyo Shibaura Denki Kabushiki Kaisha. X-Ray apparatus. 4,435,830, Cl. 378-197.000.

Suzuki, Isao: *See—*
Ando, Hideo; and Suzuki, Isao, 4,435,343, Cl. 264-22.000.

Suzuki, Kazuhiro; and Takahashi, Toshikatsu, to Fuji Xerox Co., Ltd. Optical magnification enlargement type copying machine. 4,435,077, Cl. 355-51.000.

Suzuki, Masakazu: *See—*
Furuichi, Shuhei; Ikeda, Toshiaki; and Suzuki, Masakazu, 4,435,747, Cl. 363-25.000.

Suzuki, Shigeo; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, to Hitachi, Ltd. Complex type electrophotographic plate and electrophotographic method using the same. 4,435,492, Cl. 430-58.000.

Suzuki, Toshiaki: *See—*
Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, 4,435,842, Cl. 455-181.000.

Suzuki, Yasuo: *See—*
Munekata, Kenichi; Unno, Kunihiko; and Suzuki, Yasuo, 4,434,585, Cl. 51-166.00R.

Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, to Yokogawa Hokushin Electric Corp. Interactive graphic system. 4,435,772, Cl. 364-520.000.

Svenska Rotor Maskiner Aktiebolag: *See—*
Astberg, Ake, 4,435,139, Cl. 418-201.000.

Svercl, Josef; Novak, Jan; and Kalab, Zdenek, to SIGMANKoncern. Apparatus for the radial shaping of tubular articles. 4,434,645, Cl. 72-402.000.

Swander, Kenneth D., to Hadady Corp. Truck-mounted brake system for railway cars. 4,434,877, Cl. 188-52.000.

Swanson, Glen E.; and Garstick, Larry A., to Eaton Corporation. Axle wheel end assembly. 4,434,833, Cl. 152-417.000.

Sweeney, Lawrence J., to Franklin Steel Company. Traffic delineator. 4,435,107, Cl. 404-10.000.

Sweeney, William M.: *See—*
Sung, Rodney L.; Kaufman, Benjamin J.; and Sweeney, William M., 4,435,186, Cl. 44-53.000.

Sybron Corporation: *See—*
Phillips, Edward L., 4,435,262, Cl. 204-181.00C.

Syntrex Incorporated: *See—*
Ratcliffe, David J., deceased; Jones, Richard E.; Shevrin, Philip; and Haley, Charles B., 4,435,776, Cl. 364-900.000.

Syva Company: *See—*
Zuk, Robert F.; and Litman, David J., 4,435,504, Cl. 435-7.000.

Szostak, Jan; and Newman, Albert L., to Singer Company, The. Strain controlled sewing machine mount. 4,434,736, Cl. 112-258.000.

T&N Materials Research Limited: *See—*
Atkinson, Alan W.; and Lancaster, Janet M., 4,435,235, Cl. 156-62.200.

Tachikawa, Kyoji; and Yoshida, Yuji, to National Research Institute for Metals. Process for producing NB_3SN superconducting wires. 4,435,228, Cl. 148-11.50Q.

Tacussel, Maurice. Process and installation for the remote control of a premises watch radar apparatus. 4,435,699, Cl. 340-539.000.

Taenzer, Jon C., to Siemens AG. Ultrasound apparatus for medical examinations. 4,434,799, Cl. 128-660.000.

Tagawa, Kenichi; and Iguchi, Takao, to Nippon Seiko Kabushiki Kaisha. Bearing cages for supporting and retaining roller elements in cylindrical roller bearings. 4,435,024, Cl. 308-217.000.

Tagawa, Takao; and Urakawa, Toshio, to Sharp Kabushiki Kaisha. Flying spot scanner for laser printer. 4,435,733, Cl. 358-302.000.

Taggart, Franklin K. Golfer's stance mat. 4,434,983, Cl. 273-187.00R.

Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Phase detector circuit. 4,435,657, Cl. 307-516.000.

Taiho Kogyo Co., Ltd.: *See—*
Futamura, Kenichiro; Asada, Eiji; and Fukuoka, Tatsuhiko, 4,435,482, Cl. 428-553.000.

Taillardat, Jean: *See—*
Jolly, Jean; Rizzi, Primo; and Taillardat, Jean, 4,435,325, Cl. 260-397.200.

Taillet, Joseph; and Larigaldie, Serge, to Office National d'Etudes et de Recherches Aerospatiales. Method for separating particles in suspension in a gas. 4,435,190, Cl. 55-5.000.

Takacs, Istvan: *See—*
Banos, Zoltan; Verecckey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.

Takada, Shunji: *See—*
Okutsu, Eiichi; Iwasaki, Nobuyuki; and Takada, Shunji, 4,435,500, Cl. 430-419.000.

Takahara, Yoshimasa: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, to Hitachi, Ltd. Maleimide: aryloxy diamine resin composition and process for producing same. 4,435,560, Cl. 528-170.000.

Takahashi, Sankichi: *See—*
Okouchi, Isao; Takahashi, Sankichi; Mukai, Yasuteru; Otake, Katsumoto; Sasaki, Takuya; and Miyai, Masahiko, 4,435,285, Cl. 209-250.000.

Takahashi, Tokutaro: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Takahashi, Toshikatsu: *See—*
Suzuki, Kazuhiro; and Takahashi, Toshikatsu, 4,435,077, Cl. 355-51.000.

Takahashi, Yukiharu, to Tokyo Shibaura Electric. Analog-digital converter. 4,435,697, Cl. 340-347.0AD.

Takamizawa, Minoru: *See—*
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.

Takaoka, Yukihisa: *See—*
Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, 4,435,587, Cl. 556-410.000.

Takasumi, Masakazu: *See—*
Shiohata, Koki; Fujisawa, Fumio; Shiga, Motohiro; Sato, Kazuo; Ohmori, Motoji; and Takasumi, Masakazu, 4,435,770, Cl. 364-508.000.

Takayanagi, Kiyoshi: *See—*
Ueshima, Norio; Okawa, Nobuo; and Takayanagi, Kiyoshi, 4,435,212, Cl. 75-124.000.

Takeda Chemical Industries, Ltd.: *See—*
Nishimura, Susumu; and Nomura, Hiroaki, 4,435,569, Cl. 544-280.000.
Nishimura, Susumu; and Akimoto, Hiroshi, 4,435,570, Cl. 544-280.000.

Takeda, Hiroyuki: *See—*
Hosoi, Kinji; Takeda, Hiroyuki; Kobayashi, Hisao; and Konaka, Daijiro, 4,434,693, Cl. 83-71.000.

Takeda, Makoto; Miyoshi, Kazuhito; Kaitoh, Mitsumasa; and Omori, Hiroyuki, to Mitsubishi Petrochemical Company Limited. Method for purification of 2-methyleneglutaronitrile. 4,435,251, Cl. 203-50.000.

Taken, Michael E.: *See—*
Schutten, Herman P.; Sackett, Robert W.; Sedivy, Jan K.; and Taken, Michael E., 4,435,750, Cl. 363-177.000.

Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, to Nissin Kogyo Kabushiki Kaisha. Vacuum type brake booster device for vehicular use. 4,434,707, Cl. 91-376.00R.

Takeuchi, Masaki: *See—*
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.

Tamfelt Oy AB: *See—*
Servo, Matti; and Vainio, Matti, 4,435,457, Cl. 428-58.000.

Tamosauskas, Albert E.; and Temple, Chester S., to PPG Industries, Inc. Aqueous peroxide emulsion for use with glass fibers. 4,435,473, Cl. 428-378.000.

Tamura, Akira, to CKD Controls Limited. Gas flow rate control system. 4,434,933, Cl. 236-75.000.

Tamura, Hiroshi: *See—*
Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, 4,435,765, Cl. 366-200.000.

Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, to Tamura, Shohei. Method for producing a carbon filament and derivatives thereof. 4,435,375, Cl. 423-439.000.

Tamura, Yoshio: *See—*
Sakamoto, Masahisa; Tamura, Yoshio; and Sakamoto, Tadashi, 4,435,[illegible] Cl. 369-286.000.

Tan, Yoichi, to Fuji Xerox Co., Ltd. Sub-signal transmitting system. 4,435,804, Cl. 370-69.100.

Tanaka, Haruo: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; and Tanaka, Haruo, 4,435,397, Cl. 424-250.000.

Tanaka, Ryuichiro: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Tanaka, Shikei: *See—*
Matui, Kunihiko; and Tanaka, Shikei, 4,435,653, Cl. 307-309.000.

Tanaka, Tatsuyoshi: *See—*
Nishi, Takao; Tanaka, Tatsuyoshi; and Nakagawa, Kazuyuki, 4,435,404, Cl. 424-258.000.

Tang, Daniel K.: *See—*
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,435,438, Cl. 426-656.000.

Tanikawa, Kowji, to Olympus Optical Co., Ltd. Film feeding device. 4,435,056, Cl. 354-21.000.

Tanji, Tsuneo: *See—*
Matsumiya, Saburo; Washimi, Koichi; and Tanji, Tsuneo, 4,435,276, Cl. 208-96.000.

Tarabanov, Alexandr S.: *See—*
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.

Taratuta, Igor P.: *See—*
Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., 4,435,748, Cl. 363-54.000.

Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Ion modulating electrode with improved transmission factor. 4,435,066, Cl. 355-3.0SC.

Tarumi, Noriyoshi: *See—*
Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.

Tasai, Masaaki: *See—*
Hamane, Tokuhito; and Tasai, Masaaki, 4,434,945, Cl. 242-7.140.
Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, 4,434,819, Cl. 140-92.100.

Tassie, Douglas P., to General Electric Company. Ammunition feeder. 4,434,699, Cl. 89-12.000.

Tate & Lyle Limited: *See—*
Hough, Leslie; Phadnis, Shashikant P.; Khan, Riaz A.; and Jenner, Michael R., 4,435,440, Cl. 426-658.000.

Tatievskaya, Elena M.: *See—*
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.

Tatsunosuke, Masuda, to Dainippon Screen Mfg. Co., Ltd. Projected image positioning method and apparatus for photographic enlarger. 4,435,076, Cl. 355-41.000.

Taub, Stanley. Method and apparatus for cleaning disks containing encoded information. 4,435,798, Cl. 369-72.000.

Tawse, Ian S., to Gen-Tech, Inc. Axial air gap alternators/generators of modular construction. 4,435,662, Cl. 310-168.000.

Tazuma, James J.: *See—*
Frech, Kenneth J.; and Tazuma, James J., 4,435,371, Cl. 423-228.000.

Teich, Wesley W.: *See—*
Bowen, Robert F.; Freedman, George; Teich, Wesley W.; Martel, Thomas J.; and Eves, E. Eugene, II, 4,435,628, Cl. 219-10.55M.

Tektronix, Inc.: *See—*
Hauser, Max W., 4,435,655, Cl. 307-490.000.

Teledyne Industries, Inc.: *See—*
Barbeau, Dennis E., 4,434,621, Cl. 60-734.000.

Telefunken electronic GmbH: *See—*
Nutz, Karl-Diether, 4,435,651, Cl. 307-252.0UA.

Telegin, Vasily D.: *See—*
Kostikov, Valery I.; Koshelev, Jury I.; Telegin, Vasily D.; Tarabanov, Alexandr S.; Tatievskaya, Elena M.; and Kosova, Lyana I., 4,435,538, Cl. 524-492.000.

Tellert, Rudy: *See—*
Lutz, Dieter; Nagler, Franz; Thieler, Wolfgang; and Tellert, Rudy, 4,434,879, Cl. 192-0.052.

Temple, Chester S.: *See—*
Tamosauskas, Albert E.; and Temple, Chester S., 4,435,473, Cl. 428-378.000.

Ten Berge, Eduardus F. A.: *See—*
Soes, Lucas; and Ten Berge, Eduardus F. A., 4,435,038, Cl. 350-96.210.

TenEyck, John D., to Kennecott Corp. Seamless ceramic fiber composite articles and method and apparatus for their production. 4,435,468, Cl. 428-285.000.

Tennessee Valley Authority: *See—*
Frazier, Alva W.; and Dillard, Ewell F., 4,435,372, Cl. 423-321.00R.

Teraji, Tsutomu: *See—*
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,435,321, Cl. 260-239.00A.

Terasaki, Syuuzi: *See—*
Sasaki, Tohru; Terasaki, Syuuzi; Munakata, Hideo; and Ohta, Mitsuru, 4,435,475, Cl. 428-409.000.

Terashima, Masaaki: *See—*
Katsuyama, Harumi; and Terashima, Masaaki, 4,435,362, Cl. 422-56.000.

Terashima, Tsuneo: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

Terauchi, Kiyoshi; and Sakamoto, Seiichi, to Sanden Corporation. Orbiting piston type fluid displacement apparatus with shaft bearing and seal mechanisms. 4,435,136, Cl. 418-55.000.

Terauchi, Kiyoshi, to Sanden Corporation. Scroll-type fluid compressor with scroll stabilizing mechanism. 4,435,137, Cl. 418-55.000.

Terink, Johannes L.; and Brandon, Maurits J., to Cacaofabrik DeZaan B.V. Alkalized cocoa powders and foodstuffs containing such powders. 4,435,436, Cl. 426-631.000.

Testone, Anthony Q., to Static, Inc. Filter unit and ionizing unit combination. 4,435,195, Cl. 55-126.000.

Texaco Inc.: *See—*
Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., 4,435,299, Cl. 252-41.000.
Cuscurida, Michael, 4,435,527, Cl. 521-173.000.
DaGue, Michael G.; and Valone, Frederick W., 4,435,361, Cl. 422-12.000.
Dominquez, Richard J. G.; and Rice, Doris M., 4,435,349, Cl. 264-257.000.
Haynes, Stewart, Jr.; and Mims, Donald S., 4,434,851, Cl. 166-272.000.
McCoy, David R., 4,434,850, Cl. 166-267.000.
Morel, Thomas J.; Haynes, Stewart, Jr.; and Park, Jack H., 4,434,852, Cl. 166-273.000.
Simons, Leslie H.; and Alexander, David C., 4,435,517, Cl. 502-74.000.
Sung, Rodney L.; Kaufman, Benjamin J.; and Sweeney, William M., 4,435,186, Cl. 44-53.000.

Texas Instruments Incorporated: *See—*
Bellay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., 4,435,763, Cl. 364-200.000.
Brantingham, George L.; and Someshwar, Ashok H., 4,435,775, Cl. 364-900.000.
Chapman, Richard A., 4,435,785, Cl. 365-147.000.
Ho, Cecil C.; Sharpe, Claude A.; Butcher, Bruce A.; and Bell, Alexander G., 4,435,711, Cl. 343-389.000.
Kitagawa, Norihisa; and Asahi, Hiroji, 4,435,788, Cl. 365-185.000.
Trenkler, George; and Delagi, Richard G., 4,434,930, Cl. 228-118.000.
Winkelman, Wayne, 4,435,752, Cl. 364-200.000.

Textilma AG: *See—*
Pfrommer, Bruno, 4,434,627, Cl. 66-120.000.

Thaden, Robert C.: *See—*
Bellay, Jeffrey D.; Thaden, Robert C.; Hayn, John W.; and McDonough, Kevin C., 4,435,763, Cl. 364-200.000.

Thaker, Gautam H.: *See—*
Davis, Robert C.; and Thaker, Gautam H., 4,435,823, Cl. 375-14.000.

Thakkar, Narendra C., to International Jensen Incorporated. Fade control circuit for auxiliary amplifier. 4,435,833, Cl. 381-109.000.

Theiler, Richard F., to Armour Food Company. Method for inhibiting nitrosamine formation and eliminating surface charring during meat cooking. 4,435,433, Cl. 426-266.000.

Thieler, Wolfgang: *See—*
Lutz, Dieter; Nagler, Franz; Thieler, Wolfgang; and Tellert, Rudy, 4,434,879, Cl. 192-0.052.

Thiokol Corporation: *See—*
Bolner, Thomas E., 4,435,023, Cl. 308-2.00R.

Thomas, Dale C., to Xerox Corporation. Rms voltage controller. 4,435,677, Cl. 323-235.000.

Thomas, Daniel W.: *See—*
Cesark, Frank F.; and Thomas, Daniel W., 4,435,002, Cl. 282-27.500.

Thomas Industries Inc.: *See—*
Grubbs, Calvin E., 4,435,749, Cl. 363-58.000.

Thomas, John F., Jr.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.

Thomas, Maryvonne; and Grosbois, Jean, to Rhone-Poulenc Industries. Compositions based on aluminum hydroxychlorides. 4,435,308, Cl. 252-181.000.

Thomas, Richard D.: *See—*
Voso, Philip T.; Hallmark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., 4,434,895, Cl. 206-554.000.

Thomas, Thomas J.: *See—*
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.

Thompson, Gerhard R.: *See—*
Kaufman, Dan R.; and Thompson, Gerhard R., 4,435,782, Cl. 364-716.000.

Thompson, John K.: *See—*
Gargrave, Robert J.; Thompson, John K.; and Comstock, James F., 4,434,644, Cl. 72-387.000.

Thompson, Robert B.: *See—*
Peterson, William E.; and Thompson, Robert B., 4,434,663, Cl. 73-643.000.

Thorner, Joachim; Bertram, Hans H.; Benn, Otto; and Hurnik, Helmut, to Bayer Aktiengesellschaft. Use of zinc salts of mercaptobenzimidazole and dithiophosphoric acid esters for the preparation of nitrile rubber/polyvinyl chloride mixtures. 4,435,532, Cl. 524-92.000.

Thornber, Craig W.: *See—*
Blackburn, Thomas P.; Cox, Barry; Guildford, Allen J.; Le Count, David J.; Pearce, Robert J.; and Thornber, Craig W., 4,435,405, Cl. 424-258.000.

Throckmorton, Morford C.; and Lal, Joginder, to Goodyear Tire & Rubber Company, The. Process for nonaqueous dispersion polymerization of butadiene in the presence of carbonylated polymeric dispersing agents. 4,435,553, Cl. 526-201.000.

Tickle, Andrew C., to Fairchild Camera and Instrument Corporation. Self-refreshing memory cell. 4,435,786, Cl. 365-154.000.

Tickle, Andrew C.; and Vora, Madhukar B., to Fairchild Camera and Instrument Corporation. High speed, nonvolatile, electrically erasable memory cell and system. 4,435,790, Cl. 365-218.000.

Tiefenbacher, Hubert: *See—*
Hoppe, Peter P.; Schneider, Joachim U.; Schulz, Bernhard; and Tiefenbacher, Hubert, 4,435,427, Cl. 424-356.000.

Till, Reinhard: *See—*
Gockler, Heinz; Till, Reinhard; and Schenk, Heinrich, 4,435,773, Cl. 364-724.000.

Timex Corporation: *See—*
Dorfman, Leonard M., 4,435,088, Cl. 368-88.000.

Timm, Horst; and Kruger, H. Eckard, to Blaupunkt-Werke GmbH. Automobile radio and tape cassette switching apparatus. 4,435,845, Cl. 455-228.000.

TMC Corporation: *See—*
Nitschko, Theodor, 4,434,997, Cl. 280-625.000.

Toja, Emilio; Omodei-Sale', Amedeo; and Selva, Domenica, to Gruppo Lepetit S.p.A. Antiinflammatory 3H-naphtho[1,2-d]imidazoles. 4,435,417, Cl. 424-273.00B.

Tokico Ltd.: *See—*
Aono, Masami, 4,435,020, Cl. 303-6.00C.
Hayashida, Yoshihiro, 4,435,019, Cl. 303-6.00A.
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, 4,435,120, Cl. 414-735.000.
Shinoda, Kazuichi; and Katayama, Masayoshi, 4,434,668, Cl. 73-861.220.
Sugiyama, Minoru; and Kaneko, Shinji, 4,435,101, Cl. 403-122.000.

Tokuda, Toshio: *See—*
Mayumi, Kuzuaki; Fujiwara, Yoshihiro; Tokuda, Toshio; and Suzuki, Toshiaki, 4,435,842, Cl. 455-181.000.

Tokunaga, Hiroshi: *See—*
Seimiya, Ryubun; Inowa, Shigeru; Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,723, Cl. 346-154.000.
Tarumi, Noriyoshi; Iwahashi, Haruo; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,435,066, Cl. 355-3.0SC.

Tokyo Electric Co., Ltd.: *See—*
Sakura, Yasuhiro, 4,434,911, Cl. 221-2.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Nunokawa, Kazuo, 4,435,051, Cl. 351-208.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ando, Hideo; and Suzuki, Isao, 4,435,343, Cl. 264-22.000.
Heki, Hideaki, 4,435,644, Cl. 250-435.000.
Ikeda, Yoshio, 4,434,630, Cl. 68-18.00F.
Komeya, Katsutoshi; Tsuge, Akihiko; and Inoue, Hiroshi, 4,435,513, Cl. 501-96.000.
Matui, Kunihiko; and Tanaka, Shikei, 4,435,653, Cl. 307-309.000.
Nagao, Nobuya; and Sakai, Teturou, 4,435,725, Cl. 358-36.000.
Ochii, Kiyofumi, 4,435,793, Cl. 365-233.000.
Suzuki, Hirotsugu; Urata, Sigeru; and Okabe, Kanichi, 4,435,830, Cl. 378-197.000.
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,435,657, Cl. 307-516.000.

Tokyo Shibaura Electric: *See—*
Takahashi, Yukiharu, 4,435,697, Cl. 340-347.0AD.

Tokyo Tatsuno Co., Ltd.: *See—*
Matsumura, Hiroshi; Ohta, Yasuto; Nozaki, Tetsuo; Shimizu, Makoto; and Sugizaki, Shigeru, 4,434,657, Cl. 73-304.00C.

Tom McGuane Industries, Inc.: *See—*
Ludwig, George C., 4,434,761, Cl. 123-383.000.

Tomalia, Donald A.; Wilson, Larry R.; and Conklin, Jerry R., to Dow Chemical Company, The. Branched polyamidoamines. 4,435,548, Cl. 525-451.000.

Tomioka, Hiromi: *See—*
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.

Tomooka, Keiji, to Hitachi, Ltd. Clock signal extracting circuit. 4,435,825, Cl. 375-113.000.

Tompkins, John W. Armored cattle guard. 4,434,975, Cl. 256-17.000.

Tomson, James M., to General Electric Company. Method for assembling dynamoelectric machine end shield parts. 4,434,545, Cl. 29-596.000.

Tomuro, Yasuta, to Mitsubishi Denki Kabushiki Kaisha. Phase inverter circuit. 4,435,656, Cl. 307-513.000.

Toriumi, Koshiro: *See—*
Tamura, Shohei; Sano, Mizuka; Inokuchi, Hiroo; Toriumi, Koshiro; and Sato, Naoki, 4,435,375, Cl. 423-439.000.

Torok, Ernest J.; and Harvey, William A., to Sperry Corporation. Chromatic aberration correction in a multiwavelength light beam deflection system. 4,435,041, Cl. 350-162.240.

Torretta, Roberto: *See—*
Ruscitti, Tomaso; Albini, Giovanni; Torretta, Roberto; and Incerti Baldi, Andrea, 4,434,916, Cl. 222-321.000.

Tower Systems, Inc.: *See—*
Kragh, Loren G., 4,435,339, Cl. 261-153.000.

Townsend, Peter K.: *See—*
Abramson, Edward A.; and Townsend, Peter K., 4,435,037, Cl. 350-96.200.

Toy, Stanley A. Retrievable boat trailer. 4,434,995, Cl. 280-414.100.

Toyo Engineering Corporation: *See—*
Matsumiya, Saburo; Washimi, Koichi; and Tanji, Tsuneo, 4,435,276, Cl. 208-96.000.

Toyo Kogyo Co., Ltd.: *See—*
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, 4,434,749, Cl. 123-41.020.

Toyo Rubber Industry Co., Ltd., The: *See—*
Uemura, Yukihisa, 4,434,831, Cl. 152-356.00R.

Toyoda Koki Kabushiki Kaisha: *See—*
Munekata, Kenichi; Unno, Kunihiko; and Suzuki, Yasuo, 4,434,585, Cl. 51-166.00R.

Toyota Jidosha Kabushiki Kaisha: *See—*
Hara, Kiyoshi; Kojima, Yasufumi; and Nabeta, Teiichi, 4,434,932, Cl. 236-49.000.
Iezuka, Isamu; and Nakano, Kazuo, 4,434,759, Cl. 123-325.000.
Matsuoka, Hiroki; Kato, Yuichi; and Iwata, Minoru, 4,434,766, Cl. 123-472.000.
Morita, Akiyoshi; and Sato, Mitsuyoshi, 4,435,142, Cl. 425-145.000.
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, 4,434,775, Cl. 123-564.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Chiba, Masakazu; and Matsuoka, Fumio, 4,435,000, Cl. 280-806.000.
Kobayashi, Nobuyuki; and Itoh, Hiroshi, 4,434,760, Cl. 123-339.000.

Tractel, S.A.: *See—*
Desplats, Andre, 4,434,973, Cl. 254-344.000.

Traeger, Joseph P. Heating furnace. 4,434,782, Cl. 126-77.000.

Trede, Wolfgang: *See—*
Rayer, Peter; Krone, Hartmut; Schiessl, Alois; Steinicke, Wolfgang; and Trede, Wolfgang, 4,435,233, Cl. 149-44.000.

Trefilarbed Drahtwerk Koln GmbH: *See—*
Hartmann, Helmut, 4,434,608, Cl. 57-58.520.

Trenkler, George; and Delagi, Richard G., to Texas Instruments Incorporated. Process for producing reinforced structural articles and articles produced thereby. 4,434,930, Cl. 228-118.000.

Tri Tool Inc.: *See—*
Nall, Lawson H.; and Miller, Richard, 4,434,689, Cl. 82-4.00C.

Trimble, Harold D.: *See—*
Siler, Dan R.; and Trimble, Harold D., 4,435,829, Cl. 378-60.000.

Trincia, Richard. Screwdriver with handle for storing bits. 4,434,828, Cl. 145-62.000.

Trnkoczy, Amadej; Stopar, Miha; Filipic, Dusan; and Opeka, Joze, to Gorenje Tovarna Gospodinjske Opreme N.Sol.O. Velenj. Control circuit of a functional and therapeutic stimulator. 4,434,798, Cl. 128-421.000.

Trotman, Helen H.; and Trotman, Herbert H. Underbody cushioning and ventilating structure and general utility formed plastic sheet. 4,435,015, Cl. 297-453.000.

Trotman, Herbert H.: *See—*
Trotman, Helen H.; and Trotman, Herbert H., 4,435,015, Cl. 297-453.000.

Trottier, Jean-Pierre; and Jeandin, Michel, to A.R.M.I.N.E.S.; and S.N.E.C.M.A. Method of manufacturing metal pieces by casting and sintering of a metal alloy powder. 4,435,360, Cl. 419-49.000.

Tsang, Won-Tien; and van der Ziel, Jan P., to Bell Telephone Laboratories, Incorporated. Passively mode locked laser having a saturable absorber. 4,435,809, Cl. 372-49.000.

Tschudy, Donald B.; and Morrow, Charles R., to Hoover Company, The. Power transmission for a cleaner. 4,434,865, Cl. 180-19.00H.

Tsolis, Alexandros K.; and Mikroyannidis, Ioannis A. 4-Hydroxy-5-(substituted phosphinyl)ethyleneureas. 4,435,533, Cl. 524-106.000.

Tsoukalas, Skevos N.; and Andros, John H. Chemical formulation for reclaiming silk screens. 4,435,305, Cl. 252-158.000.

Tsuchida, Naoki: *See—*
Kazuta, Hisashi; Kawai, Yasunari; and Tsuchida, Naoki, 4,434,755, Cl. 123-195.00C.

Tsuge, Akihiko: *See—*
Komeya, Katsutoshi; Tsuge, Akihiko; and Inoue, Hiroshi, 4,435,513, Cl. 501-96.000.

Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, to Sankyo Company, Limited; and Ube Industries, Limited. Aminopyrimidine derivatives, processes for their preparation, and fungicidal, insecticidal and acaricidal compositions containing them. 4,435,402, Cl. 424-251.000.

Tsukada, Toshiji; and Morinaga, Kazuo, to Ricoh Co., Ltd. Optical exposure unit for electrophotographic printing device. 4,435,064, Cl. 355-1.000.

Tsuzuki, Mitsuo; and Suga, Michihisa, to Nippon Electric Co., Ltd. Print head for an on-demand type ink-jet printer. 4,435,721, Cl. 346-140.00R.

Tsuzuki, Takashi, to Silver Seiko Ltd. Knitting needle assembly. 4,434,628, Cl. 66-123.000.

Tummers, Paul J. H.: *See—*
de Putter, Jan A.; and Tummers, Paul J. H., 4,435,493, Cl. 430-87.000.

Tuomaala, Jorma: *See—*
Niskanen, Toivo; Sundman, Frey; and Tuomaala, Jorma, 4,435,122, Cl. 415-121.00B.

Tyler, Derek E.: *See—*
Winter, Joseph; Dantzig, Jonathan A.; and Tyler, Derek E., 4,434,837, Cl. 164-468.000.

Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,435,428, Cl. 426-3.000.

Ube Industries, Limited: *See—*
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.

Uchida, Keiichiro; Tamura, Hiroshi; Okamoto, Tetsuro; and Okutani, Shigeaki, to Fujitsu Limited. Bank interleaved vector processor having a fixed relationship between start timing signals. 4,435,765, Cl. 364-200.000.

Uchidoi, Masanori: *See—*
Shimizu, Masami; and Uchidoi, Masanori, 4,435,741, Cl. 361-401.000.

Uchimura, Kazuo: *See—*
Midorikawa, Akira; Kojima, Kenji; and Uchimura, Kazuo, 4,435,074, Cl. 355-15.000.

Ueda, Toshitaka: *See—*
Yoshii, Tsuneo; Ueda, Toshitaka; and Kuroda, Tsukasa, 4,435,522, Cl. 502-319.000.

Uemura, Shigehiro: *See—*
Sakitani, Katsumi; Uemura, Shigehiro; and Yajima, Ryuzaburo, 4,434,844, Cl. 165-151.000.

Uemura, Yukihisa, to Toyo Rubber Industry Co., Ltd., The. Tubeless tires for trucks and buses. 4,434,831, Cl. 152-356.00R.

Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, to UBE Industries, Ltd. Method for polymerizing α-olefin. 4,435,550, Cl. 526-73.000.

Ueshima, Norio; Okawa, Nobuo; and Takayanagi, Kiyoshi, to Furukawa Electric Company Ltd., The. High permeability alloy. 4,435,212, Cl. 75-124.000.

Ueyama, Sadao: *See—*
Mutai, Masahiko; Terashima, Tsuneo; Takahashi, Tokutaro; Tanaka, Ryuichiro; Kuroda, Akio; Ueyama, Sadao; and Matsumoto, Keisuke, 4,435,389, Cl. 424-181.000.

UMC Industries, Inc.: *See—*
Hunt, James W.; and Johnson, Raymond A., 4,434,931, Cl. 232-15.000.
Umemura, Kazuhiro: *See—*
Asada, Akihiro; Umemura, Kazuhiro; Saito, Tadashi; and Sampei, Tohru, 4,435,832, Cl. 381-34.000.
Umesaki, Shigeo: *See—*
Otobe, Yutaka; Yamato, Akihiro; and Umesaki, Shigeo, 4,434,769, Cl. 123-493.000.
Union Carbide Corporation: *See—*
Barber, Flavil, Jr.; Karam, Emmanuel E.; Dunaway, Richard; and Rogers, Ray L., 4,435,738, Cl. 361-321.000.
Belz, Herman M.; and Stieber, Harry C., 4,435,816, Cl. 373-91.000.
D'Silva, Themistocles D. J., 4,435,421, Cl. 424-277.000.
Union Oil Company of California: *See—*
Deering, Roland F.; and Duir, John H., 4,435,271, Cl. 208-11.00R.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See—*
Wood, Jill E. G., 4,434,651, Cl. 73-85.000.
United States Gypsum Company: *See—*
Baehr, Donald O., 4,435,183, Cl. 23-293.00R.
United States of America
Air Force: *See—*
Hasinger, Siegfried H.; Howard, James M.; and Miller, David K., 4,435,810, Cl. 372-58.000.
Army: *See—*
Comeyne, Robert G., 4,434,560, Cl. 33-241.000.
Mariani, Elio; and Ballato, Arthur, 4,435,441, Cl. 427-10.000.
McDowell, Hunter L., 4,435,689, Cl. 333-81.00A.
Mon, George, 4,434,813, Cl. 137-829.000.
Petito, Ferdinand C.; and Klauber, Gerald, 4,435,668, Cl. 313-388.000.
Rozner, Marvin J.; and Chapman, Arthur S., 4,434,702, Cl. 89-36.00L.
Summerfield, Martin; Messina, Neale A.; and Ingram, Larry S., 4,434,655, Cl. 73-167.000.
Energy: *See—*
August, Charles; and Myers, Harry J., 4,434,667, Cl. 73-861.120.
Korenko, Michael K., 4,435,231, Cl. 148-12.0EA.
Michaels, Jennifer E.; Michaels, Thomas E.; and Mech, Stephen J., Jr., 4,434,660, Cl. 73-622.000.
Health and Human Services: *See—*
Rapoport, Henry; Weller, Dwight D.; and Cless, Richard D., 4,435,572, Cl. 546-228.000.
Zierdt, Charles H., 4,435,505, Cl. 435-34.000.
Interior: *See—*
Reimers, George W.; and Khalafalla, Sanaa E., 4,435,302, Cl. 252-62.510.
National Aeronautics and Space Administration: *See—*
Kurtz, George W.; and Bankston, Ben F., 4,434,659, Cl. 73-620.000.
Neugebauer, Marcia M.; Clay, Douglas R.; Goldstein, Bruce E.; and Goldstein, Raymond, 4,435,642, Cl. 250-296.000.
Stattel, Raymond J.; and Niswander, James K., 4,435,781, Cl. 364-900.000.
National Security Agency: *See—*
Williams, Richard P., 4,435,783, Cl. 365-5.000.
Navy: *See—*
Butler, John R.; Shock, Gerald D.; and Saunders, Norman J., 4,434,927, Cl. 227-9.000.
Erickson, Lawrence F., 4,434,717, Cl. 102-210.000.
Fried, Lawrence, 4,435,045, Cl. 350-310.000.
Given, George R., Jr., 4,434,855, Cl. 169-37.000.
Woods, Robert L., 4,434,812, Cl. 137-829.000.
U.S. Philips Corporation: *See—*
Boudault, Robert; and Pouzoullic, Gerard, 4,435,682, Cl. 329-107.000.
Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., 4,435,484, Cl. 428-693.000.
Claasen, Theodoor A. C. M.; and Mecklenbrauker, Wolfgang F. G., 4,435,774, Cl. 364-726.000.
Eckert, Wolfgang; Holtkamp, Bernd; and Kilian, Ernst A., 4,435,685, Cl. 330-261.000.
Joormann, Hendrik J. M.; Verweij, Henrik; and Haisma, Jan, 4,435,200, Cl. 65-64.000.
Knesa, Werner, 4,434,553, Cl. 30-34.100.
Raven, Johannes G.; and Annegarn, Marcellinus J. J. C., 4,435,728, Cl. 358-140.000.
Schoenmakers, Johannes J. M., 4,434,955, Cl. 242-199.000.
Segers, Marinus T. M.; Niessen, Cornelis; and Kuiper, Krijn, 4,435,806, Cl. 371-25.000.
Withers, Richard B., 4,435,462, Cl. 428-156.000.
U.S. Product Development Company: *See—*
Adell, Robert, 4,434,598, Cl. 52-716.000.
United Technologies Corporation: *See—*
Harner, Kermit I.; Patrick, John P.; and Kos, Joseph M., 4,435,647, Cl. 290-44.000.
Levine, Richard, 4,435,123, Cl. 416-95.000.
Prewo, Karl M.; and Brennan, John J., 4,435,455, Cl. 428-36.000.
Universal Instruments Corporation: *See—*
Yager, Glen E., 4,434,887, Cl. 198-391.000.
Universal Thread Grinding Company: *See—*
Linley, Francis M., Jr., 4,434,677, Cl. 74-409.000.
University of Nebraska, The Board of Regents of the: *See—*
Kumar, Pullatikurthi P., 4,434,789, Cl. 128-1.200.
University of Pittsburgh: *See—*
Gunduz, Nurten N.; and Gunduz, Dincer H., 4,435,063, Cl. 354-315.000.
Unno, Kunihiko: *See—*
Munekata, Kenichi; Unno, Kunihiko; and Suzuki, Yasuo, 4,434,585, Cl. 51-166.00R.
UOP Inc.: *See—*
Imai, Tamotsu, 4,435,607, Cl. 585-443.000.
Upeslacis, Janis: *See—*
Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, 4,435,387, Cl. 424-180.000.
Urakawa, Toshio: *See—*
Tagawa, Takao; and Urakawa, Toshio, 4,435,733, Cl. 358-302.000.
Urano, Susumu: *See—*
Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,435,760, Cl. 364-444.000.
Urata, Sigeru: *See—*
Suzuki, Hirotsugu; Urata, Sigeru; and Okabe, Kanichi, 4,435,830, Cl. 378-197.000.
Usry, Gerald O., to General Electric Company. Through fault pressure filter for fault pressure relay. 4,434,814, Cl. 138-44.000.
USS Engineers and Consultants, Inc.: *See—*
Cappelli, Romano, 4,434,540, Cl. 29-402.110.
USV Pharmaceutical Corporation: *See—*
Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, 4,435,409, Cl. 424-266.000.
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,435,395, Cl. 424-248.500.
Utsumi, Noriyuki: *See—*
Ikeda, Junichi; Ohtani, Iwao; Utsumi, Noriyuki; and Nojima, Shinichi, 4,435,120, Cl. 414-735.000.
Vaal Reefs Exploration and Mining Company Limited: *See—*
McKechnie, Ronald M. K., 4,434,876, Cl. 187-95.000.
Vainio, Matti: *See—*
Servo, Matti; and Vainio, Matti, 4,435,457, Cl. 428-58.000.
Valentine, Michael J. Telephone guard device. 4,435,623, Cl. 179-189.00R.
Valeo, Societe Anonyme: *See—*
Bertin, Patrice, 4,434,706, Cl. 91-375.00A.
Valko, Joseph T., to PPG Industries, Inc. β-Hydroxy urethane low temperature curing agents. 4,435,559, Cl. 528-73.000.
Valmont Industries, Inc.: *See—*
Chapman, John A.; and Sherwin, Owen W., 4,434,936, Cl. 239-178.000.
Valone, Frederick W.: *See—*
DaGue, Michael G.; and Valone, Frederick W., 4,435,361, Cl. 422-12.000.
Vamco Machine & Tool, Inc.: *See—*
Varisco, Mario, 4,434,924, Cl. 226-120.000.
Van Dam Machine Corporation of America: *See—*
Fardin, Carlos, 4,435,114, Cl. 414-330.000.
Van Bakel, Bernardus A. H.: *See—*
Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., 4,435,484, Cl. 428-693.000.
Van Deberg, Walter H. Robotic manipulator. 4,435,116, Cl. 414-728.000.
van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., to Stamicarbon B.V. Process of preparing a polymerization catalyst and preparation of ethylene polymers with this catalyst. 4,435,314, Cl. 502-154.000.
van de Leemput, Lambertus J. M. A.; Nooijen, Godefridus A. H.; and van der Loo, Hendrikus W., to Stamicarbon B.V. Process for the polymerization or copolymerization of ethylene with an improved supported chromium oxide type catalyst. 4,435,551, Cl. 526-101.000.
Vanderburg, Ralph W., to Axelson, Inc. Valve self-relieving seats. 4,434,967, Cl. 251-328.000.
van der Loo, Hendrikus W.: *See—*
van de Leemput, Lambertus J. M. A.; Nooijen, Godefridus A. H.; and van der Loo, Hendrikus W., 4,435,551, Cl. 526-101.000.
van der Ziel, Jan P.: *See—*
Tsang, Won-Tien; and van der Ziel, Jan P., 4,435,809, Cl. 372-49.000.
Vandigriff, John F. Automotive control circuit. 4,435,649, Cl. 307-10.0AT.
Vanier, Noel R., to Eastman Kodak Company. Use of ketal blocked quinones to reduce post-process D-min increase in positive redox dye-releasing image transfer systems. 4,435,502, Cl. 430-489.000.
Van Linthout, Luc K.: *See—*
de Brabander, Louis F.; and Van Linthout, Luc K., 4,435,078, Cl. 356-121.000.
van Mil, Martinus P. G., to Stork PMT BV. Device for separating and processing the gizzards of slaughtered poultry. 4,434,526, Cl. 17-11.000.
Vann, Roy R.; Ribble, George W.; and George, R. Flint, to Geo Vann, Inc. Pressure actuated vent assembly for slanted wellbores. 4,434,854, Cl. 166-386.000.
Van Patten, Frederic D. Viewing apparatus for a chimney. 4,434,784, Cl. 126-312.000.
Van Schaik, Herman: *See—*
Brugman, Martin; and Van Schaik, Herman, 4,434,885, Cl. 198-388.000.
Varisco, Mario, to Vamco Machine & Tool, Inc. Dual driven feed rolls for a punch press. 4,434,924, Cl. 226-120.000.
Varma, Ravi K., to E. R. Squibb & Sons, Inc. Intermediates useful in the preparation of 17,17-bis(substituted thio)androstenes. 4,435,326, Cl. 260-397.300.

Varrasso, Eugene C., to Owens-Corning Fiberglas Corporation. Current distribution for glass-melting furnaces. 4,435,811, Cl. 373-39.000.
VAS Corporation: *See—*
Hedberg, David J.; and Nilsson, C. Gary, 4,435,734, Cl. 358-335.000.
Vasalos, Iacovos A., to Standard Oil Company (Indiana). Catalytic cracking with reduced emission of noxious gas. 4,435,281, Cl. 208-113.000.
Vazquez, Gonzalo; and Akkerman, Neil H., to AVA International Corporation. Flow controlling apparatus. 4,434,847, Cl. 166-117.500.
Veazey, Richard L.; and Pennington, B. Timothy, to Cities Service Co. Novel catalyst composition. 4,435,519, Cl. 502-107.000.
VEB Kombinat Textima: *See—*
Krauss, Theo; Herrmann, Ludwig; and Berger, Konrad, 4,434,566, Cl. 38-8.000.
Veltkamp, John H.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,435,042, Cl. 350-281.000.
Venture Innovations, Inc.: *See—*
House, Roy F., 4,435,217, Cl. 106-171.000.
House, Roy F., 4,435,309, Cl. 252-314.000.
House, Roy F., 4,435,564, Cl. 536-87.000.
Verdicchio, Robert J.: *See—*
Guth, Jacob J.; Spilatro, Diane L.; and Verdicchio, Robert J., 4,435,300, Cl. 252-117.000.
Verduijn, Johannes P.: *See—*
Koetsier, Wicher T.; and Verduijn, Johannes P., 4,435,608, Cl. 585-480.000.
Vereczkey, Endre: *See—*
Banos, Zoltan; Vereczkey, Endre; Kerey, Gyorgy; Rudolf, Peter; Takacs, Istvan; Felmeri, Jozsef; and Bosits, Gyula, 4,435,182, Cl. 23-295.00R.
Vernay Laboratories, Inc.: *See—*
Atkinson, Gordon E., 4,434,810, Cl. 137-493.000.
Versace, Richard W.: *See—*
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,435,412, Cl. 424-270.000.
Verweij, Henrik: *See—*
Joormann, Hendrik J. M.; Verweij, Henrik; and Haisma, Jan, 4,435,200, Cl. 65-64.000.
Vetrotex Saint-Gobain: *See—*
Pivoteau, Jean; and Durot, Jean-Pierre, 4,435,479, Cl. 428-542.800.
Veutgen, Hans-Jurgen: *See—*
Neuhauser, Hans J.; and Veutgen, Hans-Jurgen, 4,435,226, Cl. 148-3.000.
Vi-Tek Designs, Inc.: *See—*
Vickio, Anthony N., 4,434,687, Cl. 81-441.000.
Vickio, Anthony N., to Vi-Tek Designs, Inc. Damaged screw remover. 4,434,687, Cl. 81-441.000.
Videki, Edwin R., II: *See—*
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,435,762, Cl. 364-200.000.
Vieth, Wolf R.; and Ryder, Leonard B. Saturated preform and method for preparation thereof. 4,435,453, Cl. 428-35.000.
Vigneau, David L. Heat transfer device. 4,435,154, Cl. 431-328.000.
Vigneau, David L. Infra-red radiant burner. 4,435,155, Cl. 431-328.000.
Vigorelli Genova S.p.A.: *See—*
Giolitti, Nicolo, 4,434,735, Cl. 112-220.000.
Viragen, Inc.: *See—*
Warren, Stanley L., 4,435,384, Cl. 424-101.000.
Visky nee Gombos, Zsuzsanna: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.
Vitolin, Rasma O.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.
Vivola, Leo A.: *See—*
Hildeman, Gregory J.; Kuli, John C., Jr.; and Vivola, Leo A., 4,435,213, Cl. 75-249.000.
Voermans, Antonius B.: *See—*
Breed, Dirk J.; Van Bakel, Bernardus A. H.; Voermans, Antonius B.; and Robertson, John M., 4,435,484, Cl. 428-693.000.
Vogel, Alfredo, to Secretary of State in her Britannic Majesty's Government of the United Kingdom. Process for producing metallic slurries. 4,434,839, Cl. 164-485.000.
Vogel, Hans-Henning: *See—*
Oppenlaender, Knut; Stork, Karl; Vogel, Hans-Henning; Schwartz, Erich; and Jakob, Claus P., 4,435,298, Cl. 252-34.000.
Voillot, Herve, to Creusot-Loire. Apparatus for conveying cylindrical objects such as ammunition. 4,434,701, Cl. 89-36.00K.
Voll, Manfred: *See—*
Reck, Reinhold; Kuhner, Gerhard; Voll, Manfred; and Kleinschmit, Peter, 4,435,378, Cl. 423-461.000.
Von Ruden, Dennis, to General Equipment Co. Rod and pipe pusher-puller apparatus. 4,434,969, Cl. 254-29.00R.
Vora, Madhukar B.: *See—*
Tickle, Andrew C.; and Vora, Madhukar B., 4,435,790, Cl. 365-218.000.
Vorres, Karl S., to Institute of Gas Technology. Fluidized bed gasifier or similar device for simultaneous classification of ash and unreacted coal. 4,435,364, Cl. 422-145.000.
Voso, Philip T.; Hallmark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., to W. R. Grace & Co., Cryovac Division. Strapped wicketed bags packet. 4,434,895, Cl. 206-554.000.
Vsesojuzny Elektrotekhnickesky Institut Imeni V.I. Lenina: *See—*
Lytaev, Rem A.; Barakaev, Khristofor F.; Taratuta, Igor P.; and Krainov, Sergei V., 4,435,748, Cl. 363-54.000.
Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki: *See—*
Karapetian, Igor S.; Korolkov, Ivan A.; Kapitanov, Nikolai N.; Smirnov, Boris A.; and Ivanova, Tatyana L., 4,434,796, Cl. 128-335.000.
W. R. Grace & Co.: *See—*
Lin, Shiow-Ching, 4,435,549, Cl. 525-504.000.
W. R. Grace & Co., Cryovac Division: *See—*
Voso, Philip T.; Hallmark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., 4,434,895, Cl. 206-554.000.
Wada, Hiroyuki: *See—*
Hashimoto, Toyokazu; Wada, Hiroyuki; Kida, Masahiko; Matsumura, Hisashi; and Nakayashiki, Susumu, 4,435,704, Cl. 340-825.010.
Wada, Kenichi, to Minolta Camera Kabushiki Kaisha. Electrographic developing apparatus with toner flow director. 4,435,065, Cl. 355-3.0DD.
Wada, Minoru; Arai, Isao; Okubo, Takeshi; and Mori, Yoshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Honing head for high-speed operation. 4,434,588, Cl. 51-344.000.
Wagener, Klaus: *See—*
Heitkamp, Dieter; and Wagener, Klaus, 4,435,366, Cl. 423-6.000.
Wagnon, Jean: *See—*
Demarne, Henri; and Wagnon, Jean, 4,435,426, Cl. 424-324.000.
Waitkus, Phillip A.: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,435,323, Cl. 548-473.000.
Wajima, Moloyo: *See—*
Takahashi, Akio; Wajima, Moloyo; Nishikawa, Akio; and Morishita, Hirosada, 4,435,560, Cl. 528-170.000.
Waldo, Paul D.: *See—*
McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,435,777, Cl. 364-900.000.
Walker, Gordon N., to Ciba-Geigy Corporation. Certain substituted β-oxo-α-carbamoylpyrrolepropionitriles. 4,435,407, Cl. 424-263.000.
Walker, Hamilton. Rotary piston internal combustion engine. 4,434,757, Cl. 123-241.000.
Walker, Wolfram H., to Biotest-Serum-Institut GmbH. Blood bags with interconnecting system. 4,435,179, Cl. 604-410.000.
Wall, Colin J.: *See—*
Greensmith, Dennis; Hammerton, Roderic H.; Wall, Colin J.; Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,435,510, Cl. 501-90.000.
Wallace, Dean L. Towing hitch construction. 4,434,996, Cl. 280-504.000.
Wallick, Scott A.: *See—*
Markham, Larry D.; Martin, Andrew C.; Elton, Edward F.; Magnotta, Vincent L.; and Wallick, Scott A., 4,435,249, Cl. 162-24.000.
Wallimann, Hans: *See—*
Compioi, Georg; Heimgartner, Roland; Loacker, Artur; Huber, Kurt; and Wallimann, Hans, 4,434,728, Cl. 112-84.000.
Walls, John E.; and Duyal, Tulay, to American Hoechst Corporation. Photopolymer cleavage imaging system. 4,435,496, Cl. 430-285.000.
Walrave, Franciskus J.: *See—*
Desert, Jean-Marie G.; and Walrave, Franciskus J., 4,434,692, Cl. 83-62.000.
Walsh, Michael M., to Mechanical Technology Incorporated. Start-up and control method and apparatus for resonant free piston Stirling engine. 4,434,617, Cl. 60-520.000.
Walter, Lee: *See—*
Allred, David D.; Walter, Lee; Reyes, Jaime M.; and Ovshinsky, Stanford R., 4,435,445, Cl. 427-54.100.
Walter, Lothar; Brandenstein, Manfred; and Olschewski, Armin, to SKF Kugellagerfabriken GmbH. Process for the production of a bearing bushing without machining. 4,434,640, Cl. 72-348.000.
Walter, Lothar: *See—*
Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Muller, Leo, 4,434,882, Cl. 192-98.000.
Walz, Gregory J.: *See—*
Woloshuk, Edward A.; and Walz, Gregory J., 4,435,053, Cl. 352-86.000.
Ward, Donald F.: *See—*
Kopsch, Paul J.; Ward, Donald F.; Graber, Jay; and Nichols, Omer, 4,434,718, Cl. 102-522.000.
Warman, Bloomfield J. Speech direction detection circuits for telephone communication devices. 4,435,621, Cl. 179-81.00B.
Warnaco of Canada Limited: *See—*
Hansen, Vagn A., 4,434,512, Cl. 2-129.000.
Warner, Dale J., to Gits Brothers Mfg. Co. Shaft seal. 4,434,986, Cl. 277-42.000.
Warner, Dale J., to Gits Brothers Mfg. Co. Shaft seal. 4,434,988, Cl. 277-81.00R.
Warren, Stanley L., to Viragen, Inc. Transfer factor composition and skin treatment. 4,435,384, Cl. 424-101.000.
Washecheck, Paul H.: *See—*
Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., 4,435,606, Cl. 585-324.000.

Washimi, Koichi: *See*—
Matsumiya, Saburo; Washimi, Koichi; and Tanji, Tsuneo, 4,435,276, Cl. 208-96.000.

Watanabe, Eiki: *See*—
Ohta, Kazutoshi; and Watanabe, Eiki, 4,434,873, Cl. 187-28.000.

Watanabe, Masahiro: *See*—
Nishimura, Hiroyuki; Hasegawa, Shumpei; Watanabe, Masahiro; and Furuya, Haruo, 4,434,770, Cl. 123-494.000.

Watanabe, Morio, to Daicel Chemical Industries, Ltd. Sport shoes. 4,434,518, Cl. 12-142.0RS.

Watanabe, Shoji; and Miho, Takuya, to Daicel Chemical Industries, Ltd. Polyol resin. 4,435,542, Cl. 525-118.000.

Watanabe, Takaji; and Noguchi, Tamio, to Merck Patent Gesellschaft mit beschrankter Haftung. Transparent colored pigments. 4,435,220, Cl. 106-291.000.

Weasel, George E., Jr. Hydro-cooling air lock. 4,434,623, Cl. 62-64.000.

Weaver, Edward A., to Owens-Illinois, Inc. Glasses suitable for sealing ferrites. 4,435,511, Cl. 501-22.000.

Weber, Harold J. Didactic apparatus providing for tutelage of responses through inculcation. 4,435,164, Cl. 434-337.000.

Weeks, Paul D.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,435,584, Cl. 549-415.000.

Weerth, Hans-Ernst: *See*—
Staudenrausch, Georg; and Weerth, Hans-Ernst, 4,434,527, Cl. 17-33.000.

Weinert, Friederich. Power wheel with double action valve in conjunction with a drill bit. 4,435,355, Cl. 376-208.000.

Weinert, Volker: *See*—
Payrhammer, Bernd; and Weinert, Volker, 4,435,075, Cl. 355-35.000.

Weintraub, Burton: *See*—
Berger, Sidney; Buda, Salvatore; and Weintraub, Burton, 4,435,005, Cl. 285-31.000.

Weintraub, Steven A. Climate control system. 4,435,025, Cl. 312-31.000.

Weise, Volker B., to GTE Automatic Electric Incorporated. Automatic gain control of a single gate GaAs FET amplifier. 4,435,846, Cl. 455-253.000.

Weiser Designs, Ltd.: *See*—
Weiser, Georgiann, 4,434,511, Cl. 2-114.000.

Weiser, Georgiann, to Weiser Designs, Ltd. Hospital gown. 4,434,511, Cl. 2-114.000.

Weisner, Carl S.; and Raynolds, David W., to Polyloom Corporation of America. Multicomponent continuous film die. 4,435,141, Cl. 425-131.100.

Weiss, Friedrich: *See*—
Brix, Joachim; and Weiss, Friedrich, 4,434,739, Cl. 114-162.000.

Weiss, John, to Wind Innovations, Inc. Displacement, planing sailboard. 4,434,737, Cl. 114-39.000.

Weisz, William, to Singer Company, The. Bight and needle positioning control for sewing machines. 4,434,733, Cl. 112-158.00A.

Welch, Marilyn L., to Gold, Inc. Infant head protector. 4,434,513, Cl. 2-410.000.

Weller, Dwight D.: *See*—
Rapoport, Henry; Weller, Dwight D.; and Cless, Richard D., 4,435,572, Cl. 546-228.000.

Wells Electronics, Inc.: *See*—
Ralstin, Donald E., 4,435,724, Cl. 357-79.000.

Wenger, Jean: *See*—
Frater, Georg; Suchy, Milos; Wenger, Jean; and Winternitz, Paul, 4,435,207, Cl. 71-94.000.

Wentzell, Joseph M. Methods for producing very fine particle size metal powders. 4,435,342, Cl. 264-8.000.

Wenzler, Peter B.: *See*—
Prather, Joseph E.; Khalifa, Ramzl A.; and Wenzler, Peter B., 4,435,027, Cl. 312-222.000.

Wessels, Egon: *See*—
Wright, Brian D.; McBeth, Raymond A.; and Wessels, Egon, 4,434,741, Cl. 114-264.000.

West, Ben F.: *See*—
Olson, Robert S.; Surls, Joseph P., Jr.; and West, Ben F., 4,435,379, Cl. 423-472.000.

Western Electric Co., Inc.: *See*—
Melka, James P., Jr.; and Barnes, John F., 4,435,258, Cl. 204-109.000.
Potkay, Eugene, 4,435,199, Cl. 65-3.120.

Westinghouse Electric Corp.: *See*—
Caputo, William R., 4,434,874, Cl. 187-29.00R.
Powell, Norman F., 4,435,710, Cl. 343-18.00E.

Weyda, Gunther: *See*—
Nitschmann, Karl; Weyda, Gunther; Emmrich, Bodo; and Stimpfig, Karl O., 4,434,556, Cl. 30-123.400.

Whaley, George S.: *See*—
Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 4,434,537, Cl. 24-380.000.

Wharff, Prentice C.: *See*—
Kuhlemann, Bruce N.; Horvath, Kalman; and Wharff, Prentice C., 4,435,177, Cl. 604-263.000.

Wheeler, Roger B. Flashing structure for geodesic dome structures. 4,434,590, Cl. 52-58.000.

Whetsell, Henry T.: *See*—
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.

Whitaker, Floyd J. Wood wheel cutter. 4,434,826, Cl. 144-219.000.

Whitcomb, William T.; and Butler, John V., to Lockheed Corporation. Dynamic spot calibration for automatic particle counters. 4,434,647, Cl. 73-1.00R.

Whitehouse, Hugh L., to Stanley Works, The. Air tool with stall torque regulator and air biasing mechanism. 4,434,858, Cl. 173-12.000.

Whitelaw, Brett A. Track block. 4,435,022, Cl. 305-53.000.

Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., to Cincinnati Milacron Inc. Apparatus for high rate production of biaxially oriented thermoplastic articles. 4,435,146, Cl. 425-534.000.

Wiechert, Rudolf: *See*—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,435,390, Cl. 424-243.000.
Petzoldt, Karl; Laurent, Henry; and Wiechert, Rudolf, 4,435,327, Cl. 260-397.500.

Wiggins Teape Group Limited, The: *See*—
Shanton, Kenneth J., 4,435,004, Cl. 282-27.500.

Wild, Jurgen: *See*—
Lauer, Gerhard; Morawiez, Alfred; and Wild, Jurgen, 4,434,559, Cl. 33-174.00L.

Wild, Peter: *See*—
Stohr, Frank-Michael; Wild, Peter; and Nickel, Horst, 4,435,334, Cl. 260-501.120.

Wilder, Vernon H., to McDonnell Douglas Corporation. Dwell assembly back spotface. 4,435,109, Cl. 408-14.000.

Wilke, Heinz; and Fonck, Klaus-Uwe, to Blaupunkt-Werke GmbH. Method and apparatus for insertion of electrical components into a circuit board. 4,434,550, Cl. 29-837.000.

Willem, Michel: *See*—
Kaczerginski, Alexandre; and Willem, Michel, 4,435,615, Cl. 174-189.000.

Willer, Armin; and Roderer, Herbert, to Robert Bosch GmbH. Magneto generator for a contactless ignition system. 4,435,660, Cl. 310-70.00R.

Willgoose, Kenneth, to Rolls-Royce Limited. Method of making a blade aerofoil for a gas turbine engine. 4,434,835, Cl. 164-34.000.

Williams, Haydn W. R.: *See*—
Belanger, Patrice C.; Williams, Haydn W. R.; and Rokach, Joshua, 4,435,579, Cl. 549-12.000.

Williams, Paul, to AccuRay Corporation. Gauge having a surface follower with peripheral vent. 4,434,649, Cl. 73-37.700.

Williams, Richard P., to United States of America, National Security Agency. Magnetic bubble logic apparatus. 4,435,783, Cl. 365-5.000.

Williamson, James; and Crete, Paul G., to Raytheon Company. Automatic frequency control circuitry. 4,435,847, Cl. 455-260.000.

Williamson, Vivien R.; and Deeks, Peter C. Sampling device. 4,434,672, Cl. 73-864.220.

Willits, Charles A. Pelvic stabilizer. 4,434,793, Cl. 128-134.000.

Wilsing, Hans: *See*—
Miessen, Ralf; Wilsing, Hans; and Schultze-Gebhardt, Fritz, 4,434,530, Cl. 19-0.460.

Wilson, David L.: *See*—
Hevenor, Charles M.; and Wilson, David L., 4,435,674, Cl. 318-640.000.

Wilson, John H.: *See*—
Brealey, Leslie; Wilson, John H.; and Demircan, Niyazi, 4,434,723, Cl. 110-245.000.

Wilson, Larry R.: *See*—
Tomalia, Donald A.; Wilson, Larry R.; and Conklin, Jerry R., 4,435,548, Cl. 525-451.000.

Winch, Allen R.; and Rearick, William A., to Cotton Incorporated. High expression squeeze roll liquor extraction of nonwoven batts. 4,434,633, Cl. 68-267.000.

Winchell, David A.: *See*—
D'Amico, Richard; Fowles, Thomas A.; and Winchell, David A., 4,434,904, Cl. 215-232.000.

Wind Innovations, Inc.: *See*—
Weiss, John, 4,434,737, Cl. 114-39.000.

Windmoller & Holscher: *See*—
Feldkamper, Richard, 4,434,948, Cl. 242-59.000.

Windpowered Machines Ltd.: *See*—
Cook, Gregory E., 4,435,125, Cl. 416-132.00B.

Wingen, Peter, to Dienes Werke fur Maschinenteile GmbH & Co. KG. Holder for a roller slitting knife. 4,434,695, Cl. 83-482.000.

Winkelman, Wayne, to Texas Instruments Incorporated. Allocation of rotating memory device storage locations. 4,435,752, Cl. 364-200.000.

Winkler, Otto, to Balzers Aktiengesellschaft. Regenerative cyclic process for refrigerating machines. 4,434,622, Cl. 62-6.000.

Winter, Joseph; Dantzig, Jonathan A.; and Tyler, Derek E., to International Telephone and Telegraph Corporation. Process and apparatus for making thixotropic metal slurries. 4,434,837, Cl. 164-468.000.

Winterberg, F. Method for the release of thermonuclear energy combining impact, magnetic and inertial confinement fusion. 4,435,354, Cl. 376-108.000.

Winternitz, Paul: *See*—
Frater, Georg; Suchy, Milos; Wenger, Jean; and Winternitz, Paul, 4,435,207, Cl. 71-94.000.

Wintershall AG: *See*—
Lindorfer, Walter; and Jan-Held, Wilhelm, 4,435,290, Cl. 210-708.000.

Winterton, Dean A. Tank carrier. 4,434,991, Cl. 280-5.00R.

Winzeler, James E.: *See*—
Riediger, Craig W.; and Winzeler, James E., 4,434,680, Cl. 74-682.000.

Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., to Standard Oil Company (Indiana); and Gulf Oil Corp. In situ retorting with flame front-stabilizing layer of lean oil shale particles. 4,435,016, Cl. 299-2.000.

Withers, Richard B., to U.S. Philips Corporation. Infra-red detector elements. 4,435,462, Cl. 428-156.000.

Witiak, David, to Rohm and Haas Company. Stabilized polymer compositions. 4,435,539, Cl. 524-558.000.

Witte, Arnold C., Jr.: *See*—
Carley, Don A.; Witte, Arnold C., Jr.; Green, William B.; and Doerr, Kermit W., 4,435,299, Cl. 252-41.000.

Witten, Raymond L., to Hughes Tool Company. Submersible pump motor flexible bearing. 4,435,661, Cl. 310-90.000.

Wofford, Benjamin G.: *See*—
Voso, Philip T.; Hallmark, Billy B.; Thomas, Richard D.; and Wofford, Benjamin G., 4,434,895, Cl. 206-554.000.

Wohlfeil, Gerhard, to Jagenberg Werke AG. Sealing system for the air feed of a rotatable air nozzle system. 4,434,941, Cl. 239-587.000.

Wolf, Karl-Heinz: *See*—
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.

Wolf, Peter: *See*—
Leibowitz, Mitchell J.; Kong, Ah S.; Sonnino-Goldman, Paula; and Wolf, Peter, 4,435,409, Cl. 424-266.000.

Wolff, Joachim: *See*—
Hoguet, Robert G.; Kalz, Dietmar; Thomas, Thomas J.; Whetsell, Henry T.; Wolff, Joachim; Nonn, Konrad; and Wolf, Karl-Heinz, 4,435,181, Cl. 8-527.000.

Wolfgarten, Hubert: *See*—
Guido, Heinz; and Wolfgarten, Hubert, 4,435,812, Cl. 373-72.000.

Woloshuk, Edward A.; and Walz, Gregory J., to Zyntrax Corporation, The. Three-dimensional plural display apparatus. 4,435,053, Cl. 352-86.000.

Woo, Gar L.; and Parker, Phillip H., to Chevron Research Company. Stabilized polypyrrolidone end capped with alkanolamine and process for preparing. 4,435,547, Cl. 525-420.000.

Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., to Donnelly Mirrors, Inc. Vehicle mirror and support assembly. 4,435,042, Cl. 350-281.000.

Wood, Jill E. G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Hardness test indenters. 4,434,651, Cl. 73-85.000.

Woodley, Raymond L. Clothes peg. 4,434,535, Cl. 24-562.00R.

Woods, Robert L., to United States of America, Navy. Fluidic gain changer. 4,434,812, Cl. 137-829.000.

Wooler, Alan M., to Abelard Management Services Limited. Process for the manufacture of urea-formaldehyde/polyurethane polymers. 4,435,526, Cl. 521-107.000.

Wosika, Leon R., to Solar Turbines Incorporated. Turbines. 4,435,121, Cl. 415-56.000.

Wouk, Victor, to Eli, Inc. Device for prolonging the life of an incandescent lamp. 4,435,671, Cl. 315-200.00R.

Wright, Brian D.; McBeth, Raymond A.; and Wessels, Egon, to Gulf Canada Limited. Arctic barge drilling unit. 4,434,741, Cl. 114-264.000.

Wright, William L.: *See*—
Huckabee, Bill F.; and Wright, William L., 4,435,740, Cl. 361-398.000.

Wroblewski, Lucien J. Cyclical mechanical dispensing mechanism. 4,434,913, Cl. 221-267.000.

Wu, Ta-Ming: *See*—
Murray, Lance R.; and Wu, Ta-Ming, 4,435,658, Cl. 307-530.000.

Wu, Wei-Wha: *See*—
Hsieh, John C.; and Wu, Wei-Wha, 4,435,805, Cl. 371-25.000.

Wu, Yulin; and Zuech, Ernest A., to Phillips Petroleum Company. Process of producing terephthalic acid. 4,435,596, Cl. 562-481.000.

Wurtman, Richard J., to Massachusetts Institute of Technology. Process for improving vigor and mood in normal human patients. 4,435,424, Cl. 424-319.000.

Wurzburg, Henry: *See*—
Dellande, Brian W.; and Wurzburg, Henry, 4,435,824, Cl. 375-46.000.

Wyoming Mineral Corporation: *See*—
Steck, Edward J., 4,435,367, Cl. 423-10.000.

Wysong, Robert D., to Du Pont de Nemours, E. I., and Company. Slow release pesticide formulations. 4,435,383, Cl. 424-78.000.

Xenell Corporation: *See*—
Fajt, John, 4,434,886, Cl. 198-389.000.

Xerox Corporation: *See*—
Lama, William L.; and Rees, James D., 4,435,039, Cl. 350-96.250.
Liao, Henry H., 4,435,726, Cl. 358-135.000.
Miller, Richard L., 4,435,073, Cl. 355-15.000.
Thomas, Dale C., 4,435,677, Cl. 323-235.000.

Yackel, Walter C., Jr.: *See*—
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,435,438, Cl. 426-656.000.

Yager, Glen E., to Universal Instruments Corporation. Isolated stop for vibrating feeders. 4,434,887, Cl. 198-391.000.

Yagi, Takashi: *See*—
Maeda, Nobuyoshi; Itakura, Hideo; and Yagi, Takashi, 4,434,646, Cl. 72-451.000.

Yagihara, Morio: *See*—
Mihayashi, Keiji; Ogawa, Tadashi; and Yagihara, Morio, 4,435,503, Cl. 430-548.000.

Yagupolsky, Lev M.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.

Yajima, Ryuzaburo: *See*—
Sakitani, Katsumi; Uemura, Shigehiro; and Yajima, Ryuzaburo, 4,434,844, Cl. 165-151.000.

Yamada, Kenji: *See*—
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, 4,434,775, Cl. 123-564.000.

Yamada, Kouzi: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,435,423, Cl. 424-318.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Grinde, James E., 4,434,867, Cl. 180-190.000.
Kazuta, Hisashi; Kawai, Yasunari; and Tsuchida, Naoki, 4,434,755, Cl. 123-195.00C.

Yamamoto, Hachizou: *See*—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,435,767, Cl. 364-405.000.

Yamamoto, Hajimu: *See*—
Ohno, Sachio; Mizukoshi, Kiyoshi; Komatsu, Osamu; Yamamoto, Hajimu; and Kunou, Yasuo, 4,435,566, Cl. 544-117.000.

Yamamoto, Haruo: *See*—
Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,434,593, Cl. 52-208.000.

Yamamoto, Kenji: *See*—
Nakayama, Yasuharu; Yamamoto, Kenji; Komatsuzawa, Toshiki; Sukejima, Hajime; and Nomoto, Kazuo, 4,435,531, Cl. 524-37.000.

Yamamoto, Norboru; Makino, Tomoatsu; and Okuda, Ryoichi, to Nippondenso Co., Ltd. Circuit for controlling the primary dwell time of ignition transformer. 4,434,779, Cl. 123-609.000.

Yamamoto, Shinjiro: *See*—
Tsuji, Hideakira; Yamamoto, Shinjiro; Nakagami, Kazuto; Honda, Takeo; Fujii, Katsutoshi; Kobayashi, Takashi; Obata, Tokio; Kojima, Mikio; and Akiyoshi, Yuji, 4,435,402, Cl. 424-251.000.

Yamane, Yukio: *See*—
Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,434,593, Cl. 52-208.000.

Yamasa Shoyu Kabushiki Kaisha: *See*—
Nakatsugawa, Shigekazu, 4,434,788, Cl. 128-1.100.

Yamashita, Ichiro; and Ise, Yukihiko, to Matsushita Electric Industrial Co., Ltd. Tension sensor. 4,434,671, Cl. 73-862.480.

Yamashita, Keitaro: *See*—
Goto, Ryuji; Yamashita, Keitaro; and Noguchi, Koji, 4,435,494, Cl. 430-122.000.

Yamato, Akihiro: *See*—
Otobe, Yutaka; Yamato, Akihiro; and Umesaki, Shigeo, 4,434,769, Cl. 123-493.000.

Yamaura, Kenji: *See*—
Murakami, Shozo; Aoki, Hiroyuki; Matsuo, Saburo; Ikezaki, Eiji; and Yamaura, Kenji, 4,434,976, Cl. 266-268.000.

Yamazaki, Shigeyuki: *See*—
Hashimoto, Takashi; and Yamazaki, Shigeyuki, 4,435,153, Cl. 431-208.000.

Yang, Ho S.: *See*—
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,435,438, Cl. 426-656.000.

Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, to Exxon Research & Engineering Co. Heterogeneous process for preparing vanadium phosphorus oxygen containing catalyst composition. 4,435,521, Cl. 502-209.000.

Yano, Takefumi: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Kai, Yoshiyuki; and Shimizu, Michimasa, 4,435,550, Cl. 526-73.000.

Yano, Takeshi: *See*—
Fukui, Izumu; Yano, Takeshi; and Hamatsuki, Takeshige, 4,435,666, Cl. 310-328.000.

Yasuda, Yoshinori: *See*—
Nagano, Susumu; Iruya, Seiichi; Yasuda, Yoshinori; and Makino, Tomoaki, 4,435,769, Cl. 364-464.000.

Yasuoka, Nobuyuki, to Nippon Electric Co., Ltd. Semiconductor memory circuit. 4,435,787, Cl. 365-174.000.

Yates, James E.: *See*—
Motz, Kaye L.; Washecheck, Paul H.; Poe, Ronald L.; and Yates, James E., 4,435,606, Cl. 585-324.000.

Yates, Winston F.: *See*—
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,435,762, Cl. 364-200.000.

Yeh, Jaw S., to Chen, Shu-Chang. Wire feeding and wire forming device for paper clip making machine. 4,434,818, Cl. 140-82.000.

Yokogawa Hokushin Electric Corp.: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Kawamura, Nobuhisa; Kurihara, Shuichi; Sakuma, Osamu; and Ito, Masahiro, 4,435,772, Cl. 364-520.000.

Yokoo, Tomohide: *See*—
Ema, Kenji; Hara, Junji; Ikado, Shuhei; Kawashima, Hideo; and Yokoo, Tomohide, 4,435,543, Cl. 525-143.000.

Yokooku, Katsuhiko: *See*—
Morita, Yasuyuki; Yokooku, Katsuhiko; Shiraishi, Hideo; and Matsuura, Masahiko, 4,434,749, Cl. 123-41.020.

Yoneyoshi, Yukio: *See—*
Funaki, Yuji; Yoneyoshi, Yukio; Ishiguri, Yukio; and Izumi, Kazuo, 4,435,203, Cl. 71-76.000.
York, Earl D.: *See—*
Wissenberg, Herman; York, Earl D.; and Porter, Darrell D., 4,435,016, Cl. 299-2.000.
Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, to Minolta Camera Kabushiki Kaisha. Auto-focus control camera. 4,435,058, Cl. 354-403.000.
Yoshida Kogyo K. K.: *See—*
Nagata, Kazuo; and Ishii, Susumu, 4,434,923, Cl. 225-97.000.
Seki, Fumio, 4,434,928, Cl. 227-16.000.
Yoshida Kogyo K.K.: *See—*
Osaki, Tatsuo, 4,434,538, Cl. 29-33.200.
Yoshida, Yuji: *See—*
Tachikawa, Kyoji; and Yoshida, Yuji, 4,435,228, Cl. 148-11.50Q.
Yoshii, Tsuneo; Ueda, Toshitaka; and Kuroda, Tsukasa. Method of producing a catalyst for liquefaction of coal. 4,435,522, Cl. 502-319.000.
Yoshimoto, Masahiro: *See—*
Koizumi, Masuo; Shirakawa, Norio; Tomioka, Hiromi; Takeuchi, Masaki; Okada, Masanori; Yoshimoto, Masahiro; Murakami, Yasushi; and Iwane, Yoshitaka, 4,435,202, Cl. 71-76.000.
Yoshimura, Junjiro; Yamada, Kenji; and Obata, Haruyuki, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling pressurized air supply to engines. 4,434,775, Cl. 123-564.000.
Yoshimura, Ryoichi: *See—*
Hirokawa, Norio; Kawachi, Tsuneo; Saito, Hiroshi; and Yoshimura, Ryoichi, 4,435,210, Cl. 75-53.000.
Yoshino Kogyosho Co., Ltd.: *See—*
Saito, Tadao; Nozawa, Takamitsu; Endo, Shuzo; Kakuta, Yoshiyuki; Ogawa, Riichi; and Kaneuchi, Tetsuro, 4,434,917, Cl. 222-383.000.
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, to Shinagawa Refractories Co., Ltd. Heat-resistant inorganic compositions. 4,435,215, Cl. 106-84.000.
Yoshioka, Hiroshi: *See—*
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,435,485, Cl. 428-694.000.
Yoshiyuki, Kazuhiko: *See—*
Horike, Masayoshi; Yamamoto, Haruo; Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,434,593, Cl. 52-208.000.
Yoshizaki, Akira: *See—*
Yoshida, Fumio; Miki, Yukio; Egawa, Takeshi; and Yoshizaki, Akira, 4,435,058, Cl. 354-403.000.
Young, Ronald R., II. Solar powered reactor. 4,434,787, Cl. 126-438.000.
Zack, Leonard N.: *See—*
Shelton, Huey G.; and Zack, Leonard N., 4,434,721, Cl. 108-4.000.
Zahnradfabrik Friedrichshafen AG: *See—*
Friedrich, Ehrlinger; and Meyerle, Michael, 4,434,681, Cl. 74-687.000.
Zajac, Theodore S., to Parker-Hannifin Corporation. Electro-hydraulic proportional control valve. 4,434,966, Cl. 251-205.000.
Zandbergen, Adrian. Method of making a conical spiral antenna. 4,435,716, Cl. 343-895.000.
Zandona, Oliver J.; Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., to Ashland Oil, Inc. Catalyst for the conversion of carbo-metallic containing oils. 4,435,515, Cl. 502-65.000.
Zarinsh, Guntis V.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Dubur, Gunar Y.; Selga, Marita Y.; Zarinsh, Guntis V.; Kondratenko, Natalya V.; Popov, Vladimir I.; Kolomeitsev, Alexandr A.; and Yagupolsky, Lev M., 4,435,574, Cl. 546-321.000.
Zauer, Karoly: *See—*
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,435,322, Cl. 260-239.00A.
Zboralski, Jon A.; and Grow, Harry N., to Hamilton Industries, Inc. Fume hood with damper controlled baffles and method. 4,434,711, Cl. 98-116.0LH.
Zellmer, Hans. Heat insulated roof structure. 4,434,601, Cl. 52-745.000.
Zenbutsu, Tadashi: *See—*
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Irie, Michiyuki, 4,435,215, Cl. 106-84.000.
Zenith Radio Corporation: *See—*
Dobrovolny, Pierre, 4,435,841, Cl. 455-180.000.
Zerna, Wolfgang; Krabbe, Wilfried; and Schafer, Hans, to Philipp Holzmann AG. Component useful in producing a cooling tower. 4,434,591, Cl. 52-73.000.
Zheng, Yea K., to Nianbilla Company Limited. Vertical axis windmill. 4,435,124, Cl. 416-119.000.
Ziegler, Erich. Aromatic citrus oil concentrate which is stable in storage. 4,435,437, Cl. 426-651.000.
Zierdt, Charles H., to United States of America, Health and Human Services. Lysis filtration culture chamber. 4,435,505, Cl. 435-34.000.
Zoppi, Michel: *See—*
Flot, Regis; and Zoppi, Michel, 4,435,454, Cl. 428-36.000.
Zscheile, John W., Jr.: *See—*
Spencer, Billie M.; Cady, William S.; and Zscheile, John W., Jr., 4,435,822, Cl. 375-1.000.
Zuech, Ernest A.: *See—*
Wu, Yulin; and Zuech, Ernest A., 4,435,596, Cl. 562-481.000.
Zuk, Robert F.; and Litman, David J., to Syva Company. Immunochromatographic assay with support having bound "MIP" and second enzyme. 4,435,504, Cl. 435-7.000.
Zyntrax Corporation, The: *See—*
Woloshuk, Edward A.; and Walz, Gregory J., 4,435,053, Cl. 352-86.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ball Corporation: *See—*
Lowe, Earl L., Re. 31,529, Cl. 137-884.000.
Bell Telephone Laboratories, Incorporated: *See—*
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., Re. 31,534, Cl. 179-99.00R.
Catalyst Research Corporation: *See—*
Schneider, Alan A.; and Moser, James R., Re. 31,532, Cl. 429-191.000.
Donn Incorporated: *See—*
Mieyal, David F., Re. 31,528, Cl. 52-730.000.
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., to Bell Telephone Laboratories, Incorporated. Communication system conferencing arrangement. Re. 31,534, Cl. 179-99.00R.
Lambert, William R. Method and apparatus for eviscerating scallops. Re. 31,527, Cl. 17-51.000.
Lewis, Terry W., to Minnesota Mining and Manufacturing Company. Information carrying discs. Re. 31,533, Cl. 428-65.000.
Lowe, Earl L., to Ball Corporation. Electronic valve assembly for glassware forming machinery. Re. 31,529, Cl. 137-884.000.
Matson, Crawford A.: *See—*
Ragard, Phillip A.; and Matson, Crawford A., Re. 31,530, Cl. 140-105.000.
Mieyal, David F., to Donn Incorporated. Grid tee for suspension ceilings or the like. Re. 31,528, Cl. 52-730.000.
Minnesota Mining and Manufacturing Company: *See—*
Lewis, Terry W., Re. 31,533, Cl. 428-65.000.
Moser, James R.: *See—*
Schneider, Alan A.; and Moser, James R., Re. 31,532, Cl. 429-191.000.
Ragard, Phillip A.; and Matson, Crawford A., to Universal Instruments Corporation. Multiple lead cut and clinch mechanism. Re. 31,530, Cl. 140-105.000.
Rockwell International Corporation: *See—*
Williams, William J., Re. 31,531, Cl. 188-341.000.
Schneider, Alan A.; and Moser, James R., to Catalyst Research Corporation. Primary cells and iodine containing cathodes therefor. Re. 31,532, Cl. 429-191.000.
Universal Instruments Corporation: *See—*
Ragard, Phillip A.; and Matson, Crawford A., Re. 31,530, Cl. 140-105.000.
Van Ornum, James H.: *See—*
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., Re. 31,534, Cl. 179-99.00R.
Wang, Tse L.: *See—*
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., Re. 31,534, Cl. 179-99.00R.
Weiss, Carl D.: *See—*
Fenton, Francis M.; Van Ornum, James H.; Wang, Tse L.; and Weiss, Carl D., Re. 31,534, Cl. 179-99.00R.
Williams, William J., to Rockwell International Corporation. Brake assembly. Re. 31,531, Cl. 188-341.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Gregorian, Razmic S.; and Namboodri, Chettoor G., to United Merchants and Manufacturers, Inc. Fabric treating compositions. B1 4,266,976, 3-6-84, Cl. 106-2.000.

Namboodri, Chettoor G.: *See—*
Gregorian, Razmic S.; and Namboodri, Chettoor G., B1 4,266,976, Cl. 106-2.000.
United Merchants and Manufacturers, Inc.: *See—*
Gregorian, Razmic S.; and Namboodri, Chettoor G., B1 4,266,976, Cl. 106-2.000.
Wilson, Jerry L. Multi-purpose exercise device. B1 4,072,309, 3-6-84, Cl. 272-136.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See—*
Johnson, Philip A.; and McCarthy, Alfred F., 272,902, Cl. D13-23.000.
Anderson, Kenneth J., to Milton Bradley International, Inc. Toy clock. 272,930, 3-6-84, Cl. D21-144.000.
Aurora Design Associates, Inc.: *See—*
Gardner, James H.; and de Nevers, Noel H., 272,882, Cl. D7-70.000.
Beasley, Rex W., III. Building. 272,947, 3-6-84, Cl. D25-1.000.
Beaty, John E., Sr. One piece dome ceiling. 272,949, 3-6-84, Cl. D25-92.000.
Beirise, Jean M.: *See—*
Coons, John C.; and Beirise, Jean M., 272,907, Cl. D14-58.000.
Belson, Sharon: *See—*
Quinn, Ronald B.; Hudson, Mark; and Belson, Sharon, 272,923, Cl. D21-55.000.
Bergsland, Jon. Foundation wall outer moisture bar sheet or basement inner wall or floor humidity controlling lining sheet or the like. 272,957, 3-6-84, Cl. D92-31.000.
Blomberg, Knut H. Telephone instrument. 272,905, 3-6-84, Cl. D14-53.000.
Boissicat, Claude M., to Contrel. Combined handling, testing, and sorting machine for integrated circuits. 272,913, 3-6-84, Cl. D15-147.000.
Bolton, James C., to Industrial Tools, Inc. Tape slitter. 272,911, 3-6-84, Cl. D15-127.000.
Brookes, Malcolm J.: *See—*
Heinzelman, Bert D.; Brookes, Malcolm J.; and Spranger, Douglas M., 272,906, Cl. D14-58.000.
Brown, Warner K.: *See—*
Kirby, Robert L.; Brown, Warner K.; and Lanci, Dennis M., 272,956, Cl. D34-37.000.
Bruce, Marilyn M. Jewelry pendant or the like. 272,891, 3-6-84, Cl. D11-78.000.
Bull, LaVera R. Communion rail. 272,948, 3-6-84, Cl. D25-38.000.
Burgi, William; and DePartout, Thomas. Toy worm or similar article. 272,931, 3-6-84, Cl. D21-148.000.
Burns, Daniel E. Dual liquid ice probe. 272,941, 3-6-84, Cl. D23-1.000.
California R&D: *See—*
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.
Casetta, Gino, to Simod Patents N.A.N.V. Sport shoe. 272,866, 3-6-84, Cl. D2-309.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. Combined lighter and cigar/cigarette filter perforator. 272,950, 3-6-84, Cl. D27-38.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. Combined lighter and cigar/cigarette filter perforator. 272,951, 3-6-84, Cl. D27-38.000.

Chambers, Jeffrey M.; and Kata, Joseph, to Milton Bradley International, Inc. Electronic game board. 272,919, 3-6-84, Cl. D21-24.000.

Chaparral Communications, Inc.: *See*—
Taggart, Robert B.; and Taylor, Howard H., 272,910, Cl. D14-90.000.

Chapman, Leif H., to General Motors Corporation. Vehicle wheel cover. 272,897, 3-6-84, Cl. D12-211.000.

Clark Equipment Company: *See*—
Kirby, Robert L.; Brown, Warner K.; and Lanci, Dennis M., 272,956, Cl. D34-37.000.
Witczak, Stanley, 272,909, Cl. D15-28.000.

Cohen, Piet, to Materias Plasticas, Limitada. Brush holder and brush for toilet. 272,874, 3-6-84, Cl. D6-86.000.

Contrel: *See*—
Boissicat, Claude M., 272,913, Cl. D15-147.000.

Coons, John C.; and Beirise, Jean M., to Masco Corporation of Indiana. Telephone base station. 272,907, 3-6-84, Cl. D14-58.000.

Corey, Charles D.; and Pia, Francesco A. Marine rescue and recreational board. 272,935, 3-6-84, Cl. D21-228.000.

Coughlin, Vincent D. Bacteriological loop holder. 272,944, 3-6-84, Cl. D24-31.000.

Davis, Paul, to Loach Manufacturing Co. Ltd. Carrying case for cash. 272,869, 3-6-84, Cl. D3-73.000.

Dawes, Kerry G., to Praegitzer, Dennis A. Propeller counterweight bearing assembly. 272,912, 3-6-84, Cl. D15-143.000.

de Nevers, Noel H.: *See*—
Gardner, James H.; and de Nevers, Noel H., 272,882, Cl. D7-70.000.

DePartout, Thomas: *See*—
Burgi, William; and DePartout, Thomas, 272,931, Cl. D21-148.000.

Designs for Vision, Inc.: *See*—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, 272,915, Cl. D16-130.000.

Dowrick, David C.; and Lanning, John M., to Harnischfeger Corporation. Mobile crane. 272,955, 3-6-84, Cl. D34-34.000.

Dropik, Martin J., to Quaker Oats Company, The. Push toy. 272,927, 3-6-84, Cl. D21-92.000.

Dufour, Kenneth L.: *See*—
Stone, Robert D.; and Dufour, Kenneth L., 272,943, Cl. D24-29.000.

Dunlop Limited: *See*—
Popplewell, Frank W., 272,934, Cl. D21-207.000.
Tomoda, Hiroshi, 272,899, Cl. D12-141.000.

Duskin Franchise Kabushiki Kaisha (Duskin Franchise Co., Ltd.): *See*—
Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 272,877, Cl. D6-209.000.

Edelmann, Paul H. Combined sweat band and eye shield. 272,865, 3-6-84, Cl. D2-241.000.

Electronic Assemblies, Inc.: *See*—
Sparks, James, 272,954, Cl. D34-21.000.

F. LLI Guzzini S.p.A.: *See*—
Pozzi, Ambrogio, 272,879, Cl. D7-21.000.
Pozzi, Ambrogio, 272,880, Cl. D7-21.000.

Fabian, Wolfgang. Sanitary fitting for a bidet. 272,942, 3-6-84, Cl. D23-23.000.

Famiglietti, Angelo. Barbecue stove. 272,885, 3-6-84, Cl. D7-333.000.

Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, to Designs for Vision, Inc. Optical coupler photographic accessory. 272,915, 3-6-84, Cl. D16-130.000.

Fisher, Robert C., to Quaker Oats Company, The. Toy truck. 272,928, 3-6-84, Cl. D21-133.000.

Forster, Karl-Heinz: *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, to Veb Kombinat Polygraph "Werner Lamberz". Machine control console. 272,903, 3-6-84, Cl. D13-40.000.

Gardner, James H.; and de Nevers, Noel H., to Aurora Design Associates, Inc. Server for a wine bottle or the like. 272,882, 3-6-84, Cl. D7-70.000.

General Motors Corporation: *See*—
Chapman, Leif H., 272,897, Cl. D12-211.000.

Glaser, Robert L., to L. M. Becker & Co., Inc. Vending machine. 272,918, 3-6-84, Cl. D20-1.000.

Gorenje Tgo N.Sol.O, Velenje: *See*—
Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, 272,945, Cl. D24-36.000.

Guinn, Kenneth F. Flyable toy rotor for kite. 272,926, 3-6-84, Cl. D21-91.000.

Gutkneht, Leroy: *See*—
Wichinsky, Michael; and Gutkneht, Leroy, 272,920, Cl. D21-37.000.

Gwaltney, Madison W.; and Longserre, Goodrich W. Hidden mountable strap for billfold or the like. 272,867, 3-6-84, Cl. D2-400.000.

Hand, William A. Drapery for framing furniture or the like. 272,876, 3-6-84, Cl. D6-205.000.

Harnischfeger Corporation: *See*—
Dowrick, David C.; and Lanning, John M., 272,955, Cl. D34-34.000.

Heap, Jean W., to Pendelfin Studios Limited. Table ornament. 272,895, 3-6-84, Cl. D11-158.000.

Heinzelman, Bert D.; Brookes, Malcolm J.; and Spranger, Douglas M., to International Telephone and Telegraph Corporation. Telephone console. 272,906, 3-6-84, Cl. D14-58.000.

Hilko, Steven E., to Quaker Oats Company, The. Toy truck. 272,929, 3-6-84, Cl. D21-139.000.

Holcombe, J. L., to Mizell, Emerson H. Insulation support. 272,886, 3-6-84, Cl. D8-380.000.

Holloway, Thomas F., to Risdon Corporation. Cosmetic container. 272,952, 3-6-84, Cl. D28-89.000.

Howden, Ashley G.: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.

Hudson, Mark: *See*—
Quinn, Ronald B.; Hudson, Mark; and Belson, Sharon, 272,923, Cl. D21-55.000.

Industrial Tools, Inc.: *See*—
Bolton, James C., 272,911, Cl. D15-127.000.

Interdica S.A.: *See*—
Kanoui, Joseph, 272,878, Cl. D7-6.000.
Kanoui, Joseph, 272,881, Cl. D7-28.000.

International Telephone and Telegraph Corporation: *See*—
Heinzelman, Bert D.; Brookes, Malcolm J.; and Spranger, Douglas M., 272,906, Cl. D14-58.000.

Jaffee, Max. Luggage cover. 272,868, 3-6-84, Cl. D3-41.000.

Johansson, Tord G. I. High pressure cover. 272,940, 3-6-84, Cl. D23-01.000.

Johne, Hans: *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Johnson, Philip A.; and McCarthy, Alfred F., to Aavid Engineering, Inc. Self-fastened heat sink. 272,902, 3-6-84, Cl. D13-23.000.

Johnston, Brian M. Soap stand. 272,875, 3-6-84, Cl. D6-89.000.

Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, to California R&D. Simulative toy vehicle. 272,925, 3-6-84, Cl. D21-74.000.

Kabushiki Kaisha Bandai: *See*—
Murakami, Katsuji, 272,933, Cl. D21-166.000.

Kanoui, Joseph, to Interdica S.A. Cup. 272,878, 3-6-84, Cl. D7-6.000.

Kanoui, Joseph, to Interdica S.A. Finger-bowl. 272,881, 3-6-84, Cl. D7-28.000.

Kata, Joseph: *See*—
Chambers, Jeffrey M.; and Kata, Joseph, 272,919, Cl. D21-24.000.

Kawano, Takeyoshi, to Sony Corporation. Earphone. 272,904, 3-6-84, Cl. D14-30.000.

Kim, Syng N., to Wico Corporation. Control for a video game or the like. 272,921, 3-6-84, Cl. D21-48.000.

Kingsbury, L. C. James: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.

Kinoyama, Takehisa: *See*—
Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 272,877, Cl. D6-209.000.

Kirby, Robert L.; Brown, Warner K.; and Lanci, Dennis M., to Clark Equipment Company. Lift truck body. 272,956, 3-6-84, Cl. D34-37.000.

Klecker, Barney J. Snowshoe. 272,936, 3-6-84, Cl. D21-228.000.

Klecker, Barney J. Binding for a snowshoe. 272,937, 3-6-84, Cl. D21-230.000.

Knez, Danijel: *See*—
Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, 272,945, Cl. D24-36.000.

Knighton, Mark S.: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.

Kobashigawa, Dana P. H. Novelty pig figure. 272,896, 3-6-84, Cl. D11-158.000.

Kodaka, Tatsuya. Scorpion figure. 272,893, 3-6-84, Cl. D11-158.000.

Kodaka, Tatsuya. Tarantula figure. 272,894, 3-6-84, Cl. D11-158.000.

Kralj, Bozo: *See*—
Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, 272,945, Cl. D24-36.000.

Kuchenbecker, Hans J. L.: *See*—
Kuchenbecker, Heinz; Kuchenbecker, Hans J. L.; and Kuchenbecker, Rolf, 272,898, Cl. D12-108.000.

Kuchenbecker, Heinz; Kuchenbecker, Hans J. L.; and Kuchenbecker, Rolf. Toy car with pedal drive. 272,898, 3-6-84, Cl. D12-108.000.

Kuchenbecker, Rolf: *See*—
Kuchenbecker, Heinz; Kuchenbecker, Hans J. L.; and Kuchenbecker, Rolf, 272,898, Cl. D12-108.000.

L. M. Becker & Co., Inc.: *See*—
Glaser, Robert L., 272,918, Cl. D20-1.000.

Lanci, Dennis M.: *See*—
Kirby, Robert L.; Brown, Warner K.; and Lanci, Dennis M., 272,956, Cl. D34-37.000.

Lanning, John M.: *See*—
Dowrick, David C.; and Lanning, John M., 272,955, Cl. D34-34.000.

Lepczynski, Richard: *See*—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, 272,915, Cl. D16-130.000.

Loach Manufacturing Co. Ltd.: *See*—
Davis, Paul, 272,869, Cl. D3-73.000.

Longserre, Goodrich W.: *See*—
Gwaltney, Madison W.; and Longserre, Goodrich W., 272,867, Cl. D2-400.000.

Masco Corporation of Indiana: *See*—
Coons, John C.; and Beirise, Jean M., 272,907, Cl. D14-58.000.

Materias Plasticas, Limitada: *See*—
Cohen, Piet, 272,874, Cl. D6-86.000.

Matsuo, Toshiyuki, to Sony Corporation. Television receiver. 272,908, 3-6-84, Cl. D14-77.000.

McCarthy, Alfred F.: *See*—
Johnson, Philip A.; and McCarthy, Alfred F., 272,902, Cl. D13-23.000.

McDaniel, Robert E. Model hobby glowplug power source with negative terminal headlock. 272,901, 3-6-84, Cl. D13-8.000.

Mengshoel, Hans C.; and Rykken, Oddvin. Chair. 272,873, 3-6-84, Cl. D6-26.000.

Micucci, Joseph M., to Olympic Sales Club, Inc. Combined paper and pencil caddy. 272,917, 3-6-84, Cl. D19-78.000.

Miles, Richard; and Stokes, Adrian D., to Samsonite Corporation. Luggage case. 272,870, 3-6-84, Cl. D3-76.000.

Milton Bradley International, Inc.: *See*—
Anderson, Kenneth J., 272,930, Cl. D21-144.000.
Chambers, Jeffrey M.; and Kata, Joseph, 272,919, Cl. D21-24.000.

Mizell, Emerson H.: *See*—
Holcombe, J. L., 272,886, Cl. D8-380.000.

Moreno, Norberto. Combined crib and storage unit. 272,872, 3-6-84, Cl. D6-16.000.

Mueschke, Herman W., Jr. Pistol grip part. 272,938, 3-6-84, Cl. D22-1.000.

Murakami, Katsuji, to Kabushiki Kaisha Bandai. Toy robot. 272,933, 3-6-84, Cl. D21-166.000.

National Can Corporation: *See*—
Wells, Harold T., 272,888, Cl. D9-352.000.

Nippon Kogaku K.K.: *See*—
Tomatsuri, Masakazu; and Takahashi, Chiyoji, 272,916, Cl. D16-132.000.

Obst, Charles J., to Vastano, Joseph J., a part interest. Wind vane steering control for boats. 272,900, 3-6-84, Cl. D12-317.000.

Oleksy, Wladyslaw: *See*—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Wladyslaw, 272,915, Cl. D16-130.000.

Olympic Sales Club, Inc.: *See*—
Micucci, Joseph M., 272,917, Cl. D19-78.000.

Parton, Denis. Clip for game goal nets. 272,887, 3-6-84, Cl. D8-395.000.

Pendelfin Studios Limited: *See*—
Heap, Jean W., 272,895, Cl. D11-158.000.

Pia, Francesco A.: *See*—
Corey, Charles D.; and Pia, Francesco A., 272,935, Cl. D21-228.000.

Popplewell, Frank W., to Dunlop Limited. Shuttlecock. 272,934, 3-6-84, Cl. D21-207.000.

Povse, Janez: *See*—
Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, 272,945, Cl. D24-36.000.

Pozzi, Ambrogio, to F. LLI Guzzini S.p.A. Serving platter. 272,879, 3-6-84, Cl. D7-21.000.

Pozzi, Ambrogio, to F. LLI Guzzini S.p.A. Hors-d'oeuvre dish. 272,880, 3-6-84, Cl. D7-21.000.

Praegitzer, Dennis A.: *See*—
Dawes, Kerry G., 272,912, Cl. D15-143.000.

Quaker Oats Company, The: *See*—
Dropik, Martin J., 272,927, Cl. D21-92.000.
Fisher, Robert C., 272,928, Cl. D21-133.000.
Hilko, Steven E., 272,929, Cl. D21-139.000.
Sahler, John T., 272,924, Cl. D21-59.000.

Quinn, Ronald B.; Hudson, Mark; and Belson, Sharon. Bingo equipment container. 272,923, 3-6-84, Cl. D21-55.000.

Rapaport, Gerald M. Child's clothes rack. 272,871, 3-6-84, Cl. D6-5.000.

Readly, Paul J. Fish net handle. 272,939, 3-6-84, Cl. D22-22.000.

Reinhardt, Peter: *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Rewald, Peter R. Chess set. 272,922, 3-6-84, Cl. D21-52.000.

Risdon Corporation: *See*—
Holloway, Thomas F., 272,952, Cl. D28-89.000.

Rykken, Oddvin: *See*—
Mengshoel, Hans C.; and Rykken, Oddvin, 272,873, Cl. D6-26.000.

S.F.C. Associates, Inc.: *See*—
Seibel, Ben, 272,884, Cl. D7-321.000.

Sahler, John T., to Quaker Oats Company, The. Toy periscope. 272,924, 3-6-84, Cl. D21-59.000.

Samsonite Corporation: *See*—
Miles, Richard; and Stokes, Adrian D., 272,870, Cl. D3-76.000.

Sasagawa, Kinichi: *See*—
Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 272,877, Cl. D6-209.000.

Sassak, John J. Toy alligator. 272,932, 3-6-84, Cl. D21-157.000.

Scanlon, Thomas A., to Tasco Corp. Ear protector. 272,946, 3-6-84, Cl. D24-67.000.

Schott, Alfred: *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Seibel, Ben, to S.F.C. Associates, Inc. Tea kettle or similar article. 272,884, 3-6-84, Cl. D7-321.000.

Sewell Plastics, Inc.: *See*—
Walton, Benn C., 272,889, Cl. D9-370.000.

Sheets, Ronald E., to Tamarack Scientific Co., Inc. Wide field illuminator. 272,914, 3-6-84, Cl. D16-32.000.

Simod Patents N.A.N.V.: *See*—
Casetta, Gino, 272,866, Cl. D2-309.000.

Simon, Dieter: *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Sims, Anson: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; Knighton, Mark S.; and Kingsbury, L. C. James, 272,925, Cl. D21-74.000.

Skewis, William A. Multihem-height skirt. 272,864, 3-6-84, Cl. D2-223.000.

Sociedad de Dispositivos Reductores de Tabaco, S.A.: *See*—
Cervantes, Rafael T., 272,950, Cl. D27-38.000.
Cervantes, Rafael T., 272,951, Cl. D27-38.000.

Sony Corporation: *See*—
Kawano, Takeyoshi, 272,904, Cl. D14-30.000.
Matsuo, Toshiyuki, 272,908, Cl. D14-77.000.

Sparks, James, to Electronic Assemblies, Inc. Mobile rack for holding wire. 272,954, 3-6-84, Cl. D34-21.000.

Spranger, Douglas M.: *See*—
Heinzelman, Bert D.; Brookes, Malcolm J.; and Spranger, Douglas M., 272,906, Cl. D14-58.000.

Steiner, Fred S. Spoon. 272,883, 3-6-84, Cl. D7-104.000.

Stockmann, Arno: *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Stokes, Adrian D.: *See*—
Miles, Richard; and Stokes, Adrian D., 272,870, Cl. D3-76.000.

Stone, Robert D.; and Dufour, Kenneth L. Electrode for biomedical signals. 272,943, 3-6-84, Cl. D24-29.000.

Stratton, Kathleen A. Button. 272,890, 3-6-84, Cl. D11-55.000.

Suhel, Peter; Kralj, Bozo; Knez, Danijel; and Povse, Janez, to Gorenje Tgo N.Sol.O, Velenje. Device for the stimulation of vaginal muscles. 272,945, 3-6-84, Cl. D24-36.000.

Sun, George C. Ornament. 272,892, 3-6-84, Cl. D11-125.000.

Taggart, Robert B.; and Taylor, Howard H., to Chaparral Communications, Inc. Feedhorn for parabolic antennae. 272,910, 3-6-84, Cl. D14-90.000.

Takahashi, Chiyoji: *See*—
Tomatsuri, Masakazu; and Takahashi, Chiyoji, 272,916, Cl. D16-132.000.

Tamarack Scientific Co., Inc.: *See*—
Sheets, Ronald E., 272,914, Cl. D16-32.000.

Tasco Corp.: *See*—
Scanlon, Thomas A., 272,946, Cl. D24-67.000.

Taylor, Frank. Dishwasher. 272,953, 3-6-84, Cl. D32-2.000.

Taylor, Howard H.: *See*—
Taggart, Robert B.; and Taylor, Howard H., 272,910, Cl. D14-90.000.

Tomatsuri, Masakazu; and Takahashi, Chiyoji, to Nippon Kogaku K.K. Monocular. 272,916, 3-6-84, Cl. D16-132.000.

Tomoda, Hiroshi, to Dunlop Limited. Tire for a vehicle wheel. 272,899, 3-6-84, Cl. D12-141.000.

Valencia, C. Esteban. Font or the like. 272,958, 3-6-84, Cl. D99-25.000.

Vastano, Joseph J.: *See*—
Obst, Charles J., 272,900, Cl. D12-317.000.

Veb Kombinat Polygraph "Werner Lamberz": *See*—
Friedrich, Ludwig; Johne, Hans; Forster, Karl-Heinz; Schott, Alfred; Reinhardt, Peter; Simon, Dieter; and Stockmann, Arno, 272,903, Cl. D13-40.000.

Walton, Benn C., to Sewell Plastics, Inc. Bottle or similar article. 272,889, 3-6-84, Cl. D9-370.000.

Wells, Harold T., to National Can Corporation. Bottle. 272,888, 3-6-84, Cl. D9-352.000.

Westbury Foundation, The: *See*—
Cervantes, Rafael T., 272,950, Cl. D27-38.000.
Cervantes, Rafael T., 272,951, Cl. D27-38.000.

Wichinsky, Michael; and Gutkneht, Leroy. Gaming machine. 272,920, 3-6-84, Cl. D21-37.000.

Wico Corporation: *See*—
Kim, Syng N., 272,921, Cl. D21-48.000.

Witczak, Stanley, to Clark Equipment Company. Fairlesd mounting for a skidder vehicle. 272,909, 3-6-84, Cl. D15-28.000.

Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, to Duskin Franchise Kabushiki Kaisha (Duskin Franchise Co., Ltd.). Door mat base plate or similar article. 272,877, 3-6-84, Cl. D6-209.000.

LIST OF PLANT PATENTEES

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant(-Flash). 5,202, 3-6-84, Cl. 74.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Rosario. 5,199, 3-6-84, Cl. 68.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named White Dream. 5,200, 3-6-84, Cl. 68.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Pink Sensation. 5,201, 3-6-84, Cl. 68.000.

Sun Valley Bulb Farms, Inc.: *See*—
Kirsch, Ted T., 5,199, Cl. 68.000.
Kirsch, Ted T., 5,200, Cl. 68.000.
Kirsch, Ted T., 5,201, Cl. 68.000.

Yoder Brothers, Inc.: *See*—
Duffett, William E., 5,202, Cl. 74.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 6TH DAY OF MARCH, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Eveland, Richard E.: *See*—
Hall, Lon E.; and Eveland, Richard E., T104,003, Cl. 364-200.000.

Gode, Donald F.: *See*—
Morrison, John F.; Jensen, Harold E.; and Gode, Donald F., T104,002, Cl. 312-214.000.

Hall, Lon E.; and Eveland, Richard E. Synchronous data link slow-poll protocol. T104,003, 3-6-84, Cl. 364-200.000.

Jensen, Harold E.: *See*—
Morrison, John F.; Jensen, Harold E.; and Gode, Donald F., T104,002, Cl. 312-214.000.

Kunter, Richard S.; and Turney, John R. Method for recovering gold from refractory ores. T104,001, 3-6-84, Cl. 75-118.00R.

Morrison, John F.; Jensen, Harold E.; and Gode, Donald F. Modular insulated cabinet construction. T104,002, 3-6-84, Cl. 312-214.000.

Turney, John R.: *See*—
Kunter, Richard S.; and Turney, John R., T104,001, Cl. 75-118.00R.

von Rymon Lipinski, Gert-Wolfhard. Taste improvement of table top preparations containing Acesulfame K. T104,004, 3-6-84, Cl. 426-548.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 6, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
114 4,434,511
129 4,434,512
410 4,434,513
425 4,434,514

CLASS 3
13 4,434,515

CLASS 4
252 R 4,434,516
585 4,434,517

CLASS 8
527 4,435,181

CLASS 12
142 RS 4,434,518

CLASS 15
1.7 4,434,519
214 4,434,520
230.11 4,434,521
256.51 4,434,522

CLASS 16
242 4,434,523
250 4,434,524
355 4,434,525

CLASS 17
11 4,434,526
33 4,434,527
49 4,434,528
4,434,529
51 Re.31,527

CLASS 19
0.46 4,434,530
99 4,434,531
159 R 4,434,532
247 4,434,533

CLASS 23
293 R 4,435,183
295 R 4,435,182
300 4,435,184

CLASS 24
67.1 4,434,534
241 PP 4,434,536
380 4,434,537
562 R 4,434,535

CLASS 29
33.2 4,434,538
157.3 V 4,434,539
402.11 4,434,540
526 R 4,434,541
566.4 4,434,542
576 B 4,434,543
578 4,434,544
596 4,434,545
598 4,434,546
599 4,434,547
623 4,434,548
832 4,434,549
837 4,434,550
861 4,434,551
876 4,434,552

CLASS 30
34.1 4,434,553
90.8 4,434,554
92 4,434,555
123.4 4,434,556

CLASS 33
148 R 4,434,557
174 L 4,434,559
174 P 4,434,558
241 4,434,560
366 4,434,561

CLASS 34
4 4,434,562
28 4,434,563
86 4,434,564

CLASS 36
7.3 4,434,565

CLASS 38
8 4,434,566

CLASS 40
157 4,434,567
518 4,434,568
545 4,434,569
617 4,434,570

CLASS 42
90 4,434,571

CLASS 43
6.5 4,434,572
15 4,434,573
63 4,434,574
100 4,434,575

CLASS 44
53 4,435,186
63 4,435,187
68 4,435,185

CLASS 47
39 4,434,576
81 4,434,577

CLASS 48
111 4,435,188

CLASS 49
49 4,434,578
63 4,434,579
502 4,434,580

CLASS 51
67 4,434,581
101 R 4,434,582
103 TF 4,434,583
135 R 4,434,584
166 R 4,434,585
170 MT 4,434,587
170 PT 4,434,586
295 4,435,189
344 4,434,588

CLASS 52
57 4,434,589
58 4,434,590
73 4,434,591
145 4,434,592
208 4,434,593
209 4,434,594
236.2 4,434,595
243.1 4,434,596
681 4,434,597
716 4,434,598
729 4,434,599
730 Re.31,528
741 4,434,600
745 4,434,601

CLASS 53
473 4,434,602
557 4,434,603

CLASS 54
23 4,434,604

CLASS 55
5 4,435,190
16 4,435,191
19 4,435,192
21 4,435,193
96 4,435,194
126 4,435,195
174 4,435,196
341 R 4,435,197

CLASS 56
16.4 4,434,605
106 4,434,606
341 4,434,607

CLASS 57
58.52 4,434,608
58.86 4,434,609
294 4,434,610
328 4,434,611
331 4,434,612

CLASS 60
39.07 4,434,613
271 4,434,614
293 4,434,615
451 4,434,616
520 4,434,617
528 4,434,618
547.1 4,434,619
657 4,434,620
734 4,434,621

CLASS 62
6 4,434,622
28 4,435,198
64 4,434,623
172 4,434,624
199 4,434,625
470 4,434,626

CLASS 65
3.12 4,435,199
64 4,435,200

CLASS 66
120 4,434,627
123 4,434,628

CLASS 68
13 A 4,434,629
18 F 4,434,630
171 4,434,631
205 R 4,434,632
267 4,434,633

CLASS 70
89 4,434,634
279 4,434,635
358 4,434,636

CLASS 71
54 4,435,201
76 4,435,202
4,435,203
86 4,435,204
92 4,435,205
4,435,206
94 4,435,207
105 4,435,208

CLASS 72
17 4,434,637
130 4,434,638
344 4,434,639
348 4,434,640
354 4,434,641
356 4,434,642
379 4,434,643
387 4,434,644
402 4,434,645
451 4,434,646

CLASS 73
1 DV 4,434,648
1 R 4,434,647
37.7 4,434,649
61.1 R 4,434,650
85 4,434,651
146 4,434,652
151 4,434,653
4,434,654
167 4,434,655
204 4,434,656
304 C 4,434,657
618 4,434,658
620 4,434,659
622 4,434,660
625 4,434,661
641 4,434,662
643 4,434,663
701 4,434,664
724 4,434,665
861.12 4,434,666
4,434,667
861.22 4,434,668
861.25 4,434,669
861.54 4,434,670
862.48 4,434,671
864.22 4,434,672

CLASS 74
10.33 4,434,673
99 A 4,434,674
200 4,434,675
4,434,676
409 4,434,677
471 R 4,434,678
491 4,434,679
682 4,434,680
687 4,434,681
805 4,434,682

CLASS 75
11 4,435,209
53 4,435,210
62 4,435,211
124 4,435,212
249 4,435,213
251 4,435,214

CLASS 76
37 4,434,683
4,434,684
38 4,434,685

CLASS 81
3 R 4,434,686
441 4,434,687
451 4,434,688

CLASS 82
4 C 4,434,689

CLASS 83
13 4,434,690
56 4,434,691
62 4,434,692
71 4,434,693
411 R 4,434,694
682 4,434,695

CLASS 84
1.01 4,434,696
434 4,434,697
483 A 4,434,698

CLASS 89
12 4,434,699
34 4,434,700
36 K 4,434,701
36 L 4,434,702
37 B 4,434,703

CLASS 91
25 4,434,704
50 4,434,705
375 A 4,434,706
376 R 4,434,707
436 4,434,708
506 4,434,709

CLASS 98
94 AC 4,434,710
116 LH 4,434,711

CLASS 99
646 S 4,434,712

CLASS 100
168 4,434,713

CLASS 101
38 A 4,434,714
76 4,434,715
142 4,434,716

CLASS 102
210 4,434,717
522 4,434,718

CLASS 105
168 4,434,719
199 CB 4,434,720
108— B1 4,266,976
84 4,435,215
97 4,435,216
171 4,435,217
266 4,435,218
287.16 4,435,219
291 4,435,220

CLASS 108
4 4,434,721
8 4,434,722

CLASS 110
245 4,434,723
269 4,434,724
346 4,434,725
347 4,434,726
4,434,727

CLASS 112
84 4,434,728
121.12 4,434,729
4,434,730
121.14 4,434,731
158 A 4,434,733
158 E 4,434,732
181 4,434,734
220 4,434,735
258 4,434,736

CLASS 114
39 4,434,737
162 4,434,738
4,434,739
211 4,434,740
264 4,434,741

CLASS 118
723 4,434,742

CLASS 119
6 4,434,743
14.02 4,434,744
51 R 4,434,745

CLASS 122
448 R 4,434,746
449 4,434,747

CLASS 123
25 L 4,434,748
41.02 4,434,749
4,434,750
43 B 4,434,751
50 B 4,434,752
143 B 4,434,753
146.5 A 4,434,754
195 C 4,434,755
195 R 4,434,756
241 4,434,757
286 4,434,758
325 4,434,759
339 4,434,760
383 4,434,761
438 4,434,762
440 4,434,763
4,434,764
472 4,434,765
4,434,766
481 4,434,767
489 4,434,768
493 4,434,769
494 4,434,770
539 4,434,771
549 4,434,772
557 4,434,773
4,434,774
564 4,434,775
568 4,434,776
4,434,777
587 4,434,778
609 4,434,779

CLASS 126
9 B 4,434,780
25 R 4,434,781
77 4,434,782
121 4,434,783
312 4,434,784
400 4,434,785
424 4,434,786
438 4,434,787

CLASS 128
1.1 4,434,788
1.2 4,434,789
20 4,434,791
80 R 4,434,792
134 4,434,793
152 4,434,794
200.14 4,434,790
303 R 4,434,795
335 4,434,796
343 4,434,797
421 4,434,798
660 4,434,799
665 4,434,800
689 4,434,801
764 4,434,802
770 4,434,803

CLASS 131
309 4,434,804
362 4,434,805

CLASS 132
91 4,434,806
92 R 4,434,807

CLASS 134
2 4,435,221
4,435,222
3 4,435,223

CLASS 135
80 4,434,808

CLASS 136
255 4,435,610

CLASS 137
318 4,434,809
493 4,434,810
515 4,434,811
829 4,434,812
4,434,813
884 Re.31,529

CLASS 138
44 4,434,814
97 4,434,815
109 4,434,816

CLASS 139
429 4,434,817

CLASS 140
82 4,434,818
92.1 4,434,819
105 Re.31,530

CLASS 141
2 4,434,820
44 4,434,821
98 4,434,822
329 4,434,823

CLASS 144
134 D 4,434,824
193 A 4,434,825
219 4,434,826
336 4,434,827

CLASS 145
62 4,434,828

CLASS 148
1.5 4,435,224
4,435,225
3 4,435,226
6.24 4,435,227
11.5 A 4,435,230
11.5 Q 4,435,228
11.5 R 4,435,229
12 EA 4,435,231

CLASS 149
2 4,435,232
44 4,435,233

CLASS 150
49 4,434,829

CLASS 152
209 R 4,434,830
356 R 4,434,831
370 4,434,832
417 4,434,833

CLASS 156
62.2 4,435,235
62.4 4,435,234
132 4,435,236
157 4,435,237
171 4,435,238
180 4,435,239
242 4,435,240
244.11 4,435,241
264 4,435,242
361 4,435,243
379.8 4,435,244
384 4,435,245
542 4,435,246
636 4,435,247

CLASS 160
166 A 4,434,834

CLASS 162
12 4,435,248
24 4,435,249

CLASS 164

34 4,434,835
429 4,434,836
468 4,434,837
485 4,434,838
4,434,839

CLASS 165

82 4,434,840
125 4,434,841
133 4,434,842
150 4,434,843
151 4,434,844
153 4,434,845
161 4,434,846

CLASS 166

117.5 4,434,847
250 4,434,848
252 4,434,849
267 4,434,850
272 4,434,851
273 4,434,852
285 4,434,853
386 4,434,854

CLASS 169

37 4,434,855

CLASS 172

256 4,434,856
328 4,434,857

CLASS 173

12 4,434,858
48 4,434,859
147 4,434,860

CLASS 174

68.5 4,435,611
92 4,435,612
102 SC 4,435,613
117 PC 4,435,614
189 4,435,615

CLASS 175

66 4,434,861
103 4,434,862
321 4,434,863

CLASS 178

18 4,435,616

CLASS 179

17 R 4,435,619
18 EB 4,435,620
81 B 4,435,621
81 R 4,435,622
99 R Re.31,534
189 R 4,435,623

CLASS 180

6.2 4,434,864
19 H 4,434,865
143 4,434,866
190 4,434,867
226 4,434,868

CLASS 182

10 4,434,869
48 4,434,870
198 4,434,871

CLASS 187

8.74 4,434,872
28 4,434,873
29 R 4,434,874
4,434,875
95 4,434,876

CLASS 188

52 4,434,877
341 Re.31,531

CLASS 192

0.052 4,434,879
48.92 4,434,878
67 R 4,434,880
89 A 4,434,881
98 4,434,882
110 R 4,434,883

CLASS 198

328 4,434,884
388 4,434,885
389 4,434,886
391 4,434,887
466 4,434,888

CLASS 200

42 T 4,435,624
61.22 4,435,625
81.9 R 4,435,626
148 R 4,435,627

CLASS 202

239 4,435,250

CLASS 203

50 4,435,251

CLASS 204

11 4,435,252
43 G 4,435,253
49 4,435,254
67 4,435,255
86 4,435,256
4,435,257
109 4,435,258
159.13 4,435,259
164 4,435,260
168 4,435,261
181 C 4,435,262
197 4,435,263
4,435,264
198 4,435,265
276 4,435,266
284 4,435,267
408 4,435,268

CLASS 206

216 4,434,889
443 4,434,890
444 4,434,891
446 4,434,892
322 4,434,893
526 4,434,894
554 4,434,895
621 4,434,896

CLASS 208

8 R 4,435,269
11 R 4,435,270
4,435,271
48 AA 4,435,273
80 4,435,274
89 4,435,275
96 4,435,276
108 4,435,277
111 4,435,279
112 4,435,280
113 4,435,281
4,435,282
127 4,435,272
138 4,435,283
251 H 4,435,278

CLASS 209

3 4,435,284
250 4,435,285

CLASS 210

116 4,435,286
131 4,435,287
227 4,435,288
637 4,435,289
708 4,435,290
739 4,435,291
747 4,435,292
772 4,435,293

CLASS 211

1.3 4,434,897
4,434,898
41 4,434,899
189 4,434,900

CLASS 212

153 4,434,901
268 4,434,902

CLASS 215

222 4,434,903
232 4,434,904

CLASS 219

10.55 A 4,435,629
10.55 M 4,435,628
98 4,435,630
124.02 4,435,631
130.51 4,435,632
216 4,435,633
4,435,634
227 4,435,635
230 4,435,636
358 4,435,637
460 4,435,638
544 4,435,639

CLASS 220

89 A 4,434,905
268 4,434,906
276 4,434,907
4,434,908
316 4,434,909
358 4,434,910

CLASS 221

2 4,434,911
227 4,434,912
267 4,434,913

CLASS 222

153 4,434,914
4,434,915
321 4,434,916
383 4,434,917

CLASS 223

75 4,434,918

CLASS 224

42.21 4,434,919
160 4,434,920
253 4,434,921
314 4,434,922

CLASS 225

97 4,434,923

CLASS 226

120 4,434,924
127 4,434,925
172 4,434,926

CLASS 227

9 4,434,927
16 4,434,928
115 4,434,929

CLASS 228

118 4,434,930

CLASS 232

15 4,434,931

CLASS 235

78 M 4,435,640

CLASS 236

49 4,434,932
75 4,434,933

CLASS 237

12.3 R 4,434,934

CLASS 239

85 4,434,935
178 4,434,936
230 4,434,937
274 4,434,938
345 4,434,939
397.5 4,434,940
587 4,434,941

CLASS 241

21 4,434,942
46.08 4,434,943
258 4,434,944

CLASS 242

7.14 4,434,945
18 G 4,434,946
57.1 4,434,947
59 4,434,948
66 4,434,949
67.2 4,434,950
84.52 B 4,434,951
107 4,434,952
4,434,953
189 4,434,954
199 4,434,955

CLASS 244

17.25 4,434,956
35 R 4,434,957
126 4,434,958
215 4,434,959

CLASS 248

220.4 4,434,960
311.2 4,434,961

CLASS 249

65 4,434,962

CLASS 250

223 B 4,435,641
296 4,435,642
358.1 4,435,643
435 4,435,644
493.1 4,435,645

CLASS 251

7 4,434,963
62 4,434,964
121 4,434,965
205 4,434,966
328 4,434,967

CLASS 252

8.55 D 4,435,295
8.6 4,435,294
28 4,435,296
33.2 4,435,301
34 4,435,298
34.7 4,435,297
41 4,435,299
62.51 4,435,302
80 4,435,303
117 4,435,300
156 4,435,304
158 4,435,305
173 4,435,306
174.12 4,435,307
181 4,435,308
314 4,435,309
370 4,435,310
522 R 4,435,315
4,435,316
547 4,435,317

CLASS 254

1 4,434,968
29 R 4,434,969
108 4,434,970
273 4,434,971
340 4,434,972
344 4,434,973
360 4,434,974

CLASS 256

17 4,434,975

CLASS 260

112 B 4,435,318
123.5 4,435,319
152 4,435,320
239 A 4,435,321
4,435,322
378 4,435,324
397.2 4,435,325
397.3 4,435,326
397.5 4,435,327
400 4,435,328
455 R 4,435,329
458 F 4,435,330
463 4,435,331
465 D 4,435,332
4,435,333
501.12 4,435,334
502 R 4,435,335
508 4,435,336
929 4,435,338

CLASS 261

153 4,435,339

CLASS 266

4.7 4,435,340
7 4,435,341
8 4,435,342
22 4,435,343
45.1 4,435,344
53 4,435,345
54 4,435,346
118 4,435,347
174 4,435,348
257 4,435,349
280 4,435,350
335 4,435,351
504 4,435,352
518 4,435,353

CLASS 266

268 4,434,976

CLASS 267

33 4,434,977

CLASS 269

69 4,434,978

CLASS 271

307 4,434,979

CLASS 272

78 4,434,980
97 4,434,981
136 B1 4,072,309

CLASS 273

153 S 4,434,982
187 R 4,434,983
246 4,434,984

CLASS 277

37 4,434,985
42 4,434,986
80 4,434,987
81 R 4,434,988
235 B 4,434,989

CLASS 279

4 4,434,990

CLASS 280

5 R 4,434,991
47.13 B 4,434,992
402 4,434,993
404 4,434,994
414.1 4,434,995
504 4,434,996
625 4,434,997
721 4,434,998
752 4,434,999
806 4,435,000

CLASS 282

11.5 A 4,435,001
27.5 4,435,002
4,435,003
4,435,004

CLASS 285

31 4,435,005
119 4,435,006

CLASS 290

44 4,435,646
4,435,647

CLASS 292

268 4,435,007

CLASS 294

25 4,435,008

CLASS 296

97 H 4,435,009
100 4,435,010

CLASS 297

113 4,435,011
355 4,435,012
364 4,435,013
452 4,435,014
453 4,435,015

CLASS 299

2 4,435,016
19 4,435,017
43 4,435,018

CLASS 303

6 A 4,435,019
6 C 4,435,020
10 4,435,021

CLASS 305

53 4,435,022

CLASS 307

10 AT 4,435,649
10 R 4,435,648
32 4,435,650
252 UA 4,435,651
297 4,435,652
309 4,435,653
455 4,435,654
490 4,435,655
513 4,435,656
516 4,435,657
530 4,435,658

CLASS 308

2 R 4,435,023
217 4,435,024

CLASS 310

68 R 4,435,659
70 R 4,435,660
90 4,435,661
168 4,435,662
186 4,435,664
306 4,435,663
307 4,435,665
328 4,435,666
367 4,435,667

CLASS 312

31 4,435,025
45 4,435,026
222 4,435,027
258 4,435,028
320 4,435,029
351 4,435,030

CLASS 313

388 4,435,668
634 4,435,669

CLASS 315

58 4,435,670
200 R 4,435,671
366 4,435,672

CLASS 318

254 A 4,435,673
640 4,435,674

CLASS 320

22 4,435,675

CLASS 322

33 4,435,676

CLASS 323

4,435,677
273 4,435,678
350 4,435,679

CLASS 324

316 4,435,680
459 4,435,681

CLASS 329

107 4,435,682

CLASS 330

2 4,435,683
51 4,435,684
261 4,435,685
311 4,435,686

CLASS 331

23 4,435,687
99 4,435,688

CLASS 333

81 A 4,435,689

CLASS 335

37 4,435,690

CLASS 338

125 4,435,691
214 4,435,692
238 4,435,693

CLASS 339

17 C 4,435,031
36 4,435,032
45 M 4,435,033
98 4,435,034
99 R 4,435,035

CLASS 340

119 4,435,696
347 AD 4,435,697
512 4,435,698
539 4,435,699
4,435,700
546 4,435,701
671 4,435,702
723 4,435,703
825.01 4,435,704
825.05 4,435,705
825.08 4,435,706
953 4,435,694
966 4,435,695

CLASS 343

5 W 4,435,707
12 A 4,435,708
14 4,435,709
17.7 4,435,712
18 E 4,435,710
389 4,435,711
702 4,435,713
753 4,435,714
771 4,435,715
895 4,435,716

CLASS 346

1.1 4,435,717
75 4,435,718
4,435,719
4,435,720
140 R 4,435,721
153.1 4,435,722
154 4,435,723

CLASS 350

96.20 4,435,036
4,435,037
96.21 4,435,038
96.25 4,435,039
96.33 4,435,040
162.24 4,435,041
281 4,435,042
288 4,435,043
302 4,435,044
310 4,435,045
334 4,435,046
4,435,047
357 4,435,048
454 4,435,049

CLASS 351

160 R 4,435,050
208 4,435,051
239 4,435,052

CLASS 352

86 4,435,053

CLASS 353

95 4,435,054

CLASS 354

4 4,435,055
21 4,435,056
173.1 4,435,060
173.11 4,435,061
303 4,435,062
315 4,435,063
403 4,435,058
426 4,435,057
453 4,435,059

CLASS 355

1 4,435,064
3 DD 4,435,065
3 FU 4,435,069
4,435,072
3 R 4,435,068
3 SC 4,435,066
3 TR 4,435,067
8 4,435,070

10 4,435,071
15 4,435,073
4,435,074
35 4,435,075
41 4,435,076
51 4,435,077

CLASS 356

121 4,435,078
123 4,435,079
426 4,435,080

CLASS 357

79 4,435,724

CLASS 358

36 4,435,725
135 4,435,726
139 4,435,727
140 4,435,728
183 4,435,729
213 4,435,730
243 4,435,731
254 4,435,732
302 4,435,733
335 4,435,734

CLASS 360

74.4 4,435,735
103 4,435,736

CLASS 361

280 4,435,737
321 4,435,738
346 4,435,739
398 4,435,740
401 4,435,741
433 4,435,742

CLASS 362

20 4,435,743
219 4,435,744

CLASS 363

21 4,435,745
4,435,746
25 4,435,747
54 4,435,748
58 4,435,749
177 4,435,750

CLASS 364

200 4,435,752
4,435,753
4,435,754
4,435,755
4,435,756
4,435,757
4,435,758
4,435,759
4,435,761
4,435,762
4,435,763
4,435,764
4,435,765
300 4,435,766
405 4,435,767
426 4,435,768
444 4,435,760
464 4,435,769
474 4,435,771
508 4,435,770
520 4,435,772
574 4,435,751
716 4,435,782
724 4,435,773
726 4,435,774
900 4,435,775
4,435,776
4,435,777
4,435,778
4,435,779
4,435,780
4,435,781

CLASS 365

5 4,435,783
8 4,435,784
147 4,435,785
154 4,435,786
174 4,435,787
185 4,435,788
203 4,435,789
218 4,435,790
230 4,435,791
4,435,792
233 4,435,793

CLASS 366

18 4,435,081
47 4,435,082
114 4,435,083
130 4,435,084
155 4,435,085

CLASS 367

4,435,794

CLASS 368

16 4,435,795
22 4,435,086
76 4,435,087
88 4,435,088
204 4,435,089
320 4,435,090
321 4,435,796

CLASS 369

32 4,435,797
72 4,435,798
77.2 4,435,799
225 4,435,800
275 4,435,801
286 4,435,802

CLASS 370

16 4,435,803
69.1 4,435,804

CLASS 371

25 4,435,805
4,435,806
50 4,435,807

CLASS 372

11 4,435,808
49 4,435,809
58 4,435,810

CLASS 373

39 4,435,811
72 4,435,812
4,435,813
76 4,435,814
81 4,435,815
91 4,435,816
103 4,435,817
104 4,435,818
119 4,435,819
161 4,435,820

CLASS 374

20 4,435,091
129 4,435,092
4,435,093
191 4,435,094
194 4,435,095

CLASS 375

1 4,435,821
4,435,822
14 4,435,823
46 4,435,824
113 4,435,825
115 4,435,826

CLASS 376

108 4,435,354
208 4,435,355
216 4,435,356
272 4,435,357
4,435,358

CLASS 377

44 4,435,827

CLASS 378

49 4,435,828
60 4,435,829
197 4,435,830

CLASS 381

7 4,435,618
30 4,435,831
34 4,435,832
44 4,435,617
109 4,435,833

CLASS 382

7 4,435,834
8 4,435,835
27 4,435,836
41 4,435,837
68 4,435,838

CLASS 384

103 4,435,839
147 4,435,096
221 4,435,097
246 4,435,393
248.5 4,435,394
674 4,435,098

CLASS 401

145 4,435,099

CLASS 403

27 4,435,100
109 4,435,105
122 4,435,101
206 4,435,102
292 4,435,103
332 4,435,104

CLASS 404

6 4,435,106
10 4,435,107

CLASS 405

209 4,435,108

CLASS 408

14 4,435,109

CLASS 409

11 4,435,110

CLASS 411

368 4,435,112
437 4,435,111

CLASS 414

330 4,435,114
347 4,435,113
490 4,435,115
620 4,435,117
4,435,119
728 4,435,116
735 4,435,120
744 R 4,435,118

CLASS 415

56 4,435,121
121 B 4,435,122

CLASS 416

95 4,435,123
119 4,435,124
132 B 4,435,125
186 R 4,435,126

CLASS 417

26 4,435,127
63 4,435,128
151 4,435,129
310 4,435,130
334 4,435,131
360 4,435,132
364 4,435,133
428 4,435,134
511 4,435,135

CLASS 418

55 4,435,136
4,435,137
131 4,435,138
201 4,435,139
259 4,435,140

CLASS 419

3 4,435,359
49 4,435,360

CLASS 422

12 4,435,361
56 4,435,362
145 4,435,364
270 4,435,363

CLASS 423

6 4,435,366
10 4,435,367
40 4,435,368
76 4,435,365
147 4,435,369
158 4,435,370
228 4,435,371
321 R 4,435,372
403 4,435,373
415 A 4,435,374
439 4,435,375
447.3 4,435,376
460 4,435,377
461 4,435,378
472 4,435,379

CLASS 424

49 4,435,380
54 4,435,381
66 4,435,382
78 4,435,383
101 4,435,384
177 4,435,385
4,435,386
4,435,387
180 4,435,388
181 4,435,389
243 4,435,390
244 4,435,391
4,435,392
4,435,393
4,435,394
4,435,395
248.51 4,435,396
250 4,435,397
4,435,398
4,435,399
4,435,400
251 4,435,401
4,435,402
256 4,435,403
258 4,435,404
4,435,405
263 4,435,406
4,435,407
4,435,408
266 4,435,409
267 4,435,410
269 4,435,411
270 4,435,412
4,435,413
271 4,435,414
272 4,435,415
273 B 4,435,417
4,435,418
273 P 4,435,416
274 4,435,419
277 4,435,420
4,435,421
285 4,435,422
318 4,435,423
319 4,435,424
324 4,435,426
325 4,435,425
330 4,435,449
356 4,435,427

CLASS 425

131.1 4,435,141
145 4,435,142
150 4,435,143
332 4,435,144
458 4,435,145
534 4,435,146
577 4,435,147

CLASS 426

3 4,435,428
18 4,435,429
4,435,430
36 4,435,431
43 4,435,432
108 4,435,434
266 4,435,433
557 4,435,435
565 4,435,439
631 4,435,436
651 4,435,437
656 4,435,438
658 4,435,440

CLASS 427

10 4,435,441
14.1 4,435,442
38 4,435,443
49 4,435,444
54.1 4,435,445
93 4,435,446
94 4,435,447
234 4,435,448
385.5 4,435,450

CLASS 428

15 4,435,451
17 4,435,452
35 4,435,453
36 4,435,454
4,435,455
4,435,456
58 4,435,457
65 Re.31,533
91 4,435,458
95 4,435,459
129 4,435,460
141 4,435,461
156 4,435,462
158 4,435,463
167 4,435,464
195 4,435,465
215 4,435,466
254 4,435,467
285 4,435,468
4,435,469
294 4,435,470
320.8 4,435,471
333 4,435,472
378 4,435,473
391 4,435,474
409 4,435,475
412 4,435,476
462 4,435,477
463 4,435,478
542.8 4,435,479
548 4,435,480
550 4,435,481
553 4,435,482
566 4,435,483
693 4,435,484
694 4,435,485

CLASS 429

1 4,435,486
70 4,435,487
191 Re.31,532
212 4,435,488

CLASS 430

17 4,435,489
45 4,435,490
49 4,435,491
58 4,435,492
87 4,435,493
122 4,435,494
218 4,435,495
285 4,435,496
288 4,435,497
318 4,435,498
350 4,435,499
419 4,435,500
434 4,435,501
489 4,435,502
548 4,435,503

CLASS 431

7 4,435,148
12 4,435,149
46 4,435,150
90 4,435,151
170 4,435,152
208 4,435,153
328 4,435,154
4,435,155
359 4,435,156

CLASS 432

30 4,435,157
58 4,435,158
106 4,435,159

CLASS 433

9 4,435,160
132 4,435,161

CLASS 434

215 4,435,162
263 4,435,163
337 4,435,164

CLASS 435

7 4,435,504
34 4,435,505
189 4,435,506
262 4,435,507
284 4,435,508

CLASS 436

518 4,435,509

CLASS 441

130 4,435,165

CLASS 485

33 4,435,840
180 4,435,841
181 4,435,842
205 4,435,843
218 4,435,844
228 4,435,845
253 4,435,846
260 4,435,847
327 4,435,848
601 4,435,849
606 4,435,850

CLASS 464

172 4,435,166

CLASS 494

16 4,435,167
20 4,435,168
4,435,169

CLASS 500

21 4,435,588

CLASS 501

22 4,435,511
32 4,435,512
90 4,435,510
96 4,435,513
117 4,435,514

CLASS 502

22 4,435,311
65 4,435,515
71 4,435,516
74 4,435,517
101 4,435,313
107 4,435,518
4,435,519
4,435,520
154 4,435,314
157 4,435,312
209 4,435,521
319 4,435,522

CLASS 521

51 4,435,523
65 4,435,524
92 4,435,525
107 4,435,526
173 4,435,527

CLASS 523

332 4,435,528
426 4,435,529
512 4,435,530

CLASS 524

37 4,435,531
92 4,435,532
106 4,435,533
292 4,435,534
321 4,435,535
378 4,435,536
391 4,435,537
492 4,435,538
558 4,435,539
780 4,435,540

CLASS 525

64 4,435,541
118 4,435,542
143 4,435,543
146 4,435,544
344 4,435,545
418 4,435,546
420 4,435,547
451 4,435,548
504 4,435,549

CLASS 526

73 4,435,550
101 4,435,551
140 4,435,552
201 4,435,553
229 4,435,554
261 4,435,555
317 4,435,556

CLASS 528

45 4,435,558
73 4,435,559
170 4,435,560
193 4,435,561
272 4,435,562
493 4,435,337

CLASS 536

18.1 4,435,563
87 4,435,564

CLASS 542

416 4,435,565

CLASS 544

117 4,435,566
165 4,435,567
182 4,435,568
280 4,435,569
4,435,570
384 4,435,571

CLASS 546

228 4,435,572
250 4,435,573
321 4,435,574
341 4,435,575

CLASS 548

164 4,435,576
221 4,435,577
309 4,435,578
473 4,435,323

CLASS 549

12 4,435,579
248 4,435,580
4,435,581
352 4,435,582
414 4,435,583
415 4,435,584
446 4,435,585
464 4,435,586

CLASS 556

410 4,435,587

CLASS 560

48 4,435,589
61 4,435,590
73 4,435,591
91 4,435,592
119 4,435,593
205 4,435,594
234 4,435,595

CLASS 562

481 4,435,596
506 4,435,597
546 4,435,598

CLASS 564

433 4,435,599
464 4,435,600

CLASS 568

430 4,435,601
470 4,435,602
701 4,435,603
854 4,435,604
878 4,435,605

CLASS 585

324 4,435,606
443 4,435,607
480 4,435,608
670 4,435,609

CLASS 604

4 4,435,170
49 4,435,171
174 4,435,174
177 4,435,175
190 4,435,176
263 4,435,177
365 4,435,178
368 4,435,172
410 4,435,179
896 4,435,180

CLASS 609

155 4,435,173

CLASSIFICATION OF DESIGNS

D2—	223	272,864			272,880			272,896		143	272,912		133	272,928		31	272,944
	241	272,865		28	272,881	D12—	108	272,898		147	272,913		139	272,929		36	272,945
	309	272,866		70	272,882		141	272,899	D16—	32	272,914		144	272,930		67	272,946
	400	272,867		104	272,883		211	272,897		130	272,915		148	272,931	D25—	1	272,947
D3—	41	272,868		321	272,884		317	272,900		132	272,916		157	272,932		38	272,948
	73	272,869		333	272,885	D13—	8	272,901	D19—	78	272,917		166	272,933		92	272,949
	76	272,870	D8—	380	272,886		23	272,902	D20—	1	272,918		207	272,934	D27—	38	272,950
D6—	5	272,871		395	272,887		40	272,903	D21—	24	272,919		228	272,935			272,951
	16	272,872	D9—	352	272,888	D14—	30	272,904		37	272,920			272,936	D28—	89	272,952
	26	272,873		370	272,889		53	272,905		48	272,921		230	272,937	D32—	2	272,953
	86	272,874	D11—	55	272,890		58	272,906		52	272,922	D22—	1	272,938	D34—	21	272,954
	89	272,875		78	272,891			272,907		55	272,923		22	272,939		34	272,955
	205	272,876		125	272,892		77	272,908		59	272,924	D23—	1	272,941		37	272,956
	209	272,877		158	272,893		90	272,910		74	272,925		01	272,940	D92—	31	272,957
D7—	6	272,878			272,894	D15—	28	272,909		91	272,926		23	272,942	D99—	25	272,958
	21	272,879			272,895		127	272,911		92	272,927	D24—	29	272,943			

CLASSIFICATION OF PLANTS

P.—	68	5,199		5,200		5,201		74	5,202			

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

75—	118	R T104,001	312—	214	T104,002	364—	200	T104,003	426—	548	T104,004	

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,434,856		4,435,416		4,434,834		4,434,914		4,435,364		4,434,927
	4,435,372		4,435,446		4,434,881		4,434,939		4,435,422		4,435,044
	4,435,622		4,435,452		4,434,891		4,434,943		4,435,438		4,435,052
2 :	4,435,795		4,435,480		4,434,922		4,434,995		4,435,444		4,435,269
4 :	4,434,872		4,435,547		4,434,993		4,435,026		4,435,464		4,435,306
	4,434,956		4,435,572		4,435,030		4,435,113		4,435,486		4,435,505
	4,434,961		4,435,612		4,435,088		4,435,367		4,435,506		4,435,549
	4,434,975		4,435,639		4,435,095		4,435,384		4,435,593		4,435,617
	4,435,232		4,435,715		4,435,177		4,435,695		4,435,607		4,435,635
	4,435,303		4,435,726		4,435,180		4,435,708		4,435,620		4,435,710
	4,435,369		4,435,732		4,435,229		4,435,713		4,435,833		4,435,781
	4,435,433		4,435,740		4,435,278		4,435,791		4,435,841		4,435,783
	4,435,762		4,435,753		4,435,283		4,435,823		4,435,844	25 :	4,434,524
5 :	4,434,931		4,435,758		4,435,379	13 :	4,434,539	18 :	Re.31,529		4,434,541
	4,435,083		4,435,779		4,435,504		4,434,602		4,434,545		4,434,579
6 :	4,434,514		4,435,784		4,435,616		4,434,814		4,434,650		4,434,724
	4,434,516		4,435,792		4,435,642		4,434,957		4,434,664		4,434,786
	4,434,576		4,435,797		4,435,658		4,435,138		4,434,720		4,435,062
	4,434,584		4,435,807		4,435,664		4,435,305		4,435,105		4,435,071
	4,434,589		4,435,839		4,435,684	16 :	4,434,517		4,435,143		4,435,079
	4,434,599		4,435,846		4,435,696	17 :	4,434,529		4,435,323		4,435,097
	4,434,624	8 :	4,434,513		4,435,701		4,434,546		4,435,638		4,435,164
	4,434,638		4,434,536		4,435,714		4,434,551		4,435,648		4,435,168
	4,434,647		4,434,549		4,435,734		4,434,562		4,435,686		4,435,195
	4,434,662		4,434,565		4,435,736		4,434,573		4,435,691		4,435,214
	4,434,686		4,434,641		4,435,756		4,434,637		4,435,724		4,435,289
	4,434,689		4,434,903		4,435,786		4,434,667		4,435,731		4,435,318
	4,434,696		4,434,920		4,435,790		4,434,680		4,435,799		4,435,424
	4,434,702		4,435,017		4,435,831		4,434,712	19 :	4,434,590		4,435,470
	4,434,717	9 :	4,434,674		4,435,836		4,434,721		4,434,616		4,435,476
	4,434,793		4,434,691	08 :	4,434,564		4,434,781		4,435,115		4,435,514
	4,434,794		4,434,726		4,435,469		4,434,822		4,435,683		4,435,580
	4,434,806		4,434,747	09 :	4,434,677		4,434,877		4,435,737		4,435,581
	4,434,919		4,434,837		4,434,727		4,434,893	20 :	4,434,567		4,435,628
	4,434,925		4,434,952		4,434,838		4,434,894		4,434,968		4,435,645
	4,434,937		4,434,994		4,434,884		4,434,904	21 :	4,434,618		4,435,655
	4,434,938		4,435,123		4,435,055		4,434,913		4,434,826		4,435,667
	4,434,944		4,435,149		4,435,112		4,434,949		4,434,902		4,435,689
	4,434,954		4,435,169		4,435,435		4,434,963		4,435,279		4,435,764
	4,434,971		4,435,241		4,435,455		4,434,986		4,435,515		4,435,808
	4,434,982		4,435,259		4,435,578		4,434,988		4,435,634		4,435,837
	4,435,045		4,435,396		4,435,674		4,434,991	22 :	4,434,594		4,435,847
	4,435,084		4,435,584	10 :	4,434,828		4,435,010		4,434,853	26 :	Re.31,531
	4,435,094		4,435,647		4,435,037		4,435,016		4,434,869		4,434,561
	4,435,100		4,435,803		4,435,205		4,435,125		4,434,960		4,434,578
	4,435,102	01 :	4,434,659		4,435,206		4,435,131		4,434,980		4,434,598
	4,435,132	04 :	4,435,678		4,435,383		4,435,135		4,435,370		4,434,621
	4,435,141	06 :	4,434,569		4,435,568		4,435,150		4,435,518		4,434,656
	4,435,173		4,434,642		4,435,586		4,435,171	23 :	4,434,572		4,434,670
	4,435,174		4,434,663	12 :	4,434,575		4,435,183		4,435,461		4,434,708
	4,435,225		4,434,715		4,434,581		4,435,282	24 :	Re.31,532		4,434,722
	4,435,271		4,434,799		4,434,740		4,435,301		4,434,748		4,434,750
	4,435,273		4,434,823		4,434,801		4,435,311		4,434,813		4,434,752

4,434,754
4,434,762
4,434,763
4,434,765
4,434,857
4,434,866
4,434,970
4,435,116
4,435,133
4,435,381
4,435,445
4,435,463
4,435,528
4,435,548
4,435,573
4,435,592
4,435,605
4,435,742
27 : Re.31,533
4,434,625
4,434,808
4,434,867
4,434,883
4,434,899
4,434,953
4,434,969
4,435,028
4,435,041
4,435,073
4,435,160
4,435,302
4,435,652
28 : 4,434,791
29 : 4,434,606
4,434,921
4,435,147
4,435,204
4,435,335
4,435,348
30 : 4,435,386
4,435,694
31 : 4,434,789
4,434,824
4,434,936
4,435,201
4,435,352
32 : 4,434,614
4,435,354
4,435,719
33 : 4,434,745
4,434,965
4,435,085
4,435,244
4,435,794
34 : Re.31,534
4,434,554
4,434,571
4,434,633
4,434,655
4,434,690
4,434,729
4,434,732
4,434,733
4,434,734
4,434,736
4,434,751
4,434,792
4,434,795
4,434,874
4,434,880
4,435,002
4,435,027

4,435,032
4,435,040
4,435,082
4,435,114
4,435,199
4,435,218
4,435,253
4,435,254
4,435,261
4,435,262
4,435,267
4,435,270
4,435,272
4,435,275
4,435,284
4,435,293
4,435,294
4,435,316
4,435,326
4,435,328
4,435,331
4,435,380
4,435,382
4,435,387
4,435,388
4,435,398
4,435,407
4,435,412
4,435,413
4,435,428
4,435,434
4,435,441
4,435,453
4,435,516
4,435,519
4,435,520
4,435,521
4,435,555
4,435,561
4,435,588
4,435,590
4,435,669
4,435,670
4,435,707
4,435,729
4,435,730
4,435,757
4,435,776
4,435,809
35 : 4,434,862
4,434,929
36 : Re.31,530
4,434,515
4,434,552
4,434,613
4,434,617
4,434,648
4,434,660
4,434,687
4,434,710
4,434,725
4,434,737
4,434,784
4,434,790
4,434,816
4,434,841
4,434,887
4,434,889
4,434,984
4,435,005
4,435,025
4,435,039

4,435,050
4,435,053
4,435,059
4,435,098
4,435,110
4,435,162
4,435,185
4,435,186
4,435,247
4,435,329
4,435,330
4,435,342
4,435,355
4,435,374
4,435,395
4,435,409
4,435,419
4,435,430
4,435,468
4,435,488
4,435,490
4,435,495
4,435,499
4,435,501
4,435,502
4,435,508
4,435,525
4,435,623
4,435,633
4,435,659
4,435,671
4,435,677
4,435,679
4,435,687
4,435,727
4,435,755
4,435,759
4,435,782
4,435,798
4,435,805
37 : Re.31,527
4,434,805
4,434,871
4,434,895
4,435,145
4,435,191
4,435,197
4,435,449
39 : Re.31,528
4,434,520
4,434,537
4,434,583
4,434,596
4,434,623
4,434,644
4,434,649
4,434,652
4,434,718
4,434,810
4,434,830
4,434,832
4,434,833
4,434,858
4,434,860
4,434,865
4,434,870
4,434,897
4,434,900
4,434,908
4,434,946
4,434,966
4,434,978

4,434,996
4,435,001
4,435,047
4,435,146
4,435,189
4,435,240
4,435,243
4,435,291
4,435,292
4,435,297
4,435,337
4,435,371
4,435,420
4,435,425
4,435,456
4,435,458
4,435,477
4,435,487
4,435,511
4,435,524
4,435,535
4,435,553
4,435,554
4,435,556
4,435,562
4,435,571
4,435,598
4,435,599
4,435,650
4,435,810
4,435,811
4,435,816
4,435,828
40 : 4,434,574
4,434,704
4,434,746
4,434,843
4,434,848
4,434,886
4,434,905
4,435,192
4,435,198
4,435,221
4,435,222
4,435,295
4,435,304
4,435,365
4,435,376
4,435,596
4,435,606
4,435,661
4,435,800
41 : 4,434,511
4,434,683
4,434,684
4,434,782
4,434,912
4,435,022
4,435,117
4,435,119
42 : 4,434,521
4,434,607
4,434,719
4,434,820
4,434,840
4,434,924
4,435,035
4,435,063
4,435,091
4,435,093
4,435,096
4,435,107

4,435,156
4,435,163
4,435,175
4,435,213
4,435,219
4,435,223
4,435,231
4,435,250
4,435,300
4,435,353
4,435,400
4,435,418
4,435,439
4,435,448
4,435,450
4,435,472
4,435,473
4,435,474
4,435,481
4,435,529
4,435,539
4,435,559
4,435,709
4,435,712
4,435,801
43 : 4,435,624
44 : 4,434,557
4,434,930
4,435,154
4,435,155
45 : 4,434,632
4,434,761
4,434,787
4,435,031
4,435,181
4,435,467
4,435,738
4,266,976
47 : 4,434,807
4,434,896
4,435,023
4,435,109
4,435,239
4,435,256
4,435,257
4,435,534
4,435,595
4,435,693
48 : 4,434,653
4,434,675
4,434,676
4,434,698
4,434,811
4,434,812
4,434,847
4,434,849
4,434,850
4,434,851
4,434,852
4,434,854
4,434,861
4,434,863
4,434,967
4,435,029
4,435,121
4,435,172
4,435,187
4,435,217
4,435,252
4,435,263
4,435,264
4,435,299

4,435,309
4,435,349
4,435,361
4,435,459
4,435,517
4,435,527
4,435,530
4,435,564
4,435,602
4,435,649
4,435,703
4,435,711
4,435,718
4,435,743
4,435,744
4,435,746
4,435,749
4,435,752
4,435,763
4,435,766
4,435,777
4,435,778
4,435,780
4,435,785
4,435,824
4,072,309
49 : 4,434,688
4,434,780
4,434,864
4,434,981
4,435,822
4,435,829
50 : 4,434,699
4,434,700
4,434,983
4,435,646
51 : 4,434,558
4,434,560
4,434,743
4,434,829
4,434,855
4,434,915
4,435,015
4,435,238
4,435,258
4,435,668
4,435,850
53 : 4,434,654
4,434,959
4,435,339
4,435,363
4,435,614
4,435,716
54 : 4,435,268
4,435,359
4,435,421
4,435,546
55 : 4,434,711
4,434,773
4,434,846
4,434,901
4,434,909
4,434,974
4,435,008
4,435,178
4,435,246
4,435,632
4,435,690
4,435,706
4,435,739
4,435,750

DESIGN PATENTS

06 : 272,872
272,891
272,910
272,911
272,912
272,913
272,914
272,923
272,925
272,941
272,943

272,947
272,953
272,958
09 : 272,885
272,952
12 : 272,865
272,949
13 : 272,889
15 : 272,896
17 : 272,868
272,871

272,888
272,918
272,921
272,930
272,948
19 : 272,955
25 : 272,917
272,919
272,954
26 : 272,897
272,922

272,932
272,956
27 : 272,936
272,937
31 : 272,901
32 : 272,920
33 : 272,902
34 : 272,892
272,906
272,944
36 : 272,883

272,884
272,915
272,924
272,927
272,928
272,929
272,931
272,935
39 : 272,876
272,907

42 : 272,939
44 : 272,900
272,946
48 : 272,867
272,886
272,926
272,938
49 : 272,882
51 : 272,890
53 : 272,864

PLANT PATENTS

06 : 5,202
41 : 5,199
5,200
5,201

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

01 : T104,001
27 : T104,002
48 : T104,003

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

Route to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

Vol. 1040 Number 2

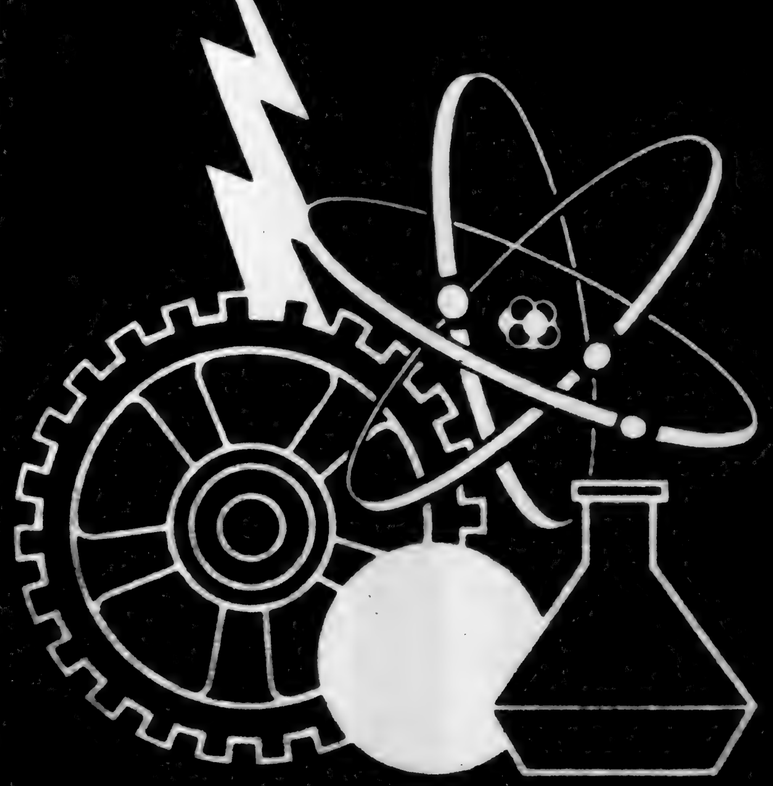
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 13, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
March 13, 1984 Volume 1040 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1040 OG 8
Reissue Applications Filed	1040 OG 8
Requests for Reexaminations Filed	1040 OG 8
Notice of Availability for Licensing	1040 OG 8
Adverse Decisions in Interference	1040 OG 9
Patent Suits	1040 OG 10
Notice of Restructuring and Move of Patent Examining Corps	1040 OG 14
Patent Certificates of Correction	1040 OG 19
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1040 OG 20
Condition of Patent Applications	1040 OG 21
Reissue Patents Granted (31,535)	471
Plant Patents Granted (5,203)	473
Patents Granted	
General and Mechanical (4,435,851)	475
Chemical (4,436,521)	709
Electrical (4,436,950)	829
Design Patents Granted (272,959)	913
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 49
Classification of	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs	PI 58
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 30, 1984.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,640,950, Re. S.N. 569,713, Filed Jan. 10, 1984, Cl. 524/181, HALOGENATED RESINS STABILIZED WITH NOVEL COMPOSITIONS, Lewis B. Weisfeld, Owner of Record: *Carstab Corp., Reading, Ohio,* Attorney or Agent: Alvin Guttag, Ex. Gp.: 143

3,645,835, Re. S.N. 569,981, Filed Jan. 11, 1984, Cl. 428/195, MOISTURE-VAPOR-PERMEABLE PRESSURE SENSITIVE ADHESIVE MATERIALS, Martin E. Hodgson, Owner of Record: *T. J. Smith & Nephew Ltd., Kingston-Upon-Hull, England,* Attorney or Agent: Albert L. Jacobs, Jr., Ex. Gp.: 164

4,277,125, Re. S.N. 571,918, Filed Jan. 19, 1984, Cl. 339/113R, ENHANCED DETENT GUIDE TRACK WITH DOG-LEG, David J. Ball, Owner of Record: *Automation Industries, Inc., Greenwich, Conn.,* Attorney or Agent: Thomas L. Flattery, et al., Ex. Gp.: 322

4,296,104, Re. S.N. 542,460, Filed Oct. 17, 1983, Cl. 424/153, THERAPEUTIC DIMETHYL SULFOXIDE COMPOSITION AND METHODS OF USE, Robert J. Herschler, Owner of Record: *Inventor,* Attorney or Agent: H. Ross Workman, et al., Ex. Gp.: 125

4,307,698, Re. S.N. 566,155, Filed Dec. 28, 1983, Cl. 123/647, DISTRIBUTOR FOR CONTACTLESS IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE, Takashi Yoshinari, Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 342

4,310,889, Re. S.N. 568,426, Filed Jan. 5, 1984, Cl. 364/431, APPARATUS FOR ELECTRONICALLY CONTROLLING INTERNAL COMBUSTION ENGINE, Masumi Imai, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 236

4,311,195, Re. S.N. 571,914, Filed Jan. 18, 1984, Cl. 166/120, HYDRAULICALLY SET WELL PACKER, Albert A. Mullins, II, et al., Owner of Record: *Baker International Corp., Orange, Calif.,* Attorney or Agent: William C. Norvell, Jr., et al., Ex. Gp.: 356

4,324,882, Re. S.N. 571,323, Filed Jan. 16, 1984, Cl. 528/206, METHOD FOR MAKING POLYIMIDES, Tohru Takekoshi, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: William A. Teoli, et al., Ex. Gp.: 143

4,366,872, Re. S.N. 568,916, Filed Jan. 6, 1984, Cl. 177/1, WEIGHING CONTROLLING FLOW RATE WITH TARING BETWEEN WEIGHINGS, David Brunnschweiler, et al., Owner of Record: *Inventor,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 211

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,826,364, Reexam. No. 90/000,502, Requested: Feb. 10, 1984, Cl. 209/3.1, PARTICLE SORTING METHOD AND APPARATUS, William A. Bonner, et al., Owner of Record: *Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.,* Attorney or Agent: Flehr, Hohbach, et al., Ex. Gp.: 312, Requester: Niels J. Reimers, Stanford, Calif.

3,934,652, Reexam. No. 90/000,498, Requested: Feb. 6, 1984, Cl. 166/285, APPARATUS AND METHOD FOR CEMENTING WELL LINERS, Chudleigh B. Cochran, Owner of Record: *Hughes Tool Co., Houston, Tex.,* Attorney or Agent: Robert A. Felfman, Ex. Gp.: 356, Requester: Thomas R. Felger, Dallas, Tex.

4,190,602, Reexam. No. 90/000,500, Requested: Feb. 13, 1984, Cl. 560/053, MONOACETALS OR AROMATIC 1,2-DIKETONES, Jean Brunisholz, et al., Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.,* Attorney or Agent: Karl F. Jorda, Ex. Gp.: 126, Requester: Denis A. Firth, North Haven, Conn.

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Patent Licensing,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

ADMINISTRATION OF VETERANS AFFAIRS

SN 6—288,197 (4,422,515). MOTORIZED WHEEL CHAIR.

DEPARTMENT OF AGRICULTURE

SN 6—248,371 (4,417,839). AUTOMATIC HATCHERY TRAY DUMPER.
SN 6—251,667 (4,421,682). HEATING OF PROTEINACEOUS LIQUIDS.
SN 6—352,426 (4,420,369). PROCESS FOR THE DECOLORIZATION OF PULP MILL BLEACH PLANT EFFLUENT.
SN 6—356,864 (4,419,120). CONTROL OF PRICKLY SIDA, VELVETLEAF, AND SPURRED ANODA WITH FUNGAL PATHOGENS.
SN 6—356,865 (4,424,059). PROCESS AND COMPOSITIONS FOR PRESERVING FRESH HIDES AND SKINS.
SN 6—380,375 (4,418,647). ARTIFICIAL HOST EGG FOR REARING TRICHOGRAMMA.
SN 6—385,172 (4,421,775). METHOD FOR REMOVING THE OUTER WAXY CUTIN-CONTAINING LAYER FROM PAPAYA.
SN 6—426,439 (4,418,064). CHEMOTHERAPEUTICALLY ACTIVE MAYTANSINOIDS: TREFLORINE, TRENUDINE, AND N-METHYLTRENUDONE.
SN 6—519,783. WOOD BEAM.
SN 6—546,220. MONCOLONAL ANTIBODIES TO PORCINE IMMUNOGLOBULINS.
SN 6—555,749. MULTI-PHASE AGRICULTURAL HERBICIDE GRANULE METHOD.

DEPARTMENT OF HEALTH & HUMAN SERVICES

SN 6—209,305 (4,421,986). NUCLEAR PULSE DISCRIMINATOR.
SN 6—221,565 (4,419,446). RECOMBINANT DNA PROCESS UTILIZING A PAPILLOMA VIRUS DNA AS A VECTOR.
SN 6—329,869 (4,421,913). SEPARATION OF TRIPHENYLPHOSPHINE OXIDE FROM METHOTREXATE ESTER AND PURIFICATION OF SAID ESTER.
SN 6—563,369. HEPATITIS B CORE ANTIGEN VACCINE.
SN 6—564,515. A SHORT TOTAL SYNTHESIS OF MORPHINAN COMPOUNDS WHICH USES CYCLIZATION OF A CYCLOALKYLCARBONYL COMPOUND SELECTED FROM CYCLOPROPYLCARBONYL AND CYCLOBUTYLCARBONYL.
SN 6—817,016 (4,419,089). BLOOD CELL SEPARATOR.

DEPARTMENT OF THE AIR FORCE

SN 6—256,362 (4,409,661). AIMPOINT SELECTION PROCESSOR.
SN 6—270,051 (4,411,715). METHOD OF ENHANCING ROTOR BORE CYCLIC LIFE.
SN 6—286,819 (4,409,899). ACOUSTIC AMPLITUDE-DOPPLER TARGET RANGING SYSTEM.
SN 6—286,820 (4,408,533). ACOUSTIC AMPLITUDE-THRESHOLD TARGET RANGING SYSTEM.
SN 6—293,780 (4,410,293). MECHANICAL PRELOAD NUT ASSEMBLY.
SN 6—339,260 (4,408,833). HOT PRESSED AND DIFFUSION BONDED LASER MIRROR HEAT EXCHANGER.
SN 6—343,031 (4,409,587). ALTIMETER CODE CONVERTER.
SN 6—343,034 (4,411,022). INTEGRATED CIRCUIT MIXER APPARATUS.
SN 6—356,574 (4,409,423). HOLE MATRIX VERTICAL JUNCTION SOLAR CELL.
SN 6—357,444 (4,408,481). PORE PRESSURE PROBE ASSEMBLY AND TWO-STAGE EMPLACEMENT THEREOF.
SN 6—361,020 (4,408,464). DEWAR COOLING CHAMBER FOR SEMICONDUCTOR PLATELETS.
SN 6—393,170 (4,410,376). BONDING AGENT FOR POLYURETHANES.
SN 6—463,190 (4,411,717). SOLID ROCKET PROPELLANTS COMPRISING GUIGNET'S GREEN PIGMENT.

DEPARTMENT OF THE ARMY

SN 6—533,611. MILLIMETER WAVE DIELECTRIC RESONATOR AND METHOD OF MAKING.
SN 6—544,764. EVANESCENT RESONATOR FREQUENCY MULTIPLIER.
SN 6—550,853. CODE GENERATOR FOR MULTILEVEL INTERLEAVED MULTIPLEXED NOISE CODES.
SN 6—551,431. MULTILEVEL MATE PAIR CODE COMPRESSOR FOR CODES EXPANDED BY THE PROCESS OF BUTTING.
SN 6—555,774. CODE COMPRESSOR FOR MULTILEVEL INTERLEAVED MULTIPLEXED NOISE CODES.
SN 6—556,661. PSEUDO-RANDOM CONVOLUTIONAL INTERLEAVING.
SN 6—557,014. DUAL SPACE FED PARALLEL PLATE LENS ANTENNA BEAMFORMING SYSTEM.
SN 6—558,000. WIDE FIELD OF VIEW REMOTE POSITION SENSOR.
SN 6—559,546. METHOD OF MAKING MINIATURE HIGH FREQUENCY SC - CUT QUARTZ CRYSTAL RESONATORS.
SN 6—564,619. DETONATION PRODUCTS CATCHER.
SN 6—565,806. MULTICHANNEL TIME DIVISION MULTIPLEXED TRUNK TRANSMISSION LINK.
SN 6—566,622. OPTICAL COMMUNICATIONS SYSTEMS.
SN 6—566,767. TIME DIVISION MULTIPLE ACCESS COMMUNICATIONS SYSTEM.

DEPARTMENT OF THE INTERIOR

SN 6—435,535 (4,423,011). SELECTIVE RECOVERY OF BASE METALS AND PRECIOUS METALS FROM ORES.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,737,513, Tadeusz K. Wiewiorowski and David J. Miller, RECOVERY OF URANIUM FROM AN ORGANIC EXTRACTANT BY BACK EXTRACTION WITH H_3PO_4 OR HF, Interference No. 101,079, decided Jan. 27, 1984, claims 2 and 3.

Patent No. 3,926,822, Emile N. Habiby, NOVEL SULFUR-CONTAINING COMPOSITIONS, Interference No. 99,871, decided Jan. 6, 1984, claims 1, 3, 8 and 9.

Patent No. 3,953,347, Emile N. Habiby, NOVEL SULFUR-CONTAINING COMPOSITIONS, Interference No. 100,000, decided Jan. 6, 1984, claims 1 and 3.

Patent No. 4,008,614, Robert B. Turner and Paul E. Brefka, REMOVABLE PROBE UNIT FOR ELECTRONIC MEASURING SYSTEM, Interference No. 100,619, decided Sept. 27, 1983, claims 1-3, 6, 7, 9 and 10.

Patent No. 4,089,733, Richard H. Zimmerman, METHOD OF FORMING COMPLEX SHAPED METAL-PLASTIC COMPOSITE LEAD FRAMES FOR IC PACKAGING, Interference No. 100,454, decided Oct. 21, 1983, claims 1-5.

Patent No. 4,165,440, Leo Kim, CATALYTIC HYDRATION OF ETHYLENE OXIDE TO ETHYLENE GLYCOL, Interference No. 100,927, decided Jan. 20, 1984, claims 1 and 3.

Patent No. 4,185,529, Hiroshi Kitagawa, ELECTRONIC MUSICAL INSTRUMENT, Interference No. 100,712, decided Sept. 12, 1983, claim 8.

Patent No. 4,194,314, John P. Foote, EJECTOR ASSEMBLY FOR A FIREARM ADAPTER, Interference No. 100,932, decided Oct. 12, 1983, claims 4 and 5.

Patent No. 4,224,330, Clive A. Henrick, Jeffrey N. Labovitz, Michael M. Leippe and Sam L. Woo, ESTERS AND THIOLESTERS OF BENZOTHIENYL ACIDS, Interference No. 100,910, decided Jan. 4, 1984, claims 1-10 and 28.

Patent No. 4,235,806, Kishor A. Desai, CATIONIC ALPHA-CYANO-P-(N-BENZYL-N-ETHYLAMINO) CINNAMOYL DYES, Interference No. 100,750, decided Feb. 10, 1983, claims 1 and 2.

Patent No. 4,237,222, Hideo Misaki, Yoshifumi Horiuchi, Kazuo Matsuura and Saburo Harada, LACTATE OXIDASE PROCESS FOR THE MANUFACTURE THEREOF AND ANALYTICAL METHOD AND KIT FOR THE USE OF THE SAME, Interference No. 100,995, decided Jan. 17, 1984, claim 1.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,703,073, Riegel Textile Corp., ANTISTATIC YARN PRODUCTION, **filed** Nov. 30, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 8726, *Brunswick Corp.* v. *Riegel Textile Corp.*

3,815,099, Digital Equipment Corp., DATA PROCESSING SYSTEM; **4,229,791, same,** DISTRIBUTED ARBITRATION CIRCUITRY FOR DATA PROCESSING SYSTEM; **4,232,366, same,** BUS FOR A DATA PROCESSING SYSTEM WITH OVERLAPPED SEQUENCES, **filed** Nov. 13, 1980, D.C. Mass. (Boston), Doc. 80-2551-K, *Digital Equipment Corp.* v. *System Industries, Inc.*

4,046,324, Joseph W. Chambers, SOLID WASTE COMMINUTOR; **4,275,849,** William M. Chambers, MACERATOR, **filed** Feb. 9, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79-0560-MML (Px), *Joseph W. Chambers, Sr.* v. *William M. Chambers.*

4,102,655, Cobe Laboratories, Inc., BUBBLE TRAP, **filed** Nov. 1, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7774, *Cobe Laboratories, Inc.* v. *Gambro, Inc.*

4,103,361, Evin Industries, Ltd., OUTERWEAR, **filed** Sept. 29, 1983, D.C., S.D.N.Y., Doc. 83-Civ-7159 SWK, *Evin Industries, Ltd.* v. *Eagle Clothes, Inc., et al.*

4,107,292, Akzona, Inc., STABLE WATER DISPERSIONS OF ENCAPSULATED PARATHION, **filed** Mar. 26, 1979, D.C. Del. (Wilmington), Doc. 79-157, *Pennwalt Corp.* v. *Akzona, Inc., et al.* Judgment is hereby entered declaring Pat. No. 4,107,292 invalid. Judgment is hereby entered in favor of plaintiff and against defendants. Final Judgment dated Aug. 22, 1983.

4,113,268, Posi Seal International, Inc., EXTENDED TEMPERATURE RANGE VALVE SEAL, **filed** Apr. 30, 1982, D.C., S.D. Ohio (Cincinnati), Doc. C-1-82-450, *Posi Seal International, Inc.* v. *Xomox Corp.*

4,117,260, Comm/Scope Co., COAXIAL DROP WIRE, **filed** Aug. 3, 1979, D.C., W.D.N.C. (Statesville), Doc. ST-C-79-21, *Belden Corp.* v. *Comm/Scope Co.* Order of Dismissal filed Apr. 10, 1980.

4,118,129, Qume Corp., ROTARY WHEEL PRINTING SYSTEM, **filed** Apr. 27, 1983, D.C., N.D. Calif. (San Francisco), Doc. 83-2147 SC, *Tokyo Electric Co., Ltd.* v. *Qume Corp.* Plaintiff dismisses complaint without prejudice on Aug. 2, 1983.

4,120,134, Scholle Corp., APPARATUS FOR AND METHOD OF FILLING FLEXIBLE CONTAINERS, **filed** June 22, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-3116, *Scholle Corp.* v. *Robert Ellert, et al.*

4,132,335, Four Star Corp., SLIDABLE BRACKET FOR ARTICLE CARRIER, **filed** Nov. 16, 1983, D.C., E.D. Mich. (Detroit), Doc. 83CV5001DT, *Four Star Corp.* v. *John A. Bott, et al.*

4,136,359, Apple Computer, Inc., MICROCOMPUTER FOR USE WITH VIDEO DISPLAY; **4,278,972, same,** DIGITALLY-CONTROLLED COLOR SIGNAL GENERATION MEANS FOR USE WITH DISPLAY, **filed** May 17, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 3213, *Apple Computer, Inc.* v. *Michael P. McCaul and Sheila Ann McCaul, doing business as Cosmic Computers, Unlimited.* Final Judgment and injunction filed restraining defendants from importing, distributing, selling, etc. any computer products copying Apple products. Dated Nov. 4, 1983.

4,136,767, The Sardee Corp., VACUUM OPERATED CAN-CONVEYING AND CAN-UPRIGHTING APPARATUS, **filed** Oct. 1, 1981, D.C.N.J. (Trenton), Doc. 81-3112, *The Sardee Corp.* v. *Kaiser Aluminum & Chemical Corp.* **Same, filed** Oct. 28, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6063, *United Systems, Inc.* v. *The Sardee Corp.*

4,138,108, Charles H. Robinson, ATHLETIC HAND/WRIST POSITIONER, **filed** May 18, 1981, D.C., M.D. Fla. (Jacksonville), Doc. 81-431-Civ-J-WC, *Charles H. Robinson* v. *Gene Patton.*

4,139,166, Menzel, Inc., SURFACE WIND BATCHER, **filed** Oct. 12, 1982, D.C.S.C. (Columbia), Doc. 82-2575-3, *Menzel, Inc.* v. *Bond Textile Machinery, Inc., et al.* Consent Stipulation of Settlement under 41(a) (1) FRCP filed Aug. 23, 1983.

4,144,461, Victoreen, Inc., METHOD AND APPARATUS FOR ASSAY AND STORAGE OF RADIOACTIVE SOLUTIONS, **filed** Nov. 29, 1982, D.C.N.J. (Newark), Doc. 82-3999, *Victoreen, Inc.* v. *Capintec, Inc.* Stipulation and Order dismissing action without costs, filed Nov. 17, 1983.

4,145,300, Sublistatic Holding S.A., DEVELOPERS CONTAINING MAGNETIC PARTICLES AND A SUBLIMABLE DYESTUFF; **4,246,331, same,** ELECTROPHOTOGRAPHIC DEVELOPERS CONTAINING SUBLIMABLE DYES; **4,251,611, same,** PROCESS FOR FORMATION OF PERMANENT IMAGE, **filed** May 27, 1981, D.C., E.D. Va. (Norfolk), Doc. 81-470-N, *Spectra Corp. and Sublistatic Holding S.A.* v. *Edward W. O'Brien, doing business as Powerband Products of Va.* Final Judgment filed Jan. 5, 1984.

4,148,410, Ermal C. Fraze, TAB FOR EASY-OPEN ECOLOGY END, **filed** Mar. 11, 1981, D.C., S.D. Ohio (Dayton), Doc. C-3-81-183, *Ermal C. Fraze* v. *The Continental Group, Inc., et al.* Case closed on Jan. 8, 1982.

4,150,768, Walter P. Maynard, Jr., CONTAINER OPENING AND POURING ATTACHMENT, **filed** Dec. 14, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6953, *Walter P. Maynard, Jr.* v. *Custom Accessories, Inc.*

4,153,998, Rolls-Royce Ltd., PROBES, **filed** Apr. 21, 1983, D.C., E.D. Mich. (Detroit), Doc. 83 cv 1497 DT, *Rolls-Royce Ltd., et al.* v. *The Valeron Corp.*

4,161,436, Gordon Gould, METHOD OF ENERGIZING A MATERIAL, **filed** Nov. 1, 1979, D.C., N.D. Ill. (Chicago), Doc. 79 C 4594, *Gordon Gould* v. *Lumonics Research, Ltd.*

4,165,717, Metallgesellschaft AG, PROCESS FOR BURNING CARBONACIOUS MATERIALS, **filed** Feb. 14, 1983, D.C., S.D. Calif. (San Diego), Doc. 83-0356-GT(H), *Metallgesellschaft AG* v. *Pyropower Corp.* **Same, filed** Feb. 14, 1983, D.C., E.D. Calif. (Fresno), Doc. CV F-83-57-EDP, *Metallgesellschaft AG* v. *Gulf Oil Corp., et al.* **Same, filed** June 8, 1983, D.C., N.D.N.Y., (Utica), Doc. 83-CV-715, *Metallgesellschaft AG* v. *Ahlstrom Machinery, Inc.* **Same, filed** Sept. 12, 1983, D.C., N.D.N.Y. (Utica), Doc. 83-CV-1193, *Metallgesellschaft AG* v. *A. Ahlstrom Osakeyhtio.* Stipulation of dismissal filed Nov. 17, 1983.

4,166,018, Airco, Inc., SPUTTERING PROCESS AND APPARATUS, **filed** Apr. 11, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-71477, *Airco, Inc.* v. *Shatterproof Glass Corp.* **Same, filed** May 30, 1980, D.C.N.J. (Newark), Doc. 80-1568, *Libbey-Owens-Ford Co.* v. *Airco, Inc.* **Same, filed** June 3, 1980, D.C., N.D. Ohio (Toledo), Doc. 80-341, *Airco, Inc.* v. *Libbey-Owens-Ford Co.*

4,173,973, David J. Hendricks, HYPEREXTENSION BACK BRACE, **filed** Apr. 4, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 2395, *David J. Hendricks, et al.* v. *Surgical Appliances Industries, Inc.*

4,175,902, Herzog Contracting Corp., APPARATUS FOR LOADING AND UNLOADING RAILROAD CARS; **4,190,394, same,** METHOD FOR LOADING AND UNLOADING RAILROAD CARS, **filed** Nov. 15, 1983, D.C., S.D. Ill. (Benton), Doc. 83-4299, *Stanley M. Herzog, Randy L. Poggemiller, and Herzog Contracting Corp.* v. *Gary Parks, doing business as "Mid South Railroad Services".*

4,178,843, Wear-Ever Aluminum, Inc., PORTABLE CORN POPPER, **filed** June 23, 1981, D.C., E.D. Wis. (Milwaukee), Doc. 81-730, *Dart Industries, Inc., doing business as The West Bend Co.* v. *Wear-Ever Aluminum, Inc.*

4,179,018, John H. Miller, METHOD AND APPARATUS FOR SELECTIVE RECOVERY OF METAL CONTAINERS; **4,257,511, same,** **filed** Nov. 10, 1983, D.C. Ariz. (Phoenix), Doc. CIV-83-2201-PHX-CLH, *Shirley L. Miller, et al.* v. *Adolph Coors Co., et al.*

4,181,955, Mathematical Applications Group, Inc., APPARATUS FOR PRODUCING PHOTOGRAPHIC SLIDES, **filed** May 3, 1983, D.C., S.D.N.Y., Doc. 83-Civ-1921 ADS, *Mathematical Applications Group, Inc.* v. *Autographix, Inc., et ano.*

4,182,494, Anthony Mfg. Corp., ANTI SIDE SPLASH DRIVE ARM FOR AN IMPACT DRIVE SPRINKLER, **filed** Nov. 27, 1981, D.C., S.D. Fla. (Ft. Lauderdale), Doc. 81-6661-Civ-JAG, *Safe-T-Lawn, Inc.* v. *Anthony Mfg. Corp.*

4,186,982, AMP, Inc., CONTACT WITH SPLIT PORTION FOR ENGAGEMENT WITH SUBSTRATE, **filed** Oct. 7, 1983, D.C., M.D. Pa. (Scranton), Doc. CV-83-1456, *AMP, Inc.* v. *E. I. Du Pont de Nemours and Co.*

4,188,189, University Patents, Inc., QUANTITATIVE TESTING FOR VITAMIN B12, **filed** Mar. 16, 1981, D.C., Colo. (Denver), Doc. 81-A-341, *University Patents, Inc.* v. *Colorado Pathologists Regional Laboratory, Inc.* Order of Dismissal without prejudice filed Nov. 19, 1981. **Same, filed** Jan. 8, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-0180 WHO, *University Patents, Inc.* v. *Western Laboratories, Inc., et al.* **Same, filed** Mar. 23, 1982, D.C. Del. (Wilmington), Doc. 82-146, *Becton Dickinson and Co.* v. *University Patents, Inc.* **Same, filed** Apr. 28, 1982, D.C. Del. (Wilmington), Doc. 82-213, *University Patents, Inc., et al.* v. *Bio-Rad Laboratories, Inc.*

4,188,762, Champion International Corp., TRIPLE LAP HARDBOARD SIDING, **filed** Dec. 6, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 8933, *Champion International Corp.* v. *Masonite Corp.*

4,190,394. (See 4,175,902.)

4,193,284, Nathan O. McCrary, CANE CUTTING AND MOLDING TOOL AND METHOD OF USING SAME, **filed** Oct. 29, 1982, D.C., S.D. Iowa (Des Moines), Doc. 82-614-E, *Nathan O. McCrary* v. *C. T. Corp. Systems.* Action dismissed with prejudice per Stipulation of Dismissal under Rule 41(a). Filed Aug. 15, 1983.

4,194,814, Bausch & Lomb, Inc., TRANSPARENT OPTHALMIC LENS HAVING ENGRAVED SURFACE INDICIA, **filed** Oct. 5, 1983, D.C., N.D. Calif. (San Jose), Doc. C 83 20283, *Bausch & Lomb, Inc.* v. *Barnes-Hind/Hydrocurve, Inc., et al.*

4,204,225, Wisconsin Alumni Research Foundation, REAL-TIME DIGITAL X-RAY SUBTRACTION IMAGING; **4,204,226, same,** REAL-TIME DIGITAL X-RAY TIME INTERVAL DIFFERENCE IMAGING, **filed** May 4, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82 2010 EFL, *Adac Laboratories* v. *Wisconsin Alumni Research Foundation.* Defendant's Motion for an Order dismissing cause granted on Aug. 27, 1982.

4,204,226. (See 4,204,225.)

4,208,747, The Procter & Gamble Co., PASSIVE DOSING DISPENSER EMPLOYING TRAPPED AIR BUBBLE TO PROVIDE AIR-LOCK; **4,305,162, same,** PASSIVE DOSING DISPENSER EMPLOYING CAPTIVE AIR BUBBLE TO PROVIDE PRODUCT ISOLATION, **filed** Oct. 13, 1982, D.C. Del. (Wilmington), Doc. 82-671, *The Procter & Gamble Co.* v. *Boyle-Midway, Inc.*

4,208,831, Shelcore, Inc., DRIVING SIMULATOR TOY, **filed** Oct. 13, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-4493, *Shelcore, Inc.* v. *Durham Industries, Inc.* Pat. No. 4,208,831 is found to be invalid due to obviousness. Judgment entered in favor of defendant and against plaintiff on Jan. 6, 1984.

4,209,261, NCR Corp., RIBBON CASSETTE FOR OBLIQUE RIBBON FEEDING, **filed** Sept. 19, 1980, D.C., M.D. Tenn. (Nashville), Doc. 80-3507, *NCR Corp.* v. *Graphic Ribbon, Inc.* Plaintiff is the owner of Pat. No. 4,209,261 which is good and valid in law. Defendant is enjoined and permanently restrained from further infringing Plaintiff's patent. Filed Sept. 15, 1981.

4,210,207, Baker International Corp., VALVE APPARATUS, **filed** Aug. 23, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-5145, *Baker International Corp.* v. *Dresser Industries, Inc.*

4,211,426, Everest & Jennings, Inc., WEIGHT RELIEVING AMBULATOR, **filed** Dec. 13, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 7934, *Everest & Jennings, Inc.* v. *L. Mulholland Corp.*

4,214,600, Cameron Iron Works, Inc., VALVE, **filed** Aug. 23, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-5138, *Cameron Iron Works, Inc.* v. *Axelson, Inc.*

4,215,431, John Nady, WIRELESS TRANSMISSION SYSTEM, **filed** Apr. 28, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-1842SC, *Sam Ash Music Corp.* v. *John Nady.* Stipulation of Dismissal filed Mar. 15, 1983.

4,217,254, Synthetic Surfaces, Inc., HIGH GREEN STRENGTH CURABLE URETHANE ADHESIVE, **filed** Oct. 7, 1983, D.C., N.D. Tex. (Dallas), Doc. CA3-83-1726-G, *Superturf, Inc.* v. *Synthetic Surfaces, Inc.*

4,218,090, Neal D. Hoffacker and Bernhard J. Hoffacker, BICYCLE SEAT, **filed** Dec. 9, 1980, D.C. Colo. (Denver), Doc. 81-K-907, *Neal D. Hoffacker, Bernhard J. Hoffacker, et al.* v. *Bike House, et al.* Pat. No. 4,218,090 is valid and owned by Plaintiffs. Defendants shall not further infringe Plaintiff's patent. Consent Judgment filed Nov. 6, 1982.

4,219,289, Trutzschler GmbH & Co. KG, ARRANGEMENT FOR LOADING A CARD, **filed** Aug. 31, 1981, D.C., W.D.N.C. (Charlotte), Doc. C-C-81-0381, *Trutzschler GmbH & Co. KG, et al.* v. *Automatic Material Handling, Inc.*

4,224,018, Thomas M. Smith, INFRA-RED APPARATUS; **4,272,238, same,** INFRA-RED HEATING AND BURNERS; **4,290,746, same,** RADIANT HEATING; **4,326,843, same,** GAS-FIRED INFRA-RED GENERATORS AND USE THEREOF, **filed** Sept. 1, 1982, D.C. Conn. (Hartford), Doc. H-82-835, *Hunt Associates, Inc. and Thomas M. Smith* v. *North American Technology, Inc., et al.*

4,227,126, Henry M. Denecke, SHAFT ROTATION INTERLOCK SYSTEM FOR FILM EDITING TABLES AND THE LIKE, **filed** Aug. 1, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 4945 TJH (Tx), *Michael Denecke* v. *Eagle Eye Film Co., Inc.* Pat. No. 4,227,126 is owned by Plaintiff and is good and valid in law. Defendant is permanently enjoined from infringing Plaintiff's patent. Consent Judgment filed Oct. 7, 1983.

4,227,829, Kossuth J. Landry, Jr., SOIL EROSION PREVENTION BLOCKS, **filed** Aug. 3, 1981, D.C., N.D. Ga. (Atlanta), Doc. C81-1450A, *Petra, Inc., and Kossuth J. Landry, Jr.* v. *Nicolon Corp., et al.*

4,229,025, Perfection Corp., STAB-TYPE COUPLING, **filed** Nov. 30, 1983, D.C., W.D. Pa. (Erie), Doc. 83-335 Erie, *Perfection Corp.* v. *Dresser Industries, Inc.*

4,229,791. (See 3,815,099.)

4,231,105, UMC Industries, Inc., VENDOR CONTROL CIRCUIT, **filed** Oct. 4, 1983, D.C. Minn. (Minneapolis), Doc. 4-83 Civil 867, *UMC Industries, Inc.* v. *Automatic Products Co., Inc., et al.*

4,232,366. (See 3,815,099.)

4,232,899, August, Inc., SEATING UNIT AND METHOD OF CONSTRUCTION, **filed** Sept. 14, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 6415, *August, Inc.* v. *Steelcase, Inc., et al.*

4,242,035, Robert L. Hornstein, APPARATUS FOR CONVERTING A LOADER BUCKET TO A PALLET LOADER, **filed** Nov. 11, 1981, D.C., S.D. Ill. (E. St. Louis), Doc. 81-3422, *Robert L. Hornstein, et al.* v. *Tri-Star Corp.*

4,243,864, Vieau and Vieau, MULTIPLE WIRE ELECTRODE FEED MECHANISM FOR ELECTROEROSION MACHINE, **filed** Oct. 27, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-74026, *Richard A. Vieau* v. *McWilliam Machinery Sales, Inc.*

4,246,331. (See 4,145,300.)

4,251,611. (See 4,145,300.)

4,257,511. (See 4,179,018.)

4,261,598, Kenneth R. Cornwall, CONCRETE FLOOR EMBEDDED COUPLING FOR PLASTIC PIPE, **filed** Dec. 8, 1983, D.C., S.D. Fla. (Ft. Lauderdale), Doc. 83-6860-Civ-JAG, *Kenneth R. Cornwall* v. *U.S. Construction Mfg., Inc.*

4,263,879, State Industries, Inc., WATER HEATER, **filed** May 20, 1981, D.C., M.D. Tenn. (Nashville), Doc. 81-3319, *State Industries, Inc.* v. *A. O. Smith Corp.*

4,264,083, Custom Accessories, Inc., SPLASH GUARD, **filed** Oct. 18, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7280, *Custom Accessories, Inc.* v. *Globe Distribution, Barnes Group, Inc.*

4,266,700, Vari-O-Matic Machine Corp., A FREELY ADJUSTABLE PIN-TUCKING DEVICE FOR USE IN A PIN TUCKING MACHINE, **filed** Sept. 8, 1982, D.C., S.D.N.Y., Doc. 82-Civ-5982 RLC, *Vari-O-Matic Machine Corp.* v. *N.Y. Sewing Machine Attachment Corp.*

4,272,238. (See 4,224,018.)

4,275,849. (See 4,046,324.)

4,278,972. (See 4,136,359.)

4,279,533, Harry S. Peterson Co., Inc., ROADWAY EXPANSION JOINT, **filed** Dec. 16, 1981, D.C. Minn. (Minneapolis), Doc. 4-81 Civil 893, *Harry S. Peterson Co., Inc.* v. *American Inland Corp.*

4,281,728, Lodec, Inc., VEHICLE PLATFORM SCALE, **filed** Sept. 20, 1983, D.C., W.D. Wash. (Seattle), Doc. C83-1320M, *Lodec, Inc.* v. *World Wide Weighing, Inc.*

4,290,746. (See 4,224,018.)

4,293,140, Pretty Products, Inc., AUTOMOBILE SPLASH GUARD AND ATTACHMENT MEANS THEREFOR, **filed** Mar. 26, 1982, D.C., S.D. Ohio (Columbus), Doc. C-2-82-311, *Pretty Products, Inc.* v. *Powerflow Products Ltd.* **Same, filed** Aug. 30, 1983, D.C., N.D. Ohio (Akron), Doc. C83-3575A, *Pretty Products, Inc.* v. *Powerflow, Inc.*

4,296,152, Idacon, Inc., METHOD AND COMPOSITION FOR TREATING WOOD WITH PENTACHLOROPHENOL, **filed** Apr. 13, 1982, D.C., E.D. Okla. (Muskogee), Doc. 82-158-C, *Idacon, Inc.* v. *Central Forest Products, Inc., et al.*

4,296,744, P. M. Palumbo, DYNAMIC PATELLAR BRACE, **filed** Feb. 4, 1982, D.C., S.D. Calif. (San Diego), Doc. 82-0119-K-H, *P. M. Palumbo, et al.* v. *Doy-Joy Co., et al.*

4,305,162. (See 4,208,747.)

4,308,713, Terrain King Corp., HYDRAULICALLY DRIVEN MOWER, **filed** Jan. 6, 1982, D.C., N.D. Fla. (Tallahassee), Doc. TCA 82-0704, *Terrain King Corp.* v. *John D. Williams, Jr., et al.*

4,309,639, Herbert T. Thrower, Jr., LIGHT MODULATOR SYSTEM AND METHOD, **filed** Mar. 31, 1982, D.C., W.D.N.C. (Charlotte), Doc. C-C-82-0188-P, *Dotech, Inc. and Herbert T. Thrower, Jr.* v. *Allied Corp., et al.*

4,310,988, George D. Porter, Jr., APPARATUS FOR SELECTIVE FIELD APPLICATION OF HERBICIDES TO WEEDS, **filed** May 27, 1982, D.C., N.D. Iowa (Cedar Rapids), Doc. 1C 82-3041, *George D. Porter, Jr.* v. *Buckley & Bush, Inc.* Defendant permanently enjoined from manufacturing and/or selling herbicide applicator equipment for the life of said patent per Final Order, Judgment and Decree filed on Aug. 11, 1982.

4,320,988, James C. Seal, SPREADER/GRADER, **filed** Oct. 20, 1983, D.C., E.D. La. (New Orleans), Doc. 83-5189 "J", *Ivy J. Foret Associates, Inc.* v. *J. C. Seal, et al.*

4,326,348, Esco Corp., EXCAVATING TOOTH ASSEMBLY, **filed** May 11, 1983, D.C. Ariz. (Phoenix), Doc. 83-863 Phx, *Esco Corp.* v. *Construction and Mining Supply Co.*

4,326,843. (See 4,224,018.)

4,327,753, Icomag Trust Reg., HAIR-CURLING IMPLEMENT, **filed** Dec. 6, 1983, D.C., S.D. Fla. (Miami), Doc. 83-2965-Cov-EBD, *Icomag Trust Reg.* v. *Windmere Corp.*

4,332,008, Zilog, Inc., MICROPROCESSOR APPARATUS AND METHOD; Reg. No. **1,083,256** (Z-80),

Zilog, Inc., **filed** Mar. 14, 1983, D.C., N.D. Calif. (San Francisco), Doc. C83-1241WHO, *Zilog, Inc.* v. *Nippon Electric Co., Ltd., et al.*

4,332,537, ENCAPSULATION MOLD WITH REMOVABLE CAVITY PLATES, Dusan Slepcevic, **filed** Aug. 19, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82 4403 WAI, *Dusan Slepcevic* v. *Kras/West Corp., et al.*

4,336,427, Vacu-Maid, Inc., OUTLET ASSEMBLY FOR A VACUUM CLEANING SYSTEM, **filed** Dec. 14, 1983, D.C., W.D. Okla. (Oklahoma City), Doc. CIV-83-3069-T, *Vacu-Maid, Inc.* v. *Hayden Mfg. Co., Ltd.*

4,341,470, Varian Associates, Inc., ATOMIC ABSORPTION SPECTROSCOPY, **filed** Jan. 6, 1984, D.C. Conn. (Bridgeport), Doc. B-84-10 TFGD, *Perkin-Elmer Corp.* v. *Varian Associates, Inc.*

4,342,450, Borg-Warner Corp., COMPOSITE CHAIN LINK ASSEMBLY, **filed** Oct. 20, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 7350, *Borg-Warner Corp.* v. *PT Components, Inc.*

4,343,032, Cable Electric Products, Inc., LIGHT SENSITIVE ELECTRICAL DEVICE, **filed** Mar. 7, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 1357, *Cable Electric Products, Inc.* v. *Home Equipment Mfg. Co.* Action dismissed without prejudice on Aug. 24, 1983.

4,346,958, Augat, Inc., CONNECTOR FOR CO-AXIAL CABLE, **filed** Dec. 29, 1982, D.C., N.D.N.Y. (Utica), Doc. 82-CV-1465, *Augat, Inc.* v. *John Mezzalingua Associates, Inc.*

4,350,240, Equipment Systems & Devices, Inc., COIN SLIDE WITH INTERCHANGEABLE CORES, **filed** Aug. 11, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-3893, *Equipment Systems & Devices, Inc.* v. *Kidde, Inc.*

4,353,329, Osborne Industries, Inc., ROTARY SELF-FEEDER, **filed** Oct. 17, 1983, D.C., M.D. Pa. (Scranton), Doc. CV-83-1494, *Osborne Industries, Inc.* v. *Farmer Boy AG., Inc.*

4,354,613, Trafalgar Industries, Inc., MICROPROCESSOR BASED VENDING APPARATUS, **filed** Jan. 31, 1983, D.C. Minn. (St. Paul), Doc. 3-83-111, *Trafalgar Industries, Inc.* v. *Automatic Products Co., Inc., et al.*

4,357,028, Chicago Roller Skate Co., ROLLER SKATE WITH IMPROVED SOLE PLATE, **filed** Nov. 12, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 6957, *Chicago Roller Skate Co.* v. *Zayre Corp.*

4,361,509, Scripps Clinic & Research Foundation, ULTRA PURIFICATION OF FACTOR VIII USING MONOCLONAL ANTIBODIES, **filed** Nov. 8, 1983, D.C., N.D. Calif. (San Francisco), Doc. C-83-5424-RPA, *Scripps Clinic & Research Foundation, et al.* v. *Chiron Corp.*

4,372,624, Smith International, Inc., DYNAMIC O-RING SEAL, **filed** Nov. 23, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83-7613 PAR (Mcx), *Smith International, Inc.* v. *Hughes Tool Co.*

4,373,123, Wico Corp., STUDDED MOUNTING STRUCTURE FOR SWITCH, **filed** June 13, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 4050, *Wico Corp.* v. *Suzo Trading CY BV.*

4,374,404, Innovative Computer Products Corp., NON-ABRASIVE MAGNETIC HEAD CLEANING SYSTEM; **4,377,831, same, filed** Feb. 15, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83-0966 CHH (Jrx), *Innovative Computer Products Corp.* v. *Head Computer Products, Inc., et al.*

4,377,130, Lonny D. Schwieger, ANIMAL ACTUATED FEED AND WATER DISPENSING APPARATUS, **filed** Dec. 30, 1983, D.C., N.D. Iowa (Sioux City), Doc. C83-4218, *Lonny D. Schwieger* v. *Glen Kruse, doing business as Kruse Mfg. & Eastern Iowa Pork, Inc.*

4,377,831. (See 4,374,404.)

4,379,594, Barry A. Willey, MOTORCYCLE SAFETY WINDSHIELDS, **filed** Aug. 29, 1983, D.C., C.D. Ill. (Danville), Doc. 83-2365, *Barry A. Willey* v. *Vetter Products, Inc.*

4,379,696, Color Communications, Inc., LATEX MYLAR CHIP, **filed** Jan. 4, 1984, D.C., W.D.N.Y. (Buffalo), Doc. Civ-84-0009C, *Color Communications, Inc.* v. *La Clede Mfg. Co., Inc., doing business as La Clede Color Cards.*

4,385,671, Yamato Scale Co., Ltd., COMBINATION WEIGHING SYSTEM, **filed** Dec. 8, 1983, D.C., N.D. Calif. (San Francisco), Doc. C-83-5830 TEH, *Yamato Scale Co., Ltd.* v. *Package Machinery Co.*

4,385,724, Ramco Mfg., Inc., APPARATUS FOR CONTROLLING THE WATER TEMPERATURE OF A SPA, **filed** Aug. 4, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 5049 MML (Mcx), *Ramco Mfg., Inc.* v. *Sundance Spas, et al.*

4,401,335, Byron L. Godbersen, BOAT HOIST, **filed** Nov. 3, 1983, D.C., E.D. Mich. (Bay City), Doc. 83CV7374BC, *Byron L. Godbersen* v. *Michigan Docks, Inc.* **Same, filed** Nov. 17, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-1352CA1, *Byron L. Godbersen* v. *Michigan Marine Distributing Co.* **Same, filed** Nov. 17, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-1353CA6, *Byron L. Godbersen* v. *Stevens Design & Fabrication, Inc.* **Same, filed** Nov. 17, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-1354CA1, *Byron L. Godbersen* v. *Harbor Master, Ltd.*

4,403,775, Joseph R. Chaput, RANDOM INDICIA SELECTOR, **filed** Sept. 13, 1983, D.C., W.D. Pa. (Pittsburgh), Doc. 83-2294, *Joseph R. Chaput, et al.* v. *J and R. Sales, Inc., et al.*

4,404,687, Markus Hager, CONVERTIBLE OUTERWEAR AND CARRYING BAG, **filed** Nov. 14, 1983, D.C., S.D.N.Y., Doc. 83-Civ-8247, *Franconia Sportswear, Inc. (Markus Hager)* v. *Anchas America, Ltd.*

4,406,615, Nova Patents of North America, Inc., IGNITER FOR A GAS DISCHARGE PIPE, **filed** Dec. 29, 1983, D.C., S.D. Tex. (Houston), Doc. H-83-7369, *Nova Patents of North America, Inc.* v. *Standby Flare Ignition Systems, Inc.*

4,413,737, Bigelow-Sanford, Inc., SHIPPING PALLET AND A PACKAGE FORMED THEREFROM, **filed** Dec. 21, 1983, D.C.S.C. (Greenville), Doc. 83-3224-14, *Bigelow-Sanford, Inc.* v. *Modular Packaging, Inc., et al.*

NOTICE OF RESTRUCTURING AND MOVE OF PATENT EXAMINING CORPS

The Patent Examining Corps is being restructured and moved to meet the needs of the public, changing technology and workload requirements.

The restructuring and move include three major aspects. The first major aspect involves hiring a large number of new examiners and a rebalancing of the Examining Corps to more accurately reflect anticipated workloads and better associate related arts. To this end, the five existing chemical groups will be rearranged into four chemical groups, i.e., Groups 110, 120, 130, and 150. In addition, a new electrical Group 260 will be assembled from components drawn from the other electrical groups.

The second aspect of current efforts involves the creation of twelve (12) additional art units to provide appropriate supervision for the enlarged Examining Corps. These new art units have been distributed throughout the Groups as dictated by anticipated supervisory workloads.

The third aspect involves the physical relocation of many persons and search files as Examining Group 150 moves into additional space on two floors in Building 2 in Crystal Plaza.

It is expected that the relocation and other changes will begin about March 19, 1984, and end by May 1, 1984. The Groups will then be located as shown in the table at the end of this notice.

The efforts described above will result in many examiners being moved to new rooms and some reassigned to different groups and art units. Many pending applications will be assigned to new groups and art units. The Office will do everything practical to minimize the adverse impact of all this change. However, problems and a certain amount of confusion will undoubtedly occur. To help the public cope with these changes, the following guidance is offered:

1. Examining Corps personnel can be reached on the telephone by calling their last known number (e.g., the number shown on the last Office action). The answering receptionist will be provided with a directory of phone numbers which will be updated daily. The caller will be informed of or transferred, if possible, to the new number.

2. Persons who are not successful in reaching an Office employee by telephone should call our information number (703) 557-3080 for the latest telephone number of the employee.

3. To determine the current Group or art unit assignment or other pertinent information concerning a patent application (for those entitled to such information) call any telephone associated with the Group to which the application was assigned. The answering receptionist - once assured of the caller's identity and/or entitlement - will provide the current art unit assignment or the other pertinent information concerning the application as shown on the PALM system.

4. Once the new art unit assignment of an application is known, all correspondence involving that application should identify the new art unit. However, all correspondence addressed to the art unit shown on the most recent communication from the Office will be routed to the correct destination.

5. A current directory will be posted periodically in or near the Public Search Room.

6. After the relocations and other changes are completed, new Group and art unit telephone and room numbers will be published in the Official Gazette.

7. Persons delivering papers, arriving for interviews or visiting the Examining Corps after March 19, 1984, should consult the directory posted near the Public Search Room for the current location of the organization and person they are visiting.

Group	Director	Location	New Art Unit	New Art Unit Comprises Examiners Primarily From Following Original Art Unit(s)	New Art Unit Responsible For All Or Parts Of The Following Classes
110	D. Talbert	CP3-9	111	111	75,148,266,420,428
			112	112	204,252
			113	113	252,423
			114	114	29,148,136,429
			116	116	208,252,260,585
			118	113,124	44,71,106,252,501
120	C.E. Van Horn	CP2-9	121	121	260,542,544,546,548,549
			122	122	260,542,544,546,548,568
			123	123	260,424,536,549
			124	124	44,252,260,556,564,568,570
			125	125	8,260,424
			126	126	260,518,560,562,564,568
			127	174	424,435
			128	174	424,426,435,436
			129	121,122,126	71,260,544,546,548,549
130	R. White	CP3-8	131	161	156,252
			132	172	127,426
			133	173,	62,65,134,159,202,203
			134	172,173	23,156,210,422,436
			135	177	55,209,261
			136	176	210
			137	147	264
			138	147	48,156,196,201,202,249,425
150	J.O. Thomas	CP2-11	151	142	204,260,521,523,524,525,527,528
			152	162	118,148,427
			153	143	260,521,523,524,527,528
			154	164	282,428
			155	144	260,520,521,523,524,525,526,528,536
			156	166	428,430
			157	144,147	8,51,106,252,433,585
				166	
210	S. Engle	CP4-9	211	211	84,181,235,352,354,355,350,361
			212	212	310,320,322,323,363
			213	213	219,338
			214	216	200,307,314,361,373
			215	217	174,336,355,361
			216	212,216	177,335,337,346
			217	217	84,187,290,318,368
220	K. Cage	CP4-10	221	221	42,89,102,114,184,244,362,367,376
			222	222	178,179,181,310,315,330,332,340, 343,356,358,367,375,376,434,435
			223	223	44,60,75,86,136,148,149,204,252, 260,264,362,419,422,423,424,427, 428,436,568

Group	Director	Location	New Art Unit	New Art Unit Comprises Examiners Primarily From Following Original Art Unit(s)	New Art Unit Responsible For All Or Parts Of The Following Classes
230	E. Levy	CP4-11	232	232,236	340,364
			233	235	235,360
			234	232,237	235,340,364
			235	235	179,358,360,369
			236	236	364
			237	237	364,381
240	G. Forlenza	CP4-7	241	241	150,190,206,215,217,220,229,383
			242	242	8,15,68,99,100,226,366,494
			243	243	134,138,141,200,224
			245	245	57,87,242,254,308,384,464
			246	246	33,73,116,277,353,374,369
			247	353	2,12,19,26,28,36,38,66,69,112, 128,139,223,289
250	S. Matthews	CP4-8	251	251,254,255	343,350,356,372
			252	252,254,256	329,330,331,332,333,334
			253	253	357
			254	254	307,328,377
			255	255	250,356
			256	256	250,378
			257	257	350,351
260	S. Kunin	CP4-5	261	214	178,179,358,381
			262	231	358
			263	233	370,375,455
			264	234	340,367
			265	244	73
			266	251	313,315,328,382
			267	252	324
			268	234,244	73,340,367
290	K. Cage	CP4-11	291	291	Design
			292	292	Design
310	B. Gray	CP3-5	311	311	133,186,187,194,221,222,258,278
			312	312	104,105,152,191,209,213,238,246, 291,293,295,296,301,305,410
			313	313	169,193,239,294,406
			314	314	188,267,271,303
			315	315	114,212,244,440,441
			316	316	180,280
			317	317	198,298,414
320	S. Zaharna	CP3-6	321	321	10,29,59,72,82,140,142,144,407,413
			322	322	29,279,339,408,409
			323	323	7,29,51,76,81,125,145,157,254,269
			324	324	16,30,83,173,225,234
			325	325	43,164,228,445
			326	326	29,79,147,163,241,300
			327	327	17,53,227,281,282,282,402,412,493

Group	Director	Location	New Art Unit	New Art Unit Comprises Examiners Primarily From Following Original Art Unit(s)	New Art Unit Responsible For All Or Parts Of The Following Classes
330	R. Aegerter	CP3-4	331	331	27,46,47,63,111,124,135,168,171, 172,231,272
			332	332	3,124,128,131,132,272,401
			333	333	6.40,54,56,109,119,130,232,433
			334	334	273,434
			335	335	128
			336	336	128
			337	337	37,101,199,276,400
340	D. Stocking	CP4-3	341	341	60,91,92,415,416
			342	342	123
			343	343	60,91,417,418
			344	344	34,62,98,110,122,236,237,432
			345	345	126,431
			346	346	60,123,160
			347	347	137,251
350	A. Smith	CP3-3	351	351	256,285,403,405
			352	171,352	74,185,192
			354	354	52
			355	355	160,182,211,248
			356	356	14,166,175,299,404,474
			357	357	24,49,108,297,312
			358	358	5,70,74,109,292,411

Any questions concerning the Corps restructuring should be addressed to Edward E. Kubasiewicz at (703)557-4281.

PLEASE NOTE: PERSONS WHO ARE NOT SUCCESSFUL IN REACHING AN OFFICE EMPLOYEE BY TELEPHONE SHOULD CALL OUR INFORMATION NUMBER (703)557-3080 FOR THE LATEST TELEPHONE NUMBER OF THAT EMPLOYEE.

Rene D. Tegtmeyer
Assistant Commissioner for Patents

2/24/84
Date

PATENT NOTICES

Certificates of Correction for the Week of Mar. 13, 1984

D. 247,221	4,375,541	4,401,185	4,413,685
D. 265,550	4,376,664	4,401,724	4,414,429
D. 265,936	4,377,785	4,402,289	4,414,539
3,576,673	4,380,484	4,402,448	4,414,704
4,117,118	4,380,741	4,402,682	4,414,829
4,157,759	4,381,335	4,403,076	4,415,014
4,205,964	4,382,739	4,403,233	4,415,279
4,232,723	4,383,158	4,403,552	4,415,286
4,238,531	4,384,199	4,404,717	4,415,486
4,267,111	4,384,298	4,405,521	4,415,758
4,290,154	4,384,348	4,406,623	4,415,886
4,308,213	4,386,127	4,407,203	4,417,141
4,313,909	4,386,966	4,407,813	4,417,920
4,320,119	4,390,797	4,408,002	4,418,462
4,327,133	4,393,262	4,408,404	4,418,768
4,337,079	4,394,177	4,408,452	4,419,249
4,350,275	4,394,330	4,408,607	4,419,721
4,351,466	4,394,517	4,409,048	4,419,796
4,353,306	4,394,542	4,409,990	4,420,220
4,353,450	4,395,459	4,410,003	4,421,314
4,358,511	4,395,546	4,410,956	4,421,386
4,360,573	4,396,424	4,411,761	4,421,678
4,367,082	4,396,953	4,412,080	4,421,782
4,369,516	4,399,913	4,412,086	4,422,031
4,372,248	4,400,083	4,412,281	4,422,180
4,375,426	4,401,151	4,413,423	4,422,443

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372 1 (901) 725-8876
Tennessee	Memphis & Shelby County Public Library and Information Center	(512) 471-1610
Texas	Austin: McKinney Engineering Library, University of Texas.	(409) 845-2551
	College Station: Sterling C. Evans Library, Texas A & M University	(214) 749-4176
	Dallas Public Library	(713) 527-8101 Ext. 2587
	Houston: The Fondren Library, Rice University	(206) 543-0740
Washington	Seattle: Engineering Library, University of Washington	
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 4, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-20-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-16-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-15-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-03-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	3-17-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-30-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-04-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-18-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-26-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-20-81

Expiration of patents: The patents within the range of numbers indicated below expire during February 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,302,213 to 3,307,199, inclusive

Plant Patents ..... Numbers 2,707 to 2,722 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,535

SPOT CLINCH MEANS AND METHOD

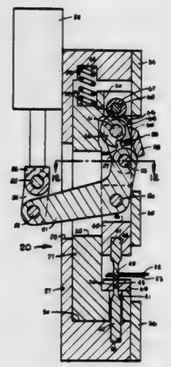
Louis C. Schleicher, 1917 Marcastle Ct., Rochester, Mich. 48063

Original No. 3,900,937, dated Aug. 26, 1975, Ser. No. 494,982, Aug. 5, 1974. Application for reissue Mar. 7, 1977, Ser. No. 774,851

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—432.2

8 Claims



1. Spot clinch tool for forming a spot clinch joint by lancing and swaging two or more materials together using one complete stroke of a *ram driven by a* power source in a single station, [said power source having a power stroke and a retract stroke,] said tool *having a tool body and* utilizing an anvil, die, and punch *ram moving* means [for moving] *connecting said ram to said power source so that said ram is driven in a power stroke and a retract stroke, means joining* one of said punch and anvil *to said ram and the other to said tool body, whereby one is made moveable* while [maintaining] the other *is maintained* stationary *in respect to said tool body* during said complete stroke of said [power source] *ram*, [means for moving] *and cam means coupled to said ram moving means responsive to the stroking movement of said ram for controlling positioning of said die relative to said anvil and punch during said complete stroke of said ram, said* one of said punch and anvil *being moved* toward the other during a first part of said power stroke, [means for piercing] said materials *being pierced* with said punch and die to lance them during a second part of said power stroke, [means for holding the] *said cam means controlling positioning of said* die in a first position [spaced from the] *stationary in respect to said* anvil during both said first and second parts of said power stroke, [means for moving the] *said cam means controlling movement of said* die *from said first position* to a second position *stationary* in respect to said anvil during a third part of said power stroke, [means for swaging] the lanced portions of said materials *being swaged* with said punch and anvil during a fourth and final part of said power stroke, [means for maintaining the] *said cam means controlling positioning of said* die [and the anvil] in said second position *stationary in respect to said anvil* during said fourth and final part of said power stroke and during a first part of said retract stroke, and [means for moving] *said cam means controlling movement of* said die relative to said anvil from said second position to said first position during a second and final part of said retract stroke, *means for holding said die including a moveable die retainer for holding the die, said cam means being actuated to control movement of said die and die retainer from said first to said second position by the continued movement of said ram in said third part of said power stroke, and said cam means being actuated to control movement of said die and die retainer from said second to said first position by the continued movement of said ram in said second and final part of said retract stroke.*

Re. 31,536

METAL CLADDED WINDOW PRODUCTS

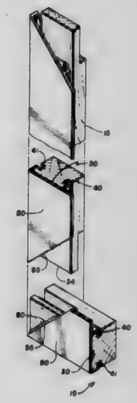
Joseph W. Holdiman, 1095 Arrowhead Dr., Dubuque, Iowa 52001, and Douglas E. Justice, 1103 Ellen, Cedar Falls, Iowa 50613

Original No. 4,207,707, dated Jun. 17, 1980, Ser. No. 925,162, Jul. 17, 1978. Application for reissue Jun. 1, 1982, Ser. No. 383,461

Int. Cl.³ E06B *3/00*

U.S. Cl. 49—501

11 Claims



8. *A metal clad window product comprising:*

a plurality of elongated members interconnected to form the configuration of a window frame or sash, each of said elongated members having front and rear surfaces and first and second sides located between said front and rear surfaces and a rabbet extending in each of said first and second sides for the length of said elongated member;

a metal cladding member coupled to each of said elongated members to form a metal cladding surface over the front surface of each elongated member, said metal cladding member including a metal member having a width and length sufficient to cover said front surface wherein said cladding member is in full contact with said front surface, first and second flanges integrally formed on said metal member so that said flanges are spaced from one another and each extend the length of said metal member, and a metal extension integrally formed with said metal member adjacent one of said flanges and extending the length of said metal member adjacent to the first side of said elongated member;

each metal cladding member being coupled to one of said elongated members prior to their interconnection to form said configuration solely by slidably engaging said flanges in said rabbets from one end of the elongated member until the metal member is positioned over the front surface of said elongated member along the entire length and width of the elongated member;

each metal cladding member being formed to have mitered ends which fit to form a mitered joint with adjacent metal cladding

members on the elongated members forming said configuration; and

sealing material positioned between said metal member and said elongated member along each mitered joint to seal said mitered joints.

Re. 31,537

DENTAL HANDPIECE CONNECTOR

Lloyd P. Flatland, 15 Quisisana Dr., Kentfield, Calif. 94904

Original No. 4,177,564, dated Dec. 11, 1979, Ser. No. 887,864, Mar. 20, 1978. Application for reissue Dec. 3, 1981, Ser. No. 327,289

Int. Cl.³ A61C *1/10*

U.S. Cl. 433—82 **11 Claims**

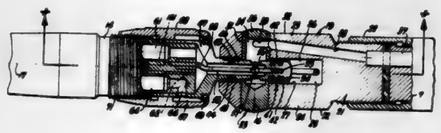
8. A dental handpiece and fluid supply tube connector, comprising:

a first base;

a second base;

pin means connecting the bases for rotating the bases relative to each other transversely to the longitudinal axis of the first base;

means defining at least two fluid passageways through the first base, the pin means and the second base; one fluid passageway passing radially through the pin means and the other fluid passageway passing axially through the pin means; and means for rotating the bases relative to each other about the longitudinal axis of the first base.



PLANT PATENTS

GRANTED MARCH 13, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,203

EXACUM AFFINE POT PLANT

Erik Rosendal, Assens, Denmark, assignor to Nurserymen's Exchange, San Francisco, Calif.

Filed Feb. 16, 1983, Ser. No. 467,076

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Exacum plant as shown and described, characterized by its double flowers, its floriferousness, its blooming habits and the sterility of the flower. Plants can be propagated by asexual processes true to type and the rooting ability is excellent. The size of the single flower surpasses the known single cultivars.

5,204

CARNATION NAMED MINTOP

Siegfried Klemm, Hanfacker 9, 7000 Stuttgart 50, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,562

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct varity of carnation plant, substantially as herein shown and descried, characterized by its high productivity of bright pink flowers borne singly on rigid, generally upright pedicels carried in spray arrangement on a sturdy upright peduncle, the flowers being characterized by having petals which have ruffled margins of clear white.

5,205

CARNATION NAMED KLEMORAC

Siegfried Klemm, Hanfacker 9, 7000 Stuttgart 50, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,563

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinctive carnation cultivar, substantially as herein shown and described, characterized by its high productivity of bright orange colored flowers borne singly on rigid, erect pedicels carried in spray arrangement by a sturdy upright peduncle.

5,206

CARNATION NAMED KLERONSTAR

Siegfried Klemm, Hanfacker 9, 7000 Stuttgart 50, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,963

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct carnation cultivar, substantially as herein shown and described, characterized by its high productivity of bright orange colored flowers having fan-shaped petals with few short red stripes extending longitudinally inward from the petal tips, the flowers being borne singly on rigid and erect pedicels carried in spray arrangement on a sturdy, upright peduncle.

PATENTS

GRANTED MAR. 13, 1984

ERRATA

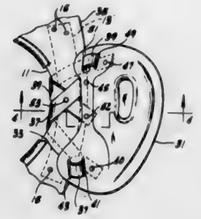
For CLASS	See PATENT NO.
428–595	4,436,518
562–519	4,436,889
156–332	4,436,896
544–238	4,436,921

PATENTS

GRANTED MARCH 13, 1984

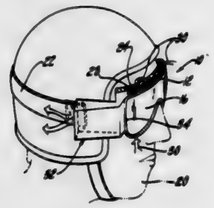
GENERAL AND MECHANICAL

4,435,851
FLAP HINGE FOR A SHOULDER PAD
Hal D. Mitchell, and Donald R. Walker, both of Rolla, Mo., assignors to Figgie International Inc., Willoughby, Ohio
Filed May 14, 1982, Ser. No. 378,140
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **19 Claims**



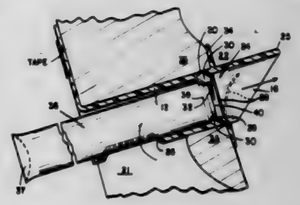
1. In a shoulder pad of the type comprising a pair of arches adapted to overlie the inner parts of the shoulders of the wearer, the arches having laterally-spaced inner edges providing an opening for the neck of the wearer, and a pair of flaps adapted to extend in front-to-back direction over the shoulders for protecting the outer parts of the shoulders, an improvement comprising a flap hinge for hinging each flap to a respective arch for enabling the flap to swing upwardly about the hinge upon upward movement of the outer part of a respective shoulder, said flap hinge comprising a first strap secured at one end to a respective flap generally adjacent the front of the flap and extending from the flap under the arch to the inner edge of the arch, up around the inner edge of the arch, and thence over the arch back to the flap for securement at its other end to the flap, and a second strap secured at one end to the flap generally adjacent the back of the flap and extending from the flap under the arch to the inner edge of the arch, up around the inner edge of the arch, and thence over the arch back to the flap for securement at its other end to the flap.

4,435,852
GOGGLE
Todd G. Nesler, 2480 Doris, Brighton, Mich. 48116
Filed Nov. 24, 1982, Ser. No. 444,321
Int. Cl.³ A61F *9/02*
U.S. Cl. 2—436 **5 Claims**



1. A goggle comprising:
a frame having a front side and a rear side,
a transparent lens secured across the first side of said frame,
means for detachably securing said frame to a head of a user so that said rear side of said frame abuts against the head of the user and thus forming a chamber between said frame, lens and the head of the user,
at least one ventilation port formed through said frame and open to said chamber,
at least one elongated ventilation channel, said channel open at each end and only each such end and defining a fluid passageway between its ends, said channel secured to and extending rearwardly from said frame,
wherein one end of said channel is open to said chamber and,
wherein the other end of said channel faces rearwardly from the rear side of said frame and is open at a position spaced rearwardly from the rear side of said frame.

4,435,853
VOICE PROSTHESIS DEVICE AND PLACEMENT TOOL THEREFOR
Eric D. Blom, and Mark I. Singer, both of Indianapolis, Ind., assignors to Hansa Medical Products, Inc., Indianapolis, Ind.
Filed Apr. 30, 1982, Ser. No. 373,635
Int. Cl.³ A61F *1/20*; A61B *17/00*
U.S. Cl. 3—1.3 **8 Claims**



1. A voice prosthesis device for placement in a fistula to channel air from a tracheostoma to the esophagus including in combination:
a cylindrical housing having a proximal end with strap means extending outwardly therefrom, a distal end, a port therein operatively cooperating with the tracheostoma, with said distal end having a beveled extension integral therewith,
one-way valve means including an annular sealing rim positioned perpendicularly within said housing adjacent said distal end and a valve membrane hingedly mounted to said housing on the side thereof adjacent said distal end of said housing to cooperate with said annular sealing rim, and
an annular collar means extending outwardly from said housing, said annular collar means adapted to abut against the esophagus tissue when the device has been positioned in the fistula, to retain and hold the device in proper position, such that upon covering the tracheostoma opening, said valve membrane is moved by the channeled air from the closed position against said annular sealing rim to an open position wherein the channeled air enters the esophagus to produce alaryngeal speech by the patient.

4,435,854
HIP JOINT PROSTHESIS WITH A SHAFT TO BE FITTED INTO THE MEDULLARY CANAL OF THE FEMUR
Arnold Keller, Kalhede, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hamnberg, Fed. Rep. of Germany
Filed Mar. 26, 1981, Ser. No. 247,776
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015690
Int. Cl.³ A61F *1/04*
U.S. Cl. 3—1.913 **2 Claims**

1. In a hip joint prosthetic device comprising a rigid shank to be fitted into the medullary canal of the femur, a head, a end flange at the proximal end of the shank, a head and a neck

section extending from the end flange to the head, the head being anteverted relative to the shank in the LM (lateral-medial) plane, the improvement wherein the shank has, in the proximal region thereof, a section extending a distance between approximately 4–8 cm from the end flange which is curved in the AP (anterior-posterior) plane with a center of curvature in



the AP plane anterior of the proximal region of the shank, wherein the axis of the shank at its proximal end extends, in the AP plane, approximately in the direction of the longitudinal axis of the neck section and wherein the shank has, in the distal region thereof, a section curved in the AP plane in the opposite direction to said proximal section.

4,435,855

UNIVERSAL INTRAOCULAR LENS AND A METHOD OF MEASURING AN EYE CHAMBER SIZE

Jaswant S. Pannu, 6120 Almond Ter., Plantation, Fla. 33317

Continuation-in-part of Ser. No. 136,243, Apr. 1, 1980, abandoned. This application May 8, 1981, Ser. No. 261,953

Int. Cl.³ A61F *1/16, 1/24*; A61B *5/00*

U.S. Cl. 3—13 **10 Claims**



1. An intraocular lens comprising:

a lens body;

at least two spaced flexible positioning and supporting elements integrally formed with said lens body as a one-piece construction and extending radially, outwardly from the periphery of said lens body;

said elements defining a continuous, substantially circular arc having a diameter greater than the diameter of said lens body, said arc curved toward said lens circumference and terminating in a free end spaced from said periphery; and

snag-resistant means integrally formed on the free end of said elements for smoothly guiding and positioning the lens across contacted eye tissue when implanting the lens, said snag resistant means having an uninterrupted, continuously, smoothly curved outer periphery which merges with said free end and is substantially greater in size than the width of said flexible elements.

10. A method of measuring the size of an eye chamber by implanting a lens having tangentially resilient strands on opposed sides of an intraocular lens attached to the body of said lens; wherein the free end is connected to a snag resistant ring, adding the diameter sizes of said ring and said lens to the distance between the edge of said ring and the edge of said lens in mm. to determine the size of said eye chamber in mm.

4,435,856

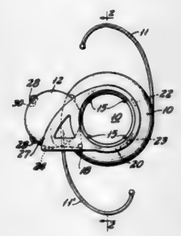
BIFOCAL INTRAOCULAR LENS STRUCTURE AND SPECTACLE ACTUATION FRAME

Francis A. L'Esperance, 255 Oakwood Rd., Englewood, N.J. 07631

Filed Apr. 14, 1982, Ser. No. 368,409

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **24 Claims**



1. Intraocular lens structure, comprising a first lens element including haptic means for stabilized mounting of the lens in one of the chambers of an eye and substantially on the pupillary axis of the eye, a second lens element, means coacting between off-axis locations of said lens elements for pivotally suspending said second lens element at axial offset with respect to said first lens element, means coacting between said lens elements for selective retention of (1) a pivoted position of said second lens element wherein the optical axes of said lens elements are in substantial registration and (2) a pivoted position of said second lens element wherein said second lens element is substantially offset from the axis of said first lens element, and means associated with said second lens element and adapted to facilitate selective pivoted displacement from one to the other of said positions.

4,435,857

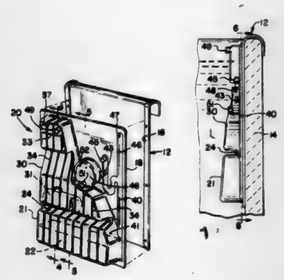
APPARATUS FOR CLEANSING AND DISINFECTING TOILET TANKS AND BOWLS

Gilbert K. Meloy, Earlville, Ill., assignor to Twinoak Products, Inc., Plano, Ill.

Filed Apr. 2, 1982, Ser. No. 364,786

Int. Cl.³ E03D *9/02*

U.S. Cl. 4—228 **19 Claims**



1. An apparatus for automatically cleansing and disinfecting a toilet tank and toilet bowl by treating the water discharged from the toilet tank each time the toilet is flushed, said apparatus comprising means for placing the apparatus in a toilet tank, a reservoir, a source of disinfectant soluble in water located in said reservoir, a volume control chamber communicating with said reservoir, a delivery tube vented to the atmosphere, a dispensing orifice defined by the delivery tube, and a passage defined between said delivery tube and said reservoir, said orifice being located beneath the normal level of water in the tank when the apparatus is placed in the tank whereby water is introduced through said orifice, the water than passing into said reservoir and into said volume control chamber and rising to the level of water in the tank, said delivery tube then being in dynamic fluid communication with water in the toilet tank, and wherein flushing of the toilet results in dropping of the water level in said tank whereby the head of water in said volume control chamber forces a dose of aqueous disinfectant solution into said tank.

4,435,858

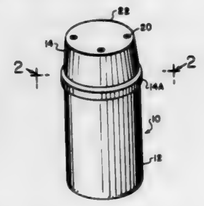
AUTOMATIC TOILET BOWL CLEANING DEVICE

John E. Dolan, 15 New Main St., Haverstraw, N.Y. 10927

Filed Jul. 6, 1982, Ser. No. 395,123

Int. Cl.³ E03D *9/02*

U.S. Cl. 4—228 **5 Claims**



1. An automatic toilet bowl cleaning device adapted to dispense water-soluble disinfectant into the flushing water of a toilet tank comprising:

(a) a container for the disinfectant;

(b) a cover, consisting of a single shell, fitted on the container, said cover having a top wall and a side, or peripheral, wall; a first series of at least three spaced holes extending through the top wall of said cover and a second series of at least three spaced holes extending through the side, or peripheral, wall of said cover;

(c) the total area of all of the spaced holes of the second series being less then the total area of all of the spaced holes of the first series, all of the spaced holes of the second series being arranged solely in one-half of the cover, while all of the spaced holes of the first series are arranged solely in the diametrically opposite half of the cover;

(d) whereby the disinfectant solution formed within the container is consistently dispensed due to the increased mixing action of the solvent with the solid disinfectant.

4,435,859

TOILET FLUSH TANK

Reinhard Barnowski, Hauptstrasse 252, 5163 Langerwehe, Fed. Rep. of Germany

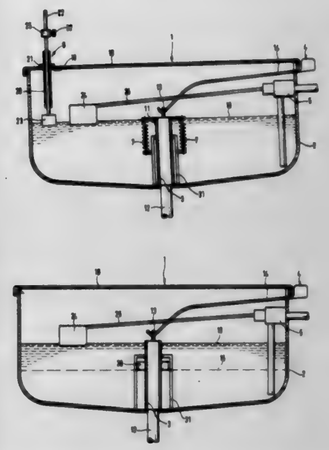
Filed Feb. 18, 1982, Ser. No. 350,026

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106764

Int. Cl.³ E03D *1/14, 3/12*

U.S. Cl. 4—324 **3 Claims**

1. A toilet flush tank apparatus having a water reservoir, said apparatus being selectively actuable to fully empty said reservoir or to automatically interrupt emptying of said reservoir at an intermediate level, a float activated water feed valve in said reservoir, a drain closure part, movable means reacting against said closure part in the filled condition of said reservoir to close the latter, an actuator device to shift said movable means away from said closure part, said actuator device being shiftable between first and second positions, said actuator device in its first position releasing said movable means and in said second position lifting said movable means clear of said drain part, the combination including automatic means for returning said



movable means to closing position of said drain when said actuator device is shifted from said first to said second position and thereafter released to said first position, said automatic means being responsive to the water level in said tank reaching an intermediate level between full and empty to effect said return movement to said movable means.

4,435,860

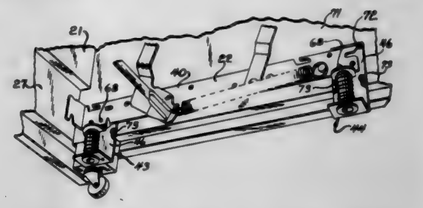
SPRING SUSPENSION FOR SOFA-BED

Thomas H. Talley, Downers Grove, Ill.; Lee W. Sheets, Muney Valley, Pa., and Alvin F. Wiley, Rushville, Ind., assignors to Schnadig Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 145,356, Apr. 30, 1980, abandoned. This application Feb. 5, 1981, Ser. No. 231,619

Int. Cl.³ A47C *17/04*

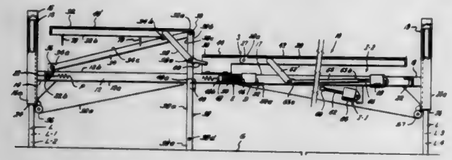
U.S. Cl. 5—13 **13 Claims**



1. In a sofa-bed having a sofa frame and a folding bed frame, the sofa frame having a front, a pair of sides, and a back, the bed frame being foldable between a sitting position in which the bed frame is confined within the sofa frame and a sleeping position in which the bed frame extends forwardly from the sofa frame, the improvement comprising spring suspension means for resiliently supporting the bed frame on each of the sides of the sofa frame, each of the spring suspension means comprising a first mounting bracket attached to the sofa frame, a second mounting bracket attached to the bed frame, and resilient connecting means extending between the first and second brackets for movably and resiliently supporting the second mounting bracket relative to the first mounting bracket,

the sofa-bed including a seat cushion supported by the bed frame when the bed frame is in the sitting position and including four of said spring suspension means for resiliently supporting the bed frame generally below the front and rear of the seat cushion on each side of the sofa frame, the resilient connecting means of each of the spring suspension means including a tube attached to one of the mounting brackets and slidably connected to the other mounting bracket and a compressible coil spring surrounding the tube between the two mounting brackets.

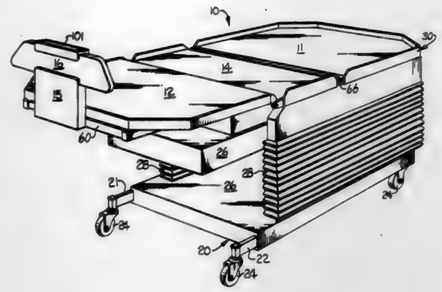
4,435,861
LEDGE BED
William L. Lindley, P.O. Box 1292, Conroe, Tex. 77301
Filed Feb. 25, 1982, Ser. No. 352,348
Int. Cl.³ A61G 7/00
U.S. Cl. 5—65 **10 Claims**

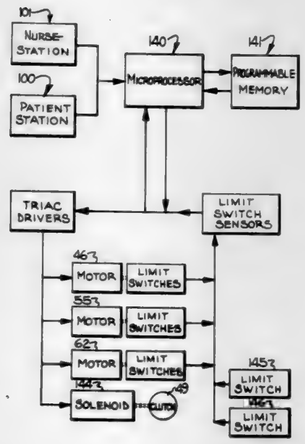


1. A ledge bed for positioning a bedpan or bathtub beneath a patient on the ledge bed without having to physically lift or move the patient, comprising:
- a main frame;
- floor engaging support legs telescopically connected to said main frame;
- a foot mattress support adjustably connected to said main frame;
- an head mattress support pivotally connected to said main frame;
- elevation means with said main frame for raising and lowering said main frame on said telescopically connected support legs; and,
- a stiff leg assembly pivotally connected to said head mattress support whereby when said stiff leg assembly is vertically positioned and said main frame is lowered, said stiff leg assembly will engage the floor surface whereupon said head mattress support will form a ledge vertically displaced above said foot mattress support.

4,435,862
CONTROL ARRANGEMENT AND METHOD FOR AN ADJUSTABLE BED
Frank R. King, Glen Mills, and Donald J. Engler, Upland, both of Pa., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Oct. 19, 1981, Ser. No. 312,528
Int. Cl.³ A61G 7/06
U.S. Cl. 5—66 **15 Claims**

2. In a motor driven adjustable bed having mattress supporting portions for supporting a mattress for an occupant in a variety of positions and including a head portion at a head end of the bed, a foot portion at a foot end of the bed, and a thigh portion between the head and foot portions,
- frame means for supporting the mattress supporting portions, and
- position controlling mechanism operatively interconnecting the mattress supporting portions and the frame means and including a plurality of motors operatively connected with the frame means for moving the frame means and thereby for positioning the mattress supporting portions in desired positions,
- an improvement in said position controlling mechanism which facilitates control over movement of the bed into a variety of positions and comprising:
- command means actuable by an operator of said bed for generating command signals indicative of selected bed positions,
- programmable memory means for receiving and storing control signals indicative of allowed and disallowed movements, and

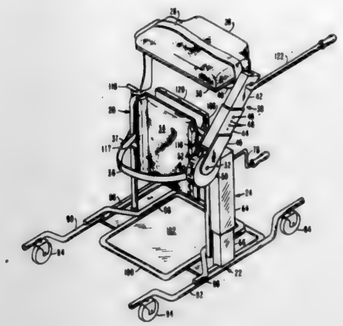




processor means operatively communicating with said command means and with said programmable memory means and with said motors and responsive to said command signals and to said control signals for actuating at least one of said motors for moving said frame means toward an allowed, selected bed position.

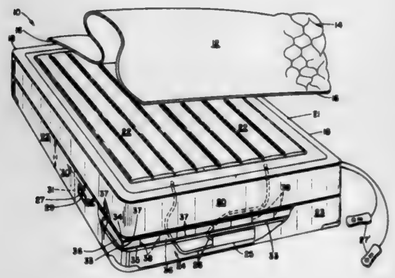
4,435,863
PATIENT TRANSPORTING DEVICE
Joel Lerich, 1418 W. Oak St., Ft. Collins, Colo. 80521
Filed Aug. 21, 1981, Ser. No. 295,226
Int. Cl.³ A61G 7/10
U.S. Cl. 5—81 B **21 Claims**

1. A patient transporting device comprising:
- a support projecting upwardly from a base;
- a chest pad shaped and oriented to fit against the upper torso of the user when the lower torso of the user is positioned beneath said chest pad;
- and a linkage assembly coupling said chest pad to said support and including means for enabling swinging of said chest pad effectively about a horizontal axis, with said upper torso secured to said chest pad, from a first position in which said chest pad is swung outwardly away from said support to permit engagement of said chest pad with said upper torso when said lower torso is positioned beneath said chest pad and a second position in which said chest pad has been swung by said linkage assembly to a stable location above said linkage assembly to have moved



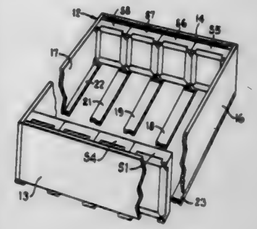
upwardly said upper torso with said lower torso remaining beneath said chest pad.

4,435,864
AIR BED ARRANGEMENT
Milton A. Callaway, Jackson, Oreg., assignor to Simons U.S.A. Corporation, Atlanta, Ga.
Filed Jun. 22, 1981, Ser. No. 275,958
Int. Cl.³ A47C 27/10
U.S. Cl. 5—453 **15 Claims**



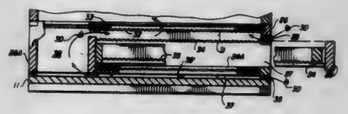
1. A mattress foundation designed to be used in combination with an accompanying inflatable mattress, comprising a primary support structure for supporting a mattress and any loads imposed thereon; a compartment defined with said support structure; and an air compressor positioned within said compartment, said primary support structure including a first area of support structure extending for substantially the full height of the mattress foundation and a second area of support structure extending from the top surface of the foundation to only a portion of the full height of the mattress foundation, said compartment being positioned below said second area of said support structure, said first area including a first inflatable support structure extending for substantially the full height of the mattress foundation, and said second area including a second inflatable support structure extending from the top surface of the foundation to only a portion of the full height of the mattress foundation.

4,435,865
FRAME FOR COMB HONEY
John A. Hogg, 2225 S. 36th St., Galesburg, Mich. 49053
Continuation-in-part of Ser. No. 120,951, Feb. 13, 1980. This application Sep. 15, 1981, Ser. No. 302,273
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ A01K 47/02, 47/04
U.S. Cl. 6—2 R **16 Claims**



1. In a device for producing comb honey in a hive having a hive body, the combination comprising:
- a super for superposing on the hive body and having ends and sides;
- a plurality of separate comb sections positioned within said super, each of said sections having perimeter components with top and bottom edges;
- means for inducing bees to build comb only in one direction within a said section and to a predetermined depth therein, wherein each of said sections has a bottom wall connecting the bottom edges of said perimeter components, said bottom wall has a foundation surface facing into its said section, the top of one section is adjacent the bottom wall of the next section, and means project from the top of said one section in cooperative relation with the bottom wall of the next section for permitting bee access and effecting comb depth control in said one section.

4,435,866
PELLEN TRAP FOR BEEHIVES WITH DUAL ENTRANCEWAYS
Royden Brown, 4343 E. Keim Dr., Phoenix, Ariz. 85253
Filed Mar. 4, 1982, Ser. No. 354,882
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.³ A01K 47/06
U.S. Cl. 6—4 R **10 Claims**



1. A pollen trap for collecting pollen from bees as they enter a beehive comprising:
- a frame having an open top and dimensioned to fit as one of the axially positioned parts of a vertically stacked beehive,
- a drawer slidably arranged in said frame to assume a substantially horizontal position in the hive,
- said drawer having a bottom surface comprising a first screen, the mesh size of which is smaller than the pollen dropped thereon by the bees,
- a second screen mounted in said frame above said drawer and having a mesh size smaller than the size of the pollen carrying bees for prohibiting them from entering the drawer,
- a pair of parallel and spacedly arranged third and fourth

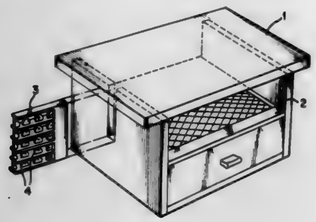
screens mounted on said frame, but offset above said second screen and forming an elongated space between said second screen and said pair of screens,
said third and fourth screens having mesh openings offset from each other causing bees crawling through said pair of screens to be forced to follow a circuitous path, divesting their legs of a substantial portion of the pollen carried thereon,
a first entranceway for the pollen carrying bees into the pollen trap positioned adjacent the front and above said drawer and connected with one end of said space between said second screen and said pair of screens, and
a second entranceway for the pollen carrying bees into the pollen trap positioned adjacent the front and below said drawer and connected with another end of said space between said second screen and said pair of screens,
whereby the bees may move through said pair of screens at points all along their lengths.

4,435,867

DEVICE FOR GATHERING THE POLLEN FROM A BEE

Tae S. Jeong, 1184, Hwanghak-dong, Jung-ku, Seoul, Rep. of Korea

Filed Apr. 19, 1982, Ser. No. 369,663
Int. Cl.³ A01K *47/06*; B32B *3/10*
U.S. Cl. 6—4 R **9 Claims**



1. A device for gathering pollen from bees entering a beehive comprising a pollen collecting screen having a plurality of entrances for passage of said bees therethrough each of said entrances having a wider upper section through which the body of the bee is to pass and a substantially square narrow lower section through which the legs of the bees pass to be contacted by the portion of the screen forming said narrow section to remove the pollen from the legs of the bee.

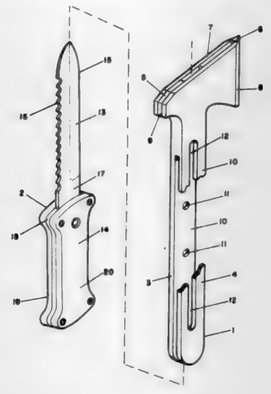
4,435,868

HIKER'S HATCHET

Sidney J. McQueen, 414 Coors Blvd. SW., Albuquerque, N. Mex. 87105

Continuation-in-part of Ser. No. 189,579, Sep. 23, 1980, abandoned. This application Apr. 2, 1982, Ser. No. 365,035
Int. Cl.³ B26B *11/00*
U.S. Cl. 7—158 **2 Claims**

1. A combination tool comprising: a hatchet having a left side, a right side, a hammer spacer and an edge spacer, wherein the left side and the right side, each are flat plates shaped to a hatchet head and having integrally formed therewith a hatchet handle, being straight, the extremity of each of the hatchet handles being rounded: and wherein the hatchet head has a blade and a hammer end: and wherein the hammer spacer is a flat plate shaped to the contour of the hammer end, but extends from the hammer end toward the blade edge only to an extension of the line defining the nearest edge of the handle; and wherein the edge spacer is shaped to the contour of the blade but extends from the blade toward the hammer and only to an extension of the line defining the nearest edge of the handle; and wherein the left side handle has a plurality of stop holes along its length; and wherein the right side hndle has a longitudinal slot running from the vicinity of the hatchet head toward the extremity of the handle; and wherein the edge spacer and hammer spacer are the same thickness; and wherein the hammer spacer and edge spacer are placed between the left hand side and right hand side during assembly and rigidly and permanently assembled as by welding; and
a knife having a blade and handle; the blade being a flat member whose thickness is the same as the hammer spacer and edge spacer: one edge of the blade sharpened to a knife edge and the other edge of the blade sharpened to a saw tooth edge, both the saw tooth and knife edges extending approximately one-half the length of the blade, the remainder of the blade being the shank, wherein the shank has two ears one on each edge adjacent to the knife edge and saw tooth edge, and two ears adjacent end of the shank, each of the said ears having a hole therein; and wherein the handle consists of two half handles, a right half and a left half, and the handle shaped to a comfortable grip; and the half handles having ears near the blade edge and saw tooth edge and having ears near the end of the shank said ears on the handle mating with the ears on the shank; and each said half handle having a flat wide groove on its inner faces, and a button hole from the inner surface to the outer surface; and each said half handle having a spring depression longitudinally aligned with the button hole, and a screw hole axially aligned and between the button hole and screw hole, and a cross shaped recess in



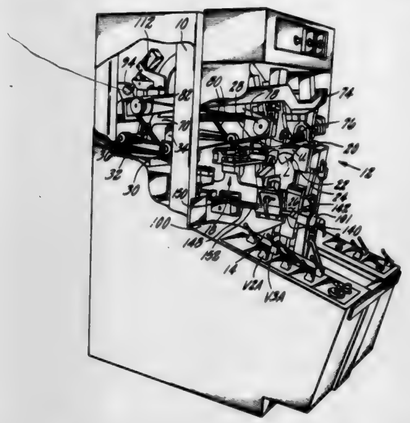
the vicinity of the button hole, screw hole, and spring depression, said cross shaped recess having a pivot crown tranverse to the half handle, and the right half handle having pivotally installed in the flat wide groove on its inner surface in the recess, a pivot latch; said pivot latch having an oblong attaching hole, a lock stud sized to fit easily into the stop holes, and a button which protrudes through the button hole, said pivot latch being pivotally installed by a screw which slideably passes through the oblong attaching hole and threadably engages the screw hole; said pivot latch being biased such that the lock stud engages the stop holes; and a biasing means installed in the right half handle between the lock stud and the spring depression; and the left half handle having pivotally installed in the flat wide groove on its inner surface in the recess another pivot latch; said pivot latch installed on the left half handle having an oblong attaching hole, a lock stud sized to fit easily into the longitudinal slot, and a button which protrudes slightly less than flush with the outside of the left half handle, said pivot latch installed in the left half handles by a screw which slideably passes through the oblong attaching hole and threadably engages the screw hole; and said pivot latch being biased such that the lock stud engages the longitudinal slot; and a brasing means installed in the left half handle between the lock stud and the spring depression; and wherein the two half handles are assembled to the shank, by bolts passing through the holes in the ears on the half handles and the shank,
and a means for sheathing the combination tool for safety and carrying.

4,435,869

SHOE LASTING MACHINES

William H. Berrill, Leicester; Herbert W. Boot, Thurmaston, and Frank Hartshorn, Wigston, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Mar. 2, 1981, Ser. No. 239,210
Claims priority, application United Kingdom, Mar. 22, 1980, 8009771
Int. Cl.³ A43D *21/00*
U.S. Cl. 12—12 **18 Claims**



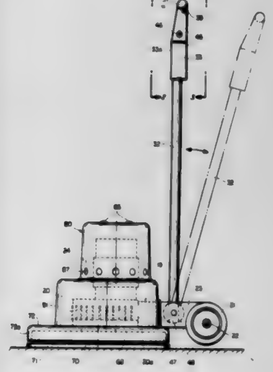
1. A machine for lasting side portions of shoes comprising:
a shoe support arrangement by which a last carrying a shoe upper and an insole can be positioned and which includes means serving to position the shoe in a desired relationship with the longitudinal center line of the machine;
instrumentalities for operating on side portions of a shoe supported by the shoe support arrangement;
means for effecting relative movement between the shoe support arrangement and said instrumentalities in a direction extending lengthwise of a shoe supported by the shoe support arrangement, whereby the instrumentalities are caused to operate progressively along opposite side portions of such shoe, wherein the instrumentalities are mounted on a support which is movable between a first position, in which the instrumentalities can be positioned symmetrically at opposite sides of the longitudinal center line of the machine, and a second position, in which said instrumentalities can be positioned offset from said line;
a support moving means is provided for moving the support between its first and second positions, the arrangement being such that the support is positioned in a selected one of its first and second positions at the start of an operating cycle of the machine and is moved by the support-moving means to the other of said positions during said operating cycle;
said support being movable between its first position and a selected one of two second positions, in which said instrumentalities can be positioned offset from the longitudinal center line of the machine, said two second positions of the support being arranged symmetrically at opposite sides of the first position thereof, and the arrangement being such that the support is caused to be moved as aforesaid during an operating cycle of the machine between its first position and one of its second positions selected according to whether the shoe being operated upon is a left or a right;
said instrumentalities comprising side lasting instrumentalities;
said support-moving means for the support for the side lasting instrumentalities as they are moved between its first and second positions comprises cam means; and
wherein said cam means comprises a cam member having two cam faces and means for moving said member so as to enable one or other of said faces to be engaged by an abutment member, the arrangement being such that, in an operating cycle of the machine, relative movement is caused to take place over a predetermined distance between the cam member and the abutment member between a first operative position in which they are out of engagement with one another, in which position the support for the side lasting instrumentalities is in its first position, and a second operative position in which the abutment is located in engagement with one or other of the cam faces, and further that, with cam member and abutment member in such second operative position, when one of said cam faces is engaged by the abutment member said support is in one of its second positions, and when the other cam face is so engaged, said support is in the other of its second positions.

4,435,870

FLOOR MACHINE

Jeffery R. Tucker, 6831 Cabernet Ave., Newark, Calif. 94560; Dennis W. Ross, 1746 Carpentier St., San Leandro, Calif. 94577, and Hartwell F. Tucker, 1300 Holly Ave., Los Altos, Calif. 94022

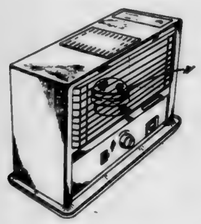
Division of Ser. No. 129,902, Mar. 13, 1980, Pat. No. 4,330,897. This application Mar. 24, 1982, Ser. No. 361,427
Int. Cl.³ A47L *11/14*
U.S. Cl. 15—98 **6 Claims**



1. In a floor machine of the type having a power unit comprising a rotatable shaft driven through a transmission, a drive unit connected to the rotatable shaft for rotation thereby, a floor processing pad or the like connected to the drive unit, a drive guard enclosing at least a portion of the drive unit, a cover enclosing the transmission, a motor connected to the rotatable shaft through the transmission, means for connecting said motor to a source of electric power, said motor being a series universal motor arranged to develop 1.9 horsepower and torque sufficient to rotate said pad at a speed of from 800–900 rpm when the full weight of the power unit, said motor, and the handle rests on said pad and said motor is connected to a source of 120 volt power, the handle being an elongated member carrying a control box at its upper end and being mounted

on and extending upwardly from the transmission extension, said control box comprising spaced side walls, the improvement comprising a switch in the control box connected in the electrical circuit of the power unit, an elongate rigid lever with longitudinal edges, means mounting said lever for pivotal movement about one longitudinal edge thereof on one of said side walls of the control box, said lever having an abutment portion adapted to engage and actuate said switch, and spring positioned adjacent the lever and arranged to be flexed when said lever is gripped and moved away from said switch and to move said abutment portion into contact with said switch when said lever is released.

4,435,871
CLEANER FOR A TUBULAR WICK
Orville O. Johnson, 4011 S. Shady La., Eveleth, Minn. 55734
Filed Jan. 21, 1982, Ser. No. 341,510
Int. Cl.³ B08B *1/00*
U.S. Cl. 15—104 R **5 Claims**



1. A cleaner for loosening accumulated carbon on the top edge of a tubular wick, with the tubular wick having a diameter, comprising, in combination: a circular support having a circular periphery and an annular area adjacent to the periphery, means extending from the annular area adjacent the periphery of the support for at least partial insertion into the carbonized top edge of the tubular wick at a multiplicity of equally spaced locations around the tubular wick and for loosening the carbon when the support is rotated slightly, with the insertion and loosening means comprising: a multiplicity of pointed elements including a pointed shank portion, and means for connecting said pointed elements to said support in an equally spaced relation and in a single circular formation in the annular area of the circular support for engagement into the top edge of the tubular wick, with the annular area of the circular support having a diameter substantially equal to the diameter of the tubular wick, and with the annular area of the support defining an inner, central circular area of the circular support having a diameter slightly less than the diameter of the tubular wick, with the inner, central circular area of the circular support being free of any pointed elements or other protrusions.

4,435,872
SPHEROID PIG LAUNCHER
Vernon Leikam, P.O. Box 2069, Ponca City, Okla. 74602
Filed May 10, 1982, Ser. No. 376,732
Int. Cl.³ B08B *9/04*
U.S. Cl. 15—104.06 A **5 Claims**

1. In a launcher for launching spheroid pigs one at a time into a pipeline comprising:

a downward sloping barrel magazine for holding a multiplicity of spheroid pigs, the magazine having a closable fluid tight opening for loading the pigs on the breech end and a full bore opening valve on the muzzle end in fluid communication with a pipeline the magazine characterized by having a generally downwardly sloping lower surface such that the pigs will pass from the breech end to the muzzle end of the magazine in response to the force of gravity;

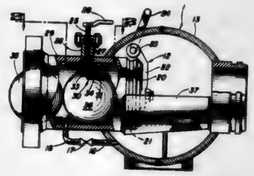
the improvement comprising:

apparatus situated in connection with the magazine upstream of the full bore valve for releasing the pigs one at a time into the pipeline from the magazine;

said apparatus having:

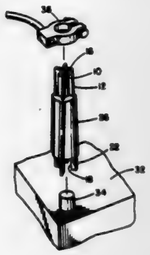
(a) a shaft means passing sealably through the wall of the magazine,

(b) on the exterior of the magazine, a means affixed to the shaft for turning the shaft, and



(c) affixed to the shaft on the interior of the magazine, a catcher-releaser affixed to the end of the shaft having a convexoid surface and a concavoid surface opposite the convexoid surface, the concavoid surface generally adapted to mate with a portion of the surface of one of the pigs, the catcher-releaser having a truncation generally parallel to the long axis of the shaft, and a truncation generally perpendicular to the long axis of the shaft, such that rotation of the shaft will catch and release a single spheroid pig.

4,435,873
BATTERY POST AND TERMINAL CLEANER
James L. Pool, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa
Filed Nov. 29, 1982, Ser. No. 444,969
Int. Cl.³ B23D *79/08*; A47L *13/08*
U.S. Cl. 15—105 **7 Claims**



6. An apparatus for cleaning posts and terminals comprising in combination:

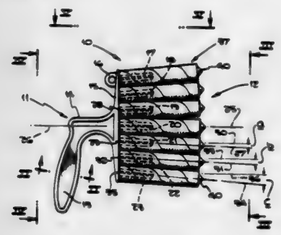
(a) a plurality of blades, said blades having an outside scraping surface at one end and an inside scraping surface at the opposite end;

(b) a body member, said body member having a frustoconical inside cavity, said cavity having a converging array of slots extending uniformly toward a longitudinal axis of the cavity, each of said slots being adapted to slidingly receive one of said blades to adjust the spacing between said blades at said ends;

(c) a guide, said guide having a plurality of notches therein for receiving said blades and retaining said blades in a converging relationship in said body member slots; and

(d) a blade connecting member connected simultaneouly to all of the blades and longitudinally slidable therewith to maintain sliding movement in unison of the blades relative to the body member.

4,435,874
BLIND CLEANING DEVICE
Jeff A. Jacobson, 22 Woodgrove, Irvine, Calif. 92714
Filed Aug. 1, 1983, Ser. No. 519,075
Int. Cl.³ A47L *4/02*
U.S. Cl. 15—210 A **14 Claims**



1. In a blind cleaning device having a handle and a plurality of vertically spaced rigid fingers with cleaning elements extending from a vertical support interconnected to the handle, the improvement which comprises:

said fingers includes a first finger fixedly mounted to said vertical support at generally the midpoint thereof, said first finger having its central longitudinal axis perpendicular to the central longitudinal axis of said vertical support, a pair of second and third fingers fixedly mounted to said vertical support on opposite sides of said first finger, each of said second and third fingers having their central longitudinal axes making an angle of about 1.5° with respect to a line extending from the midpoint of each of said second and third fingers at its respective point of connection to said vertical support along its respective central longitudinal axis outwardly normal to the central longitudinal axis of said vertical support whereby insertion of the fingers between slats of a blind is adapted to progressively clamp the slats between adjacent fingers until the slats abut against the vertical support.

4,435,875
PARALLEL ARM WINDSHIELD WIPER ASSEMBLY
Klaus Hauk, Altrip, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.
Filed May 5, 1982, Ser. No. 375,070
Claims priority, application European Pat. Off., May 13, 1981, 81302130
Int. Cl.³ B60S *1/18*
U.S. Cl. 15—250.23 **1 Claim**

1. An improved parallel arm windshield wiper assembly comprising:

(a) a drive motor attached to a stationary support plate, said support plate having an aperture formed therein with a set of notches arranged about the periphery of said aperture;

(b) a drive spindle passing through both said aperture formed in said support plate and through an aperture formed in a windshield, said drive spindle connected at one end to said motor and having a wiper arm attached to a second end;

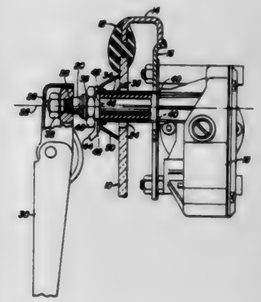
(c) a spacer tube coaxially aligned about said drive spindle and extending through said aperture formed in said windshield, said spacer tube having a pair of outwardly extending tabs formed on first and second ends thereof, said tabs on said first end engaging in said set of notches formed in said support plate;

(d) a sleeve coaxially arranged between said drive spindle and said spacer tube, said sleeve having an externally threaded end surface;

(e) a bracket having an opening formed therein approximate a first end and having a set of notches formed about the periphery of said opening, said bracket being positioned about both said drive spindle and said sleeve with said set of notches mating with said tabs formed on said second end of said spacer tube, said bracket further being retained at said first end by a nut fastened on said threaded end surface of said sleeve;

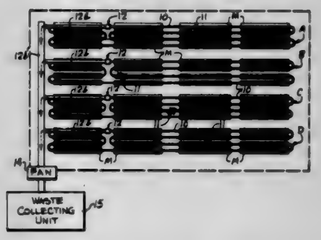
(f) a stud secured to a second end of said bracket;

(g) a control arm aligned parallel to said wiper arm and being pivotally attached at one end to said stud; and



(h) a wiper blade support member pivotally connected to distal ends of both said wiper arm and said control arm, a line drawn between the centers of said drive spindle and said stud combines with said wiper arm, said control arm and said wiper blade support member to form a parallelogram which permits said wiper blade to maintain a constant orientation throughout its oscillatory sweep of said windshield.

4,435,876
FIBER WASTE DISPOSAL SYSTEM FOR TRAVELING PNEUMATIC CLEANERS
William L. Mulligan, Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.
Filed Oct. 13, 1982, Ser. No. 434,115
Int. Cl.³ A47L *5/38*
U.S. Cl. 15—312 R **5 Claims**



1. In a fiber waste disposal system for a texile room containing a plurality of groups of fiber waste generating textile machines and having a plurality of traveling pneumatic cleaners each movable in a predetermined path of travel adjacent a respective group of textile machines for removing fiber waste from the textile machines, each traveling cleaner having at least one collection chamber thereon for collecting fiber waste therein, a plurality of unloading station means corresponding in number to the number of traveling pneumatic cleaners with an unloading station means being mounted adjacent the path of travel of each respective traveling cleaner for removing fiber waste from the collection chamber of the respective traveling

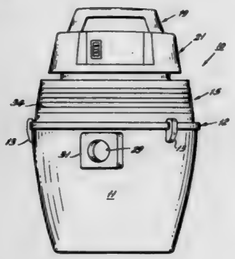
cleaner during a portion of its travel along said path, a fiber waste collection unit connected to said plurality of unloading station means for receiving fiber waste therefrom, suction producing means connected to said plurality of unloading station means and said collection unit for removing fiber waste from the collection chambers of respective traveling cleaners and for transporting such fiber waste from the unloading station means to said collection unit, control means operatively associated with said traveling cleaners and said unloading station means for controlling the operation of said traveling cleaners to provide a fiber waste collecting cycle and a fiber waste unloading cycle, said control means including cooperating means carried by each unloading station means and its associated traveling cleaner for effecting fiber waste unloading of each traveling cleaner during each unloading cycle, the improvement therein comprising said control means further including deactivating means operatively associated with each of said cooperating means for deactivating said cooperating means upon unloading of the associated traveling cleaner to ensure that said traveling cleaners are unloaded only once during each unloading cycle.

4,435,877

NOISE REDUCING MEANS FOR VACUUM CLEANER

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Sep. 30, 1982, Ser. No. 429,446
Int. Cl.³ A47L 9/00
U.S. Cl. 15—326 **8 Claims**



1. A vacuum cleaner including a bypass-type blower motor, a main blower fan connected to said motor and driven thereby to create a stream of working air, a dust filter located in said stream and upstream of said fan, said stream also extending through first and second plenums disposed downstream of said fan with said second plenum being downstream of said first plenum, partition means defining said plenums and including a first partition separating said plenums, said first partition having an opening through which said working air flows from said first plenum to said second plenum, sound muffler means including a section extending across said opening and through which said working air flows in leaving said first plenum and entering said second plenum, said section being constructed of foam material and having a plurality of relatively large perforations aligned with said opening.

4,435,878

POULTRY EVISCERATING TOOL

Rudolf J. Tieleman, Broekhuizerweg 6, 6983 BM Doesburg, Netherlands

Filed Jan. 24, 1983, Ser. No. 460,432
Int. Cl.³ A22C 21/06
U.S. Cl. 17—11 **8 Claims**

1. A tool for eviscerating a poultry carcass by entering the body cavity of the carcass from a rear access opening, said tool comprising a shaft and a loop member mounted on said shaft, said loop being vertically elongated and being formed of two symmetrical interconnected halves which lie on opposite sides of a central plane,

each of said halves of the loop including an upper portion, an intermediate portion, a lower portion and a bottom, each said upper portion extending downwardly from the shaft in a direction which diverges from the central plane, each said intermediate portion extending downwardly from the



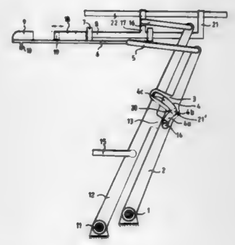
upper portion in a direction which converges toward the central plane, each said lower portion extending downwardly from the intermediate portion towards the central plane, and each said bottom extending from the lower portion to the central plane and having a center of curvature located in said central plane and a radius which is less than the distance from the central plane to the lower end of the upper portion.

4,435,879

MODELLING OR PACKING DEVICE FOR FOWL

Kornelis van 't Slot, Uddel, Netherlands, assignor to Moba Holding Barneveld B.V., Barneveld, Netherlands

Filed Jun. 11, 1982, Ser. No. 388,658
Claims priority, application Netherlands, Jun. 17, 1981, 8102913
Int. Cl.³ A22C 21/00
U.S. Cl. 17—11 **4 Claims**



1. Device for dressing a poultry, provided with a first pushing member (6) adapted to push the body of the poultry in a fixed direction and a second pushing member (18) adapted to push the ends of the legs of the poultry in nearly the same direction to lay the said legs against the said body, provided with a driving mechanism (15, 12, 16, 14, 4, 2, 5) for both pushing members which causes these members to carry out a forward and backward stroke, wherewith the second pushing member (18) moves faster than the first one (6) at the end of the forward stroke, in which each pushing member is coupled to a different one of two pivotable arms (2, 12) having different pivots (1, 11) wherewith a member (3) having a control slit (4) is connected to one (2) of the said arms and a control member

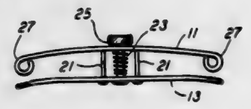
(14) fitting in said slit (4) is connected to the other of said arms, said slit having a first portion (4a) which is directed mainly radially with respect to the pivot of the arm connected to the member having the control slit and a second portion (4c) that is mainly tangentially directed with respect to said pivot, one (12) of the said arms being connected to a driving means (15) to be pivoted about its pivot (11).

4,435,880

COLLAR CLASP

Irving Gardner, P.O. Box 294, Hunter, N.Y. 12442

Continuation-in-part of Ser. No. 312,378, Oct. 19, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,275
Int. Cl.³ A41D 25/04, 25/10
U.S. Cl. 24—49 KC **15 Claims**



1. A collar clasp comprising:

a backing bar including an elongated member, said backing bar having a central opening and two side openings therein, said central opening being centrally located along the major axis of said backing bar and the two side openings located substantially equally distant along said major axis on opposite sides of said central opening, both the central opening and the two side openings being grouped together;

a clasp bar including an elongated member, said clasp bar having a central opening and two side openings therein, said central opening being centrally located along the major axis of said clasp bar and the two side openings being located substantially equally distant along said major axis on opposite sides of said centrally located opening, both the central opening and the two side openings being grouped together;

a thread means including a knob aligned with and located through both the central opening in said backing bar and the central opening in said clasp bar, said thread means being adapted to draw said backing bar and said clasp bar together; and

a pair of guide rods aligned with and located through the two side openings in said backing bar and the two side openings in said clasp bar to keep the clasp bar and backing bar aligned in both the open and in the closed position.

4,435,881

HARNESS CLIP

Noboru Yamaguchi, and Seiichi Satoh, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 23, 1981, Ser. No. 324,108
Claims priority, application Japan, Nov. 28, 1980, 55-170639[U]
Int. Cl.³ B65D 63/10
U.S. Cl. 24—16 PB **7 Claims**

1. A harness clip comprising:

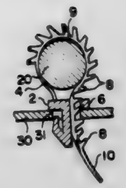
(a) an engaging member having a hole therethrough and a stepped portion within said hole,

(b) a leg portion integrally connected to said engaging member and extending from one side of said engaging member, said leg portion having an engaging portion extending to one side of said leg portion,

(c) a flexible strap integrally connected to said engaging member and extending from the other side of said engaging member, said strap having a plurality of teeth on one side thereof and being flat on the other side thereof,

(d) said strap adapted to wrap around a harness for contacting said harness with said flat side of said strap and for subsequent passage through said hole of said engaging member, one of said plurality of teeth of said strap engaging said stepped portion of said engaging member for securing said harness to said engaging member,

(e) said leg portion and said strap adapted to be extended within a hole of a panel for securing said clip thereto, said engaging portion of said leg portion flexibly bent by said



panel and passing through said panel hole, said engaging member contacting one side of said panel upon insertion of said leg portion and said strap through said panel hole, and

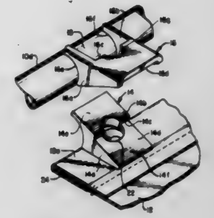
(f) said teeth of said strap positioned apart from one another such that one of said plurality of teeth resiliently contacts the other side of said panel upon contact of said engaging member with said one side of said panel for biasing said clip in secure engagement with said panel.

4,435,882

ASSEMBLY FOR HOLDING AND TENSIONING A WEBBING

Götz W. Unger, East Greenville, Pa., assignor to Knoll International, Inc., New York, N.Y.

Continuation of Ser. No. 311,637, Oct. 15, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,075
Int. Cl.³ A44C 5/18; A44B 21/00, 17/00
U.S. Cl. 24—265 R **7 Claims**



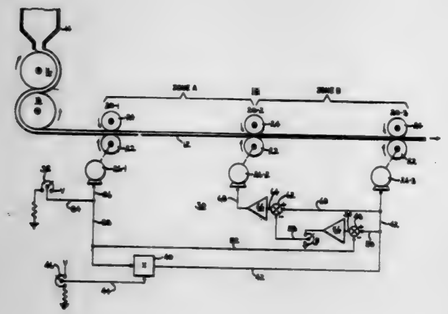
1. An assembly for holding and tensioning a webbing end to a framework comprising: a female member having opposed side walls; first and second abutment surfaces generally perpendicular to each other and disposed between said opposed side walls, said opposed side walls each having an edge portion; said female member being adapted to be fastened to a framework, in which said edge portions of the opposed side walls register with the framework; and a male member having opposed side walls and first and second abutment surfaces generally perpendicular to each other and disposed between the opposed side walls of said male member; said male member cooperating with said female member such that the first and second abutment surfaces of the male member are positioned respectively against the first and second abutment surfaces of the female member, and the opposed side walls of the male member are positioned between the opposed side walls of the female member; said male member including a portion thereof with a webbing attachment surface, opposed to and forming an acute angle with said second abutment surface of said male member.

4,435,883

STRETCH RATIO CONTROL CIRCUIT FOR MULTIPLE STATION WEB STRETCHING APPARATUS

Jerome D. Muszynski, Cudahy, Wis., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Sep. 28, 1981, Ser. No. 306,463
Int. Cl.³ D06C 3/00; H02P 7/00
U.S. Cl. 26—71 8 Claims



1. A control circuit for apparatus stretching a web between pulling stations of the type having pull rolls in driving engagement with the web whereby the speed of the web in contact with the pull rolls is equal to the surface speed of the pull rolls and wherein each pulling station is powered by an electronically controllable variable speed drive responsive to provide pull roll speed which is proportional to an electronic signal, the apparatus having an intake station receiving the web to be stretched, a discharge station for discharging the stretched web, and at least one intermediate station, the overall stretching of the web extending between the intake and discharge stations with intermediate stretching occurring in intermediate zones between adjacent stations, said control circuit comprising:

first signal generating means (32) for providing a first signal to one of the intake and discharge stations corresponding to the desired speed of the web at the one station;

multiplier means (40) coupled to said first signal generating means for altering the first signal in accordance with the amount of overall stretching desired in the apparatus and for providing a second signal having an equivalent speed offset to the other of the intake and discharge stations corresponding to the speed of the web at the other station and having an equivalent difference in speed from the first signal to obtain the desired overall stretching; and

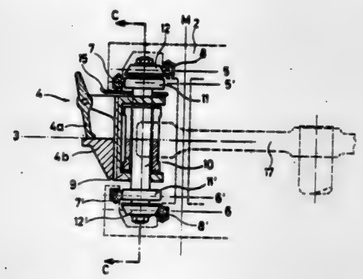
second signal generating means (50–68) coupled to said first signal generating means and to said multiplier means for deriving a signal indicative of the overall stretching and for reducing the discharge station signal by a selected amount of the signal indicative of the overall stretching to provide a third signal to the intermediate station distributing the overall stretching in the apparatus between the intermediate zones, wherein said third signal is obtained by subtracting a selected amount of the difference between said first and second signals from the discharge station signal.

4,435,884

CLIP-CHAIN TRACK FOR TENTER CLIPS

Alfred Bösch, Lustenau, Austria, assignor to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 280,017, Jun. 30, 1981, abandoned. This application Sep. 28, 1981, Ser. No. 306,416
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024890
Int. Cl.³ D06C 3/04
U.S. Cl. 26—93 7 Claims



1. In a clip-chain track for tenter clips, with roller guidance in tenter frames for sheet material, composed of a clip-chain support with rod-like, endless and jointless guide rails of small cross-section mounted pairwise to the clip-chain support on both sides of the tensioning plane of the tenter chain, and with tenter clip rollers resting by their running surfaces against said guide rails,

the improvement comprising a pair of vertical spindle means connected to a clip body of each said tenter clip and mounting separate support rollers and running rollers on both sides of a tensioning plane of a sheet material in two separate transverse planes on each of said spindle means, with the support rollers absorbing vertical forces and having slanted running surfaces of opposite inclinations, and

separate support rails mounted on one side of their associated support rollers and running rails mounted on the other side of their associated running rollers in the said transverse planes at the clip-chain support.

4,435,885

PROCESS AND APPARATUS FOR MANUFACTURING STORAGE BATTERY PLATES

Yuichi Suzuki, and Ichiro Sano, both of Yokohama, Japan, assignors to Furukawa Denchi Kabushiki Kaisha and Furukawa Denki Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 239,883, Mar. 2, 1981, abandoned. This application Aug. 19, 1983, Ser. No. 524,471
Claims priority, application Japan, Feb. 28, 1980, 55-23436
Int. Cl.³ B23P 19/00, 25/00; B26D 7/00, 7/06
U.S. Cl. 29—2 8 Claims



1. Apparatus for use in the manufacture of plates of an electrical storage battery in a continuous operation, comprising:

a punch press for punching grids of openings in a continuous strip of stock material and for partially severing plates from said stock strip material around the periphery of said plates to define the perimeter of said plates while leaving relatively weak and easily rupturable bridges interconnecting said plates with surrounding stock strip material,

said press including means for form finishing said plates simultaneously with the partial severing and cutting die means for the partial severing;

a filling mechanism operative to fill corrosive paste material into the openings of said grids;

an ejector mechanism for removing said plates from said surrounding stock strip material by rupturing said bridges; and

a drive mechanism for feeding said stock material from a source thereof sequentially through said punch press, said filling mechanism, and said ejector mechanism.

5. In a process for the manufacture of plates of an electrical storage battery which includes the steps of punching a grid of openings in stock strip material, filling said openings with a corrosive paste material, and subsequently punching said battery plates out of said stock strip material, the improvement comprising:

partially severing said stock strip material at positions defining the perimeter of said plates along frame-shaped cut lines each comprising a plurality of longitudinally spaced cut lines which define said perimeter while simultaneously form finishing said plates, the adjacent ends of the respective cut lines being spaced from each other by a distance defining relatively weak and easily rupturable bridges interconnecting said plate with said stock strip material, said bridges supporting said plate within said stock strip material to form a plurality of plate blanks each defined by a frame-shape cut line and connected through the bridges to the stock strip material surrounding the perimeter of each plate blank;

subsequently filling said openings with said corrosive paste material, each plate blank being supported through the bridges by the surrounding stock strip material; and

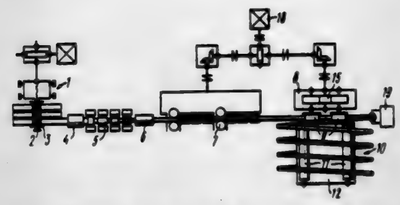
subsequently ejecting said plates from the surrounding stock strip material by rupturing said bridges.

4,435,886

PIPE-WELDING MILL FOR PRODUCTION OF COILED PIPES

Jury F. Shevakin; Igor I. Dobkin, both of Moscow; Efim M. Donskoi, Zheleznodorozhny; Grigory L. Manov, Moscow; Vasily V. Zhdanov, Moscow; Elena S. Berger, Moscow; Valery M. Popov, Sverdlovskoi; Alexei A. Pavlov, Sverdlovskoi, and Rashid Z. Akchurin, Sverdlovskoi, all of U.S.S.R., assignors to Gosudarstvenny Nauchnoissledovatelsky, Proektny I Konstruktorsky Institut Splavov I Obrabotki Tsvetnykh Metallov "Giprotsvetmetobrabotka", U.S.S.R.

Filed Oct. 29, 1981, Ser. No. 316,123
Int. Cl.³ B21C 37/00, 47/00
U.S. Cl. 29—33 D 2 Claims



1. In a pipe-welding mill for the production of coiled pipes from coiled strips including a coil preparation section; an arrangement for unwinding coils prepared in said section; means for displacing said arrangement in a direction perpendicular to the direction of movement of the pipe in said mill; a magazine including a reel containing said coils, said magazine being mounted on said unwinding arrangement; a strip coupler installed behind said coil preparation section in the direction of movement of the pipe; a shaping stand installed behind said strip coupler; a welding stand installed behind said shaping stand; a drawing stand installed behind said welding stand; a coiling arrangement installed behind said drawing stand in the direction of movement of the pipe, said coiling arrangement including bending rollers a receiving arrangement including receiving rollers; common drive means for driving both said bending and receiving rollers; and a cutting arrangement, the improvement comprising:

said receiving arrangement includes a platform mounted for tilting movement with respect to the axes of said bending rollers; means for tilting said platform; said receiving rollers of said receiving arrangement being mounted for rotation on said tiltable platform; universal joint means for coupling said receiving rollers to said common drive means of the bending rollers so that said receiving rollers tilt together with said platform; and wherein said cutting arrangement is installed behind said bending rollers in the path of a turn of the pipe being received in said receiving arrangement.

4,435,887

METHOD OF MAKING PROJECTILE

Knare R. Strandli, and Arne M. Östlie, both of Raufoss, Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Division of Ser. No. 448,539, Mar. 27, 1981. This application Dec. 22, 1982, Ser. No. 452,087
Int. Cl.³ B21K 21/06
U.S. Cl. 29—123 2 Claims



1. In the manufacture of a multi-capability projectile of the type having a heavy armour piercing primary penetration element surrounded over its full length by a secondary armour piercing penetration element which extends forward of the primary penetration element to form a cavity having a bursting charge therein, the secondary penetration element being constructed to splinter and fragment upon ignition of the bursting charge, and a nose portion ahead of the secondary penetration element and having an impact ignition charge therein, the improvement comprising attaching the primary penetration element to the secondary penetration element by the following steps:

taking the secondary penetration element, which has a large internal diameter front portion, a smaller internal diameter rearward portion and a radially extending, axially facing shoulder between the front and rear portions, and arranging said secondary penetration element in a position to receive the back end of the primary penetration element in the smaller internal diameter rearward portion,

inserting the back of the primary penetration element, which back is cylindrically shaped, into the said smaller internal diameter rearward portion of the secondary penetration element, and

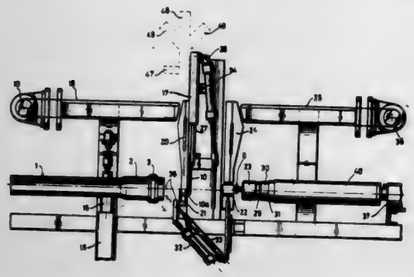
forcing an annular tool down into the said shoulder to form an annular groove defining a rim radially inwardly thereof and forcing that rim into rimmed contact with the primary penetration element on the cylindrically shaped side thereof to positively secure the primary penetration element in said smaller internal diameter portion.

4,435,888

APPARATUS FOR INSTALLING A SEALING RING

Wilhelmus F. T. C. Olderaan, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Division of Ser. No. 134,341, Mar. 26, 1980, Pat. No. 4,304,037.
This application Nov. 6, 1981, Ser. No. 318,822
Claims priority, application Netherlands, Mar. 29, 1979, 7902473
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—235 4 Claims



1. Apparatus for installing a sealing ring in an annular groove chamber of a socket end of a pipe part, comprising a sealing ring retaining member, a sealing ring impression member and retaining means so as to keep a sealing ring in its impressed position, as well as means for moving the retaining means from an inactive position into an active position and reverse, in which the retaining means comprises two elements being movable with respect to one another, and the impression member being movable in between said elements, said retaining means comprising a first mandrel portion being connected with a mandrel, said first mandrel portion adjoining said mandrel through an abutment edge, and a second mandrel portion, which expandable parts form a tapering surface when expanded, whereby the periphery of the tapering plane formed by said parts at least equals the periphery of a supporting ring.

4,435,889

METHOD AND APPARATUS FOR THE PRODUCTION OF A ROLLING BEARING CAGE

Peter Horling, Mainberg; Hermann Hetterich, Heidenfeld; Herbert Dobhan, Bergrheinfeld, and Norbert Klupfel, Hambach, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 287,898
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030247
Int. Cl.³ B21D *53/12*
U.S. Cl. 29—148.4 C 3 Claims



1. A process for the production of a cage part for the cage of a rolling bearing, wherein the cage part is generally annular with alternate recesses for receiving rolling element and flat sections adapted to engage other cage parts, whereby the cage parts may be held together by riveting; and said method comprising forming a ring of a material of round or rectangular cross-section, and thereafter pressing said ring in a press having a hollow die with a rectangular cross-section and recesses distributed about the bottom of the hollow thereon, whereby the cage part is formed to its final shape and the material of the ring flows into said recess to form rivet pins simultaneously with the forming of the cage part, said pressing step forming the cage part with a substantially rectangular cross-section.

4,435,890

METHOD FOR PRODUCTION OF PLASTIC EXTRUSION-COATED BEARING RACES FOR ROLLING BEARINGS AND BEARING RACES PRODUCED THEREBY

Horst M. Ernst, Eltingshausen; Manfred Brandenstein, Eussenheim; Lothar Walter, and Armin Olschewski, both of Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 372,197
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117162
Int. Cl.³ B21D *53/10*; B23P *17/00*
U.S. Cl. 29—148.4 R 3 Claims



1. A method for making complementary pairs of race rings for rolling bearing assemblies from a unitary metallic base component formed with the raceways for the rings consisting of the steps of:

a. forming at least one annular separation seam in the metallic base component defining a bridge which can be severed to form the paired bearing race rings;
b. hardening the metallic base component;
c. machining the raceways of the rings simultaneously or successively;
d. plastic coating the base component to form housing sections adjacent the bearing and side surfaces of the race rings exposing the raceways and separation seam; and
e. separating the base component at the bridge to form the finished race rings.

4,435,891

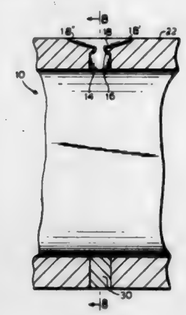
METHOD OF MANUFACTURING A SANITARY FAN SPRAY NOZZLE

Charles B. Nicholson, Glens Falls, N.Y., assignor to Albany International Corporation, Menands, N.Y.

Division of Ser. No. 235,895, Feb. 19, 1981, abandoned. This application Oct. 20, 1982, Ser. No. 435,360
Int. Cl.³ B23P *15/00, 13/00*
U.S. Cl. 29—157 C 2 Claims

1. A method for manufacturing a fan spray nozzle comprising the steps of:

providing a substantially cylindrical tube having interior and exterior surfaces;
drilling a first pair of coaxial, diametrically opposed holes of relatively small diameter through the walls of said tube;
enlarging the diameter of one of said diametrically opposed holes by drilling coaxially therethrough with a drill bit having a larger diameter than the diameter of said diametrically opposed holes;
enlarging the diameter of a portion of the other of said diametrically opposed holes by passing said drill bit through said one hole and the interior of said tube until it contacts the interior surface defining an interior opening of said other hole, drilling along the axis of said other hole, and stopping said drilling before said bit fully penetrates the exterior surface of said tube such that said other hole includes a first cylindrical hole portion extending within the walls of said tube from the interior surface thereof to a point between said interior surface and said exterior surface and a second hole portion of lesser diameter than said first hole portion extending from said point to said exterior surface;
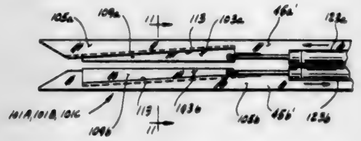


grinding an arcuate groove within the walls of said tube, said groove extending below the exterior surface of said tube and intersecting said other hole at a depth which is between the exterior surface of said tube and said point, said groove being ground to have a length dimension substantially parallel to the longitudinal axis of said tube; and
plugging said one of said diametrically opposed holes after the enlarging thereof, whereby water provided under pressure to the cylindrical tube is dispersed in a predetermined pattern.

4,435,892

METHOD OF DISASSEMBLING WOODEN PALLETS

Lonnie M. Williams, Greene County, Ill., assignor to Williams Panel Board Company, Roodhouse, Ill.

Division of Ser. No. 91,517, Nov. 5, 1979, Pat. No. 4,320,570.
This application Mar. 8, 1982, Ser. No. 356,246
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—239 4 Claims



1. Method of disassembling a nailed together wood structure, such as a wood pallet or the like, having a plurality of longitudinal stringers and a plurality of slats extending transversely of the stringers and nailed to at least one face of the stringers, said method comprising the steps of:

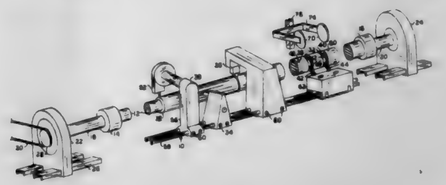
moving a wood structure from a loading position to a cutting position, said wood structure being moved in the longitudinal direction of its above-said stringers;
positioning a pair of shear blades on opposite sides of one stringer at a respective interface of said one stringer and the slats nailed thereto, said shear blades being movable toward and away from one another between a retracted position in which said shear blades are clear of said wood structure and a cutting position in which the shear blades cooperate with one another so as to shear said nails; and
actuating said shear blades for movement from their retracted to their cutting positions so as to shear the nails holding said slats to said one stringer at said one interface thereby freeing the slats from said one stringer.

4,435,893

METHOD OF MANUFACTURE OF HYDRAULIC CYLINDERS UTILIZING BRONZE OVERLAYS FOR ENGAGING SURFACES

James O. Sims, Rte. #2 Box 246, Hartselle, Ala. 35640

Filed Oct. 13, 1981, Ser. No. 310,630
Int. Cl.³ B23P *17/00, 15/00*
U.S. Cl. 29—412 9 Claims



1. The process of manufacturing components of a fluid-operated cylinder, which cylinder comprises a pair of circular members, an outer, hollow, bearing member and an inner piston member, including the following steps:

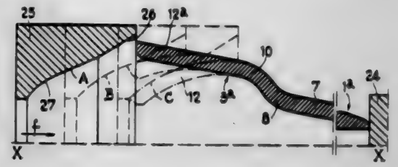
rotating an elongated steel member about its longitudinal axis;
fusing onto the rotating steel member a continuous layer of bronze, said bronze being applied by deposition from a bronze wire;
monitoring the thickness of said bronze layer and controlling the depth of said layer, including the deposition to a minimum thickness of 0.031 inch;
machining the surface of said bronze layer to a selected diameter and finish;
cutting a series of spaced grooves through said bronze layers into the steel of said steel member, said grooves being cut to selected depths and widths; and
severing a discrete length from said steel member, whereby said length includes at least a series of said spaced grooves, and whereby a discrete one of said circular members of a said cylinder is fabricated.

4,435,894

DUCTILE CAST IRON PIPE HAVING CONSTRICTED END CASING

Claude Fuminier, and Michel Pierrel, both of Pont-a-Mousson, France, assignors to Pont-A-Mousson S.A., Nancy, France

Division of Ser. No. 146,736, May 2, 1980, Pat. No. 4,330,015.
This application Feb. 12, 1982, Ser. No. 348,580
Claims priority, application France, May 17, 1979, 79 12559
Int. Cl.³ B22D *11/126*
U.S. Cl. 29—527.5 3 Claims



1. A method of making a pipe or similar tubular member of ductile cast iron having an end casing, comprising the steps of: making by centrifugal casting a pipe with a casing preform using an end casing shell and a corresponding casing mandrel, the shell and mandrel forming between them an annular space

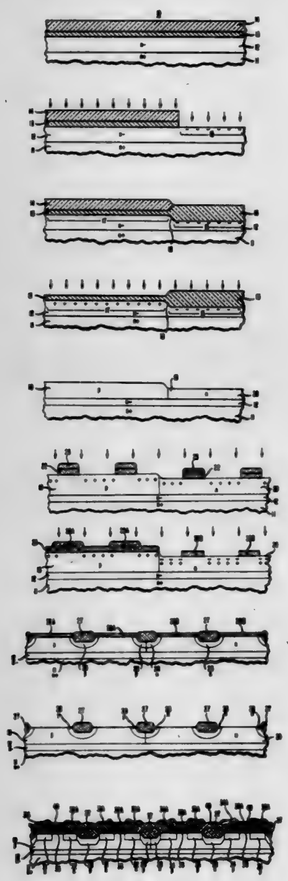
having, starting from the entrance of the casing, a first converging rectilinear profile followed by a second convex curved profile; and, subsequently, after removing the centrifuged from the mold, progressively deforming the rectilinear profile so as to curve it towards the axis of the pipe by exerting a force on the end of the preform which has an axial component and a radial component directed towards the axis of the pipe.

4,435,895

PROCESS FOR FORMING COMPLEMENTARY INTEGRATED CIRCUIT DEVICES

Louis C. Parrillo, Warren; George W. Reutlinger, Florham Park, and Li-Kong Wang, Martinsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1982, Ser. No. 365,396
Int. Cl.³ H01L *21/22, 29/78*
U.S. Cl. 29—571 **13 Claims**



1. In the manufacture of complementary integrated circuits in a silicon wafer, the process for forming complementary chanstops at the surface of the water between regions where transistors are to be formed comprising the steps of,

providing a silicon wafer whose surface includes p-type and n-type regions in which transistors are to be formed,

implanting acceptor ions selectively in the surface regions of the wafer where chanstops are to be formed in both the p-type and n-type regions,

implanting donor ions selectively only into the n-type regions where the n-type chanstops are to be formed, the acceptor ions being chosen to have a greater tendency to segregate in a growing oxide than the donor ions and the dosages being substantially similar, and

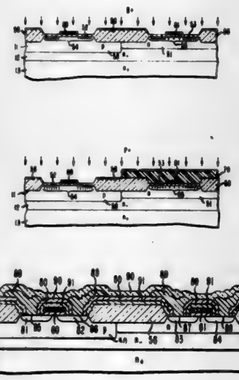
heating the wafer in an oxidizing atmosphere while the portions of the wafer in which chanstops are to be formed are selectively exposed for oxidizing the surface regions where chanstops are to be formed, whereby as a result of the difference in segregation characteristics, underlying the oxide there are formed in the p-type surface regions localized p-type chanstops where acceptor ions are in excess and in the n-type surface regions localized n-type chanstops where the donor ions are in excess.

4,435,896

METHOD FOR FABRICATING COMPLEMENTARY FIELD EFFECT TRANSISTOR DEVICES

Louis C. Parrillo, Warren, N.J., and Richard S. Payne, Andover, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 328,150, Dec. 7, 1981, abandoned. This application Jun. 29, 1983, Ser. No. 508,923
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **14 Claims**



8. A method for manufacturing a complementary MOS device which is characterized by the method for forming source/drain regions in each of two contiguous tub regions of opposite conductivity type of a silicon body comprising the steps of:

forming a thin oxide layer over the areas of each of the two tub regions where transistors are to be formed and a relatively thicker layer silicon oxide layer over the p-n junction region between the two regions;

depositing a polysilicon layer over the body and patterning it to form gate conductors over the central portion of the two transistor areas; and

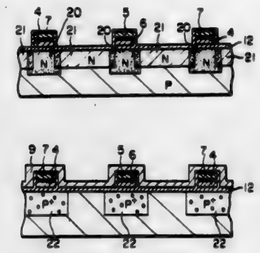
subjecting the body to donor and acceptor ion implantations, the acceptor implantation being unmasked to permit penetration in both the n-type and p-type tub regions, and the donor implantation being masked to permit penetration into only the p-type tub region whereby p-type source/-drain regions are formed in the n-type tub regions and n-type source/drain regions are formed in the p-type tub regions, each aligned with the gate conductors.

4,435,897

METHOD FOR FABRICATING SOLID-STATE IMAGE SENSOR

Takao Kuroda, Osaka, and Kenju Horii, Shiga, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Nov. 12, 1981, Ser. No. 320,845
Claims priority, application Japan, Nov. 19, 1980, 55-163654
Int. Cl.³ H01L *31/10*
U.S. Cl. 29—572 **1 Claim**



1. A method for the fabrication of a solid-state image sensor of the charge-coupled type having a plurality of photoelectric transducer means on a semiconductor substrate of one conductivity type, a corresponding plurality of excessive charge drain regions coupled to respective ones of said transducer means, and a plurality of first electrodes and second electrodes which function as gate electrodes overlying corresponding channels coupled between said transducer means and said excessive charge drain regions for controlling the discharge of excessive charge from each of said transducer means to the corresponding excessive charge drain region, said method comprising the steps of:

forming channel stopper regions by introducing impurities of the same conductivity type as the substrate into each zone where a channel is situated and into each zone where a corresponding excessive charge drain region is situated, said impurities being introduced from the zones where each first electrode and each second electrode are situated, and introducing impurities with conductivity type opposite to that of the substrate into the excessive charge drain region of the zone where each first electrode is formed;

forming said first electrodes and said second electrodes on a surface of said substrate overlying corresponding channels; and

introducing conductivity-type-determining impurities into the surface of said substrate upon which said first and second electrodes are formed, using said electrodes as a diffusion mask, to form said excessive charge drain regions and said photoelectric transducer means in said substrate.

4,435,898

METHOD FOR MAKING A BASE ETCHED TRANSISTOR INTEGRATED CIRCUIT

Santosh P. Gaur; John S. Lechaton, both of Wappingers Falls, and Gurumakonda R. Srinivasan, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,731
Int. Cl.³ H01L *21/302, 21/22*
U.S. Cl. 29—577 C **12 Claims**

1. A method of making a high performance bipolar transistor in an integrated circuit comprising:

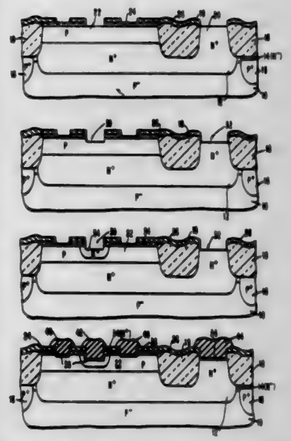
providing a monocrystalline silicon substrate having a pattern of regions of said silicon isolated from one another by a dielectric isolation pattern on one major surface of said substrate;

providing a subcollector region within said silicon and spaced from said major surface;

forming a base region in at least certain of said regions of silicon down to said subcollector region wherein said base region has a surface concentration of more than about 1×10^{18} atoms/cc;

forming a surface mask opening down to the surface of the said silicon over the area in which a depression is planned to be formed;

reactive ion etching to form said depression having a depth



between about 70 to 100 nanometers in the portion of said base region wherein an emitter region is planned to be formed;

the sides of said depression are substantially vertical without undercutting and the bottom of said depression is substantially planar from one vertical side to another vertical side;

forming an emitter region in said etched portion of said base region and heating said emitter region wherein a narrow intrinsic base region is formed; and

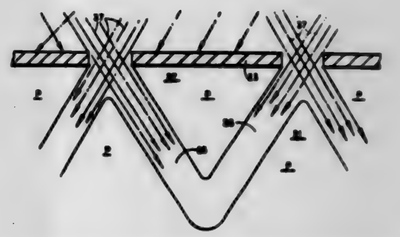
making contacts to each of the elements of the said bipolar transistor.

4,435,899

METHOD OF PRODUCING LATERAL TRANSISTOR SEPARATED FROM SUBSTRATE BY INTERSECTING SLOTS FILLED WITH SUBSTRATE OXIDE

Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 239,750, Mar. 2, 1981. This application Dec. 16, 1982, Ser. No. 450,310
Int. Cl.³ H01L *21/265, 21/302*
U.S. Cl. 29—577 R **11 Claims**



1. A method for producing an array of sub-micron dimen-

sioned NPN type lateral transistors formed in a silicon substrate doped P-type, comprising the steps of:

forming a plurality of first sidewalls of pairs of intersecting slots in spaced apart relation across the substrate defining semi-arrays of V shaped intermediate regions which will become transistors;

oxidizing the substrate and intermediate regions to fill said slots and cover the surface of the substrate through which they were made;

forming a plurality of second sidewalls of orthogonal slots relative to said pairs of slots dividing the semi-arrays of regions into individual transistor active regions;

N+ doping each of said active regions through the inner opposed second sidewalls;

driving in said doping to comprise emitter and collector regions on respective sides of original P substrate comprising the base regions;

further oxidizing said substrate to fill in said orthogonal slots and insure total peripheral oxide isolation of each transistor active region; and

forming metallization patterns in electrical connection with the respective emitter, base and collector regions.

4,435,900

METHOD OF MANUFACTURING A MAGNETIC HEAD UNIT

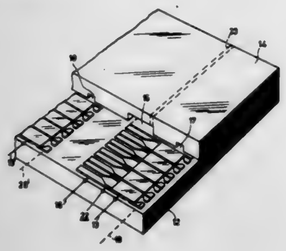
Johannes de Wilde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 200,820, Oct. 27, 1980. This application Jun. 25, 1982, Ser. No. 392,116

Claims priority, application Netherlands, Nov. 28, 1979, 7908611

Int. Cl.³ G11B *5/42*

U.S. Cl. 29—603 **4 Claims**



1. A method of manufacturing a magnetic head unit having a plurality of transducing elements arranged in a housing, comprising:

providing a substrate having a plurality of transducing elements and associated bonding pads arranged in a row;

covering the transducing elements with a silicon cover plate having a surface facing the transducing elements and also having a groove arranged through the surface so that the groove is disposed above the bonding pads, and further arranging the cover plate to be in a good thermally-conducting relationship with the transducing elements;

removing material above the groove in the cover plate to expose the bonding pads; and

arranging the resulting assembly in a housing such that the cover plate is in a good thermally-conducting relationship with the housing.

4,435,901

METHOD OF MANUFACTURING SCISSORS AND SCISSORS

Masatoshi Nishikawa, No. 56, Aza-Chira, Sanjoh, Bisai City, Aichi Prefecture, Japan

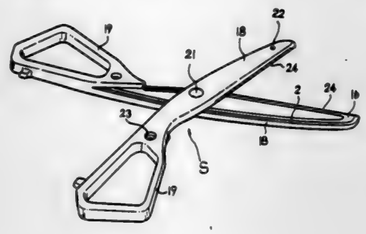
Continuation of Ser. No. 29,700, Apr. 3, 1979, Pat. No. 4,250,620. This application Jan. 8, 1981, Ser. No. 223,325

Claims priority, application Japan, Nov. 2, 1978, 53-135352

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ B26B *13/02*; B21K *11/06*

U.S. Cl. 30—254 **2 Claims**



1. Safety scissors that include two elongated scissor members that are pivotally joined together at a point intermediate their ends by a pivot pin so as to divide each scissor member into a gripping section and a cutting section, the improvement being that the cutting section of each scissor member is composed of a generally dish-shaped metallic member partially embedded in a plastic matrix, said generally dish-shaped metallic member consisting of an elongated and generally flat piece of metal that includes a large recessed central portion that extends on both sides of said pivot pin for substantially the full length of said cutting section and which is surrounded by a narrow outwardly extending generally oblong rim portion, one portion of said narrow rim portion serving as the sharp cutting edge for each scissor member, said large recessed central portion having a plurality of holes therein, said holes being located on both sides of said pivot pin, plastics material both filling said large recessed central portion to a level slightly below the level of said narrow rim portion and extending through said plurality of holes to the area behind said large recessed portion so as to form a sturdy support for the entire metallic member, whereby when said scissor members are moved back and forth relative to each other the only portions which come into direct sliding contact are the generally oblong narrow rim portions.

4,435,902

ARTICULATED BOOM WATER JET CUTTING APPARATUS

John E. Mercer; John H. Olsen, and Stephen Elkins, all of King County, Wash., assignors to Flow Industries, Inc., Kent, Wash.

Filed Dec. 16, 1980, Ser. No. 216,910

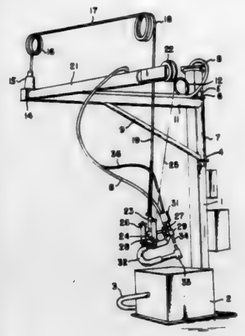
Int. Cl.³ B26F *3/00*

U.S. Cl. 30—296 R **11 Claims**

1. A fluid jet cutting apparatus comprising:

a cutting head including a nozzle for forming a cutting jet for cutting a workpiece with a jet of high velocity fluid and a jet catching means for catching any cutting jet formed by said nozzle and support means for connecting said cutting jet to said jet cutting means; and,

translation means for supporting said cutting head while allowing movement in two directions; and,



rotational translation means connecting said translation means to said cutting head for allowing rotation in three perpendicular axes.

4,435,903

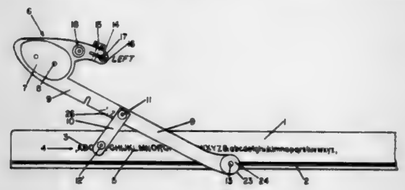
LEFT-HANDED LETTERER

Philip E. Warner, 56 Hilton Rd., Mount Holly, N.J. 08060

Filed Aug. 24, 1981, Ser. No. 295,707

Int. Cl.³ B43I *13/10*

U.S. Cl. 33—23 D **5 Claims**



1. A lettering device for drawing characters for use in connection with a lettering template having character grooves and a horizontal guide pin groove, comprising:

a body;

a guide pin;

a tracer pin; and

writing instrument holding means for holding a writing instrument; said guide pin, said tracer pin and said writing instrument holding means being located at three spaced positions on said body at vertices of a right triangle, said tracer pin being located at the right angle vertex; and

knob means on said body for providing an element to be held with the hand of the user for manipulation of the lettering device on the lettering template, said knob means being located outside of said right triangle adjacent and closest to that leg of the right triangle which interconnects said writing instrument holding means and said tracer pin; whereby the lettering device can be easily manipulated by the left hand of the user.

4,435,904

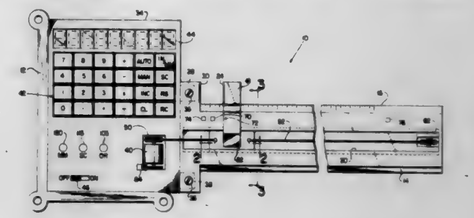
AUTOMATED MEASURING SCALE

David J. Logan, Glastonbury; Ronald B. Webster, Ellington, and Daniel J. Sullivan, Hartford, all of Conn., assignors to Gerber Scientific Products, Inc., Manchester, Conn.

Filed Feb. 8, 1982, Ser. No. 346,998

Int. Cl.³ G01B *3/20, 5/02*

U.S. Cl. 33—143 K **15 Claims**



1. An automated measuring scale for making measurements of linear extent in a selected measuring direction comprising:

a base having a linear guide for aligning the scale in a measuring position aligned with a selected measuring direction, and including means defining a reference position;

an index marker slidably mounted on the base and movable relative thereto toward and away from said reference position to identify linear measurements of various extent along the base in the measuring direction, said index marker including a marking guide for enabling a mark to be made on a sheet placed beneath said base;

motor means also mounted on the base and connected in driving relationship with the movable index marker for moving the marker back and forth relative to the base in the measuring direction; and

control means connected with the motor means and including a command entry means having a keyboard mounted on the base for manually entering measurement commands, and processing means responsive to the measurement commands entered through the keyboard for causing the motor means to move the index marker relative to the base by commanded amounts whereby measurements of specified linear extent may be produced by movement of the index marker.

4,435,905

TELESCOPING MAGNETIC BALL BAR TEST GAGE

James B. Bryan, Pleasanton, Calif., assignor to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Filed Mar. 15, 1982, Ser. No. 358,084

Int. Cl.³ G01B *7/31*

U.S. Cl. 33—181 R **10 Claims**

1. A test gage for determining the accuracy of an associated machine having a servo drive, which comprises:

a first gage ball;

a second gage ball;

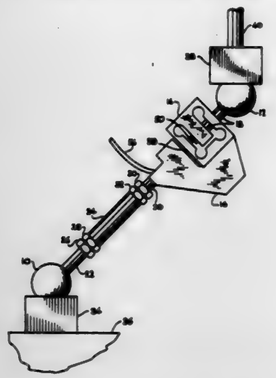
telescoping holding means for maintaining said first gage ball and said second gage ball in a relationship allowing relative radial motional freedom while not allowing relative lateral motional freedom;

a first means for securing said first gage ball so that the center of said first gage ball is maintained at a fixed location with respect to an associated machine;

a second means for securing said second gage ball so that the center of said second gage ball is directed by an associated machine to execute a prescribed trajectory, all points of which are equidistant from the center of said first gage ball; and

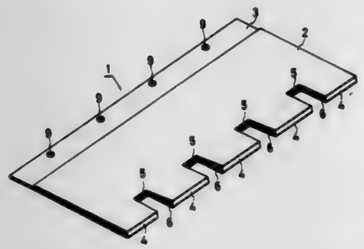
means for determining changes in the radial distance be-

tween the center of said first gage ball and the center of said second gage ball, whereby error in the execution of



the directed trajectory is detected and the accuracy of an associated machine is determined.

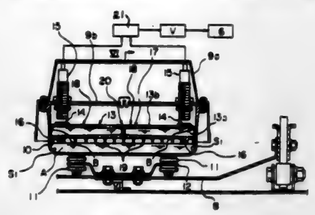
4,435,906
PERFORATING JIG
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan
Filed Jan. 27, 1982, Ser. No. 343,168
Claims priority, application Japan, Jun. 26, 1981, 56-95020[U]
Int. Cl.³ B26D *5/00*; B27B *5/00*
U.S. Cl. 33—185 R **5 Claims**



1. A perforating jig comprising two superimposed plates, one edge thereof being openably and closably joined, for sandwiching a sheet therebetween, said plates having in and along the joined edge at least one recess in each plate so formed as to allow insertion and positioning therein of a perforating end of a punch to fully perforate an edge portion of the sheet.

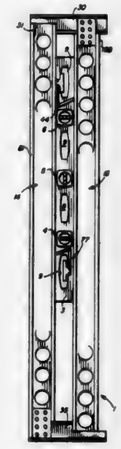
4,435,907
MACHINE BODY INCLINATION DETECTOR DEVICE
Shigeaki Okuyama, Kawachinagano; Norimi Nakamura, and Osami Hashimoto, both of Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan
Filed Jan. 11, 1982, Ser. No. 338,511
Claims priority, application Japan, Jan. 13, 1981, 56-3647[U]
Int. Cl.³ G01C *9/06*, *9/18*
U.S. Cl. 33—366 **9 Claims**

1. A machine body inclination detector device comprising:
a container adapted to be fixed to said machine body for containing a liquid;
a float in said container for floating substantially sunken in said liquid and having horizontal longitudinally extending spaces therein communicating with the liquid in said con-



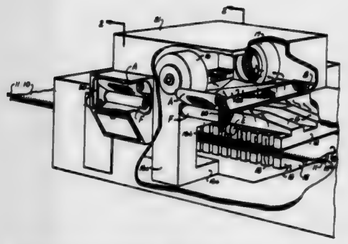
tainer through holes extending between said spaces and at least one surface of said float and
means for detecting the inclination of said float.

4,435,908
OFFSET, EXTENDABLE, QUICK-RELEASE PLUMBNESS INDICATING APPARATUS
Paul M. Semler, Jr., 3045 N. Dodge Blvd., Tucson, Ariz. 85716
Filed Dec. 20, 1982, Ser. No. 451,726
Int. Cl.³ G01C *9/00*
U.S. Cl. 33—376 **13 Claims**



1. An apparatus for measuring plumbness of an elongated, warped vertical member, said apparatus comprising in combination:
(a) an elongated main body member having parallel opposed flat first and second surfaces;
(b) a bubble vial attached to said main body member for indicating when said first and second surfaces are precisely vertical;
(c) an elongated first extension member having an elongated flat third surface slidably engaging said first surface and an elongated fourth surface opposed to said third surface;
(d) an elongated second extension member having an elongated flat fifth surface slidably engaging said second surface and an elongated sixth surface opposed to said fifth surface;
(e) first offset means attached to the upper end of said first extension member and extending beyond said sixth surface to an imaginary plane that is parallel to said first surface;
(f) second offset means attachable to the lower end of said second extension member and extending beyond said sixth surface to said imaginary plane;
(g) first quick release means connected to said main body member and actuatable for releasably engaging said first extension member to allow sliding of said third surface along said first surface and thereby allow extension of said first extension member to effectively lengthen said apparatus if said first quick release means is actuated and to lock said first extension member relative to said main body member if said first quick release means is not actuated; and
(h) second quick release means connected to said main body member and actuatable for releasably engaging said second extension member to allow sliding of said fifth surface along said second surface and thereby allow extension of said second extension member to affectively lengthen said apparatus if said second quick release means is actuated and to lock said second extension member to said main body member if said second quick release means is not actuated.

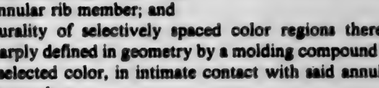
4,435,909
AUTOMATIC LINT SCREEN
John G. Williamson, Jr., Greenville, S.C., assignor to Marshall and Williams Company, Providence, R.I.
Filed Nov. 30, 1981, Ser. No. 325,991
Int. Cl.³ F26B *13/02*
U.S. Cl. 34—82 **5 Claims**



1. A lint screen assembly for use in an elongatd oven having ducts with nozzles for directing heated air against a web carried therethrough, said oven also having a heater and fans with an air passageway between the web and the heater extending substantially across said oven, the improvement comprising:
a transverse filter media serving as an elongated lint screen;
a trackway extending transversely of said oven entirely across said air passageway; said trackway having an imperforate flange covering the edges of said lint screen media;
power-operated means for rolling up a single width of said lint screen on one side of the oven;
an edge of said lint screen on each side thereof in sealing engagement with said imperforate flange;
means intermittently actuating said power-operated means for rolling up a length of lint screen;
means feeding said length of lint screen from the other side of the oven; and
means removing lint from said lint screen during rolling up of the lint screen.

4,435,910
SHOE INSOLE
Michel Marc, 48 Ridge Hill Farm Rd., Wellesley, Mass. 02181
Filed Mar. 12, 1982, Ser. No. 357,784
Int. Cl.³ A43B *13/38*, *13/40*, *21/32*
U.S. Cl. 36—44 **10 Claims**

1. A shoe insole comprising:
a substantially flat base layer,
a resilient intermediate layer affixed to and overlying the rear portion of the base layer and adapted to conform to the foot having a cupped back for accommodating the heel and a side crown for accommodating the arch,
and a top cushioning layer affixed to and overlying the base and intermediate layers and having a top surface adapted to be in direct contact with the foot,
said resilient intermediate layer being formed thicker at the cupped back to absorb maximum impact usually concentrated thereat than at the side crown where there is provided improved flexibility so as to not interfere with a low arch foot,
said intermediate layer having a plurality of substantially



radially disposed ribs with each rib extending downwardly with the top surface of the intermediate layer having a smooth but contoured surface,
said ribs being spaced along the periphery of the intermediate layer with each rib being arcuate extending from a top peripheral edge of the intermediate layer to a central thin portion thereof,
said ribs being wider at the cupped back and at the side crown so as to provide enhanced impact absorption.

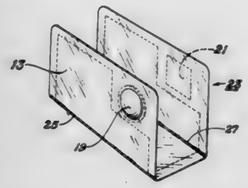
4,435,911
INJECTION-MOLDED GAMING TOKEN AND PROCESS THEREFOR
Bernard B. Jones, 3672 S. Highland, Las Vegas, Nev. 89103
Continuation of Ser. No. 15,334, Feb. 26, 1979, abandoned. This application Apr. 26, 1982, Ser. No. 371,638
Int. Cl.³ G09F *3/02*
U.S. Cl. 40—27.5 **4 Claims**



1. A gaming token comprising:
(a) a flat non-metallic annular ring having a central opening therein, said ring comprising:
an annular rib member; and
a plurality of selectively spaced color regions therein sharply defined in geometry by a molding compound of a selected color, in intimate contact with said annular rib member,
(b) a disc-support annulus integral with said annular ring and extending radially into said central opening to a predetermined radial distance,
(c) flat metal discs mounted face-to-face on each side of said disc-support annulus and positioned substantially flush respectively with the outer surfaces of said annular ring, and
(d) a fused junction for joining said metal discs together at a portion of their adjacent faces, whereby said metal discs are difficult to remove from said gaming token.

4,435,912
CARD CARRYING MICROFILM AND ASSOCIATED READING LENS

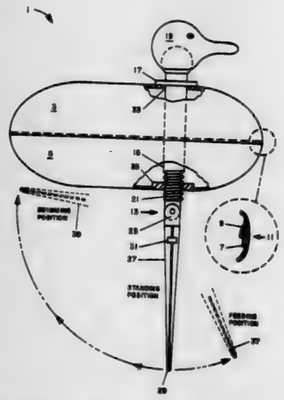
David L. Adrian, Abilene, and Sam H. Young, Fort Worth, both of Tex., assignors to Frank J. King, Abilene, Tex.
Continuation of Ser. No. 888,407, Mar. 20, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,158
Int. Cl.³ G02B 27/04
U.S. Cl. 40—365 1 Claim



1. An emergency medical data card comprising:
(a) an information portion upon which information appears that can be read in the normal manner with the naked eye, said information portion consisting of a thickness of flexible paper stock having a generally rectangular shape and billfold size, with portions removed at opposite end regions;
(b) a plastic lens disposed at one of said end regions;
(c) a microfilm portion upon which information is recorded and which is disposed at the other of said end regions opposite said one end region;
(d) a pair of juxtaposed flexible clear plastic sheets laminating at least said information portion and said microfilm portion to provide a one-piece, unitary, generally planar card structure;
(e) said lens being a molded integral part of a clear plastic sheet portion of said card;
whereby a reader may bend the card to align and focus the lens on the microfilm for the reading of same without the need for any special auxiliary apparatus.

4,435,913
DECOY

Samuel E. Messina, 2 Snowden Ave., Delmar, N.Y. 12054
Filed May 19, 1983, Ser. No. 496,008
Int. Cl.³ A01M 31/06
U.S. Cl. 43—3 20 Claims



1. A full-bodied decoy for use on land or water, said decoy comprising a top shell, a bottom shell and a shaft-stake keel member; said top and bottom shells having interfitting joint means to join together said top and bottom shells to afford buoyancy for water use of said decoy, said shaft-stake keel member having a shaft, said shaft carrying a head, said shaft being disposed through said top and bottom shells, said shaft, top shell and bottom shell having cooperating securement means for securing said shaft with said top and bottom shells, and for maintaining said top and bottom shells joined together, said stake keel being imbedded in the ground for land use of said decoy, and said stake keel having a counterbalancing weight below the water line of said decoy to maintain said decoy stable in the water.

4,435,914
FISH LURE

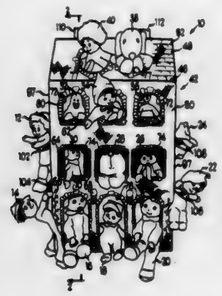
Bill K. Norman, Greenwood, Ark., assignor to Norman Manufacturing Co., Inc., Greenwood, Ark.
Filed Aug. 28, 1981, Ser. No. 297,348
Int. Cl.³ A01K 85/00
U.S. Cl. 43—42.12 3 Claims



1. A surface retrieve or trolling lure comprising an elongated generally planar body being slightly elongated, egg-shaped in plan including small and large radius front and rear ends, said front end including means for attaching the free end of a fishing line thereto, said body including upper and lower sides and a central upstanding opening formed therethrough including a rear upstanding transverse wall, a spinner journaled in said opening, forwardly opening hook means anchored relative to and trailed behind the large radius end of said body, said lower side being both longitudinally and transversely downwardly convexed substantially throughout the plan area thereof, the portion of said lower side defining the rear marginal edge of said opening including a transversely rounded downward projection terminating downwardly at a level slightly below the portion of said lower side defining the forward marginal portion of the opening, the lower margin of said rear transverse wall defining the forward extremity of said projection, said spinner being generally S-shaped in axial elevation and being journaled for rotation about a horizontal axis extending transversely of said body, said rear marginal edge defining the lower extremity of said rear transverse wall, the upper surface of said body being generally flat and horizontal, said upper surface and said rear transverse wall being devoid of inclined portions thereof operative, responsive to said body being forwardly advanced over the surface of a body of water, to cause water incident thereupon to develop a downward reaction force on said body sufficient to overcome the inherent planing effect developed on the body as a result of the downwardly convex lower side of said body moving over the surface of a body of water, said hook means including an elongated shank terminating at one end in a reverse turned hook portion, the other end of said shank being anchored to said body with said one shank end projecting rearwardly of said body.

4,435,915
HANGING DOLL HOUSE STRUCTURE

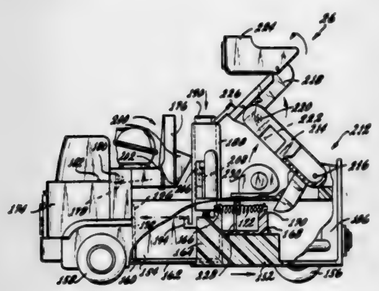
John V. Zaruba, and Rouben T. Terzian, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 20, 1982, Ser. No. 340,969
Int. Cl.³ A63H 33/00
U.S. Cl. 46—12 6 Claims



1. A case for storing and displaying a plurality of toy dolls and the like, comprising:
a housing including a roof, a front wall a first side wall and a second side wall;
a plurality of vertically spaced floors mounted in said housing;
means for displaying the dolls including a plurality of openings in said roof and said front wall, said openings being related to said floors in a manner whereby a floor can support a doll in position for display through an opening;
a plurality of elastic members secured to said first and second side walls for holding dolls and the like; and
means for hanging said housing on a wall or the like.

4,435,916
TOY VEHICLE CAPABLE OF CHANGING SIZE AND SHAPE

Noriaki Iwao, and Akira Abe, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Japan
Continuation-in-part of Ser. No. 170,260, Jul. 18, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 324,734
Int. Cl.³ A63H 11/10, 17/08, 33/30
U.S. Cl. 46—201 7 Claims



1. A toy vehicle which comprises:
a compound vehicle chassis having a first chassis member and a second chassis member, said first and said second chassis members being movable with respect to each other;
connecting means operatively associated with both said first chassis member and said second chassis member movably connecting said first and said second chassis members such that said first and said second chassis members can move reversibly between a first stable position wherein said first and said second chassis members are located in a first chassis configuration with respect to one another and a second stable position wherein said first and said second chassis members are located in a second chassis configuration with respect to one another, said compound vehicular chassis being a greater first length when said first and said second chassis members are in said first chassis configuration and said compound vehicular chassis being a second length when said first and said second chassis members are in said second chassis configuration, said first length greater than said second length;
a first spring member attaching between said first and said second chassis member, said first spring member biasing said first and said second chassis members to said first chassis configuration;
a retaining member movably located on one of said first and said second chassis members and connectable to the other of said first and said second chassis members, said retaining member movable on said one of said first and said second chassis members between a locking and a releasing position, said retaining member including detent means located thereon, said detent means connecting to said other of said first and said second chassis members when said retaining member is is said locking position to retain said first and second chassis members in said second chassis configuration against the bias of said first spring member;
a second spring member associated with said retaining member, said second spring member biasing said retaining member from said releasing position to said locking position;
a vehicle body having a plurality of body elements forming the outside surface of said vehicle, at least one of said body elements fixedly located on said first chassis member, at least a second of said body elements fixedly located on said second chassis member, a least a third of said body elements pivotably located on said first chassis member, at least a fourth of said body elements pivotably located on said second body chassis;
said first body element and said second body element located adjacent of one another when said first and said second chassis members are in said second chassis configuration, said first and second body elements spaced apart from each other so as to form a space between each other when said first and second chassis members are in said first chassis configuration, said third body element located adjacent to said first body element when said first and second chassis members are in said second chassis configuration and pivotable on said first chassis member when said first and said second chassis members are in said first chassis configuration so as to become located in said space when said first and second body members are in said first chassis configuration,
a third spring element attaching to said third body elements, said third spring element biasing said third body element towards said space when said first and second chassis members are in said first chassis configuration;
said third and said fourth body elements each including a first and second surface, said first surface of both said third and said fourth body elements exposed and forming a portion of the outside surface of said vehicle when said first and said second chassis members are in said first chassis configuration and said second surface of both said third and said fourth body elements exposed and forming a portion of the outside surface of said vehicle when said first and said second chassis members are in said second chassis configuration;
said fourth body element including a first body section pivotably attaching to said second chassis member, a second body section pivotably attaching to said first body section and a fourth spring member connecting between said first and said second body sections and biasing said second

body section from a folded position with respect to the first body section to an extended position with respect to the first body section, a portion of said first body section abutting against and held by said first chassis member when said first and said second chassis members are in said second chassis configuration pivoting said first body section on said second chassis member and said second body section on said first body section to position said second body section in said folded position against the bias of said fourth spring member, said portion of said first body section releasing from said first chassis member when said first and said second chassis members are in said first chassis configuration and said fourth spring member biasing said second body section to said releasing position with respect to said first body section;

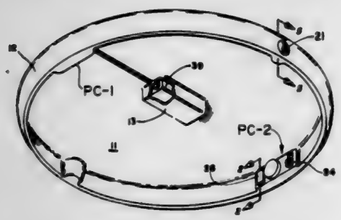
the shape of said vehicle as determined by the spatial relationship between said plurality of body elements being different when said first and said second chassis members are in said first chassis configuration and when said first and said second chassis members are in said second chassis configuration.

4,435,917

LIGHTING SYSTEM FOR ROTATABLE TOY

William B. Lee, 252 South 800 East, Salt Lake City, Utah 84102

Filed Apr. 30, 1982, Ser. No. 373,427
Int. Cl.³ A63H 33/26
U.S. Cl. 46—228 6 Claims



1. In a toy of the type having a body rotatable about a central axis and at least one lamp, a battery and associated circuit to light said lamp, the improved lighting system which comprises a solid state astable multivibrator circuit adapted to generate pulses to light said lamp for a predetermined on-time at predetermined intervals said circuit including a first resistor, a second resistor and a capacitor arranged in series so that said second resistor and capacitor determine said on-time of said lamp and said first resistor, said second resistor and said capacitor in series determine said interval; a resistive switch interposed in said circuit in parallel with said first resistor, said resistive switch including a third resistor and a normally open switch arranged so that when said normally open switch is closed said first resistor and said third resistor are in parallel to each other and are each in series with said second resistor and said capacitor, and said normally open switch includes means to close said switch in response to rotation of said toy about its central axis faster than a predetermined rate.

4,435,918

DECORATIVE FLOWER POT

Guey-Ji Shain, 113, Yu Miao Li, Miao Li Chen, Taiwan

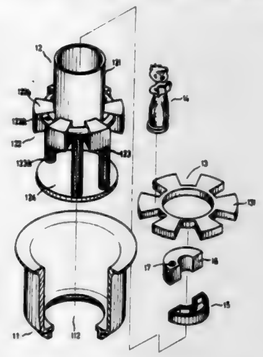
Filed Dec. 23, 1981, Ser. No. 333,730
Int. Cl.³ A01G 25/00
U.S. Cl. 47—79 2 Claims

1. A horticultural pot comprising:

two coaxially positioned pots including a bottomless upper pot having smaller diametrical dimension and a lower pot having larger diametrical dimension with a drainage hole; the said upper pot being at a level where its lower edge is slightly below the top edge of said lower pot; around the lower part of said upper pot there being externally and peripherally provided a plurality of radially distributed, hollow structures to define first reservoir means for receiving water, and conduit means intercommunicating adjacent ones of said first reservoir means;

a drainage hole cover which closes said drainage hole;

a plurality of hollow columns supporting said first reservoir means and said upper pot; the lower end of each said



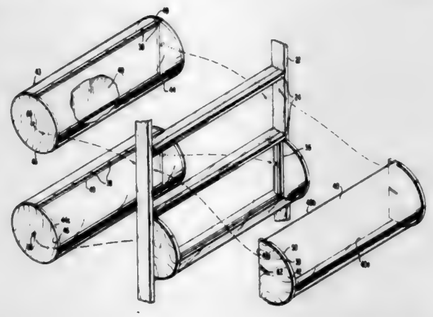
column having an opening through said drainage hole cover and open to the outside, the upper end of each said column being blind; the side wall of each said column being densely provided with tiny perforations to communicate the interior of said column to the interior of said lower pot; at least part of the bottom of said first reservoir means being water-pervious; the top side of said reservoirs being substantially at the same level to define a platform.

4,435,919

INTEGRATED WINDOW AND THERMAL SHUTTER ASSEMBLY

Leandre Poisson, P.O. Box 275, Harrisville, N.H. 03450

Filed Sep. 10, 1981, Ser. No. 300,821
Int. Cl.³ E05B 65/04
U.S. Cl. 49—63 8 Claims



1. An integrated window and thermal shutter assembly for closing a rectangular opening within a building wall or the like to permit controlled passive solar heating of a building interior, said assembly comprising:

a closed end elongated cylinder mounted for rotation about its axis within said window opening and in the plane of said rectangular opening, said cylinder being sized to said rectangular opening and said cylinder being formed of a sheet of light transmissive material, and

an opaque, relatively thick rectangular panel of thermal insulation material mounted internally of said cylinder and spanning diametrically across said cylinder to separate the interior of said cylinder into two dead air spaces;

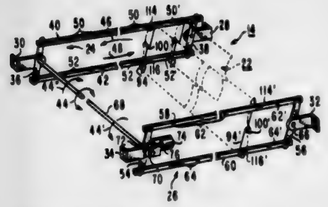
whereby, rotation of said cylinder to a position with the thermal insulation material panel parallel to the plane of said rectangular opening results in complete blockage of light and thermal energy from the building exterior to the building interior and vice versa while, rotation to an angularly displaced position therefrom permits selectively light and thermal radiation to enter the interior of the building, or leave the same.

4,435,920

SHUTTER CONSTRUCTION

Susumu Osaka, and Minoru Toda, both of Machida, Japan, assignors to RCA Corporation, New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,740
Int. Cl.³ E05F 17/00; E06B 7/08
U.S. Cl. 49—82 11 Claims



1. A shutter construction comprising:

a plurality of slats, each slat having first and second opposite ends, two relatively long, parallel opposite edges, and a central axis parallel to and between these edges;

a pair of support brackets for each slat, one bracket secured to one end of each slat and the other bracket secured to the opposite end of each slat, each bracket including two pivot means permitting rotation of the bracket about two spaced points, respectively, one point on one side of the central axis and the other point spaced from the one point on the other side of the central axis;

first and second parallel support links, the first of said links adjacent to one end of the slats and the second of said links adjacent to the other end of the slats, the slats being perpendicular to said links and being spaced from one another along the length of links, each support bracket at one end of the slats being supported by said first link at one end of its pivot means and each support bracket at the other end of the slats being supported by said second link at the corresponding one of its pivot means;

first and second support means, said first support means adjacent to one end of the slats and said second support means adjacent to the other end of the slats, each support bracket at one end of the slats being supported by said first support means at the other of its pivot means along a line parallel to said first link and each support bracket at the other end of the slats being supported by said second support means at the other of its pivot means along a line parallel to said second support link; and

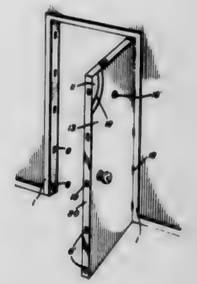
drive means for concurrently driving said first and second support links in the same direction along the length dimension of said links relative to said first and second support means for concurrently rotating the slats about axes parallel to their central axes.

4,435,921

SAFETY DOOR

Manuel Marin, 6777 Ple IX Blvd., Apt. 14, Montreal, Quebec, Canada H1X 2C7

Filed Apr. 5, 1982, Ser. No. 365,489
Int. Cl.³ E05C 9/00
U.S. Cl. 49—395 2 Claims



1. In a door and associated door frame, the door including a lock operating a bolt by use of a key, the bolt then operatively projecting from the free edge of the door and engaging in an opening of the door frame, said free edge being provided with a series of spaced-apart cavities along said edge, a lever pivoted in the door frame and operated by said bolt, and a series of auxiliary bolts installed in the door frame and operated by said lever to move from a withdrawn unlocking position to a projecting locking position, wherein their free ends project from the door frame and engage into said cavities of the door, said auxiliary bolts being substantially parallel, horizontal and fixed at their opposite ends to a generally vertical common bar located within said door rame, at least two lever arms of equal length pivotally connected to the bar and to the door frame and equally inclined in upward direction away from said auxiliary bolts, said lever pivotally connected to said common bar and, upon being pivoted by said bolt, moving said common bar from a lower position in which the auxiliary bolts are in their withdrawn position, to a higher position in which the auxiliary bolts are in their projecting position, whereby said auxiliary bolts tend to move to their withdrawn position under gravity.

4,435,922

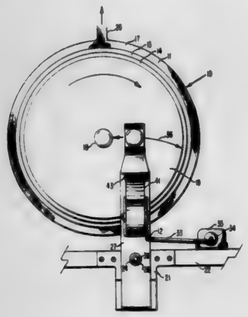
APPARATUS FOR GRINDING THE BACK SURFACES OF RECORD MOLDING STAMPERS

John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 302,128
Int. Cl.³ B24B 7/04
U.S. Cl. 51—58 7 Claims

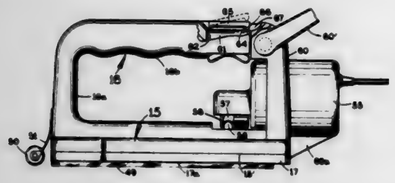
1. An apparatus for grinding the back surface of record molding stampers, said apparatus comprising in combination: a stamper holder means and a grinding means; said stamper holding means including a disc-shaped member having a diameter at least as large as the stamper to be ground by said apparatus, a drive means for rotating said disc-shaped member about the center thereof, and means associated with said disc-shaped member for securing a stamper to be ground to a surface of the disc-shaped member; said grinding means including an elongated arm member having first and second terminal end portions, said arm member being pivotally mounted at a point intermediate between said first and second terminal end portions, said first terminal end portion having positioned thereon abrasive means for grinding said stamper, said grinding means further including pressure applying means positioned to apply pressure to said second terminal end portion and thereby pivotally move said arm member from a first position to a second position and to apply a given amount of pressure at the first

terminal end portion, said grinding means further including oscillating means for continuously reciprocating said arm in a uniform manner radially back and forth across the back surface of the stamper in a plane approximately parallel to the plane of rotation of the disc-shaped member, said grinding means being spacially positioned relative to the stamper holding means so that when the arm is moved from said first position to said second position the abrasive means is brought into grinding contact at a said given amount of pressure with a stamper



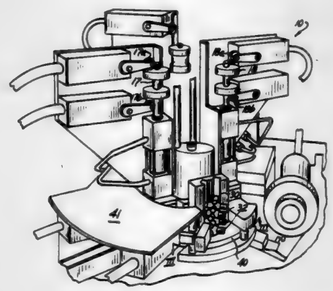
mounted on said stamper holding means; whereby when said stamper is mounted back surface out on the disc-shaped member of the stamper holding means, and said disc-shaped member is rotated by said drive means, and said grinding means is activated by the pressure applying means and oscillating means, the abrasive means on the arm member is moved from said first position to said second position into oscillating pressure contact with the back surface of said stamper, causing the back surface of the stamper to be ground, removing surface defects.

4,435,923
ABRADING TOOL
Ralph Regina, 5471 SW. 16th St., Plantation, Fla. 33317
Filed Mar. 22, 1982, Ser. No. 360,736
Int. Cl.³ B24B *23/04*; A47L *13/00*
U.S. Cl. 51—170 TL **12 Claims**



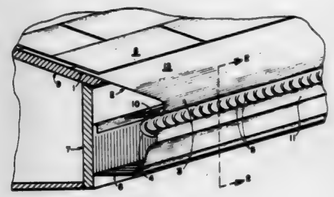
1. In an abrading tool having a base and a handle attached to said base and extending on one side of the base, said base having a longitudinal recess therein which is open at the opposite side of the base from said handle, the improvement which comprises:
a pair of rigid clamping members extending lengthwise in said recess in confronting relationship to one another, a

4,435,924
METHOD OF GRINDING WORKPIECES
Jack L. Garnett, Beloit, Wis., assignor to The Bendix Corporation, Cleveland, Ohio
Division of Ser. No. 206,122, Nov. 12, 1980, Pat. No. 4,368,595. This application Sep. 30, 1982, Ser. No. 431,513
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—327 **8 Claims**



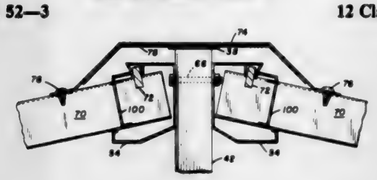
1. A method of grinding a workpiece using a grinding apparatus of the type having a frame, a movable grinding member coupled to the frame for grinding a surface of workpiece at a grinding station, a carrier movably coupled to said frame having a loading station and an unloading station and a workpiece-handling apparatus coupled to the frame adjacent to the carrier and having at least two workpiece receiving apertures for receiving a workpiece at the unloading station and for loading workpieces into and discharging workpieces from the carrier, the steps of the method comprising:
positioning a workpiece adjacent one of the workpiece-receiving apertures of the workpiece-handling apparatus;
loading the workpiece from the carrier into the adjacent aperture;
rotating the workpiece-handling apparatus through a partial revolution to move the one aperture adjacent to a loading station of the carrier;
moving the workpiece from the apparatus to the carrier;
moving the carrier to bring a first surface of the workpiece adjacent the grinding member at the grinding station grinding the workpiece with the grinding member;
moving the carrier to bring the workpiece to the unloadng station;
moving the workpiece from the carrier of the unloading

4,435,925
SHIELD FOR EAVES DRAIN GUTTER
Henry J. Jefferys, P. O. Box 6029, Norfolk, Va. 23508
Continuation-in-part of Ser. No. 668,324, Mar. 18, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 955,862
Int. Cl.³ E04D *13/06*
U.S. Cl. 52—12 **8 Claims**



1. A gutter shield of integral construction adapted to be mounted under the eaves of a building and above a conventional drain gutter comprising a flat mounting portion, a downwardly sloped collector portion which tangentially merges with a curved nose portion, a re-entrant portion emerging tangentially from below said nose portion as a continuation thereof and downwardly sloped in a direction substantially opposite to the direction of slope of said collector portion, a leg portion pendant from said re-entrant portion as a continuation thereof and comprised of a multitude of uniformly spaced parallel teeth extending downward and terminating adjacent the outer lip of said drain gutter, the spaces between said teeth having a length to width ratio between 3:1 and 9:1 and the area of said spaces comprising between 30% and 60% of the total area of said leg portion, said teeth originating at a sharply defined angle of between 90° and 140° with respect to said re-entrant portion, and a conductor surface beginning at the locus of origination of said leg portion as a continuation of said re-entrant portion and extending inwardly in the general direction of said mounting portion, the outermost extremity of said nose portion projecting ¼" to 1¼" beyond said leg portion.

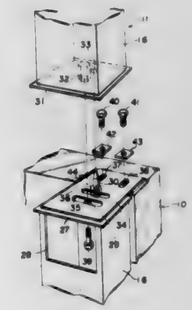
4,435,926
RIDGE ROOF
Francis L. Struben, 3870 Jarrettsville Pike, Jarrettsville, Md. 21062
Filed Sep. 1, 1982, Ser. No. 413,712
Int. Cl.³ E04D *13/00*
U.S. Cl. 52—3 **12 Claims**



1. A roof structure, comprising:
a center support component, said center support component being vertically adjustable to a plurality of heights, said center support component being suitably affixed to a structure requiring a new roof structure;
a first pair of roof panel support members, said roof panel support members being spaced apart and suitable affixed

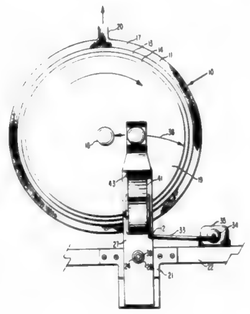
each other and being suitably affixed to said structure requiring a roof structure, said second pair of roof panel support members being angle-like in configuration;
a plurality of interlocking roof panels, said plurality of roof panels being of a corrugated configuration, each roof panel of said plurality of roof panels having a first end and a second end, said first end of each said roof panel being slideably and removably inserted into and suitably affixed to one of said first pair of roof panel support members, said second end of each said roof panel being set upon and suitably affixed to one of said second pair of roof panel support members;
a plurality of locking bars, each locking bar of said plurality of locking bars being slideably and removably set so as to lock one of said roof panels to one of said first pair of roof panel support members;
a ridge cap member, said ridge cap member being suitably affixed to said plurality of roof panel members, said ridge cap member being located and affixed to said plurality of roof panel members at said first end thereof where said first end inserts into and is affixed to said first pair of roof panel support members.

4,435,927
MODULAR BUILDING STRUCTURE AND MODULE FOR IT
Hiroaki Umezu; Akira Kishi, both of Tokyo, and Hiroshi Yamagami, Hachioji, all of Japan, assignors to Misawa Homes K.K., Tokyo, Japan
Filed Jun. 19, 1981, Ser. No. 275,152
Int. Cl.³ E04B *1/343*
U.S. Cl. 52—79.13 **1 Claim**



1. A modular building structure which comprises an upper and lower structure, each having:
(a) a frame including a horizontal base member of a rectangular shape and four vertical corner posts of the same length secured at their lower ends to the four corners of said base member and having a tubular construction;
(b) a first wall member attached to two adjacent ones of said four corner posts, said first wall member being vertically coextensive with said corner posts; and
(c) a second wall member attached to one of said two adjacent corner posts and the corner post disposed in diagonal relation to the other of said two adjacent corner posts, said second wall member being vertically coextensive with

terminal end portion, said grinding means further including oscillating means for continuously reciprocating said arm in a uniform manner radially back and forth across the back surface of the stamper in a plane approximately parallel to the plane of rotation of the disc-shaped member, said grinding means being spacially positioned relative to the stamper holding means so that when the arm is moved from said first position to said second position the abrasive means is brought into grinding contact at a said given amount of pressure with a stamper



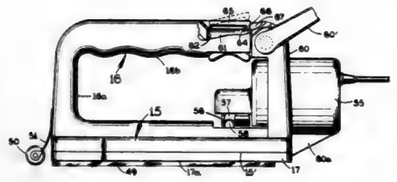
mounted on said stamper holding means; whereby when said stamper is mounted back surface out on the disc-shaped member of the stamper holding means, and said disc-shaped member is rotated by said drive means, and said grinding means is activated by the pressure applying means and oscillating means, the abrasive means on the arm member is moved from said first position to said second position into oscillating pressure contact with the back surface of said stamper, causing the back surface of the stamper to be ground, removing surface defects.

4,435,923

ABRADING TOOL

Ralph Regina, 5471 SW. 16th St., Plantation, Fla. 33317

Filed Mar. 22, 1982, Ser. No. 360,736
Int. Cl.³ B24B *23/04*; A47L *13/00*
U.S. Cl. 51—170 TL **12 Claims**



1. In an abrading tool having a base and a handle attached to said base and extending on one side of the base, said base having a longitudinal recess therein which is open at the opposite side of the base from said handle, the improvement which comprises:

a pair of rigid clamping members extending lengthwise in said recess in confronting relationship to one another, at least one of said clamping members being retractable away from the other clamping member;

and an abrasive pad sandwiched between said clamping members in said recess and projecting beyond said opposite side of the base for engagement with grout exposed between neighboring tiles in a tiled wall or floor;

a holder in said recess carrying said clamping members;

an electric motor mounted on said base and having a rotary shaft operatively coupled to said holder to reciprocate the latter in response to rotation of the shaft;

said handle being attached to the base at the front end of the abrading tool; and

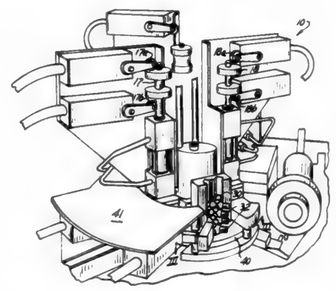
a mounting structure carrying the motor and releasably attached to the handle and the base at the opposite end of the abrading tool.

4,435,924

METHOD OF GRINDING WORKPIECES

Jack L. Garnett, Beloit, Wis., assignor to The Bendix Corporation, Cleveland, Ohio

Division of Ser. No. 206,122, Nov. 12, 1980, Pat. No. 4,368,595. This application Sep. 30, 1982, Ser. No. 431,513
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—327 **8 Claims**



1. A method of grinding a workpiece using a grinding apparatus of the type having a frame, a movable grinding member coupled to the frame for grinding a surface of workpiece at a grinding station, a carrier movably coupled to said frame having a loading station and an unloading station and a workpiece-handling apparatus coupled to the frame adjacent to the carrier and having at least two workpiece receiving apertures for receiving a workpiece at the unloading station and for loading workpieces into and discharging workpieces from the carrier, the steps of the method comprising:

positioning a workpiece adjacent one of the workpiece-receiving apertures of the workpiece-handling apparatus;

loading the workpiece from the carrier into the adjacent aperture;

rotating the workpiece-handling apparatus through a partial revolution to move the one aperture adjacent to a loading station of the carrier;

moving the workpiece from the apparatus to the carrier;

moving the carrier to bring a first surface of the workpiece adjacent the grinding member at the grinding station grinding the workpiece with the grinding member;

moving the carrier to bring the workpiece to the unloadng station;

moving the workpiece from the carrier of the unloading station to an aperture of the workpiece-handling apparatus;

rotating the workpiece-handling apparatus through a partial revolution in a plane to an unload station adjacent the carrier to expose another surface;

reloading the workpiece into the carrier;

grinding the other surface; and

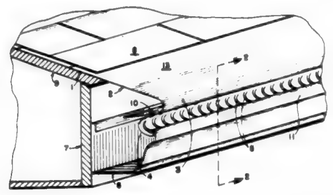
unloading and discharging the workpiece.

4,435,925

SHIELD FOR EAVES DRAIN GUTTER

Henry J. Jefferys, P. O. Box 6029, Norfolk, Va. 23508

Continuation-in-part of Ser. No. 668,324, Mar. 18, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 955,862
Int. Cl.³ E04D *13/06*
U.S. Cl. 52—12 **8 Claims**



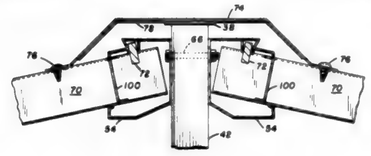
1. A gutter shield of integral construction adapted to be mounted under the eaves of a building and above a conventional drain gutter comprising a flat mounting portion, a downwardly sloped collector portion which tangentially merges with a curved nose portion, a re-entrant portion emerging tangentially from below said nose portion as a continuation thereof and downwardly sloped in a direction substantially opposite to the direction of slope of said collector portion, a leg portion pendant from said re-entrant portion as a continuation thereof and comprised of a multitude of uniformly spaced parallel teeth extending downward and terminating adjacent the outer lip of said drain gutter, the spaces between said teeth having a length to width ratio between 3:1 and 9:1 and the area of said spaces comprising between 30% and 60% of the total area of said leg portion, said teeth originating at a sharply defined angle of between 90° and 140° with respect to said re-entrant portion, and a conductor surface beginning at the locus of origination of said leg portion as a continuation of said re-entrant portion and extending inwardly in the general direction of said mounting portion, the outermost extremity of said nose portion projecting ⅛″ to 1¼″ beyond said leg portion.

4,435,926

RIDGE ROOF

Francis L. Struben, 3870 Jarrettsville Pike, Jarrettsville, Md. 21062

Filed Sep. 1, 1982, Ser. No. 413,712
Int. Cl.³ E04D *13/00*
U.S. Cl. 52—3 **12 Claims**



1. A roof structure, comprising:

a center support component, said center support component being vertically adjustable to a plurality of heights, said center support component being suitably affixed to a structure requiring a new roof structure;

a first pair of roof panel support members, said roof panel support members being spaced apart and suitable affixed to said center support component, said roof panel support members being longitudinally parallel to said center support component to which affixed, said first pair of roof panel support members being channel-like in configuration;

a second pair of roof panel support members, said second pair of roof panel support members being spaced from said first pair of roof panel support members, said second pair of roof panel support members being spaced apart from each other and being suitably affixed to said structure requiring a roof structure, said second pair of roof panel support members being angle-like in configuration;

a plurality of interlocking roof panels, said plurality of roof panels being of a corrugated configuration, each roof panel of said plurality of roof panels having a first end and a second end, said first end of each said roof panel being slideably and removably inserted into and suitably affixed to one of said first pair of roof panel support members, said second end of each said roof panel being set upon and suitably affixed to one of said second pair of roof panel support members;

a plurality of locking bars, each locking bar of said plurality of locking bars being slideably and removably set so as to lock one of said roof panels to one of said first pair of roof panel support members;

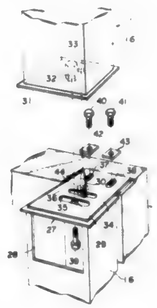
a ridge cap member, said ridge cap member being suitably affixed to said plurality of roof panel members, said ridge cap member being located and affixed to said plurality of roof panel members at said first end thereof where said first end inserts into and is affixed to said first pair of roof panel support members.

4,435,927

MODULAR BUILDING STRUCTURE AND MODULE FOR IT

Hiroaki Umezu; Akira Kishi, both of Tokyo, and Hiroshi Yamagami, Hachioji, all of Japan, assignors to Misawa Homes K.K., Tokyo, Japan

Filed Jun. 19, 1981, Ser. No. 275,152
Int. Cl.³ E04B *1/343*
U.S. Cl. 52—79.13 **1 Claim**



1. A modular building structure which comprises an upper and lower structure, each having:

(a) a frame including a horizontal base member of a rectangular shape and four vertical corner posts of the same length secured at their lower ends to the four corners of said base member and having a tubular construction;

(b) a first wall member attached to two adjacent ones of said four corner posts, said first wall member being vertically coextensive with said corner posts; and

(c) a second wall member attached to one of said two adjacent corner posts and the corner post disposed in diagonal relation to the other of said two adjacent corner posts, said second wall member being vertically coextensive with said corner posts; each of the corner posts of said lower module having an upper end member fixedly secured to its upper end, a bolt receiving hole being formed through said upper end member, a guide pin being fixedly secured to said upper end member and extending upwardly therefrom in parallel relation to the longitudinal axis of said corner post, each of the corner posts of said upper module having a lower end member fixedly secured to its lower end, a bolt receiving portion being formed on said lower

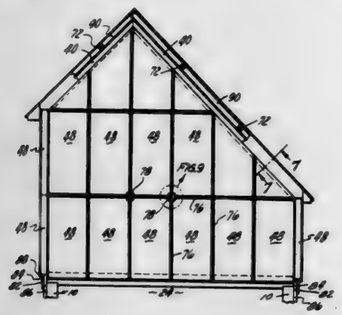
end member, a guide pin receiving hole being formed through said lower end member, the corresponding corner posts of said upper and lower modules being connected in end to end relation, said guide pin of each corner post of said lower module passing through said guide pin receiving hole of the corresponding corner post of said upper module, and a bolt passing through said bolt receiving hold of each corner post of said lower module and being threaded into said bolt receiving portion of the corresponding corner post of said upper module; the corner posts of the lower module, except for the corner post adjacent to said first and second wall members, being attached slightly swingingly movable about their lower end; said upper module including a pair of connecting plates attached to the upper end members of the two corner posts which are disposed in diagonal relation and to which said first and second wall members are attached, said connecting plates extending outwardly from said corner posts to be laid over the upper surfaces of said first and second wall members, respectively, each of said connecting plates having a pair of first slots extending parallel to the plane of a respective one of said first and second wall members, and having a pair of second slots extending perpendicular to the plane of the respective wall member, said guide pin and said bolt passing through said pair of first slots, respectively, and a pair of bolts passing through said pair of second slots into the upper portion of a respective one of said first and second wall members.

4,435,928

LOW ENERGY BUILDING

Edwin Huling, Houghton Hill Rd., Thetford Hill, Vt. 05074

Filed Mar. 30, 1981, Ser. No. 249,149
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—90 **17 Claims**



1. A low energy building having one or more stories adapted to be erected one story at a time on an existing foundation from prefabricated components comprising:

a modular post and beam framing system including:

short, integral beams of at least two modules length having vertical rectangular joist notches cut therein at modular increments along their length,

floor joists having their ends seated in said notches,

a plurality of boards laid on top of said beams and said joists forming a floor at each story of the building,

posts upstanding from said floors at suitable spacing and height to provide modular openings for the side and end walls of the building

roof rafters supported at one of their ends on said beams and meeting at another of their ends at the roof ridge,

a plurality of prefabricated laminated panels secured to said framing system and covering said openings;

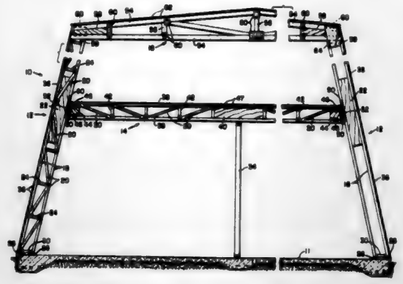
said panels having a central core member of insulating material, an outer layer of siding material connected to one side of said core by a layer of adhesive, and an inner layer of finish material connected to the other side of said core by a layer of adhesive.

4,435,929

MODIFIED A-FRAME STRUCTURE

Hugh M. Bussell, 251 S. Willow, Cookeville, Tenn. 38501

Filed Aug. 23, 1982, Ser. No. 410,327
Int. Cl.³ E04C *3/02*; E04D *3/35*
U.S. Cl. 52—93 **10 Claims**



1. A floor truss-wall truss assembly comprising a wooden floor truss joined to a wooden wall truss at an angle such that said floor truss is an A cross-bar member and said wall truss is an A upright member, said wall truss having a single bearing block adjacent the inside of an inner chord member thereof occupying the whole space between upper and lower chords, said floor truss having two end blocks separated by a spacer member extending between said upper and lower chords of said floor truss with said upper and lower chords protruding beyond an outer end of each of said two end blocks so as to fit respectively over and under the upper and lower ends of said single bearing block and means holding said two end blocks in position and fastening said end blocks and said upper and lower chords of said floor truss to said inner chord member of said wall truss.

4,435,930

TRAFFIC SAFE POLE

Oscar W. Plym, Generalsvägen 133, 180 21 Österskär, Sweden

Filed Oct. 14, 1980, Ser. No. 196,570
Int. Cl.³ E04H *12/02*; E04B *1/54*
U.S. Cl. 52—98 **7 Claims**



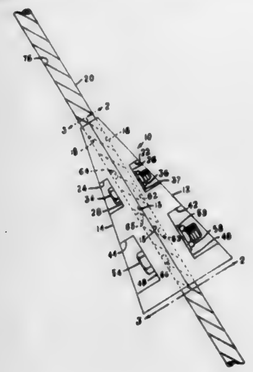
1. A traffic safe pole for supporting traffic signs, road lighting and the like, characterized in that the pole is divided substantially perpendicularly to its longitudinal direction to thereby comprise a first pole portion to which a traffic sign and the like may be attached; and a second pole portion jointed to said first portion adapted to be anchored in a suitable manner; said joint substantially consisting of a sleeve secured to and arranged relative to the two pole portions so that its tensile strength in substantially its longitudinal direction which is coextensive with the pole portions considerably exceeds the tensile strength in its circumferential direction; said pole portions being structurally coextensive with coextensive surfaces; said sleeve consisting of reinforced plastic with its reinforcement provision directed in the longitudinal direction of the sleeve; the means for securing said sleeve to said pole portions consisting of glue which glues the sleeve to coextensive surfaces of said pole portions to thereby provide a homogenous pole; said sleeve being located on the inner shell surface of said pole portions; a ring, preferably of steel, located and glued on the outside of each of said pole portions at the joint, where each ring projects in longitudinal direction of the pole portion beyond the end surface of the associated pole portion, and where the inner diameter of the projecting portion of the ring substantially agrees with that of the pole portion, each ring constituting a cylindric cup located on the end of the associated pole portion with an axial hole in the cup bottom, and the end surfaces of the projecting portions of the rings arranged so as to abut each other; a first inner ring and a second inner ring, preferably of steel, located within said sleeve and glued to its inner shell surface in such a manner, that said first inner ring is located within said first pole portion and projects in the longitudinal direction beyond the end surface of the pole portion a distance substantially equal to but no greater than said end surfaces of said cup-shape ring, and said second inner ring is located in corresponding manner within said other pole portion; said traffic safe pole being further characterized in that in the inner shell surface of the projecting portion of each of said cup-shaped rings a circumferential groove is provided in connection to the end surface of the projecting portion, which groove is arranged so that the flank of the groove which is closest to said projecting end surface and the projecting end surface together form a sharp edge about the inner edge of said projecting end surface, and that the outer shell surface of the projecting portion of said first inner ring and said second inner ring includes a groove which is located in the circumferential direction in connection to the end surface of the projecting portion in a manner corresponding to the cup-shaped rings so that a sharp edge is formed about the outer edge of said projecting end surface.

4,435,931

GUY WIRE PROTECTOR DEVICE

James A. Newbanks, 205 W. Allen St., Apt. 318, Springfield, Ill. 62704

Filed Jan. 29, 1981, Ser. No. 229,465
Int. Cl.³ E04H *12/20*
U.S. Cl. 52—147 **18 Claims**



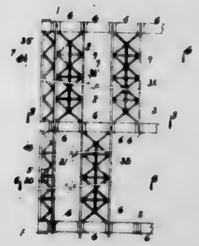
1. A device mountable on guy wires and like supports for deflecting and splitting ice sheaths that form on the guy wires and subsequently slide therealong, each guy wire having opposed ends, one of which opposed ends is anchored to a fixed member and the opposite of which is connected to a structure to be supported thereby, said device comprising a pair of substantially alike interconnectable members, each member having spaced first and second ends of substantially semi-circular cross-section, the radius of said first end being smaller than the radius of the second end, an outer surface, and a substantially planar mating surface opposite the outer surface, said spaced first and second ends of each of said members defining a respective semi-frusto-conical shaped body envelope for each member, said outer surface of each member being disposed within said respective body envelope for such member, said mating surfaces having a longitudinal channel formed therein including a channel wall extending between said first and second ends, said outer surface of each of said interconnectable members tapering from said second end towards said first end to adjacent said channel wall at said first end, said members adapted to complementarily engage a guy wire when positioned therearound in a mating condition with said mating surfaces positioned adjacent to one another, said channels being registrable with one another when said members are so disposed in a mating condition to engage opposite sides of the guy wire about which said members are positioned, and means for connecting said members to one another about the guy wire at a fixed location therealong spaced from the opposed ends thereof, whereby said device facilitates the deflection and splitting of ice sheaths impacting said device at the first end thereof.

4,435,932

ALTERNATING V-TRUSS ROOF SYSTEM AND METHOD OF ERECTION

Paul A. Seaburg, and Richard W. Lautensleger, both of Middletown, Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Oct. 19, 1981, Ser. No. 312,711
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—263 **26 Claims**

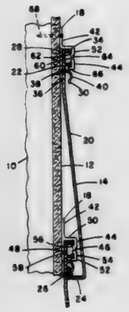


1. A roof supporting structure comprising a series of spaced apart rafters lying in parallel relation, a series of elongated V-truss units extending between the rafters in parallel relation at spaced apart intervals to define rows of V-truss units, said elongated V-truss units each comprising a spaced apart pair of top chords and at least one bottom chord defining the apex of the V-truss unit, and diagonally disposed web members interconnecting said top and bottom chords, said top chords being supported at their opposite ends on said rafters, the V-truss units in at least one given row lying in alternating relation with respect to the V-truss units in the next adjacent row, and means interconnecting the ends of the top chords of the V-truss units in one row with the adjoining ends of the top chords of the V-truss units in the next adjacent row.

4,435,933
VINYL SIDING ATTACHMENT

Thomas R. Krowl, N. Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Aug. 10, 1981, Ser. No. 291,639
Int. Cl.³ E04D *1/34, 3/362, 3/363*
U.S. Cl. 52—309.1 10 Claims

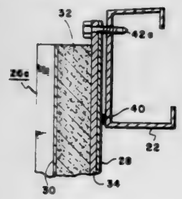


1. In combination, an elongate section of siding and a siding clip for supporting said siding, said clip comprising a back for disposition against a supporting surface, an upper hanger portion suitable for attachment to such a supporting surface, and a lower channel portion, said channel portion having a channel formed extending therethrough from side to side, said channel having internally raised portions disposed for engaging and restricting removal from said channel of non-uniform thickness elements extending along the top portion of said elongate siding section, said siding having a face portion, a top concealed portion, a bottom rearwardly extending spacer flange, and, at the rearward end of said spacer flange, a short interlock flange, said siding concealed portion including an attachment portion having a plurality of spaced apart, longitudinally aligned nailing slots, said slots being disposed between two spaced parallel guide ribs, said attachment portion being disposed within said clip channel and said guide ribs being restricted from removal from said channel by said internally raised portion.

4,435,934
PREFABRICATED PANEL CONSTRUCTION SYSTEM

Kwon S. Kim, Oklahoma City, Okla., assignor to Star Manufacturing Co., Oklahoma City, Okla.

Continuation of Ser. No. 47,132, Jun. 11, 1979, abandoned, which is a division of Ser. No. 893,435, May 4, 1978, Pat. No. 4,295,304. This application Jul. 1, 1981, Ser. No. 279,574
Int. Cl.³ E04C *1/00*
U.S. Cl. 52—309.7 6 Claims



1. A prefabricated wall panel for use with like panels in constructing the walls of a building, comprising:

a body of insulating material having opposed top and bottom ends;

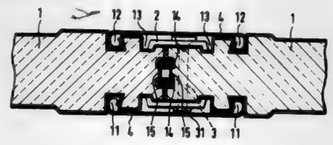
interior and exterior corrugated metal sheets disposed on opposite major faces of said insulating body; and

at least one fastener strip disposed between said interior metal sheet and said insulating body to provide strength at a selected point of attachment of the panel to support members, said fastener strip being disposed between spaced apart corrugated grooves in said interior metal sheet for holding said fastener strip in a predetermined position during fabrication of the panel whereby the location of said fastener strip can be identified from the exterior of the panel, and said fastener strip and said interior metal sheet extend beyond said exterior metal sheet and said insulating body at one of said ends of said insulating body to permit installation of a fastener through only said fastener strip and said interior metal sheet into a support member for said panel from the outside of the building.

4,435,935
PANEL JOINING SYSTEM

D. Juan Larrea, Pamplona, Spain, assignor to Perfil En Frio, S.A. (PERFRISA), Pamplona, Spain

Filed Aug. 21, 1981, Ser. No. 294,922
Claims priority, application Spain, Oct. 8, 1980, 253296; Oct. 8, 1980, 253397
Int. Cl.³ E04B *5/52*
U.S. Cl. 52—461 8 Claims



1. A panel-joining system for panels, said panels being of the type which include an exterior and an interior rigid sheet having an insulating fill therebetween, said panels having ends to be joined, the ends being arranged flush with one another, said system comprising:

(a) an exterior rigid sheet of a panel which sheet includes:

(i) a first exterior shaped section near one end of the sheet, said shaped section being a groove with respect to the exterior plane of the panel;

(ii) a second exterior shaped section, said second shaped section being a groove arranged between the first shaped section and said one end of the sheet; and

(iii) said end including an exterior flange perpendicular to the outer plane of the panel;

(b) an interior rigid sheet of the panel which includes:

(i) an interior shaped section near one end, said interior shaped section being a groove with respect to the plane of the panel; and

(ii) said end including an interior flange perpendicular to the plane of the panel;

(c) the panel having a seal disposed at the end thereof, said seal being sealingly situated between the exterior and interior flanges, and wherein said seal, upon abutment with a corresponding seal of a panel to be joined, cooperates to provide a space between midportions of the seals;

(d) at least two elastic covers, said elastic covers being insertable into the corresponding exterior and interior first shaped sections of the panels to be joined;

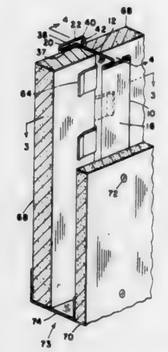
(e) a load spreader plate for insertion into corresponding second shaped sections of the panels to be joined, said load spreader plate being operative for holding the panels in abutment; and

(f) means for holding said load spreader plate in position between the abutting panels for supporting said panels.

4,435,936
METAL STUD

Edward J. Rutkowski, Kenmore, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Feb. 8, 1982, Ser. No. 346,402
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—481 10 Claims



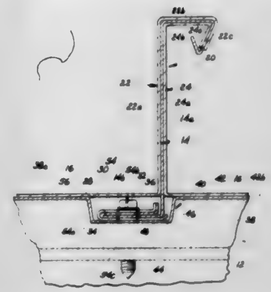
1. A fire-resistant metal stud for supporting a vertical wall comprising an elongate formed sheet metal body having an elongate first side and, opposite thereto, an elongate second side, elongate means central thereof adjoining said first side and said second side, means on said second side for affixing wallboard thereto, a pair of flanges on said first side adapted to have the edges of a pair of wallboards affixed against the inner side thereof, whereby said flanges would be disposed on the surface of a wall formed by said wallboards, said pair of flanges including at least one flange which is formed from an inner layer sheet of metal extending from the inner edge of the flange to the outer edge of the flange whereat the metal is reversely folded and extends back to said inner edge forming an outer layer, said inner layer having means for retarding the increase in temperature of said inner layer and the wallboard surface adjacent thereto when said wall is subjected to a fire on the wall second side, said means for retarding comprising structure which directs cooler gases to the interface of said inner layer and said wallboard, said structure comprising a plurality of outwardly projecting dimples, said stud further comprising an internal gap formed between said flange inner layer and outer layer, whereby air within said internal gap that becomes heated will tend to move vertically upward, within said gap.

4,435,937
CONCEALED FASTENER SUPPORT FOR INTERLOCKED CHANNEL SECTION PANELS

Lester W. Stone, Germantown, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed Mar. 8, 1982, Ser. No. 356,126
Int. Cl.³ E04D *3/24, 3/36*
U.S. Cl. 52—520 11 Claims

1. In a roof structure, a series of interlocked roof panels having adjacent margins forming rib joints and being of self-supporting capacity and closing the space between said purlins, rigid insulation sandwiched between said panels and said purlins, an integral, one-piece bearing support member overlying said rigid insulation of each said rib joint, said bearing support member comprising a pair of upper coplanar portions and an intermediate lower planar portion lying in a plane parallel to that of said coplanar portions, said coplanar portions and said intermediate lower portion being joined by a pair of downwardly extending portions to form a recess extending fully between opposite edges of said bearing support, said panels being connected to said bearing support, and a concealed fastener and associated through fastener means positioned along said rib joint in said recess to anchor said bearing support member to said purlin, each said concealed fastener having a foot extending from the lower end thereof for anchoring pairs of rigid interlocked metal panels at said rib joints, the foot of each said concealed fastener being contiguous with said lower

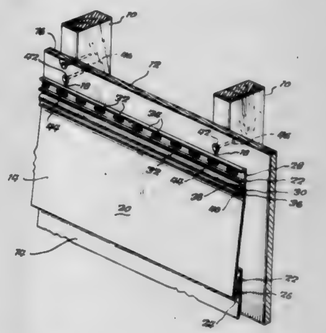


portion, said recess of said bearing support member being tightly pulled into said rigid insulation an amount about equal to the depth of said recess such that the lower surfaces of said coplanar portions are substantially contiguous with the upper surface of said rigid insulation.

4,435,938
VINYL SIDING ATTACHMENT

Edward J. Rutkowski, Kenmore, and Thomas R. Krowl, North Tonawanda, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Nov. 12, 1981, Ser. No. 320,613
Int. Cl.³ E04D *1/00*
U.S. Cl. 52—521 5 Claims

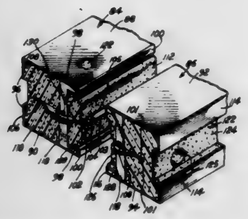


1. In an exterior wall structure, a plurality of sections of elongate vinyl lap siding, said vinyl siding comprising an elongate thin face section of potentially deformable vinyl exposed and forming the exterior surface of said wall structure and an elongate concealed top portion along the top edge, said top portion having a plurality of holes for the reception of fasteners at spaced positions therealong, and a plurality of preformed, relatively rigid, individual clips, said clips supporting solely a thin section of vinyl siding, said clips each having a top portion and a bottom portion, said clip top portions being affixed to the structure sheathing or framing members, said clip bottom portions having outwardly directed portions extending from behind the siding through said holes terminating in a preformed relatively rigid upwardly extending means for retaining the siding on said clip bottom portions, said clip bottom portions fitting loosely through said holes, whereby the vinyl siding top portion is free to expand and contract relative to said clips when said siding is subjected to temperature changes.

4,435,939
PANEL LOCKING MEANS

Richard E. Hird, Catlin, Ill., assignor to Estad Products, Inc., Danville, Ill.

Filed Aug. 15, 1980, Ser. No. 178,539
Int. Cl.³ E04C 1/10
U.S. Cl. 52—582 9 Claims

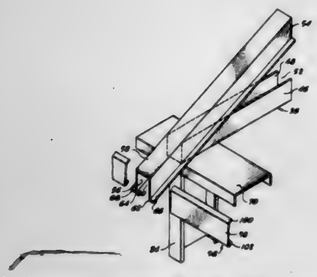


1. A panel locking supporting means for each of a pair of adjacent panels to be joined together, each panel including a pair of relatively rigid wall members with heat insulating material disposed therebetween, said locking supporting means comprising a rigid housing having spaced sides and means for joining the edge portions of the wall members together, said housing further comprising extensions respectively extending from opposite ends of the spaced sides and having at least one slot for receiving retaining means therein, and elongated retaining means substantially perpendicular to said housing extending through said slot and having its ends positioned within said joined edge portions to positively position said housing with respect to said wall members.

4,435,940
METAL BUILDING TRUSS

Jeanne A. Davenport, Long Beach; Robert L. Campbell, Irvine, and James F. Gallaway, Tustin, all of Calif., assignors to Angeles Metal Trim Co., Los Angeles, Calif.

Filed May 10, 1982, Ser. No. 376,527
Int. Cl.³ E04B 7/08
U.S. Cl. 52—641 7 Claims



1. A unitary metal building truss of lightweight metal adapted to span an area defined by vertical walls having outer edges, said truss including bottom chord member resting upon said vertical walls and having ends extending to at least the outer edges of said vertical walls, a pair of top chord members each having an outer end and an inner end, each of said top chord members extending from at least the ends of said bottom chord member and secured thereto angled upward and inward toward each other and each inner end abutting the other and secured to each other forming a crown wherein the bottom and top chord members form a triangle, and a plurality of diagonal members extend between the bottom and top chord members and are secured thereto, wherein a plurality of said trusses are used to cover said area defined by said vertical walls the improvement including:

said bottom chord member being of lightweight material and having a generally U shaped cross section formed by a web and two legs extending from said web and said web forms a base with said legs projecting upwardly forming a channel;

said top chord members each being of lightweight metal and in cross section possessing a hat shaped configuration and of an interior dimension greater than the exterior width dimension of said bottom chord member to overlie and encompass a portion of the legs of the end of said bottom chord;

fastening means to directly secure the ends of said bottom chord to portions of said top chords and the abutting ends of said top chords;

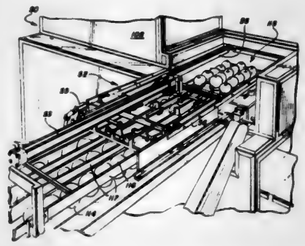
diagonal members each being of lightweight metal having ends, and one end of said diagonal member adapting to interfit within the legs of said bottom chord member and extend upwardly at an angle to a vertical plane and the other end interfitted within the legs of one of said top chord members; and

fastening means to secure the ends of said diagonal members to said bottom chord member and one of said top chord members.

4,435,941
PACKAGING MACHINE

John L. Booth, Richton Park, and Peter A. Rittmaster, Chicago, both of Ill., assignors to Booth Manufacturing Company, Vero Beach, Fla.

Continuation of Ser. No. 6,085, Jan. 25, 1979, Pat. No. 4,233,802, and a continuation-in-part of Ser. No. 876,841, Feb. 10, 1978, abandoned. This application Nov. 17, 1980, Ser. No. 207,690
The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.
Int. Cl.³ B65B 5/08, 5/06
U.S. Cl. 53—475 14 Claims



1. A machine for automatically packaging articles into expanded honeycomb and into a container comprising means for locating a container at a loading station of the packaging machine to be filled and moving the container out of the loading station after it has been filled, means for providing a separator sheet into the container at the loading station, means for disposing a prescribed number of articles to be packaged as a layer in the container in a nested relationship in an article loading position, an article controlling housing assembly, means for automatically providing above said loading station a honeycomb expander tray on which is located an open honeycomb section for receiving articles and for removing the tray after the honeycomb section has been removed therefrom, means for moving the housing assembly and for lifting said articles from their article loading position, depositing them in said open honeycomb and subsequently lifting the filled honeycomb from said tray and then depositing the same in a container.

4,435,942
METHOD AND APPARATUS FOR STOPPERING MODIFIED BOTTLES WITH A ONE-PIECE CORKING MEANS

Efim Zaltsman, Brooklyn, N.Y., assignor to Monarch Wine Co., Inc., Brooklyn, N.Y.

Division of Ser. No. 223,894, Jan. 9, 1981, abandoned. This application Apr. 16, 1982, Ser. No. 368,990
Int. Cl.³ B67B 1/04, 3/22; B65B 7/28
U.S. Cl. 53—489 2 Claims



1. A method for stoppering a bottle with pressurized, carbonated, water-based liquid contents; said method comprising the steps of:

(a) providing a bottle having a body portion; an elongated neck portion; and, a mouth portion; said neck portion having two relatively axially proximate, circumferential, squat, annular flanges spaced apart longitudinally of the neck and adjacent to the mouth;

(b) providing a corking means having:

(i) an elongated, generally circularly cylindrical stopper, insertable with frictional engagement into the mouth portion of the bottle;

(ii) a head connected to the stopper;

(iii) an annular, circumferential ring, dimensioned and shaped for reception between the two annular flanges of the bottle neck; said annular ring being positioned and spaced below the head as molded and being concentric with the stopper, said ring being below the head;

(iv) a flexible, elongated tether having one end connected to the ring and the other end connected to the head; said tether being in a folded state as molded and having a length substantially greater than the distance between said one end and said other end; and

(v) a plurality of short frangible bridges, circumferentially spaced apart of each other; said frangible bridges connecting the head to the ring;

(vi) the stopper, head, ring, tether and bridges being integrally molded in one piece of elastomeric plastic;

(c) inserting the stopper portion of the corking means into the mouth portion of the bottle with a die; and

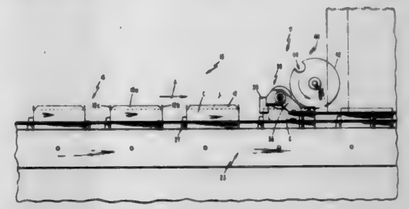
(d) thereafter forcing the annular ring portion of the corking means downwardly with a second die over the upper of the two annular flanges to a position between the two annular flanges of the bottle;

whereby the frangible bridges hold the stopper and annular ring in proper position with respect to one another for insertion and reception respectively in and around the bottle neck; said frangible bridges breaking when the annular ring is forced into place between the flanges.

4,435,943
METHOD AND APPARATUS FOR FOLDING CARTON FLANGES

Sigurd J. Hoyrup, Monta Vista, Calif., assignor to Kliklok Corporation, Redwood City, Calif.

Filed Jul. 15, 1981, Ser. No. 283,553
Int. Cl.³ B65B 7/20
U.S. Cl. 53—491 12 Claims



1. A folding apparatus for prebreaking and folding relatively short upstanding flanges formed on the upper sides of a carton or the like, comprising:

(a) conveying means for moving the carton along a predetermined guide path at a substantially uniform velocity, said carton positioned on the conveying means to define upwardly directed side, leading and trailing end flanges;

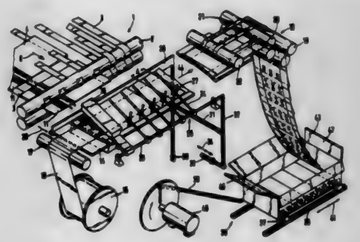
(b) first folding means including a grooved trap and inclined edge surface positioned above the guide path for engaging and partially folding down the upwardly directed side flanges of the carton, said grooved trap being positioned adjacent the inclined edge surface to engage and trap the upwardly directed free edge of said side flanges; and

(c) second folding means for contacting and completing the folding down of said prebroken flanges, said second folding means being further operable to contact and prebreak the leading end and trailing end flanges.

4,435,944
APPARATUS FOR ORDERLY TRANSPORT AND STORAGE OF FLAT OBJECTS

Alfons Meyer, Donauschwabenstrasse 40, D-7050 Waiblingen, Fed. Rep. of Germany

Division of Ser. No. 276,949, Jun. 24, 1981, Pat. No. 4,354,335, which is a continuation of Ser. No. 34,756, Apr. 30, 1979, abandoned. This application Jun. 18, 1982, Ser. No. 389,584
Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819887
Int. Cl.³ B65B 35/32
U.S. Cl. 53—531 8 Claims



1. An apparatus for ordering, transporting and storing flat empty bags (4) closed at three sides and having an opening (6) at the fourth side and an extending flap (11) located adjacent said bag opening and projecting therefrom,

said bags being aligned seriatim and in overlapping position in shingled arrangement on a carrier web (15) in which the

carrier web provides for storage and delivery of the bags to a subsequent processing station,

comprising means for providing a tear or servering or fracture line (13) between the extending flap (11) and the remainder of the bag;

means for transporting the bags seriatim in a first direction (0) with their flaps extended at right angles to said first direction;

means for fixing the carrier web (15) in a direction (44) which is perpendicular to said first direction (0);

means for forwarding the bags, one after another, in predetermined time intervals in said first direction (0) at a level above said carrier web (15) from a first side of the carrier web and across the carrier web into an abutment or stop means (27) located at the second side of the carrier web;

means for dropping said bags over and on the carrier web in mutually overlapping position while guiding the drop of the then dropping bag on the web and forming a shingled arrangement of bags on the web;

means for aligning each side of the bag on the carrier web and exactly positioning the bags on the carrier web with their flaps at defined distances (A) from one another;

means for permanently and irremovably attaching said flaps of bags, as positioned and aligned onto said carrier web, seriatim at said defined distances (A) from one another to insure separation of the bag from the flap at said tear, severing or fracture line upon application of a severing force to the bag while leaving the flap attached to the web;

and means for storing said carrier web and said bags for subsequent separation of said bags from said flaps to permit subsequent filling, and separation and removal of said bags (4) from the web (15) while leaving the flaps (11) attached to the web (15).

4,435,945

APPARATUS FOR GIRDING PACKAGE WITH BONDED SYNTHETIC-RESIN STRIP

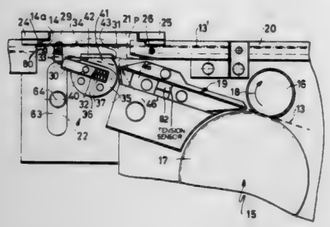
Klaus Röhrig, Wuppertal, Fed. Rep. of Germany, assignor to Berning & Sohne, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,661

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023526

Int. Cl.³ B65B *13/32*

U.S. Cl. 53—589 **14 Claims**



1. An apparatus for girding a package with a bonded synthetic-resin web, comprising:

a frame;

support means on said frame for holding said package at a bonding station;

feed means on said frame for automatically encircling said package at said station with a leading portion of an elongate synthetic-resin web;

clamping means on said frame for temporarily constraining said web upon an encircling of said package by said leading portion;

cutting means on said frame at said station for severing said leading portion upon a securing of said web by said clamping means, thereby forming a web segment having a leading end and a trailing end overlappable therewith and engaging said package along at least a substantial part of a perimeter thereof, said clamping means functioning to secure at least one of said ends;

melting means on said frame at said station insertable between said ends for heating at least one of said ends on a surface facing the other end;

sealing means on said frame at said station for pressing said ends together along a clamping surface upon a heating of at least one of said ends by said melting means, said sealing means including a drum rotatably mounted on said frame, means to undirectionally rotate said drum on said frame about an axis parallel to said clamping surface, a first press element mounted on said drum, said sealing means further including a second press element disposed in the rotation path of said first press element for coacting therewith to squeeze said ends together during a bonding phase of an operating cycle, said first press element being provided with means shiftably mounting it for moving away from the other press element during said bonding phase upon contact of said elements, said sealing means further including contact-ensuring means acting on at least the shiftably mounted press element for exerting a restoring force thereon to yieldably urge such element towards the other press element during said bonding phase; and

a programmer means operatively connected to said feed means, said clamping means, said cutting means, said melting means and said sealing means for controlling and timing the operations thereof, said clamping surface being a plane defined by a face of said second press element, said second press element being mounted on said frame at a fixed distance from said axis, said contact-ensuring means comprising a restoring spring acting on said first press element, said first press element being shiftably mounted for reciprocation perpendicular to said axis, said first press element being in the form of a bar shiftably mounted along a diameter of said drum, said drum having a passage wall for said web along a longitudinal plane parallel to said axis and at an angle with respect to said bar; said cutting means including a blade attached to said drum on said passage wall, passage ahead of said first press element in the direction of rotation of said drum and traversed by said web formed between said first press bar and said blade.

4,435,946

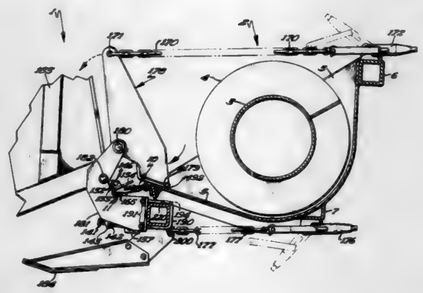
MULTI-ROW CROP HARVESTING ATTACHMENT

Leland E. Erickson, Forman, N. Dak. 58032

Division of Ser. No. 311,459, Oct. 14, 1981. This application Jan. 3, 1983, Ser. No. 455,218

Int. Cl.³ A01D *41/06, 41/12, 47/00*

U.S. Cl. 56—15.6 **7 Claims**



1. A crop harvesting attachment for use in combination with a combine having a cross auger trough and sickles and guards protruding forward of the trough, comprising:

(1) means for presenting crops to said combines sickles;

(2) frame means for supporting the weight of such crop presenting means; said crop presenting means attached to said frame means;

(3) one or more mounting brackets, each comprising an upper section and a lower section, each mounting bracket rigidly attached to the frame means at the mounting bracket's lower section;

(4) one or more locking cams, each comprising a lower pivot section and an upper section, each of said locking cams pivotally connected to a said mounting bracket at their respective upper sections; and

(5) means for attaching each said locking cam's upper section to the upper rear portion of said combine's cross auger trough and for fixing the distance therebetween, said upper attaching means attached to the locking cam's upper section, said distance fixed so that the point, at which each said mounting bracket is pivotally connected to each said locking cam, is approximately above the locking cam's pivot section, but slightly longitudinally forward of a vertical line running through the locking cam's lower pivot section, when said lower pivot section is in contact with and being supported by the upper front portion of said cross auger trough.

4,435,947

TOWED COTTON RETRIEVING BELT ASSEMBLY

William E. Rood, Jr., 3134 E. Fargo Cir., Mesa, Ariz. 85203

Filed Oct. 16, 1981, Ser. No. 311,984

Int. Cl.³ A01D *45/18*

U.S. Cl. 56—28 **17 Claims**



1. A cotton retrieving device comprising in combination:

(a) a retrieving belt, said retrieving belt being transversely slotted;

(b) upper pulley means for supporting said retrieving belt, said upper pulley means having a first axis;

(c) a lower pulley means for supporting said retrieving belt, said lower pulley means having a second axis parallel to said first axis;

(d) pulley support means for supporting said upper pulley means and said lower pulley means; and

(e) towing means connected to said pulley support means for effecting towing of said pulley support means along a ground surface, said towing means having a forward portion for connection to a pulling means at a point outside of the area circumscribed by said retrieving belt and substantially in front of said retrieving belt, said towing means also having a rear portion connected to said pulley support means for towing said pulley support means and for holding said first axis and said second axis in a plane which remains approximately at a predetermined non-parallel angle with respect to said ground surface as said cotton retrieving device is towed along said ground surface.

4,435,948

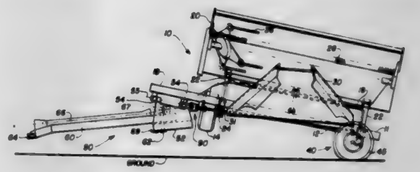
MECHANISM FOR PIVOTING WINDROW SHIELDS INTO A VERTICAL TRANSPORT POSITION

Richard E. Jennings, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 30, 1982, Ser. No. 431,520

Int. Cl.³ A01B *73/00*

U.S. Cl. 56—228 **10 Claims**



1. In a crop harvesting machine convertable between a longitudinally movable operating position and a laterally movable transport position and having a draft means for connection to a prime mover for a source of motive power, said draft means including a hitch base member and a tongue pivotally connected to said hitch base member; a frame pivotally connected to said hitch base member for rotation about a pivot axis; windrow shields pivotally mounted on said frame for movement between a generally horizontally extending operative position and a generally vertically extending transport position; and power means for pivotally moving said frame and said tongue, the improvement comprising:

windrow shield pivot means interconnecting said hitch base member and said frame to automatically pivotally rotate said windrow forming shield from said operative position to said transport position as said frame is pivotally moved about said pivot axis.

4,435,949

MULCHING ADAPTER FOR ROTARY LAWN MOWER

Richard A. Heismann, Knoxville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 12, 1982, Ser. No. 397,102

Int. Cl.³ A01D *53/08*

U.S. Cl. 56—320.2 **14 Claims**



1. A lawn mower comprising a blade housing having a generally circular interior surface and having a grass discharge chute including a discharge outlet through which cut grass is adapted to be discharged, at least one wheel for supporting said blade housing for movement along the ground, a cutting blade supported in said blade housing, a prime mover supported by said blade housing and connected to said blade for causing rotation of said blade about a generally vertical axis, and a grass mulcher insertable through said discharge outlet into said discharge chute for blocking said discharge chute to prevent cut grass from passing through said discharge chute, said mulcher comprising an inner portion including a substantially vertical surface curved about said generally vertical axis, spaced from but adjacent the path of said cutting blade, and forming a generally continuous surface with said blade housing interior surface, said inner portion of said mulcher also including an upper surface sloping upwardly and inwardly with

respect to said generally vertical axis so as to deflect downwardly and toward said cutting blade moving pieces of grass, cut by said cutting blade and striking said upper surface.

4,435,950

FRUIT OR BERRY HARVESTING DEVICE FOR IN-LINE CROPS

Alain Deux, Angers, and Jean C. Merant, Doue La Fontaine, both of France, assignors to Braud, Societe Anonyme Francaise, Angers, France

Filed Aug. 17, 1982, Ser. No. 408,889
Claims priority, application France, Aug. 31, 1981, 81 16564
Int. Cl.³ A01D *46/00*
U.S. Cl. 56—330 **4 Claims**



1. A machine for harvesting fruits and berries by dislodgment for in-line crops, by vibration of the vegetation, comprising pairs of "hedgehog" drums with vertical axes, arms supporting said axes free to pivot with resilient return about fixed axes of the machine, angularly adjustable hubs fixed on said axes of the drums inclined by at an angle with respect to said axes of the drums, sleeves mounted freely rotatable about said hubs and inclined by the same angle, flexible fingers fixed radially to said sleeves, eccentric fly-weights free to rotate about axes carried by arms extending radially from the sleeves, means for controlling the speed of rotation of the axes of the drums and of a chain and gear wheel transmission coupling the axes of the drums to the axes of the fly-weights, the rotation of the axes of the drums causing a sinusoidal vibration of the fingers in a vertical plane passing through said axes of the drums, which vibration is adjustable from zero to its maximum by variation of the speed of rotation of said axes and by variation of the angle of inclination of the hubs, which vertical vibration is compounded by the adjustable horizontal vibration due to the fly-weights, the horizontal vibration being adjustable by varying at least one of the weight, eccentricity and speed of the fly-weights.

4,435,951

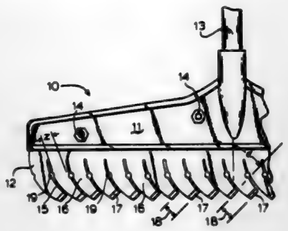
GARDENING DEVICE

Jürgen Dambroth, Barsinghausen, Fed. Rep. of Germany, assignor to Firma Rux GmbH, Barsinghausen, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 279,903
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025029
Int. Cl.³ A01B *1/24*
U.S. Cl. 56—400.05 **14 Claims**

1. A multi-purpose gardening tool for operating on grass faces which is securable to an elongated handle, comprising:

an operating device having an elongated support portion which is securable to an elongated handle and which has a longitudinal axis oriented in a generally perpendicular disposition relative to the axis of said handle and a tool portion composed of a plurality of tongues separated by channel-like cut-outs, the free ends of which define cutting-like linear faces all of which faces are parallel to each other and are directed to the grass face to be worked on and are disposed at an angle (α) with respect to a plane passing through the axis of the handle and the normal movement direction of the handle, said linear tongue faces



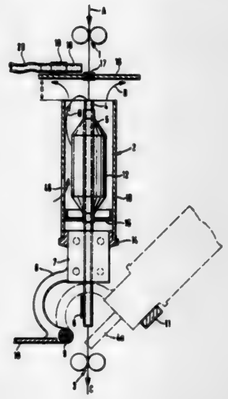
also being generally arranged at an angle to a plane passing through said handle axis and said support portion axis.

4,435,952

SPINNING ASSEMBLY FOR A WRAPPED YARN SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Str. 18, 7347 Bad Überkingen, Fed. Rep. of Germany; Kurt Lang, Lauterstein, and Rolf Erhardt, Wäschenbeuren, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 332,760
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101146
Int. Cl.³ D02G *3/36*; D01H *7/18, 11/00*
U.S. Cl. 57—18 **20 Claims**



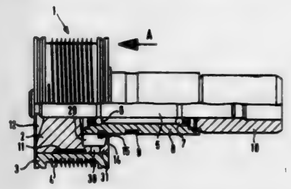
1. A spinning assembly for a wrapped yarn spinning machine comprising a hollow spindle carrying a co-rotating binding thread and disposed between delivery means for a sliver to be wrapped and a take-off means for the wrapped yarn, said binding thread moving toward the sliver to be wrapped thereby during rotation of said spindle, said spindle being surrounded in the vicinity of the binding thread with a stationary balloon limiter means, a relatively stationary screen plate means located between the delivery means and the balloon limiter means, said screen plate means being provided with a passage for sliver and being disposed at an axial distance from the balloon limiter means so that an airflow is able to take place in the balloon limiter means which airflow leaves the balloon limiter means in a generally radially outward direction and thus generally opposite the direction of movement of the binding thread to thereby prevent fly accumulation on the binding thread.

4,435,953

OPENING ROLLER UNIT FOR OPEN-END SPINNING INSTALLATIONS

Friedbert Schmid, Bad Überkingen, and Hans Raasch, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker, Uberkingen and Hans Stahlecker, Sussen, both of, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,219
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123480
Int. Cl.³ D01H *7/895, 7/892*; D01G *15/28*
U.S. Cl. 57—408 **18 Claims**



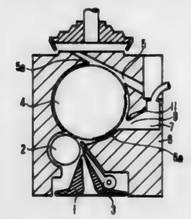
1. Opening roller unit for open-end spinning installations having a shaft supported in a bearing box, and an opening roller being arranged on an end of the shaft which projects from the bearing box for rotation with said shaft, the opening roller extending over the bearing box in a manner forming a cavity that is sealed toward the outside with an annular sealing gap, wherein the opening roller comprises a base member and a ring detachably secured thereto, the outer periphery of said ring being provided with a fitting, and wherein external access to said cavity is blocked by said ring.

4,435,954

FIBER OPENING DEVICE IN OPEN-END SPINNING UNIT

Kazuo Seiki, Kariya; Kozo Motobayashi, Aichi; Toshio Yoshizawa, Chiryu; Yoshiaki Yoshida, and Keiji Onoue, both of Toyota, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 22, 1981, Ser. No. 333,443
Claims priority, application Japan, Dec. 27, 1980, 55-185105
Int. Cl.³ D01H *7/882, 7/892*
U.S. Cl. 57—408 **6 Claims**



1. A fiber opening device for use in an open-end spinning unit, comprising a generally hollow cylindrical casing having a rotatable combing roller mounted therein, said casing having a fiber inlet port, a trash exit port, and a fiber feeding channel port through which a stream of opened fibers is discharged from said casing responsive to rotation of said combing roller, said ports being disposed in tandem spaced-apart relation along the interior periphery of said casing, and each of said ports providing an upstream edge and a downstream edge of the port respectively extending substantially across said interior periphery, and an elongated edging member of wear-resistant material attached to at least one of said port edges and substantially extending only along the length thereof.

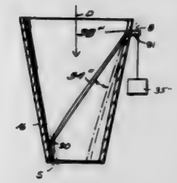
4,435,955

METHOD AND APPARATUS FOR PRODUCING OPEN-END-SPUN NOVELTY YARNS

John H. Sumner, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 127,446, Mar. 5, 1980, Pat. No. 4,361,007. This application Sep. 3, 1982, Ser. No. 414,576
Int. Cl.³ D01H *1/12, 7/882, 7/892*; D02G *3/34*
U.S. Cl. 57—409 **15 Claims**





1. A method of open-end spinning a novelty yarn in an open-end spinning apparatus having a fiber separating device, a twisting device, an elongated thin member, and a fiber transport section interconnecting the separating and twisting devices, said method comprising the steps of: effecting controlled formation of effects in the fiber transport section by effecting controlled reciprocating introduction of the elongated member into the fiber flow within the transport section so that it at all times makes an angle of less than about 45° with respect to the direction of fiber flow; and intermittently passing those effects to the twisting device by reciprocally withdrawing the elongated member from the fiber flow so that it at all times makes an angle of less than about 45°.

5. Apparatus for spinning novelty yarn comprising an open-end spinning device including:

a fiber separating device;

a twisting device;

a fiber transport section disposed between said separating and twisting devices, said fiber transport section comprising a tubular member defined by a wall, and through which the fiber flows in a predetermined direction from the fiber separating device to the twisting device; and

means for effecting controlled formation of effects in the transport section and for occasionally passing the formed effects to the twisting device, said means comprising: an elongated member having a length long enough to extend from one side of said tubular member wall to another portion of said tubular member wall; and means for pivotally mounting, for pivotal movement about an axis, said elongated member at a first side of said tubular member wall so that said elongated member has a free end extending angularly from said first side of said tubular member wall generally in the predetermined direction of fiber flow, and so that it is moveable from a collecting position wherein said free end thereof engages, or substantially engages, another side of said tubular member wall to collect effects between said free end and said wall, to a

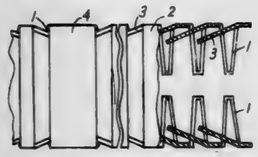
release position wherein said free end is spaced from said tubular member wall.

4,435,956

BRACELET

Usher Meyman, 230 Ocean Pkwy., E3, Brooklyn, N.Y. 11218

Filed Nov. 12, 1981, Ser. No. 320,420
Int. Cl.³ F16G *13/00*
U.S. Cl. 59—79.1 **6 Claims**



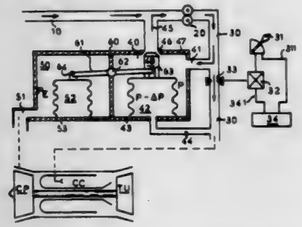
1. A bracelet, comprising
two spring elements arranged in two rows extending in direction of elongation; and
a plurality of connecting elements arranged in overlapping relationship and connecting said spring elements in a direction which is transverse to said direction of elongation and fixedly connected with said spring elements.

4,435,957

DEVICE TO REGULATE THE FLOW RATE OF A LIQUID FUEL SUPPLY SYSTEM OF A GAS TURBINE ENGINE

Jean-Luc Fondacci, Montgeron, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), France

Filed Jan. 8, 1982, Ser. No. 338,093
Claims priority, application France, Jan. 19, 1981, 81 00853
Int. Cl.³ F02C *9/28*
U.S. Cl. 60—39.281 **3 Claims**



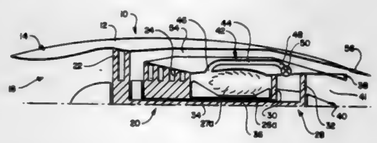
1. Flow control device for a liquid fuel supply system of a gas turbine engine equipped with an air compressor, said fuel supply system being of the type comprising a volumetric fuel pump, an intake line delivering the fuel from a reservoir to the pump, a supply line directing the fuel discharged by the pump to the combustion chamber of the engine, a principal flow regulator element in the supply line, means to assign specific values to the passage cross section of said principal regulator element and a fuel return circuit connecting the supply line upstream from the principal regulator with the intake line, wherein said flow control device is an auxiliary regulator comprising:
a tight enclosure divided into a first chamber and a second chamber by a tight, transverse separating partition, the first chamber being in the return circuit of the fuel and also containing a fuel inlet orifice and a fuel outlet orifice; means connecting the second chamber with a selected stage of the compressor;
a first bellows longitudinally deformable and located in the first chamber, fastened by one of its ends to a wall of the enclosure opposite the fuel outlet orifice, its interior being in communication with the supply line downstream from the principal regulator and carrying on its free end a valve tending to close the fuel outlet orifice when said bellows expands;
a second bellows, longitudinally deformable and containing no air, located in the second chamber wherein it is attached by one of its ends to the same wall of the enclosure as the first bellows; and,
a lever passing through the partition to which it is attached by means of a tight articulated joint and having its free ends attached to the two bellows by articulated joints such that the auxiliary regulator maintains the value of the pressure drop of the fuel at the passage of the principal regulator essentially proportional to the value of the pressure of the air discharged by the compressor through the connecting means, as the principal regulator varies within predetermined limits.

4,435,958

TURBINE BYPASS TURBOFAN WITH MID-TURBINE REINGESTION AND METHOD OF OPERATING THE SAME

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1981, Ser. No. 306,650
Int. Cl.³ F02K *3/06*
U.S. Cl. 60—204 **24 Claims**



14. In a supersonic jet engine adapted to cruise at supersonic speeds at a relatively high efficiency, to operate with high turbine inlet temperatures for high power operation, and to cruise subsonically with a relatively low specific fuel consumption, said engine comprising:
a. a housing structure having an upstream inlet end to receive intake air, and a downstream exhaust end to discharge jet exhaust,
b. an air inlet arranged to receive intake air at subsonic velocity and also to receive intake air at supersonic velocities and reduce said air to subsonic velocity,
c. a compressor mounted in said housing rearwardly of said inlet and arranged to compress air flowing into said inlet, said compressor having a first compressor fan section and a second compressor section, each having an inlet end and an outlet end arranged to operate between a maximum compression ratio and a minimum compression ratio,
d. means defining a fan duct positioned rearwardly of said fan section,
e. means defining a combustion chamber mounted in said housing downstream of said compressor to receive compressed air therefrom,
f. fuel injection and ignition means in said combustion chamber arranged to burn fuel in airflow from the compressor and provide a gaseous flow from said combustion chamber,
g. a turbine mounted in said housing rearwardly of said combustion chamber and arranged to receive said gaseous flow from the combustion chamber, said turbine having a first stage operatively connected to the compressor second section, and a second stage operatively connected to the compressor first section adapted to receive gaseous flow from said first stage, each of said first and second turbine stage having a predetermined cross-sectional nozzle area through which said gaseous flow passes to pass rearwardly through a primary exhaust passageway,
h. an exhaust nozzle to receive gaseous flow from said turbine and exhaust said flow to produce a thrust,
i. turbine bypass means to receive flow from a location downstream of said compressor as bypass flow, to direct said bypass flow along a path bypassing said turbine first stage and exhaust said bypass flow to pass through said turbine second stage,
j. bypass valve means to control the amount of flow bypassed through said turbine bypass means,
k. engine control means operatively connected to said fuel injection and ignition means and to said bypass valve means, in a manner to control the amount of fuel directed to said fuel injection and ignition means and to control said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means,
a method of operating said jet engine, said method comprising: controlling the amount of fuel directed to said fuel injection and ignition means and controlling said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means so that said bypass valve means is at a more open position at higher engine thrust settings where higher temperatures are created in said combustion chamber, and at a more closed position at lower engine thrust settings where lower temperatures are created in said combustion chamber, in a manner that there is substantially constant corrected gaseous flow into said turbine, and said bypass flow is directed through said turbine second stage, said corrected flow being measured according to the formula:

$$\text{corrected gaseous flow} = W\sqrt{\theta_t/\delta_t}$$

where:
W = Total Mass Flow Rate in lbs. per second
θ_t = Observed temperature (absolute) divided by standard temperature (518.67° R)
δ_t = Observed pressure divided by standard pressure (2116.22 lbs./sq. ft.) whereby during subsonic cruise said engine can operate at a relatively low specific fuel consumption with high compression ratio and low combustion exit temperature, in a condition where said valve bypass means is at a substantially closed position, during high power acceleration mode, said engine can operate at high combustion exit temperatures in a condition where said valve bypass means is in a more open position to maintain constant corrected flow through said turbine to satisfy the turbine requirements, and during supersonic cruise mode the engine can operate efficiently at relatively high combustion exit temperatures.

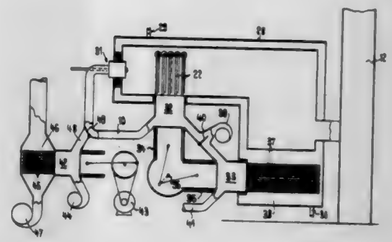
4,435,959

HOT-GAS PISTON-TYPE ENGINE AND USE THEREOF IN HEATING, COOLING AND POWER PLANTS

Ernst Mohr, Murten, Switzerland, assignor to Fides Treuhand GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,787
Claims priority, application European Pat. Off., Jul. 1, 1980, 80810217
Int. Cl.³ F01B *29/08*
U.S. Cl. 60—512 **28 Claims**

1. A hot-gas piston-type engine comprising
at least one cylinder having a first wall portion defining a first compression space and a second wall portion defining a second compression space, said second compression space being in fluid communication with said first compression space;
a reciprocable piston disposed in said first compression space for reciprocating movement therein and for contact with compressible fluid in said first compression space;
crank means connected to said piston for converting reciprocating piston motion to rotational motion;
inlet means for intake of fluid into said cylinder;
outlet means for exhaust of fluid from said cylinder; and
heat exchanger means for contact with a heat transfer medium, said heat exchanger means comprising said second compression space and said second wall portion of said cylinder, said second compression space being empty during operation of the engine except for the presence of compressible fluid communicated into said second compression space from said first compression space.

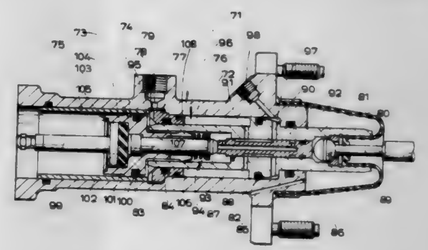


4,435,960

HYDRAULIC POWER BOOSTERS FOR VEHICLE HYDRAULIC SYSTEMS

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 30, 1980, Ser. No. 221,260
Claims priority, application United Kingdom, Jan. 3, 1980, 8000200; Feb. 20, 1980, 8005727
Int. Cl.³ B60T *13/00*
U.S. Cl. 60—547.1 **6 Claims**



1. A pedal-operated hydraulic power booster for a vehicle hydraulic system comprising a pedal, a housing having an inlet port for connection to a source of hydraulic fluid under pressure, an exhaust port for connection to a reservoir for hydraulic fluid, a stepped bore having axially spaced first, second and third portions, said first and second portions being of different diameter, a boost piston of stepped outline for actuating a master cylinder assembly, said boost piston having first, second and third portions of at last two different diameters working in said first, second and third portions of said bore respectively, said second portion of said piston being of smallest diameter, and said first and third portions of said piston being arranged at opposite ends of said second portion of said piston, a seal carried by said first portion of said piston for slidable sealing engagement with said first portion of said bore, a seal in said housing located in said second portion of said bore and in which said second portion of said piston has a slidable sealing engagement, a seal carried by said third portion of said piston for slidable sealing engagement in said third portion of said bore, said first portions being disposed closer than said second portions to said pedal, means defining in said housing a first high pressure chamber through which hydraulic fluid is applied to said boost piston, means defining in said housing a second high pressure chamber communicating with said inlet port, means defining in said housing a reservoir chamber communicating with said exhaust port, and a control valve opera-

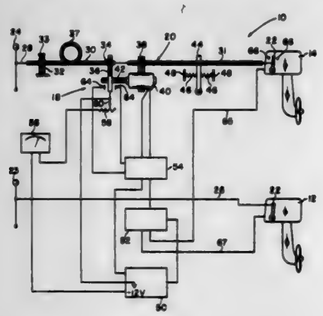
ble in response to an effort applied to said pedal for controlling communication between said first and second high pressure chambers and between said first high pressure chamber and said reservoir chamber, said first high pressure chamber being defined at least in part between said first portion of said piston and a shoulder at a first step between said first portion of said bore and said second portion of said bore, said reservoir chamber being defined at last in part between said third portion of said piston and a shoulder at a second step between said second portion of said bore and said third portion of said bore in which the said third portion of said piston works, and said second high pressure chamber being defined between said second portion of said piston and the end of said bore which is remote from said master cylinder.

4,435,961

METHOD AND APPARATUS FOR AUTOMATICALLY SYNCHRONIZING MULTIPLE ENGINES

Glenn D. Stewart, 210 Bayview Ave., Massapequa, N.Y. 11758

Filed Dec. 19, 1980, Ser. No. 218,063
Int. Cl.³ F02B 73/00
U.S. Cl. 60—719 16 Claims



1. In an apparatus for synchronizing the operation of at least a slave engine with that of a master engine,

manual and engine throttles movably connected with and for adjusting the operation of each of said engines,

servo means operable to adjust said slave engine throttle to synchronize it with the operation of said master engine throttle when the master and slave engines operate asynchronously,

and means connecting said slave engine throttle with its respective manual throttle including operable means connecting said slave engine manual throttle with said slave engine throttle for operation of said slave engine throttle directly in response to the operation of said respective manual throttle and moving means releasably moving said operable means and connected with and between said servo means and said operable means to move to adjust said operable means and said slave engine throttle in response to the operation of said servo means,

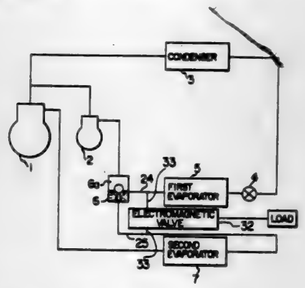
and resiliently yieldable means connected between said moving means and said servo means and applying a predetermined resistance to the movement of said moving means in response to the operation of said slave engine manual throttle until the force applied by said slave engine manual throttle exceeds said predetermined force thereby enabling said slave engine and its throttle to be independently manually overcontrolled and adjusted by the movement of its respective manual throttle without the application of anything more.

4,435,962

REFRIGERATING APPARATUS

Taketoshi Mochizuki, Shimizu; Kazuya Matsuo, Ibaraki; Mituo Kudo, Shimizu; Akira Arai, Ibaraki; Junichi Yamada, Itami; Keizi Shono, Toyonaka; Masaaki Aoki, Amagasaki; Masaichi Ohmori, Hachioji, and Genichiro Nishi, Sagamihara, all of Japan, assignors to Shin Meiwa Industry Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 276,192
Claims priority, application Japan, Jun. 20, 1980, 55-82871
Int. Cl.³ F25B 7/00, 41/00
U.S. Cl. 62—175 4 Claims



1. A refrigerating apparatus comprising a closed refrigerant circuit including a first compressor, a condenser, a first pressure reducing means, a first evaporator, a second pressure reducing means and a second evaporator connected together through lines in the indicated order, said first evaporator is located in a cooling air passage on an upstream side thereof with respect to a direction of an air current flowing through said air passage, said second evaporator is located in the cooling air passage on a downstream side thereof, and

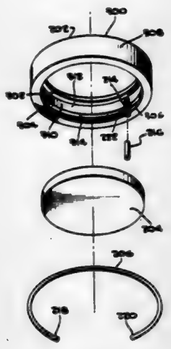
a second compressor connected to said refrigerant circuit so that gaseous components of refrigerant in the line between an outlet of the first evaporator and the second pressure reducing means is lead to a suction side of the second compressor, a discharge line of the second compressor is in communication with a discharge line of said first compressor.

4,435,963

MEANS FOR RETAINING JEWELERY FOR INTERLOCKING WITH PRECISE PREFORMS

Jhono Shigeru, Los Angeles, Calif., assignor to Tempo G, Los Angeles, Calif.

Continuation-in-part of Ser. No. 146,488, May 5, 1980, Pat. No. 4,283,831. This application Apr. 28, 1981, Ser. No. 258,287
Int. Cl.³ A44C 15/00; B65D 45/32
U.S. Cl. 63—18 49 Claims



1. A cast frame characterized by an upper face having a large central hole for exposing an object, a lower face having a large central hole, an inner transverse circumferential wall containing a transverse critical dimension inner wall portion adjacent the upper face, the circumference of the critical dimension inner wall being only slightly larger than the corresponding circumference of the object to be retained within it, and an annular groove in the inner transverse circumferential wall and beneath the critical dimension inner wall, whereby the improvement is an anti-rotation means for preventing rotational movement of different objects of a circular configuration and approximately the same size in the cast frame, the anti-rotation means comprising:

a. a notch in said inner transverse circumferential wall and extending into said critical dimension inner wall;

b. an anti-rotation pin placed into said notch such that the pin extends into the area of the critical dimension inner wall but does not extend into said annular groove; and

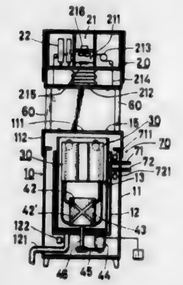
c. said anti-rotation pin having a press fit between the object and said notch.

4,435,964

AUTOMATIC WASHING MACHINE FOR SHOES

Nobuo Misawa, 2749 Kawajiri, Shiroyamacho Tsukuigun Kanagawaken, Japan

Filed Aug. 4, 1982, Ser. No. 405,150
Claims priority, application Japan, Aug. 27, 1981, 56-134701; Feb. 19, 1982, 57-25765; May 24, 1982, 57-86668
Int. Cl.³ D06F 9/00, 25/00
U.S. Cl. 68—19.2 13 Claims



1. An automatic washing machine for shoes comprising

(a) a water tub having an open upper side,

(b) a dehydrating tub which is rotatably disposed in said water tub,

(c) an external shell which houses said water tub,

(d) a head section which is provided above said external shell and vertically moves to open and close the opening of said water tub,

(e) a water supplying and discharging means which supplies water into and discharges it from said water tub,

(f) at least two brushing sections which are arranged adjacent each other in said dehydrating tub, each brushing section having an inner brush which is made so that a shoe may be mounted thereon and an outer brush which is arranged to surround said inner brush so that said outer brush comes in contact with the external surface of said shoe mounted on said inner brush,

(g) a drying means which is provided on said head section to supply air for drying into said water tub,

(h) a driving means for rotating said dehydrating tub at a high speed,

(i) a driving means for alternately moving up and down the inner and outer brushes of said brushing section in two different directions,

(j) a driving means for vertically moving said head section, and

(k) a control means for controlling the driving means for said dehydrating tub, the driving means for said brushing sections, the driving means for said head section and said water supplying and discharging means,

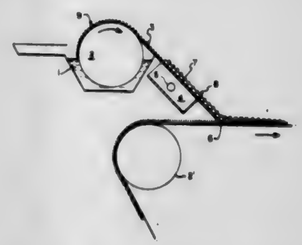
wherein an automatic washing operation for shoes is carried out in sequence through a first stage for covering and closing said water tub by moving down said head section by said control means after shoes have been mounted on said inner brushes of the brushing sections, a second stage for supplying water for washing into said water tub, a third stage for brushing the shoes by said brushing sections, a fourth stage for discharging water for washing from said water tub and supplying water for cleansing into the water tub, a fifth stage for discharging water for cleansing, a sixth stage for centrifugally dehydrating water from the shoes by rotating said dehydrating tub and said brushing sections, a seventh stage for supplying air for drying from said drying means into said dehydrating tub after dehydration, and an eighth stage for moving up said head section to expose said brushing sections.

4,435,965

APPARATUS FOR TREATING A POROUS, ABSORBENT MATERIAL WITH A FOAMABLE CHEMICAL COMPOSITION

Sasseville, Roland E.; Joseph S. Chappell, and Daniel J. Corcoran, Jr., all of Greensboro, N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 246,320, Mar. 23, 1981, abandoned. This application Jan. 7, 1982, Ser. No. 337,856
Int. Cl.³ D06B 1/06
U.S. Cl. 68—205 R 3 Claims



1. An apparatus for treating a porous, absorbent material with a liquid, foamable chemical composition containing a modifying compound with which it is desired to treat the material, which chemical composition is capable of being formed by forcing a gas through the chemical composition, said apparatus comprising:

a container for containing the foamable chemical composition;

rotatable roll means positioned at least partially in said container for transferring the foamable chemical composition out of said container;

a doctor blade having a receiving end adjacent the periphery of said roll means for receiving the foamable chemical composition from said roll means, a discharge end below said receiving end for discharging foam onto the material to be treated, and an intermediate porous portion between said receiving and discharge ends and extending across the doctor blade;

a gas chamber having an inlet for introducing the gas into said gas chamber, said gas chamber being positioned beneath said doctor blade and having an opening therein opening against said porous portion for directing the gas from said gas chamber through said porous portion; and

material feed means for feeding the material to be treated past said discharge end of said doctor blade;

whereby the foamable chemical composition is transported by gravity over said receiving end of said doctor blade, thence over said porous portion to cause foaming of the

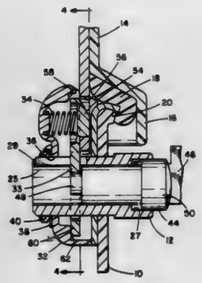
foamable chemical composition by means of gas being expelled from said gas chamber through said porous portion, and thence over said discharge end of said doctor blade and onto the material to be treated.

4,435,966

MOTORCYCLE SADDLE BAG LOCK

Clark E. Craig, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed May 7, 1982, Ser. No. 376,182
Int. Cl.³ B65D *55/14; E05C 5/00*
U.S. Cl. 70—161 **5 Claims**



1. A latch and lock mechanism for use in combination with an open container of the type having a lid cooperating with the open container, said lock mechanism comprising:
- a fixed cylinder for projecting through a container wall adjacent an edge cooperative with the lid;
- a housing cooperative with the fixed cylinder on the inside of the wall to retain the fixed cylinder in position in the wall;
- a shutter mounted in the housing and retained by the housing for limited movement transverse to the axis of the fixed cylinder and pivotal movement about an axis parallel to the edge of the container;
- a key actuated rotatable plug in the cylinder, said plug mounted for rotatable movement and axial movement along the axis of the cylinder, said plug including means engaging the shutter for driving the shutter transversely in response to rotatable movement and pivotally in response to axial movement;
- biasing means for biasing the shutter about the pivotal axis;
- a strike on the lid for receiving the shutter and retaining the shutter; and
- said housing including a land cooperative with the shutter only when the shutter is shifted to a maximum transversely position toward the edge to thereby prevent pivotal movement of the shutter and release of the shutter from the strike.

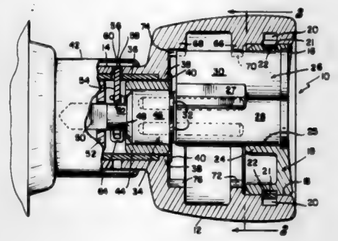
4,435,967

DOORKNOB

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 270,825, Jun. 5, 1981, Pat. No. 4,394,821, which is a continuation-in-part of Ser. No. 136,746, Apr. 2, 1980, abandoned. This application Mar. 25, 1982, Ser. No. 361,989
Int. Cl.³ E05B *63/10*
U.S. Cl. 70—224 **10 Claims**

1. A doorknob, comprising
- a body having a hand-hold portion and a neck, and mountable in a predetermined orientation on a knob sleeve or the like,
- said hand-hold portion being hollow and having a large circular end face opening,
- a face plate rotatably mounted in said opening and defining within itself an unsymmetrical opening adapted to removably receive a key-operable lock core,



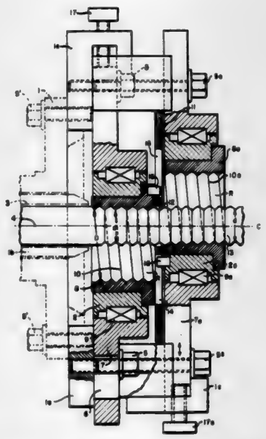
said knob being formed axially inward of said face plate with a notch in position to be engaged by an eccentric portion of a lock core mounted in said face plate so as to key the face plate and knob against relative rotation.

4,435,968

APPARATUS FOR CORRUGATING PIPES

Harald Roderburg, Langenhagen, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,619
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029447; Aug. 2, 1980, 3029448
Int. Cl.³ B21D *15/04*
U.S. Cl. 72—77 **18 Claims**



1. In an apparatus for the corrugation of tube of plastically deformable material through which the tube is continuously passed in a direction of passage, comprising a corrugator rolling bushing having an inside surface formed with a deformation rib which is helical (when annular parallel corrugations are to be produced on the tube) of more than one thread, or, respectively, with at least one deformation rib acting on successive points viewed in the longitudinal direction of the tube (when helical corrugations are to be produced in the tube), said corrugator rolling bushing being supported for free rotation in a rotatable corrugator head, the inside diameter of the corrugator rolling bushing being larger than the diameter of the tube to be corrugated and the corrugator rolling bushing being supported eccentrically to the tube, the improvement wherein

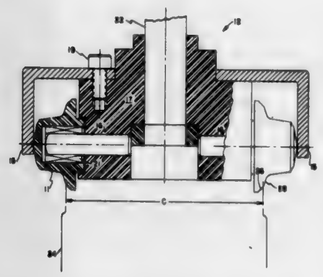
the ratio of the inner diameter of the inside diameter defined by the deformation rib to the outside diameter of the corrugated tube in the region of a corrugation valley thereof is n:1 where n is an even integer, with a maximum deviation of 5%.

4,435,969

SPIN-FLANGER FOR BEVERAGE CONTAINERS

C. Ross Nichols, Golden, and Edward C. Miller, Broomfield, both of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Jun. 2, 1981, Ser. No. 269,446
Int. Cl.³ B21D *19/12*
U.S. Cl. 72—126 **11 Claims**



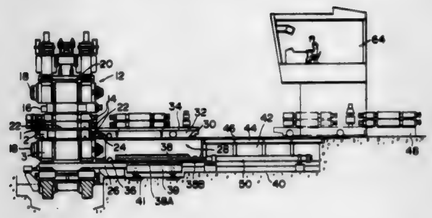
1. A roller for flanging canbodies comprising:
- an annular arcuate forming surface;
- a first frustoconical slack-removing and supporting surface integrally connected to said arcuate forming surface and forming an outside angle of from about 60° to about 70° with respect to the central axis of the rotor; and
- an annular curved surface with a radius of less than about 0.300 inches and greater than about 0.060 inches for providing clearance of the canbody, said annular curved surface being integrally connected to said first frustoconical surface.

4,435,970

ROLL CHANGING DEVICE FOR ROLLING MILL

Teruo Sekiya, Takahagi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,283
Claims priority, application Japan, Jun. 18, 1980, 55-81423
Int. Cl.³ B21B *31/10*
U.S. Cl. 72—239 **8 Claims**



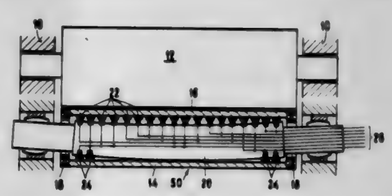
1. A roll changing device for rolling mills, comprising:
- a mill stand having a housing, and upper and lower roll sets constituting a pair, each including a work roll, an intermediate roll and a back up roll with said intermediate roll disposed between said work roll and said back up roll;
- work roll changing rails and intermediate roll changing rails spaced vertically from said work roll changing rails, respectively, and adapted for mounting said work rolls and said intermediate rolls during the roll change;
- said roll changing rails being disposed in said housing;
- a stationary floor being provided at the front side of said rolling mill at a fixed distance from said rolling mill and having rails mounted thereon;
- delivery rails disposed between said rolling mill and said stationary floor, and adapted to deliver and receive said rolls to and from said roll changing rails;
- a vertically movable floor device provided between said rolling mill and said stationary floor, said floor device having rails;
- a roll changing truck carrying said delivery rails mounted thereon and movably mounted on said rails of said vertically movable floor device; said work and intermediate roll changing rails being common in size with and parallel to said delivery rails, and said rails on said stationary floor being common in size with and parallel to said floor device rails; and
- said vertically movable floor device being vertically movable respectively to a first position where said delivery rails on said roll changing truck join and align with said work roll changing rails, to a second position where said delivery rails join and align with said intermediate roll changing rails, and to a third position where said floor device rails join and align with said rails on said stationary floor.

4,435,971

CONTROLLED DEFLECTION ROLL WITH CONTROL ARRANGEMENT

Wolfgang Schuwerk, Kisslegg, Fed. Rep. of Germany, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Dec. 28, 1981, Ser. No. 334,644
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101115
Int. Cl.³ B21B *29/00*
U.S. Cl. 72—243 **3 Claims**



1. A controlled deflection roll intended to cooperate with a counter roll, comprising:
- a roll shell having opposed end regions;
- a roll support having opposed end regions;
- a plurality of support elements interposed between said roll shell and said roll support for supporting said roll shell upon said roll support;
- predetermined ones of said support elements being arranged in respective commonly controlled groups;
- at least one of said commonly controlled groups of support elements containing at least two support elements effective in opposite directions;
- said at least two support elements which are effective in opposite directions of said one commonly controlled group of support elements being arranged at one of the end regions of said roll support and said roll shell;
- said at least two support elements which are effective in opposite directions being spaced from one another in order to exert a bending moment at said one end region of said roll shell in order to counteract edge compression between the controlled deflection roll and the counter roll;
- one of said at least two oppositely effective support elements being located closer to an outer edge of said one end region of the roll shell than the other support element; and

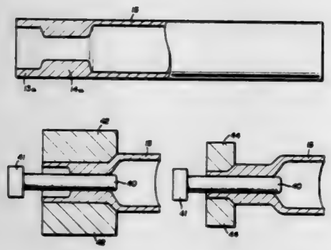
a common supply line for applying essentially the same pressure force to said at least two support elements which are effective in opposite directions, so that the forces applied by said two support elements essentially compensate one another, but by virtue of the different mutual spacing of said two oppositely effective support elements from said outer end of the roll shell there is applied a bending moment to the roll shell counteracting edge compression.

4,435,972

PROCESS FOR FORMING INTEGRAL SPINDLE-AXLE TUBES

Joseph A. Simon, 17755 Masonic Blvd., Fraser, Mich. 48026

Filed Jun. 28, 1982, Ser. No. 393,032
Int. Cl.³ B21C *25/08, 37/16*
U.S. Cl. 72—256 **6 Claims**



1. A process for extruding an integral spindle and axle tube, comprising the steps of:

positioning a relatively short, tubular blank within an open ended, tubular die having an inlet end through which the blank is inserted and an opposite extrusion end formed by an annular, inwardly extending, continuous shoulder forming a die extrusion throat through which the blank is extruded, and with the throat diameter being larger than the inner diameter of the blank;

inserting a punch into the die inlet end, with the punch closely fitted within the die and having an annular shoulder engaged against the free end of the blank, and having a first punch extension closely fitted within the interior wall of the blank, and having a second punch extension of a smaller diameter than the blank interior diameter extended through part of the blank and die throat, and having a third punch extension, which is formed on the punch co-axial with and extending from the second punch extension, but of a smaller diameter than the second punch extension, with the punch shoulder and punch extensions being located co-axially with each other and also with the blank and die throat, and with the second punch extension being located between the first and third punch extensions;

next moving the punch towards the die throat so that the punch shoulder rams the blank towards the die throat, and simultaneously aligns its second punch extension within the die throat to thereby extrude the lead end of the blank through the annular space between said second punch extension and the die throat to thereby form one thickened end of the metal tube;

continuing moving the punch so that the first punch extension aligns with the die throat to thereby extrude the blank through the annular space between the first punch extension and the throat to form a relatively thin wall metal tube middle portion;

then removing the punch from the die, and inserting a second tubular blank within the die in full end to end contact with the trailing end of the partially extruded blank;

reinserting the punch in the die with its punch shoulder engaging the trailing end of the second blank, and with the punch first extension closely fitted within the second blank, so that the punch second extension is aligned with but spaced from the die throat, and the third punch extension is positioned within the die throat;

moving the punch in the direction of the die throat to extrude a portion of the first, partially extruded, blank through the annular space between the die throat and third punch extension to form a relatively thick ring section adjacent the trailing end of the partially extruded blank, and thereafter proceeding with the step of moving the punch so that the second punch extension moves within the die throat and the second blank pushes the remainder of the first, partially extruded, blank through the annular space between the second punch extension and the die throat to form an inwardly thickened end portion on the trailing end of the first blank, and also, simultaneously extrudes an inwardly thickened end portion on the leading end of the second blank;

then removing the extruded first blank and continuing and repeating the cycle on the second and successive blanks;

on each removed extruded blank, swaging radially inwardly, to a uniform outside diameter which is less than the extruded tube external diameter, both the thick ring section and the tube trailing end portion, i.e., the portion located between the thick ring section and the trailing end of the tube;

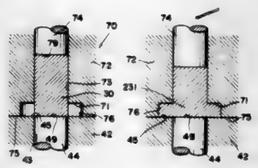
then swaging radially inwardly only said tube trailing end portion until its internal diameter is about the same as the thick ring section internal diameter and its outside diameter is less than the thick ring section outside diameter, to thereby form an integral spindle and axle tube.

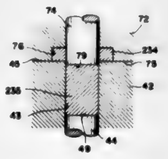
4,435,973

METHOD OF PRODUCING RING-SHAPED METAL PARTS

Shigeo Nakazawa, Yokohama, and Shintaro Sato, Fujisawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 25, 1981, Ser. No. 325,052
Int. Cl.³ B21D *28/00, 28/14, 28/24*
U.S. Cl. 72—327 **8 Claims**





1. A method of producing a plurality of identical ring-shaped or ring-like metal parts having inner and outer peripheries, comprising the steps of:

(a) applying a compression force to a blank of a metal material, which is in the shape of a solid rod having an outer periphery corresponding to the inner periphery of the metal parts to be produced, in a longitudinal direction of said blank so as to upset an end portion of said blank until said end portion transforms into a laterally expanded portion having a side periphery corresponding to the outer periphery of said metal parts and a length corresponding to the thickness of said metal parts, said applying step including the sub-steps of inserting said blank into a fitting through-hole formed in a first die which has a flat die face and is formed with a recess in said die face, said recess bieng coaxial with said through-hole and having a depth corresponding to the thickness of said metal parts and an outer periphery corresponding to the outer periphery of said metal parts, such that said end portion of said blank longitudinally protrudes into said recess and comes into contact with a flat die face of a second die which is arranged opposite to said first die and held stationary with said die face thereof in close contact with said die face of said first die such that the second die face, recess of the first die, punch and through-hole form a closed cavity, said first die being provided with a punch which is slidably fitted in said through-hole to come into contact with the other end of said blank, and moving said punch toward said second die to longitudinally compress said end portion of said blank within said closed cavity against said die face of said second die until a space provided by a peripheral region of said recess and defined between the bottom of said recess and said die face of said second die is completely filled with a laterally expanded portion of said end portion of said blank;

(b) subjecting said laterally expanded portion to shearing along a plane defining the outer periphery of said blank thereby parting said laterally expanded portion into a peripheral portion, which is one of said metal parts, and a central portion which remains as an end portion of the blank shortened by the step (a); and

(c) repeating the steps (a) and (b) by using the shortened blank remaining after the step (b) in place of said blank in the initial step (a),

wherein said second die is formed with a through-hole which is coaxial with and identical in cross-sectional shape with said through-hole in said first die and is provided with a plunger slideably fitted into said through-hole thereof, the step (a) being performed by keeping an end face of said plunger flush with said die face of said second die to serve as part of said die face of said second die so that the end face of said plunger and the die face of the second die present a substantially planar surface to the recess of the first die, the step (b) being performed by forcing said punch to move toward said second die while said first and second dies are kept in the state at the end of the step (a) thereby thrusting the blank except said laterally expanded portion and simultaneously moving said plunger in compliance with the movement of said punch until the end face of said punch which is in contact with said blank enters said through-hole in said second die.

4,435,974

METHOD AND APPARATUS FOR LOCATING LEAKAGES IN PIPES AND SIMILAR CONDUITS

Helmut V. Fuchs, Weil; Gerold Schupp, and Carl-Alexander Voigtsberger, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V., Munich, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,298
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 3045660
Int. Cl.³ G01M *3/24*
U.S. Cl. 73—40.5 A **12 Claims**

1. A method for finding the position of leaks in a fluid conveying pipe-line such as in a water supply networks, comprising the steps of:

(a) attaching a sound sensor at a first position in said pipe-line such that said sound sensor is in direct contact with said fluid;

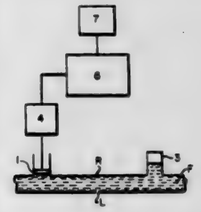
(b) attaching a sound reflector at a second position in said pipe-line such that said sound reflector is in direct contact with said fluid and such that said sound sensor and said sound reflector are coupled acoustically through said fluid, said second position being spaced from said first position a predetermined distance;

(c) supplying the signal produced by said sound sensor into a signal analyzer;

(d) making an autocorrelation analysis of said signal in said signal analyzer;

(e) determining a characteristic propagation time difference from a characteristic maximum of such autocorrelation function which has been determined by said autocorrelation analysis and which propagation time difference corresponds to the difference of the propagation time of the sound wave which has passed directly between said leak and said sound sensor and the propagation time of the sound wave which is has passed from said leak via said sound reflector to said sound sensor;

(f) determining the distance between the positions of said leak and said sound reflector from said obtained propagation time difference.

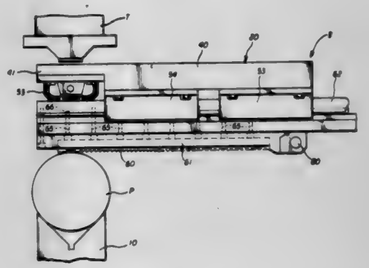


4,435,975

APPARATUS AND METHOD FOR CUTTING A FLAT SURFACE ON A METALLIC MEMBER

Robert M. Edward, Jr., The Woodlands, Tex., assignor to J B Development Corporation, The Woodlands, Tex.

Filed Dec. 28, 1981, Ser. No. 334,746
Int. Cl.³ G01N *3/40*
U.S. Cl. 73—81 **18 Claims**



1. Apparatus for cutting a flat surface on and testing the hardness of a metallic member comprising:

frame means including clamping means on which said metallic member may be placed for clamping said metallic member in a firmly fixed positon;

tester head means mounted on said frame means in a fixed position directly above said clamping means;

a broach frame mounted on said frame means for movement between a first position below said tester head means, above said metallic member and engageable by said metallic member and against which said metallic member may be firmly clamped by said clamping means and a second position away from said tester head means and not engageable by said metallic member when on said clamping means, allowing said metallic member to be firmly

clamped against said tester head means by said clamping means;

a broach blade having cutting means thereon carried by said broach frame for reciprocal movement, when said broach frame is in said first position, between a first terminal position and a second terminal position for cutting a flat surface on said metallic member when clamped against said broach frame; and

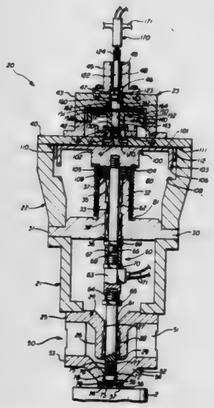
power means mounted on said frame means and attached to said broach blade for moving said broach blade between said first and second terminal positions.

4,435,976

APPARATUS FOR MEASURING THE HARDNESS PROPERTIES OF MATERIALS

Robert M. Edward, Jr., The Woodlands, Tex., assignor to J B Development Corporation, The Woodlands, Tex.

Filed Dec. 28, 1981, Ser. No. 334,747
Int. Cl.³ G01N *3/44*
U.S. Cl. 73—83 **12 Claims**



1. Improved apparatus for measuring the hardness properties of materials comprising a frame for supporting said apparatus and the material to be tested; a tester head assembly mounted on said frame for applying predetermined measuring forces to said material and a clamp assembly mounted on said frame for supporting said material and for applying a clamping force to clamp said material against said tester head assembly prior to said application of said predetermined measuring forces; said tester head assembly including housing means attached to said frame; a penetrator assembly carried by said housing, including an axially reciprocal penetrator shaft at the lower end of which is a penetrator member for contact with said material; operating means for applying a first predetermined force and a second and greater predetermined force to said penetrator shaft for indentation of said material by said penetrator member and means for measuring the difference of indentation of said material by said first and second predetermined forces; wherein the improvement comprises:

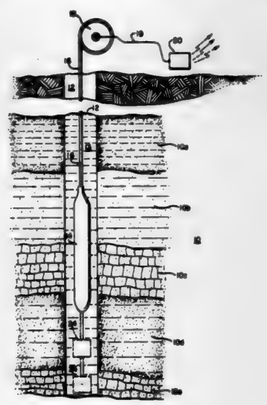
an electronic load cell for measuring said first and second predetermined forces attached between and connecting a first shaft portion, being the lower end of said penetrator shaft, and a second shaft portion, being the upper end of said penetrator shaft; said housing means comprising a lower housing portion in which said penetrator shaft is carried, an intermediate housing portion and an upper housing portion, said operating means including first and second piston members carried in said upper and intermediate housing portions, respectively, and responsive to fluid pressures applied thereto for applying said first and second predetermined forces to said penetrator shaft.

4,435,977

METHOD FOR LOCATING LOW RESISTIVITY PAY SANDS USING WELL LOGS

Luke S. Gournay, Rockwall, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 339,963
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—152 **13 Claims**



11. A method of locating potential low water cut hydrocarbon producing regions of a sand formation comprising the steps of:

producing a first log containing permeability values for the formation along the length of a borehole extending into the formation;

producing a second log containing porosity values for the formation along said length;

producing a third log of specific surface area values of the formation along said length from said first and second log; and

identifying potential low water cut hydrocarbon producing regions along said length of the formation using said third log.

4,435,978

HOT WIRE ANEMOMETER FLOW METER

John J. Glatz, 24351 Spartan, Mission Viejo, Calif. 92691

Filed Sep. 7, 1982, Ser. No. 415,261
Int. Cl.³ E21B *47/00*; G01F *1/68*
U.S. Cl. 73—155 **14 Claims**



1. An improved flow meter device for measuring flow through a conduit comprising:

an elongate member sized to be received within a flow conduit;

plural struts pivotally mounted to said elongate member extensible radially outward from said elongate member to contact said flow conduit and anchor said elongate member at a desired location within said flow conduit;

means for selectively radially extending and retracting said plural struts from said elongate member; and

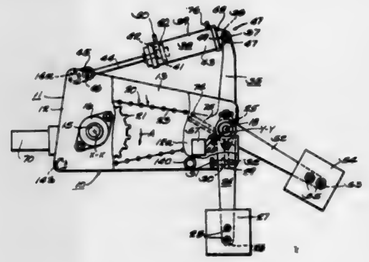
plural anemometers mounted along the length of struts for generating a variable electrical signal in response to the amount of flow medium passing across said anemometers.

4,435,979

APPARATUS FOR TESTING VALVE ACTUATORS

William H. Gilgore, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 2, 1982, Ser. No. 394,855
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—168 **4 Claims**



1. An apparatus for subjecting a test actuator to torque loads which simulate torque loads experienced by an actuator while operating a butterfly-type valve between a valve fully opened position and a valve fully closed position in a fluid conduit where the torque loads to be simulated include a dynamic torque load experienced by the actuator by reason of fluid flow against the valve within the conduit as the valve moves between fully opened position and fully closed position, and a seating torque load experienced by the actuator as the valve moves from a position at which the valve begins to contact a valve seat to said fully closed position; the apparatus comprising:

a first mass supported away from a horizontal axis for rotation about said axis; said first mass being of a preselected weight and displacement from said axis to generate a first cyclic torque load at said axis proportional to said dynamic torque load as said first mass rotates from a first position corresponding to said valve fully opened position to a final position corresponding to said valve fully closed position;

a second mass supported away from a horizontal axis for rotation about said axis operable to rotate from a rest position to an end position as said first mass rotates from a valve seating position corresponding with said position at which a valve begins to contact a valve seat to said final position; said second mass being of a preselected weight and displacement from said axis to generate a second cyclic torque load such that a sum of said first cyclic torque load and said second cyclic torque load is proportional to said seating torque load as said first mass rotates from said valve seating position to said final position;

means for transmitting said first cyclic torque load to said test actuator with said first cyclic torque load proportionally translated to approximate said dynamic torque load; and,

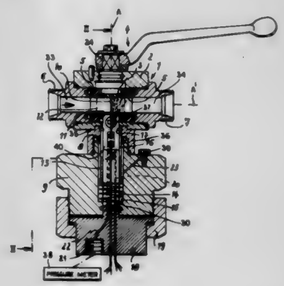
means for transmitting said second cyclic torque load to said test actuator as said first mass rotates from said valve seating position to said final position with said first cyclic torque load and said second cyclic torque load summed and the sum of said loads proportionally translated to approximate said seating torque load.

4,435,980

PIPE-MOUNTED VALVE-TYPE FLOW METER

Ulrich Schmidt, Lahn-Steindorf, Fed. Rep. of Germany, assignor to Firma Rötelmann & Co., Werdohl, Fed. Rep. of Germany

Filed Jun. 18, 1982, Ser. No. 389,971
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200587
Int. Cl.³ G01F *15/02*
U.S. Cl. 73—198 **20 Claims**



1. An apparatus for measuing at least one parameter of a fluid flowing between two conduit sections, said apparatus comprising:

a housing connected between said sections and having a throughgoing main passage communicating therebetween and an externally open branch passsage extending from said main passage between said sections, said housing being formed at the junction of said main branch passages with a valve seat;

a valve body on said seat formed with a throughgoing and at least generally T-shaped valve passage having a pair of arm sections alignable with said main passage and a leg section aligned with said branch passage,

means for displacing said body relative to said main passage at said seat between a flow position in which said valve passage is aligned with said main passage and said fluid can flow through said main passage between said sections and a blocking position in which said valve passage is not aligned with said main passage and fluid cannot flow through said main passage between said sections, said valve seat sealing said valve passage from said main passage in said blocking position

a sensor for said one parameter extending through said branch passage into said valve passage; and

means for releasably securing said sensor to said housing and for externally sealing said branch passage.

4,435,981

AIRBORNE GRAVITY SURVEYING

Franklin D. Carson, Hilltown Township, Bucks County, and William R. Gumert, East Rockhill Township, Bucks County, both of Pa., assignors to Carson Helicopters, Inc., Perkasie, Pa.

Filed Oct. 9, 1981, Ser. No. 309,906
Int. Cl.³ G01V *7/16*
U.S. Cl. 73—382 R **17 Claims**

1. Apparatus for airborne gravity surveying which comprises

an airborne vehicle,

means on said vehicle for controlling the flight of said vehicle along a preplotted path at a preselected level responding to vertical movement, including means to move the vehicle vertically without changing its pitch,

said controlling means comprising a plurality of altimeters for determining the preselected level for correction of the

path of the vehicle and providing signals for recording on a tape,

said controlling means comprising navigating means providing signals for recording on a tape for indicating deviation of the flight of the vehicle from the preplotted path vertically and horizontally and for correction of the path of the vehicle,

signal means including gravity meter and magnetic means providing signals for recording on a tape,



means for digitalizing the signals from said gravity meter means at a predetermined sample rate and at a high order of sensitivity,

recording means including a tape for recording signals from said altimeter means, said navigation means, said signal means and said digitalizing means, and

computer means for indicating the departure of the vehicle from the preplotted path.

4,435,982

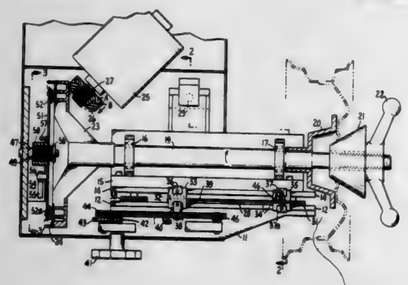
MACHINE AND METHOD FOR BALANCING WHEELS

Willy Borner, Cupertino, and Bernie F. Jackson, Los Gatos, both of Calif., assignors to Balco, Inc., San Jose, Calif.

Filed Feb. 20, 1981, Ser. No. 236,558

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—462 **22 Claims**



1. A wheel balancing machine which comprises a chassis, a rotatable shaft, means on one end of said shaft for removably mounting the wheel to be balanced, carrier means for supporting said shaft on said chassis, driving means for rotating said shaft to a first angular velocity greater than a predetermined second angular velocity, clutch means for decoupling said driving means from said shaft when said first angular velocity has been attained thereby allowing said shaft and wheel to rotate freely and decelerate, means for measuring the angular velocity of the shaft and activating unbalance measuring means when said angular velocity is equal to said predetermined second angular velocity after said driving means has been decoupled from said shaft, said unbalance measuring means being adapted to measure unbalance during the first full revolution of said shaft after said shaft reaches said predetermined second angular velocity, and means for displaying the value of unbalance so measured, said first angular velocity being selected from two or more velocities in response to said angular velocity measuring means so as to provide the lowest velocity of said two or more velocities that will permit a 2 to 20 second settling period between decoupling said driving means and activating said unbalance measuring means.

4,435,983

HANDLE STEM FOR A BICYCLE

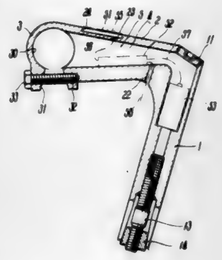
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 10, 1981, Ser. No. 320,105

Claims priority, application Japan, Nov. 22, 1980, 55-168009; Nov. 22, 1980, 55-168010

Int. Cl.³ G01P *1/02*

U.S. Cl. 73—493 **4 Claims**



1. A handle stem for a bicycle, which carries a handle bar, said handle stem comprising

a stem body,

a projecting portion extending from a top of said stem body radially outwardly thereof, said projecting portion containing an opening in an upper surface thereof and

a holding portion provided at a foremost end of said projecting portion and having an insertion bore for said handle bar,

said projecting portion being provided with an indicator comprising: a display unit which electrically displays running condition of the bicycle; electronic components; and a power source; said projecting portion containing a first hollow area located below said upper surface and opening therein, said first hollow area housing therein said electronic components of said indicator, said display unit of said indicator being mounted above said first hollow area and over said opening, electronically connected to said electronic components through said opening, and exposed to view on a top surface of said projecting portion.

4,435,984

ULTRASONIC MULTIPLE-BEAM TECHNIQUE FOR DETECTING CRACKS IN BIMETALLIC OR COARSE-GRAINED MATERIALS

George J. Gruber, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 142,216, Apr. 21, 1980, Pat. No. 4,299,128. This application May 28, 1981, Ser. No. 268,145

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—628 **33 Claims**

1. An ultrasonic test method of detecting and confirming defects in a test specimen comprising:

(a) detecting suspect defects by:

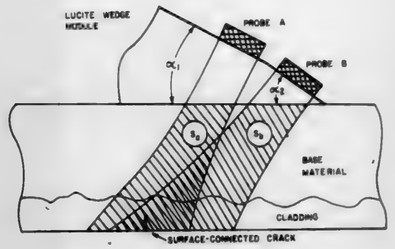
(1) transmitting at least two detection beams of a same wave mode from a first set of multiple detection probe positions so that said two detection beams overlap in a region of interest in said test specimen;

(2) receiving echoes of said two detection beams from said region of interest at a second set of multiple detection probe positions;

(3) directionally averaging said echoes by means of a summing device to at least partially cancel at least some interference echoes and to reinforce at least some defect reflected echoes if a defect is present in said region of interest;

(4) recording by means of a recording device substantial directionally averaged echoes as called echoes, said called echo indicating one or more suspect defects in said region of interest;

(b) confirming suspect defects by:



(1) transmitting at least two confirmation beams of different wave modes from at least one first confirmation probe position so at least two of said confirmation beams of said different wave modes overlap in said region of interest in said test specimen;

(2) receiving echoes of said confirmation beams of said different wave modes from said region of interest at at least one second confirmation probe position;

(3) moving said first confirmation probe position to move at least some of said confirmation beams of said different wave modes with respect to said region of interest to produce echoes having an associated reflected-pulse pattern if a defect is present in said region of interest;

(4) recording by means of a recording device an associated reflected pulse pattern as confirming a suspect defect in said region of interest.

4,435,985

ACOUSTIC COUPLING DEVICE

Hemantha K. Wickramasinghe, London, England, assignor to National Research Development Corporation, London, England

Filed Apr. 15, 1982, Ser. No. 368,811

Claims priority, application United Kingdom, Apr. 16, 1981, 8112014

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—642 **9 Claims**

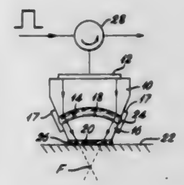
1. An acoustic coupling device comprising:

an acoustic lens arranged to provide a convergent beam of acoustic radiation; and

an acoustic coupler having adjacent and spaced from the acoustic lens a convex surface over which the convergent beam of radiation is incident in an approximately normal direction,

the coupler having opposite the convex surface a coupling surface which conforms to the surface of an object to be investigated and the beam converging beyond said coupling surface;

there being between the acoustic lens and the acoustic coupler a first coupling liquid such that the ratio of the velocity of sound in the acoustic lens and the velocity of sound in the liquid is greater than 3,



the device also having between the acoustic coupler and the object a layer of a second, low acoustic loss, coupling liquid.

4,435,986

PRESSURE TRANSDUCER OF THE VIBRATING ELEMENT TYPE

Hubert Choffat, Bole, Switzerland, assignor to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Nov. 9, 1981, Ser. No. 319,286

Claims priority, application Switzerland, Nov. 12, 1980, 8387/80

Int. Cl.³ G01L *9/08*

U.S. Cl. 73—702 **14 Claims**





1. A pressure transducer comprising a vibrating membrane which comprises a reduced-thickness bottom of a cavity in a first member which is fixed on and closed by a support member forming a first cavity, the vibrating membrane at least partially comprising a piezoelectric material and having a curvature therein, and means for exciting the membrane and maintaining oscillations of the membrane at its resonance frequency and for producing an electrical signal at that resonance frequency.

4,435,987

DEVICE FOR CORRECTING TORQUE DETECTED BY AN ELECTRIC DYNAMOMETER

Hiroshi Sugimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,895

Claims priority, application Japan, Feb. 25, 1981, 56-27240

Int. Cl.³ G01L *3/22*

U.S. Cl. 73—862.17 **5 Claims**

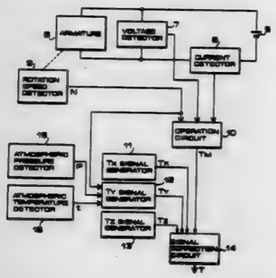
1. A device for correcting torque detected by an electric dynamometer comprising:

(a) detection means for detecting at least an armature current, an armature voltage and a rotation speed of the electric dynamometer and generating outputs comprising detection signals;

(b) an operation circuit calculating the torque that acts between the yoke and the armature of the electric dynamometer, upon receipt of detection signals from said detection means, and providing an output;

(c) a windage-loss torque correction signal generator generating an output comprising a windage-loss torque correction signal upon receipt of an output related to the rotation speed sent from said detection means, an output comprising a detection signal sent from an atmospheric pressure detector and an output comprising a detection signal sent from an atmospheric temperature detector;

(d) a friction torque correction signal generator generating an output comprising a friction torque correction signal of the bearings of the electric dynamometer;



(e) an eddy-current-loss torque correction signal generator generating an output comprising an eddy-current-loss torque correction signal; and

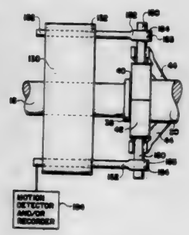
(f) a signal correction circuit subtracting the sum of said correction signals from the output of said operation circuit, upon receipt of the output from said operation circuit, said windage-loss torque correction signal, said friction torque correction signal, and said eddy-current-loss torque correction signal.

4,435,988

APPARATUS FOR INDICATING CRITICAL TORQUE LOAD

Stuart E. Corry, Hallett, and Lanny V. Grade, Oklahoma City, both of Okla., assignors to The Geolograph Company, Oklahoma City, Okla.

Filed Jul. 13, 1981, Ser. No. 282,966
Int. Cl.³ G01L *3/14*
U.S. Cl. 73—862.19 **1 Claim**



1. Apparatus for indicating torque load in a drill string of a shaft driven drilling machine of the type having a rotary table for rotating the drill string and wherein a shaft rotates the rotary table from an external rotary drive; comprising a torque indicating device having an input section adapted to be rotatably connected to the external rotary drive and an output section adapted to be rotatably connected to the rotary table, said input and output sections being disposed in axial alignment and being drivingly connected to each other so as to rotate conjointly, said input section having an input shaft adapted to be connected at a first longitudinal end thereof to the rotary drive and having a first coupling means mounted on a second longitudinal end of said input shaft; said output section having a second coupling means and an output shaft, said second coupling means being mounted on a first longitudinal end of said output shaft and said output shaft being adapted to be connected at a second longitudinal end to the rotary table, said first coupling means having a first spiral spline means thereon, said second coupling means having a second spiral spline means thereon complementary to said first spiral spline means, said first and second coupling means being connected to each other so as to be in driving relationship with each other through said spiral spline means, an input bearing being received in an input housing and rotatably supporting said input shaft, said input bearing allowing for axial movement of said input shaft toward said output section under increased torque load conditions, said second coupling means being axially immovable, resilient means preventing axial movement of said input shaft toward said output section under normal rotary driving conditions, and a sensing means for measuring the degree of axial movement of said input shaft, wherein said sensing means comprises a collar received in an annular groove recessed into said input shaft at a point adjacent said first coupling means, a pair of pins extending radially outwardly in opposite directions from said collar, a yoke for preventing said collar from rotating with said input shaft, said yoke being attached at its upper end to said pins and being pivotally attached at its lower end to a suitable base, and a pair of slide links being adapted to be received over the ends of said pins and extending rearwardly therefrom so as to be received in suitable holes in said input housing wherein said collar moves axially with said input shaft under increased torque load conditions thus causing said slide links to move a corresponding distance parallel to said input shaft.

4,435,989

PLUNGER OPERATED PIPET

Richard C. Meyer, La Habra, and Edward L. Carroll, Garden Grove, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 165,909, Jul. 3, 1980, abandoned. This application Dec. 4, 1981, Ser. No. 327,393
Int. Cl.³ G01F *13/00*; B01L *3/02*
U.S. Cl. 73—864.14 **2 Claims**



1. Pipetting apparatus comprising:

a generally tubular body having an open forward end for receiving and expelling fluid and adapted to receive a replaceable open tip thereon;

a plunger supported for axial movement in the body to draw fluid into and expel fluid from the open tip on the body with axial movement away from and toward the open end;

stop means movable between first and second locations in the body to halt movement of the plunger in one direction at first and second axial positions thereby establishing different stroke lengths of plunger movement in the body;

spring means for driving the stop means in one direction between the first and second locations;

arming means for energizing the spring means in response to the positioning of the replaceable tip on the body;

means for retaining the stop means in one of the first and second locations against action of the spring means; and

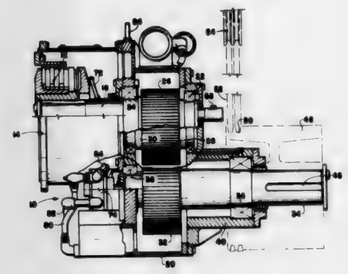
release means responsive to plunger movement away from the forward end during a first plunger stroke following energizing of the spring means for disabling the retaining means and allowing the spring means to drive the stop means to the other of the first and second locations whereby the first plunger stroke and the succeeding plunger stroke are of the different stroke lengths.

4,435,990

POWER TAKE OFF GEAR BOX

Samuel A. Chalmers, 8141 E. 48th, Tulsa, Okla. 74145

Filed Sep. 11, 1980, Ser. No. 186,127
Int. Cl.³ F16H *37/00*; F16D *25/04*
U.S. Cl. 74—15.63 **6 Claims**



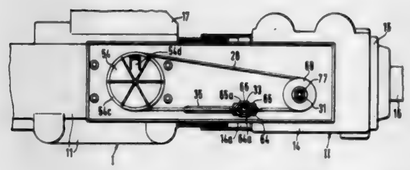
1. A power take off gear box assembly for transmitting power between a drive source and a driven source and comprising rotatable input shaft means, clutch means operably connected between the drive source and input shaft means for transmitting rotation to the input shaft means, rotatable permanent output shaft means having the longitudinal axis thereof disposed in substantial vertical planar alignment with the longitudinal axis of the input shaft means, gear train means interposed between the input shaft means and output shaft means for transmitting rotation to the output shaft means, the relative position between the input shaft means and output shaft means providing for ease of forward and reverse directions of rotation for the output shaft means, housing means encasing the gear train means, independent self-contained lubricating means operably secured to the output shaft means and in communication with the interior of the housing means for providing internal lubrication surrounding the gear train means for facilitating maintenance of the gear box assembly, and wherein the housing means encasing the gear train means includes drop box means having mounting pad means carried thereby and disposed in substantial horizontal planar alignment with the longitudinal axis of the output shaft means to compensate for side loading forces during operation of the power take off gear box assembly.

4,435,991

POTENTIOMETER DRIVE FOR DISPLACEMENT TRANSDUCER OF RECIPROCATING UNIT

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Loesburg 1, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 255,730
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1980, 3014903
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—89.2 **14 Claims**



1. A backlash-free drive connection between a rotatable control disc and a rotary potentiometer comprising in combination:

a mounting wall extending substantially perpendicularly to the rotational axis of the control disc;

a journal support rotably supporting the control disc in the mounting wall;

means for releasably clamping the potentiometer drive shaft to the control disc in such a way that they form a rigid rotatable assembly; and

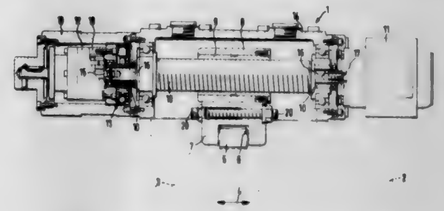
means for blocking the potentiometer housing against rotation relative to the mounting wall in such a way that only circumferentially oriented antirotation forces are transmittable from the mounting wall to the potentiometer housing and the weight of the potentiometer is carried entirely by the potentiometer shaft and the connected control disc.

4,435,992

ADJUSTING DEVICE FOR AXIAL AND RADIAL PISTON MACHINES

Heinz Berthold, Bildechigen, Fed. Rep. of Germany, assignor to Brueninghaus Hydraulik GmbH, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,258
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005168
Int. Cl.³ F16H *25/20*
U.S. Cl. 74—89.15 **3 Claims**



1. A motorized adjusting device for an axial and radial piston machine wherein a cylinder block is reciprocated by a setting element to control a charge delivered by the machine, said adjusting device comprising;

(a) a housing having a threaded output shaft journaled for rotation therein, said output shaft being substantially parallel to the reciprocating axis of a cylinder block to be adjusted; said housing and said axial and radial piston machine providing a defined enclosure surrounding said output shaft and a setting means;

(b) said setting means mounted on said threaded shaft to be reciprocated along said shaft as said shaft is rotated, said setting means engaging a cylinder block to be adjusted;

(c) a servo motor removably mounted outside said housing and said enclosure at one end of said output shaft to provide for replacement of only the servo motor without disturbing the setting of said setting means in said shaft;

(d) an input shaft journaled for coaxial rotation within said output shaft, said input shaft being connected to said servo motor at one end thereof;

(e) a planetary transmission and overload protection means removably mounted outside said housing and said enclosure at the other end of said output shaft, opposite said servo motor, said overload coupling means connected between said output shaft and a cage member for said planetary transmission, said planetary transmission also having a sun gear connected to said input shaft, said transmission mounted to provide for a replacement of only the transmission and overload coupling without disturbing the setting means on said shaft; wherein rotation of the servo motor rotates said input shaft, said transmission and said overload protection device to power the rotation of said output shaft and thereby reciprocate said setting means mounted on said output shaft;

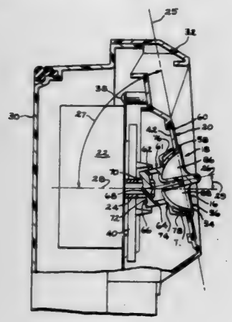
whereby either the servo motor or the transmission means may be separately removed from the housing without disturbing the enclosure surrounding said shaft and said setting element.

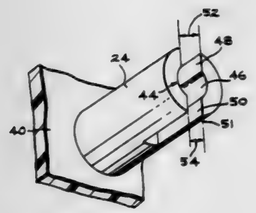
4,435,993

CONTROL KNOB TO SHAFT ASSEMBLY

Allen W. Scott, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 29, 1982, Ser. No. 362,587
Int. Cl.³ G05G 1/10
U.S. Cl. 74—553 5 Claims





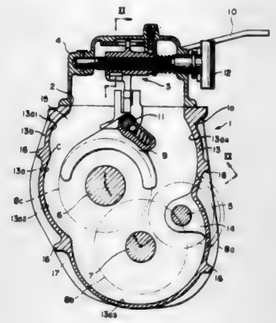
1. A control knob to shaft assembly comprising:
a rotatable, bifurcated shaft, the bifurcation spanning the diameter of the shaft and having a central cylindrical bore interconnecting two open slots, one of which has a width larger than the other,
an escutcheon plate in a plane that intersects the longitudinal axis of the shaft at an acute angle, said escutcheon plate having an opening therethrough,
a knob received in the escutcheon plate opening having,
a first portion larger in diameter than the escutcheon plate opening;
a second portion having two projecting spaced parallel legs with a yoke connecting and spanning the legs, said yoke having a central ball-shaped portion with a diameter slightly smaller than the cylindrical bore in the shaft and received in said cylindrical bore, and two cross elements between the ball-shaped portion and each of said legs, one cross element having a diameter slightly smaller than the width of one of said open slots in the shaft and receivable therein and the other cross element having a diameter slightly smaller than the width of the other open slot in the shaft and received therein, and
a third portion interconnecting the first and second portions, said third portion having means to rotatably secure the knob to the escutcheon plate.

4,435,994

AUTOMOBILE TRANSMISSION CASING HAVING REINFORCEMENT

Shuji Hata; Toshio Yamada, and Katsuji Murakawa, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 26, 1981, Ser. No. 277,603
Claims priority, application Japan, Jun. 27, 1980, 55-90857[U]
Int. Cl.³ F16H 57/02
U.S. Cl. 74—606 R 3 Claims



1. A transmission casing for automobiles which comprises a casing body having a wall formed at an upper portion with an opening which is adapted to be closed by a top cover provided with gear changing motion transmitting means, said casing being adapted for receiving a main shaft, a countershaft and a reverse idle gear shaft which extend longitudinally of the casing body for carrying transmission gears, said wall of the casing body having an inner surface which is of a cross-section comprised of a plurality of outwardly curved portions connected with each other at node portions projecting inwardly with respect to the curved portions, at least one of said curved portions having a curvature which is not coaxial with one of said shafts, said wall being of a substantially uniform thickness and formed with reverse idle gear support bracket means in the vicinity of one of the node portions for supporting the reverse idle gear shaft, one of said node portions being located in the vicinity of the point of intersection between the inner surface of the wall of the casing body and a line passing through the center of said main shaft and the center of the reverse idle gear shaft.

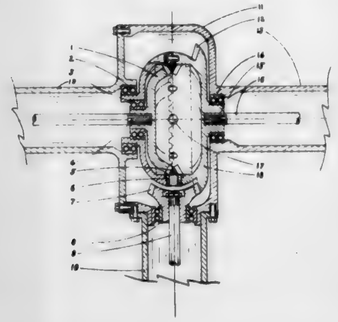
4,435,995

POSITIVE DRIVE DIFFERENTIAL FOR VEHICLE INCLUDING TRACTORS

Walter E. Welander, Box 449, Virginia, Minn. 55792

Continuation-in-part of Ser. No. 129,034, Mar. 10, 1980, abandoned. This application Jul. 10, 1980, Ser. No. 168,439
Int. Cl.³ F16H 1/44, 1/40
U.S. Cl. 74—711 2 Claims

1. A positive drive differential apparatus for a wheeled vehicle including drive wheels comprising, an axle housing, right and left coaxially aligned axles, a drive shaft, a pinion gear fixedly attached to and driven by the drive shaft, a differential housing having right and left hubs on opposite sides—each journaled for rotation in the axle housing by the means of ball-bearings, a ring gear fixedly attached to the differential housing, said ring gear engaging and being driven by the pinion gear on the drive shaft, said right axle being fixedly attached to said right hub of the differential housing, said left axle being fixedly attached to a left side differential gear journaled by the means of ball-bearings for rotation within the differential housing adjacent to the left hub of said differential housing, a plurality of spaced apart planetary gears journaled for rotation by the means of a bushing upon the inside of the differential housing, said planetary gears being in engagement with the left side differential gear for transmitting power from the differential housing to the left side differential gear and the axle connected thereto, said left side differential gear is as large as constructionally possible relative to the size of each of said planetary gears which are as small as constructionally possible,



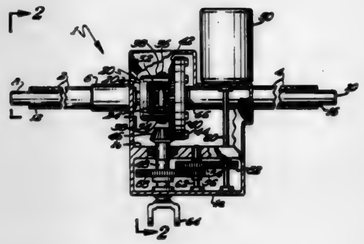
and because the relatively high rotational speed needed by the planetary gears compared to the housing speed cannot be attained when power or speed is applied to the differential housing the small differential gears lock instead thereby passing the power to the left axle and wheel, but allowing the axles and wheels to turn at different speeds when power is applied gradually as a result of uneven road conditions or turns.

4,435,996

DIFFERENTIAL ASSEMBLY FOR VEHICLES

Oliver L. Gorby, Fargo, N. Dak., assignor to Agri-Tech Ltd., Inc., Barnesville, Minn.

Filed Dec. 17, 1979, Ser. No. 104,515
Int. Cl.³ F16H 1/40
U.S. Cl. 74—713 3 Claims



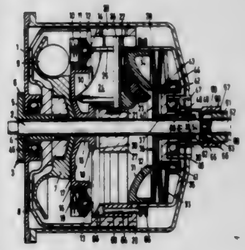
1. A differential for vehicles comprising:
a differential housing;
a pair of axle tubes affixed to opposite sides of said housing;
a pair of axles positioned longitudinally within said axle tubes with their inner ends extending into said housing;
a differential carrier in the form of a walled enclosure defining a central cavity, said carrier being positioned within said housing and directly and completely supported on the inner ends of said axles at axially aligned apertures in opposite side walls of said carrier enclosure through which the inner ends of said axles extend into said central cavity, the portions of said inner ends of said axles extending through said apertures being bearing surfaces on which said differential carrier is directly rotatably supported;
intermeshing, differential gears mounted on said carrier and said axles within said central cavity, two side gears of said intermeshing gears being affixed to said inner ends of said axles entirely within said central cavity, said side gears and all portions thereof being completely contained inside of the walled enclosure of said differential carrier within said central cavity;
a ring gear mounted on said differential carrier for rotation therewith;
a pinion gear in meshing engagement with said ring gear, said pinion gear being affixed to a power input shaft; and
bearing means comprising a pair of bearings positioned at longitudinally spaced locations in each of said axle tubes and directly, rotatably supporting said axles therein, one of said bearings of each pair of bearings being located adjacent to a side wall of said housing in laterally spaced relation to said differential carrier enclosure and said differential gears to directly rotatably support said inner ends of said axles, whereby said axle inner ends are able to provide proper bearing support for said differential carrier;
one of said axle tubes is laterally adjusted so that its inner end projects a predetermined distance inside of said housing;
thrust bearing means positioned between the inner end of said one axle tube and one side of said differential carrier, whereby said one axle tube serves to position said differential carrier within said housing and to take the ring gear thrust load imparted thereto by said pinion gear;
one side wall of said differential carrier enclosure terminates laterally inwardly from one of said side walls of said housing, defining an open space therebetween having no bearings or support members therein;
the opposite side wall of said differential carrier enclosure is affixed to said ring gear for rotation therewith; and
said opposite side wall of said differential carrier enclosure bears against said thrust bearing and is laterally positioned by said inner end of said one axle tube, whereby no close machine tolerances are required on said differential carrier enclosure or on said housing for the accurate lateral positioning of said carrier enclosure within said housing.

4,435,997

AUTOMATIC CONTINUOUSLY VARIABLE TRANSMISSION

Hubertus J. van Doorne, deceased, late of Deurne, Netherlands (by Martinus P. J. H. van Doorne, executor), assignor to Erven Dr. Hubertus Josephus van Doorne, Eindhoven, Netherlands

Filed Sep. 22, 1981, Ser. No. 304,378
Claims priority, application Netherlands, Mar. 12, 1980, 8001480
Int. Cl.³ F16H 15/50
U.S. Cl. 74—796 10 Claims



1. An automatic, continuously variable transmission comprising a speed-dependent clutch, a section cooperating with said clutch for steplessly controlling the transmission ratio between an input shaft and an output shaft, said section comprising a central shaft having a first longitudinal axis carrying at least one radially extending shaft with a conical body having a second longitudinal axis transverse to said first longitudinal axis rotatable about said second longitudinal axis thereof, said

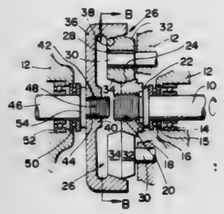
conical body having an outer circumferential surface of concave curvature in the direction of said second longitudinal axis said conical body being longitudinally movable over said radial shaft, and being arranged to be driven for rotation about said shaft, a spring-loaded annular body cooperating with said conical body, depending on the desired torque-speed ratio, via an axial pressure exerted by the speed dependent clutch, along a direction substantially parallel to said first longitudinal axis, with said spring-loaded annular body further having a conical inner circumferential surface of convex curvature in the axial direction of said second longitudinal axis, and means for reversing the direction of rotation of the output shaft relative to the input shaft.

4,435,998

ROLLER TYPE PLANETARY GEAR HAVING A PRELOADING ARRANGEMENT

Keijiro Kinoshita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 10, 1981, Ser. No. 242,279
Claims priority, application Japan, Apr. 7, 1980, 55-44588
Int. Cl.³ F16H *13/06*
U.S. Cl. 74—798 **7 Claims**



1. Planetary gearing comprising:
a first shaft and a sun roller threadably mounted on said first shaft, said sun roller tending to unscrew in a first axial direction along said first shaft when said first shaft is rotated in a first rotational direction;
a second shaft and a ring roller threadably mounted on said second shaft, said ring roller tending to unscrew in a second axial direction along said second shaft when said ring roller is rotated in said first rotational direction; and
planet roller shafts, planet rollers mounted on said planet roller shafts, and means for permitting said planet rollers to move in the axial direction of said planet roller shafts, said planet rollers being operatively interposed between and arranged to interconnect said sun roller and said ring roller, said ring roller rotating in a second rotational direction when said sun roller rotates in said first rotational direction.

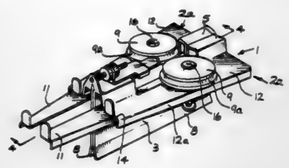
4,435,999

SAW SHARPENING GUIDE

Cornelis J. M. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia

Filed May 11, 1982, Ser. No. 377,020
Claims priority, application Australia, May 11, 1981, PE8799/81
Int. Cl.³ B23D *63/10*
U.S. Cl. 76—36 **9 Claims**

1. A saw sharpening guide including a member adapted to be located on the blade of the saw in a straddling relationship to the toothed edge and carrying two grooved rollers arranged to guide a file for the sharpening of the teeth of the saw; said member having a dependent portion arranged to engage one side of the blade when the member is in said straddling relationship thereto, a locking element supported by the member for sliding movement relative thereto along a path inclined to the plane of the saw blade so as to move towards or away from the blade when moved in respective opposite directions along said path, and resilient means urging said locking element to



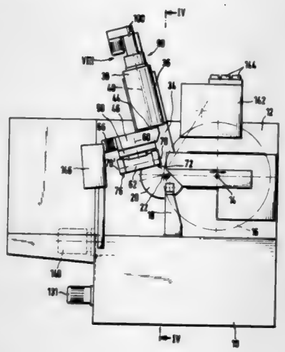
move along the path in the direction towards the saw blade whereby the blade may be gripped between the dependent portion and the locking element.

4,436,000

SHARPENING MACHINE FOR SAWS

Peter Lenard, Biberach, and Ernst Beck, Maselheim, both of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,195
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120465
Int. Cl.³ B23D *63/14*
U.S. Cl. 76—41 **15 Claims**



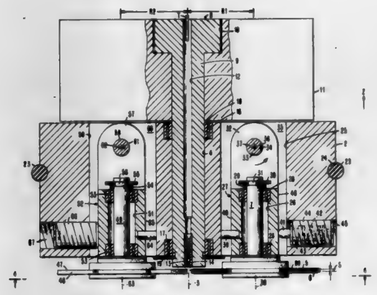
1. A sharpening machine for sharpening toothed saws, comprising:
mounting means for supporting a saw blade;
a carrier mounted for rotation about a tilting axis oriented perpendicular relative to the plane of said saw blade;
a support mounted on the carrier, said support being arranged so as to selectively swivel relative to the carrier through at least 180° about a first swivel axis lying in the plane of the saw blade, and said support being arranged so as to selectively reciprocate along the first swivel axis;
a grinding head mounted on the support, the grinding head being reciprocable relative to the support between two operating positions;
a first grinding wheel mounted on the grinding head, the first grinding wheel having a first operating position in which an active face of the first grinding wheel is contiguous with the first swivel axis;
a second grinding wheel mounted on the grinding head and arranged in offset relationship with respect to the first grinding wheel, the second grinding wheel having a second operating position in which an active face of
the second grinding wheel is contiguous with the first swivel axis; and
means for driving said first and second grinding wheels.

4,436,001

CENTRIPETAL CUTTER AND STRIPPER APPARATUS

James M. Ergler, Friendsville, Pa.; Harold Kohn, Endwell, and Michael Smetana, Johnson City, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1982, Ser. No. 387,992
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.51 **10 Claims**



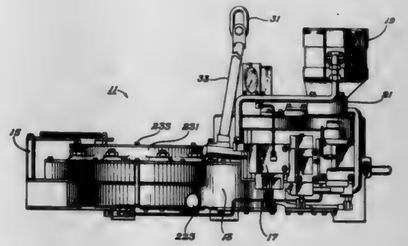
1. Apparatus for cutting a piece from an elongated object having an inner core member and a concentric outer member and a predetermined portion of said outer member from said piece, said apparatus comprising:
a head rotatable about a predetermined first axis, said head having an opening concentric with said first axis,
first and second disc cutters mounted on a common shaft with a predetermined spacing therebetween, said shaft being rotatable about a second axis, and said shaft being pivotably mounted to said head a predetermined distance from said first axis, said first disc cutter being positioned between said opening and said second cutter,
means for positioning said object for advancement through said opening coincidentally along said first axis in a direction towards said cutters, and
variable speed drive means for continuously rotating said head about said first axis, said head being rotated at a first speed by said drive means to pivot said shaft to an inner first radial position to place said first disc cutter in contacting and obstructing relationship with the leading end of said object and prevent the advancement thereof, said head being rotated by said drive means at an increased second speed relative to said first speed to pivot said shaft centrifugally to an outer second radial position to displace said first cutter from said contacting and obstructing relationship with said leading end of said object to allow further advancement of said object in said direction along said first axis to a predetermined axial position along said first axis beyond said second cutter, and said head being rotated by said drive means when said object is in said predetermined axial position at a predetermined reduced third speed relative to said second speed to pivot said shaft centripetally radially inward towards said first axis to place at least one of said first and second cutters in a predetermined lateral contacting relationship with said object to effect in coaction with said rotation of said head about said first axis the rotation of said shaft and said first and second cutters about said second axis, said rotation of said head about said first axis in coaction with said rotation of said first and second cutters about said second axis thereby effecting concurrent cutting of said piece from said object and of said portion from said outer member of said piece by said first and second cutters, respectively.

4,436,002

REVERSAL MECHANISM FOR POWER TONG

Kerry S. Kennington, and Ronald Baker, both of Austin, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Dec. 11, 1981, Ser. No. 329,971
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.2 **6 Claims**



1. In a pipe gripping tong of the type having a stationary housing with a central opening for receiving pipe to be gripped, a ring gear rotatably mounted in said housing for movement about said central opening, a plurality of jaws supported by said housing and movable between an extended position for gripping pipe in said central opening and retracted position, said jaws being rotatably engaged by said ring gear, and drive means for transmitting rotary motion to said ring gear, wherein the improvement comprises:
a carrier assembly supported by said housing for rotation about said central opening, said assembly comprising upper and lower plates spaced apart by a plurality of pins, said jaws being mounted on said pins between said plates; and
said jaws being rotatable to said extended pipe gripping position in either of opposite directions from a single retracted position;
reversal means for controlling the direction of rotation of said jaws; and
wherein said reversal means comprises a detent pin mounted on said lower plate at a right angle with respect thereto, one end of said pin being received within a transverse opening in said ring gear, said opening on said ring gear being located at the approximate mid point of two, off-set, longitudinal slots in said ring gear.

4,436,003

TOOL FOR SUPPORTING AND TURNING THREADED MEMBERS

Raymond G. Cox, 733 Cumberland Dr., St. Louis, Mo. 63125

Filed Jan. 7, 1982, Ser. No. 337,583
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—57.43 **11 Claims**



1. A tool having particular utility for supporting for rotation threaded members to be installed or removed from relatively inaccessible locations comprising an elongated body member having first and second opposite end portions and a passageway extending therebetween, each of said first and second end portions having an opening therethrough communicating with the passageway extending through said body member, a flange member extending endwardly from said first end portion, said

the input shaft.

4,435,998

ROLLER TYPE PLANETARY GEAR HAVING A PRELOADING ARRANGEMENT

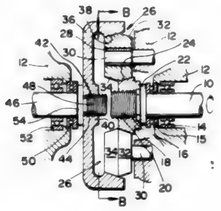
Keijiro Kinoshita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 10, 1981, Ser. No. 242,279

Claims priority, application Japan, Apr. 7, 1980, 55-44588

Int. Cl.³ F16H *13/06*

U.S. Cl. 74—798 **7 Claims**



1. Planetary gearing comprising:

a first shaft and a sun roller threadably mounted on said first shaft, said sun roller tending to unscrew in a first axial direction along said first shaft when said first shaft is rotated in a first rotational direction;

a second shaft and a ring roller threadably mounted on said second shaft, said ring roller tending to unscrew in a second axial direction along said second shaft when said ring roller is rotated in said first rotational direction; and

planet roller shafts, planet rollers mounted on said planet roller shafts, and means for permitting said planet rollers to move in the axial direction of said planet roller shafts, said planet rollers being operatively interposed between and arranged to interconnect said sun roller and said ring roller, said ring roller rotating in a second rotational direction when said sun roller rotates in said first rotational direction.

4,435,999

SAW SHARPENING GUIDE

Cornelis J. M. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia

Filed May 11, 1982, Ser. No. 377,020

Claims priority, application Australia, May 11, 1981, PE8799/81

Int. Cl.³ B23D *63/10*

U.S. Cl. 76—36 **9 Claims**

1. A saw sharpening guide including a member adapted to be located on the blade of the saw in a straddling relationship to the toothed edge and carrying two grooved rollers arranged to guide a file for the sharpening of the teeth of the saw; said member having a dependent portion arranged to engage one side of the blade when the member is in said straddling relationship thereto, a locking element supported by the member for sliding movement relative thereto along a path inclined to the plane of the saw blade so as to move towards or away from the dependent portion and the locking element, whereby the blade may be gripped between the dependent portion and the locking element.

4,436,000

SHARPENING MACHINE FOR SAWS

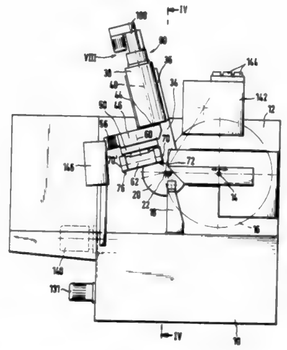
Peter Lenard, Biberach, and Ernst Beck, Maselheim, both of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,195

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120465

Int. Cl.³ B23D *63/14*

U.S. Cl. 76—41 **15 Claims**



1. A sharpening machine for sharpening toothed saws, comprising:

mounting means for supporting a saw blade;

a carrier mounted for rotation about a tilting axis oriented perpendicular relative to the plane of said saw blade;

a support mounted on the carrier, said support being arranged so as to selectively swivel relative to the carrier through at least 180° about a first swivel axis lying in the plane of the saw blade, and said support being arranged so as to selectively reciprocate along the first swivel axis;

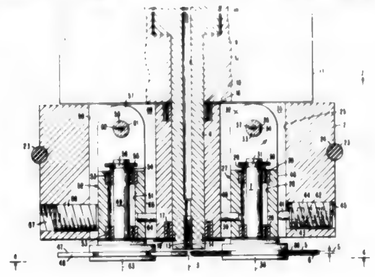
a grinding head mounted on the support, the grinding head being reciprocable relative to the support between two operating positions;

a first grinding wheel mounted on the grinding head, the first grinding wheel having a first operating position in which an active face of the first grinding wheel is contiguous with the first swivel axis;

a second grinding wheel mounted on the grinding head and arranged in offset relationship with respect to the first grinding wheel, the second grinding wheel having a second operating position in which an active face of

the second grinding wheel is contiguous with the first swivel axis; and

means for driving said first and second grinding wheels.



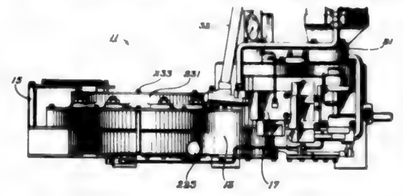
1. Apparatus for cutting a piece from an elongated object having an inner core member and a concentric outer member and a predetermined portion of said outer member from said piece, said apparatus comprising:

a head rotatable about a predetermined first axis, said head having an opening concentric with said first axis,

first and second disc cutters mounted on a common shaft with a predetermined spacing therebetween, said shaft being rotatable about a second axis, and said shaft being pivotably mounted to said head a predetermined distance from said first axis, said first disc cutter being positioned between said opening and said second cutter,

means for positioning said object for advancement through said opening coincidentally along said first axis in a direction towards said cutters, and

variable speed drive means for continuously rotating said head about said first axis, said head being rotated at a first speed by said drive means to pivot said shaft to an inner first radial position to place said first disc cutter in contacting and obstructing relationship with the leading end of said object and prevent the advancement thereof, said head being rotated by said drive means at an increased second speed relative to said first speed to pivot said shaft centrifugally to an outer second radial position to displace said first cutter from said contacting and obstructing relationship with said leading end of said object to allow further advancement of said object in said direction along said first axis to a predetermined axial position along said first axis beyond said second cutter, and said head being rotated by said drive means when said object is in said predetermined axial position at a predetermined reduced third speed relative to said second speed to pivot said shaft centripetally radially inward towards said first axis to place at least one of said first and second cutters in a predetermined lateral contacting relationship with said object to effect in coaction with said rotation of said head about said first axis the rotation of said shaft and said first and second cutters about said second axis, said rotation of said head about said first axis in coaction with said rotation of said first and second cutters about said second axis thereby effecting concurrent cutting of said piece from said object and of said portion from said outer member of said piece by said first and second cutters, respectively.



1. In a pipe gripping tong of the type having a stationary housing with a central opening for receiving pipe to be gripped, a ring gear rotatably mounted in said housing for movement about said central opening, a plurality of jaws supported by said housing and movable between an extended position for gripping pipe in said central opening and retracted position, said jaws being rotatably engaged by said ring gear, and drive means for transmitting rotary motion to said ring gear, wherein the improvement comprises:

a carrier assembly supported by said housing for rotation about said central opening, said assembly comprising upper and lower plates spaced apart by a plurality of pins, said jaws being mounted on said pins between said plates; and

said jaws being rotatable to said extended pipe gripping position in either of opposite directions from a single retracted position;

reversal means for controlling the direction of rotation of said jaws; and

wherein said reversal means comprises a detent pin mounted on said lower plate at a right angle with respect thereto, one end of said pin being received within a transverse opening in said ring gear, said opening on said ring gear being located at the approximate mid point of two, off-set, longitudinal slots in said ring gear.

4,436,003

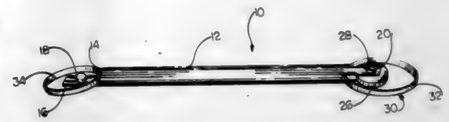
TOOL FOR SUPPORTING AND TURNING THREADED MEMBERS

Raymond G. Cox, 733 Cumberland Dr., St. Louis, Mo. 63125

Filed Jan. 7, 1982, Ser. No. 337,583

Int. Cl.³ B25B *13/00*

U.S. Cl. 81—57.43 **11 Claims**



1. A tool having particular utility for supporting for rotation threaded members to be installed or removed from relatively inaccessible locations comprising an elongated body member having first and second opposite end portions and a passageway extending therebetween, each of said first and second end portions having an opening therethrough communicating with the passageway extending through said body member, a flange member extending endwardly from said first end portion, said

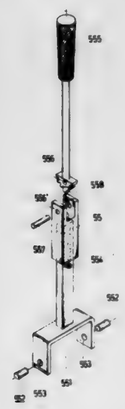
flange member having a sidewardly extending projection thereon in position to rotatably hold and support a threaded member when positioned thereon or therearound, a rotatable member and means extending endwardly from the second end portion of said body member for mounting the rotatable member thereon, an elongated endless flexible member extending through the passageway and through the opening associated with said second end portion and having portions thereof extending endwardly beyond said second end portion for tangential engagement with opposite sides of the rotatable member, said endless flexible member having another portion extending endwardly through the opening associated with the first end portion of said body member and around said sidewardly extending projection for engagement with a threaded member rotatably positioned in communication with said projection, rotation of said rotatable member when the endless flexible member is engaged with the opposite sides thereof providing the means for controllably tensioning and moving the flexible member longitudinally through said body member thereby imparting rotational movement to said threaded member.

4,436,004

UNIVERSAL MULTI-SOCKET RATCHET WRENCH

Hui-Huang Chang, 21, Alley 17, Lane 65 Chung-Chin Rd., Tai-chung City, Taiwan

Filed Mar. 3, 1982, Ser. No. 354,482
Claims priority, application Taiwan, Oct. 5, 1981, 7025849
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—60 **8 Claims**



1. A universal multi-socket ratchet wrench comprising in combination:

a socket gripping body having a plurality of cross slot equally formed around the longitudinal wall of the open head at one end and an annular recess circumscribed by a ring of spaced tooth at the other;

a plurality of gripping member respectively and movably received in said cross slots forming an adjustable hexagonal socket thereof;

a rotary conical member having a driving arm structure at one end and a plurality of screw teeth at the other being positioned within said annular recess of said socket gripping body with respect to said gripping members;

a force applying member having a force transmission projection at one end, a conical recess in the middle, and a spaced tooth portion at the other end, being fitly scarfed to the toothed portion of said socket gripping body in relation to said rotary conical member positioned therein;

a coupling sleeve connected to said force applying member;

control means installed in said coupling sleeve with respect to said force applying member and socket gripping body; and

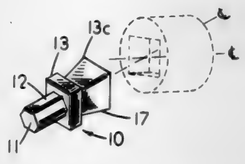
an operating handle telescopically and pitchably coupled with said coupling sleeve, whereby, with the arrangement of said driving structure and said control means, said hexagonal socket is adaptable to any hexagonal nuts or other bolt type fasteners for performing tightening and loosening operations by the user at any directions.

4,436,005

ROTARY TORQUE ADAPTER

Alan R. Hanson, 10024 Johnson Cir., Bloomington, Minn. 55437

Filed Mar. 10, 1982, Ser. No. 356,711
Int. Cl.³ B25B *23/00*; B25G *1/04, 3/00*
U.S. Cl. 81—177 G **1 Claim**



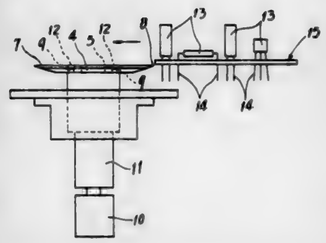
1. A tool adapter device having an integral hexagonal cross sectional drive shaft with a drive end, said drive end comprising a first and a second square cross-sectional drive end portion, wherein said first drive end portion is disposed between the drive shaft and said second drive end portion, and said first drive end portion is of constant cross-sectional area and said second drive end portion is comprised of a frustrum of a quadrangular pyramid which decreases from a cross-sectional area equal to the cross-sectional area of the first described drive end portion to decreasing cross-sectional areas decreasing in size in the direction toward and fixedly joined to said first described nonreducing cross-sectional area drive end portion, said first drive end portion operating cooperatively with the largest and equal-size square area of the second drive end portion which is placed on the opposite end of the device from said drive shaft to align coincidentally the centerlines of said adapter device and a socket tool when both drive end portions are slidably inserted into a square aperture or said socket tool to enable in-line rotational motion at low and relatively high speeds, of clockwise and counterclockwise direction, of continuous and noncontinuous rotation of said adapter device and said socket tool each about their respective coincident centerlines, whereby said frustrum of the quadrangular pyramid of said second drive end portion operating to transmit rotational motion at low and relatively high speeds, of clockwise and counterclockwise direction, of continuous and noncontinuous rotational motion of said tool adapter and the socket tool mated thereon, when said frustrum portion of the second drive end portion is partially slidably inserted into the square aperture of said socket tool thereby creating a hold-on force means and a "universal-joint" type swivel action allowed by the spatial clearance between said socket tool square aperture and said frustrum of the quadrangular pyramid, said second drive end portion and said socket tool each rotating about its own respective centerline with the centerlines of said second drive end portion and said socket tool being non-coincident and angularly disposed to each other.

4,436,006

METHOD FOR CUTTING LEAD WIRES

Hiromichi Nakamura; Haruya Urano; Tatsuo Kojima, all of Gifu, and Mitsunao Sekiwa, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Mitsubishi Metal Corporation, Tokyo, both of, Japan

Continuation of Ser. No. 972,066, Dec. 21, 1978, abandoned.
This application Sep. 22, 1980, Ser. No. 189,299
Claims priority, application Japan, Dec. 29, 1977, 52-160008
Int. Cl.³ B23D *19/00, 35/00*
U.S. Cl. 83—13 **6 Claims**



1. In a method of cutting lead wires projecting from one side of print base panels by relatively moving the panels and a rotating circular cutting disk having a peripheral cutting edge adapted to sever the lead wires, the improvement comprising the steps of

providing the cutting disk with a main body and an annular hard layer of from 0.02 to 0.2 mm in thickness made from at least one material selected from the group consisting of cemented carbide, TiC, TaC, Cr_2C_3 and Al_2O_3, said hard layer forming said peripheral cutting edge and extending radially inwardly thereof, said main body having lower abrasion resistance than said hard layer; and

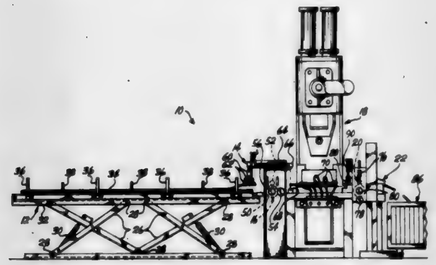
severing the lead wires successively from a plurality of panels by rotating the cutting disk at a speed sufficiently high to cause the peripheral cutting edge to be self-sharpening by chipping of said hard layer from successive contacts with the lead wires.

4,436,007

AUTOMATED FEED FOR A PUNCH PRESS AND METHOD OF USING SAME

Darrel L. Russon, and Warren H. Wheeler, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 30, 1981, Ser. No. 248,153
Int. Cl.³ B26D *1/40*
U.S. Cl. 83—23 **11 Claims**



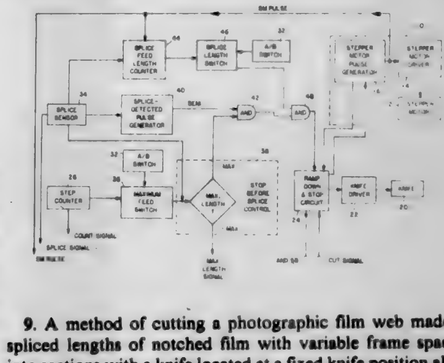
5. A method of handling feed stock through a punch press with steps comprising: aligning feed stock for passing through the dies of a punch press, establishing a reference line for the leading edge of the feed stock with respect to load position in the punch press, utilizing in-feed rolls for advancing the feed stock on the reference line, then to the punch position, stamping out a part, and incrementally advancing the feed stock through the punch press, laterally removing punched parts from the punched stock, switching to out-feed rolls for incrementally feeding the stock through the punch press once the scrap stock advances to the out-feed rolls, and removing the punched scrap stock.

4,436,008

PHOTOGRAPHIC FILM WEB CUTTER AND METHOD

Gerald R. Strunc, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Apr. 5, 1982, Ser. No. 365,284
Int. Cl.³ B26D *5/24*
U.S. Cl. 83—42 **12 Claims**



9. A method of cutting a photographic film web made of spliced lengths of notched film with variable frame spacing into sections with a knife located at a fixed knife position along a feed path, the method comprising:

(a) advancing the web along a feed path so that a leading end of the web extends past the fixed knife position;

(b) sensing a splice in the web at a splice sensing position upstream from the fixed knife position; P1 (c) determining a first length of web from a cut end to to the splice;

(d) if the first length to the splice is less than a predetermined maximum length, advancing the web until a portion of the web adjacent the splice is aligned with the fixed knife position and activating the knife to cut a segment extending past the fixed knife position from the web; and

(e) if the first length of the splice is greater than the predetermined maximum length, advancing the web a second length so that a portion of the web greater than a predetermined minimum length from the cut end is aligned with the fixed knife position, and cutting the web.

4,436,009

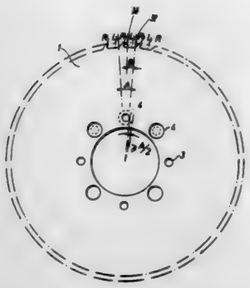
SAW UNIT HAVING MUTUALLY DISPLACEABLE SAW PARTS

Jonas W. Ask, Skogstigen 10, S-183 50 Täby, Sweden

Continuation-in-part of Ser. No. 160,177, Jun. 17, 1980, abandoned. This application Feb. 25, 1981, Ser. No. 237,978
Int. Cl.³ B27B *5/29*
U.S. Cl. 83—72 **10 Claims**

1. A sawing unit comprising two sawblades having a plurality of teeth with equal toothpitch, said blades being pressed together and driven as a unit, the teeth of either blade disposed between a pair of teeth of the other blade, the teeth of each blade being inclined toward the plane of the other blade, said blades being mounted for relative displacement both in the direction of travel of said teeth and in the direction of feed of the object being sawed during a sawing operation, actuating means operably connected to at least one of said blades for

effecting relative displacement between said blades selected in said direction of travel of said teeth and in said direction of feed



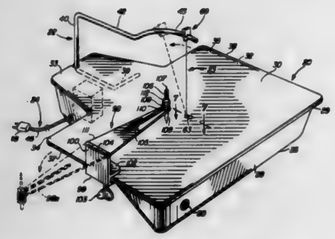
during a sawing operation to regulate the cutting action of the teeth.

4,436,010

APPARATUS FOR CUTTING FUSIBLE MATERIAL

John M. Valentine, 14975 E. Columbia Dr., Aurora, Colo. 80014

Filed Jun. 15, 1981, Ser. No. 273,654
Int. Cl.³ B26F *3/12*; B29C *17/10*
U.S. Cl. 83—171 13 Claims



1. An apparatus for cutting and shaping a fusible material workpiece, said apparatus comprising:

a. a base including a table having a top surface for supporting said workpiece;

b. a support member extending from said base and having a downwardly arcuate terminal section residing at an elevated position above the top surface of said table;

c. an elongate electrical resistance cutting element having

i. a lower end secured to said base, and

ii. an upper end directed toward the terminal section of said support member;

d. attachment means carrying the upper end of said cutting element and adjustably positionable along the terminal portion of said support member; and

e. electrical supply means for providing electrical energy to said cutting element.

4,436,011

SLICING DEVICE FOR ROUNDED FOOD ARTICLES

Frank W. Jones, P.O. Box 4074, Greenville, Del. 19807

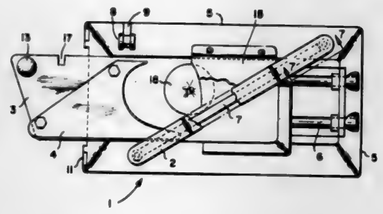
Filed Apr. 4, 1983, Ser. No. 481,764
Int. Cl.³ B26D *1/03, 4/18, 4/20, 7/06*
U.S. Cl. 83—425.3 10 Claims

1. A manual food slicer comprising a base;

a rack of parallel spaced blades mounted to said base at an acute angle with said base, said blades under tension and having two edges, one edge sharp;

a slide means mounted to the base;

a movable carrier assembly mounted to said slide means on the sharp side of the blades, said carrier assembly having a carrier plate connected to the slide means and carrier fingers which are a parallel array of planar segments mounted above and parallel with the carrier plate, said carrier fingers intermesh between the rack of parallel blades, in the open position the carrier assembly allows for inserting a food article between the rack of blades and the carrier fingers on to the carrier plate which extends beyond the lowest blade in the rack and between said lowest blade and the base, in the closed position the carrier fingers extend through the posterior side of the blades with



the carrier plate extending under the lowest blade sufficiently for the sliced food article to rest upon the carrier plate,

a guard mounted to the base and shielding the sharp edge of the blades and in combination with the rack of blades and the carrier fingers with the carrier assembly in the open position creating a vertical cavity in which the food article to be sliced is inserted;

a means stopping the base from moving relative to a work surface and;

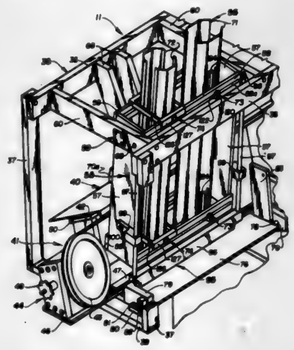
a locking means to secure the carrier assembly to the base.

4,436,012

PENDULUM-TYPE PRODUCT SLICING MACHINE

Thomas A. Hochanadel, Pickerington, Ohio, assignor to J. E. Grote Pepp-A-Matic Co., Inc., Columbus, Ohio

Filed Nov. 13, 1981, Ser. No. 321,244
Int. Cl.³ B26D *7/06*; B23D *53/06*
U.S. Cl. 83—703 15 Claims



1. A product slicing apparatus comprising

a structural frame,

a product carrier pivotally mounted on said frame for reciprocating movement about a substantially horizontal pivot axis, said carrier including at least one elongated product compartment extending generally perpendicular to and downward from said pivot axis and adapted to receive a product to be sliced and permit downward movement of the product toward an open, bottom end of the compartment that is spaced a predetermined distance from said pivot axis,

product carrier drive means coupled with said carrier and operable to effect reciprocating swinging movement of said carrier about its pivot axis through a predetermined arc of sufficient extent to cause the entire bottom end of the product in the carrier and projecting from the lower end thereof to traverse a cutting line extending transversely across the path of movement of the product,

slice thickness control means operatively interengageable with the product carrier by said product carrier for controlling the distance of projection of the product with respect to the cutting line, and

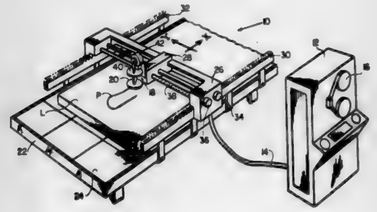
slicing means mounted on said frame and including an endless slicing blade carried by support means for maintaining the blade in vertically spaced upper and lower runs having at least a portion of the lower run forming a generally rectilinear cutting blade section disposed in substantially horizontal, transversely extending relationship across the path of movement of the product at the cutting line, said slicing blade being supported to revolve in a place aligned with the cutting blade section of the lower run thereof and inclined to a plane tangent to an arc of movement of the product through the cutting line to position the upper run in sufficiently offset relationship to a plane perpendicular to the tangent plane to permit said product carrier to swing over the lower run in effecting complete cutting of the product carried thereby, and blade drive means operatively coupled with said blade to effect revolution thereof in performance of slicing operations.

4,436,013

RECIPROCATING CUTTING APPARATUS WITH THETA DITHER

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Nov. 30, 1981, Ser. No. 325,673
Int. Cl.³ B26D *7/01*; B22B *3/00*
U.S. Cl. 83—747 11 Claims



1. An apparatus for cutting sheet material comprising:

a cutting tool in the form of an elongated cutting blade which reciprocates generally along an axis of reciprocation when performing a cutting operation, the cutting blade having a leading cutting edge and a trailing edge, the cutting edge and trailing edge being generally parallel to the axis of reciprocation;

means defining a support surface for supporting sheet material to be cut by the cutting blade;

means supporting the cutting blade with the axis of reciprocation of the blade generally perpendicular to the support surface;

motive means for translating the cutting blade generally progressively along a desired lie of cut relative to the sheet material on the support surface;

means for reciprocating the cutting blade along the axis of reciprocation in alternate upward and downward strokes between upper and lower limits of travel; and

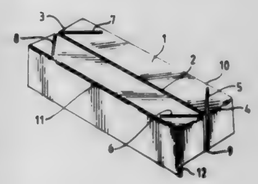
mechanical means interposed between the cutting blade and the blade supporting means for producing from the reciprocation strokes of the blade limited oscillatory rotations of the cutting blade about the axis of reciprocation toward one side of the line of cut and then the other.

4,436,014

MITER BLOCK

Terence C. O'Neill, Northumberland, England, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

PCT No. PCT/GB81/00110, § 371 Date Feb. 5, 1982, § 102(e) Date Feb. 5, 1982, PCT Pub. No. WO82/00018, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 25, 1981, Ser. No. 348,045
Claims priority, application United Kingdom, Jun. 25, 1980, 8020828
Int. Cl.³ B27G *5/02*
U.S. Cl. 83—762 2 Claims



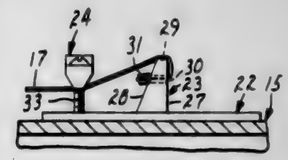
1. A mitre block comprising a receiving slot to receive the article to be cut and two guide slots at right angles to one another for guiding the cutting implement, the guide slots intersecting with one another and with the receiving slot at a common intersection point at one end of the receiving slot.

4,436,015

STRINGED INSTRUMENT BRIDGE

Milan S. Zarich, 801 Dodd Rd., West St. Paul, Minn. 55118

Filed Sep. 20, 1982, Ser. No. 420,123
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—298 4 Claims



1. A bridge for a stringed instrument comprising:

a base plate,

an elongate end wall extending perpendicularly from said base plate and having a plurality of laterally spaced string grooves extending across said end wall spaced from said base plate,

an elongate bridge bar supported spaced from and parallel to said end wall and having string support grooves across its surface that faces said base plate corresponding to said string support grooves across said end wall, and

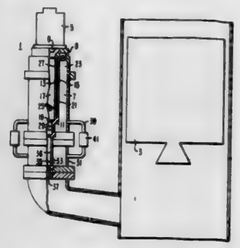
means for moving said bridge bar toward and away from said base plate while maintaining the spacing between said bridge bar string support grooves and said base plate less than the spacing between said end wall string support grooves and said base plate.

4,436,016

VARIABLE ENERGY MISSILE EJECT SYSTEM

Gaylord S. Olmsted, Los Altos, and Gordon W. Romo, Saratoga, both of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1981, Ser. No. 291,746
Int. Cl.³ F41F 3/04
U.S. Cl. 89—1.809 7 Claims



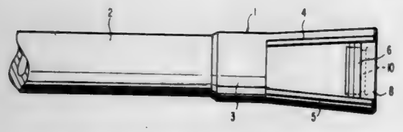
1. A variable energy missile eject system comprising an invariable gas generator having an outlet nozzle;
a cooling chamber filled with a liquid and having an outer housing;
a standpipe disposed within said housing to form a centrally located gas conduit in fluid communication with said gas generator outlet nozzle;
said standpipe having a nozzle disposed in the lower portion;
said standpipe having an inner and outer wall portion disposed to form an inner annular chamber above said standpipe nozzle and an outer annular chamber extending above and below said standpipe nozzle;
a first set of ports in said standpipe disposed above said standpipe nozzle providing fluid communication between said gas conduit and said inner annular chamber;
a second set of ports in said standpipe disposed in the upper portion of said outer wall of said standpipe providing fluid communication between inner annular chamber and said outer annular chamber;
a third set of ports disposed in said standpipe below said standpipe nozzle providing fluid communication between said gas conduit and said outer annular chamber;
a fourth set of ports disposed to provide fluid communication between said gas conduit and said outer annular chamber;
means for controlling the flow of fluid through said fourth set of ports; and
a rupture disc disposed in said gas conduit to seal the fluid in said annular chambers and said gas conduit.

4,436,017

MUZZLE BRAKE FOR ARTILLERY GUNS

Kjell Mohlin, Kariskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 22, 1982, Ser. No. 351,055
Int. Cl.³ F41F 17/12
U.S. Cl. 89—14 C 3 Claims



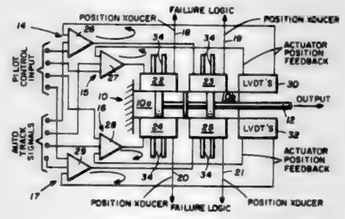
1. A muzzle brake for artillery guns comprising a sidewardly open body attached to the muzzle of the barrel of said gun, said body being defined in the forward direction by a front wall having an outer face provided with a central opening for the gun projectiles, the diameter of said opening being adjusted to the recoil forces initiated by the fire of the gun, the free area of said opening including an exchangeable wear ring axially slid into said opening and attached to the outer face of said front wall of said body.

4,436,018

MULTIPLE LOOP CONTROL SYSTEM

Milford R. Murphy, Arlington, and Delbert E. Haskins, Irving, both of Tex., assignors to Textron Inc., Providence, R.I.

Filed Feb. 17, 1981, Ser. No. 234,713
Int. Cl.³ F15B 9/03, 9/09
U.S. Cl. 91—363 A 18 Claims



1. A multiple loop control system providing a single composite output, comprising:
a plurality of actuators, each actuator receiving at least two separate control signals and generating an output interconnected with the output of all other actuators in the plurality to provide a single composite output;
a plurality of control loops, at least one connected to each of said actuators, each control loop responsive to an individual input signal and generating one of said control signals to one of the actuators; and
failure monitoring means connected to each of said actuators and the control loops to monitor the operation thereof, said failure monitoring means including means responsive to a monitor signal from each actuator, and means responsive to the monitor signal from one actuator having a difference from the monitor signals for the other actuators above a first threshold level to generate the disengage signal to one of the actuators for a failure condition, said failure monitoring means further including means for detecting a hard-type failure and inert-type failure and means for generating a disengage signal at a lower threshold level for an inert-type failure than for a hard-type failure.

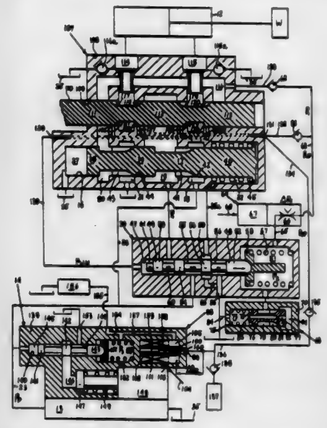
4,436,019

PRESSURE COMPENSATED FLUID CONTROL VALVE

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Aug. 20, 1981, Ser. No. 294,606
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.³ F15B 13/04
U.S. Cl. 91—446 32 Claims

12. A valve assembly supplied with pressure fluid by a pump, said valve assembly comprising a housing having an inlet chamber, a supply chamber, first and second load chambers and exhaust means connected to reservoir means, first valve means for selectively interconnecting said load chambers with said supply chamber and said exhaust means, first control orifice means responsive to movement of said first valve means and operable to meter fluid flow between said supply chamber and said load chambers, second control orifice means responsive to movement of said first valve means and operable to meter fluid flow between said load chambers and said exhaust means, positive load fluid throttling means between said inlet chamber and said supply chamber, negative load fluid throttling means between said load chambers and said exhaust means, single pilot valve means operable through said positive load fluid throttling means to throttle fluid flow from said inlet chamber to said supply chamber and also operable through said negative load fluid throttling means to throttle fluid flow from said load chambers to said exhaust means to maintain a constant pressure differential at a preselected constant level



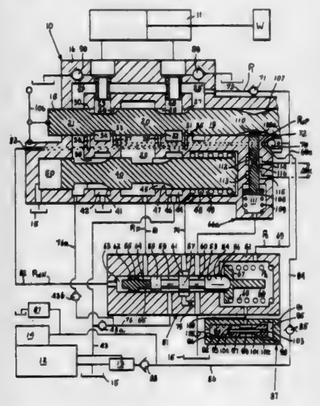
across said pilot valve means and to maintain a constant pressure differential across said first and said second control orifice means, and valve means having means operable through said positive and said negative load fluid throttling means to vary the level of said constant pressure differential across said first and said second control orifice means while said pressure differential across said pilot valve means remains constant at said constant predetermined level.

4,436,020

DUAL INPUT PRESSURE COMPENSATED FLUID CONTROL VALVE

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Mar. 11, 1982, Ser. No. 357,036
Int. Cl.³ F15B 13/04
U.S. Cl. 91—446 10 Claims



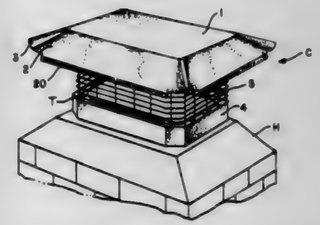
1. A control valve assembly operable to control fluid flow to and from a fluid motor subjected to a load, said valve assembly having first valve means operable to meter fluid flow of said motor, throttling control means operable to throttle fluid flow of said motor, pilot valve means having means responsive to a load pressure related control signal and operable through said throttling control means to maintain a relatively constant pressure differential at a preselected constant level across said pilot valve means and to maintain a constant pressure differential across said first valve means during control of said load, and controller means having means responsive to displacement of said first valve means and means operable to modify said load pressure related control signal, whereby the level of said constant pressure differential acting across said first valve means can be varied in respect to displacement of said first valve means while said pressure differential across said pilot valve means remains constant at said constant predetermined level.

4,436,021

CHIMNEY CAP

Durward A. Hisey, St. Louis, Mo., assignor to HY-C Company Inc., St. Louis, Mo.

Filed Mar. 12, 1982, Ser. No. 357,733
Int. Cl.³ F23J 13/08
U.S. Cl. 98—67 9 Claims



1. In a chimney cap for use in providing coverage for the upper end of the formed chimney flue and thereby preventing the entrance of any extraneous elements therein, comprising, a cover means provided upwardly of the chimney flue and preventing the entrance of rain or other elements downwardly into the chimney flue, a band means arranged downwardly of the said cover means and designed for proximity fitting upon the said chimney flue, said cover and band means being spaced apart a distance heightwise to allow sufficient draft to develop and remove smoke and fumes from the chimney flue, a foraminous means arranged connecting with both the said cap and band means and disposed spanning the space in between the said means and arranged substantially in alignment with the said band means, and retention means operatively associated with the said band means for assuring its securement with the chimney flue upon which it seats, said retention means including at least one adjustable fastener securing with the band means and capable of tightening into binding engagement with the chimney flue, said retention means including a flexible strap being attached interiorly of the band means, said strap capable of being forced inwardly during chimney cap adjustment, and fastening means incorporated within the retention means and when adjusted binding against the flexible strap for forcing it further inwardly for binding engagement with the chimney flue.

4,436,022

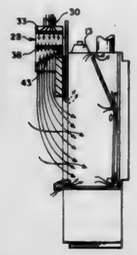
FUME HOOD INCORPORATING HIGH EFFICIENCY AUXILIARY AIR PLENUM

Jon A. Zboralski, Manitowoc; Harry N. Grow, Two Rivers, and Stephen E. Holschbach, Manitowoc, all of Wis., assignors to Hamilton Industries, Inc., Two Rivers, Wis.

Filed Aug. 28, 1981, Ser. No. 297,387
Int. Cl.³ F23J 11/00
U.S. Cl. 98—115 LH 3 Claims

1. A fume hood comprising a frame including top, rear, and side panels, and an air exhaust opening; a bypass opening on

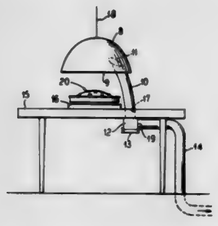
the front portion of the hood; an auxiliary air housing mounted on the uppermost portion of the front of the hood and extending outwardly therefrom; and an access opening on the rear portion of the auxiliary air housing which is disposed at the bypass opening of said hood; wherein said housing further comprises an auxiliary air supply opening; a primary means for diffusing a downward flow of air from the air supply, said primary means disposed adjacent to the auxiliary air supply opening; a secondary means for diffusing the downward flow of air, said secondary means positioned below the primary means; a tertiary means for diffusing the downward flow of air and directing the passage of said air flow in front of the front portion of the hood, wherein said tertiary means includes a



downwardly depending baffle which slopes downwardly away from the front of the hood from an area directly above said bypass opening; said baffle comprising a perforated support member having a layer of porous diffuser material thereon; said support member having a perforated rear portion disposed immediately in front of the upper margin of said bypass opening which is free of said diffuser material; said baffle also including a front portion extending along the lower forward margin thereof providing a second layer of diffuser material; said front portion of said baffle and said rear portion of said support member each having a length constituting a minor portion of the length of said baffle measured from front to rear thereof.

4,436,023
APPARATUS FOR COOKING FOOD AND EXTRACTING SMOKE

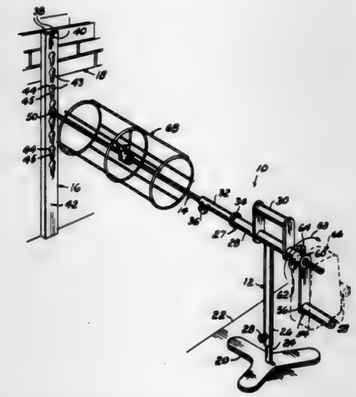
Kensuke Takahashi, c/o Kabushiki Kaisha Diamond Hotel, 25, Ichibancho, Chiyodaku, Tokyo 102, Japan
Filed Mar. 25, 1982, Ser. No. 361,983
Int. Cl.³ A47J 37/06
U.S. Cl. 99—400 17 Claims



9. An apparatus for cooking food and extracting the smoke produced thereby, comprising:
a table with a hole formed through its surface;
heating means fixed to the table surface;
a grill placed atop said heating means, said grill comprising:
an upwardly convex central body,
a plurality of raised noses formed on the surface of said central body, said noses being directed radially outward from the upper surface of said therein;
a peripheral groove for collecting juices encircling said central body; and
a sidewall encircling said peripheral groove;
a downwardly opening hood for collecting smoke supported above said heating means by means independent of said table;
a hollow pipe having an open upper end positioned inside said hood above the lower edge of said hood and a lower end inserted tightly but removably into said hole through said table, said pipe having no structural connection to said hood; and a ventilation duct connected to said lower end leading away from said table to external exhaust.

4,436,024
FIREPLACE ROTISSERIE

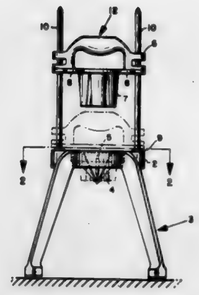
Terry D. Arden, 5009 Lunow, Oklahoma City, Okla. 73135, and Robert M. Foglesong, 3115 Del View, Del City, Okla. 73115
Filed Dec. 24, 1981, Ser. No. 334,415
Int. Cl.³ A47J 37/04
U.S. Cl. 99—421 HV 4 Claims



1. A portable device for cooking over an open fire in a fireplace, said fireplace having a back wall, comprising:
a base;
vertically adjustable standard means supported by said base;
tubular means horizontally supported by said standard means;
a post vertically secured to said back wall,
said post having a plurality of vertically spaced apertures;
a spit extending between and supported at its respective end portions by said tubular means and said post;
a drive rod coaxially secured to said tubular means opposite said spit;
handle means including a hub having internal step diameters respectively surrounding the drive rod equipped end portion of said tubular means and an adjacent intermediate portion of said drive rod;
set screw means including first and second set screws on said hub for selectively securing said hub to said drive rod for manual angular rotation of the drive rod or rigidly securing said hub to said tubular means; and,
a rotisserie motor drivably connected with said drive rod,
whereby said handle means forms a stop when rigidly securred to said tubular means for preventing angular rotation of said rotisserie motor as a unit about the axis of said drive rod.

4,436,025
SECTIONING DEVICE FOR ROUNDED FOOD ARTICLES

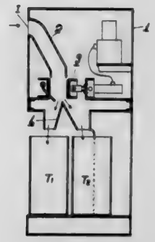
Frank W. Jones, P.O. Box 4074, Greenville, Del. 19807
Filed Apr. 1, 1983, Ser. No. 481,390
Int. Cl.³ A47J 17/00
U.S. Cl. 99—538 11 Claims



1. A device for sectioning a rounded food article comprising
a base
a conical cup of internally sharp radial blades mounted in the base and having an apex disposed towards the base with substantially wedge-shaped spaces between the blades,
slide guide means connected to the base,
a plunger having an outer perimeter having slide guide ways located at the outer perimeter of the plunger in which the slide guides engage, the plunger transversing towards the base and returning along the slide guide means,
the plunger having slide guide obstructing tabs attached to the outer perimeter of the plunger adjacent on each side of the slide guide ways causing the plunger to rotate when the plunger is installed inproperly without all the slide guide ways cooperating with the slide guides such that the plunger strikes the base rather than said blades;
an annular array of fingers depending from the plunger which freely engage within the wedge-shaped spaces between the radial blades when the plunger is moved towards the blades, the fingers each comprising a linear element having two ends, one end of each of the fingers being attached to the plunger and the other end being free, the fingers being long enough to substantially pass through the blades when the movement of the plunger into engagement with the base is terminated,
stop means on the base and plunger for terminating their engagement with each other,
a spike having a point and a stem centrally mounted at the central junction of the blades to form their apex disposed within the cup, the point of the spike extending upwardly adjacent the entrance to the cup for holding the article aligned for engagement by the plunger and for initiating the radial splitting of the article which is continued and completed by the blades, the stem of the spike freely terminating a short distance below the cup of blades.

4,436,026
EMPTY CAN CRUSHER

Yoshinobu Imamura; Shigeki Kamei, both of Nishinomiya; Tetuo Yamagata, Kobe, and Hiroshi Fujii, Amagasaki, all of Japan, assignors to Hitachi Kiden Kogyo, Ltd., Hyogo, Japan
Filed Dec. 2, 1981, Ser. No. 326,748
Claims priority, application Japan, Mar. 6, 1981, 56-32908; Jun. 29, 1981, 56-97399[U]; Jun. 29, 1981, 56-97400[U]; Jun. 29, 1981, 56-97401[U]
Int. Cl.³ B30B 9/32
U.S. Cl. 100—45 11 Claims



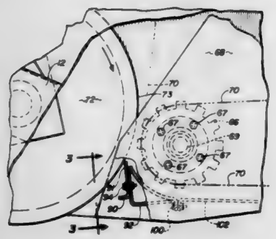
1. An apparatus for crushing and sorting empty cans, comprising:
a main body frame;
a pressing device, said pressing device including a vertically extending back pressure plate, a vertically extending pressing plate horizontally spaced from and confronting said back pressure plate, and means, including a hydraulic cylinder, for linearly moving said pressing plate horizontally toward and away from said back pressure plate between a first position horizontally spaced from said back pressure plate a distance greater than the diameter of the empty can to be crushed and a second position horizontally spaced from said back pressure plate a distance substantially less than the diameter of the empty can to be crushed;
an empty can supporting bar pivotally mounted to said frame at said back pressure plate for vertically supporting the empty can between said back pressure plate and said pressing plate during movement of said pressing plate toward said back pressure plate;
a magnet embedded in said pressing plate for holding a magnetically attractive crushed empty can to said pressure plate when said pressing plate is moved away from said back pressure plate;
means for separating the magnetically attractive crushed empty can from said pressing plate after said pressure plate has moved away from said back pressure plate to a third position whereby the magnetically attractive crushed empty can falls downward under the influence of gravity;
an empty chute for delivering an empty can to a position between said back pressure plate and said pressing plate when said pressing plate is in said first position; and
a forked sorting chute located in said main body frame below said pressing device defining a first path below said first position and a second path below said third position, said forked sorting chute respectively directing magnetically non-attractive and magnetically attractive crushed empty cans falling from said pressing plate to separate locations along first and second paths.

4,436,027

STRIPPER BAR FOR ROLL BALING MACHINE

John H. Freimuth, New Holland, and Willis R. Campbell, Ephrata, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 28, 1982, Ser. No. 372,778
Int. Cl.³ B30B 5/04
U.S. Cl. 100—88 5 Claims



1. In a roll baling machine having a base frame, a rear frame pivotally connected to said base frame, a floor roller rotatably supported on said frame, bale forming means supported on said base and rear frames cooperating with said floor roller to define a bale chamber for forming a roll bale of crop material, said rear frame being pivotally movable between a lower position for formation of a roll bale in said bale chamber and an upper position for discharge of a roll bale from said bale chamber, the improvement comprising:

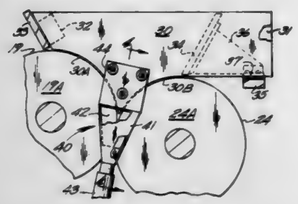
a stripper bar mounted on said rear frame for removing crop material from said floor roller during formation of a roll bale in said bale chamber, said stripper bar having an edge located proximate to said floor roller when said rear frame is in said lower position.

4,436,028

ROLL MILL FOR REDUCTION OF MOISTURE CONTENT IN WASTE MATERIAL

David M. Wilder, 82061 Lost Valley La., Dexter, Oreg. 97431

Filed May 10, 1982, Ser. No. 377,262
Int. Cl.³ B30B 3/04
U.S. Cl. 100—121 6 Claims



1. A two roll press machine for removing moisture from organic material, said machine comprising in combination,

a machine base,

a first roll rotatably mounted on said base and coupled to a roll driving motor and rotatable about a fixed axis,

a second roll,

a carriage slidably mounting said second roll on said machine base enabling travel of said second roll into and out of linear contact with said first roll,

retention means confining said carriage for rectilinear travel on said base,

powered means carried by said base and acting on said carriage to urge said second roll into and out of linear contact with said first roll,

barriers located superjacent the corresponding sides of said rolls, and

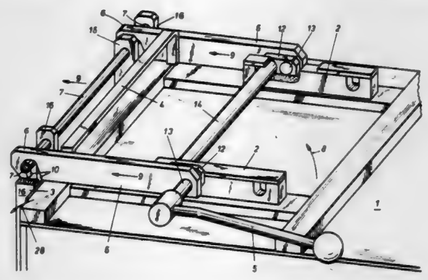
discharge means including collector boxes located laterally adjacent the nip of the rolls to remove collected fluid expelled from the organic material.

4,436,029

DEVICE FOR THE PRESS DOOR OF A BALING PRESS

Albert Goldhammer, Zum Hecht 46, D-7770 Überlingen, Fed. Rep. of Germany

Continuation of Ser. No. 198,965, Oct. 20, 1980, abandoned. This application Sep. 18, 1981, Ser. No. 303,204
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942218; Oct. 18, 1979, 2942229
Int. Cl.³ B30B 15/32
U.S. Cl. 100—250 13 Claims



1. A closure device for a baling press having one end enclosed by a press door, comprising a press door pivotably mounted at its lower end to said baling press, traverse bar means secured to the upper end of said door and for holding said door against said baling press, lever means fixably secured to an end of an eccentric member, the eccentric member having its opposite end rotatably coupled to the baling press, and a pivotable closure beam having one end rotatably connected to said lever means and the other end of the beam having a guide opening inclined at an angle to the vertical such that the guide opening is inclined opposite the direction of closure of said press door, the traverse bar means being received in the guide opening for holding said door against said baling press, whereby rotation of said lever means in a closure direction effects rotation of said eccentric member and a corresponding pivotable movement of the beam end rotatably connected to said lever such that the inclined guide opening is displaced towards said baling press to secure said door to the baling press.

4,436,030

MATERIAL COMPACTOR UTILIZING A POWER TRANSMISSION MECHANISM

John A. Ciciora, Denver, Colo., assignor to Nelson & Johnson Engineering, Boulder, Colo.

Division of Ser. No. 80,741, Oct. 1, 1979, Pat. No. 4,353,263. This application Aug. 11, 1982, Ser. No. 407,199
Int. Cl.³ B30B 1/00
U.S. Cl. 100—268 9 Claims

1. A material compacting apparatus comprising:

a frame;

means, movably mounted on said frame, for compressing said material;

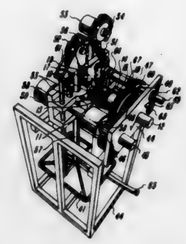
means, mounted adjacent said frame, for driving said compressing means; and

a coupling drive comprising:

a shaft;

a first arbor journaled on said shaft;

a second arbor journaled on said shaft; and



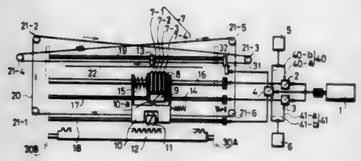
engaging means, associated with said arbors and said shaft, for engaging said first or second arbors with said shaft in response to the direction of rotation of said shaft.

4,436,031

SERIAL PRINTER

Fumihisa Hori, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,544
Claims priority, application Japan, Dec. 27, 1980, 55-185990
Int. Cl.³ B41J 1/50
U.S. Cl. 101—93.17 8 Claims



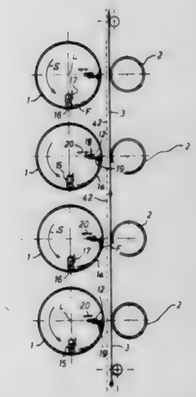
1. A printer including a carriage adapted to be moved along a line to be printed and carrying a holder containing a plurality of circumferential rows of type elements, impact means including a hammer movable along the line to be printed in unison with said carriage for pressing a record medium between said hammer and a selected one of said type elements placed in a printing position along the line to be printed, and selection means for selectively sliding said rows of type elements laterally within said carriage for bringing a selected one of said rows into said printing position, said selection means including a rotary cam carried by said holder and including spiralling cam portion and a return cam portion, a guide portion held to said carriage and adapted to engage said cam portions and means including a cam shaft connected to said cam for rotating said cam so that said guide portion can slide along said cam portions to shift said holder laterally from its home position within said carriage to selectively bring said rows into said printing position and then return said holder to its home position within said carriage by rotating said shaft in a single direction, means including a type shaft extending thorugh said rows of type elements for rotating them to bring a selected angular position of said rows along said printing position, means including a column shaft for shifting said carriage along the line to be printed, means including a single motor for providing motive power to each of said cam shaft, said rotary shaft and said column shaft, means including a first clutch for transmitting motive power selectively from said motor to said type shaft, means including a second clutch for transmitting motive power selectively from said motor to said cam shaft, and means including a third clutch for transmitting motive power to said column shaft when said first and second clutches are not transmitting motive power to said type shaft and said cam shafts respectively.

4,436,032

ROTARY SCREEN PRINTING APPARATUS

Wouter C. van Ouwerkerk, Hengelo, Fed. Rep. of Germany, assignor to Saueressig GmbH, Ahaus-Wüllen, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,833
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101766
Int. Cl.³ B41L 41/00, 13/18
U.S. Cl. 101—120 11 Claims



1. A rotary screen printing apparatus for printing dye on a web of material, said apparatus having at least one cylindrical screen printer with a lower portion and an inner side for which dismantling is avoided to undertake dye change quickly at minimum cost while also minimizing any possible dye losses, which includes centrally therein:

supply and withdrawal means at the lower portion of said screen printer that selectively supplies or withdraws dye, said pipe means being connected to a source of dye for supplying dye over the width of that portion of the inner side of said screen printer which at any given time is the lower portion thereof, and also for withdrawing dye therefrom; said pipe means for supplying and withdrawing dye being provided with at least one aperture over its length being directed on the screen printer and arranged approximately in the immediate vicinity of the inner lower side of said screen printer and being selectively connectible with a dye conveying pump to supply dye and a dye withdrawal pump selectively to remove excess quantities of dye from said screen printer so that undesired passage of dye through the screen printer is avoided during standstill thereof; means for guiding a web material to be printed on vertically past said screen printer so that during the printing procedure the web of material engages tangentially against the screen printer and unwanted or unused dye reaching the web of material including any final dye residue, is drained and/or withdrawn from the lower inside portion of the screen printer to facilitate cleaning thereof; and

a squeegee device which, when viewed in the direction of rotation of said screen printer, is spaced from said pipe means for supplying the dye that the squeegee device pushes through the screen printer and is positioned so that excess dye is accummulated between the squeegee device and the lower portion of said screen printer and drains or runs off along said screen printer for recovery therefrom via said pipe means.

4,436,033

HOLLOW CHARGES WITH PLURAL CONICAL CONFIGURATIONS

Michel Precoul, Paris, France, assignor to Societe d'Etudes, de Realisations et d'Applications Techniques (SERAT), Paris, France

Filed Jul. 28, 1981, Ser. No. 287,547
Claims priority, application France, Aug. 6, 1980, 80 17341
Int. Cl.³ F42B 1/02
U.S. Cl. 102—307 **18 Claims**



1. In a hollow charge of the type including a main explosive charge, a priming charge at a rear portion of said main explosive charge, and covering at a forward end of said main explosive charge, said covering having a longitudinal axis, the improvement wherein said covering comprises:

plural covering stages disposed sequentially from a rear end to a forward end of said covering;

each said stage having a conical configuration which converges toward said rear end of said covering and which defines with a plane extending longitudinally through said axis a pair of rectilinear slopes converging toward said rear end of said covering;

the apical angles defined by said pairs of rectilinear slopes increasing from said rear end of said covering to said forward end thereof; and

rectilinear extensions of said slopes of adjacent said stages intersecting.

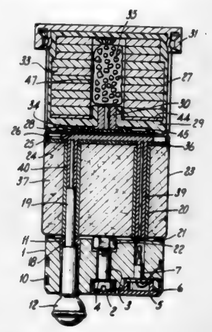
4,436,034

SMOKE GRENADE WITH SUCCESSIVE SLOW AND FAST BURNING CHARGES

Kjell O. Jacobsen, Raufoss; Tore Matre, Osterås; Rolf I. Halvorsen, Boverbru; Ingar H. Hele, Raufoss; Erling Myhrvold, Raufoss, and Ove R. Berger, Raufoss, all of Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Filed May 5, 1981, Ser. No. 260,827
Int. Cl.³ C06D 3/00
U.S. Cl. 102—334 **2 Claims**

1. A smoke shell for successively discharging a fast burning smoke emitting charge and a slow burning smoke emitting charge comprising a steel casing, an inner casing positioned in the upper part of the said steel casing and enclosing an upper instantaneous fast burning smoke emitting charge in the form of a series of annular disc rings, and an ignition bursting charge disposed in the central lower end of the steel casing ignition means for igniting said bursting charge, a first stooping fuse in the lower part of the steel casing leading from the ignition means and extending upwardly through said slow burning charge, an ejector charge a delay charge for controlling the ignition of the ejector charge for the instantaneous fast burning charge, a second delay charge disposed in the inner casing for igniting the ignition bursting charge for the instantaneous fast burning charge, a third delay charge and a second stooping fuse disposed in a contact head leading from the ignition means to the ejector charge for ejecting the said shell with its slow burning charge, the delay time of the first stooping fuse from the ignition means up to the perforated cover being shorter than the combined burning times of the third delay charge and of the second stooping fuse together, which lead from the



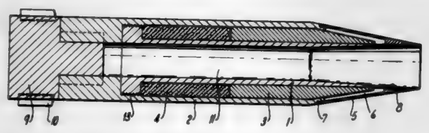
ignition means to the ejector charge, for ejecting the steel shell with its slow burning charge in a delayed time period after the inner casing with its fast burning charge has been ejected.

4,436,035

TUBULAR PROJECTILE

Kaare R. Strandli, Raufoss, Norway, assignor to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Continuation of Ser. No. 112,475, Jan. 16, 1980, abandoned. This application Jun. 3, 1982, Ser. No. 384,638
Claims priority, application Norway, Jun. 16, 1979, 790148
Int. Cl.³ F42B 11/24
U.S. Cl. 102—364 **5 Claims**



1. A tubular projectile having a rear end with a sabot and an open front end, characterized in that is comprises an interior and an exterior cylindrical wall, concentrically arranged, between which at least one incendiary charge is provided in front of at least one explsoive charge, as seen in the moving direction of said projectile, the incendiary charge being constructed to ignite on impact and then to ignite the explosive charge after a predetermined delay, and including a cover in front of said incendiary charge, said cover being a separate piece from the interior and exterior walls, and having a portion which is thinner and more deformable than the interior and exterior walls, said cover being firmly secured to the forward end of the interior and exterior walls.

4,436,036

PROJECTILE FOR DISPENSING GASEOUS MATERIAL

Frank H. Bell, Brigham City, Utah, assignor to Thiokol Corporation, Chicago, Ill.

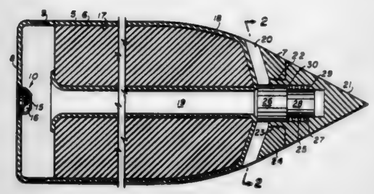
Division of Ser. No. 80,359, Sep. 28, 1979, Pat. No. 4,353,303, which is a continuation-in-part of Ser. No. 888,120, Mar. 20, 1978, abandoned. This application Jul. 28, 1982, Ser. No. 402,498
Int. Cl.³ F42B 13/46
U.S. Cl. 102—367 **7 Claims**

1. A projectile for dispensing gaseous materials comprising:

a closed, hollow, substantially cylindrical housing located at a rear portion of the projectile and having an aerodynamic forward surface forming a front portion of the projectile, said forward surface having an aft end;

a central venturi tube having one end fixed inside the housing to a portion of the housing at the forward end thereof that is adjacent the aft end of said forward surface and extending aftwardly into said housing to form an annular space therein;

means in said substantially cylindrical housing and located adjacent the aft end of said forward surface for venting the forward end of the venturi tube to the external environment at an area of maximum turbulence about said projectile;



material to be dispensed located in and completely filling the annular space in said housing surrounding the venturi tube, said material being capable of being gasified;

means for retaining said material in said annular space in said housing;

means for releasing said material from said annular space in said housing in the form of a gas; and

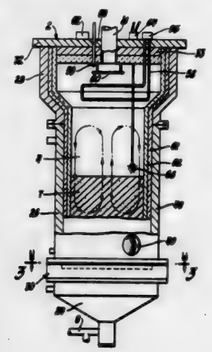
spring-loaded valve means located at the forward end of the venturi tube for normally closing the venturi tube and for maintaining a predetermined operating pressure within the projectile.

4,436,037

CONTINUOUS IGNITION SOURCE FOR CONTROLLED DISPOSAL OF COMBUSTIBLE POLYMER WASTE IN A FLUIDIZED BED REACTOR

Hong-Hsiang Kuo, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1982, Ser. No. 370,457
Int. Cl.³ F23G 5/00, 7/00
U.S. Cl. 110—245 **4 Claims**



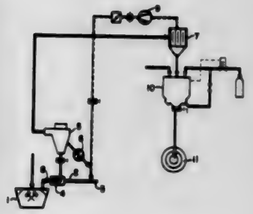
1. In a fluidized bed reactor suitable for burning paint sludge having an acrylic polymer constituent the improvement comprising a point source of heat maintained at a temperature above the ignition temperature of the polymer constituent, said source being located in the reactor such that it is immersed in the fluidized bed, the presence of said heat source serving to initially and continuously ignite the acrylic paint component of the sludge and prevent the accumulation of explosive amounts of reaction products within the reactor wherein said point source of heat is an electrically heated glow plug.

4,436,038

METHOD OF PREPARING PULVERIZED FUEL WITHDRAWN FROM A PRIMARY FUEL FLOW FOR A PULVERIZED FUEL PILOT LIGHT BY MEANS OF A SIFTER DEVICE OR A SUPPLEMENTAL PULVERIZING PLANT

Klaus Leikert, Gummersbach, and Klaus-Dieter Rennert, Marienheide, both of Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,252
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105626
Int. Cl.³ F23D 1/00
U.S. Cl. 110—347 **5 Claims**



1. A method of preparing pulverized ignition fuel for igniting a pulverized-fuel annular burner flame having an internal back flow region, with the ignition energy for said annular burner flame being introduced centrally into the interior of the back flow region of the annular burner flame, said method comprising the steps of:

supplying said burner with a pulverized fuel/carrier air mixture from a pulverizing plant via a primary fuel conduit;

providing a pilot light for furnishing said ignition energy, said pilot light being operated with pulverized ignition fuel having at least one of the characteristics of coarseness and consistency/different from the same characteristic of said primary fuel;

withdrawing said pulverized ignition fuel for said pilot light from said primary fuel conduit through the opening of a withdrawal device which is capable of being shut off;

processing said withdrawn pulverized ignition fuel prior to supplying same to said pilot light; and

directing said withdrawal opening of said withdrawal device counter to the flow in said primary fuel conduit.

4,436,039

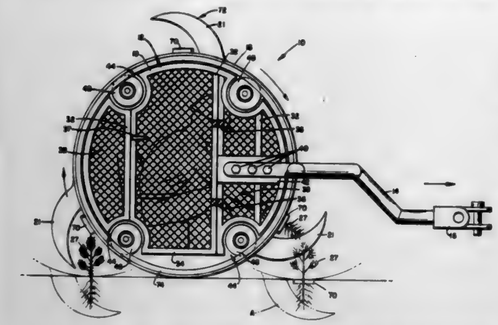
ROLLING DRUM TREE PLANTER

Marion A. Stephens, Jr., 1749 Ivan Clyde Dr., Bogalusa, La. 70427

Filed Jul. 19, 1982, Ser. No. 399,247
Int. Cl.³ A01C 11/02
U.S. Cl. 111—2 **11 Claims**

1. Apparatus for planting a tree or other plant comprising: a carriage assembly having an opening at least in the forward portion thereof; means for accommodating a human operator of the apparatus in a non-rotating position within said carriage; a cylindrical drum mounted for rotation about the circumference of the carriage; at least one soil penetrating implement attached to the exterior of the drum; and a slot located in the drum adjacent said soil penetrating implement, said slot being

aligned with the opening in the carriage during rotation of said drum to allow a plant to be positioned in said slot by the operator for insertion in the ground after contact with the ground is made by the soil penetrating implement.

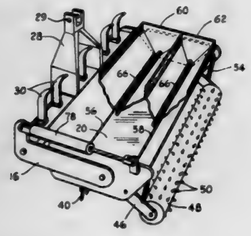


4,436,040

LANDSCAPING AND SEEDING APPARATUS

William M. Chumley, Rte. 6, Box 600, Greer, S.C. 29651

Continuation of Ser. No. 144,427, Apr. 28, 1980. This application Aug. 20, 1982, Ser. No. 409,968
Int. Cl.³ A01C 7/08
U.S. Cl. 111—10 22 Claims



1. A multi-purpose lawn landscaping device for use on a tractor hitch capable of raising and lowering the device, said landscaping device comprising:

(a) a support frame;

(b) means securing said frame to said tractor hitch adjacent one end of said frame;

(c) an elongate transversely disposed pan having a ground scraper blade adjacent a front portion of said pan facing toward said tractor hitch;

(d) means mounting said pan on said frame adjacent the other end of said frame for pivotal movement about a longitudinal axis of said pan between a first position wherein said pan is generally horizontally disposed, and a second position wherein said pan is generally upright with said scraper blade extending downwardly for engagement with the ground;

(e) a fluid motor having pivotal connection on said support frame on one end thereof and on said pan on the other end thereof and on said pan on the other end for moving said pan between said second position wherein said scraper blade is in engagement with the ground to remove soil therefrom, and said first position wherein said pan is generally horizontally disposed to transport removed soil therein; and

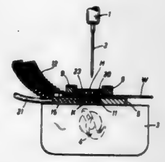
(f) backfill means comprising an elongate blade extending along the length of the pan and pivotally attached to a forward undersurface portion thereof for movement between a rearwardly extending inoperative position when said pan is in said first position, and a downwardly extending operative position for engagement with the ground when said pan is in said second position and said pan is moved rearwardly across the ground.

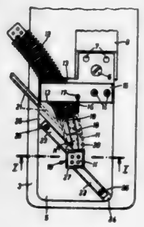
4,436,041

ATTACHMENT FOR FEEDING REINFORCING BACK BUTTONS TO A SEWING MACHINE

Hermann Taddicken, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Eisele Apparate-und Geratebau GmbH, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,474
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 8114009[U]
Int. Cl.³ D05B 3/14
U.S. Cl. 112—110 7 Claims





1. An attachment for feeding reinforcing back buttons to a sewing machine having a feed for main buttons to a button clamp which is positionable over the work material which is moved through a sewing station, comprising a plate member over which the material is set having a button chute guide groove defined thereon terminating in a button recess having a button aligning stop edge at the end thereof, and a back button feed chute connected to said plate for feeding back buttons in succession into said recess against said aligning stop edge.

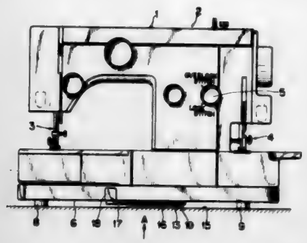
4,436,042

DUAL FUNCTION SEWING MACHINE WITH A ROTATABLE BASE

Susumu Hanyu, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Kyobashi, Japan

Filed Aug. 16, 1982, Ser. No. 408,658
Claims priority, application Japan, Aug. 31, 1981, 56-135436
Int. Cl.³ D05B 75/06
U.S. Cl. 112—217.1 7 Claims

1. In a double-function sewing machine having a machine body, lock stitching mechanism and an overlock stitching mechanism positioned at two opposite sides of the machine body, and feet positioned on a lower surface of the machine body and abutting against a machine mounting surface on which the machine is positioned, a switching device for switching the positions of the lock stitching mechanism and the overlock stitching mechanism comprising rotating switching means disposed on said lower surface of the machine body and including a rotatable operating member, a base disc operatively connected to said operating member and adapted to move in a vertical direction with respect to said lower surface upon rotation of said operating member between a rest position in which said base disc is above the machine mounting surface and an operating position in which said base disc projects downward farther than said feet to contact said machine mounting surface, whereby the machine body is lifted from the machine mounting surface and may be rotated in a horizontal plane to place a required one of said stitching mechanisms to a use position.

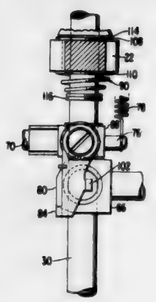


4,436,043

GATE BRACKETING CUSHIONING SPRING ARRANGEMENT FOR A SEWING MACHINE

Edilberto Cantada, East Brunswick, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 7, 1982, Ser. No. 375,922
Int. Cl.³ D05B 3/02
U.S. Cl. 112—221 2 Claims



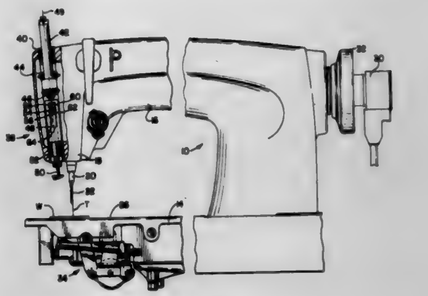
1. In a sewing machine, a needle bar, a movable gate with a bearing therein in which the needle bar is supported for endwise reciprocation, latching means carried on the needle bar, actuating means for imparting endwise reciprocatory motion to the needle bar through said latching means, means for unlatching the latching means from said actuating means, elevating spring means for raising the needle bar when unlatched from the actuating means, a fixed member on the needle bar, and a cushioning spring clipped with upper end gate bracketing coils onto the gate structure in a coaxial position with respect to the needle bar for engagement by said fixed member when the needle bar is raised by the elevating spring means, the said bearing being located in an arm on the gate for the needle bar, the bearing being encircled and gripped on an upper side of the arm by one of the coils of the cushioning spring, and the the other coils of the spring being located under the arm.

4,436,044

THREAD WIPING DEVICE

Eric W. Nordstrom, Forest Park, and Laurence A. Manoski, Mt. Prospect, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Sep. 18, 1981, Ser. No. 303,649
Int. Cl.³ D05B 65/06
U.S. Cl. 112—286 8 Claims



1. In a sewing machine having a stitching mechanism including an eye pointed thread carrying needle means operable along a straight line path during the sewing operation, mechanism for securing the loose end of a sewing thread during the initial operation of the stitching mechanism comprising:

spindle means arranged for movement about a fixed axis extending generally parallel to the path of the needle means with an annular bearing projecting transversely therefrom;

thread engaging element means arranged at one end of said spindle means;

a sleeve provided with an anfractuous slot whose side edges tangentially engage and positively guide said bearing to rotate the spindle means and thereby the thread engaging element means outward and back along identical paths; and

means for reciprocating the spindle means whereby moving said element through a helical path extending generally parallel to the needle's path with a segmented portion of said helical path crossing the needle thread path below the eye pointed needle.

4,436,045

DIFFERENTIAL FEED MECHANISM FOR SEWING MACHINES

Richard T. Bonham, Oak Park; John P. Sigiola, Chicago, and Paul H. Dinkelacker, Hillside, all of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed May 14, 1982, Ser. No. 378,147
Int. Cl.³ D08B 27/08
U.S. Cl. 112—313 3 Claims

1. In a sewing machine having a frame, a main drive shaft, reciprocatory needle means, and a differential feed mechanism comprising:

first and second feed dog carrier means arranged side by side and supported for oscillatory and reciprocatory movements relative to said frame;

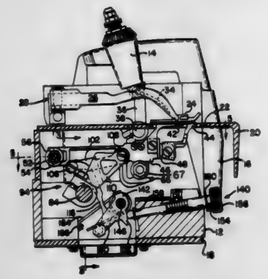
means for interconnecting said first and second feed dog carrier means to permit relative horizontal movement between said carrier means and to prevent relative vertical movement of said bars;

eccentric drive means arranged on said drive shaft for imparting simultaneous vertical movement of said first and second feed dog carrier means;

first operative means interconnecting the drive shaft and said first feed dog carrier means for effecting reciprocatory horizontal movement of said first feed dog carrier means;

second operative means interconnecting the drive shaft and said second feed dog carrier means for effecting reciprocatory horizontal movement of said second feed dog carrier means;

each of said first and second operative means includes a means for converting the rotational movement of the drive shaft into oscillatory motion, a driving lever connected to said motion converting means to be oscillated thereby along a predetermined oscillatory path, linkage means including two interconnected and substantially equal links for connecting said driving lever to said feed



dog carrier means for imparting reciprocatory horizontal movements thereto;

a first adjustment means communicating with said first operative means for varying the extent of reciprocatory horizontal movement of said first feed dog carrier means by controlling the oscillatory path of the driving lever of said first operative means; and

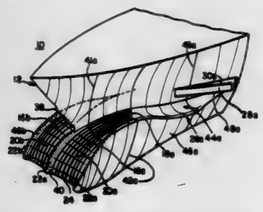
a second adjustment means communicating with said second operative means for varying the extent of reciprocatory horizontal movement of said second feed dog carrier means by controlling the oscillatory path of the driving lever of said second operative means.

4,436,046

ICE-BREAKING HULL

William W. Braley, 21 Arrowhead Trail, Media, Pa. 19063

Filed Feb. 1, 1982, Ser. No. 344,360
Int. Cl.[3] B63B *35/12, 35/08*
U.S. Cl. 114—42 12 Claims



1. An icebreaker for forming substantially ice-free channel of water through an ice mass by breaking up a portion of the ice mass into fragments comprising:

a hull, including a forwardly and upwardly sloping stem;

a pair of ramps having first and second longitudinally sloped surfaces rigidly connected to and partially surrounding a portion of said hull for substantially removing said ice fragments from said water and depositing them on the remaining ice mass on either side of said channel, each of said ramps extend forward of said stem and have a longitudinally oriented trough formed by their upper surfaces,

cutting edges molded to said stem and to inboard and outboard sides of said ramps which form the sides of said troughs for breaking said ice mass into substantially strips of ice fragments that are removed from the water along said ramps and deposited therefrom on the remaining ice mass on either side of said channel, said stem and cutting edges having an acute angle therebetween, and

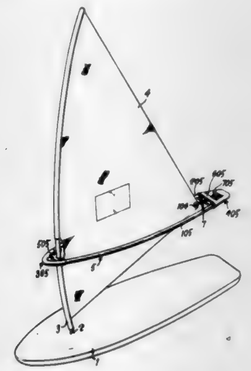
a pair of longitudinally oriented sweep means, each having a substantially vertical hinge at its leading edge for pivotally connecting it to said hull for moving said deposited ice fragments further away from said substantially ice-free channels.

4,436,047

BOOM FOR SAILBOARDS

Leonardo Freyrie, Milan, Italy, assignor to AMF Inc., White Plains, N.Y.

Filed May 5, 1982, Ser. No. 375,254
Claims priority, application Italy, May 5, 1981, 12517 A/81
Int. Cl.[3] B63H *9/04*
U.S. Cl. 114—102 6 Claims



6. A boom for sailboards having a mast and a substantially triangular sail secured along one side to the mast, the boom comprising: two spaced spars joined at their forward ends to each other and to the mast, plate means fastened to the free end of the sail and constrained by the aft ends of the spars for limited motion substantially along the longitudinal axis of the boom, and means actuated by motion of the spars substantially transverse to the longitudinal axis for moving the plate means along the axis to take up slack in the sail that would be produced by such spar motion.

4,436,048

ROTARY TRANSFER SUBSYSTEMS AND TENSIONING ASSEMBLIES FOR A PROCESS VESSEL

Larry L. Gentry, Sunnyvale; Herbert H. Moss, Cupertino, both of Calif.; Narayana N. Panicker, Grand Prairie, Tex., and William T. Wada, Sunnyvale, Calif., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 22, 1982, Ser. No. 391,070
Int. Cl.[3] E21B *43/01*
U.S. Cl. 114—230 20 Claims

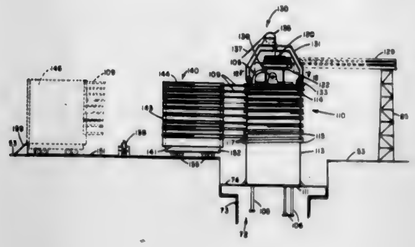
1. A rotary fluid transfer subsystem, for transfer of production fluids, electrical power, hydraulic power, and control signals across a rotating interface between an offshore process vessel and a flowline bundle of service hoses and high-pressure hoses which are connected to a deepwater production riser system, and a tensioning means, for maintaining a selected tension on terminal hoses between said interface and said vessel while said vessel weathervanes during maintenance of position in a watch circle above said riser system, said subsystem and said tensioning means being mounted on said vessel which is equipped with a powered turret within a circular moonpool and is capable of performing most subsea service functions on said riser system without major equipment support, said subsystem and said tensioning means, in combination, comprising:

A. a column assembly which is attached to said turret and supports horizontal loops of terminal hoses;

B. a multi-passage swivel for accommodating a portion of said terminal hoses not containing gas;

C. a tower for selectively tensioning said portion of said hoses and for connecting said hoses to production piping;

D. a traveling sheave and drive mechanism which supports



horizontal loops of the remaining portion of said hoses while maintaining tension on and adjusting the lengths of said remaining hoses, between connections to storage facilities in said vessel and said column assembly, while said column assembly remains rotatably stationary with respect to said flowline bundle during said weathervaning of said vessel through at least 270°; and

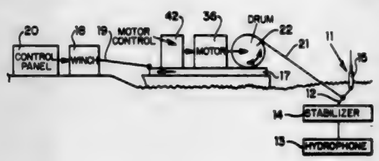
E. hose support trays for supporting horizontal spans of said hoses between said tower and said column and between said column and said traveling sheave.

4,436,049

SIMULATOR FOR TESTING SONOBUOYS

Louis E. Ante; Richard A. Lindquist, and Eugene R. Roeschlein, all of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1982, Ser. No. 380,152
Int. Cl.[3] B63B *21/16, 21/52*
U.S. Cl. 114—254 2 Claims



1. Apparatus for simulating a sea condition for a sonobuoy being tested in a relatively calm body of water, said sonobuoy comprising a float and a hydrophone connected to said float by an electrical cable comprising:

a floating platform,

means, comprising a winch placed on shore and a cable connecting said winch with said floating platform, for moving said floating platform at a predetermined speed for simulating a sea current,

a drum rotatably mounted on said floating platform,

a motion cable having one end attached to said electrical cable and the other end attached to said drum,

a reversible motor for rotating said drum, and

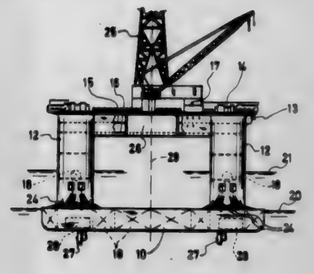
control means for regulating rotation of said reversible motor whereby said motion cable is wound upon said drum and unwound from said drum in a manner to simulate action of sea waves on said hydrophone, said control means comprising a plurality of programmable read-only memories for storing digital voltage values representing sea wave amplitudes and having a selector switch for selecting a desired memory.

4,436,050

SEMI-SUBMERSIBLE VESSEL

Hadar Lidea, Västra Frölunda, Sweden, assignor to Gotaverken Arendal AB, Gothenburg, Sweden

Filed Oct. 7, 1981, Ser. No. 309,475
Claims priority, application Sweden, Oct. 23, 1980, 8007434
Int. Cl.[3] B63B *35/44*
U.S. Cl. 114—265 2 Claims



1. A semisubmersible vessel comprising:

(A) two parallel under-water hulls;

(B) an operating deck shaped as a self-supporting displacement body, having sufficient volume to hold the vessel floating;

(C) two pairs of columns connecting said operating deck with said under-water hulls, and arranged at generally equal distances from each other and at the same distance from a vertical line of symmetry through the vessel;

(D) said operating deck being a multi-deck high box structure rigidly interconnecting the upper ends of said columns and extending downwardly below the upper ends of the columns;

(E) said under-water hulls and said columns being so constructed that said operating deck is located substantially above wave level and said under-water hulls are immersed sufficiently below water level to assure that they are not noticeably affected by wave movements; and

(F) a horizontal stay means interconnecting each set of juxtaposed columns in each of said pairs thereof and arranged transversely to said under-water hulls, just above the decks thereof and below the water level;

(G) the space between said operating deck and said horizontal stay means being free of obstructing cross-braces.

4,436,051

HOISTING AND LOWERING MECHANISM FOR A ROTATABLE MAST

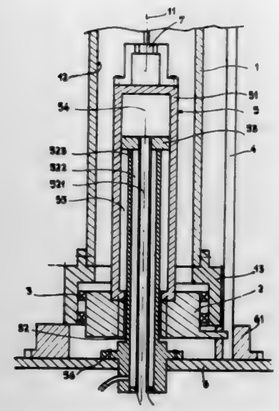
Jacques Nollez, Paris; Jacques Ragain, Domont, and Marc Prevost, Paris, all of France, assignors to Societe d'Optique, Precision Electronique et Mechanique, Sopelem, Levallois-Perret, France

Filed Jan. 28, 1982, Ser. No. 344,271
Claims priority, application France, Feb. 4, 1981, 81 02098
Int. Cl.[3] B63G *8/38*
U.S. Cl. 114—340 4 Claims

1. Mechanism for hoisting and lowering a rotatable mast for a submarine having a thick hull (6), said mast being guided along its longitudinal axis with respect to said submarine, comprising

(a) a suspension (2) associated with means (3) assuring the vertical connection of said suspension to the lower part of said mast while permitting relative rotation of said suspension and said mast; and

(b) a jack (5) housed rod downward in said mast so that its cylinder (51) is fast to said suspension (2) and so that the



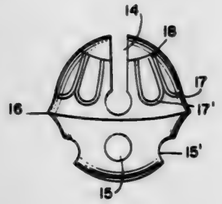
lower end of its rod (52) is coupled through an anchoring point (56) to the upper part of said thick hull (6).

4,436,052

GLOBE-SHAPED BELLS WITH SINGLE-PIECE SHELLS

William R. Schall, Star Rte. Box 137, Apollo, Pa. 15618

Division of Ser. No. 187,395, Sep. 15, 1980, Pat. No. 4,349,065.
This application Jun. 15, 1982, Ser. No. 388,782
Int. Cl.³ G10K *1/07, 1/26*
U.S. Cl. 116—148 13 Claims



1. A globe-shaped or nearly globe-shaped bell, comprising a metal shell with holes extending through the shell, which is molded in only one piece around a readily disintegrative substance forming an inner core; and a ball-bearing or jinglet, which, during the process of casting the shell, is held in place securely in said disintegrative inner core of the shell's mold.

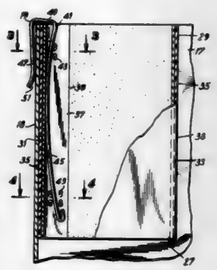
4,436,053

CLIP-ON BOOKMARK

Andre L. Zelsky, 55 W. 14th St., New York, N.Y. 10011

Filed Aug. 12, 1981, Ser. No. 292,282
Int. Cl.³ B42D *9/00*
U.S. Cl. 116—237 15 Claims

1. A clip-on bookmark for a book comprising
a substantially planar marking member having two opposed covers and at least one edge portion,
indicia associated with at least a portion of said covers,
slot means formed by said marking member along said edge portion, and
fastening means received by said slot means for removably fastening said marking member to the book,
wherein said fastening means for fastening comprises a unitary member comprising oppositely positioned first and second legs joined at a reverse bend and having an open side opposite said reverse bend, said first leg being mounted in said slot means and said second leg being mounted outside said marking member, said legs being spring biased one against the other, whereby when the spine of the book is inserted between the second leg and the marking member, the marking member is held in position in part by bias action between the two legs, and
said unitary member being shaped and rotatable about said slot means to move said second leg to an outer position to mark pages of the book and to an inner position to shield said second leg against said marking member, said second



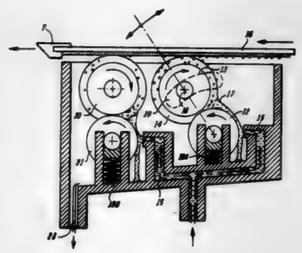
leg being alternatively resiliently biased toward one of said inner and outer positions,
said slot means formed of a resilient plastic material extending along said edge portion, said first leg being inserted between the facing surfaces of said slot means bowing said facing surfaces to accommodate said first leg, said first leg comprising means to bear against said facing surfaces, said facing surfaces resiliently biased against said means to bear of said first leg to resiliently maintain said second leg in said inner and outer positions.

4,436,054

XEROGRAPHIC TONER CLEANING STATION

Theodorus M. Ceelen, LaVerne; Lothar S. Jeromin, Sierra Madre, and Lamont R. Wright, Pasadena, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 23, 1982, Ser. No. 410,666
Int. Cl.³ G03G *21/00*
U.S. Cl. 118—652 6 Claims



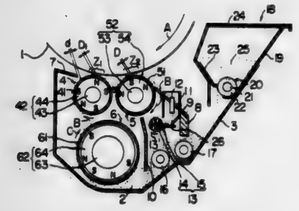
1. In a system for the development of a xerographic image comprising a reservoir of cleaning liquid,
a cleaning station for the removal of toner particles from a xerographic plate after the image has been developed comprising:
a cylindrical cleaning roll comprising a foam outer covering adapted to rotate in contact with said plate to remove said toner particles from said plate,
a cylindrical donor roll in contact with said cleaning roll at a nip, said donor roll being rotationally driven by said cleaning roll,
means for delivering a flow of cleaning liquid to the surface of said donor roll at a point where the rotation of said donor roll will pull said liquid into the nip, creating there a standing wave of liquid,
drain means for returning the cleaning liquid which flows downward from said standing wave into said reservoir, and
means for rotating said cleaning roll.

4,436,055

DEVELOPING APPARATUS

Keitaro Yamashita, Saitama, and Hiromi Kashiwagi, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 11, 1982, Ser. No. 357,295
Claims priority, application Japan, Mar. 20, 1981, 56-39543; Mar. 26, 1981, 56-43169
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—658 4 Claims



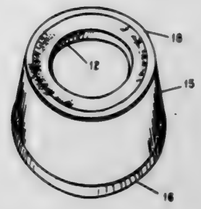
1. A developing apparatus comprising an image carrier member carrying an electrostatic latent image on a surface thereof; a plurality of developing rolls disposed in opposition to said image carrier member with developing gaps being formed therebetween, each of said developing rolls being formed therebetween, each of said developing rolls being composed of a rotatable cylindrical sleeve made of a non-magnetic material and a permanent magnet member disposed stationarily within said sleeve and having a plurality of magnetic poles formed in the peripheral surface, wherein at least one of said magnetic poles of each of said permanent magnet members is disposed in opposition to the associated one of said developing gaps so that magnetic brushes are formed on the surfaces of the sleeves at said developing gaps when a magnetic developer is transferred between the adjacent sleeves upon rotation of said sleeves in a same direction, said image carrier member being frictionally swept by said magnetic brushes; a developer container for supplying said magnetic developer to said developing rolls; a doctor blade member for controlling a quantity of said magnetic developer supplied to said developing gaps; and a scraper member for scraping off the magnetic developer after having passed through said developing gaps; wherein the magnetic poles of the adjacent developing rolls which are positioned in opposition and closest to each other are magnetized in polarities opposite to each other, and the magnetic pole on a magnetic developer receiving side of said oppositely positioned magnetic poles is displaced in a direction opposite to the rotating direction of the associated sleeve from a position at which said adjacent developing rolls come closest to each other thereby producing a magnetic coupling having a direction which is inclined between said oppositely positioned magnetic poles.

4,436,056

SPILL-RESISTANT PET ANIMAL DISH

Norman J. MacLeod, 730 Franklin Rd. K-1, Marietta, Ga. 30067

Filed Jul. 19, 1982, Ser. No. 399,458
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—72 9 Claims



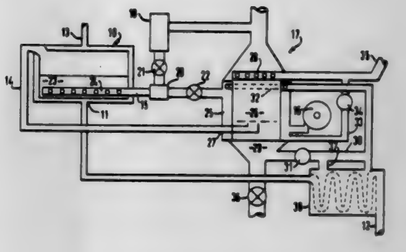
1. A spill-resistant container for an animal which comprises:
(a) a bowl and lid therefor, the lid having an aperture to permit access by the animal to liquid within the bowl; a segment of the lid having an outside shape to conform to a portion of the interior surface of the bowl; the lid having a wall section which extends generally inward and downward from the lower edge of said segment, the wall section being adapted to change the direction of a liquid advancing generally upward along the interior surface of the bowl and to direct it away from the aperture; and
(b) the bowl having a floor elevated above the lowermost portion of said interior surface and an inclined section, the upper surface of which extends generally outward and downward from the outer periphery of the floor, so that the lower portion of the bowl forms a depression surrounding the floor, the inclined section being adapted to create undercurrents within the liquid as it is being moved to oppose any forces tending to push it upward along the interior surface of the bowl.

4,436,057

METHOD AND APPARATUS ENABLING THERMAL ENERGY RECOVERY IN COMBUSTOR OPERATION

Henry F. Cross, Rickmansworth, and Maurice Harman, Milton Keynes, both of England, assignors to Energy Equipment Co. Ltd., Bedfordshire, England

PCT No. PCT/GB80/00101, § 371 Date Feb. 10, 1981, § 102(e) Date Feb. 10, 1981, PCT Pub. No. WO80/02868, PCT Pub. Date Dec. 24, 1980
PCT Filed Jun. 6, 1980, Ser. No. 237,144
Claims priority, application United Kingdom, Jun. 15, 1979, 7920965
Int. Cl.³ F23G *5/02*; F22B *1/02*
U.S. Cl. 122—4 D 5 Claims



1. A method of operating heating apparatus including a fluidised bed of inert particulate material to which gas is fed to fluidise the bed and support combustion of fuel fed thereto, the method comprising using a mixture of air and recycled flue gas

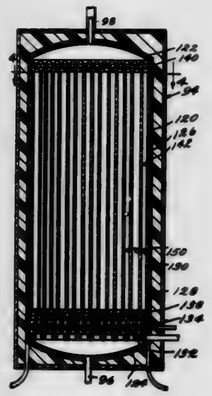
the proportions of which may be varied to fluidise the bed of inert particulate material, scrubbing flue gas passing from the heating apparatus with water and bringing at least a part of the air fluidising the bed into contact with the scrubbing water to enable said fluidising gas to entrain and carry water vapour and/or steam to said fluidised bed to aid control of the temperature of the bed, said fluidising air being fed to the fluidised bed by passing at least a part thereof through a chamber to which the water used to scrub the flue-gas is also passed.

4,436,058

HOT WATER SUPPLY TANK ASSEMBLY

Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

Division of Ser. No. 32,636, Apr. 23, 1979, Pat. No. 4,265,220.
This application Dec. 4, 1980, Ser. No. 213,199
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—13 R **5 Claims**



1. A potable hot water supply tank assembly comprising
a generally vertically extending housing assembly including a peripheral wall and upper and lower end closures,
inlet means for directing a supply of unheated water into said housing assembly adjacent said lower end closure,
outlet means for directing a supply of hot water from said housing assembly adjacent said upper end closure,
heater means within said housing assembly adjacent said lower end closure,
a lower screen assembly within said housing assembly above said heating means,
an upper screen assembly within said housing assembly adjacent said upper end closure and defining with said lower screen assembly and the coextensive portion of said peripheral wall a supply chamber within said housing assembly, and
anti-convection cartridge means having structure providing a multiplicity of separate vertical passages constituting the entire space remaining in said supply chamber other than said structure, said passage being of relatively small cross-sectional area and extending completely between said screen assemblies.

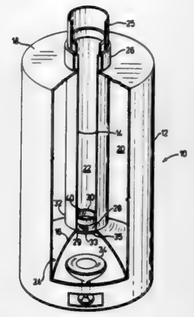
4,436,059

FLUE CONDENSATE SHIELD

Antonio Galati, Toronto, Canada, assignor to Canadian Gas Research Institute, Don Mills, Canada

Filed Apr. 26, 1982, Ser. No. 371,641
Claims priority, application Canada, Jul. 31, 1981, 383072
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—17 **2 Claims**

1. An improved water heater comprising, in combination, a water heater tank having a vertical, open-ended flue formed by a cylindrical wall extending therethrough defining an inner wall of the tank adjacent water in the tank, said flue adapted to receive hot combustion gases for heating the water in said tank, a metal annulus having an outer side and an inner side formed at the bottom of the flue wall, said annulus being continuously affixed to and abutting the flue wall on the annulus outer side for effective heat transfer from the annulus to the flue wall and



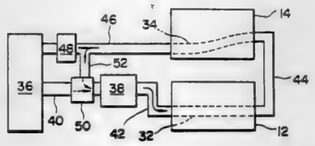
to water in said tank, said annulus having an upturned lip on the inner side thereof such that the annulus will collect and retain condensate forming on the flue wall for subsequent evaporation of said condensate, said annulus occupying from about 40 to about 60% of the sectional area of the flue and having a condensate holding capacity of about 0.3 cubic inch per 1,000 BTU/h of fuel input.

4,436,060

ENGINE COOLING SYSTEM

Toshiaki Tanaka, Fujisawa; Shoji Ushimura, Yokosuka, and Yukihiro Etoh, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jan. 28, 1981, Ser. No. 229,103
Claims priority, application Japan, Feb. 1, 1980, 55-11280[U]
Int. Cl.³ F01P *7/16*
U.S. Cl. 123—41.1 **3 Claims**



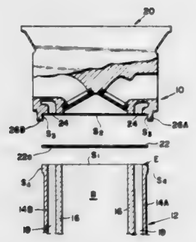
1. A V-type internal combustion engine comprising:
(a) first and second engine blocks arranged with a V-angle;
(b) first and second cylinder units each including at least one cylinder, said first and second cylinder units being arranged in said first and second engine blocks, respectively;
(c) means for disabling said second cylinder unit under low load conditions; and
(d) a coolant circuit including:
a first jacket disposed in said first engine block, said first jacket adapted to receive an engine coolant for cooling said first cylinder unit;
a second jacket disposed in said second engine block, said second jacket adapted to receive an engine coolant for cooling said second cylinder unit, said second jacket communicating in series with said first jacket;
a radiator connected through a first passage to said first jacket and connected through a second passage to said second jacket; and
a feed pump for circulating an engine coolant through said coolant circuit in a direction from said first jacket to said second jacket such that the second cylinder unit is maintained at a temperature sufficient to permit rapid combustion when said second cylinder unit is enabled after being disabled.

4,436,061

AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 10, 1981, Ser. No. 319,886
Claims priority, application Japan, Nov. 14, 1980, 55-163329[U]
Int. Cl.³ F01P *3/02*
U.S. Cl. 123—41.74 **10 Claims**



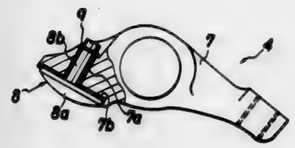
1. An automotive internal combustion engine comprising:
a cylinder head having at its bottom surface two oppositely disposed projections which extend along the length of said cylinder head;
a cylinder block having a plurality of cylinder sections, each being formed therein with an engine cylinder bore, and two water jacket walls which are oppositely disposed to interpose therebetween said cylinder sections, each water jacket wall being separate at its upper-most part from each cylinder section and forming therebetween a water jacket, the upper end part containing the water jacket wall uppermost part of said cylinder block having a contacting surface fitting inbetween said two projections of said cylinder head to form a tight contact therebetween.

4,436,062

ROCKER ARM MECHANISM IN OVERHEAD CAM TYPE ENGINE

Takeshi Nakakobara, Toyota; Kiyoshi Sakaguchi, Aichi; Fumio Ueda, and Hiroyuki Murase, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 10, 1981, Ser. No. 319,902
Claims priority, application Japan, Nov. 14, 1980, 55-162806[U]
Int. Cl.³ F01L *1/02*
U.S. Cl. 123—90.27 **3 Claims**



1. A rocker arm mechanism in an OHC type engine; an intake valve, an exhaust valve, and a cam shaft comprising:
a cam rotatable while interlocking with said cam shaft; and
a rocker arm which oscillates in accordance with the rotation of said cam so as to open and close one of said intake valve and said exhaust valve, wherein said rocker arm further comprises a rocker arm body and a pad member rotatably fitted to said rocker arm body for contacting said cam, said cam and said pad member being brought into contact with each other such that said pad member may rotate due to a frictional force generated between said cam and said pad member as said cam rotates, wherein
said contact of said pad member to said cam is eccentrically located with respect to a center of rotation of said pad member;
said pad member further comprises a shaft portion and a substantially half-spherical cam receiving portion integrally formed with one end of said shaft portion, said rocker arm body includes a shaft hole bored therein orthogonal to said cam shaft, and said shaft portion is rotatably supported in said shaft hole; and
wherein said cam further comprises a curved surface parallel to said cam shaft, a tapered surface continuously formed with said curved surface and a joint formed between said curved surface and said tapered surface which contacts with said flat portion of said cam receiving member such that said cam and said pad member may be brought into point-contact with each other.

4,436,063

PUSH ROD FOR OPERATING AN INTAKE OR EXHAUST VALVE OF AN INTERNAL COMBUSTION ENGINE

Masayoshi Usui, Numazu, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shizouka, Japan

Filed Feb. 6, 1981, Ser. No. 232,163
Claims priority, application Japan, Dec. 24, 1979, 54-178951
Int. Cl.³ F01L *1/14*
U.S. Cl. 123—90.61 **9 Claims**



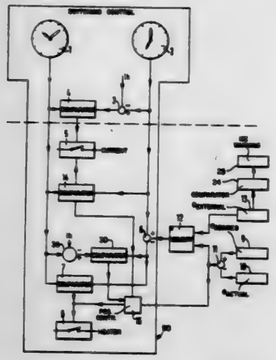
1. A valve operating push rod for an internal combustion engine comprising: an elongated metal tube having a pair of opposed ends and a length defined by the distance between the opposed ends of said tube; a pair of end members having portions secured to the ends of said tube respectively; and an elongated tubular metal member having a pair of opposed ends and a length defined by the distance between said opposed ends of said tubular member, said length of said tubular member being substantially the same as the length of said tube, said tubular member being pressure fitted substantially along the entire length of said tube with the opposed ends of said tube being substantially adjacent respectively to the opposed ends of said tubular member, but with at least one end of said tubular member being spaced slightly inwardly from the substantially adjacent end of said tube and the end member secured thereto, whereby operation of the engine generates vibrations which are attenuated by the tube and the tubular member and the pressure fit therebetween.

4,436,064

PROCESS AND APPARATUS FOR DETERMINATION AND UTILIZATION OF A QUANTITY OF PREHEATING ENERGY

Falk Lankewitz, Munich, and Josef Riedmaier, Pentenried, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,599
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3024983
Int. Cl.³ F02N 17/02
U.S. Cl. 123—142.5 R 22 Claims



1. Preheating process for automatically applying a quantity of heat energy sufficient to achieve a desired temperature at a location within a motor vehicle prior to a period of usage, comprising the steps of:

(a) determining the respective preheating times required to achieve said desired temperature for various possible actual temperatures at said location on the basis of the time required by a heating device to overcome a temperature difference between the various possible temperatures at said location and said desired temperature in dependence on various possible ambient temperatures outside of said motor vehicle;

(b) storing the preheating times determined in step (a);

(c) predetermining a time for commencement of said period of usage;

(d) at a predetermined point of time prior to said usage commencement time, automatically determining a correct preheating time from said stored preheating times for use based upon actual temperature conditions at said location and the actual ambient temperature outside of said motor vehicle; and

(e) automatically commencing application of heat to said location at a time prior to said usage commencement time that corresponds to the difference between said usage commencement time and the correct preheating time determined in step (d).

4. Preheating apparatus for automatically applying a quantity of heat energy sufficient to achieve a desired temperature at a location within a motor vehicle prior to a period of usage, comprising:

(a) a heating device;

(b) a presettable timer actuted switching control means for actuating said heating device;

(c) an actual temperature value sensor means for sensing the actual temperature at said location;

(d) an external temperature sensor means for detecting actual ambient temperatures outside of the motor vehicle; and

(e) a memory unit that is addressable in dependence on the actual temperature values sensed by said sensor means and containing, as stored data, preheating time spans required for said heating device to overcome a difference between various possible actual temperatures at said location and an adjustable desired temperature in dependence upon various possible ambient temperatures outside of said motor vehicle;

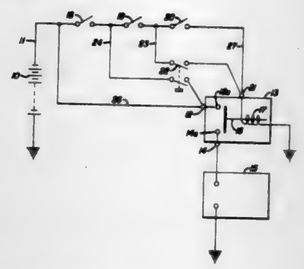
wherein said switching control means is operable to actuate said heating device at a time prior to a preset time for commencement of usage that corresponds to the difference between said preset usage commencement time and a stored preheating time read out by said memory unit based upon actual temperature values sensed by said sensor means at a point of time prior to the preset usage commencement time.

4,436,065

STARTER ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

Gerhard Gradmann, Ketsch, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Apr. 5, 1982, Ser. No. 365,852
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 302128
Int. Cl.³ F02N 17/00
U.S. Cl. 123—179 B 2 Claims



1. A starter system for a battery powered starter motor coupled to an internal combustion engine, the starter system comprising:

a starter relay having a motor terminal connected to the starter motor, a battery terminal connected to the battery, a coil terminal and means for connecting the battery terminal to the motor terminal in response to energization of the coil terminal;

an energizing circuit for energizing and de-energizing the coil terminal, the energizing circuit comprising an ignition switch, a safety switch and a starter switch connected in series between the coil terminal and the battery; and

a deformable insulating housing for preventing access to at least the battery terminal and the coil terminals; and

first and second manually operable bridging switches, the first bridging switch being connected in parallel with the ignition switch and the second bridging switch being connected in parallel with the starter switch, the bridging switches including first and second conductive contact mounted on an inner surface of the housing for engagement with the battery and coil terminals, respectively, upon deformation of the housing.

4,436,066

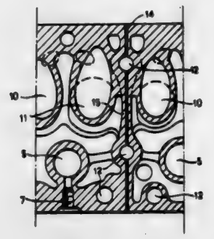
CYLINDER HEAD FOR COMPRESSION-IGNITION INTERNAL COMBUSTION ENGINE

Antonio Formia, Turin, and Giorgio Filtri, Moncalieri, both of Italy, assignors to Fiat Veicoli Industriali S.p.A., Turin, Italy

Filed Jan. 9, 1980, Ser. No. 110,735
Claims priority, application Italy, May 23, 1979, 68097 A/79
Int. Cl.³ F02F 1/24
U.S. Cl. 123—193 H 6 Claims

1. A cylinder head for a compression-ignition internal combustion engine of the type having precombustion chambers

associated with the engine cylinders, the head being constituted by an elongate block formed to define walls delimiting both a cooling chamber and a plurality of cavities the latter of which provide for each of said engine cylinders, a precombustion chamber, induction and discharge ducts, and a seat for a fuel injector, said cooling chamber being traversable by coolant liquid to cool said walls which delimit the said cavities, and one said wall delimiting said cooling chamber constituting a base wall the outer surface of which faces into the cylinders of the engine when the cylinder head is assembled onto the engine



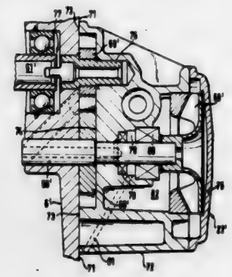
cylinder block, the said base wall being integral with said head and formed, intermediate portions of the head corresponding to said engine cylinders, with means to allow expansion comprising slits having a uniform thickness extending into said cylinder head from the said outer surface of the said base wall in a plane perpendicular to the longitudinal direction of the cylinder head across the whole width thereof adjacently spaced from said cooling chamber whereby the portions of the cylinder head corresponding to different cylinders are partially separated from one another.

4,436,067

ENGINE DRIVEN PUMP ARRANGEMENT

Josef Fritzenwenger, Anzing, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,580
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044253
Int. Cl.³ F01P 5/12; F01M 11/00
U.S. Cl. 123—198 C 11 Claims



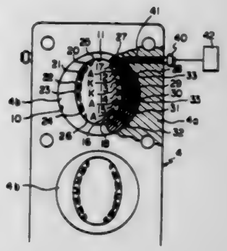
1. An internal combustion engine comprising a drive connection for a pump assembly wherein the assembly includes a step-down gear, a pump impeller of a coolant pump and a pump wheel of a lubricating oil gear pump situated on a common shaft, wherein pump wheels of the lubricating oil gear pump form the step-down gear for the coolant pump.

4,436,068

IGNITION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Norihiko Nakamura, Mishima, and Yoshiaki Shibata, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 5, 1982, Ser. No. 405,564
Claims priority, application Japan, Oct. 22, 1981, 56-167919
Int. Cl.³ F02P 1/00
U.S. Cl. 123—310 13 Claims



1. An internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a piston reciprocally movable in said cylinder bore;

a cylinder head fixed onto said cylinder block and having an interior combustion space therein;

a voltage source for generating a high voltage;

a metallic plate inserted between said cylinder block and said cylinder head and electrically connected to said cylinder block, said metallic plate having an opening which interconnects said cylinder bore to said interior combustion space and has an inner peripheral wall exposed to said cylinder bore and said interior combustion chamber, said metallic plate having a plurality of bores formed on the inner peripheral wall of said opening and arranged in series;

a first electrode arranged on the inner peripheral wall of said opening and electrically connected to said cylinder block;

a second electrode arranged on the inner peripheral wall of said opening and electrically connected to said voltage source;

a plurality of third electrodes arranged in series on the inner peripheral wall of said opening between said first electrode and said second electrode, each of said third electrodes having an electrode piece which has opposite ends each being spaced from the adjacent electrode by a predetermined distance for forming a spark gap therebetween, each of said third electrodes having a conductive bar member connected to said electrode piece and extending through the corresponding bore of said metallic plate; and

a plurality of tubular insulating members each surrounding said conductive bar member and inserted into the bore of said metallic plate for forming a condensor between said conductive bar member and said metallic plate.

4,436,069

SETTING DEVICE FOR THE CONTROLLED DISPLACEMENT OF A STOP CONNECTED WITH A SETTING MEMBER

Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

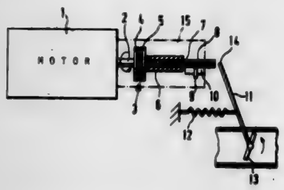
Filed Sep. 27, 1982, Ser. No. 424,689
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146210
Int. Cl.³ F02M 3/00
U.S. Cl. 123—339 10 Claims

1. In a setting device for controlled displacement of a stop connected with a setting member, particularly an idling stop of

an internal combustion engine which is pressed by a spring against a stop pin, the latter being displaceable by an electric drive member, and the stop being actuatable independently of the latter with opening of a force-locked connection to the electric drive member, the improvement wherein

the electric drive member is an electric motor,

the force-locked connection is constituted by a clutch having a first clutch part and a second clutch part, said first clutch part being displaceable to engagement against said second clutch part,



said second clutch part constitutes a driving member operatively connected between the stop pin and the electric motor,

a self-locking gearing means for converting rotary motion of said first clutch part into a translation of said stop pin,

said gearing means is arranged between the stop pin and said displaceable first clutch part such that said clutch becomes engaged force-locked by force of the spring on the stop pin via the stop.

4,436,070

APPARATUS FOR CONTROLLING THE PROPORTION OF AIR AND FUEL IN AN AIR-FUEL MIXTURE OF THE INTERNAL COMBUSTION ENGINE

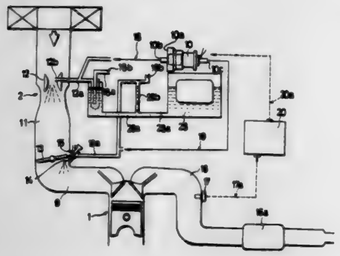
Motonobu Akagi; Isshi Nomura, both of Aichi; Kyo Hattori, and Kichiro Kato, both of Shizuoka, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 22, 1982, Ser. No. 390,889

Claims priority, application Japan, Jun. 23, 1981, 56-097041

Int. Cl.³ F02M 7/24

U.S. Cl. 123—440 3 Claims



1. An apparatus for controlling the proportion of air and fuel in the air-fuel mixture of the internal combustion engine having an intake manifold, a main system fuel passage and a slow system fuel supply port, comprising:

a carburetor including an air horn tube having a venturi tube with a main nozzle and a throttle valve and connected to the intake manifold of said internal combustion engine, a main system fuel tube opening into said main nozzle of said venturi tube at a first end thereof and communicating with said main system fuel passage through a second end thereof,a slow system fuel tube opening into said slow system fuel supply port which is adjacent to said throttle valve of the air horn tube at a first end thereof and communicating with a slow system fuel passage through a second end thereof:

a proportional control solenoid valve including a box-shaped housing formed of a magnetic material and provided with an air-inlet port, a first outlet port connected to said main system air-bleeding passage and a second outlet port connected to said slow system air-bleeding passage, a single iron core having a tubular periphery, supported by said housing at opposite ends thereof and provided with separately formed first and second passages communicating with said first outlet port and said second outlet port, respectively, at opposite ends thereof, at least one first valve opening formed in the shape of an oblong circle extending axially of said iron core in a portion of said iron core provided with said first passage to allow communication of said first passage with said air-inlet port, and second valve openings formed in the shape of an oblong circle extending axially of said iron core in a portion of said iron core provided with said second passage for allowing communication of said second outlet port with the air-inlet port, a single bobbin axially slidably mounted on the periphery of said iron core, a solenoid wound around the periphery of said bobbin in an axial portion thereof and having a first valve element and a second valve element for opening and closing said at least one first valve opening and said at least one second valve opening respectively, spring means urging said bobbin in one axial direction of said iron core and at least one pair of permanent magnets fixed to said housing at a position corresponding to said solenoid and so disposed that the flux of the magnetic force thereof passes perpendicular with respect to said solenoid; and

control means for supplying analog electric signals to said solenoid of said proportional control solenoid valve whereby said bobbin of said proportional control solenoid valve moves axially along said iron core a distance proportional to a level of the analog electric signals applied to the solenoid by said control means and said first valve element and said second valve element open said at least one first valve opening and said at least one second valve opening, respectively, by respective areas corresponding to the level of said analog electric signals.

4,436,071

ELECTROMAGNETICALLY ACTUATABLE VALVE, IN PARTICULAR A FUEL INJECTION VALVE

Udo Hafner, Lorch; Harro Herth, Vaihingen; Wolfgang Kienzle, Schwieberdingen; Heinrich Knapp, Leonberg; Rudolf Krauss, Stuttgart; Manfred Lembke, Gerlingen; Werner Paschke, Schwieberdingen, and Rudolf Sauer, Besningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

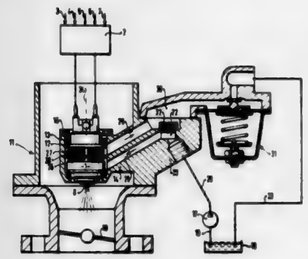
Filed Aug. 17, 1982, Ser. No. 408,976

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143849

Int. Cl.³ F02M 39/00, 32/00

U.S. Cl. 123—472 3 Claims

1. An electromagnetically actuatable valve, in particular, a fuel injection valve for fuel injection systems of internal combustion engines provided with a housing having a valve chamber therewithin, said valve furher provided with a magnetic coil surrounding a core of ferromagnetic material, said magnetic coil being associated with an armature, said valve having a movable valve component operable by said armature with relation to a valve seat, said valve further having at least one fuel supply opening extending through said housing to said valve chamber and at least one fuel return opening extending from said valve chamber to an exit in said housing, said valve further having a collecting chamber which encompasses the armature and the valve component and communicates with said at least one fuel supply opening, characterized in that said at least one fuel supply opening discharges into a flow passage provided around said magnetic coil upstream from said collecting chamber, said flow passage communicating with said at least one fuel return opening via a first restriction, said core being provided with a second restriction extending between



the collecting chamber and said at least one fuel return opening, whereby vapor bubbles may be exhausted from the fuel to be injected.

4,436,073

METHOD OF AND APPARATUS FOR CONTROLLING THE FUEL FEEDING RATE OF AN INTERNAL COMBUSTION ENGINE

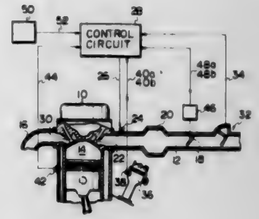
Hideo Miyagi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 24, 1981, Ser. No. 296,242

Claims priority, application Japan, Sep. 1, 1980, 55-119832

Int. Cl.³ F02B 3/02

U.S. Cl. 123—491 12 Claims



1. A method of controlling the fuel feeding rate of an internal combustion engine, comprising the steps of:

detecting the load condition of said engine;

generating a first electrical signal related to the warm-up condition of said engine;

generating a second electrical signal related to whether said engine is starting or not;

generating a third electrical signal related to the rotational speed of said engine;

determining a fuel feeding amount for every engine revolution in accordance with said detected load condition;

calculating, in response to said first and second electrical signals, an additional increment of the fuel feeding amount for every engine revolution, said additional increment being determined in accordance with said detected warm-up condition during starting and, after starting, being decreased in accordance with the lapse of time;

correcting said calculated additional increment in response to said third electrical signal, said calculated additional increment being corrected to increase when the detected rotational speed decreases and to decrease when the detected rotational speed increases; and

controlling the fuel feeding amount for every engine revolution in accordance with said determined fuel feeding amount and said corrected increment.

4,436,072

FUEL INJECTION CONTROL IN AN INTERNAL-COMBUSTION ENGINE

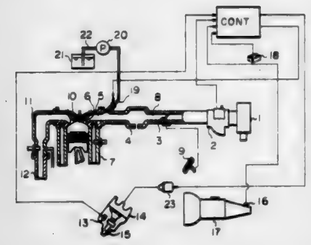
Yukio Suzuki; Kunihiko Sato, and Motoyasu Muramatsu, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 15, 1982, Ser. No. 450,044

Claims priority, application Japan, Mar. 29, 1982, 57-49196

Int. Cl.³ F02B 3/00; F02P 5/04

U.S. Cl. 123—488 3 Claims



1. A method for controlling fuel injection in an internal-combustion engine for an automobile in which the rate of change of the rotational speed of the engine is checked as to whether or not the rate of change of the rotational speed of the engine exceeds the selected limit of the rate of change of the rotational speed of the engine, determined by the ratio of the rotational speed of the engine to the speed of the automobile and the ratio of the amount of intake air to the rotational speed of the engine, the value of the rotational speed of the engine used in the control of fuel injection being restricted to within said selected limit of the rate of change of the rotational speed of the engine and the width of the fuel injecton pulse and the ignition timing of the engine being controlled by using said restricted value of the rotational speed of the engine.

7. An apparatus for controlling the rate of fuel supplied to an internal combustion engine comprising:

means for detecting the load condition of said engine;

means for generating a first electrical signal related to the warm-up condition of said engine;

means for generating a second electrical signal related to whether said engine is starting or not;

means for generating a third electrical signal related to the rotational speed of said engine;

processing means for (1) determining a fuel feeding amount for every engine revolution in accordance with said detected load condition, (2) calculating, in response to said first and second electrical signals, an additional increment of the fuel feeding amount for every engine revolution, said additional increment being determined in accordance with said detected warm-up condition during starting and, after starting, being decreased in accordance with the lapse of time, and (3) correcting said calculated additional increment in response to said third electrical signal, said correcting function correcting the calculated additional increment to increase the increment when the detected rotational speed decreases and to decrease the increment when the detected rotational speed increases; and

means for controlling the fuel feeding amount for every

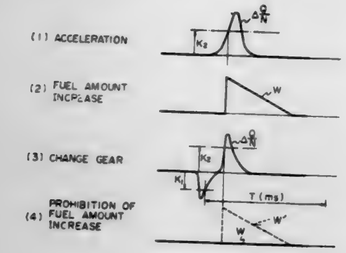
engine revolution in accordance with said calculated fuel feeding rate and said corrected increment.

4,436,074

METHOD AND APPARATUS FOR CONTROLLING THE FUEL INJECTION IN INTERNAL COMBUSTION ENGINE

Hirotaka Nakatsuka, Kariya; Toshiaki Mizuno, Nagoya; Hisamitsu Yamazoe, Kariya, and Hiroki Matsuoka, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 15, 1982, Ser. No. 388,654
Claims priority, application Japan, Jun. 17, 1981, 56-92110
Int. Cl.³ F02B 3/00, 33/00
U.S. Cl. 123—492 5 Claims



1. An apparatus for controlling the fuel injection in an internal combustion engine, comprising: an air flow sensor; a rotation sensor; a collant water temperature sensor; a fuel injection nozzle; and an electronic control device for receiving the signals from said intake air sensor, said rotation sensor, and said coolant water temperature sensor, for calculating the fuel injection duration on the basis of said received signals, and for producing the signal to control said fuel injection nozzle;

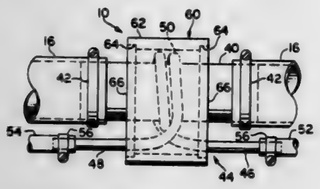
the ratio (Q/N) between the intake air amount (Q) and the rotational speed (N) being used as the signal for triggering the increase, wherein said fuel increase is prohibited or modified during gear change operations of the automobile driven by the engine.

4,436,075

FUEL PRE-HEAT DEVICE

Robert L. Campbell, Decatur, Ill., and Daniel D. Bailey, 1014 Norman, Anchorage, Ak. 99504, assignors to Daniel D. Bailey, Anchorage, Ak.

Filed Jan. 7, 1982, Ser. No. 337,850
Int. Cl.³ F02M 31/00
U.S. Cl. 123—557 5 Claims



1. A fuel pre-heat device for use with an engine having a fuel pump, a fuel dispenser and a radiator hose, the device comprising:

(a) a tubular section having opposed ends communicating with the radiator hose,

(b) a fuel line section including opposed end portions and an intermediate coiled portion wrapped around the tubular section, one of said end portions being connected to the fuel pump and the other of said end portions being operatively connected to the fuel dispenser,

(c) a housing for the coiled portion of the fuel line including a tubular body having annular end recesses and opposed covers attached within the end recesses, each of said covers having an opening adapted to receive one end of the tubular section and an opening adapted to receive one end portion of the fuel line section, and

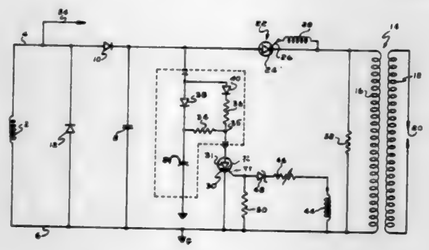
(d) the fuel line section coiled portion including at least two turns and the ends being disposed in cross-over relation to each other.

4,436,076

ELECTRONIC SPEED CONTROL FOR CAPACITOR DISCHARGE IGNITION SYSTEM

Michael J. Piteo, Enfield, Conn., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Sep. 25, 1981, Ser. No. 306,281
Int. Cl.³ F02P 5/00
U.S. Cl. 123—602 5 Claims



1. In a capacitor discharge ignition system for an internal combustion engine having rotatable magnet means associated with engine rotation to generate electrical energy, a capacitor chargeable by said energy and selectively connected in timed relationship with engine operation to the primary winding of an ignition coil to generate an ignition pulse by the discharge of the capacitor charge through said primary winding, as a means for protecting said engine and any apparatus driven thereby against excessive high-speed operation, an electronic shut-off system comprising a silicon controlled rectifier (SCR) having anode, cathode and gate electrodes, with its anode/cathode path connected in parallel with said capacitor and the primary winding of said ignition coil to shunt the energy from the charge coil and capacitor away from said primary winding, means for generating a voltage in response to a predetermined high rotational speed of said engine, the gate of said SCR being connected to said means for generating a voltage for triggering said SCR to its conductive state and means for maintaining the SCR in its conductive state for a predetermined time sufficient to ensure complete engine cut-off, including a second capacitor and a resistor connected to provide continuing current to said anode to hold the SCR "on" for said predetermined time.

4,436,077

GUN AND RESILIENT LOOP PROJECTILE THEREFOR

Wayne G. Smith, 10129, Overland Park, Kans. 66212

Filed Dec. 14, 1981, Ser. No. 330,073
Int. Cl.³ F41B 7/00
U.S. Cl. 124—18 14 Claims

1. A gun for projecting resilient loop missiles, said gun comprising:

a body including a handle and an elongated frame for holding a missile in a stretched condition, said body having a cavity extending therethrough;

a member slidably positioned in the cavity including trigger means projecting from the cavity forwardly of the handle, and plunger means movable with the member to a missile engaging position for dislodging the latter; and

means on the body to confine the member to a rectilinear, fore and aft path of travel in the cavity, said path being inclined upwardly as the rear of the gun is approached, whereby said plunger may impart a generally upwardly and rearwardly lifting force on the missile to enhance the projection thereof, said body being configured to present a pair of grooves at the rear of the gun to facilitate the positioning of missiles on the gun in stretched condition, one of the grooves being spaced upwardly and forwardly



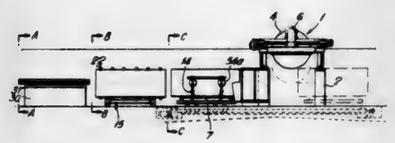
of the other groove and adjacent the path of travel of the plunger means for dislodgement thereby, said other groove being on the outer surface of the body at the rear thereof and spaced downwardly of the body and below-said one of the grooves in disposition clear of the plunger mean's 's path of travel, whereby a stored stretched missile positioned on the gun in said other groove will not be dislodged by said plunger means when the latter is moved to a missile dislodging position, and a stretched missile may be readily positioned manually in said one groove so as to be in position for release by said plunger means.

4,436,078

APPARATUS FOR CUTTING STONE PANELS

Patrick T. Bourke, Doon House, Maam, County Galway, Ireland

Division of Ser. No. 147,757, May 8, 1980, Pat. No. 4,350,552, which is a continuation-in-part of Ser. No. 64,999, Aug. 7, 1979, Pat. No. 4,346,691, which is a continuation-in-part of Ser. No. 394,138, Sep. 4, 1973, Pat. No. 3,963,846. This application Jan. 21, 1982, Ser. No. 341,551
Claims priority, application United Kingdom, Sep. 4, 1972, 40839/72; Jan. 19, 1973, 2795/73; Ireland, May 9, 1979, 402/79
Int. Cl.³ B28D 1/04
U.S. Cl. 125—13 R 5 Claims



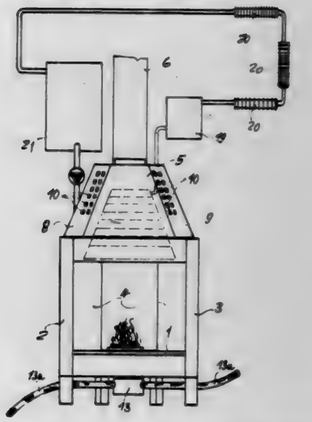
1. Apparatus for use in manufacturing composite surface elements having a lamina of stone bonded to a backing layer, comprising a stone-cutting saw having at least one disc blade adapted to cut in a vertical plane, conveyor means for conveying a stone slab beneath the saw blade, at least one slab gripping device mounted on said conveyor means and adapted to support the slab upwardly on one longitudinal edge of the slab, and means for tumbling the partly-cut slab onto its opposite longitudinal edge after a first pass through the saw, the tumbling means comprising a body portion having two spaced-apart parallel channel-shaped bearings lying in a substantially horizontal plane, a frame which is adapted to receive and support a slab of stone and which is provided with a pair of spaced-apart parallel axles which are adapted to engage with said channel-shaped bearings, the arrangement being such that the frame may be pivoted from a first position in which it is disposed in a substantially vertical plane on one side of said body portion with one of said axles located in one of said channel-shaped bearings, through approximately 90° about said bearings, to a position in which the frame is disposed horizontally on said body portion with an axle engaged in each of said channel-shaped bearings, the frame then being pivotable about said other channel-shaped bearing through a further 90° until it is again disposed in a substantially vertical plane on the opposite side of the body portion.

4,436,079

FIREPLACE FOR HEATING INDOOR SPACES AND WATER FOP SANITARY USE

Domenico Piazzetta, Via Montello, 23-Casella D'Asolo-(Provincia di Treviso, Italy

Filed Jun. 18, 1981, Ser. No. 273,554
Claims priority, application Italy, Jun. 25, 1980, 41596 A/80
Int. Cl.³ F24B 7/00
U.S. Cl. 126—121 1 Claim



1. A diversified heat energy operated compact fireplace comprising a hearth, lateral walls bordering said hearth on its sides, a partition on the rear of the hearth, a hood overlying the hearth and a flue into which said hood extends, at the rear of said partition an interspace defined by said partition, two compartments extending on the sides of said hood and communicating with said interspace, said compartments having each a front face with a plurality of holes in said front faces for allowing air to flow therethrough, a screen extending in front of the hood and the flue to define a screened space behind said screen, said screened space enclosing said hood and said flue, ports in said screen at the upper region thereof to allow passage of air therethrough, a tube nest heat exchanger in the upper inner portion of said hood, said heat exchanger being exposed in use to combustion gases from the hearth, hydraulic circuit means for said heat exchanger, said hydraulic circuit means including a pump within said screened space for circulating heat exchanging oil through said heat exchanger, a gas-fired boiler in said hydraulic circuit means and arranged in said screened space, said gas-fired boiler providing a first diversified heat energy source for said fireplace, a water heater included in said hydraulic circuit and located in said screened space for providing hot water for sanitary purposes and radiator elements connected with said hydraulic circuit, duct means connected with the lower part of said interspace, a fan located below said hearth and in communication with said duct means to draw in use air from said interspace and thereby create in use a current of air entering said ports of the screen from the indoor space and flowing downwards through said screened space towards said holes in said compartments and through said hole into said compartments and therefrom into said interspace, said fan

having delivery ducts leading into the indoor space to be heated, said duct means connected with the bottom of said interspace including an electric resistance heater for heating in use the air drawn by said fan, said heater providing a second diversified heat energy source.

4,436,080

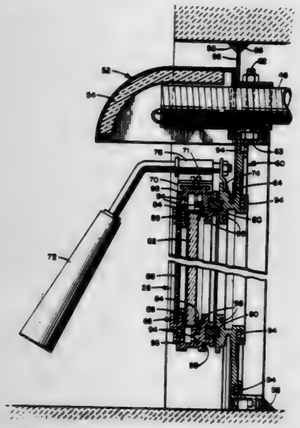
FIREPLACE AND STOVE APPARATUS

Jeffrey L. Evans, Aspen, Colo., assignor to Ting Enterprises, Inc., Aspen, Colo.

Division of Ser. No. 359,061, Mar. 17, 1982. This application Sep. 20, 1982, Ser. No. 420,339

Int. Cl.³ F24C *15/04*

U.S. Cl. 126—139 **6 Claims**



1. A fireplace door construction for a firebox comprising:
(a) a fireplace door; and
(b) a door frame rigidly secured to said fireplace, said door frame comprising:
a flange portion for receipt of a flange,
a door portion against which the fireplace door can close; the door portion of the frame being further from the firebox than the flange portion, and
isolating means connecting said flange portion to said door portion and thermally isolating the door portion from the flange portion, to thereby prevent the heat of the fire from warping the door portion.

4,436,081

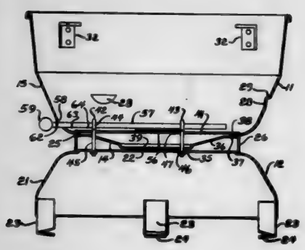
DAMPER ASSEMBLY FOR BARBECUE GRILL

Dennis V. Hefling, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Jan. 27, 1982, Ser. No. 343,321

Int. Cl.³ F23L *3/00*

U.S. Cl. 126—285 A **9 Claims**



1. A damper assembly for a barbecue having an outer casing, the outer casing having a bottom and an upwardly extending sidewall, the damper assembly including:
(a) a generally horizontally extending slide plate mounted within the outer casing above the bottom wall, the slide plate having upper and lower surfaces and having an opening therethrough,
(b) a pair of eye bolts, each eye bolt having a looped end and a shank, the looped end of each eye bolt being positioned above the slide plate and the shank of each eye bolt extending through the slide plate and being secured to the bottom of the outer casing,
(c) a damper plate having an outside dimension greater than the diameter of the opening in the slide plate, and
(d) a rod secured to the damper plate and extending slidably through the looped ends of the eye bolts whereby the damper plate is maintained in sliding contact with the upper surface of the slide plate, the rod and the damper plate being movable between a first position in which the damper plate covers the opening in the slide plate and a second position in which the damper disc uncovers the opening in the slide plate, the rod having an end which extends through an opening in the outer casing whereby the rod and the damper plate can be moved from outside of the casing.

4,436,082

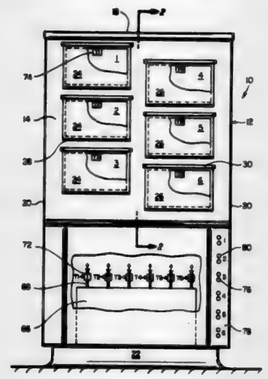
ASSEMBLY FOR STEAM HEATING OR COOKING FOOD PRODUCTS AND ITS METHOD OF OPERATION

Jeffrey H. Hiller, and Stephen S. Hiller, both of 1300 Hancock St., Redwood City, Calif. 94063

Filed Oct. 29, 1981, Ser. No. 316,131

Int. Cl.³ F24D *1/00*

U.S. Cl. 126—348 **20 Claims**



1. An assembly for steam heating or cooking a given food product, comprising housing means including a cooking chamber; means for sensing the temperature within said cooking chamber; boiler means including a steam chamber for maintaining a supply of steam under pressure within said steam chamber continuously throughout operation of the assembly; and flow control means connected between said steam chamber and cooking chamber and responsive to said temperature sensing means for directing steam from the supply in said steam chamber into said cooking chamber when the temperature therein is below a preset value, whereby to raise the chamber temperature to said preset value for heating or cooking said food product at that temperature.

18. A method of steam heating or cooking given food products, comprising the steps of: providing an oven having an internal chamber, inlet door means into said chamber, vertically lower outlet door means out of said chamber, and ramp means in said chamber extending between said inlet and outlet door means for guiding a plurality of support trays between said inlet and outlet door means, one at a time; providing a plurality of support trays supported on wheels and placing a plurality of said food products on each of said trays; thereafter placing said trays, one at a time, into said chamber through said inlet door means in cooperation with said ramp means so as to cause said trays and the food products supported thereby to move through said chamber, one at a time, from said inlet door means to points adjacent said outlet door means by their own weight; while said trays are in said chamber, heating the food products thereon; and removing said trays and supported food products from said chamber through said outlet door means, one at a time, in the order in which the trays were placed into said chamber.

4,436,083

SUNBEAM CONCENTRATING AND COLLECTING APPARATUS

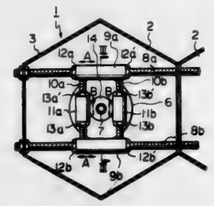
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Nov. 2, 1981, Ser. No. 317,453

Claims priority, application Japan, Nov. 6, 1980, 55-159013[U]

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **8 Claims**



1. A sunbeam concentrating and collecting apparatus comprising a lens system for concentrating sunbeams and a light conductor cable having a beam-receiving end face thereof arranged at the focus of said lens system, wherein sunbeams concentrated by said lens system are guided into said light conductor cable, said apparatus comprising: a cable holding means and a position adjusting means, said cable holding means being intended to hold said beam-receiving end face of the light conductor cable, said position adjusting means having a first adjusting means which supports said cable holding means and is capable of moving said beam-receiving end face of the light conductor cable in the direction of the optical axis perpendicular to each other; and said apparatus further including a light-shielding plate provided on the sunbeam concentrating side of said cable holding means and said position adjusting means, said light-shielding plate surrounding said beam receiving end face of the light conductor cable.

4,436,084

PORTABLE PANE MOUNTABLE SOLAR PANEL

Jack E. Carlston, 1834 Antiadale Rd., Muskegon, Mich. 49442, and Harold W. Johnson, 3337 Jefferson, Muskegon Heights, Mich. 49444

Filed Sep. 17, 1981, Ser. No. 303,199

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—429 **6 Claims**

1. A portable window mounted solar panel for attaching to the inside face of a glass pane comprising:
a shallow box-like frame open on one side and having height adjustable means;
sealing means on the perimeter edge of the open side of said frame to contact said glass pane;
at least one upper heat discharge port through said frame;
at least one lower input port through said frame;
a plurality of elongate heat absorbers in said box frame;
a parabolic trough concentrator focusing on each of said heat absorbers;
a plurality of open mesh baffled heat accumulators in spaced



relation to each other and in spaced relation to said absorbers and fully across the open side of said box; and
automatic means assuring unidirectional flow through said frame from bottom to top.

4,436,085

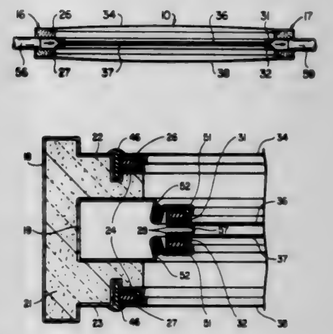
SOLAR COLLECTOR ASSEMBLY AND FRAME

Raymond B. Larsen, Sausalito, Calif., assignor to Acme Solar Works, Inc., Lodi, Calif.

Filed Aug. 24, 1982, Ser. No. 411,032

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—450 **6 Claims**



1. A frame for a solar collector comprising
opposite side frame members and opposite end frame member connected to form a rectangular frame;
each of said frame members comprising a C-shaped outer shell and a boxlike inner member supported in spaced relationship inside the C-shaped outer shell by insulating material;
said boxlike member including a protrusion along the inner edge adapted to support films on each side therewith in spaced relationship to one another;
said protrusion on the end members including openings to communicate with the space between said films;
means for applying fluid to the boxlike member of the upper end member so that the fluid flows outwardly through the openings formed in its protrusion between the films and
means for removing fluid which flows through the openings

in the lower protrusion into the boxlike member of the lower frame member

said frame adapted to support outer films one in spaced relationship with each adjacent inner film and

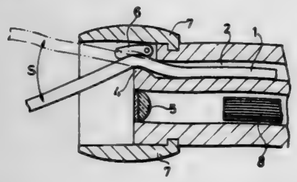
means in one of said side frame members for introducing air between the outer films and the adjacent inner films and means in the other side frame member for allowing the air to vent.

4,436,086
Patent Not Issued For This Number

4,436,087
BIOPTIC INSTRUMENT

Teruo Ouchi, Saitama, Japan, assignor to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Filed Dec. 11, 1978, Ser. No. 967,949
Claims priority, application Japan, Dec. 11, 1977, 52-148461; Dec. 11, 1977, 52-166057[U]; Dec. 24, 1977, 52-155830; Jan. 14, 1978, 53-2905[U]; Feb. 22, 1978, 53-21662[U]; Dec. 11, 1978, 53-2904[U]
Int. Cl.³ A61B *1/12*
U.S. Cl. 128—6 **7 Claims**



1. A medical instrument for insertion into the body for the study of internal areas, comprising: an elongate hollow member having a hollow passage therein, an opening at the terminus of said passage; a member for insertion into said passage; an optical member disposed in the vicinity of said opening; means disposed adjacent said opening to deflect said insertion member to a suitable angle; said means to deflect being further operable to selectively deflect the flow of a stream of cleaning fluid from said hollow passage onto a body cavity surface or onto said optical member; a hood surrounding said opening; said means to deflect comprising a member extending beyond said opening and adapted to be positioned to deflect said insertion member; said means to deflect further comprising a pivoting deflection member having a flow directing channel to deflect said stream of fluid onto said optical member; and wherein said insertion member is adapted to deliver said stream of fluid toward said means to deflect.

4,436,088
UPPER ARM BRACE

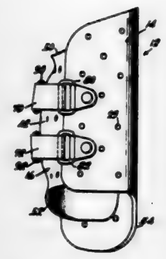
Alan Fianleston, 1901 NW. 17 Ave., Miami, Fla. 33125

Filed Sep. 8, 1981, Ser. No. 299,815
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—77 **3 Claims**

1. An upper arm brace for protecting and reinforcing the surfaces of the upper arm of the wearer between the shoulder zone and the elbow zone, said brace comprising,

an elongate, generally U-shaped posterior member having a base and sidewalls adapted to extend around the posterior surface of the upper arm,

an elongate generally C shaped anterior member having a base and side walls adapted to extend around the anterior surface of the upper arm, the posterior member and the anterior member having longitudinal side edges being disposed in overlapping relationship with each other whereby the anterior and posterior members encase the upper arm with the inner surface of the anterior and posterior members in contact with the surface of the upper arm, said anterior and posterior members being of a semi-rigid material with the side walls of said members capable of being flexed, the base of the anterior member having a central portion bulged outwardly to accommodate the bicep muscle whereby the engagement of the outwardly



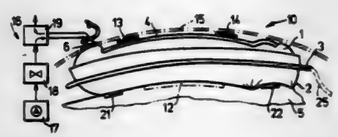
bulged central portion of the anterior member with the bicep muscle assists in retaining the arm brace in a predetermined position on the upper arm,

fastener means mounted on said posterior member for securing said posterior and anterior members snugly together in overlapping relationship.

4,436,089
PRESSURE DRESSING WITH CUSHION

Eduard Schmid, Böheimstrasse 37, D7000 Stuttgart 1, Fed. Rep. of Germany

PCT No. PCT/DE80/00028, § 371 Date Nov. 9, 1981, § 102(e) Date Nov. 9, 1981, PCT Pub. No. WO81/02517, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 11, 1980, Ser. No. 321,168
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—155 **6 Claims**



1. A skin graft pressure dressing for pressing a skin graft against a body member,

said pressure dressing comprising in combination:

a fluid-containing cushion for engaging and exerting pressure against the entire skin graft and the surrounding normal skin on the body member,

said cushion having thin flexible walls enclosing a space for receiving a fluid material,

said walls being made of a thin flexible resilient foil material,

a rigid pressure plate engaging said cushion on the side thereof opposite from the skin graft for pressing said cushion against the skin graft and the surrounding normal skin,

said plate being made of a transparent material,

the foil material between said plate and the skin graft also being transparent to render the skin graft clearly visible for inspection through said plate and said cushion,

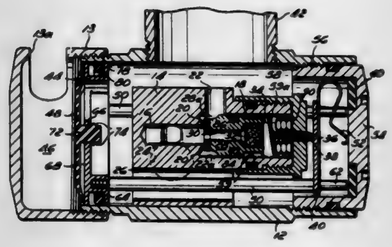
means for securing said plate to the body member while exerting pressure upon said plate to press said plate against said cushion so that said cushion will exert pressure against the skin graft,

and means for producing, maintaining and controlling the pressure of the fluid material within said cushion.

4,436,090
PISTON ACTUATED, PILOT VALVE OPERATED BREATHING REGULATOR

Phillip H. Darling, 38 Meadowgrass, Irvine, Calif. 92714

Continuation of Ser. No. 5,158, Jan. 22, 1979, abandoned. This application Aug. 11, 1981, Ser. No. 291,998
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—204.26 **74 Claims**



1. A device for the regulation of a user's breathing from a source of pressurized gas, comprising:

a housing having passage means for conducting said pressurized gas to said user;

a valve body in said housing, said valve body having a pressurized gas inlet and a gas outlet, said outlet communicating with said passage means;

a first pressurization chamber in said body, communicating with said inlet;

valving means, moveable within said body, for controllably opening and closing said outlet, said valving means having first and second surfaces, said first surface confronting said first chamber, said second surface having a larger area than said first surface;

a second pressurization chamber communicating with said first pressurization chamber, said second surface of said valving means confronting said second chamber, said valving means being moveable in opposite directions within said body in response to the force differential between said first and second surfaces so that said valving means closes said gas outlet when the force on said second surface, equal to the pressure on said second surface times the area of said second surface, is greater than the force on said first surface, equal to the pressure on said first surface times the area of said first surface, thus closing said gas outlet when the pressures in said first and second pressurization chambers are equal, and said valving means opens said gas outlet when the force on said first surface is greater than the force on said second surface;

a pilot valve having pilot passage means for venting gas from said second chamber to reduce the pressure in said second chamber with respect to the pressure in said first chamber so that said valving means opens said outlet;

pilot passage closure means, slideably moveable between a first position and a second position, for closing said pilot passage means in said first position and opening said pilot passage means in said second position;

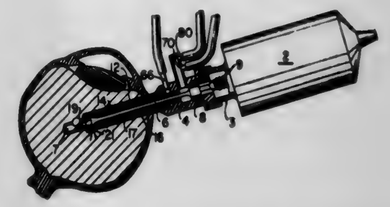
pilot valve actuating means, attached to said pilot passage closure means, and forming a pressure interface between the interior and exterior of said housing, for moving said closure means from said first position to said second position in response to an inhalation-induced reduction in pressure on the interior side of said interface with respect to the pressure on the exterior side of said interface; and

exhalation outlet means from said housing.

4,436,091
SURGICAL CUTTING INSTRUMENT WITH RELEASE MECHANISM

Anton Banko, The Bronx, N.Y., assignor to Surgical Design Corporation, Long Island City, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,704
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **8 Claims**



1. A surgical instrument for severing by a shearing action material located between two coacting surfaces comprising

an elongated tubular member having a surface defining an opening into which material to be severed is introduced,

a cutter means disposed within said tubular member and having a cutting surface to coact with the surface of said tubular member defining and opening for producing a shearing action of material between said cutting surface and said surface of said tubular member,

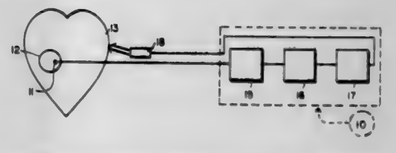
means for moving one of said cutting means and tubular member to produce relative motion in a first direction to produce the shearing action of material between said coacting surfaces,

and means responsive to the controlled stopping of relative movement in said first direction causing said moving means to produce relative motion between said cutter means and said surface of said tubular member in a second direction opposite to said first direction for a predetermined amout to clear material trapped therebetween, said cutter means always remaining within said tubular member.

4,436,092
EXERCISE RESPONSIVE CARDIAC PACEMAKER

William A. Cook, Bloomington; Neal E. Fearnot, and Leslie A. Geddes, both of West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed May 19, 1982, Ser. No. 379,667
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **9 Claims**



1. A cardiac pacemaker including means for variably controlling the stimulation rate of the heart according to the level of muscular exertion in the body, comprising:

a temperature sensing means for sensing a non-ambient body temperature, said non-ambient body temperature related by an algorithm to heart rate in a normally functioning heart, said temperature sensing means producing an output signal;

an algorithm implementing means connected to said temperature sensing means for implementing said output signal by an algorithm which represents the mathematical function between said non-ambient body temperature and heart rate in a normally functioning heart; and

a cardiac pacemaker connected to said algorithm implementing means and responsive thereto in order to variably control the stimulation rate of said heart.

4,436,093

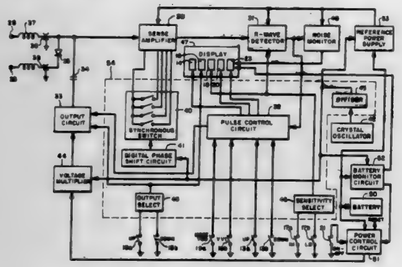
CARDIAC PACER HAVING ACTIVE NOTCH FILTER SYSTEM

Kenneth W. Belt, Fort Atkinson, Wis., assignor to Norland Corporation, Fort Atkinson, Wis.

Continuation of Ser. No. 203,959, Nov. 4, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,223

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 PG **14 Claims**



1. In a cardiac pacer of the type responsive to an applied cardiac sense signal which includes a desired signal component and a power line-induced interference component, a sense amplifier comprising:

means comprising a plurality of selectable sample-and-hold channels for independently sampling the instantaneous amplitude of said cardiac signal;

sampling means for sequentially and repeatedly selecting said channels whereby each channel is selected for an equal period of time over a complete selecting cycle; and

signal summation means for combining the outputs of said channels to derive an output signal including said desired signal component;

said channels being selected at a frequency of nf, where n is a whole integer and f is the frequency of the power line component, whereby said interference component is attenuated from said output signal.

4,436,094

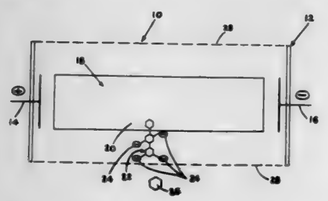
MONITOR FOR CONTINUOUS IN VIVO MEASUREMENT OF GLUCOSE CONCENTRATION

Anthony Cerami, New York, N.Y., assignor to Evreka, Inc., Bergenfield, N.J.

Continuation-in-part of Ser. No. 241,991, Mar. 9, 1981, Pat. No. 4,330,299. This application Jan. 27, 1982, Ser. No. 343,128

Int. Cl.³ G01N 33/66, 27/30

U.S. Cl. 128—635 **30 Claims**



14. A glucose monitor for the continuous, in vivo measurement of glucose concentration in animal body fluids comprising:

A. an electrode adapted to electrically sense variations in the concentration of said glucose in said body fluid;

B. said electrode including a charge-transfer medium comprising a reversible complex of a binding macromolecular component, and a charge-bearing carbohydrate component;

C. said reversible complex adapted to react with said glucose to change the level of electrical charge sensed by said electrode, to thereby indicate corresponding variations in said glucose concentration.

15. The monitor of claim 14 wherein said binding macromolecular component comprises one or more lectins, and said charge-bearing carbohydrate component, comprises monosaccharides and oligosaccharides containing a material selected from the group consisting of glucose, mannose, and mixtures thereof.

4,436,095

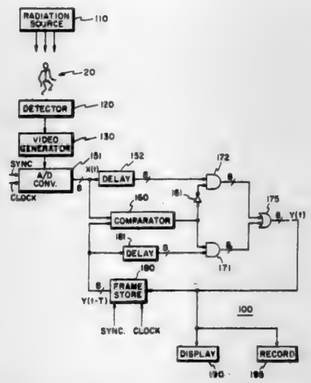
METHOD AND APPARATUS FOR IMAGING A BODY

Robert A. Kruger, Salt Lake City, Utah, assignor to Thomson-CSF Broadcast, Inc., Stamford, Conn.

Filed Dec. 22, 1981, Ser. No. 333,558

Int. Cl.³ A61B 6/00

U.S. Cl. 128—654 **12 Claims**



1. A method for generating a processed video image of a fluid-carrying vessel in a body, comprising the steps of:

injecting a contrast medium to pass into the vessel;

irradiating the body;

detecting radiation which passes through the body and generating a series of frames of electronic video signals that represent an image of the radiation transmission characteristics of the body at a series of different times, each frame including an array of pixels, the video signal level at each pixel being determined by the radiation transmissivity of an elemental region of the body, and operating on said series of frames as follows:

storing a frame of the sequence;

comparing the video signal level at each pixel of another frame of the sequence with the video signal level at the corresponding pixel of the stored frame;

selecting at each said pixel a video signal level representative of the lower of the compared video signal levels;

re-storing the selected video signal levels; and

displaying the selected video signal levels.

4,436,096

PORTABLE DIGITAL HEART RATE METER/STETHOSCOPE

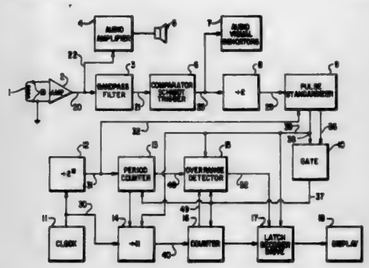
Walter R. Dyck, Medicine Hat, and Burns R. Hay, Calgary, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Feb. 4, 1981, Ser. No. 231,442

Claims priority, application Canada, Apr. 24, 1980, 350599

Int. Cl.³ A61B 5/02

U.S. Cl. 128—689 **20 Claims**



1. An electronic heart rate detector comprising:

a transducer for providing an electrical signal in response to sounds, including heart sounds;

filter means for filtering said electrical signal, said filter means having a passband including frequencies characteristic of heart sounds and producing a filtered electrical signal;

means for detecting amplitude levels of said filtered electrical signal exceeding a predetermined threshold level and providing an output pulse of fixed duration in response to each amplitude level exceeding said threshold level, the output of said detecting means being connected to the input thereof, said detecting means including a comparator having an input connected to the output of said filter means for producing a first output pulse in response to each filtered electrical signal amplitude level exceeding said threshold level, the duration of said first output pulse corresponding to the duration of that portion of said amplitude level exceeding said threshold level; means for selectively modifying the duration of said output pulse; means responsive to the output of said pulse modifying means for producing a second output pulse of predetermined duration, the output of said second output pulse producing means being connected to the input of said comparator; and

means responsive to the output of said second output pulse producing means for producing a signal representative of a heart rate; and

means for displaying said signal as a detected heart rate.

4,436,097

CARDIOVASCULAR EXERCISE APPARATUS

Patrick J. Cunningham, 350 Orangethorpe Ave., #27, Placentia, Calif. 92670

Filed Jun. 7, 1982, Ser. No. 385,464

Int. Cl.³ A61B 5/02

U.S. Cl. 128—707 **14 Claims**

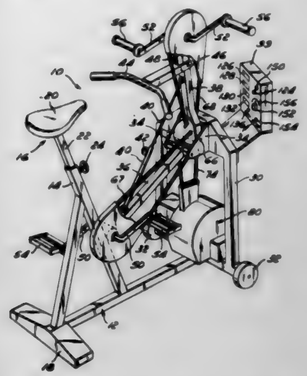
1. An improved cardiovascular exercise apparatus comprising:

a frame adapted to support a user thereon;

means carried by said frame and adapted for manual rotatable movement in a first direction for providing aerobic exercising of the upper body of said user;

means carried by said frame and adapted for manual rotatable movement in a first direction for providing aerobic exercising of the lower body of said user; and

means for applying a pre-determined force in opposition to and independent of the rotatable movement of said upper and lower aerobic exercising means, wherein said opposition force applying means comprises a hydraulic pump



connected to rotate a common rotable shaft cooperating with said upper and lower aerobic exercising means in a secon direction, opposite to said first direction.

4,436,098

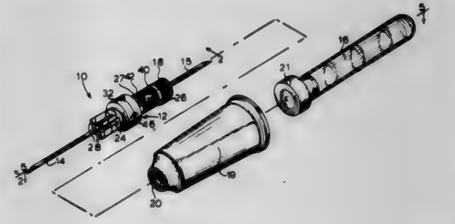
NEEDLE ASSEMBLY WITH VEIN ENTRY INDICATOR

Joseph Kaufman, Emerson, N.J., assignor to Becton Dickinson Company, Paramus, N.J.

Filed Mar. 16, 1981, Ser. No. 244,408

Int. Cl.³ A61B 5/14

U.S. Cl. 128—766 **6 Claims**



1. A needle assembly for collecting a single blood sample from a patient for introduction into an evacuated container, comprising

(a) a translucent housing having a forward end and a rearward end;

(b) a chamber in said housing;

(c) a first access opening in said forward end;

(d) a first cannula in fluid communication with said chamber and extending outwardly from said first access opening and adapted for insertion into a patient;

(e) a second cannula in fluid communication with said chamber and extending outwardly from said second access opening; the improvement characterized by

(f) said second cannula having a portion on the end thereof opposite to that extending outwardly from said second access opening, which extends internally into said chamber;

(g) said internally extending portion having a first and a second hole therethrough, with said second hole providing fluid communication between said chamber and the lumen of said second cannula;

(h) a vent plug of air-permeable, blood-impermeable material in liquid-tight contact with the outer surface of such internally extending portion and overlying said first hole;

(i) means for temporarily restricting blood flow covering said second hole; and

(j) said temporary restricting means comprising a compliant material forming a sealant plug permanently displaceable from covering said second hole by a negative pressure gradient applied to said second cannula, and being sufficiently pliable to deform and pass through the lumen thereof;

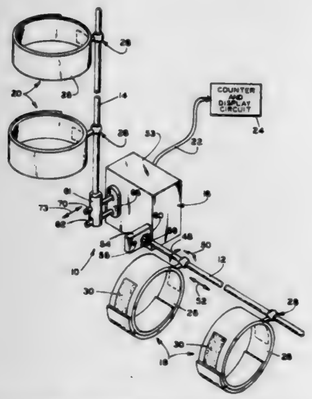
(k) whereby blood flowing into said chamber from said first cannula under normal tourniquet pressure is prevented by said plugs from flowing into said second cannula, but can be viewed through said translucent housing to indicate vein entry by said first cannula while air in said chamber passes through said vent plug and first hole and through said second cannula, and said sealant plug being drawn through said second hole and the lumen of said second cannula when said pressure gradient is applied for allowing blood to flow through said second cannula for collection.

4,436,099

INSTRUMENT FOR MEASURING THE RANGE OF MOTION ASSOCIATED WITH A HUMAN BODY JOINT

Demetrios D. Raftopoulos, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio

Filed Aug. 14, 1981, Ser. No. 292,899
Int. Cl.³ A61B 5/10
U.S. Cl. 128—782 11 Claims



1. An apparatus intended for use in measuring the relative angular displacement between two body portions connected to a common joint comprising:

a first elongate member;

a first support means adapted to be connected to a first one of two body portions connected to a common joint for supporting said first elongate member in generally spaced relation to the first body portion, said first support means maintaining said first elongate member in spaced relation to the first body portion as the first body portion is rotated about the common joint;

a second elongate member;

a second support member adapted to be connected to a second one of the two body portions for supporting said second elongate member in generally spaced relation to the second body portion, said second support means maintaining said second elongate member in spaced relation to the second body portion as the second body portion is rotated about the common joint;

means for pivotally interconnecting said first and second elongate members including an encoder means for generating an output signal representing the relative angular position between said first and second elongate members; and

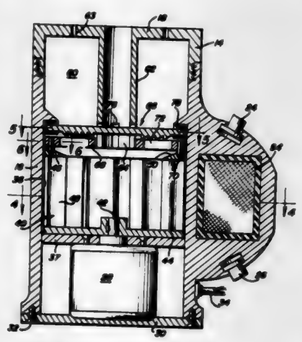
means coupled to said interconnecting means and responsive to said encoder output signal for determining an angular displacement measurement between said first and second elongate members, said measurement representing the relative angular displacement between the two body portions, said measuring means including a display means for displaying said angular displacement mesurement, means for generating a reset signal defining an initial angular position between said elongate members, said measuring means responsive to said reset signal for determining said angular displacement measurement relative to said initial angular position.

4,436,100

SMOKE GENERATOR

William D. Green, Jr., 8906 Camden St., Alexandria, Va. 22308

Continuation-in-part of Ser. No. 104,701, Dec. 17, 1979, Pat. No. 4,259,970. This application Apr. 6, 1981, Ser. No. 251,074
Int. Cl.³ A24F 47/00
U.S. Cl. 131—330 16 Claims



1. In an apparatus for generating and dispensing smoke by combustion of material on an upstream side of a gas permeable element through which a flow stream is induced by a blower, the improvement residing in a housing having a portion within which said gas permeable element is mounted downstream of the blower, a hopper within which the material is stored upstream of the blower, means for introducing the material from the hopper into the blower and an inflow conduit extending through the hopper to the blower through which ambient air is conducted to the blower separately from the material entering the blower from the hopper through the material introducing means.

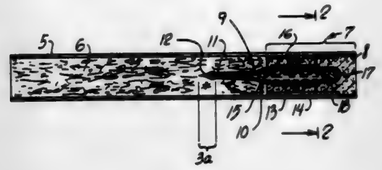
4,436,101

SELF-EXTINGUISHING CIGAR OR CIGARETTE

William Seatts, 225 Eastern Parkway/Apt. #3C, Brooklyn, N.Y. 11238

Filed Mar. 28, 1983, Ser. No. 479,278
Int. Cl.³ A24D 3/04, 1/10
U.S. Cl. 131—349 20 Claims

1. An elongated smoking-tobacco member comprising in combination: tubular material that is inflammable, tobacco in cut-up form compacted within tubular space of the tubular material, a compressible enclosed vessel mounted within said tubular space near one of opposite ends of the tubular material and said compressible enclosed vessel containing within enclosed space thereof a fire-extinguishing composition which when heated is decomposible into fire extinguishing product comprising a non-inflammable gas propellant that is non-toxic such that compressing pressure applied inwardly on exterior tubular walls of the tubular material at the one end results in compacting the enclosed vessel and contents thereof to rupture



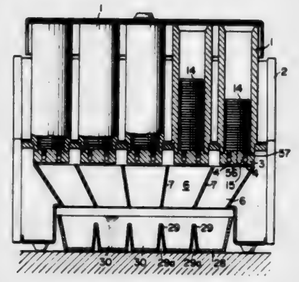
the enclosed vessel and squirt said product into said compacted tobacco.

4,436,102

COIN DISCHARGE MACHINE AND PARTITIONED CARTON

Eiichi Kokubo, and Kyoichi Osako, both of Toyko, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,885
Claims priority, application Japan, May 30, 1980, 55/74948[U]
Int. Cl.³ G07D 1/08
U.S. Cl. 133—2 8 Claims



1. A coin discharge machine which comprises: a plurality of cartridges, each accommodating coins of a given denomination; a plurality of dropping outlets communicating with respective ones of said cartridges; a coin discharge mechanism for individually discharging the lowermost coin from the coins stacked in each said cartridge and for transferring the discharged coin to one of said dropping outlets; a plurality of discharge passages separated from each other by partitions and in communication with said dropping outlets corresponding to said cartridges; and a carton including a plurality of receiving sections separated from each other by partitions, said receiving sections being disposed under respective ones of said discharge passages, and an open collecting section connected to all said receiving sections for collecting coins from said receiving sections, whereby all received coins are collected in the collecting section and are easily picked up.

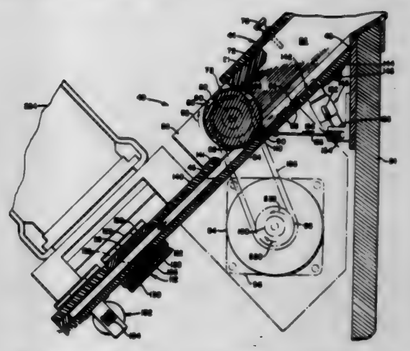
4,436,103

COIN COLLECTING AND COUNTING SYSTEMS

Neil M. Dick, Schenectady, N.Y., assignor to 4-D Electronics Company, Inc., Schenectady, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,390
Int. Cl.³ G07D 3/16
U.S. Cl. 133—3 D 41 Claims

1. Coin counting apparatus or the like comprising: a coin identification system including means for generating a separate, distinct signal indicative of the value of each countable coin; means for coincidentally generating a gating signal; and means for converting each of said first-mentioned signals to a series of pulses representative of the monetary value of the coin identified by the signal, the means for generating each of the aforesaid coin value indicative signals comprising at least one light source and a detector circuit means associated with each light source for generating a signal when the optical path between the detector and the light source is interrupted, the means for generating the gating signal comprising a light emitting source and a detector circuit means as aforesaid on opposite sides of an optical path that is interruptable by any of the countable coins at the time that the signal indicative of the



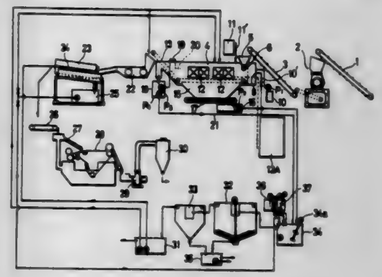
value of that coin is being generated to generate a position indicative signal, the means for converting the value indicative signals to the corresponding series of pulses comprising a solid state device which changes states when any one of said value indicative signals and the amplified, position indicative signals are applied thereto, and said coin identification system further including means energizable coincidentally with the generation of coin value indicative and gating signals for providing indications that the means employed to produce said coin value indicative and gating signals has functioned properly.

4,436,104

METHOD OF TREATMENT FOR RECYCLING A WASTE FILM AS A RAW MATERIAL AND APPARATUS THEREFOR

Hidehiro Kashiwagi, Tokushima, Japan, assignor to Taiyo Denko Kabushiki Kaisha, Tokushima, Japan

Division of Ser. No. 293,420, Aug. 14, 1981, Pat. No. 4,379,724. This application Jan. 3, 1983, Ser. No. 455,085
Int. Cl.³ B08B 3/02, 3/12
U.S. Cl. 134—63 3 Claims



1. An apparatus for cleaning soiled, thermoplastic resin, waste film which comprises: crushing means for cutting a mass of soiled, thermoplastic resin, waste film to provide a mass of pieces of waste film; an elongated washing tank adapted to be filled with a cleaning liquid; and elongated mesh conveyor disposed within said washing tank and movable substantially horizontally therein and lengthwise thereof; feeding means for

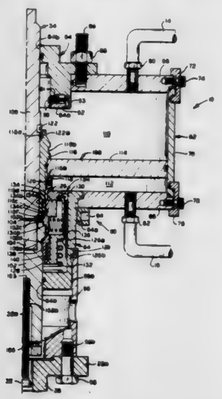
feeding the mass of pieces of waste film onto one end of said conveyor so that the mass of pieces of waste film is moved lengthwise through said tank by said conveyor; first supply means for feeding a first quantity of the cleaning liquid into said tank adjacent to said one end of said conveyor and directing the liquid lengthwise of said conveyor toward the opposite end thereof; jet means located within said tank above said conveyor and close to but upstream of the opposite end of said conveyor and adapted for directing jets of a second quantity of the cleaning fluid in a direction lengthwise of and opposite to the direction of movement of said conveyor; and ultrasonic energy transducers located on opposite lateral sides of and above said conveyor between said first supply means and said jet means for directing ultrasonic energy across said conveyor, and means located below said conveyor for discharging the soil that is removed from said waste film.

4,436,105

VALVE ACTUATOR HAVING AN ADJUSTABLE COLLET LOCK

Kip B. Goans, Harvey, La., assignor to Baker CAC, Inc., Belle Chasse, La.

Filed Nov. 4, 1981, Ser. No. 318,188
Int. Cl.³ F16K *31/122*
U.S. Cl. 137—1 **22 Claims**



22. A method of operating a shiftable valve member into wedging engagement with a fixed valve seat by a linearly shiftable actuator, comprising:

(a) moving the actuator linearly to shift the valve member to its closed position in engagement with the valve seat;

(b) engaging a cam surface on the actuator with the valve member during the final linear movement of the actuator to wedge the valve member toward its seat;

(c) engaging the actuator with a latch in its valve closed position; and

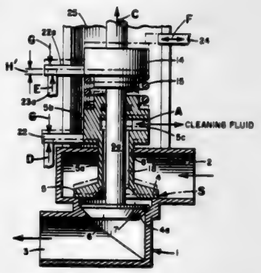
(d) automatically shifting the latch to accommodate for wear of the operative surfaces of the valve member, valve seat and actuator.

4,436,106

PIPELINE SWITCH WITH LEAKAGE CONTROL AND CLEANABLE LEAKAGE CAVITY

Otto A. P. Tuchenhagen, Lüchow-Dannenberg; Hans O. E. Mieth, Hamburg, and Herbert R. Coura, Lüchow-Dannenberg, all of Fed. Rep. of Germany, assignors to Otto Tuchenhagen GmbH & Co. KG, Fed. Rep. of Germany

Division of Ser. No. 873,068, Jan. 27, 1978, Pat. No. 4,344,453. This application Oct. 22, 1980, Ser. No. 199,662
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703792; Nov. 14, 1977, 2750833
Int. Cl.³ F16K *1/44*
U.S. Cl. 137—240 **6 Claims**



1. Apparatus for cleaning a liquid connection and securing a stroke and spring abutment for double seat pipeline switches with leakage control, comprising a pipeline switch housing, a pipeline switch drive mounted within said switch housing, two valve disks of different sizes, two concentrically mounted valve rods of different lengths, one of said valve rods being hollow, the one of longer length fitting within the other of shorter length, said inside valve rod being connected to said pipeline switch drive and the smaller of the two valve disks, said inside valve rod upon being lifted by said drive carrying along said valve disk of larger size, said valve disks in both the closed position and the open position enclosing between themselves a leakage cavity, one end of said hollow valve rod defining a pressing and guide part with a spring abutment and a connecting opening adapted to receive a cleaning fluid, a rod head forming a portion of the longer valve rod and defining a connecting opening, an upper spring abutment and an upper stop surface for said pressure and guide part, and a spring between said rod head and said pressing and guide part to bias them apart, said valve rod of longer length defining an axial bore with transverse holes communicating with said leakage cavity and said connecting opening in said valve head, said pressing and guide part communicating around said valve rod of longer length and through said leakage cavity with said axial bore and connecting opening of said valve head to provide a fluid passageway for said cleaning fluid through said apparatus.

4,436,107

VENTILATION VALVE

Bengt A. Persson, 28B, Corso Italia, CH-6911 Campione D'Italia, Italy

Filed Jul. 20, 1979, Ser. No. 59,399
Claims priority, application Sweden, Sep. 12, 1978, 7809583
Int. Cl.³ F16K *15/00*
U.S. Cl. 137—314 **2 Claims**

1. An air valve connectable to a pipe to relieve vacuum in said pipe while preventing escape of fluid therefrom, said valve including:

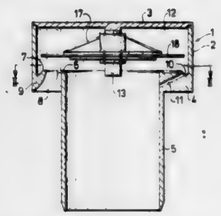
a body having an inner chamber and air inlet means for communicating said inner chamber with the ambient atmosphere,

said air inlet means including inner and outer concentrically spaced valve seats,

an annular water collecting groove immediately surrounding said outer valve seat,

a valve element displaceably mounted in said inner chamber, said valve element being normally urged to a valve closed position and being shiftable to a valve open position in response to a vacuum in said pipe,

said valve element including an annular disc formed of an eleastic material with said disc having a diameter sufficient to engage said outer concentrically spaced valve seat



when the valve element is in its closed position but insufficient to cover said annular water collecting groove surrounding said outer valve seat, and

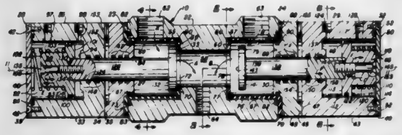
a channel connecting said water collecting groove and said pipe so that when said valve element is in its closed position with said annular disc engaging said inner and outer concentrically spaced valve seats communication is maintained between said inner chamber and said pipe to permit transmission of vacuum to said inner chamber and water in said water collecting groove to said pipe.

4,436,108

VALVE ASSEMBLY

Eugene W. Ellsworth, 1220 E. Alice St., Phoenix, Ariz. 85020

Filed Oct. 20, 1980, Ser. No. 198,853
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—375 **12 Claims**



1. A valve assembly for receiving a pressurized first fluid and a pressurized second fluid and for controllably distributing a selected said fluid to a common receiver, said valve comprising:

(a) a housing including an intermediate body portion having a first end having a first inlet chamber formed inwardly therefrom and a second end having a second inlet chamber formed inwardly therefrom, a first end portion detachably receivable to the first end of the intermediate body portion and a second end portion detachably securable to the second end of said intermediate portion,

i. a first inlet for receiving said first fluid,

ii. a second inlet for receiving said second fluid,

iii. an outlet for discharging said selected fluid,

iv. first passage means communicating between said first inlet and said outlet, said first passage means including the first inlet chamber for receiving said first fluid from said first inlet and an outlet chamber communicating between said first inlet chamber and said outlet, said first inlet chamber including detachable liner means,

v. second passage means communicating between said second inlet and said outlet, said second passage means including the second inlet chamber for receiving said second fluid from said second inlet and said outlet chamber, said second inlet chamber including detachable liner means, said detachable liner means having substantially greater erosion resistance characteristics than said housing for protecting said chamber from erosive effects of said pressurized fluids, said liner means being clamped between the intermediate body portion and the respective end portions to retain the liners in their respective inlet chambers, said housing being separable for removal of said liner means,

(b) first valve means reciprocally movable, in response to a pressurized third fluid, between an open position and a closed position for selectively controlling the flow of said first fluid through said first passage means; and

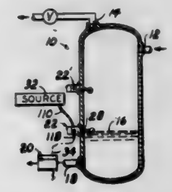
(c) second valve means reciprocally movable, in response to said third fluid, between an open position and a closed position for selectively controlling the flow for said second fluid through said second passage means.

4,436,109

MAGNETICALLY COUPLED POSITIVE ACTING LEVEL CONTROL

Wesley L. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73108

Filed Feb. 25, 1983, Ser. No. 469,847
Int. Cl.³ F16K *31/34, 31/126*
U.S. Cl. 137—413 **16 Claims**



1. A liquid level control, comprising:

a body adapted for connection with a liquid containing vessel having a liquid drain or supply valve;

lever means pivotally supported by said body for vertical pivoting movement of its respective end portions;

float means pivotally supported within the vessel proximate said lever means for vertical pivoting movement in response to the rise and fall of liquid in the vessel;

magnetic means supported by said lever means and said float means, respectively, in magnetic inductive relation for pivoting said lever means in a direction opposite the direction of pivoting movement of said float means;

said body having a valve seat and having lateral bores forming a fluid pressure path through the body valve seat;

a source of fluid pressure connected with the liquid drain or supply valve through the lateral bores;

valve housing means secured to said body in communication with the lateral bores;

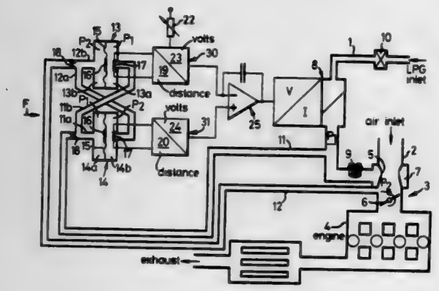
pressure-responsive valve means for receiving said fluid pressure therein and being supported by and disposed within the valve housing means for axial snap action movement toward and away from the body valve seat in response to changes in the fluid pressure within the pressure-responsive valve means; and,

nozzle valve means and a nozzle orifice being interposed in the fluid pressure path between the pressure-responsive valve means and the atmosphere, said nozzle valve means is opened and closed by said lever means as a result of changes in the fluid pressure within the pressure-responsive valve means for fluid pressure biasing said pressure-responsive valve means toward and away from said body valve seat in response to the rise and fall of liquid in the vessel.

4,436,110
PRESSURE REGULATING SYSTEMS

Derk B. Leeuwma, Terschuur, and Marius de Groot, Schyedam, both of Netherlands, assignors to Landi den Hartog BV, Netherlands

Filed Mar. 25, 1982, Ser. No. 361,752
Int. Cl.³ G05D 16/00
U.S. Cl. 137—487.5 12 Claims



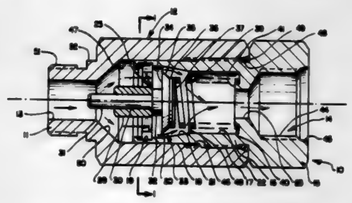
1. A regulating system for regulating the pressure in a fluid flow line comprising:
(i) a regulating device connected in said flow line for varying the fluid flow rate along said line,
(ii) an electro-fluid control loop comprising
(a) a feed back line connected to said flow line to provide a feed-back pressure related to to the pressure in said flow line,
(b) a control arrangement in which said feed back pressure is compared with a reference pressure to provide an electrical output signal for controlling the regulating device in the sense to maintain a predetermined relationship between said feed back pressure and said reference pressure,
characterised in that said control arrangement comprises:
(A) a pair of control chambers, each control chamber being divided into sub-chambers by a flexible diaphragm and said feed-back pressure being connected to act in one sub-chamber and the reference pressure being connected to act in the other sub-chamber,
(B) a diaphragm position senser associated with each control chamber and comprising an electric senser having a senser coil whose electrical output is representative of the distance of the diaphragm from it, the arrangement being such that a variation in said feed-back pressure in relation to said reference pressure causes said diaphragms to move in opposite directions relatively to their associated senser coils, and
(C) comparator means for comparing the electrical outputs from said senser coils to provide an output for controlling said regulating device.

4,436,111
HYDRAULIC FUSE VALVE

Harold Gold, 3645 Tolland Rd., Shaker Heights, Ohio 44122, and Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Jul. 21, 1981, Ser. No. 285,596
Int. Cl.³ F16K 17/30
U.S. Cl. 137—498 6 Claims

1. A valve assembly operable to block fluid flows in excess of a predetermined fluid flow, said valve assembly comprising a housing for conducting fluid, said housing including an inner side surface which includes a converging surface area, an inlet end portion disposed at a first end of said converging surface area and having a first diameter, and an outlet end portion disposed at a second end of said converging surface area and having a second diameter which is smaller than the first diameter, a flow control member disposed in said housing, said flow control member having a circular rim with a sharp edge portion which cooperates with said inner side surface of said housing to form a first variable size orifice, said flow control member being movable relative to said housing between a first position in which said sharp edge portion of the rim of said flow control member cooperates with said inlet end portion of said inner side surface of said housing to form an annular orifice having a relatively large cross sectional area and a second position in which said sharp edge portion of the rim of said flow control member cooperates with said outlet end portion of said inner side surface of said housing to form an annular orifice having a relatively small cross sectional area, said sharp edge portion of said flow control member being

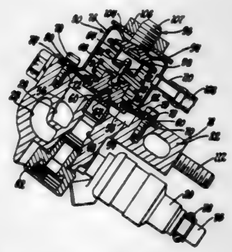


disposed radially inwardly of said converging surface area during at least a major portion of the movement of said flow control member between the first and second positions, and coil spring means disposed downstream of the rim of said flow control member for urging said flow control member toward said first position and for blocking fluid flow through said housing when said flow control member is in said second position, said coil spring means including a plurality of turns which cooperate to define a second variable size orifice through which fluid flows when said flow control member is in the first position, said turns to said coil spring means being disposed in tight abutting engagement to block fluid flow through said housing when said flow control member is in said second position.

4,436,112
FUEL PRESSURE REGULATOR

Terrance J. Atkins, Rochester, and Martin J. Field, Churchville, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1982, Ser. No. 410,651
Int. Cl.³ F16K 31/12
U.S. Cl. 137—510 4 Claims

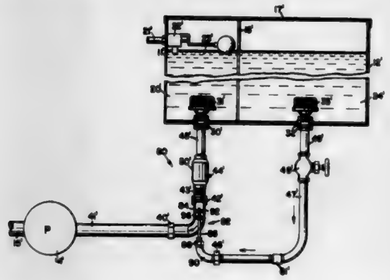


4. A fuel pressure regulator comprising a diaphragm overlying a base and defining a fuel chamber therebetween, said base including a fuel access region opening to said chamber and a fuel outlet opening from said chamber and a valve seat surrounding said outlet, said diaphragm carrying a valve member controlling fuel flow past said valve seat through said outlet, a coil spring having one end engaging said diaphragm and biasing said diaphragm to urge said valve member toward said valve seat whereby fuel flow past said valve seat through said outlet is controlled to balance the fuel pressure on said diaphragm with the bias of said spring on said diaphragm, a spring seat engaging the other end of said coil spring, a spring housing surrounding said coil spring and said spring seat, a tie rod having one end secured to said diaphragm, the other end of said tie rod being adapted to engage said spring seat for limiting movement of said spring seat away from said diaphragm, whereby said coil spring is captured between said spring seat and said diaphragm to simplify assembly of said pressure regulator, the position of said spring seat being axially adjustable within said housing to vary the bias of said coil spring on said diaphragm, said spring housing having a base overlying said spring seat, said base being axially deformable to adjust said spring seat to the position required to establish the desired fuel pressure in said chamber, wherein said pressure regulator includes a stem extending from said base and a flange underlying said base, said stem being adapted to receive a washer overlying said base and a member effective to draw said flange toward said washer to compensate for over-deformation of said base toward said spring seat, both said base and said housing having an annular flange and said diaphragm having an annular sealing region disposed between said flanges, said sealing region having a plurality of peripherally spaced apertures receiving fasteners which clamp said sealing region between said flanges, and wherein said sealing region has slits extending peripherally between and spaced peripherally from said apertures, whereby undue distortion of said diaphragm results in separation of said diaphragm along an arcuate line between one of said slits and one of said apertures instead of along a radial line from one of said apertures, said diaphragm thereby maintaining a continuous seal between said flanges.

4,436,113
CLEANING APPARATUS

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Continuation-in-part of Ser. No. 191,838, Sep. 29, 1980, Pat. No. 4,368,757. This application Dec. 30, 1981, Ser. No. 335,861
Int. Cl.³ B08B 3/00
U.S. Cl. 137—565 13 Claims

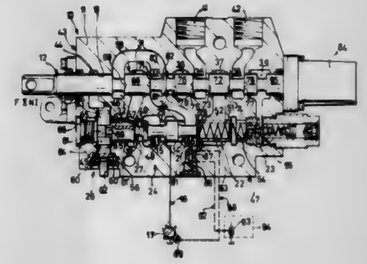


1. Pressure cleaning apparatus comprising, in combination:
a pair of liquid containers at substantially the same level including a water container and a detergent container;
means for replenishing and maintaining the liquid in said water container at a predetermined liquid level;
a positive displacement pump located below said containers and having an inlet and an outlet, the outlet being connected to a nozzle; and
means for supplying a mixture of water and detergent to said pump; including
(a) an outer tube having first and second straight end portions interconnected by a curved intermediate portion,
(b) an inner tube projecting through the curved intermediate portion of said outer tube in sealed relation therewith, said inner tube extending axially within one end portion of said outer tube to an outlet at a first end with an inlet being located at a second end outside said outer tube,
(c) first conduit means for connecting the second end of said outer tube to the inlet of said pump,
(d) second conduit means for connecting the second end of said inner tube to said detergent container,
(e) third conduit means for connecting the first end of said outer tube to said water container,
(f) disk means mounted inside said outer tube adjacent the first outlet end of said inner tube for defining a flow annulus with said inner tube, and
(g) first check valve means in said third conduit means for preventing backflow into said water container.

4,436,114
HYDRAULIC VALVE MECHANISM

Wolfgang Kötter, Markgröningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,185
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034859
Int. Cl.³ F15B 13/04
U.S. Cl. 137—596 9 Claims



1. A hydraulic valve mechanism, comprising a housing having a first bore and a second bore; a control valve element in said first bore and having control edges for direction control and arranged so as to selectively connect motor ports in an operative position with fluid feed and return means and to block the same in a neutral position, and control edges arranged for forming throttle means; a pressure compensation valve
upstream of said throttle means and having a longitudinal valve element in said second bore and allowing with said throttle means load independent flow control; and a non-return valve downstream of said throttle means and cooperating with the motor ports, said control edges for direction control being arranged on said control valve element only at one side of said throttle means, said non-return valve being also arranged in said second bore of said housing, and said longitudinal valve element also forming a closing member of said non-return valve.

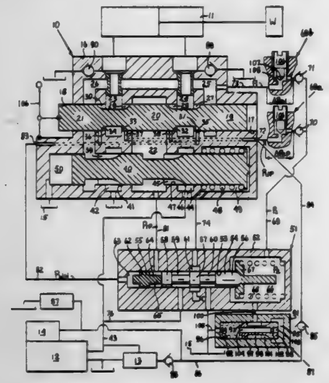
4,436,115
PRESSURE COMPENSATED FLUID CONTROL VALVE WITH MAXIMUM FLOW ADJUSTMENT

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Mar. 11, 1982, Ser. No. 357,037
Int. Cl.³ F15B 13/04
U.S. Cl. 137—596.1 9 Claims

1. A control valve assembly supplied with pressure fluid by a pump, said control valve assembly comprising a housing having an inlet chamber, a supply chamber, first and second load chambers, and exhaust means connected to reservoir

means, first valve means for selectively interconnecting said load chambers with said supply chamber and said exhaust means, first positive load control orifice means responsive to movement of said first valve means and operable to meter fluid flow between said supply chamber and said load chambers, second negative load control orifice means responsive to movement of said first valve means and operable to meter fluid flow between said load chambers and said exhaust means, positive load fluid throttling means between said inlet chamber and said supply chamber, negative load fluid throttling means between said load chambers and said exhaust means, single pilot valve means operable through said positive load fluid throttling means to throttle fluid flow from said inlet chamber



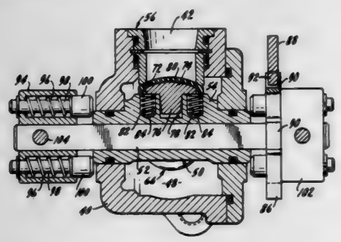
to said supply chamber and also operable through said negative load fluid throttling means to throttle fluid flow from said load chambers to said exhaust means to maintain a constant pressure differential at a preselected constant level across said single pilot valve means and to maintain a constant pressure differential across said first and said second control orifice means, and adjusting control means having means operable through said single pilot valve means to vary the level of said constant pressure differential across one of said first positive load control orifice means and said second negative load control orifice means, without thereby varying the level of said constant pressure differential across the other of the said control orifice means.

4,436,116

FOUR-WAY VALVE

Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Aug. 24, 1981, Ser. No. 295,833
Int. Cl.³ F16K *11/08, 5/14*
U.S. Cl. 137—625.47 **4 Claims**



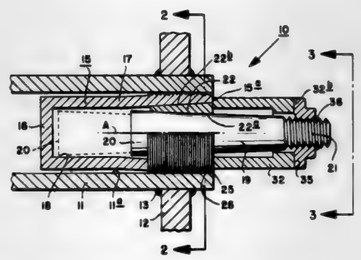
1. A four-way valve for use in a railroad air brake system including a housing having a generally cylindrical internal chamber and ports in communication therewith, two of said ports being adapted for connection to a railroad car brake pipe with an intermediate port being adapted for connection to the railroad car air brake system, a valve member movable about the axis of said chamber between a plurality of positions, there being a position to close each port and a neutral position in which all ports are in communication with said chamber, the improvement comprising a seal member having a spherical sealing surface carried by said valve member, spring means urging said seal member and sealing surface thereof outwardly of said valve member and toward said ports, and seal means for each port including a floating seal ring within each port and positioned for contact with said valve member seal member sealing surface, said floating seal rings being movable axially relative to said valve member seal member, with the outer diameter of each floating seal ring being greater than the pressure responsive sealing surface of said valve member seal member whereby if the pressure upon said floating seal ring from exteriorly of said four-way valve is greater than the pressure within said four-way valve chamber, a floating seal ring will be urged by said greater pressure into firm sealing contact with said valve member seal member, an operating rod forming a portion of said valve member and extending outwardly therefrom, from opposite sides thereof, from said housing, and spring means attached to opposite ends of said rod for holding said rod in a fixed axial position relative to said valve member.

4,436,117

LEAK RESISTANT PLUG ASSEMBLY

John E. Martin, Penllyn Pike, Springhouse, Pa. 19477

Filed Dec. 2, 1982, Ser. No. 446,153
Int. Cl.³ F16L *55/12*
U.S. Cl. 138—89 **13 Claims**



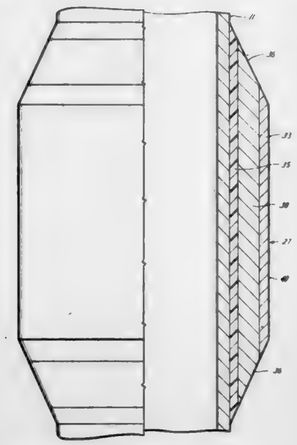
1. For use in plugging a tube having a hole, an expandable plug assembly, comprising:
- a sleeve having a longitudinal axis with an endwall and a deformable tubular sidewall surrounding said endwall for cooperating therewith to form a chamber closed at one end and open at its opposite end, said sleeve having a plurality of cutting edges formed integral therewith and defined by V-shaped intersecting converging surfaces providing a slender deformable tip and a series of shallow grooves therebetween,
- a wedge contained within said chamber, a separate expandable ring mounted in said chamber and having a tapered bore slidably receiving said wedge,
- said wedge, when pulled axially of the chamber, cooperating with the ring to expand the same and thereby to expand the tubular sidewall of the sleeve outwardly whereby the cutting edges cooperate with the tube to define a labyrinth seal along the outer periphery of the sleeve.

4,436,118

SLEEVED DRILL PIPE

William R. Garrett, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation of Ser. No. 197,057, Oct. 14, 1980, abandoned, which is a continuation of Ser. No. 10,235, Feb. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 818,672, Jul. 25, 1977, Pat. No. 4,171,560. This application Dec. 7, 1981, Ser. No. 328,169
Int. Cl.³ E21B *17/10*
U.S. Cl. 138—110 **11 Claims**



1. A drill pipe comprising:
- a metal tube,
- a tool joint member at each end of the tube, and
- a circumferentially homogeneous metal sleeve disposed about the tube between the tool joint members and axially spaced from said members,
- said sleeve being a dual metal centrifugal casting including inner and outer metal shells, the outer shell being harder than the inner shell and the inner shell being softer than the outer shell, and
- means securing said sleeve to said tube comprising a layer of adhesive material therebetween,
- both of said shells being circumferentially continuous,
- the inner periphery of the harder shell being integral with the outer periphery of the softer shell,
- the inner periphery of said inner shell having a diameter larger than the outer diameter of said tube and being everywhere out of contact therewith,
- the ends of said sleeve being out of contact with said tube and all members connected to said tube,
- said tube being free of stress concentrations at the ends of the sleeve which could occur if the inner shell contacted the tube, and which could occur if the ends of the sleeve contacted a member connected to the tube.

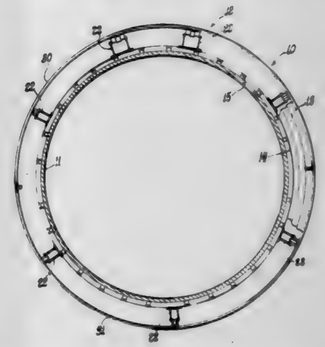
4,436,119

THERMAL ACOUSTICAL PIPE INSULATION

James E. Shahan, and Loren Pitts, both of 55 E. Jackson Blvd., Chicago, Ill. 60604

Filed Sep. 24, 1982, Ser. No. 422,462
Int. Cl.³ F16L *3/08, 59/12*
U.S. Cl. 138—149 **4 Claims**

1. A prefabricated jacket assembly for thermally and acoustically insulating a fluid conduit comprising:
- (a) a pair of mating semicircular longitudinal sections,
- (b) an outer metallic cover for each section,
- (c) means for connecting the longitudinal edges of said cover of each section together to form a cylindrical jacket,
- (d) insulation conforming to the configuration of said cover positioned upon the inner surface thereof,
- (e) a backing element for the exposed surface of said insulation,
- (f) yieldable spacing means positioned between the outer surface of the conduit to be insulated and said backing element of said insulation,
- (g) a vibration damper in the assembly between the outer cover and the conduit,



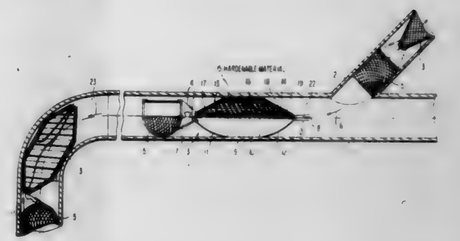
- (h) a damper supporting means comprising a pair of spaced apart support members each having a portion insertable through the center of said damper from opposite ends thereof so as to be independent of each other while cooperating to maintain said damper in its relation to said backing member, and
- (i) means for connecting said damper in facial contact with the inner surface of the cover with said connecting means isolated by said damper from said supporting leg portions.

4,436,120

INFLATABLE INTERNAL PIPE OBTURATOR WITH HARDENABLE CORE

Daniel Josien, Willems, and Jean-Louis Migliarese, Paris, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Jun. 15, 1982, Ser. No. 388,772
Claims priority, application France, Jun. 23, 1981, 81 12265
Int. Cl.³ F16L *55/10*
U.S. Cl. 138—93 **5 Claims**



1. A displaceable internal obturator for a pipe, comprising:
- (a) a central core (13) including a cylindrical portion (16), said core comprising a flexible envelope (14) filled with a hardenable material,
- (b) a flexible inflatable sleeve (20) disposed around the cylindrical portion of said core,
- (c) a flexible outer cylindrical sealing wall (9) disposed around said sleeve and retained in place at at least one longitudinal extremity thereof,
- (d) a first flexible umbilical cord (21) connected to said

flexible envelope for introducing a fluid material into said envelope, and

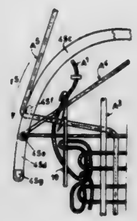
(e) a second flexible umbilical cord (22) connected to said sleeve for inflating said sleeve with a pressurized fluid, whereby the obturator may be introduced into a pipe and displaced therealong to a desired position, whereafter the core filler material is hardened and the sleeve is inflated to urge the outer cylindrical wall into sealing engagement with the pipe inner wall to obturate said pipe.

4,436,121

PROCESS FOR MANUFACTURING AN ELASTIC OR NON-ELASTIC RIBBON

Rene Cheynet, St. Just-Malmont, France, assignor to Cheynet et ses fils, France

Filed Jan. 30, 1981, Ser. No. 230,026
Claims priority, application France, Feb. 1, 1980, 80 02511
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—116 **7 Claims**





1. A process for making a woven ribbon with two stitched selvages on a ribbon loom by moving a single weft inserting member crosswise in two directions, the weft inserting member driving a single weft thread in both directions, the weft inserting member inserting a first auxiliary thread in one direction to a position outside one selvage edge and alternately driving a second auxiliary thread in the opposite direction to a position outside the opposite selvage edge, the weft inserting member engaging each of the auxiliary threads during one direction of movement and being free of such engagement during movement in the opposite direction, tying each freed auxiliary thread to the respective selvage along with the weft thread when the direction of the weft inserting member is reversed.

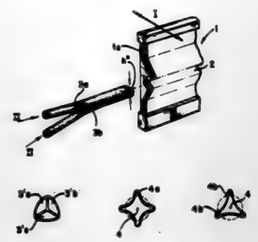
4,436,122

DEVICE FOR INSERTING A THREAD INTO THE WEAVING SHED OF A PNEUMATIC WEAVING MACHINE BY MEANS OF A FLOWING FLUID

Hubert P. van Mullekom, Deurne, Netherlands, assignor to Ruti-te Strake, B.V., Netherlands

Filed Dec. 22, 1981, Ser. No. 333,634
Claims priority, application Netherlands, Dec. 31, 1980, 8007127
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **5 Claims**

1. A device for inserting a thread into a transport tunnel formed in the weaving shed of a pneumatic weaving machine, the thread being inserted by a flowing fluid, said device comprising at least one injector including a unitary mixing tube through which the thread passes, the mixing tube being deformed at an exit end such that the exit cross-section is non-circular and is narrowed in at least one direction, the upstream



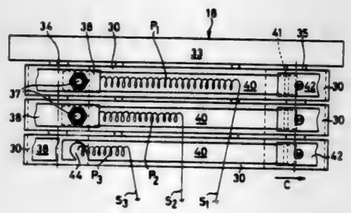
portion of the mixing tube being substantially circular, the total cross-sectional area at the exit end being substantially that of the remainder of the mixing tube.

4,436,123

DEVICE FOR STORING FILAMENTARY MATERIAL FOR USE ON A LOOM

Georg Senn, and Walter Koch, both of Rüti, Switzerland, assignors to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Oct. 23, 1981, Ser. No. 314,736
Claims priority, application Switzerland, Oct. 31, 1980, 8108/80; Sep. 7, 1981, 5739/81
Int. Cl.³ D03D *47/34*
U.S. Cl. 139—452 **12 Claims**



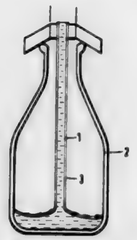
1. A device for storing filamentary thread material for inserting weft threads in weaving machines, having a feed nozzle for feeding the thread material and air, and further having an endless thread carrier provided with a rough surface and passing the said nozzle for temporary retaining of the fed material, characterized by the fact that the feed nozzle is arranged rigidly fixed in position, and that a cover member is arranged about the horizontal part of the thread carrier, which cover member rests on the thread carrier merely under the action of its own weight and is fixed against displacement in the longitudinal and transverse directions of the thread carrier, wherein the material coming from the nozzle is introduced between thread carrier and cover member.

4,436,124

PROCESS AND APPARATUS FOR BOTTLING OXYGEN-SENSITIVE LIQUIDS

Wolfgang Borstelmann, Dortmund, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,702
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1981, 3102678
Int. Cl.³ B65B *31/00*
U.S. Cl. 141—5 **7 Claims**



2. Apparatus for filling a container having a bottom with an oxygen-sensitive liquid under pressure comprising liquid feed means adapted to be inserted into said container for feeding liquid into said container from said bottom thereof, said liquid defining a rising liquid level during feeding thereof through said liquid feed means, buffer gas feed means adapted to feed into said container a buffer gas layer over said rising liquid level during feeding of said liquid by said liquid feed means, said buffer gas feed means being movable together with said rising liquid level within said container during feeding of said liquid.

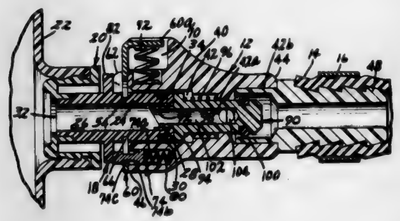
3. In a process for filling containers with an oxygen-sensitive liquid under pressure, said liquid defining a surface of said liquid during said filling process, the improvement which comprises that a buffer layer of gas is maintained over said surface of said liquid throughout said filling process to maintain said liquid separated from any oxygen which may be present within the container, said buffer gas being continuously delivered to said container during the filling process, and that said container is depressurized with said delivery being maintained during said depressurizing of said container.

4,436,125

QUICK CONNECT COUPLING

Brian J. Blenkush, Maple Grove, Minn., assignor to Colder Products Company, St. Paul, Minn.

Filed Mar. 17, 1982, Ser. No. 359,071
Int. Cl.³ B67C *9/00*
U.S. Cl. 141—330 **8 Claims**



1. A quick connect/disconnect coupling assembly, comprising:

(a) a female coupling member having a front end and a back end, said female coupling member defining a path for the flow of fluid therethrough;

(b) a male coupling member having a front end and a back end and defining a path for the flow of fluid therethrough, said male coupling member including a hollow tubular portion defining an axial bore adjacent said front end, said tubular portion being enclosed at the front end thereof by a penetrable membrane to seal off said fluid flow path, said tubular portion being constructed and arranged for removeable insertion a predetermined distance into the front end of said female coupling member, said female coupling member defining an axial tubular bore within which said tubular portion of said male coupling member is concentrically received, said tubular portion of said male coupling member including a ring-like seal about its circumference near the front end of said male coupling member for providing a fluid tight seal between the outside surface of said tubular portion and the inside surface of said tubular bore of said female coupling member upon insertion of said male coupling into said female coupling member;

(c) a valve assembly adapted for reciprocating longitudinal axial movement within the tubular bore of said female coupling member between a front end position and a back end position, said valve assembly being constructed and arranged for engaging said male coupling member upon insertion of said male coupling member into said female coupling member whereby said valve assembly is caused to move toward the back end of said female coupling member into said back end position, said valve assembly at a front end including a hollow needle-like member adapted to puncture the penetrable membrane of said male coupling member, whereby fluid flow from said male coupling member to said female coupling member is enabled upon removeable attachment of said male coupling member to said female coupling member, said valve assembly including means for sealing off the fluid flow path through said female coupling member when said valve assembly is in said front end position, whereby said fluid flow through said female coupling member is prevented when said male coupling member is removed therefrom;

(d) locking means proximate the front end of said female coupling member for releasably locking said male coupling member in said female coupling member, said locking means being activated upon insertion of said male coupling member a predetermined distance into said female coupling member;

(e) release means interconnected to said locking means for deactivating said locking means whereby said male coupling member is released by said locking means; and,

(f) spring biasing means adapted for biasing said valve assembly toward the front end of said female coupling member into said front end position, whereby when said male coupling member is released from said female coupling member, said valve assembly is biased into said front end position thereby preventing the flow of fluid through said female coupling member.

4,436,126

WOOD PLANING MACHINE

Peter Lawson, Campinas, Brazil, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 17, 1981, Ser. No. 303,318
Int. Cl.³ B27C *1/00*
U.S. Cl. 144—130 **4 Claims**

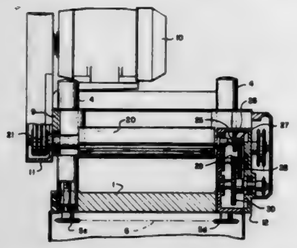
1. A thicknessing machine having a plurality of corners for wood comprising,

(a) an elongated bed over which the wood passes,

(b) an upper housing spaced from said elongated bed,

(c) cutter and drive rollers mounted in said upper housing for rotation about separate parallel axes,

(d) a plurality of hollow pillars each containing a threaded shaft for adjusting said upper housing, and locating the



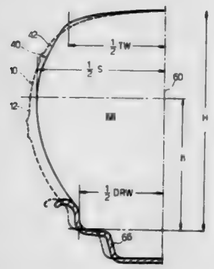
vertical position of said upper housing on said hollow pillars with respect to said elongated bed.

4,436,127

ADVANCED PROFILE RADIAL TIRE HAVING RELATIVELY HIGH INFLATION PRESSURE

Manuel G. Balbis, and Colin V. King, both of Rome, Italy, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 11, 1982, Ser. No. 357,028
Claims priority, application Italy, Apr. 29, 1981, 67578 A/81
Int. Cl.³ B60C *3/00, 15/06*
U.S. Cl. 152—209 R **6 Claims**



1. In an inflated tire and rim assembly wherein the tire includes a tread portion, a tread reinforcement in the tread portion, a pair of sidewalls respectively on opposite sides of said tread portion, a pair of bead portions respectively at the inner edges of said sidewalls, a lower sidewall reinforcement adjacent each of said bead portions and sidewall inner edges, a bead reinforcement in each of said bead portions, and a radial carcass reinforcement extending from one bead portion to the other, the improvement being in the profile of said tire characterized in:

a. the tire having a section height H and a section width S, the aspect ratio (H/S) being in the range from about 0.80 to about 0.90;

b. the maximum section width (S) being located at a height (h) of more than 55 percent of said section height (H), with the design width (DRW) of said rim being about 65 percent of said section width (S);

c. the width (TW) of said tread portion being greater than 70 percent of said section width (S);

d. the inflation pressure of said tire being a minimum of about 25 percent greater than the inflation pressure of a conventional profile tire of equivalent size, said assembly being operable at said greater inflation pressure at about the same load capacity and at about the same tire deflection as a conventional profile tire while having acceptable ride comfort characteristics; and

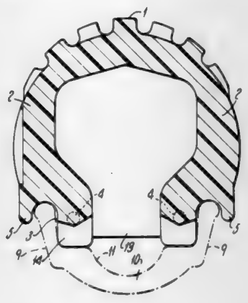
e. said lower sidewall reinforcement providing relative stiffness in its area of location.

4,436,128

TIRES FOR WHEELS

Simon P. Pointer, 31 Eaton St., Norwich, NR4 7LD, England

Filed Jul. 29, 1982, Ser. No. 402,971
Claims priority, application United Kingdom, Jul. 30, 1981, 8123406
Int. Cl.³ B60C *15/00, 11/00, 13/00*
U.S. Cl. 152—209 R **5 Claims**



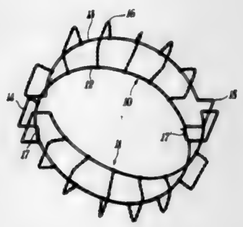
1. A tubeless tire for a wheel comprising a tread portion, and sidewall portions terminating in bead portions to rest in the well of a wheel rim to receive the tire, lips spaced outwardly from the bead portions and integral with the sidewall portions to overlie respective outer surfaces of the wheel rim flanges and form, with the bead portions, recesses to receive the peripheral edges of the rim flanges, a plurality of equispaced venting channels extending across each bead portion, the channels in one bead portion, and a plurality of equispaced partitions extending transversely between the side walls and radially inwardly from the inner surface of the tread portion to divide the tyre interior into a series of empty cells each of which extends between the side walls and are entirely devoid of solids within the sidewalls and tread portion.

4,436,129

COMPOSITE SEMIRIGID SNOW CHAIN, WITHOUT REAR HOOKING MEANS, FOR MOTOR VEHICLES

Aldo Razza, No. 63, Via Pio Foa, Rome, Italy

Filed Dec. 15, 1982, Ser. No. 449,958
Claims priority, application Italy, Dec. 18, 1981, 362217/81[U]
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—213 A **3 Claims**



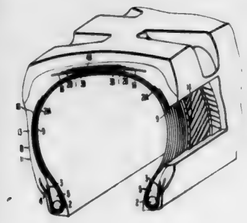
1. A snow chain for motor vehicles having two parts adapted to be applied to a wheel independently of each other, means for connecting said parts together on the wheel, each of said parts including a frame which is essentially rigid but has a limited flexibility formed of two semicircular bars lying in spaced radial planes and two U-shaped bridge elements connecting said bars at their ends for maintaining the bars in spaced radial planes, said parts having flexible friction elements which are connected to and arranged in spaced relation between said U-shaped bridge elements, an elastic connecting element connecting said two parts together at each end thereof and stop means for limiting the stretching of said elastic element, said parts being located around substantially the entire surface of the wheel.

4,436,130

PNEUMATIC RADIAL TIRE HAVING AN EXCELLENT SIDE-CUT RESISTANT PROPERTY

Yasuo Suzuki, Akigawa; Masaru Abe, Sayama, and Toshiro Tezuka, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 244,481, Mar. 16, 1981, abandoned, which is a continuation of Ser. No. 63,641, Aug. 1, 1979, abandoned, which is a continuation of Ser. No. 773,733, Mar. 2, 1977, abandoned. This application Sep. 9, 1982, Ser. No. 416,520
Claims priority, application Japan, Mar. 4, 1976, 51-22651
Int. Cl.³ B60C *9/04, 9/08, 9/14*
U.S. Cl. 152—353 R **15 Claims**



1. An off-road pneumatic radial tire having an excellent sidecut resistant property, comprising; a radial carcass body composed of at least one rubberized ply layer each containing metal cords embedded therein and a belt superimposed about said radial carcass body and having a high rigidity, said tire comprising 1 or 2 extensible and compressible rubberized side portion reinforcing layers independently arranged at each side portion of the tire and on one side of said carcass at that area of each side portion of the tire which is inclusive of at least the maximum cross section position of the carcass and each containing a reinforcing element embedded therein and composed of a bundle of helically formed filaments, each bundle having 3 to 30 filaments and each bundle formed by merely assembling together said helically formed filaments without twisting at random wherein each filament is formed of a steel wire material, said reinforcing elements each having the helically formed filament having a diameter ϕ in the range of 0.1 mm to 1.0 mm, and an average diameter D of an outer contour projected on a plane perpendicular to the axial direction of one pitch of the filament defined by Dmax + Dmin/2 in the range of 2ϕ to 20ϕ, an elongation at tensile breaking strength which is at least 1.5 times larger than that of said metal cord of the radial carcass body, wherein said reinforcing element of each side portion reinforcing layer located at the maximum width position of the carcass in a vertical center section through the rotational axis of the tire is inclined at 0° to 70° with respect to a radial plane which is projected on and in parallel with said vertical center section, wherein a ratio δ of a space formed between the two adjacent reinforcing elements to a pitch S in mm between the midlines of said reinforcing elements is given by:

$$\delta = \frac{S - (D + d - \phi)}{S} = 0.11 \text{ to } 0.78$$

where, d is an effective diameter in mm of said reinforcing element which is given by:

$$1.25 \times \sqrt{N} \times \phi$$

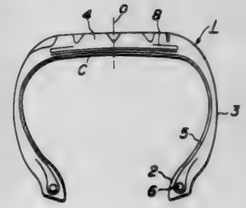
where, N is the number of filaments constituting said reinforcing element, a shock absorbing sheet interposed between said carcass ply and each of said side portion reinforcing layers and said off-road tire configured for mounting on a rim of at least 13.00×25.

4,436,131

PNEUMATIC RADIAL TIRES

Yutaka Yamaguchi, Tokorozawa; Nobuyuki Koizumi, Higashimurayama; Tamio Araki, Fuchu; Koichi Kojima, Higashimurayama, and Nobumasa Ikeda, Kodaira, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 422,912
Claims priority, application Japan, Jan. 29, 1982, 57-9916[U]
Int. Cl.³ B60C *9/00*
U.S. Cl. 152—361 FP **6 Claims**



1. In a pneumatic radial tire comprising a tread portion, a pair of sidewall portions extending from both sides of the tread portion, a pair of bead portions extending from the sidewall portions, a carcass of radial structure extending from one bead portion to the other and composed of at least one rubberized ply containing cords therein, and a belt superimposed about a crown portion of the carcass and consisting of a first belt body composed of a single ply containing metal twisted cords arranged at an inclination angle of 5°–25° with respect to the equatorial plane of the tire and embedded in a coating rubber, both end portions in widthwise direction of which being folded on the remaining central base portion thereof, and a second belt body composed of at least one rubberized ply containing inextensible cords inclined with respect to the equatorial plane and crossed with the cords in the base portion of the first belt body, the improvement in which the coating rubber for the first belt body has a dynamic modulus of 160–400 kg/cm² and a thickness of rubber interposed between the cords in the base portion and the cords in the folded portion is within a range of 1.3–4.5 times an average diameter of the cords and is not less than 2 times a thickness of the coating rubber located outside the cords in the base portion opposite to the folded portion.

4,436,132

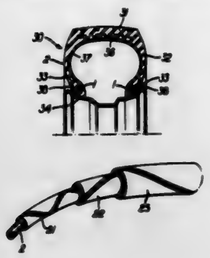
BEAD RINGS FOR TIRES

Jean-Pierre Cesar, Sayat, and Jean-Louis Charvet, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jun. 4, 1982, Ser. No. 384,915
Claims priority, application France, Jul. 20, 1981, 81 14228
Int. Cl.³ B60C *15/04*; B29H *17/32*
U.S. Cl. 152—362 R **10 Claims**

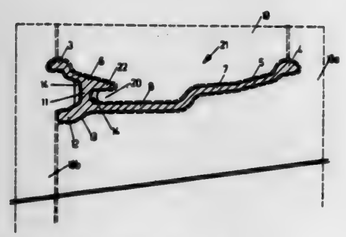
1. A bead ring for a tire bead formed of an annular core and an assembly of wires arranged on the core and surrounding it, characterized by the fact that the assembly of wires is constituted of at least one layer formed of at least one strand of continuous nonmetallic filaments which are practically parallel to each other and free of impregnation, which strand is wound around the core in the same direction to a layer thickness at

least equal to twice the average diameter of a filament and with a winding pitch p less than $2\sqrt{ac}$ (in which a is the radius of a circle equivalent to the perimeter of the cross section of the



core and c is the average circumference of the core) and a twist in the same direction as the winding and equal to one turn per pitch.

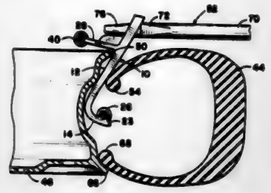
4,436,133
CAST VEHICLE WHEEL RIM
Jakob Rohr, Schaffhausen, Switzerland, assignor to George Fischer Ltd., Switzerland
Filed Nov. 6, 1981, Ser. No. 318,943
Claims priority, application Switzerland, Nov. 13, 1980, 8421/80
Int. Cl.³ B60B *21/02*
U.S. Cl. 152—381.3 11 Claims



1. A unitary, cast vehicle wheel rim, particularly for use with a tubeless tire, comprising:
a rim profile portion formed with a radially outwardly facing surface having a first outer tip, a first conical portion, a drop center, a shoulder, a second conical portion and a second outer tip in sequence axially, said first conical portion partially overlying and spaced radially relative to said drop center;
a support ring axially offset adjacent said first conical portion and formed as an axial extension of said drop center, said support ring having a conical surface for mounting the rim on a support device, such as a spider; and
a generally radially extending annular crosspiece interconnecting said support ring with the center of said first conical portion, and thereby, with the remainder of the rim.

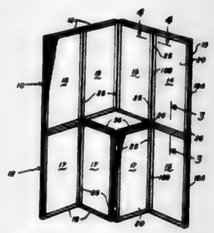
4,436,134
TIRE TOOL
Delphard Gaither, Rte. 1, Box 43, Cameron, Okla. 74932
Filed Nov. 24, 1981, Ser. No. 324,620
Int. Cl.³ B60C *25/04*
U.S. Cl. 157—1.3 12 Claims

1. A tool kit comprising a tool for removal of a tire from a wheel rim, lever means, and helper means, said tire tool comprising a main body portion having a bore provided in the proximity of one end thereof, an arcuate flange provided at the opposite end thereof, a plurality of first roller members journalled at the outer end of the arcuate flange, an arm member



extending outwardly from one face of the main body portion and in a direction opposite the arcuate flange, and a plurality of second rollers journalled at the outer end of the arm member.

4,436,135
PORTABLE DISPLAY SYSTEM
Willy Ytter, Stockholm, Sweden, assignor to Extraversion, Inc., New York, N.Y.
Filed Jan. 28, 1980, Ser. No. 116,102
Int. Cl.³ A47G *5/00*
U.S. Cl. 160—135 11 Claims



1. A portable display system comprising:
a plurality of panel assemblies each comprising a detachable front panel and a detachable rear panel, and border strip means including at least first and second peripheral support members for supporting and positioning the detachable panels in a substantially parallel and confronting relationship;
said first peripheral support means at least partially removably positioned along at least one outer edge of said detachable front and rear panels, said second peripheral support means positioned along the other edges of said detachable front and rear panels;
hinge means for interconnecting the plurality of panel assemblies with said panel assemblies being divided into first and second arrays;
said arrays each including a main panel assembly and at least one other connected panel assembly;
said hinge means comprising at least first and second pairs of side hinges and a pair of corner hinges,
means securing said first pair of side hinges to side disposed second peripheral support means of adjacent panel assemblies of the first array;
means securing said second pair of side hinges to side disposed second peripheral support means of adjacent panel assemblies of the second array;
means securing said pair of corner hinges between main panel assemblies of first and second arrays with one of said corner hinges disposed along said side disposed second peripheral support means of first and second array main panel assemblies, and the other of said corner hinges disposed along opposite side disposed second peripheral support means of first and second array main panel assemblies.

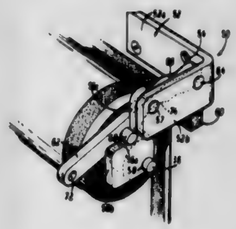
4,436,136
INSULATED SLAT
Robert C. Downey, Jr., Columbus, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.
Filed Dec. 23, 1981, Ser. No. 333,805
Int. Cl.³ A47H *1/13*
U.S. Cl. 160—232 17 Claims



1. A door including at least a first slat assembly and a second slat assembly, each slat assembly comprising:
(a) a slat including
(i) a generally planar side portion having an interior surface on one side and an exterior surface on the other side,
(ii) an upper end curved portion,
(iii) a lower end curved portion;
(b) an insulation cover piece including
(i) a generally planar side portion having an interior surface facing towards said slat and an exterior surface facing away from said slat,
(ii) an upper end curved portion disposed at least partially around said upper end curved portion of said slat, said upper end curved portion of said cover piece held to said upper end curved portion of said slat by its curvature around said upper end curved portion of said slat,
(iii) a generally planar upper end transverse portion extending from said side portion of said insulation cover to said side portion of said slat, and
(iv) a generally planar lower end transverse portion extending from said side portion of said insulation cover to said side portion of said slat; and
(c) insulation disposed in a cavity between said side portion of said slat and said side portion of said insulating cover, said cavity bounded by said upper transverse portion and said lower transverse portion; and
wherein said lower end curved portion of said slat of said first slat assembly is disposed at least partially within said upper curved portion of said slat of said second slat assembly for relative rotation between said first and second slat assemblies.

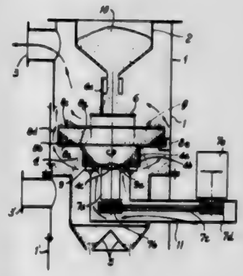
4,436,137
WINDOW INSULATION SYSTEM
Hugh G. Charles, 41 Coed-y-Glyn, Sontley Rd., Wrexham, Clwyd, England
Filed Apr. 2, 1982, Ser. No. 364,810
Claims priority, application United Kingdom, Apr. 4, 1981, 8110618
Int. Cl.³ E06B *9/17*
U.S. Cl. 160—242 5 Claims

1. A window insulation system for thermally insulating a rectangular window assembly comprising:
(a) a roller blind mechanism carrying a transparent plastics blind;
(b) means for mounting said roller blind mechanism to a window frame above said window assembly;
(c) VELCRO strip means on the longitudinal side edges and free transverse edge of said blind;
(d) mating VELCRO strip means on the frame around the vertical side edges and the horizontal lower edges thereof; and
(e) means enabling the roller blind mechanism to be displaced on said mounting means between a first position, in which the roller blind mechanism is spaced from the frame to enable the blind to be retracted and extended, and a second position wherein the roller blind periphery is in sealing engagement with said frame above said window assembly, the latter means comprising:



(1) respective camming means pivotally interconnected with said mounting means at the opposite ends of the roller blind mechanism,
(2) said camming means each including a pair of camming surfaces which are approximately mutually perpendicular;
(3) means journaling said blind mechanism between the two camming means;
(4) lever means pivotally interconnected with said mounting means; and
(5) cam follower means carried by said lever means and engaging said camming surfaces said cam followers comprise a projection on each of said lever means.

4,436,138
METHOD OF AND APPARATUS FOR RECLAIMING MOLDING SAND
Toshio Kondo, Yokohama, Japan, assignor to Nippon Chuzo Kabushiki Kaisha, Kanagawa, Japan
Continuation-in-part of Ser. No. 171,404, Jul. 23, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 351,327
Int. Cl.³ B02C *19/12*
U.S. Cl. 164—5 4 Claims



1. A molding sand reclamation apparatus comprising:
(a) a cylindrical housing having an opening for dust exhaustion in an upper part thereof;
(b) a feed opening for supplying unreclaimed sand, located in the upper part of said cylindrical housing;
(c) a rotary drum positioned concentrically below a distributor for receiving distributed unreclaimed sand and having a cylindrical wall, a flat base, and no top such that said

distributed unreclaimed sand is centrifugally scattered over the top of said cylindrical wall when said rotary drum rotates;

(d) a distributor rigidly fixed to said feed opening so dimensioned as to enable distributing said unreclaimed sand fed by said feed opening within the perimeter of the rotary drum, said distributed unreclaimed sand falling in a cylindrical curtain from the outer periphery of said distributor;

(e) an annular C-shaped rack means, having a lower flange, a cylindrical wall, and an upper flange, concentrically mounted above said rotary drum for receiving said scattered unreclaimed sand and retaining said sand in place, said lower flange of said rack means being separated by a first predetermined distance from the top of said cylindrical wall of said rotary drum, and said cylindrical wall of said rack means being separated by a second predetermined distance from said cylindrical housing;

(f) a fan attached integrally to the lower surface of said rotary drum, such that the axis of rotation of said fan and the axis of rotation of said rotary drum are in alignment;

(g) a suction pipe having one end thereof connected to a central suction port of said fan and the other end thereof which communicates with the outside of said cylindrical housing; and

(h) a discharge opening for discharging reclaimed sand, located in the lower part of said cylindrical housing,

wherein said first predetermined distance is adjustable by adjusting said lower flange of said rack means so that the amount of distributed unreclaimed sand escaping through said first predetermined distance per unit time is less than the amount of unreclaimed sand being supplied through said feed opening per unit time, thereby ensuring that scattered unreclaimed sand overflows the outer periphery of said rack means.

3. A process for reclaiming molding sand comprising the steps of:

(a) feeding unreclaimed sand through a feed opening onto a cylindrical distributor;

(b) allowing the fed sand to overflow the periphery of said distributor and to fall in a cylindrical curtain of a smaller diameter into a rotating rotary drum having a larger diameter;

(c) scattering sand centrifugally by rotation of said rotary drum so that the scattered sand rubs against stationary sand pressed by centrifugal force against the cylindrical wall of said rotary drum, thereby producing shearing forces between the scattered and stationary layers of sand;

(d) allowing the scattered sand to overflow the periphery of said rotary drum and to escape through a space defined by the top of the cylindrical wall of said rotary drum and the lower flange of an annular C-shaped rack means, such that the rate of escape is less than the rate of supply through said feed opening;

(e) holding some of the scattered sand stationary by means of said rack means and allowing the scattered sand which did not escape through said space to scatter further as a result of the centrifugal force produced by said rotating rotary drum, thereby producing additional shearing forces between the further scattered and the stationary layers of sand; and

(f) overflowing the further scattered sand over the periphery of said rack means.

4,436,139

METHOD AND APPARATUS FOR MANUFACTURE OF BRAKE DRUMS

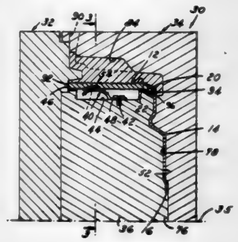
Don S. Strader, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Jul. 20, 1981, Ser. No. 284,932
Int. Cl.³ B22D *19/08*
U.S. Cl. 164—112 **6 Claims**

1. Molding apparatus for manufacturing brake drums of the type which include a preformed brake liner in the form of an annular hoop and a shell cast around said liner, said apparatus comprising a pair of die sections which collectively define a mold cavity having a central axis in a closed position of said die sections, and a centering mandrel carried by one of said die sections for receiving a brake liner so as to define one wall of said cavity, said centering mandrel comprising spring means disposed in a circumferential array around a radial portion of said mandrel for engaging the braking surface of a liner mounted on said mandrel so as to center said liner with respect to said axis.

4. A method of manufacturing brake drums of the type which include a preformed brake liner and a shell cast around said liner, said method comprising the steps of:

(a) providing a pair of die sections, at least one of which is movable with respect to the other along an axis common to said die sections between an open position and a closed



position in which said die sections cooperate to form a mold cavity for said shell, one of said die sections including a mandrel with radially oriented self-centering means carried thereon and adapted for internal engagement with a brake liner,

(b) with said die sections open, locating a said preformed brake liner on said mandrel over said self-centering means such that said means cooperates with said liner to fixture said liner in a substantially cylindrical configuration coaxially with said axis,

(c) closing said die sections such that said brake liner is fixtured within said cavity to form one wall of said cavity, and then

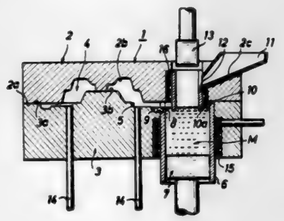
(d) casting said shell within said cavity around said brake liner.

4,436,140

METHOD OF CHARGING MOLTEN METAL INTO A VERTICAL DIE CASTING MACHINE

Masuo Ebisawa, Kawagoe, and Tetsuya Suzuki, Oimachi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 113,762, Jan. 21, 1980, abandoned. This application Jul. 12, 1982, Ser. No. 397,161
Claims priority, application Japan, Jan. 26, 1979, 54-7888
Int. Cl.³ B22D *17/12*
U.S. Cl. 164—120 **5 Claims**



1. A method of charging molten metal into a vertical die casting machine comprising: a die having an upper passageway and a lower passageway defined therein, said upper passageway including an upper sleeve disposed therein and an upper plunger disposed in said upper passageway for compressing said molten metal, said lower passageway including a lower sleeve and a lower plunger disposed in said lower passageway for receiving said molten metal, both of said plungers cooperating to charge molten metal stored therebetween into a mold cavity defined in said die, and the gap between said upper and lower sleeves defining an inlet passage to said mold cavity, the method comprising the steps of:

lowering said upper plunger to a predetermined position;

raising said lower plunger to urge said molten metal upwardly and into said mold cavity;

actuating said upper plunger to start compressing said molten metal sandwiched between said upper and lower plungers substantially before movement of said lower plunger has been completed; and

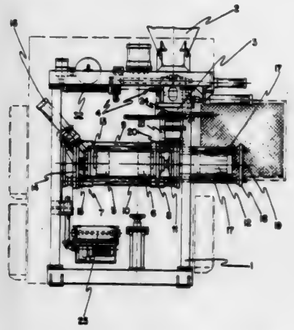
completing compression of said molten metal by said upper plunger substantially after movement of said lower plunger has been completed, and prior to solidification of said molten metal between said plungers.

4,436,141

MOLDING SAND BLOWERS

Agustin Arana Erana, Zorrostea, 4 Poligono Industrial Ali-Gobeo, Victoria, Spain

Filed Feb. 18, 1981, Ser. No. 235,732
Claims priority, application Spain, Feb. 20, 1980, 488791; Apr. 9, 1980, 249912[U]
Int. Cl.³ B22C *15/22*
U.S. Cl. 164—201 **2 Claims**



1. A blowing sand molding machine comprising:

a main frame having mounted on an upper portion thereof a hopper for storing sand to be molded;

support means mounted on said main frame and consisting essentially of first and second parallel guide bars extending along a front portion and a rear portion, respectively, of said main frame, said first guide bar being positioned at a level substantially lower than said second guide bar;

master plates mounted on said guide bars for movement along said guide bars between a closed position whereat said master plates define a mold cavity and an open position;

a blower cartridge mounted on said main frame for movement between a first position beneath said hopper to receive therefrom a charge of sand to a second position above said mold cavity when said master plates are in said closed position;

means for directing automatically pressurized gas into said blower cartridge when said blower cartridge is in said second position thereof, and thereby for blowing the charge of sand in said blower cartridge into said mold cavity, said directing and blowing means comprising a nozzle extending horizontally from said blower cartridge and communicating with the interior thereof, a flexible duct adapted to be connected to a source of pressurized gas, and a block member permanently connected to said flexible duct and having defined therein a horizontally extending orifice, said block member being mounted on said main frame at a position such that when said blower cartridge moves to said second position thereof said nozzle of said blower cartridge simultaneously automatically is inserted into said orifice in said block member; and

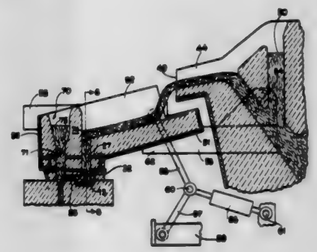
means for mounting said block member at said position thereof for vertical displacement with said blower cartridge, said mounting means comprising a support fixed to said main frame and including vertical guides, said block member having rollers mounted for movement in said vertical guides, spring means mounted on said support and acting on said block member for urging said block member upwardly along said guides, and abutment means mounted on said support at a position to be abutted by said block member under the spring force of said spring means, the vertical position of said abutment means being adjustable.

4,436,142

METHOD AND APPARATUS FOR MAKING DUCTILE IRON CASTINGS

David S. Mather, Montreal, Canada, assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Nov. 9, 1981, Ser. No. 319,217
Int. Cl.³ B22D *27/20*
U.S. Cl. 164—337 **7 Claims**



1. The combination of an open mold containing a nodulizing treatment chamber and a casting cavity inlet adjacent the treatment chamber and spaced therefrom by one portion of an upper mold surface, and a sealing member mounted for movement toward and away from the mold for respectively engaging and disengaging the upper surface of the mold;

said sealing member having a lower surface opposing the upper mold surface which extends to cover the underlying treatment chamber and the casting cavity inlet, said sealing member having a portion which is raised from the mold upper surface portion opposite the treatment chamber to form a first conduit for the flow of nodulized molten metal therefrom to said casting cavity inlet when the member engages the mold;

said sealing member having a second conduit extending upwardly from the raised portion of said sealing member for conveying molten metal to said treatment chamber; and

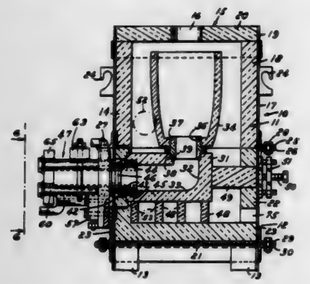
reservoir means mounted on the sealing member communicating with said first conduit for containing the nodulized metal received from said first conduit.

4,436,143

HORIZONTAL CONTINUOUS CASTING APPARATUS

Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615

Continuation of Ser. No. 255,859, Apr. 20, 1981, abandoned. This application Jan. 7, 1983, Ser. No. 500,227
Int. Cl.³ B22D 11/00
U.S. Cl. 164—440 10 Claims



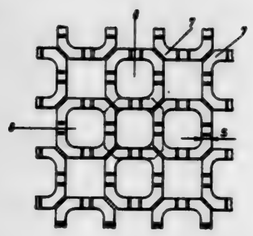
1. A horizontal continuous casting apparatus comprising
a furnace having a bottom wall, side walls and a top wall,
a holding block supported within said furnace and having a vertical opening and a horizontal opening communicating with the vertical opening,
the vertical opening extending upwardly,
a crucible mounted within said furnace and having a downwardly extending opening,
means for providing communication between the opening of the crucible and the vertical opening of said block,
a side wall of said furnace having a horizontal opening,
a die associated with said horizontal opening in the side wall and extending externally of said furnace,
means for providing communication between the horizontal opening of the holding block and said die,
and cooling means associated with said die such that molten metal passes downwardly from said crucible through the vertical opening and horizontal opening of said block and, in turn, through said die wherein the cooling means function to progreasively solidify the metal as it is removed from the die,
a mounting bracket on said furnace defining downwardly and inwardly inclined surfaces engaged by said cooling means to locate and align said die with said opening in said holding block.

4,436,144

PRISMATIC BRICK OF REFRACTORY MATERIAL

Josef Horak, Vienna, Austria, assignor to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

Continuation of Ser. No. 119,796, Feb. 8, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,225
Claims priority, application Austria, Feb. 20, 1979, 1302/79
Int. Cl.³ F28D 17/00
U.S. Cl. 165—9.1 2 Claims



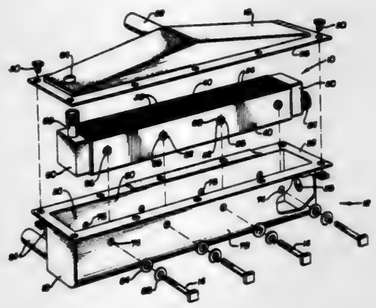
1. A checkerwork for chambers of a glass melting furnace comprised of centrally positioned prismatic bricks of refractory material surrounded by edge and corner bricks, all of the centrally positioned prismatic bricks having a bottom surface, a top surface, a longitudinal axis extending between the surfaces, and a through passage of tetragonal cross-section coaxial with the longitudinal axis, the passage having a hydraulic diameter of 120 to 200 mm, the hydraulic diameter being defined by the relationship: four times the passage cross-section divided by the periphery of the passage cross-section, and the ratio of the hydraulic diameter to the wall thickness of the brick, measured in the direction of the main axes extending parallel to the bottom and/or top surface being between 3 and 5, and the periphery of each brick defining sharp corners and the periphery of the through passage of each brick defining four rounded corners, the bricks being stacked in layers to form the checkerwork and the bricks in each layer being so staggered from the bricks of an adjacent one of the layers that each brick of a respective superposed layer stacked on a respective underlying layer rests on the top surfaces of four bricks of the underlying layer, the four bricks defining therebetween a through passage in alignment with the through passage of the brick of the superposed layer and the rounded corners of the latter through passage projecting inwardly in relation to the former through passage.

4,436,145

CHARGE AIR COOLER MOUNTING ARRANGEMENT

Joseph N. Manfredo, Palos Verdes Estates, and Selwyn R. Hirsch, Los Angeles, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 6, 1981, Ser. No. 318,937
Int. Cl.³ F28F 9/00; F28D 9/00
U.S. Cl. 165—67 24 Claims



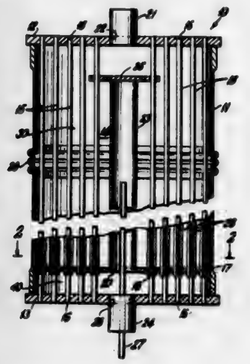
1. A charge air cooler mounting arrangement for mounting a charge air cooler within an engine intake manifold, comprising:
a plate-fin charge air cooler having a heat exchanger core with a stacked plurality of generally parallel plate-fin heat transfer elements defining a first flow path and a second flow path generally parallel with said first flow path for respective passage of charge air and coolant in heat transfer relation with each other;
at least one relatively rigid mounting sleeve carried by said charge air cooler to extend perpendicularly of said plate-fin elements and having a length at least as great as the width of said charge air cooler;
an engine intake manifold having a chamber formed therein for reception of said charge air cooler with said mounting sleeve extending transversely between a pair of manifold side walls bounding opposite sides of the chamber;
means extending through at least one of said manifold side walls and into said mounting sleeve for securing said mounting sleeve with respect to said one side wall and thereby secure said charge air cooler within said manifold; and
means coupled between said plate-fin elements and said mounting sleeve for preventing leakage between said first and second flow paths in the vicinity of said mounting sleeve.

4,436,146

SHELL AND TUBE HEAT EXCHANGER

James Smolarek, Blasdell, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 20, 1981, Ser. No. 265,681
Int. Cl.³ F28D 7/02
U.S. Cl. 165—111 13 Claims



1. An open-ended, shell and tube heat exchanger for use in a vertical position comprising:
(a) a longitudinal shell,
(b) a pair of spaced tube sheets attached near their periphery to the upper and lower ends of the shell so as to define an enclosed space,
(c) baffle means positioned proximate to the lower tube sheet extending across and attached to the longitudinal shell so as to divide the enclosed space into a larger condensation chamber and a smaller vapor-liquid separation chamber, said baffle means comprising a plurality of first openings and a plurality of second openings larger than said first openings,
(d) a plurality of heat transfer tubes extending through the enclosed space having their opposite ends attached to each tube sheet, each tube extending through a first or second opening and adapted to have a first heat exchange medium flow therethrough,
(e) a first conduit for introducing vapor communicating with said condensation chamber,
(f) means for distributing the vapor substantially throughout the condensation chamber, such that vapor and condensing liquid flow downwardly along substantially the entire length of said heat transfer tubes,
(g) a second conduit having an opening communicating with the vapor-liquid separation chamber for removing condensed liquid, and
(h) a third conduit having an opening communicating with the vapor-liquid separation chamber, for removing vapor, at a point above the opening of the second conduit.

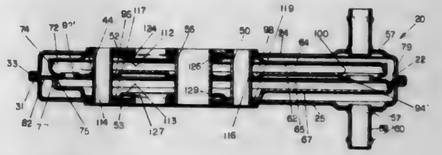
4,436,147

DUAL FLUID HEAT EXCHANGER

Sharon J. Hudson, Jr., Lambertville, Mich., assignor to Sharon Manufacturing Company, Lambertville, Mich.

Filed Nov. 30, 1978, Ser. No. 965,149
Int. Cl.³ F28D 9/00; F28F 3/12
U.S. Cl. 165—165 10 Claims

1. A heat exchanger made of sheet metal components comprising: an outer shell made of two shell members bonded together, a partition member in said outer shell defining two compartments for a circulating cooling fluid, an aperture in said partition member providing communication between said compartments, a fluid inlet to one of said compartments, a fluid outlet from the other of said compartments, two pairs of plate members defining two chambers of an inner assembly for a circulating fluid to be cooled, one of said plate members of one of said pairs being formed by said partition member said plate members being disposed such that one plate member is exposed to the circulating coolant in one compartment and the other plate members are exposed to the circulating coolant in the other compartment, a fluid inlet to one of said chambers, a fluid outlet from the other of said chambers and aperture means providing communication between said chambers.

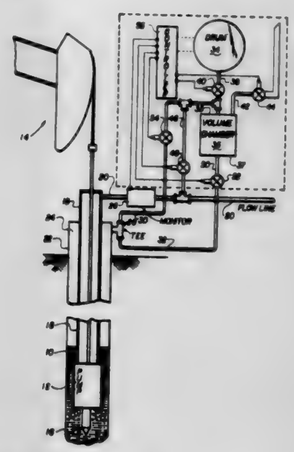


4,436,148

CHEMICAL TREATMENT FOR OIL WELLS

Richard Maxwell, 2021 E. 56th, Odessa, Tex. 79762

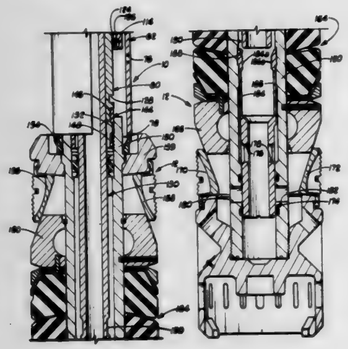
Filed Apr. 27, 1981, Ser. No. 257,780
Int. Cl.³ E21B 37/06, 37/08, 43/12, 44/00
U.S. Cl. 166—53 3 Claims



1. In a liquid system having:
a. a liquid reservoir,
b. a pump with a pump intake in the reservoir,
c. a flow line from the pump having pressurized liquid from the reservoir,
d. a treatment drum, and
e. treatment liquid in the drum; wherein the improved structure for adding treatment liquid to the reservoir comprises:
f. a closed volume chamber having a top and bottom,
g. a flush line extending from the bottom of the volume chamber to the reservoir,
h. a flush valve in the flush line,
j. a treatment feed line connecting the treatment drum to the volume chamber,
k. a feed valve in the feed line,
l. a vent line extending from the top of volume chamber to atmosphere,
m. a vent valve in the vent line,

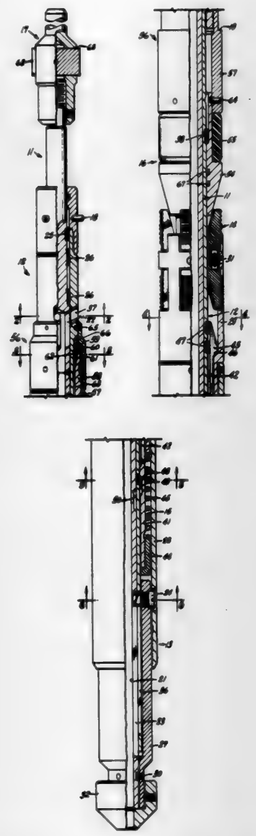
n. a liquid pressure line from the flow line to the volume chamber, and
o. a pressure valve in the pressure line,
p. a source of gas at a gas pressure which is greater than the pressure of the reservoir liquid at the level of the bottom of the volume chamber,
q. a gas line connecting the source of gas to the volume chamber, and
r. a gas valve in the gas line,
s. a controller providing means for opening and closing said valves so that
(i) opening the feed valve and the vent valve and closing all other valves will fill the volume chamber with treatment liquid, and then
(ii) opening the flush valve and pressure valve and closing all other valves will flush the treatment liquid from the volume chamber into the reservoir, and
(iii) after flushing the treatment liquid into the reservoir, then opening the gas valve and flush valve and closing all other valves will purge the volume chamber of liquid.

4,436,149
HYDRAULIC SETTING TOOL
Arnold G. Edwards, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Jun. 18, 1982, Ser. No. 389,700
Int. Cl.³ E21B *23/06*
U.S. Cl. 166—120 **17 Claims**



1. Apparatus for setting in a bore a well tool of the type having radially expandable anchor means and a mandrel-actuated slidable valve for permitting flow through the tool, said apparatus comprising:
inner and outer sleeves telescopically interengaged and adapted to be suspended from a tubing string for lowering into the bore;
means for attaching a shearable connector to the lower end of said inner sleeve for suspending such a tool therefrom;
a vertically shiftable mandrel received within the inner sleeve for engaging the well tool valve;
means for maintaining said mandrel in a predetermined upper position with respect to said inner sleeve;
means for telescopically moving said inner sleeve upwardly relative to said outer sleeve, said outer sleeve engaging said anchor means to effect setting of the tool responsive to such movement; and
means for maintaining said mandrel in a predetermined lower position with respect to said inner sleeve subsequent to such setting of the tool.

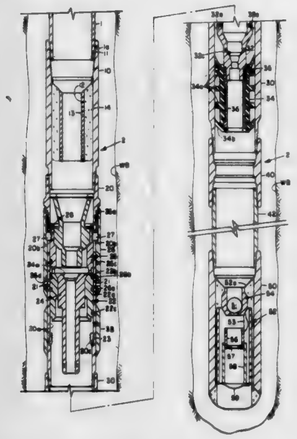
4,436,150
BRIDGE PLUG
James M. Barker, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Sep. 28, 1981, Ser. No. 306,150
Int. Cl.³ E21B *33/129*
U.S. Cl. 166—31 **29 Claims**



1. A bridge plug for a well bore comprising
an elongated linear mandrel having an internal bypass passage opening to the lower end of said mandrel, with the upper end of said passage terminating in lateral ports opening to the exterior of said mandrel;
an elongated tubular outer mandrel mounted for limited axial movement on said inner mandrel;
external slips carried on said outer mandrel for limited axial movement relative thereto, and disposed to be expanded into setting engagement with a well bore;
a tubular setting assembly mounted for axial movement on said outer mandrel above said slips; said setting assembly including a lower top wedge to engage and expand said slips, an upper compression member, and an annular elastic seal element disposed to be compressed between said top wedge and said compression member and thereby expanded radially into sealing engagement with the well bore;
said outer mandrel and said compression member having means for coupling to a setting apparatus, for concurrent upward pull of said outer mandrel and downward push of said setting assembly to effect the setting of said bridge plug in a well bore;

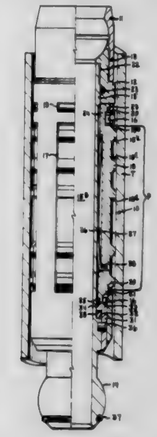
coupling means for coupling said inner mandrel to said tubular setting assembly for downward movement therewith relative to said outer mandrel during the setting of said bridge plug;
said outer mandrel having lateral ports for selective communication with said inner mandrel ports to open and close said bypass passage;
yieldable coupling means coupling axially said inner and outer mandrels during the running of said plug into the well bore, to maintain said ports in communication to open said bypass passage; said yieldable coupling means yielding and said outer mandrel being moved upward relative to said inner mandrel, during the setting of said bridge plug, to move said ports out of communication to close said bypass passage.

4,436,151
APPARATUS FOR WELL CEMENTING THROUGH A TUBULAR MEMBER
Rudy B. Callihan, and Lyndon R. Stone, both of San Antonio, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.
Filed Jun. 7, 1982, Ser. No. 385,613
Int. Cl.³ E21B *33/16, 33/06*
U.S. Cl. 166—154 **5 Claims**



1. A well conduit cementing apparatus for effecting plural stage cementing of a subterranean well conduit by cement supplied through a small diameter tubular member, comprising, in combination a tubular assembly attachable at its upper end to the well conduit; means in the upper end of the bore of said tubular assembly for sealingly engaging the bottom portion of the small diameter tubular member; means in the lower portions of the bore of said tubular assembly defining an axial cement conduit communicating with the well, whereby a first stage of cement may be supplied through the tubular member to exteriorly surround the lower portions of said tubular assembly; a plurality of peripherally spaced cement ports in said tubular assembly located above the first stage cement level; a first annular valve mounted relative to said tubular assembly in sealing relation to said cement ports; a first plug means movable through the tubular member to seal the bore of said first annular valve, whereby pressured fluid applied through the tubular member will urge said first annular valve to expose said radial cement ports, thereby permitting a second stage of cement to be supplied through the tubular member and said cement ports to the exterior of said tubular assembly; a second annular valve mounted relative to said tubular assembly above said first annular valve; an annular piston assembly mounted in said tubular assembly and operatively connected to said second annular valve; and a second plug means droppable through the tubular member to seal the bore of said annular piston assembly above said radial cement ports, thereby permitting pressured fluid supplied through the tubular member to urge said annular piston assembly and said second annular valve downwardly to close said cement ports.

4,436,152
SHIFTING TOOL
Ernest P. Fisher, Jr., and William R. Welch, both of Carrollton, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed Sep. 24, 1982, Ser. No. 422,739
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—214 **5 Claims**



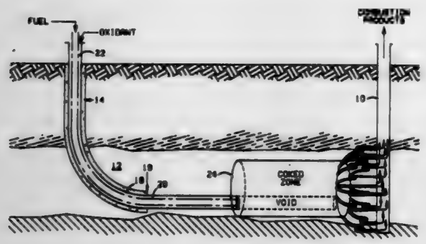
1. An improved shifting tool connectable in a well tool string for operating a sliding sleeve device, comprising:
a. an inner tubular mandrel;
b. an outer key mandrel secured in concentric spaced relation around said tubular mandrel, said key mandrel having a plurality of windows and an equal number of slots, said slots being spaced vertically above and aligned with each window, each slot and each window having a camming surface along the lower surface thereof;
c. a selectively profiled key disposed for radial movement in each of said windows, each said key having an upper extended portion and a lower extended portion, each upper extended key portion having a camming surface engageable with said slot camming surface and each lower key extended portion having a camming surface engageable with said window camming surface;
d. means between said keys and said inner mandrel biasing said keys outwardly; and
e. releasable holding means between said inner mandrel and said lower key extended portion retaining said keys in a radially movable position and said camming surfaces disengaged, said holding means being releasable when an upward force in excess of a predetermined value is applied to said mandrels when said shifting tool is engaged with a sliding sleeve device whereby said camming surfaces are engaged at both ends of each key camming said keys inwardly to disengage from said sliding sleeve device.

4,436,153

IN-SITU COMBUSTION METHOD FOR CONTROLLED THERMAL LINKING OF WELLS

Francis M. Carlson, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 31, 1981, Ser. No. 336,200
Int. Cl.³ E21B *43/243*
U.S. Cl. 166—260 5 Claims



1. A method of underground conversion of hydrocarbon-bearing material disposed in a subterranean formation, the method being carried out between an injection well and a production well wherein a portion of the injection well is deviated toward the production well, comprising:

initiating a combustion zone in the hydrocarbon-bearing material adjacent the production well;

injecting an oxygen-containing gas and a combustible material through separate conveyance components of the injection well for mixing adjacent the end of the injection well;

advancing the combustion zone through the formation from the production well to the injection well along the deviated portion of the injection well; and

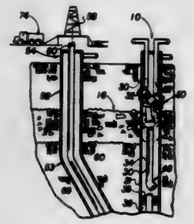
removing produced gases from the formation through the production well.

4,436,154

METHOD FOR CONTROLLING SUBSURFACE BLOWOUT

Roy R. Vann, Houston, and Flint R. George, Katy, both of Tex., assignors to Geo Vann, Inc., Houston, Tex.

Filed Feb. 23, 1981, Ser. No. 236,867
Int. Cl.³ E21B *43/12*
U.S. Cl. 166—281 10 Claims



1. In a formation having a cased wellbore extending thereto, wherein the wellbore is damaged and the formation is inaccessible therethrough, the method of reworking the formation comprising the steps of:

(1) forming a borehole which is arranged in spaced relationship to the wellbore; and, drilling the lower end of the borehole non-intersecting but within shooting range of the wellbore;

(2) orienting a plurality of shaped charges of a perforating gun to fire in the same direction;

(3) running the gun of step (2) downhole into the borehole at a location adjacent to the perforated casing of the wellbore; orienting the gun respective to the wellbore to position the shaped charges to fire radially away from the gun and form tunnels towards the perforated casing of the wellbore;

(4) firing the gun;

(5) pumping killing fluid down through the borehole, through the tunnels, and into the lower end of the wellbore, thereby isolating the formation from the upper wellbore; the killing fluid being pumped down the cased borehole simultaneously with the firing of the gun, with the killing fluid being maintained at a pressure which forces a flow path to be formed from the borehole into the perforated zone of the wellbore.

4,436,155

WELL CLEANUP AND COMPLETION APPARATUS

Emmet F. Brieger, Alburquerque, N. Mex., assignor to GEO Vann, Inc., Houston, Tex.

Filed Jun. 1, 1982, Ser. No. 383,746
Int. Cl.³ E21B *43/11*
U.S. Cl. 166—297 19 Claims



12. Well completion apparatus comprising:

detonator means;

tubular means connected around said detonator means, and extending therefrom;

first check valve means included in the tubular means adjacent said detonator means to allow flow from inside said tubular means to the exterior thereof;

second check valve means included in said tubular means farther from said detonator means than said first check valve means and allowing flow from outside to inside said tubular means.

4,436,156

METHOD OF TREATING WELL FORMATIONS EMPLOYING FOAMED TREATMENT FLUIDS

Sherman E. Fredrickson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

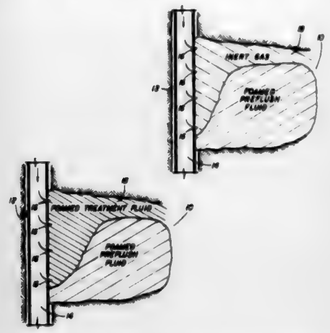
Filed Jan. 21, 1982, Ser. No. 390,156
Int. Cl.³ E21B *43/267, 43/27*
U.S. Cl. 166—307 20 Claims

1. A method for placing a foamed treating fluid into an upper portion of a fracture in an underground well formation comprising:

introducing a foamed preflush fluid having a known specific gravity into said fracture;

introducing an inert gas into said fracture containing said foamed preflush fluid in an amount sufficient to create a flow channel above said foamed preflush fluid in said fracture; and,

introducing a foamed treating fluid into said fracture whereby said foamed treating fluid is caused to override said foamed preflush fluid and flow through said flow channel formed by said inert gas into an upper portion of said fracture.

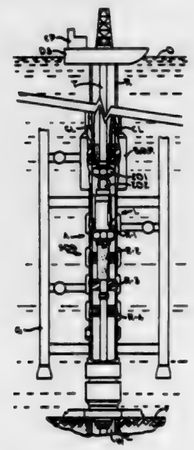


4,436,157

LATCH MECHANISM FOR SUBSEA TEST TREE

Robert T. Brooks, Kingwood, Tex., assignor to Baker International Corporation, Orange, Calif.

Continuation-in-part of Ser. No. 64,332, Aug. 6, 1979, Pat. No. 4,320,804. This application Aug. 7, 1981, Ser. No. 291,009
Int. Cl.³ E21B *43/12, 34/10*
U.S. Cl. 166—344 10 Claims



1. In a test assembly with a blowout preventer stack above a subterranean well and carryable between upper and lower portions of a tubular conduit extendible to at least one production zone within said well, said test assembly having valve means in the lower conduit portion manipulatable between open and closed positions by a reciprocable actuator sleeve to control the flow of fluid within said conduit, the improvement comprising: means defining an annular pressure chamber disposed around said actuator sleeve; an annular piston mounted in said annular fluid pressure chamber for shifting the actuator sleeve between its valve open and valve closed positions; latching means connecting said annular piston to said valve actuator; a latch retaining sleeve axially shiftably mounted in the upper tubular conduit portion between a latch retaining position securing said annular piston to said actuator sleeve, and a latch releasing position relative to said latching means releasing said annular piston from said actuator sleeve; means for maintaining said latch retaining sleeve in said latch retaining position whenever said valve means is positioned in other than its closed position; a second annular piston in said annular pressure chamber operatively connected to said latch sleeve, and a spring interposed between said annular piston and said second annular piston.

4,436,158

RELEASABLE DRILL STRING DEVICE AND METHOD

Kenneth J. Carstensen, 4840 N. 44th St., No. 70, Phoenix, Ariz. 85018

Filed Dec. 15, 1981, Ser. No. 330,958
Int. Cl.³ E21B *17/10*
U.S. Cl. 166—377 38 Claims



29. The method of releasably attaching a drill tool to a drill collar or other tubular member of a drill string comprising the steps of:

defining a cavity between the outer surface of the tubular member and the inner surface of an encompassing drill tool;

preheating the drill tool;

pouring a low melting point fill material into the cavity to substantially fill the cavity;

solidifying the fill material in place to mechanically unite the drill tool and tubular member by transferring heat primarily to the tubular member, such that the drill tool heat shrinks onto the fill material and preloads it under compression onto the tubular member; and

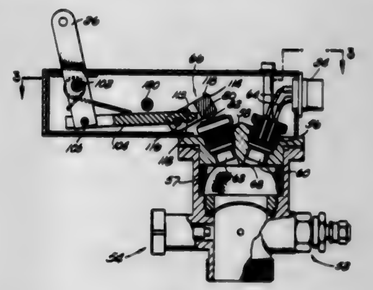
remelting the fill material to remove the drill tool.

4,436,189

MANUAL/ELECTRIC ACTIVATED SQUIB ACTUATED DISCHARGE VALVE FOR FIRE EXTINGUISHERS

Blaise Revay, San Marino, Calif., assignor to Kidde, Inc., Clifton, N.J.

Filed May 1, 1981, Ser. No. 260,132
Int. Cl.³ A62C *35/02*
U.S. Cl. 169—28 4 Claims



1. An improved dual squib discharge valve for a container housing pressurized fire extinguishing fluid and having a frangible diaphragm for releasing said fluid upon rupture thereof and further including first and second squibs, said first squib being actuated by an electric current source, means for con-

necting said electrical current source to said first squib upon command, impact means, means for mechanically actuating said impact means to fire said second squib upon command, wherein the improvement comprises:

plate means having first and second screw threaded apertures therein adapted to receive said first and second squibs respectively; and

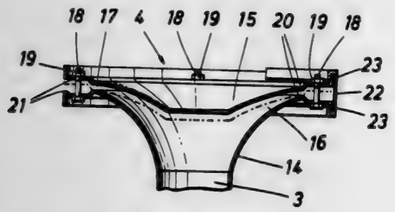
said plate means includes a generally V-shaped protrusion extending between and beyond the active ends of said first and second squibs to block the line of sight therebetween when said squibs are fully seated in their respective threaded apertures wherein said protrusion isolates shock waves generated by firing of one of said squibs from the other of said squibs to substantially prevent unwanted detonation of or damage to the unfired squib.

4,436,160

SPRAYER

Franz Ragaller, Schmiedstrasse 6, A-4070 Eferding Österreich, Austria

Filed Jan. 21, 1982, Ser. No. 341,293
Int. Cl.³ A62C 31/02; B05B 1/32
U.S. Cl. 169—74 **16 Claims**



1. In a sprayer comprising

a tank adapted to hold a sprayable substance,

a sprayhead disposed above said tank,

a rising pipe having an inlet opening in the lower portion of the interior of said tank and leading to said sprayhead,

a pressure vessel adapted to hold a compressed gas, and

a shutoff valve operable to establish a communication between the interior of said pressure vessel and the interior of said tank,

the improvement residing in that

said sprayhead comprises a base and a top,

said base is coaxial to and communicates with said rising pipe and flares upwardly and has an upwardly facing, annular seating face,

said top is exposed on its underside to the interior of said base and is vertically movable relative to said base and biased to a lower position and has an annular seating face which faces the seating face of said base and is arranged to be in sealing contact with said seating face of said base when said top is in said lower position,

said base and said top have portions which extend radially outwardly of said seating surfaces and face each other,

said radially outwardly extending portions of said top are formed with angularly spaced apart holes,

said radially outwardly extending portions of said base and said top are vertically spaced apart when said top is in said lower position,

said top is adapted to be raised so that said seating faces of said base and said top define between them an annular gap in response to fluid pressure in the interior of said base,

screws which are parallel to the axis of said sprayhead are secured to said radially outwardly extending portions of said base and extend upwardly from said base through said holes and above said top, and
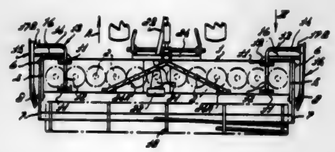
said base carries vertically adjustable stop means, which are spaced above said top when the same is in said lower position and adapted to be engaged by said top to the limit the upward movement thereof, said stop means consisting of nuts screwed on said screws above said top.

4,436,161

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7 Brischenrain, Zug, Switzerland

Filed Feb. 12, 1982, Ser. No. 348,356
Claims priority, application Netherlands, Feb. 18, 1981, 8100784
Int. Cl.³ A01B 33/06, 33/12
U.S. Cl. 172—49.5 **11 Claims**



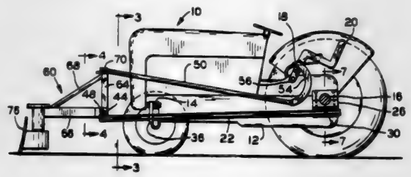
1. A soil cultivating implement comprising a frame and a row of soil working members mounted along the length of an elongated portion of said frame, a roller interconnected to said frame to support said frame portion and said roller being located to the rear of that portion, at least one side plate displaceably mounted on said frame adjacent a lateral side of said row to deflect soil being worked inwardly towards said roller, said plate having a lower substantially horizontal portion that extends in the general direction of implement travel during operation, said plate being pivoted to the top of said frame portion by an arm, a horizontal portion of said arm extending forwardly from bracket means on said frame portion to a laterally and outwardly extending arm portion that is connected by fastening means to a forward part of said plate, the trailing end of said plate extending freely to the rear and said fastening means being adjustable to move said trailing end nearer to or farther from said roller, a stop on said frame portion being positioned to prevent said side plate from pivoting too far downwardly when the implement is in operation or is undergoing inoperative transport, said stop being located in front of said frame portion, a telescoping support arm interconnecting the forward part of said plate to said frame and said support arm being located adjacent said outwardly extending arm position, said support arm cooperating with said stop to arrest the downward displacement of said side plate.

4,436,162

IMPLEMENT ATTACHMENT FOR THE FRONT END OF A TRACTOR

Michael J. Selbert, Rte. 5, Bryan, Ohio 43506

Filed Oct. 15, 1981, Ser. No. 311,560
Int. Cl.³ A01B 3/76
U.S. Cl. 172—810 **4 Claims**



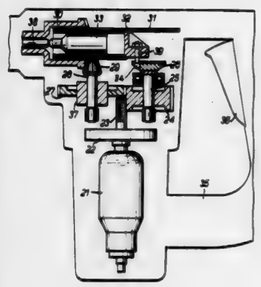
1. An implement-attaching apparatus for the front end of a tractor comprising a frame device which carries two horizontally spaced supports adapted to receive two coaxial pivot pins, an actuating linkage carrying an elongated cross-bar disposed above and generally in parallelism with said spaced supports, a pivot connection provided on said cross-bar intermediate its ends and generally midway between and above said spaced supports, and means for supporting said frame device for limited vertical, free floating movement, said frame device including two elongated members which are spaced apart and generally parallel, said actuating linkage includes two elongated bars which are also spaced apart and generally parallel to each other and to said elongated members, said two members carrying said two supports, respectively, and said two bars being connected to the opposite end portions, respectively, of said cross-bar, said means including two eyelet elements which are horizontally spaced and which receive said elongated members therethrough, said eyelet elements being of a size as permits vertical movement of said members therein.

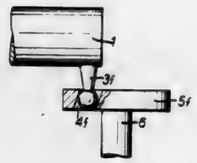
4,436,163

ARRANGEMENT FOR CONVERTING ROTARY MOTION TO RECIPROCATORY MOTION

Frank F. Simpson, Staines, England, assignor to Black & Decker Inc., Newark, Del.

Continuation-in-part of Ser. No. 102,688, Dec. 12, 1979. This application May 22, 1981, Ser. No. 266,156
Claims priority, application United Kingdom, Dec. 13, 1978, 48305/78
Int. Cl.³ B23B 45/02, 45/16
U.S. Cl. 173—117 **4 Claims**





1. A power operated tool, comprising:

a prime mover;

an output member for reciprocating an operating tool member when present;

a power transmission mechanism arranged to transmit motion of the prime mover to said output member and comprising:

(a) a first member mounted for reciprocatory and partial rotary motion,

(b) a second member mounted for rotary motion about an axis transverse to the axis of reciprocatory motion of said first member, and having a bore therein eccentric of and inclined to said axis of rotary motion, and

(c) a link coupled at one end to said first member, and at the other end to said second member, said other end being mounted in said bore for swivelling and sliding movement relative thereto,

whereby rotation of said second member by the prime mover reciprocates said first member and also imparts a cyclic partial rotation to the first member during reciprocation thereof;

said bore being inclined towards said axis of rotary motion in the general direction of said link from said other end to said one end; and

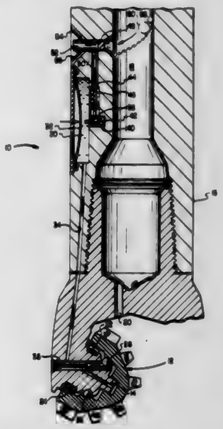
the axis of said bore intersecting said axis of rotary motion and making an angle therewith equal to about one quarter of the angle through which said first member partially rotates.

4,436,164

LUBRICATION FAILURE DETECTION SYSTEM

Lloyd L. Garner, Ft. Worth, Tex., assignor to Globe Oil Tools, Inc., Fort Worth, Tex.

Filed Mar. 10, 1982, Ser. No. 356,853
Int. Cl.³ E21B 10/22
U.S. Cl. 175—39 **19 Claims**



1. A lubrication failure detection system for use in conjunction with an earth boring drilling system having at least one rotary drill bit coupled to a drill string, said drill string including an internal passage adapted to receive drilling fluid under pressure at a first end thereof and including at least a first orifice at a second end thereof for directing said drilling fluid into the bottom of the annulus formed by said drilling system, said lubrication failure detection system comprising:

at least one lubricant chamber for storing a reservoir of lubricant;

a passageway coupling said lubricant chamber to a bearing surface within said at least one rotary drill bit;

a flexible membrane interposed between said lubricant chamber and said annulus, said flexible membrane adapted to distend inwardly in response to the pressure of said drilling fluid within said annulus, thereby forcing lubricant into said passageway;

a second orifice between said internal passage and said annulus;

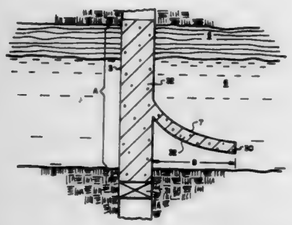
a plug within said second orifice and a mechanical linkage means responsive to a selected distention of said flexible membrane for releasing said plug; and

second means for detecting a reduction in pressure of said drilling fluid within said internal passage when said second orifice is opened.

4,436,165
DRAIN HOLE DRILLING

Leonard W. Emery, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 2, 1982, Ser. No. 414,212
Int. Cl.³ E21B 71/00
U.S. Cl. 175—61 6 Claims

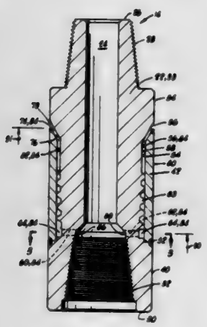


1. In a method for drilling at least one laterally extending drain hole wellbore from a primary wellbore into an area of the earth that produces both gas and liquid, the improvement comprising drilling a first portion of said drain hole wellbore into said area, said first portion being at least through the radius of curvature portion of said drain hole wellbore, filling said primary wellbore in said area and at least said radius of curvature portion of said drain hole wellbore with a hardenable material, allowing said material to harden, and re-drilling said primary wellbore and said filled portion of said drain hole wellbore to leave an outer layer of said hardened material around said primary and drain hole wellbores whereby in said area of gas and liquid production a lined primary wellbore and a lined first portion of said drain hole wellbore adjacent said primary wellbore is established to thereby reduce gas coning into same and enhance liquid production through the unlined portion of said drain hole wellbore.

4,436,166
DOWNHOLE VORTEX GENERATOR AND METHOD

Asadollah Hayatdavoudi, and Ladd M. Adams, both of Norman, Okla., assignors to Gill Industries, Inc., Meeker, Colo.

Filed Jul. 17, 1980, Ser. No. 169,676
Int. Cl.³ E21B 21/00
U.S. Cl. 175—65 47 Claims

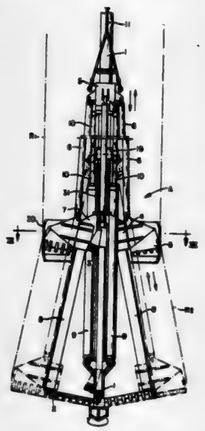


1. A method of drilling a well, comprising:
rotating a drill bit attached to a lower end of a drill string by rotating an upper end of said drill string, and thereby boring a well borehole;
dividing a downward flow of drilling fluid in said drill string, at a first elevation above said drill bit, into a first stream and a second stream;
directing said second stream of fluid downward, through a portion of said drill string below said first elevation, to said drill bit, then out at least one orifice of said drill bit, and then upward through an annulus between said drill string and said well borehole;
directing said first stream of fluid into said annulus, at a second elevation above said drill bit, with a velocity component tangential to said annulus; and thereby
imparting a swirling motion in only one direction about said drill string to said upward flowing second stream of drilling fluid; and
wherein said step of directing said first stream of fluid into said annulus includes steps of:
directing said first stream of fluid into a lower portion of an annular space disposed in a cylindrical housing with a velocity component tangential to said annular space at a point where said first stream of fluid enters said annular space, to thereby create a swirling motion of said first stream of fluid within said annular space within said housing;
flowing said swirling first stream of fluid upward through said annular space within said housing; and
ejecting said upwardly swirling first stream of fluid from an upper portion of said annular space into said annulus.

4,436,167
METHOD OF EXCAVATING A PILE HOLE AND AN APPARATUS THEREFOR

Masakazu Masuda, Sakai, and Hironori Matsumoto, Amagasaki, both of Japan, assignors to Okumura Corporation, Osaka, Japan

Filed Mar. 30, 1981, Ser. No. 249,236
Int. Cl.³ E21B 10/32
U.S. Cl. 175—72 14 Claims

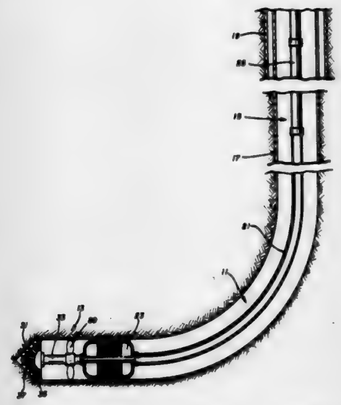


1. In a pile hole excavating method of excavating a pile hole of the required diameter by means of excavating bits fixed to the lower end portion of a rotary drill pipe and stabilizing the hole wall by filling the excavated pile hole with slurry, the improvement comprising firstly excavating a pile hole portion of a larger diameter down to the required depth by moving widening bits on the drilling apparatus to an extended position, drawing the widening bits in to a retracted position and excavating a pile hole portion of reduced diameter down to the required depth, moving the widening bits to the extended position and excavating a pile hole bottom of widened diameter for forming a pile hole with a larger diameter at the pile head and at the pile bottom, and finally sucking up and discharging the soil, sand, slime and slurry excavated by both bits and settled on the hole bottom by a suction pipe fixed to the rotary drill pipe.

4,436,168
THRUST GENERATOR FOR BORING TOOLS

Newton B. Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006

Filed Jan. 12, 1982, Ser. No. 339,001
Int. Cl.³ E21B 4/04
U.S. Cl. 175—94 15 Claims

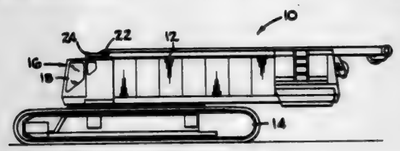


1. A rotary drilling system for drilling a well bore in the earth comprising in combination:
a. an electric motor comprising a housing and at least one rotor;
b. a twist resistant flexible conduit for conducting drilling fluid and electric power to one end of said housing of said electric motor;
c. at least one rotor driven hollow shaft projecting from the other end of said housing;
d. hollow shaft driven bit means;
e. marine screw propeller means mounted on said rotor driven shaft rotation of which generates forward thrust along the axis of said shaft;
f. means for transmitting the forward thrust generated by said propeller to said bit means, said housing and said conduit; and
g. coupling means connecting the end of said conduit and said motor housing, said coupling means transmitting torque from the motor housing to the conduit to resist the tendency of the motor housing to rotate in a direction counter to the rotation of said hollow shaft as torque is imposed to the housing through the action of the drill bit and the propeller.

4,436,169
ELEVATING AND TILTING MECHANISM FOR CRANE CAB

Dennis A. Jennerjohn, and Lyle B. Jensen, both of Cedar Rapids, Iowa, assignors to FMC Corporation, Chicago, Ill.

Filed Jan. 25, 1982, Ser. No. 342,287
Int. Cl.³ B62D 23/00
U.S. Cl. 180—89.14 6 Claims

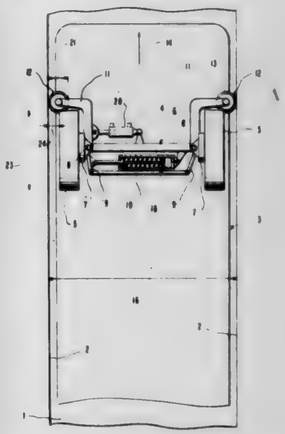


1. In combination with a crane having a lower works rotatably supporting an upper works including an upright wall, an elevatable cab movable between lowered and raised positions comprising:
a subframe connected to said upper works;
an inner link pivotally connected at its upper end to said subframe and at its lower end to said cab and positioned parallel to and adjacent said wall when said cab is in its lowered position;
a pair of outer links oriented parallel to said inner link and pivotally connected to said subframe and said cab at their upper and lower ends respectively;
upper and lower cross tubes connected between said outer links; and
hydraulic rams positioned between said inner link and outer links and pivotally connected between said subframe and one of said cross tubes, whereby extension of said rams will cause said cab to be raised and contraction of said rams will cause said cab to be lowered to a position adjacent said upper works.

4,436,170
EXTERNALLY TRACK-GUIDED VEHICLE, ESPECIALLY FOR THE LOCAL PUBLIC PASSENGER TRAFFIC

Herbert Mehren, Ludwigsburg, and Ferdinand Panik, Feilbach, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,044
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746462
Int. Cl.³ B62D 1/26
U.S. Cl. 180—131 21 Claims



1. A vehicle comprising a vehicle axle means including steerable vehicle wheels mounted thereon, cross-guide roller means being adapted to cooperate with an external guide track for mechanically guiding and automatically influencing a deflection angle of the steerable wheels, and support arm means for mounting said cross-guide roller means on at least one side of the vehicle, said cross-guide roller means being located at a forward end of the support arm means in front of the steerable vehicle wheel, as viewed in a normal driving direction of the vehicle, the support arm means is attached to the hub of each of the steerable vehicle wheels, the cross-guide roller means includes a single cross-guide roller, a single cross-guide roller is arranged on each of the support arm means so that a cross-guide roller means is provided on both sides of the vehicle forwardly of the steerable vehicle wheel, characterized in that the support arm means are constructed relatively bending-rigid under a substantial elimination of yieldingness, and in that the

cross-guide roller is constructed as a metal wheel provided along an outer circumference thereof with a solid rubber tread,

force storage means are interposed between the support arm means for prestressing the support arm means in a direction toward a position substantially corresponding to a straight driving position of the vehicle,

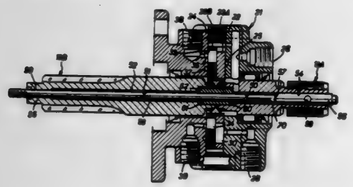
a distance between outer surfaces of the cross-guide rollers is greater than a distance between cross-guide means of the external guide track so that the cross-guide rollers are adapted to be pressed against the cross-guide means under a prestress of about 400 to about 1,000 N.

4,436,171

POWER ASSISTED STEERING DEVICE FOR A VEHICLE

Patrice Bertin, Paris, France, assignor to VALEO, Paris, France

Filed Feb. 23, 1982, Ser. No. 351,485
Claims priority, application France, Feb. 23, 1981, 81 03512
Int. Cl.³ B62D *5/06*
U.S. Cl. 180—148 **6 Claims**



1. Power-assisted steering device for a vehicle, comprising control means (10) acting on turning means (11) via a rotating transmission element (13), this element (13) being in two parts (13A and 13B) coupled elastically by a torsion bar (52), a limited relative angular play being provided between these two parts (13A, 13B) to permit an angular offset between said parts (13A, 13B) under the action of the control means (10) and against a restoring action of the torsion bar (52), and power-assistance means (17, 18) which, in response to such an angular offset, are allowed to act on the turning means (11) in the same direction as the control means (10), said power-assistance means comprising a hydraulic unit (17, 18), an actuator (19) acting on the turning means (11) and a distributor (12) located between the unit and the actuator, in which device said torsion bar (52) has, on the one hand, a main portion (53) which passes through the distributor (21) and extends freely in a perforation (50, 51) of said parts (13A, 13B) and, on the other hand, two ends (54, 55) which are fixed respectively to said parts (13A, 13B), at least one (54) of these ends being formed by a widened head (56) of said torsion bar (52), said device being characterized in that at least one annular sealing gasket (70, 70') is arranged round the main portion (53) of the torsion bar (52), being applied against said widened head (56) and engaged in said perforation (50), the torsion bar (52) having, between the main portion (53) and the widened head (56), a fillet (57) against which said annular sealing gasket (70, 70') wedges itself.

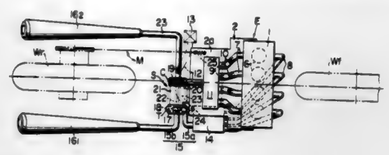
4,436,172

MOTORCYCLE HAVING AN ENGINE WITH A TURBO-SUPERCHARGER

Kazuo Inoue, Tokyo, and Tsuneo Otsuka, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,368
Claims priority, application Japan, Jan. 24, 1981, 56-9174
Int. Cl.³ B62D *63/04*; F02D *23/00*
U.S. Cl. 180—219 **6 Claims**

1. A motorcycle having an engine with a turbo-supercharger mounted on a body frame between front and rear wheels, comprising: a first muffler and a second muffler arranged on opposite sides of said rear wheel, an exhaust pipe having a front end connected to said engine and a rear end connected to said first muffler, said turbo-charger having a turbine disposed in said exhaust pipe and a compressor coupled for rotation with said turbine, a waste pipe branching from said exhaust pipe at



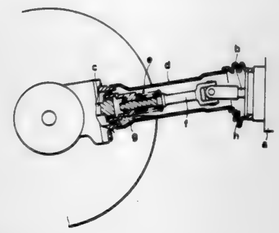
a position upstream of said turbine and connected to said second muffler, and a control valve provided internally of said waste pipe for regulating the flow of exhaust gas passing therethrough and adapted to open when the outlet pressure of said compressor exceeds a predetermined level.

4,436,173

SHAFT DRIVE APPARATUS FOR MOTORIZED TWO-WHEELED VEHICLE

Hirotake Takahashi, Sayama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,908
Claims priority, application Japan, May 15, 1981, 56-72155; May 15, 1981, 56-72156; May 16, 1981, 56-71161[U]; May 19, 1981, 56-72206[U]; May 19, 1981, 56-72207[U]
Int. Cl.³ B62M *17/00, 25/28*
U.S. Cl. 180—226 **19 Claims**



1. In a shaft drive apparatus in a two-wheeled vehicle which includes a vehicle body having a middle portion; front wheel mounted on the body; a rear fork mounted on the body; an internal combustion engine having an output shaft mounted on said middle portion; and a rear wheel mounted on said rear fork; the shaft driving apparatus including: a bevel gear mechanism having a gear casing and an input shaft connected to said rear wheel; a propeller shaft having opposite ends with one end connected to said output shaft and the other end extending axially into said rear fork; and a torque damper interconnecting said other end to said input shaft; the improvement comprising an outer casing extending over and liquid-tightly enclosing said torque damper, said casing being attached to said propeller shaft to rotate therewith.

4,436,174

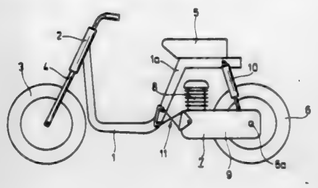
VEHICULAR POWER UNIT SUPPORTING DEVICE

Akira Morisono, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,643
Claims priority, application Japan, Sep. 28, 1981, 56-153136
Int. Cl.³ B62K *11/04*
U.S. Cl. 180—227 **10 Claims**

1. In a vehicle having a vehicle body frame, at least one rear wheel, an engine, transmission means for transmitting power of said engine to said rear wheel, a transmission case which houses said transmission means, a power unit comprising an integral combination of said transmission case and said engine and rotatably supporting said rear wheel and a cushion means for suspending said power unit from said vehicle body frame, a power unit supporting device comprising:

a front member fixed to said vehicle body frame;



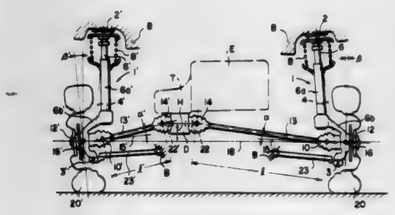
a rear member pivotably connected to said power unit; and at least two spring members which cross each other to define substantially an X-shape in side-elevation, front and rear ends of said spring members being fixed to said front and rear members, respectively.

4,436,175

FRONT WHEEL SUSPENSION FOR A FRONT ENGINE-FRONT WHEEL DRIVE AUTOMOBILE

Kenichi Watanabe, and Takashi Sumimoto, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Aug. 11, 1982, Ser. No. 407,173
Claims priority, application Japan, Aug. 12, 1981, 56-126400
Int. Cl.³ B62D *9/00*; B60G *25/00*
U.S. Cl. 180—254 **5 Claims**



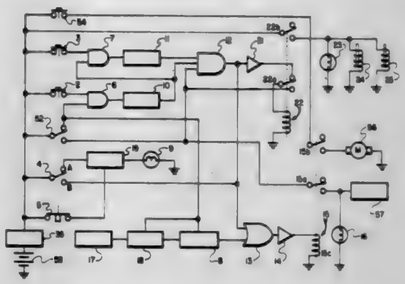
1. A front engine - front wheel drive automobile comprising a power unit including differential gear means provided with left and right output shafts, left and right front wheels mounted for steering movement about left and right king pin axes, respectively, left and right drive shafts having one end connected with said left and right output shafts of the differential gear means, respectively, and the other end with said left and right wheels, respectively, to transmit driving torque to the wheels, said left and right drive shafts being inclined with respect to a horizontal plane by different angles so that a difference between turning moments about said left and right king pin axes is produced when the driving torque is being transmitted to the wheels, the wheel which is connected with the drive shaft with a larger inclination angle with respect to the horizontal plane having a larger camber angle than the other wheel to thereby produce a difference between turning moments about the left and right king pin axes which is in a direction opposite to the difference between turning moments caused by the different angles in inclination of the driving shafts.

4,436,176

DELAYED VEHICLE STARTER

Albert O. Cota, 17475 Flanders St., Granada Hills, Calif. 91344, and Dean C. Obray, 624 23rd St., Manhattan Beach, Calif. 90266

Filed Dec. 14, 1981, Ser. No. 331,300
Int. Cl.³ B60R *25/04*
U.S. Cl. 180—287 **13 Claims**



1. A Delayed Vehicle Starter contained within the structure of a motor vehicle and comprised of a first circuit that prevents the driver of the motor vehicle from starting the vehicle before the driver has sequentially depressed, within a preset time, a plurality of electrical switches and where once started the vehicle must be moved for a minimum distance, within said preset time, to keep the vehicle ignition system enabled, where said first circuit comprises:

(a) a power source,

(b) a motor vehicle ingition switch where the pole of said ignition switch is connected to said power source such that when said ignition switch is placed in the OFF position a voltage, in part, from said power source is applied to one of the inputs of a first two-input AND gate,

(c) a first switch connected to said power source such that when said first switch is closed the second enabling input is applied to said first two-input AND gate,

(d) a first timer that is enabled by the output of said first two-input AND gate where said first timer is active during its preset time and its output provides one of the inputs to a second two-input AND gate and one of the inputs to a three-input AND gate,

(e) a second switch connected to said power source such that when said second switch is closed, subsequent to the closing of said first switch, the second enabling input is applied to said second two-input AND gate,

(f) a second timer that is enabled by the output of said second two-input AND gate where said second timer is active during its preset time and its output provides the second input to said three-input AND gate, where the third enabling input to said three-input AND gate is applied when said vehicle ignition switch is placed in the ON position,

(g) a two-input OR gate that is initially enabled by the output from said three-input AND gate where output of said OR gate is applied through a first amplifier to energize a two-pole double-throw first relay such that when said first relay is energized a voltage from said power source is applied through the closed contact of said vehicle ignition switch and through the closed first contact set of said first relay to the vehicle ignition system,

(h) an Ok-To-Start indicator, electrically connected in parallel with the vehicle ignition system, that is energized by a voltage applied through the closed first contact set of said first relay,

(i) a motor vehicle start switch where one side of said start switch is connected to said power source such that when said start switch is placed in the ON position a voltage from said power source is applied through the closed

second contact set of said first relay to the vehicle start motor,

(j) a rotational transducer assembly that produces a series of pulsed signals when said vehicle is moved,

(k) an electronic counter that receives the signals from said rotational transducer assembly such that when said counter reaches a preset count level, corresponding to an established minimum travel distance, an output signal is produced, and

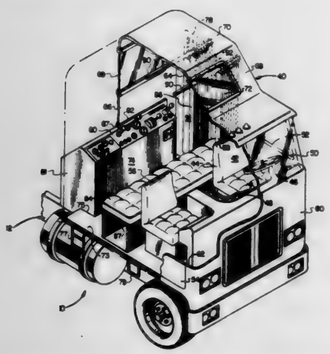
(l) a first bistable latch that when set by the output signal from said electronic counter produces a signal that, when applied through said two-input OR gate and said first amplifier, maintains said first relay in an energized condition to keep the vehicle ignition system enabled after the preset time in said first timer and said second timer has expired.

4,436,177

TRUCK OPERATOR'S CAB WITH EQUIPMENT CONTROL STATION

Thomas L. Elliston, Fort Worth, Tex., assignor to Hydra-Rig, Inc., Fort Worth, Tex.

Filed Mar. 19, 1982, Ser. No. 359,802
Int. Cl.³ B62D *33/06*
U.S. Cl. 180—324 **11 Claims**



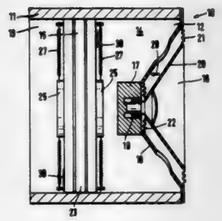
1. In an over the road motor vehicle including a chassis having a main propulsion engine mounted thereon, an operator's cab forming an enclosure defining a driver's compartment for driving said vehicle, said driver's compartment including steering means for said vehicle and an instrument panel for monitoring instruments for said main engine, said cab including a front wall including a windshield formed therein, spaced apart sidewalls, a roof, a rear wall, at least one access door to said driver's compartment, and access doors in each of said sidewalls separate from said one access door to said driver's compartment and opening to a separate control station formed within said enclosure and generally rearward of said driver's compartment, a control panel disposed at sid control station and including means for controlling and monitoring equipment disposed on said vehicle and generally rearward of said cab, a floor forming a part of said enclosure at said control station, and a stepped portion of said roof above said floor providing substantially standing headroom for an operator at said control panel.

4,436,178

HOUSING LOUDSPEAKER

Hans-Joachim Gieger, Fischerbrücke 5, 3300 Braunschweig, DE, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,163
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102870
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—151 **25 Claims**



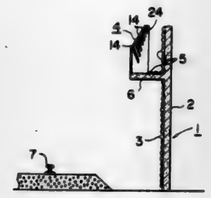
1. A loudspeaker comprising a housing having an interior defined by an inner wall; a loudspeaker element in said interior and having a vibration member, said housing being formed with a loudspeaker opening in one face thereof and an additional opening at an opposite face thereof, said openings defining a box-like intermediate space in said interior; and means for eliminating the sound emitted by the loudspeaker into said interior, said means including a filling with two sound-absorbing faces mounted in said box-like intermediate space between said loudspeaker opening and said additional opening, one of said faces being defined by a flow-tight closure of an elastically vibrationable mass positioned within said interior and having a predetermined size, and the other of said faces being defined by at least one air-flow opening in said closure, said air-flow opening being filled with a packing and having a size much smaller than the size of the flow-tight closure.

4,436,179

NOISE CONTROL APPARATUS

Tsuyoshi Yamamoto; Norihisa Taniguchi, both of Tokyo; Kazuyoshi Iida, Yokohama, and Yoshikazu Kondo, Tokyo, all of Japan, assignors to Japanese National Railways and Bridgestone Tire Company Limited, both of Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,617
Claims priority, application Japan, Jan. 9, 1981, 56-1156
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—210 **7 Claims**



1. A noise control apparatus for reducing sound volume of noise propagating from a noise source, comprising:

a sound arresting wall separate from the noise source; and

means for shifting in phase and refracting the acoustic wave of the noise to provide a refracted propagating acoustic wave, said means being disposed at substantially the top of said sound arresting wall, said means being hollow and further comprising bent plates vertically disposed within said means, said bent plates having an equal interval therebetween and having front edges aligned in such a manner that a line drawn through the front edges diagonally descends and intersects with said noise source,

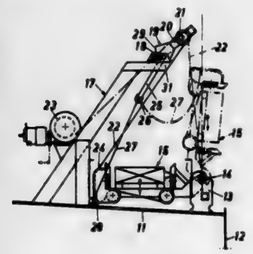
whereby said refracted propagating acoustic wave interferes with said acoustic wave directly propagating from the noise source and diffracting over said sound arresting wall.

4,436,180

METHOD AND A DEVICE FOR PIVOTING AN ACCOMMODATION LADDER

Per Nilsson, Västra Frölunda, Sweden, assignor to AB Welin, Gothenburg, Sweden

Filed Apr. 12, 1982, Ser. No. 367,802
Claims priority, application Sweden, Apr. 13, 1981, 8102342
Int. Cl.³ B63B *23/04*
U.S. Cl. 182—97 **3 Claims**



2. A device for pivoting an accommodation ladder between a stowing position on a ship's deck and an active position outside the ship's side comprising at least one fixed davit, a winch, an operating wire one end of which is wound up on the winch and the other end is attached to the ladder, a two-arm link pivotably mounted on the davit about a horizontal shaft arranged between the said two arms, a pulley for the operating wire mounted on one of said arms of said link and being pivotably movable by said link between two positions, said ladder being pivotable by means of said operating wire from one of its stowing and active positions up to a substantially vertical position in which the center of gravity of the ladder has passed a vertical line through the pivot center of the ladder, and a member having its one end attached to the ladder and its other end connected to the second arm of said link in such a manner that said member causes the link with the pulley to pivot from one of said two positions thereof to the other when the ladder is pivoted downwards further from said substantially vertical position.

4,436,181

ESCAPE SYSTEM

David Gutman, 447 Mercy St., Philadelhia, Pa. 19148

Filed Jun. 21, 1982, Ser. No. 390,578
Int. Cl.³ A62B *1/06*
U.S. Cl. 182—236 **10 Claims**

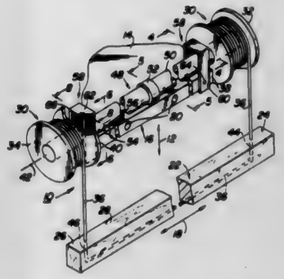
1. An escape system for vertically lowering a user at a predetermined rate of descent responsive to a user applied force, comprising:

(a) a mounting bar member extending in a longitudinal direction, said mounting bar member being fixedly secured to a base surface;

(b) seating means extending in said longitudinal direction for providing a seat for said user;

(c) pulley means displaceably coupled to said seating means on opposing longitudinal ends thereof; and,

(d) lever means secured to said pulley means on opposing ends thereof for (1) actuating rotation of said pulley means when said user applies a force load on a first longitudinal end of said seating means, and (2) terminating rotation of



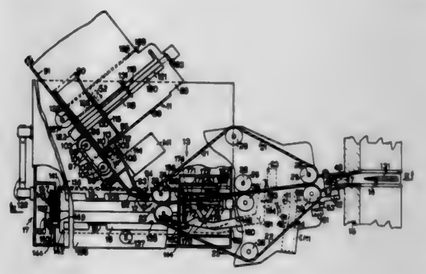
said pulley means when said user applies a force load on a second longitudinal end of said seating means.

4,436,182

APPARATUS FOR DEPOSITING VALUABLES IN ENVELOPES WITH AUTOMATIC ENVELOPE DISPENSING

Lucio Simonotti, Banchette d'Ivrea, and Carlo Motta, Borgofranco d'Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 14, 1981, Ser. No. 254,140
Claims priority, application Italy, Apr. 16, 1980, 67587 A/80
Int. Cl.³ G07G *5/00*
U.S. Cl. 186—37 **13 Claims**



1. An apparatus for depositing valuables in envelopes, with automatic dispensing of envelopes, in which the envelopes to be deposited are inserted into a slot of the apparatus and conveyed into an internal drawer of the apparatus, comprising a magazine within the apparatus containing the empty envelopes, a conveyor for individually moving the envelopes, said conveyor including at least one pair of belts in contact with one another along a predetermined path between the slot and an internal deflection station, a reversible electric motor operable for selectively driving the belts in a first direction to dispense an envelope from the magazine to the slot and in a second direction to convey an envelope inserted in the slot toward the drawer, said magazine including a duct leading to the deflection station, the duct being disposed in such a way that an envelope coming from the conveyor does not enter it.

4,436,183

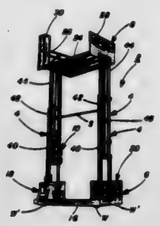
MATERIAL HANDLING APPARATUS

Victor R. Laurich-Trost, 34600 McAfee Dr., Solon, Ohio 44139

Filed Sep. 18, 1981, Ser. No. 302,515
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—9 E **5 Claims**

1. A lift apparatus for use in material handling comprising a

chassis member mounted on wheel means for movement along the ground, a pair of laterally spaced, oppositely disposed mast assemblies extend upwardly from said chassis member, a lift platform assembly is disposed between and operably connected to said mast assemblies for vertical lifting movement toward and away from said chassis member, and fluid power means are operably associated with each of said mast assemblies to impart said lifting movement to said lift carriage assembly, wherein said wheel means includes a pair of steering and traction units each including a motor and a steering and traction wheel, and a pair of freely rotatable caster wheels, endless chain drive means operably connecting one of said caster



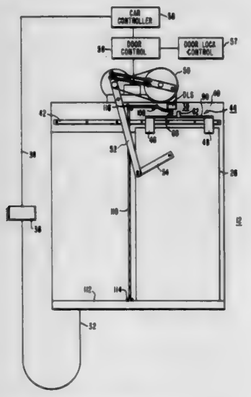
wheels with an associated one of said steering and traction units for synchronously turning said caster wheels upon actuation of an associated of said motors, and an operators cab mounted for movement with said lift carriage assembly, and steering control means operable from said operator's cab for controlling steering movement of said steering and traction units from said cab, wherein said steering and traction units each include driven sprocket means disposed for meshing engagement with said drive chain means and said orbital drive motors including drive sprocket means for driving meshing engagement with said drive chain means for synchronously turning said caster wheels with said traction wheels.

4,436,184

ELEVATOR SYSTEM

John G. Dorman, Randolph; Anthony M. Balbo, Millburn, both of N.J.; Charles E. Randall, Bolling Springs, and Robert A. Sette, Gettysburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 5, 1982, Ser. No. 375,249
Int. Cl.³ B66B *13/16*
U.S. Cl. 187—29 R **21 Claims**



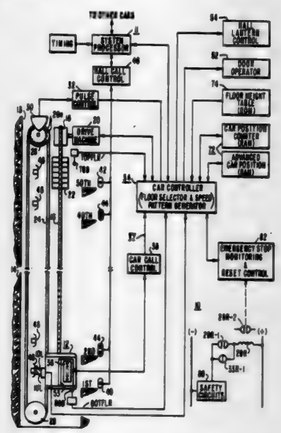
1. An elevator system, comprising:
a structure having a hatchway and a landing,
an elevator car,
means mounting said elevator car for movement in said hatchway from a position displaced from the landing to a predetermined position adjacent to the landing,
said elevator car having an opening,
closure means for controlling passenger movement between the car and landing through said opening,
marker means associated with the landing indicative of an allowable displacement zone of the elevator car from the landing within which the closure means may be actuated to allow passenger exit from the car, in the event the elevator car stops for an unscheduled length of time at a position other than level with said landing,
and electromechanical means responsive to said marker means, including means carried by said elevator car for detecting said marker means, and for mechanically preventing actuation of said closure means, at least to an extent which would enable passenger exit from the car, when the elevator car is outside said allowable displacement zone.

4,436,185

ELEVATOR SYSTEM

Richard H. Ludwig, West Caldwell; Wing C. Quan, Waldwick; Alan L. Husson, Hackettstown; Linus R. Dirnberger, Randolph, and Marjorie J. Polis, Morris Township, Morris County, all of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 20, 1982, Ser. No. 370,021
Int. Cl.³ B66B *3/02*
U.S. Cl. 187—29 R **13 Claims**



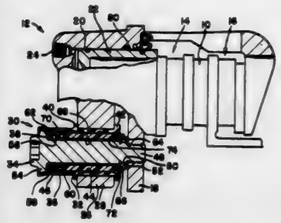
1. A method of reinitializing an elevator system in a building having a plurality of floors, including upper and lower terminal floors, following an occurrence which may result in an elevator car being stopped at a position other than level with a floor of the building, comprising the steps of:
determining if the elevator car is within a predetermined distance from a floor,
setting the car position to the associated floor when it is found to be within said predetermined distance,
setting the car position to the closest floor to the elevator car in a predetermined travel direction, when the elevator car is not within said predetermined distance,
and moving the elevator car to a predetermined floor when it is not within said predetermined distance.

4,436,186

DISC BRAKE ASSEMBLY

Irving R. Ritsema, South Bend, and James J. Colpaert, Granger, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1981, Ser. No. 307,918
Int. Cl.³ F16D *65/54*
U.S. Cl. 188—71.8 **11 Claims**



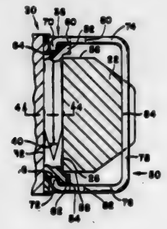
1. A disc brake assembly comprising a torque member secured to a nonrotatable portion of a vehicle, a caliper assembly movably disposed relative to the disc by means of at least one pin assembly connecting the caliper assembly to the torque member, a pair of friction elements cooperating with the caliper assembly during braking to engage the disc to retard rotation of the latter, and the pin assembly including a bolt threadably coupled to the torque member and extending through an opening in the caliper assembly, a resilient bushing engaged to the caliper assembly and extending through the caliper assembly opening, and a sleeve disposed between the resilient bushing and the bolt, characterized by said sleeve cooperating with said bolt to define a predetermined axial clearance therebetween, said predetermined axial clearance providing for said sleeve to move with said caliper assembly and said resilient bushing initially during braking, said resilient bushing moving relative to said sleeve after said predetermined axial clearance is taken up between said sleeve and bolt during braking in order to define an adjusted position for said resilient bushing and caliper assembly relative to said sleeve in response to wear of said friction elements, and said pin assembly further including a resilient member extending between said sleeve and said bolt to bias said sleeve to a position maintaining said predetermined axial clearance between said sleeve and said bolt.

4,436,187

DISC BRAKE ASSEMBLY

Daniel L. Bolenbaugh, and John R. Wegh, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 18, 1981, Ser. No. 322,349
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—73.45 **2 Claims**



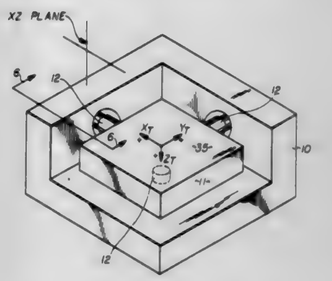
1. A disc brake assembly comprising a torque member disposed adjacent a rotor to be braked, the torque member including a pair of arms extending axially over the periphery of the rotor and circumferentially spaced from each other, a caliper assembly carried by the pair of arms via nonrotatable pin assemblies disposed within matching, axially extending slots between the caliper assembly and each of the pair of arms, and a resilient member engageable with one of the pair of pin assemblies, characterized by said one pin assembly including a pin having a longitudinal axis and flanges extending radially from said axis defining slots leading to central holes formed along said axis at opposite ends of said pin, said resilient member including ends biased to fit within the respective holes and legs biased to fit within the respective slots, one of said pair of arms defining an axially extending groove opening away from the caliper, said resilient member including a connecting part extending between said legs and disposed within said axially extending groove, said one pin assembly slots defining a first locking fit with said resilient member to prevent rotation of the latter about one of the matching slots, said axially extending groove defining a second locking fit with said resilient member to also prevent rotation of the latter about said one matching slot, and said one pin assembly extending from the holes and slots to the axially extending groove while remaining radially inwardly of a radial outer dimension for said one arm.

4,436,188

CONTROLLED MOTION APPARATUS

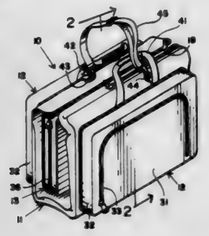
Cecil R. Jones, 21127 Bank Mill Rd., Saratoga, Calif. 95070

Filed Nov. 18, 1981, Ser. No. 322,466
Int. Cl.³ B06B *3/00*; F16D *3/22*
U.S. Cl. 188—378 **7 Claims**



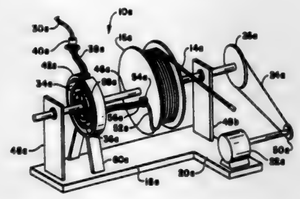
1. Controlled motion apparatus comprising a rigid base member, a support member, and means for mounting the support member to the rigid base for controlled motion relative to the base, said support member mounting means comprising three independently-driven displacement actuators each having a fixed part and a linearly movable part and having one of said parts connected by means of a first non-rotatable universal joint to a region of said support member and having the other of said parts connected by means of a second non-rotatable universal joint to a region of said rigid base, each of said actuators being capable upon actuation of causing a linear motion displacement of said support member along one of three orthogonal axes of an XYZ coordinate system but without permitting rotation about its respective displacement axis of the actuator movable part with respect to its fixed part or of the actuator fixed part in response to a linear displacement of the support along any of the three orthogonal axes, said non-rotating actuators by means of the first and second non-rotatable universal joint connections cooperating, during driving of the actuators to cause the said support member to undergo a controlled motion relative to the rigid base member, to maintain the support member substantially parallel to a desired plane formed by two axes of the coordinate system and to constrain the motion of said support member substantially parallel to said desired plane, and means connected to the apparatus for sensing the amount of support member displacement in its three displacement axes and generating signals representative of said displacement.

4,436,189
MULTI-PURPOSE TRAVELING BAG
Frank Baum, 1030 E. 30th St., Hialeah, Fla. 33013
Filed Apr. 8, 1982, Ser. No. 366,499
Int. Cl.³ A45C 5/06, 13/00
U.S. Cl. 190—108 1 Claim



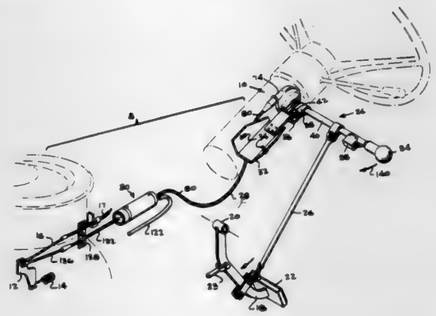
1. A multi-purpose traveling bag comprising, in combination a substantially rectangular, elongated garment bag portion, said garment bag portion comprising inner and outer flexible panels secured in spaced relation by a comparatively narrow flexible side panel, said inner and outer panels and said side panel defining, together, an interior compartment for hanging clothes, means for opening said interior compartment for the insertion and removal of clothes, a pair of side bag compartment portions of substantially rectangular shape and each having a flexible inside panel, a flexible outside panel and a flexible, peripheral side wall panel defining with said inside and outside panels a second interior compartment, the outside panel of each of said side bag compartment portions being fitted with a zipper strip for opening and closing said side bag compartment portion, zipper means for peripherally attaching said inside panel of said side bag compartment portions, one each, to upper and lower longitudinal end portions, respectively, of said outer panel of said garment bag portion, a briefcase compartment portion of the same rectangular shape as that of said side bag compartment portions, said briefcase compartment portion having a pair of opposed outside panels secured in a spaced relation by a peripheral, flexible, briefcase side wall panel and defining therewith a third interior compartment, zipper means in said peripheral briefcase side wall panel for opening and closing said briefcase interior compartment, zipper means for removably attaching said briefcase compartment portion, face-to-face against said inside panel of said garment bag portion at the lower longitudinal end portion thereof, and zipper means for detachably securing a lower edge portion of said inner panel of said elongated garment bag portion with the upper edge portion thereof upon said elongated garment bag portion being folded double to the inside from bottom to top, hand carrying means at the upper end of said garment bag portion when so folded and secured, said means for opening said interior compartment of said garment bag portion comprising a zipper extending along the upper end of said garment bag portion side panel, and a hook flexibly linked with respect to the inside of said interior compartment of said garment bag portion and extensible through said zipper when partially opened to permit hanging of said garment bag portion from a clothes pole or the like, said zipper means for peripherally attaching said inside panel of said side bag compartment portions being selectively cooperative with said zipper means for removably attaching said briefcase compartment portion against said inside panel of said garment bag portion, selectively, to detachably secure said side bag compartment portions, one each, to the sides of said briefcase compartment portion, said zipper strip for opening and closing each of said side bag compartment portions following a U-shaped course closely spaced to the peripheral sides and top of said side bag compartment portions to permit the opening and closing of said side bag compartment outside panels, and hand grip means extending outwardly of the upper end of said briefcase compartment portion.

4,436,190
TORSIONLESS MULTIPLE CONNECTOR REEL DEVICE
Timothy H. Wentzell, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jul. 29, 1981, Ser. No. 287,679
Int. Cl.³ H02G 11/00
U.S. Cl. 191—12.2 R 3 Claims



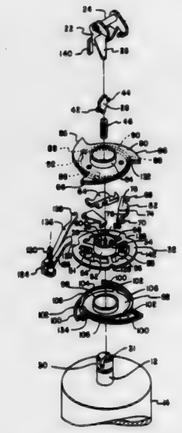
1. An apparatus to be electrically connected to a stationary output circuit, for advancing and retrieving an electrical input cable, comprising:
a stationary frame;
a drum carried by the frame and adapted to advance and retrieve the input cable by rotating about an axis;
a reel carried by the frame adjacent to and coaxial with said drum;
a flexible ribbon cable circumferentially coiled about said reel, the ribbon cable having its inner end adapted to connect to the tail end of the input cable and to rotate with the reel about said axis;
a housing enclosing the ribbon cable for maintaining the ribbon cable substantially concentric;
socket means carried by the frame and wired to the tail end of the ribbon cable, adapted to electrically connect the ribbon cable to the output circuit; and
means for rotating the drum and reel simultaneously.

4,436,191
AUTOMOBILE HAND CONTROL
William E. Perry, 9417 Delancey Dr., Vienna, Va. 22180
Filed Dec. 15, 1981, Ser. No. 330,785
Int. Cl.³ B60K 41/20
U.S. Cl. 192—3 S 21 Claims



1. A vehicle control system for a vehicle having a throttle having a throttle spring tending to move the throttle to a closed position, said system including:
an operator actuated movable control member;
cable means having first and second ends with said first end being connected to said movable control member and said second end being connected to an engine throttle so that movement of the control member results in movement of the cable means and consequent movement of the engine throttle; and
air pressure actuated power assist means connected to said cable means for aiding in movement of said cable against the force of said throttle spring and for maintaining said cable means in any given position of adjustment while permitting a subsequent movement of the cable to a subsequent position of adjustment in response to subsequent movement of said movable control member.

4,436,192
RIBBON DRIVE CLUTCH
Scott J. Longrod, Woodbury, Conn., assignor to SCM Corporation, New York, N.Y.
Filed Oct. 14, 1981, Ser. No. 311,224
Int. Cl.³ F16D 11/06; B41J 33/50
U.S. Cl. 192—43.1 11 Claims



1. A ribbon drive clutch comprising a reversible stepper motor having an output shaft,
clutch plate means mounted on said output shaft,
first cam means mounted on said clutch plate means,
second cam means mounted on said clutch plate means,
pawl means mounted on said clutch plate means disposed to engage said first cam means for rotation with said output shaft responsive to rotation of said output shaft in a first direction and disposed to engage said second cam means for rotation with said output shaft responsive to rotation of said output shaft in a second direction,
first ribbon drive means,
second ribbon drive means,
first cam follower means disposed to operate said first ribbon drive means responsive to rotation of said output shaft in said first direction and,
second cam follower means disposed to operate said second ribbon drive means responsive to rotation of said second ribbon drive means in said second direction.

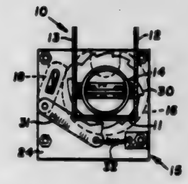
4,436,193
VARIABLE PULLEY TRANSMISSION
Richard L. Smirl, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 257,283, Apr. 24, 1981. This application Dec. 15, 1982, Ser. No. 449,894
Int. Cl.³ F16D 13/68
U.S. Cl. 192—107 C 3 Claims

1. A fluid cooled clutch including a generally annular laminated clutch disc assembly having an inner and an outer periphery which disc assembly comprises a central disc with opposed surfaces, a resilient material layer affixed to each surface, a friction material layer affixed to each resilient layer where each resilient layer is at least as thick as the friction material layer, and a pattern of grooves is provided in the friction material layer, which grooves extend completely through the friction material layer and through substantially all



of the resilient layer, thus providing a path for coolant fluid flow in the laminated structure which is substantially greater than that of a grooved friction layer.

4,436,194
COIN OPERATED DELIVERY SYSTEM FOR VENDING MACHINES
James O. Hanley, 12838 Burwell Dr., Minnetonka, Minn. 5
Filed Aug. 3, 1983, Ser. No. 519,845
Int. Cl.³ G07F 5/02
U.S. Cl. 194—63 9 Claims



1. A coin operated delivery system for a product vending machine comprising:
(A) an elongated open top horizontal channel,
(B) an elongated horizontally disposed helix within said channel,
(1) the coils of said helix being widely spaced apart to receive loosely therebetween a vertically disposed product to be dispensed,
(2) one end of said helix extending at least to the corresponding end of the channel, and
(C) a vertically disposed rotatable coin receiver mechanically linked directly to the opposite end of the helix, said coin receiver when containing the requisite amount of money being capable of manual rotation through at least one full rotation to rotate the helix through its direct mechanical linkage through one full rotation to discharge in a front to rear direction one unit of product contained therein from the remote end of the channel.

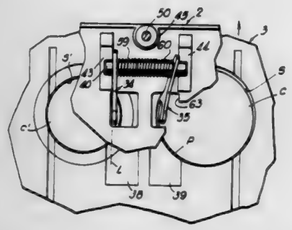
4,436,195
MULTI-COIN CHUTE MECHANISM
Donald C. Schmitt, Lithonia, and Melvin J. Harvill, Conyers, both of Ga., assignors to Reed Industries, Inc., Stone Mountain, Ga.
Filed Jun. 18, 1981, Ser. No. 274,878
Int. Cl.³ G07F 5/02
U.S. Cl. 194—92 5 Claims

1. In a coin chute having a frame defining a coin-supporting surface, a slide movable over said surface and having at least one opening therein to define, with said surface, a coin socket for transporting a coin received therein along a path on said surface from an initial position to a coin discharge position, said surface having an opening at such discharge position to

allow a coin to drop from the socket, the improvement which comprises:

coin diameter gauging means for sensing an undersize coin or a spurious coin with a hole in it in said socket as the coin is transported toward said discharge position and for arresting movement of said slide upon the sensing of an undersize coin or a spurious coin with a hole in it,

said gauging means comprising a dog carried by said frame and having a tip engaging said slide, as the slide is moved, along a line which is within the widthwise confines of said path,



means mounting said dog on said frame for normally maintaining said tip in a generally upright plane passing through said line while allowing said tip to tilt relative to said upright plane and to shift laterally across said surface with respect to said line,

whereby when the slide is moved toward the discharge position, said tip actively seeks and penetrates deeply into any peripheral gap within said socket created by an undersize coin, or penetrates into the hole of a spurious coin with a hole in it and prevents further inward motion of the slide.

4,436,196

METHOD OF AND APPARATUS FOR ASSESSING COINS

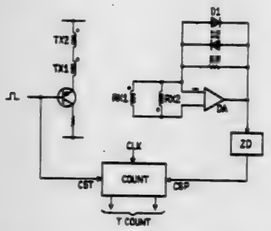
Malcolm Crisp, Swavesey, and Christopher Lewis, Ely, both of England, assignors to Plessey Overseas Limited, Ilford, England

Filed Jun. 18, 1981, Ser. No. 274,765

Claims priority, application United Kingdom, Jun. 20, 1980, 8020338

Int. Cl.³ G07F 3/02

U.S. Cl. 194—100 A **6 Claims**



1. A coin discriminating apparatus comprising first and second coil sets each comprising a transmit and receive coil, each set arranged to be subject to an abrupt flux change and associated with a coin runway in such a manner that a coin passing along the runway travels through a coil set and the transmit coils of both coil sets are driven in series by an abrupt flux change generator which is operable as the coin passes the said coil set, and the receive coils of the coil sets are connected in parallel and in opposition to each other and across the inputs of a differential amplifier whose output is used to drive a zero detector, the composite waveform produced being indicative of the coin passing the coils and the apparatus includes means for comparing the composite waveform with stored information indicative of acceptable coins.

4,436,197

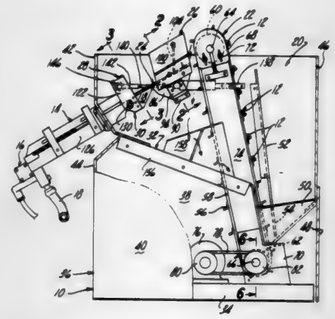
ARTICLE ORIENTING APPARATUS

Murdo A. MacDonald, Bloomfield Hills, Mich., assignor to Clyde Corporation, Auburn Heights, Mich.

Filed Jan. 15, 1982, Ser. No. 339,830

Int. Cl.³ B65G 47/24

U.S. Cl. 198—389 **11 Claims**



1. An apparatus for orienting articles each having a head and a reduced shank comprising, a track having a pair of generally parallel and laterally spaced apart rails constructed and arranged to receive the head of an article thereon with at least a portion of the shank thereof depending therebetween, said track sloping downwardly such that articles received thereon will slide toward the lower end thereof, a discharge section of said track being constructed and arranged to be movable to a first position in generally longitudinal alignment with said track such that articles received thereon will slide toward the lower end of said discharge section and to a second position wherein at least a portion of said discharge section is displaced from said first position such that articles will drop off said discharge section, a gate associated with said track and constructed and arranged to permit only articles received on said track with their heads bearing on said rails and their shanks depending therebetween to move on said track downstream of the lower end of said discharge section and to prevent articles bearing on said track in any other orientation from moving downstream of the lower end of said discharge section, article delivery means associated with said track and constructed and arranged to repeatedly dump articles onto said track upstream of said gate, drive means constructed and arranged to move said discharge section of said track to said first and second positions, and cycle means associated with said drive means and constructed and arranged to periodically cycle said drive means to move said discharge section of said track from said first position to said second position and back to said first position, whereby at least some of the articles dumped onto said track by said article delivery means are received on said track with their heads bearing on said rails and their shanks depending therebetween and at least some of such articles so received on said track and not so oriented are prevented by said gate from passing downstream thereof and the periodic cycling of said discharge section of said track removes therefrom any not so oriented articles bearing on said discharge section such that a succession of only oriented articles emerge from said track downstream of said gate.

4,436,198

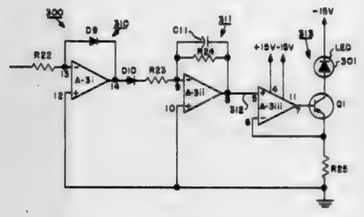
CONVEYOR BELT SYSTEM HAVING A PHASE SHIFT INDICATOR AND ADJUSTER FOR OPTIMUM TUNING OF A SYNCHRONOUS RIP DETECTOR CIRCUIT

Robert J. Houck, Akron, Ohio, and Kevin J. King, Coon Rapids, Minn., assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,712

Int. Cl.³ B65G 43/06

U.S. Cl. 198—502 **3 Claims**



1. In a conveyor belt assembly, with rip detection capabilities, a circuit for shifting the phase of one signal relative to another signal and for determining the synchronous relationship therebetween, comprising: first means for producing digital information directly coordinated with the instantaneous time frame development of such another signal, thumbwheel switch means for setting a predetermined phase relation of such one signal relative to such another signal, comparator means responsive to such digital information and said set means for producing an output signal representative of the phase of such one signal, output means responsive to such output signal for producing such one signal at a phase corresponding thereto and light emitting diode means for illuminating in intensity inversly proportionately to the degree of synchronization of the phase relationships.

4,436,199

CAM-OPERATED MULTISTROKE FEED MECHANISM

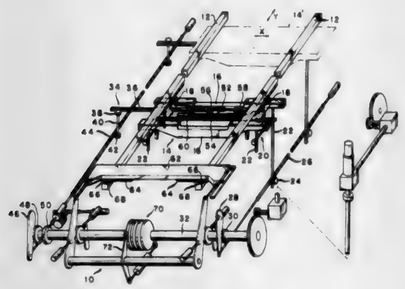
Kiyokazu Baba, Komatsu, and Kenji Nishida, Matsuto, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,447

Claims priority, application Japan, Oct. 8, 1981, 56-159398

Int. Cl.³ B65G 25/04

U.S. Cl. 198—750 **9 Claims**



1. In apparatus for transferring or feeding articles, the apparatus including a feed member which reciprocates for causing such transferring or feeding motion, a multistroke feed mechanism for reciprocating the feed member over any selected one of a plurality of preassigned different strokes, the multistroke feed mechanism comprising:

(a) a rotatable camshaft;

(b) a set of feed cams having differently contoured surfaces and mounted side by side on the camshaft, the feed cams being jointly movable axially of the camshaft while being constrained to simultaneous rotation therewith;

(c) a cam follower arranged for engagement with the contoured surface of one of the feed cams;

(d) means defining a pair of opposed fluid chambers acting between the camshaft and the set of feed cams for moving the latter axially of the camshaft to a desired position where a selected one of the feed cams is engaged by the cam follower; and

(e) a linkage for operatively connecting the cam follower to the feed member in order to cause the latter to reciprocate over a distance determined by the contoured surface of the selected feed cam in engagement with the cam follower.

4,436,200

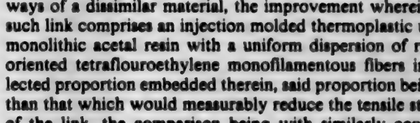
LOW FRICTION FLAT-TOP ARTICLE CARRYING CHAIN

Wasly G. Hodlewsky, Greendale, and William H. Bloedorn, West Allis, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Continuation of Ser. No. 653,564, Jan. 29, 1976, abandoned, which is a continuation of Ser. No. 225,845, Feb. 14, 1972, abandoned. This application Jul. 23, 1979, Ser. No. 59,851

Int. Cl.³ B65G 17/40

U.S. Cl. 198—851 **6 Claims**



1. A chain comprising links interconnected by pins for articulation and having a tensile strength, wear resistance and low coefficient of friction for operation on rigid supporting guide ways of a dissimilar material, the improvement wherein each such link comprises an injection molded thermoplastic unitary monolithic acetal resin with a uniform dispersion of random oriented tetraflouroethylene monofilamentous fibers in a selected proportion embedded therein, said proportion being less than that which would measurably reduce the tensile strength of the link, the comparison being with similarly connected links molded under the same conditions entirely of the same acetal resin alone and using the same accepted measurement procedure, and said proportion being greater than 1.3% by weight and such that the number of fibers exposed to the guide ways are sufficient to reduce the coefficient of friction of the link with the guide ways to 0.2, said coefficient being well below that indicated by accepted test procedures using test specimens of the same resin with the same fibers in said proportion.

4,436,201

DISC CARTRIDGE HAVING A DETACHABLE LID

Shosei Inaba, Sagamihara, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan

Filed Nov. 8, 1982, Ser. No. 440,158

Claims priority, application Japan, Nov. 11, 1981, 56-167141[U]; Nov. 19, 1981, 56-171455[U]

Int. Cl.³ B65D 85/30, 85/57; F16F 1/22

U.S. Cl. 206—444 **8 Claims**

1. A disc cartridge for containing an information recording disc therein, comprising:

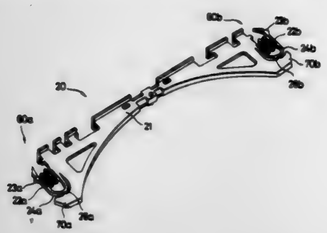
(a) a cartridge body having an opening at one end thereof for inserting and taking out a recording disc therethrough;

(b) a lid detachably engaged with said end for covering said opening when engaged with said cartridge body, said lid

having a lid body and a pair of engaging means provided at both ends of said lid body for the engagement of said lid with said cartridge body, said lid body and said engaging means being integrally formed of a synthetic resin;

said engaging means having;

a lock arm having a curved portion, one end of said lock arm being connected to said lid body, a projection, which will be received in a recess made in said cartridge



body, being provided in the vicinity of the other end of said lock arm;

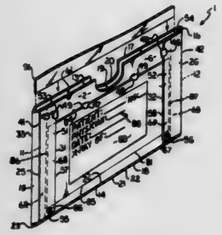
a plurality of leaf spring elements constituting a generally zigzag-shaped spring means, which is interposed between one end of said lid body and said lock arm, each of said leaf spring elements being connected to another at its end to form consecutive V-shapes, every other leaf spring element in said zigzag-shaped spring means has a thin portion and a thick portion.

4,436,202

REUSABLE ENVELOPE

E. Bertram Berkley, Kansas City, Mo., assignor to Tension Envelope Corporation, Kansas City, Mo.

Filed Sep. 20, 1982, Ser. No. 420,127
Int. Cl.³ B65D 85/48
U.S. Cl. 206—455 9 Claims



1. An envelope for removably receiving and retaining a card insert with opposite side margins, which comprises:

(a) an exposed front panel having an inner and an outer surface, an upper and a lower edge, and opposite side edges;

(b) an exposed back panel having an inner and an outer surface, an upper and a lower edge, and opposite side edges; said back panel being integrally connected to said front panel and demarcated therefrom by a lower edge fold line along said front and back panel lower edges;

(c) said back panel being folded along said lower edge fold line with respect to said front panel and positioned adjacent thereto;

(d) said front and back panels forming a pocket therebetween open at said front and back panel upper edges;

(e) a pair of opposed side flaps each having a respective side flap edge and each being integrally connected to said back panel and demarcated therefrom by a respective fold line along said side flap edge and a respective back panel side edge, each said side flap being attached to said front panel outer surface and positioned exteriorly with respect to said envelope;

(f) a pair of extensions each attached to a respective side flap and extending inwardly therefrom; each said extension having a lower portion secured to said front panel outer surface and an unsecured upper portion;

(g) each said extension including an extension inner side edge, said extension inner side edges being positioned in spaced, opposed relationship; and

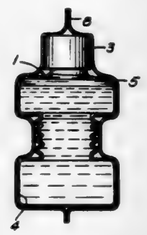
(h) a pair of closures each formed between said front panel outer surface and a respective extension unsecured portion; each said closure being adapted to slidably and releasably receive therein a respective said insert side margin whereby said card insert is removably retained adjacent said front panel outer surface and whereby said card insert is visible between said extension side edges.

4,436,203

TAMPER RESISTANT PACKAGING DEVICE

Ellis M. Reyner, New Brunswick, N.J., assignor to Joy Research Incorporated, New Brunswick, N.J.

Filed May 10, 1983, Ser. No. 493,363
Int. Cl.³ B65D 81/20, 85/86; G01L 19/12
U.S. Cl. 206—524.8 33 Claims



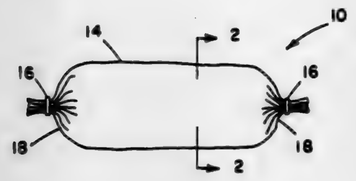
1. In a tamper-resistant package, at least one over sized closeable outer enclosure and at least one inner enclosure fitted with closure means containing at least one flowable material in addition to the product, and means associated with said package for making available higher pressure inside the inner enclosure than that of its surrounding atmosphere, space between said outer and inner enclosures contains a predetermined amount of flowable material suitable for the proper functioning of said package, the internal pressure in said outer enclosure is reduced to a predetermined level below that of its surrounding atmosphere by drawing out a suitable quantity of its flowable contents before closing it, the walls of said outer enclosure press against the walls of said inner enclosure which holds the product and restricts its movement therein to a predetermined extent, means associated with said package for manifesting evidence that tampering with said package has occurred in the event that the contents in said inner enclosure is tampered with through at least one aperture made in said walls of said package leading to the product therein.

4,436,204

DRYWALL JOINT COMPOUND PACKAGING

Gerard T. Sowinski, Lancaster, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Dec. 9, 1982, Ser. No. 448,291
Int. Cl.³ B65D 75/48, 77/12
U.S. Cl. 206—525 10 Claims



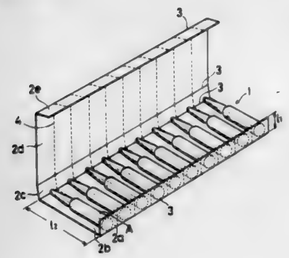
1. A package of ready-mix joint compound comprising a cylindrical plastic tube gathered and sealed at each end and filled with an aqueous slurry of drywall joint compound.

4,436,205

AMPULE CASE

Isamu Horii, Osaka, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 31, 1982, Ser. No. 363,920
Claims priority, application Japan, Apr. 3, 1981, 56-50897
Int. Cl.³ B65D 85/42, 73/00
U.S. Cl. 206—530 7 Claims



1. An ampule case comprising one or more L-shaped base sheets in which the long side of each L extends along one side of the ampule, means effecting adherence between the short side of each L and the bottom side of each ampule and means formed as an integral extension of each base sheet covering at least one other dimension of said ampule.

4,436,206

RECLOSABLE PAPERBOARD CARTON STRUCTURE

Morris W. Kuchenbecker, Neenah, Wis., assignor to James River/Dixie-Northern, Inc., Norwalk, Conn.

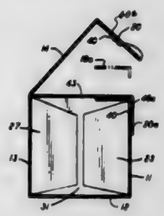
Filed Sep. 15, 1981, Ser. No. 302,388
Int. Cl.³ B65D 5/54
U.S. Cl. 206—625 18 Claims

1. A reclosable paperboard carton structure comprising:

an open-top body portion including upstanding front and rear walls and opposed end walls;

a cover including a top wall hinged along an edge portion thereof to said rear wall, and a depending front flap on the free edge portion of said top wall opposite the recited hinged edge portion; and

means releasably adhering said flap to said front wall comprising adhesive on said front wall and said flap in predetermined areas thereof defined by a pattern of discontinuous first knife cuts provided in at least one of said front wall and said flap, whereby said flap is releasable to open said top wall by pulling said flap away from said front wall



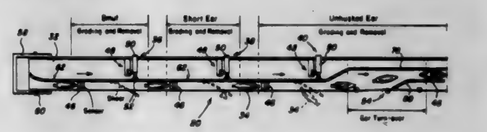
and peeling the surfaces of said areas of paperboard defined by said first knife cuts.

4,436,207

AUTOMATIC CORN SORTING AND INSPECTION SYSTEM

Edward L. Klukis, 1270 Marshall Dr., S.E., Salem, Oreg. 97302

Filed May 8, 1981, Ser. No. 261,942
Int. Cl.³ B07C 5/10; G02B 5/16
U.S. Cl. 209—577 4 Claims



4. An automatic sorting and inspection system for articles of food, comprising a plurality of grading and removal stations, each station including means for sensing a particular characteristic of the articles, means for conveying each of the articles through each of the stations, and means for removal of the articles from the conveying means at each of the stations, said sensing means including a plurality of fiber optic tubes having ends positioned above said conveying means, means for transmitting light through said optic fiber tubes, mounting means for anchoring the ends of the optic fiber tubes and spring means connected to the mounting means for rectilinear movement thereof to enable the ends of the optic fiber tubes to follow contours of the articles during travel on the conveying means.

4,436,208

GUIDE MEMBER FOR A ROLLER-TYPE CLASSIFYING MACHINE

Walter I. Cronan, 125 Lakeview Ave., Leonia, N.J. 07605

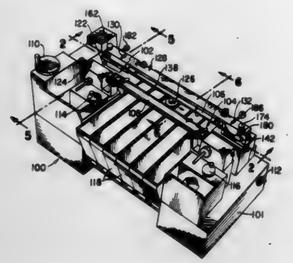
Filed Jan. 4, 1982, Ser. No. 336,633
Int. Cl.³ B07C 5/04
U.S. Cl. 209—668 24 Claims

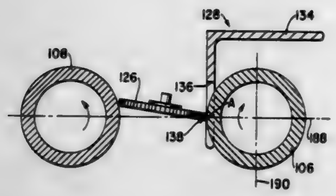
1. An improved classifying machine having first and second rollers supported with their rolling surfaces facing and spaced apart from each other, said rollers having respective axes of rotation lying in the same plane, said apparatus including means for rotating said rollers about their axes as a workpiece is fed along at least a portion of the rollers' length while the workpiece is seated between and in contact with the roller' surfaces, the improvement comprising:

an elongated guide member including a tensioned filament disposed between said rollers and extending along a substantial part of the length of said rollers, and

means positioning said filament at a position where it provides vertical support to the workpiece while the workpiece is seated in contact with the surfaces of both rollers, and positioning said filament relative to said rollers so that

when said workpiece is seated in contact with said rollers and said filament, the center of gravity of the workpiece





must rise in order for the workpiece to break contact with either of the roller surfaces.

4,436,209

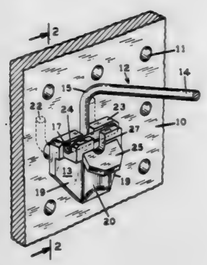
MERCHANDISE DISPLAY HOOK

David R. Thalenfeld, Beachurst, N.Y., assignor to Trion Industries Inc., Wilkes-Barre, Pa.

Continuation-in-part of Ser. No. 151,357, May 19, 1980, Pat. No. 4,351,440, Continuation-in-part of Ser. No. 918,483, Jun. 23, 1978, abandoned. This application Sep. 18, 1981, Ser. No. 303,419

Int. Cl.[3] A47F *5/00*

U.S. Cl. 211—57.1 10 Claims



1. A two part merchandise hook or the like which comprises
(a) a formed wire support element having an outwardly extending portion and a downwardly extending stabilizing portion,
(b) a hinge bar secured to said support element;
(c) a molded plastic base member including spaced, L-shaped mounting lugs adapted for reception in an apertured display panel,
(d) said base member having an open-sided hinge recess for the reception of said hinge bar,
(e) said base member being pivotable about said hinge bar when assembled therewith,
(f) the open side of said recess being of smaller dimension than the diameter of said hinge bar, whereby said hinge bar is forceably inserted into said recess and is self-retaining therein after assembly.

4,436,210

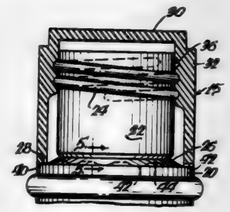
THREADED CAP FOR SEVERING A CLOSURE FROM A HERMETICALLY SEALED CONTAINER

Gerhard H. Weiler, South Barrington, and Louis T. Pagels, Hanover Park, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Apr. 1, 1982, Ser. No. 364,476

Int. Cl.[3] B65D *1/02*

U.S. Cl. 215—32 4 Claims



1. A sealed package comprising:
a hermetically sealed plastic container having a body portion provided with an annular bearing surface and a cover integral therewith but adapted to be severed therefrom; and
a cap threadedly engaged with said cover and operable to sever said cover from said body portion when said cap is threaded down on said container to abut the bearing surface and thereby open said container;
said cap defining a discontinuous bottom edge adapted to bear against said container annular bearing surface as the cap is threaded down onto said container, whereby the surface area contact between said bottom edge and shoulder is substantially reduced;
said bottom edge further comprising a plurality of alternating circumferentially spaced prominences and recesses, only said prominences being adapted to bear against said annular bearing surface of said container; and
said prominences being arcuate so that the surface area contact between a prominence and said container annular bearing surface is substantially tangential.

4,436,211

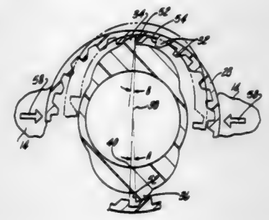
SAFETY PACKAGE

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Dec. 17, 1982, Ser. No. 450,686

Int. Cl.[3] B65D *55/02*

U.S. Cl. 215—216 9 Claims



1. A safety package comprising: a container having a cylindrical neck portion forming an opening, a cylindrical cap

disposed on said neck for closing said opening, complementary cam means on said neck of said container and on said cap to permit relative axial movement between a first position closing said opening and a second position permitting removal of said cap upon relative rotation of said cap and container less than one turn, said cap including an outer skirt concentric with said cap, a plurality of ratchet teeth uniformly spaced on the circumference of said skirt, a lock element on said container engageable with said teeth to permit rotation of said cap in a closing direction toward said first position and being engageable with any one of said teeth to substantially prevent relative rotation of said container and cap toward said 2nd position for a distance more than the spacing between adjacent teeth, said skirt being deformable by simultaneous radial pressure at diametrically spaced points on said skirt spaced approximately 90° from said lock element to move said one of said teeth radially outward and disengage said lock element from said one of said teeth to permit relative rotation of said cap and closure in an opening direction.

4,436,212

TAMPER PROOF CLOSURE

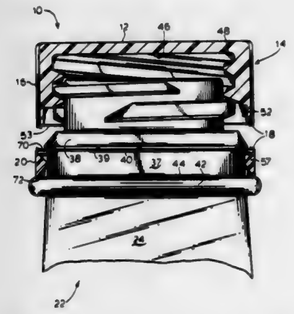
Santos A. Alejandro Llera, San Juan, P.R., assignor to Precision Plastic Products Corp.

Continuation-in-part of Ser. No. 185,889, Sep. 10, 1980, Pat. No. 4,380,299. This application May 5, 1982, Ser. No. 375,207

The portion of the term of this patent subsequent to Apr. 19, 2000, has been disclaimed.

Int. Cl.[3] B65D *49/12*

U.S. Cl. 215—252 21 Claims



1. A tamper proof closure for a container with a neck finish having a threaded portion and a retaining means therebelow having a bottom surface, said closure comprising:
a body having a substantially straight side wall having an inner surface with an internally threaded portion located on said inner surface and on its external surface having located thereon a plurality of spaced ribs;
a breakaway skirt therebelow;
a frangible connecting means for connecting said breakaway to said side wall including a plurality of straps formed from a select number of ribs by an undercut in the side wall which extends outward from said inner surface;
said breakaway skirt being adapted to slide over said retaining means as the closure is threaded onto the container and to be disposed below of and adjacent to said retaining means when said closure is fully threaded onto the container;
whereby when the closure is unthreaded from the container, the breakaway skirt will be severed from the body at the frangible connecting means by the bottom surface of said retaining means acting on the breakaway skirt leaving said breakaway skirt on the container as an indication of tampering.

4,436,213

CONTAINER HAVING TAMPER EVIDENT SEAL AND IMAGED POLYMER FILM USEFUL AS SUCH A SEAL

Fred R. Paul, Jr., Chisago, and James S. Mrozinski, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Nov. 5, 1982, Ser. No. 439,638

Int. Cl.[3] B65D *51/00*

U.S. Cl. 215—365 11 Claims

1. A container having walls defining a cavity and an opening into said cavity covered by a tamper evident seal comprising a normally transparent polymer film which can be repeatedly rendered temporarily translucent by stretching and transparent by relaxing.

4,436,214

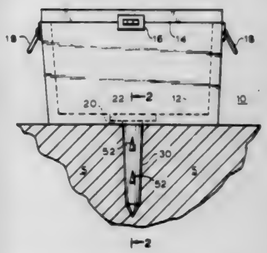
ANTI-THEFT PICNIC DEVICE

David Henderson, 14 Chester Rd., Darien, Conn. 06820

Filed Dec. 20, 1982, Ser. No. 450,987

Int. Cl.[3] B65D *25/24*; E02D *5/80*

U.S. Cl. 220—18 13 Claims



1. A securable beach picnic chest assembly comprising, in combination, a picnic chest having a floor, a closable lid, locking means for locking said lid, and carrying handles, with the chest being constructed to be of sufficiently light weight to be hand-portable, and with the floor having a through opening; and a locking spike device extending through said through opening and including a body portion, an insertion point at a lower end of the body portion, a shoulder at an upper end of the body portion securing the picnic chest to the locking spike device, a plurality of locking spikes having at least anchoring portions thereof disposed outside said body portion, slide means within said body portion coupled to said locking spikes and displaceable between first and second operative positions, and an actuator handle within said picnic chest and operative selectively to displace said slide means to said first position in which said anchoring portions of said locking spikes are disposed against said body portion so that said locking spike device can be inserted into and withdrawn from sand or soft soil, and to said second position in which said anchoring portions of said locking spikes are angled outwardly from said body portion to anchor said locking spike device and picnic chest in place in the sand or soft soil.

4,436,215

STORAGE DRAWER WITH RETAINED PARTITIONS

Karl W. Kleinert, 19601 Beach Cliff Blvd., Rocky River, Ohio 44116, and Kenneth B. Kleinert, 1285 E. Melrose Dr., Westlake, Ohio 44145

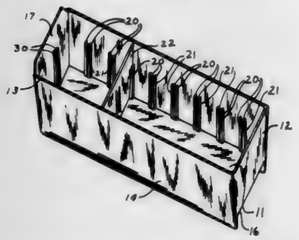
Filed Jan. 21, 1982, Ser. No. 341,464

Int. Cl.[3] B65D *1/24, 25/04*

U.S. Cl. 220—22.3 7 Claims

1. A storage drawer which comprises:
a bottom;
two ends extending from the bottom;
two sides extending from the bottom between the two ends, each side having a plurality of longitudinally spaced slots

extending from the bottom, each slot defined by two edges, the edges being formed by a pair of ridges which extend from the side, the edges converging as the slot extends toward the bottom so that each slot becomes narrower as its extends toward the bottom, each ridge having a recess extending into the ridge from the edge of the slot and extending from the top of the slot toward the bottom thereof, the recesses for each pair of ridges being opposite each other, each recess extending into the ridge in a direction generally perpendicular to the slot; and



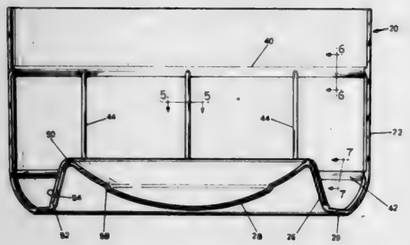
a partition adapted to be held on each side by one of the slots on the side of the drawer, the partition having a pair of diametrically opposed protruding tabs which extend from each end on each side of the partition, each tab adapted to fit in one of the recesses, the sides of the partition adapted to be held by the narrowing slot as the partition is inserted into the drawer, and the tab adapted to be held in the recesses.

4,436,216

RIBBED BASE CUPS

Long F. Chang, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 30, 1982, Ser. No. 412,673
Int. Cl.³ B65D *23/00*
U.S. Cl. 220—69 22 Claims



1. A base cup for receiving a container having a generally spherical bottom comprising, in combination, an annular sidewall, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface, at least one circumferential rib disposed on said annular sidewall, at lesat one lower rib disposed on said seating ring and a plurality of generally vertically oriented ribs extending between said circumferential rib and said lower rib, a pair of concentric ribs, one of said concentric ribs disposed generally at the intersection of said seating ring and said support member, the other of said concentric ribs disposed generally at the intersection of said support member and said support platform.

6. A base cup for receivng a container having a hemispherical bottom comprising, in combination, an annular sidewall having a thickness of about 20 mils, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface disposed within said seating ring, said seating ring, said support member, and said support platform having a thickness of about 25 mils, at least one circumferential rib disposed on said annular sidewall, at least one lower rib disposed on said seating ring and a plurality of generally vertically oriented ribs extending between and intersecting said circumferential rib and said lower rib, said ribs each having a thickness of about 40 to 45 mils, a second lower rib disposed generally on said seating ring and spaced inwardly from said lower rib, a third lower rib disposed generally at the intersection of said support member and said support platform, a plurality of generally conically oriented ribs on said support member extending between said second lower rib and said third lower rib, a circumferential step in said support platform and a plurality of radially oriented, intersecting ribs disposed on said support platform within said circumferential step.

7. A base cup for receiving a container having a hemispherical bottom comprising, in combination, an annular sidewall having a thickness of about 20 mils, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface disposed within said seating ring, said seating ring, said support member, and said support platform having a thickness of about 25 mils, at least one circumferential rib disposed on said annular sidewall, at least one lower rib disposed on said seating ring and a plurality of generally vertically oriented ribs extending between and intersecting said circumferential rib and said lower rib, said ribs each having a thickness of about 40 to 45 mils, a second lower rib disposed generally on said seating ring and spaced inwardly from said lower rib, said ribs being disposed on the inside of said base cup.

10. A plastic base cup for receiving a container having a hemispherical bottom comprising, in combination, an annular sidewall, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface, at least one circumferential rib disposed on said annular sidewall, an annular thickened portion at substantially the intersection of the support member and the support platform, and a plurality of substantially conically extending ribs disposed on said support member and intersecting said thickened portion.

16. A base cup for receiving a container having a hemispherical bottom comprising, in combination, an annular sidewall, a seating ring extending generally inwardly from said sidewall, a generally frusto-conical support member extending upwardly and inwardly from said seating ring and a support platform having a container receiving surface, at least one circumferential rib disposed on said annular sidewall, a pair of substantially concentric ribs, one of said ribs disposed at substantially the intersection of said seating ring and said support member and the other of said ribs disposed at substantially the intersection of said support member and said support platform and a plurality of substantially conically extending ribs disposed between and intersecting said pair of concentric ribs.

4,436,217

PAINT BRUSH SUPPORT

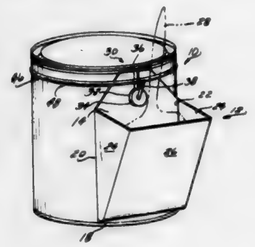
John C. Ritter, 12645 Duchess, Detroit, Mich. 48224

Filed Dec. 4, 1981, Ser. No. 327,413
Int. Cl.³ A46B *17/02*
U.S. Cl. 220—85 D 6 Claims

1. A paint brush support attachable to the outer portion of a paint container having a bale attached to the outer portion of the paint container by a bale attachment button, the paint brush support comprising:

a brush container, the brush container comprising a vessel having an open top, an inside wall having a top edge, opposed side walls and an outside wall;

an aperture formed in the inside wall of the brush container, the aperture being snugly engageable with the bale attachment button to support the brush container on the paint container; and



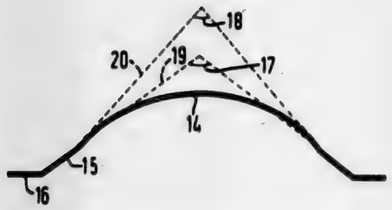
a slot extending from the top edge of the inner wall of the brush container to the aperture to clear the bale when mounting the brush container on the bale attachment button.

4,436,218

REVERSE BUCKLING BURSTING DISC

John G. Beese, Cardiff, England, assignor to IMI Marston Limited, Wolverhampton, England

Filed Jan. 26, 1982, Ser. No. 342,803
Claims priority, application United Kingdom, Feb. 19, 1981, 8105237
Int. Cl.³ F16K *17/40*
U.S. Cl. 220—89 A 8 Claims



1. A reverse buckling pressure relief disc adapted to be disposed, in use, with its convex side towards the higher pressure encountered in use, wherein the improvement comprising the disc having a central domed region, an outer flange and an integral transitional region interconnecting the flange and the central domed region, the transitional region being of generally frusto-conical shape and having an included angle in the region 170° to 70°, the included angle of the tangents of the domed region taken where the central domed region meets the transitional region being less than the said included angle of the transitional region.

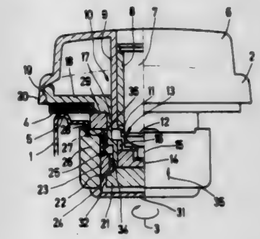
4,436,219

SEALING CAP FOR A GASOLINE TANK

Heinrich Reutter, Waiblingen, Fed. Rep. of Germany, assignor to Reutter Metallwarenfabrik GmbH, Waiblingen, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,205
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146824
Int. Cl.³ B65D *41/96, 41/36*
U.S. Cl. 220—295 22 Claims

1. Sealing cap with turning stop (26) for placing on a filler neck (1) provided with a counter stop (27), in particular of a gasoline tank, which is supported with the intermediary of a sealing ring (4) on the free end (5) of said filler neck, wherein said turning stop engages under a neck edge (36) facing into the neck interior, characterized in that a turning handle (2) carries a slide surface (21) which simultaneously forms a turning carrier (32) for said turning step (26), wherein said turning carrier



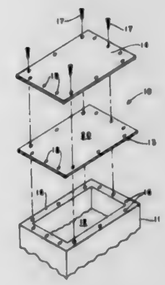
and said turning stop are coupled via a turning lifting apparatus (24, 43) and in that a turning protection member (29) rotatably supported at said turning handle is rotatably supported in said neck (1).

4,436,220

HERMETIC PACKAGE USING MEMBRANE SEAL

Louis D. Simmons, Arnold, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1982, Ser. No. 393,266
Int. Cl.³ B65D *41/00*
U.S. Cl. 220—359 4 Claims



1. A solderable, hermetically sealed reuseable container which comprises:

a. a container body defining a cavity therein and presenting a solderable surface defining an opening for said container;

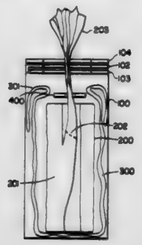
b. a thin, reuseable, solderable metallic membrane for hermetically sealing said opening by interfacing with said solderable surface by the application of heat around the periphery of said membrane;

c. a solder seal interfacing said membrane and said solderable surface;

d. a protective plate covering said membrane; and

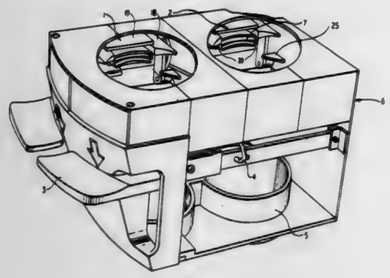
e. means for removably attaching said protective plate to said container body.

4,436,221
CONTAINER AND DISPENSING PLATE FOR A ROLL OF PRE-MOISTENED TOWELETTES
Herman Margulies, Westfield, N.J., assignor to Sterling Drug Inc., New York, N.Y.
Filed Oct. 12, 1978, Ser. No. 950,616
Int. Cl.³ A47K *10/38*
U.S. Cl. 221—46 9 Claims



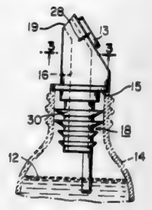
7. A device for dispensing and separating a single perforated sheet from a continuous roll of sheets which are joined at perforations, said device comprising a substantially rigid plate having therethrough a dispensing opening dimensioned to allow an end sheet of a roll to slide therethrough, a slit having a first end opening into said dispensing opening and a second end, and sloped edges converging toward said second end of said slit from an outer edge of said plate, whereby said end sheet of said roll slides through said slit into said dispensing opening, and the remaining sheets are pulled directly through said dispensing opening.

4,436,222
APPARATUS FOR DISPENSING CONTAINERS
Michael Taylor, Lower Norton, Nr. Warwick, and Malcolm D. N. Withnall, Moreton Morrell, both of England, assignors to Mars Limited, London, England
Filed Dec. 10, 1981, Ser. No. 329,708
Claims priority, application United Kingdom, Dec. 18, 1980, 8040531
Int. Cl.³ B65H *3/24*
U.S. Cl. 221—223 7 Claims



1. Apparatus for dispensing containers from a stack, comprising a plurality of jaw assemblies evenly spaced around a common vertical axis, each jaw assembly having a catch member and a lever member pivotable about horizontal axes between a first rest position in which the catch member is pivoted upwards away from the common axis to allow a stack of containers to pass it and rest on a lower support surface of the lever member and a second dispensing position in which an upper support surface of the catch member is positioned to support the stack of containers and the lever member is pivoted downwards away from the common axis to allow the lowermost of the stack of containers to pass it, wherein the inner edges of the upper and lower support surfaces form concave segments of a circle of substantially the same radius as the containers, each said lever member having an upper pressure surface opposed to and spaced from its lower support surface so as to apply downward pressure to the top of the lowermost of the stack of containers when in the said second position, the inner edges of the upper pressure surfaces forming concave segments of a circle and wherein the upper pressure surfaces are horizontal when the lever members are in their second position.

4,436,223
DEVICE FOR RECORDING THE DISPENSING OF FLUIDS
Jerry L. Wilson, 2810 E. 46th St., Chattanooga, Tenn. 37407
Filed Feb. 3, 1981, Ser. No. 231,244
Int. Cl.³ B67D *5/22*; G01F *11/26*
U.S. Cl. 222—36 5 Claims



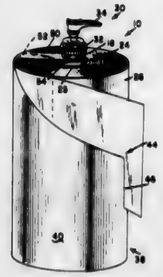
1. In combination, a dispenser for dispensing a predetermined measured unit of conductive fluid from a container when the container is tipped, and a device for recording the number of measured units dispensed by the dispenser, said dispenser having a housing including an outlet spout, means including an inlet for entering into said container, and a conduit communicating said inlet and said outlet, said device comprising, a casing mounted on the exterior of the housing of said dispenser, a pair of electrical conductors extending from the casing and disposed in spaced apart disposition within said conduit adjacent said outlet spout to form a gap, whereby whenever said container is tipped fluid is presented over said conductors to provide an electrical path across said gap, and electrical circuit means disposed within said casing and connected across said conductors, said circuit means including a source of electrical energy, and an electrical counting means for counting and recording the number of times the electrical path across said gap occurs and thereby the number of predetermined measured units dispensed by said dispenser.

4,436,224
DISPENSER FOR FLUIDS AND PAPER TOWELS
John McInerny, 25 Central Sq., Grafton, Mass. 01519
Filed Feb. 22, 1982, Ser. No. 351,189
Int. Cl.³ B67D *5/06*; B65H *19/00*
U.S. Cl. 222—183 14 Claims

1. Dispenser for fluid and paper towels in which the towels are arranged in a roll having a central bore, the dispenser comprising:
(a) a fluid container comprising:
1. a base portion with an upper horizontal surface,
2. an elongated neck portion which extends vertically from the base portion and is adapted to extend through the bore of a roll of paper towels, so that the roll is supported on said horizontal surface and the top of said elongated neck portion extends above the roll, and
3. an outlet aperture at the top of the elongated neck portion;
(b) a fluid dispensing fixture consisting of a manually operated pump comprising:
1. a cap adapted to fit on top of the elongated neck portion,
2. a spout on top of the cap, and

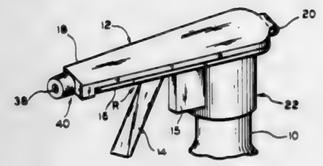
3. an elongated tube which is operatively connected to the spout and which extends down into the base portion of the container.

7. Dispenser for fluid and paper towels in which the towels are arranged in a roll having a central bore, the dispenser comprising:
(a) a fluid container having an outlet aperture and comprising:
1. a base portion with an upper horizontal surface,



2. an elongated neck portion which extends vertically from the base portion and is adapted to extend through the bore of a roll of paper towels, so that the roll is supported on said horizontal surface and the top of said elongated neck portion extends above the roll, and
3. an outlet aperture at said base portion,
(b) a fluid dispensing fixture consisting of a spigot at said outlet aperture.

4,436,225
DISPENSER HAVING A TRIGGER-BULB PUMP
Sidney M. Libit, 441 Lakeside Ter., Glencoe, Ill. 60022
Continuation of Ser. No. 162,429, Jun. 24, 1980, Pat. No. 4,352,443. This application May 17, 1982, Ser. No. 378,805
The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.
Int. Cl.³ B05B *11/01*
U.S. Cl. 222—207 5 Claims



1. A pump for a fluid container comprising: a two part spray head which fits together to form means for dispensing fluid from the container via passages in at least one of said two parts, said head including a fluid-dispensing nozzle; a first of said parts being shaped and proportioned to provide first means for enabling a flow of fluid from near the bottom of the container to the nozzle; second means interposed in said first means for drawing fluid from said container and for delivering it to and expelling it from said nozzle, said second means further including a flexible trigger means having a flange with contours for forming intake and outlet fluid valves and an air breather valve, and said flexible trigger means contours further forming a thin walled bulb which is dependent from said flange and which is positioned to be in direct contact with a finger on the hand of an operator, said finger first closing and then opening said bulb for sucking in said fluid via said first means and said intake valve and then closing said bulb for expelling fluid via said outlet valve and said nozzle, said valves being operated solely by said finger squeezing said bulb.

4,436,226
MATERIAL METERING DEVICE
Alvin F. Aggus, 2750 Sailor Ave., Ventura, Calif. 93001
Filed Aug. 6, 1981, Ser. No. 290,419
Int. Cl.³ G01F *11/00*
U.S. Cl. 222—280 9 Claims

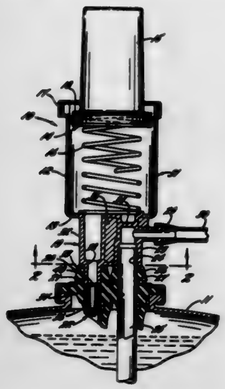


1. A metering device for particulate material, comprising:
forward and rear rollers for supporting a conveyor belt,
a flexible conveyor belt wound about the rollers,
means for dispensing particulate material onto said conveyor belt,
means for rotating at least one of the rollers to rotate the conveyor belt with its upper surface moving toward the forward roller,
a gate having a lower material contacting surface, said gate comprising a generally cylindrical elongate rod positioned generally above and forward from the forward roller with its axis generally parallel to the roller axis, and a material blocking surface above said rod, said rod cooperting with the forward roller to define a gate opening which prevents material above the level of the lower rod surface from being metered past the gate,
means for adjusting the position of the gate along a path which extends upward and forward from the forward roller to control the volumetric metering rate and permit material being metered past the gate to fall downwardly, and
means for continuously rotating the rod so that its lower surface moves in the direction of material flow, thereby retarding clogging of metered material at the gate.

4,436,227
PUMP AND TAP ASSEMBLY FOR BEVERAGE CONTAINERS
Arthur L. Johnson, Jr., and Marlow W. Dodge, both of Rockford, Ill., assignors to Johnson Enterprises, Inc., Rockford, Ill.
Filed Oct. 1, 1981, Ser. No. 307,535
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—382 1 Claim

1. In a pump and tap assembly for a beverage container, the combination of, a single unitary piece of rigid plastic material and comprising, a cylinder having a first end open to receive a hand operated piston, and a tapping unit formed integrally with the second end of said cylinder, said tapping unit including a bottom wall portion formed integrally with said cylinder and closing said second end of the cylinder, a first rigid tube formed integrally with said bottom wall portion and projecting longitudinally outwardly from said bottom wall portion, said tube having an enlarged portion of predetermined length adjacent said bottom wall portion and communicating with the interior of said cylinder while terminating at said bottom wall portion thereby to permit air to be pumped from said cylinder into the container through said tube, the outer end portion of said first tube having an internal diameter of predetermined size, a hollow tubular boss integrally formed on the exterior of said bottom portion and projecting longitudinally from said bottom wall portion alongside said tube a distance equal to said predetermined length, the outer end of said boss having a hole

facing longitudinally outwardly to receive and hold a second rigid tube generally paralleling said first tube, a web integral with and extending across the interior of said boss to separate the interior of the boss from the interior of said cylinder, a tubular fitting formed integrally with said boss and projecting laterally therefrom, said fitting communicating with the interior of said boss and adapted to receive a hose whereby beverage in the container flows out through said second tube, said boss, said fitting and said hose, and a separate and elongated one-way valve made of elastomeric material and disposed in



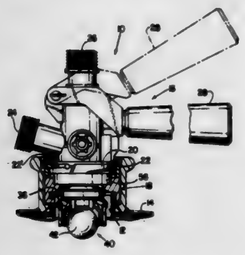
said outer end portion of said first tube, said valve having a generally cylindrical body with a radial flange at its outer end, said body extending longitudinally of said first tube and having a slit which is adjacent its outer end and which opens to permit air to flow only in the direction from said cylinder to the container, the natural diameter of said radial flange of said valve being greater than the internal diameter of said outer end portion of said first tube whereby the flange is compressed against the inside of said first tube to hold the valve in place as said piston moves back and forth in said cylinder.

4,436,228

KEG TAPPING APPARATUS HAVING IMPROVED RETAINER

John A. Frey, Orange, Conn., assignor to Hoff-Stevens, Inc., Ansonia, Conn.

Filed Feb. 16, 1982, Ser. No. 348,961
Int. Cl.³ F16K *35/00*; F16L *37/28*
U.S. Cl. 222—400.7 **3 Claims**



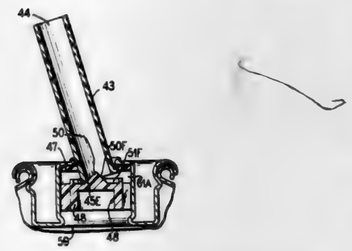
1. In a tapping apparatus for a keg having a neck, the tapping apparatus including a tavern unit and a keg unit, the keg unit including a generally cylindrical retainer for positioning within the neck and having an outwardly opening coaxial bore, said retainer having a plurality of coupling lugs projecting into the bore, the tavern unit having a coupling member received within the bore and coupled to the keg unit by engagement with the coupling lugs, the improvement comprising said retainer having a generally cylindrical body defining said bore and made from one material, said body having an annular bearing surface at its outer end and a plurality of notches therein communicating with said bore, each of said notches extending radially through said body and opening outwardly through said bearing surface, each of said notches having a dovetailed inner end portion converging outwardly toward said bearing surface, a plurality of inserts equal in number to said notches and made from another material harder than said one material, each of said inserts received within and generally complementing an associated one of said notches, each of said inserts defining an associated one of said coupling lugs and a portion of said bearing surface, and means for retaining said inserts in integral assembly with said body.

4,436,229

HIGH FLOW TILT VALVE WITH ACCELERATING CAM EQUIPPED MOVEABLE CUP

Walter C. Beard, South Street, Middlebury, Conn. 06762

Continuation-in-part of Ser. No. 405,696, Aug. 5, 1982, abandoned. This application Oct. 1, 1982, Ser. No. 432,298
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—402.22 **21 Claims**



1. A fluid dispensing valve structure for dispensing the viscous contents of a pressurized container comprising:
a mounting cup member sealingly securable to said pressurized container and having communications with the pressurized contents of said container,
a resilient seal member carried within said mounting cup member,
an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second opposed and outwardly flanged end extending through said mounting cup member and supported in said mounting cup member by said resilient seal member in a normally generally straight upright extended position,
a moveable valve cup member reciprocally slidably carried within said mounting cup member and normally biasable against said resilient seal member to form a seal means for normally sealing the contents of said container, said moveable valve cup member being engageable with said second end, said contents of said pressurized container being dispensable when said one end is tiltably displaced relative to its generally straight upright extended position by an external deflecting operating force applied thereagainst, thereby opening said seal means, said moveable valve cup member including:
(A) a base portion extending across said second end of said tubular nozzle means,
(B) rib means upstanding from said base portion for engaging said resilient seal member peripherally of said tubular nozzle means,
(C) camming means centrally upstanding from said base portion and slidably engagable with portions of said second end of said tubular nozzle means when said one end is so tiltably displaced, whereby deflection of said

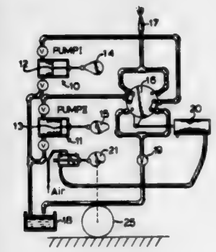
moveable valve cup member occurs when said second end slides along said camming means,
(D) guidance means for orienting said moveable valve cup member relative to said mounting cup member for stable reciprocal sliding movements longitudinally relative to said mounting cup member, and
(E) channel means defined by said moveable valve cup member longitudinally extending therethrough adapted for the laminar flow of a viscous fluid therethrough, the interrelationship between said moveable valve cup member, said tubular nozzle means, said resilient seal member, and said mounting cup member being such that a substantially unobstructed flow of said contents through said valve structure can occur when said one end is so tiltably displaced and also such that when said tubular nozzle means is so tiltably displaced, said second end first exerts said operating force against said base portion and thereafter, as said tiltable displacement increases, said second end next exerts said operating force against said camming means.

4,436,230

ARRANGEMENT FOR PULSATION-FREE FEEDING OF A LIQUID MEDIUM

Frank Hofmann, Hamburg, Fed. Rep. of Germany, assignor to Firma Walter Hofmann Maschinenfabrik, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,336
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007116
Int. Cl.³ F04B *21/02, 23/06*
U.S. Cl. 222—614 **9 Claims**



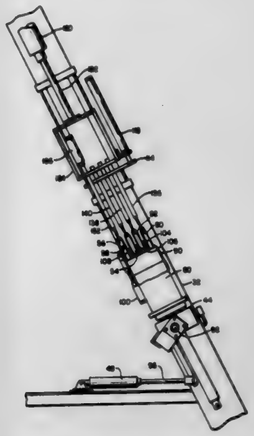
1. An apparatus for pulsation-free feeding of a liquid medium, operable at a certain drive speed, comprising:
a supply container for a liquid medium;
a consuming device;
at least two statically-operated feeding devices, each of which has an inlet end communicating with said supply container and a discharge end, as well as reciprocating displacement means which has a feed stroke for generating a liquid flow out of said discharge end of each feeding device, said feed strokes of said feeding devices overlapping one another and producing equivalent liquid flows; and
switch-over means for successively, simultaneously, and alternately connecting said discharge ends of said feeding devices with said consuming device and with said supply container, respectively, during said feed strokes of said feeding devices.

4,436,231

METHOD AND MACHINE FOR PRE-FORMING AND TURNING GLOVES

James C. Kelly, and Charles H. Shurden, both of Starkville, Miss., assignors to Starkville Tool & Die Company, Starkville, Miss.

Filed Nov. 12, 1981, Ser. No. 320,505
Int. Cl.³ A41H *43/00*
U.S. Cl. 223—40 **45 Claims**



1. A method of pre-forming and turning gloves comprising:
(a) placing an unturned glove on five turning tubes having resiliently mounted ends;
(b) mechanically centering the fingers of said glove on said turning tubes by exerting pressure on the glove between said fingers;
(c) pre-forming the glove by stretching the stitches at the tips of the fingers of said glove by mechanically advancing five turning rods into the tops of said fingers and said resiliently mounted ends of said turning tubes while maintaining said pressure between the fingers of said glove wherein the thumb turning rod is mechanically actuated independently of the remaining turning rods;
(d) removing said pressure from between the fingers of said glove;
(e) mechanically removing pressure on said glove by removing said thumb turning rod at a rate of removal independent of the rate of removal of said remaining turning rods; and
(f) mechanically turning in a single operation all the fingers, the thumb, the palm and wrist of said glove.

4,436,232

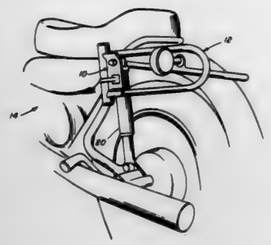
BRACKET FOR MOTORCYCLE LOCK

Peter L. Zane, S. Easton, and Michael S. Zane, Cambridge, both of Mass., assignors to KBL Corporation, Boston, Mass.

Filed Nov. 16, 1981, Ser. No. 297,240
Int. Cl.³ B62J *11/00*
U.S. Cl. 224—39 **13 Claims**

1. A bracket mountable to a support for holding a lock having a U-shaped shackle and a cross-piece adapted to be locked perpendicularly across the legs of said shackle, said bracket comprising
(a) a rigid body portion dimensioned to generally span at least between the legs of said shackle,
(b) said body portion being formed with at least one channel extending along an edge thereof and adapted to receive a leg of said shackle,
(c) clamp means mounted to said body portion and adapted

to engage said cross-piece to prevent movement of said leg along said channel,



(d) mounting means operatively associated with said bracket for mounting said bracket to said support.

4,436,233

BABY CARRIER

James B. Hill, and Sally F. Hill, both of Rte. 2, Galena, Mo. 65656

Filed Dec. 30, 1981, Ser. No. 335,682
Int. Cl.³ A47D *13/02*
U.S. Cl. 224—159 8 Claims



1. Apparatus for carrying an infant on and by the body of an adult comprising:

a seat means adapted to be located in proximity to the waist, hip and stomach of an adult for conformable supporting engagement with the legs, buttocks and lower back of the infant;

a lower hip strap means attached to a lower portion of said seat means and adapted to be located about the hips of an adult for conformable supporting engagement with the body of the adult;

an upper shoulder strap means attached to an upper portion of said seat means and adapted to be located across the back and over the shoulder and across the chest of the adult for conformable supporting engagement with the body of the adult; and

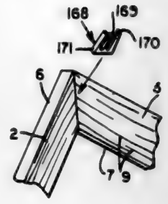
said seat means and said hip strap means and said shoulder strap means being constructed and arranged to form said seat means into a J shape configuration providing a front flap portion connected to and extending downwardly from said waist strap means and located between the infant and the adult and a bottom portion located in the crotch area of the infant and a back portion extending upwardly across the back of the infant and being connected to said shoulder strap means.

4,436,234

FRAME FASTENER

George W. Kennedy, Pompano Beach, Fla., assignor to Senco Southeast, Inc., Decatur, Ga.

Filed Jul. 20, 1981, Ser. No. 284,607
Int. Cl.³ B27F *7/34*
U.S. Cl. 227—4 9 Claims



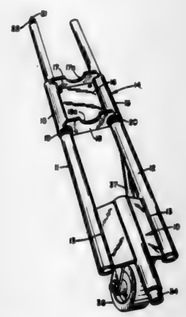
1. In apparatus for fastening mitered joints of a frame comprising a clamp assembly for holding two frame elements in a common plane and in angled abutment with each other to form a mitered joint, means for moving said clamp assembly into clamping engagement with the frame elements, support means for supporting a fastener tool with its fastener discharge opening at a position on one side of the common plane at a location where the mitered joint is to be positioned and at an attitude to discharge a fastener into the mitered joint, the improvement comprising a brace member movable into engagement with the frame elements at the mitered joint clamped by said clamp assembly on the other side of the common plane, said brace member including a foot with a surface movable into engagement with both frame elements at the mitered joint to brace the frame elements in a common plane, a stem connected at one of its ends to said foot, a socket member movably mounted to said stem, and said socket member and stem including means for limiting the movement of said foot and stem with respect to said socket member as the foot engages the frame elements, means for moving said brace member into engagement with the mitered joint, and control means responsive to the movement of the stem and the socket member with respect to each other as the foot engages the frame elements to discharge a fastener from the fastener tool.

4,436,235

PORTABLE PNEUMATIC NAIL DRIVING APPARATUS

Francis A. Hebert, Schriever, La., assignor to South Louisiana Contractors Inc., Lafayette, La.

Filed Jun. 8, 1982, Ser. No. 386,311
Int. Cl.³ B25C *1/02*
U.S. Cl. 227—111 8 Claims



1. For use with a percussive air hammer having a chisel, a nail driving apparatus comprising:

(a) a base member,

(b) guide means upstanding from each side of said base member,

(c) cradle means movable along said guide means,

(d) means carried by said cradle means adapted to mount the air hammer securely to said cradle means,

(e) nail barrel means into which both nails to be driven and the chisel of the air hammer are to be received is positioned on and carried by said base member; and

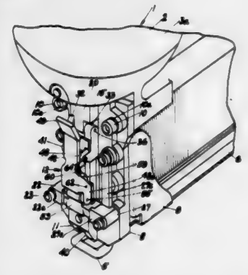
(f) one of said guide means upstanding from said base member forming a nail chute having means for delivering nails singly to said barrel means.

4,436,236

FRONT GATE AND LATCH ASSEMBLY FOR THE GUIDE BODY OF AN INDUSTRIAL FASTENER DRIVING TOOL

William T. Jobe, Bethel, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Mar. 22, 1982, Ser. No. 360,180
Int. Cl.³ B25L *1/04*
U.S. Cl. 227—123 10 Claims



1. A fastener driving tool of the type having a fastener-containing magazine, a reciprocating fastener driver, a guide body communicating with said magazine and having a front opening, and an elongated front gate closing said front opening, said gate being pivotally affixed at one end to said guide body and being swingable between open and closed positions, said gate in closed position and said guide body defining a drive track for said fasteners and said fastener driver, characterized by a latch plate extending transversely of the long axis of said gate and being captively and slidably mounted on said gate, said latch plate having end portions extending laterally to either side of said gate, a spaced pair of locking blocks mounted on said guide body to either side of said front opening, said locking blocks having opposed laterally extending lugs, said latch plate being shiftable along said gate between a gate-locking position near the free end of said gate wherein said latch plate ends are in wedging engagement with said locking block lugs and a gate release position free of said locking block lugs, and a manually actuable over-center lever assembly to shift said latch plate.

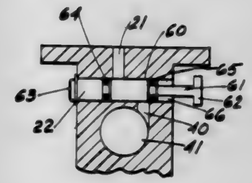
4,436,237

AUTOMATIC FIRING SYSTEM FOR PNEUMATIC TOOLS

George F. Vornberger, and John P. Crutcher, both of Cincinnati, Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio

Filed Nov. 16, 1981, Ser. No. 321,772
Int. Cl.³ B25C *1/04*; F01D *25/06*
U.S. Cl. 227—130 10 Claims

1. In a pneumatically actuated fastener applying tool of the type having a tool body adapted to be connected to a supply of air under pressure, a cylinder in said body, a piston and fastener driver reciprocable in said cylinder, a return air chamber in said body, a main valve for supplying air under pressure to said piston for a working stroke, a portion of the underside of said main valve being continuously exposed to air under pressure, a remote valve assembly for actuating said tool, a connection between said remote valve assembly and the upper side of said main valve, said remote valve assembly in the inactive position providing a connection between said air under pressure and the upper side of said main valve, said upper side of said main valve having a greater area than its underside, a connection between said return air chamber and said remote valve assembly, and a selector valve in said last named connection, the improvement wherein said remote valve assembly comprises a



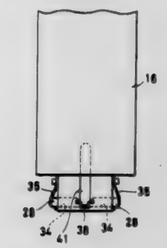
one-piece movable core shiftable between an idle position and an active position, said selector valve in one position venting said air under pressure from above said main valve through said remote valve assembly and selector valve to atmosphere to provide a working stroke upon each actuation of said remote valve assembly, said selector valve in another position providing a connection between said return air chamber through said selector valve and remote valve assembly directly to the upper side of said main valve to provide for auto-fire operation of said tool as long as said remote valve assembly is in said active position.

4,436,238

APPARATUS FOR ATTACHING FASTENER ELEMENTS ONTO A GARMENT

Fumio Seki, Toyama, Japan, assignor to Yoshida Kogyo K K, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,610
Claims priority, application Japan, Dec. 13, 1979, 54-172896[U]
Int. Cl.³ A41H *37/04, 37/16*
U.S. Cl. 227—149 1 Claim



1. An apparatus for attaching a pair of fastener elements onto a garment, comprising:

(a) a frame having a table and a bored head;

(b) a stationary die mounted on said table in opposite relation to said bored head;

(c) a plunger reciprocable mounted in said bored head for movement along a path toward and away from said die having a plunger head supporting a punch for coaction with said die to attach the pair of fastener elements onto the garment from opposite sides thereof;

(d) first means on said bored head for releasably holding one of the fastener elements in said path in front of said punch,

said first means being adapted to be actuated by said punch for releasing said one fastener element, and including a substantially hollow cylindrical holder slidably mounted in said bored head in front of said plunger;

(e) second means on said die for releasably holding the other fastener element in said path in front of said die, said second means being responsive to coaction with said holder for releasing the other fastener element; and

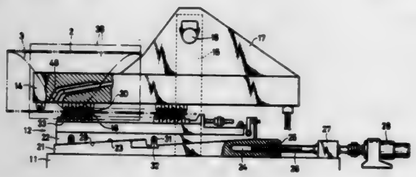
(f) third means acting between said plunger head and said holder for frictionally retaining said holder on said third means so as to enable said holder to move along with said plunger head, said third means comprising a split bush made of an elastic metal and fitted loosely over said plunger head, said holder being compressively fitted over said split bush so as to be held on said split bush under the resilience of said split bush.

4,436,239

METHOD AND APPARATUS FOR MANUFACTURING SPIRAL PIPE

Yoshito Tsuyama, Kitakyushu; Yasumi Shimazaki, Munakata; Kazutoshi Kakita, Kitakyushu, and Toshio Hirokawa, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,555
Int. Cl.³ B23K *31/06*
U.S. Cl. 228—17 **11 Claims**



7. A spiral pipe manufacturing apparatus which comprises: a forming apparatus having three forming roll means disposed at the apexes of a triangle and positioned along the circumference of the pipe being manufactured for continuously bending a flat strip into spiral form, one of said roll means being an internal forming roll for contacting the inner surface of the strip and pressing toward the outside of the pipe and the other two of said forming roll means being outer rolls and respectively being ahead of and behind said internal forming roll in the direction of movement of the strip and for contacting the outer surface of the strip and pressing it toward the inside of the pipe, a welding apparatus provided behind said forming apparatus in the direction of movement of the strip and along the circumference of the pipe being manufactured for continuously welding the seam of the spirally formed strip, a plurality of holding rolls positioned along the path of movement of the strip behind said forming apparatus for engaging one side of the strip for holding the strip in a shape equal to the desired diameter of the pipe, and a bending moment imparting roll means adjacent to and behind the forming apparatus in the direction of movement of the strip and ahead of the first of said holding rolls and on the opposite side of the strip from said holding rolls and adjustably movable in the direction of the pipe diameter for engaging the strip for holding it in a position as it moves past said bending moment imparting roll means for making the diameter of the spirally bent strip equal to the desired diameter of the finished pipe.

4,436,240

METHOD FOR PLATING DIELECTRIC ELEMENTS IN AN ISOLATOR AND FOR ASSEMBLING THE ISOLATOR

Jay H. Feinberg, Deerfield, and Terrance Knowles, Lincolnshire, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 5, 1982, Ser. No. 365,423
Int. Cl.³ C23C *3/02*
U.S. Cl. 228—122 **2 Claims**



1. For an isolator comprising a hollow, cylindrical ferrite bead sandwiched between a pair of hollow, cylindrical dielectric elements having metal plated inner and outer circumferences and non-plated inner and outer circumferences, a method for plating the end faces and for assembling the isolator within a hollow connector shell, comprising:

sensitizing and activating the dielectric elements such that a subsequently applied plating will adhere thereto;

covering the end faces of the dielectric elements with a non-conductive plating resist;

immersing the dielectric elements in a metal plating bath to plate the inner and outer circumferences of the dielectric elements;

sandwiching the ferrite bead between the plated dielectric elements such that the dielectric elements abut the ferrite bead without being bonded thereto;

providing a tubular conductor sized to fit within said dielectric elements and ferrite bead;

surrounding the tubular conductor with a thin solder sheath;

inserting the tubular conductor with the solder sheath thereon into the assembled dielectric elements and ferrite bead;

surrounding the assembled dielectric elements and ferrite bead with a second thin solder sheath;

inserting the assembled dielectric elements and ferrite bead with the second solder sheath thereon into the connector shell; and

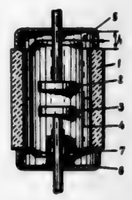
heating the entire structure so as to solder the tubular conductor to the plated inner circumferences of the dielectric elements and to solder the connector shell to the plated outer circumferences of the dielectric elements.

4,436,241

METAL-CERAMIC JOINT

Joseph H. F. G. Lipperts, Hengelo, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands

Continuation of Ser. No. 126,286, Mar. 3, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 388,438
Claims priority, application Netherlands, Mar. 5, 1979, 7901740
Int. Cl.³ B23K *1/04*; C04B *37/02*
U.S. Cl. 228—124 **7 Claims**



1. A method for producing a vacuum-tight butt brazing joint between a metallized ceramic part and a stainless steel part, said method comprising the steps of

(a) shaping the end portion of the stainless steel part to be joined with the metallized ceramic part such that it has a height of from about 4 mm to about 12 mm and a maximum thickness along this height of 0.8 mm,

(b) annealing at least said shaped end portion of said stainless steel part, and

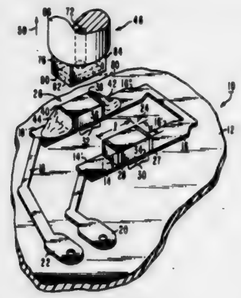
(c) brazing said annealed and shaped end portion of said stainless steel part directly to said metallized ceramic part.

4,436,242

DESOLDERING TOOL AND METHOD OF DESOLDERING LEADLESS COMPONENTS

Robert W. Shisler, Noblesville, and Ronald E. McVety, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1981, Ser. No. 331,088
Int. Cl.³ B23K *3/02*; H05K *13/00*
U.S. Cl. 228—264 **15 Claims**



13. A leadless component desoldering tool tip comprising:

a shaft having an end face;

a rod-like member having first and second faces at its respective opposite ends, said member being heat conductively and mechanically fixed at its first face to said end face of said shaft; and

a rectangular member attached to said second face of said member, the rectangular member comprising side walls which define a recess of given shape, and having also a planar base normal to said side walls defining the base of said recess, said side walls being discontinuous to permit the insertion in the discontinuity of a tool for removing from the recess a component that may be present therein.

15. A method of removing a leadless component from a printed circuit board comprising:

coating the recess of a recessed desoldering tip with solder;

heating said tip and solder until the solder is molten;

applying the tip to said component to provide sufficiently close engagement between said molten solder and component to create molecular attraction forces therebetween and sufficient heat transfer from said tip to said component to loosen said component from said board; and

displacing said tip relative to said printed circuit board to remove said loosened component from said board.

4,436,243

STORAGE FILE FOR SLIDES AND TISSUE BLOCKS

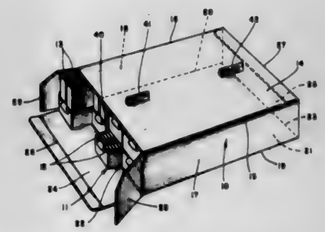
Frederic L. Nason, Van Nuys, and Walton B. Crane, Sherman Oaks, both of Calif., assignors to Medical Packaging Corporation, Santa Monica, Calif.

Filed Sep. 27, 1982, Ser. No. 424,028
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—27 **3 Claims**

1. A storage file for slides and tissue blocks including, in combination:

(a) a box stamping comprising initially a flat sheet having fold lines defining a top, left and right sides, a bottom and front and rear ends for folding into a box;

(b) means having fold lines defining a central partition in said box including an extended portion of said box stamping, said extended portion when folded to form the partition defining front and rear tabs, the central area of the top having front and rear slots for receiving said tabs, and the central area of said bottom having front and rear slots for receiving the protruding tabs from the top of another box



to enable indexing of several of the boxes in a vertical stack; and

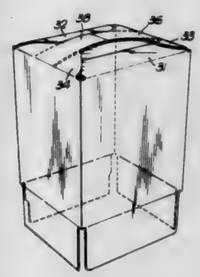
(c) a tray stamping comprising initially a flat sheet having fold lines defining a floor, left and right sides, and front and rear ends for folding into a tray receivable in said box whereby a storage file for slides and tissue blocks can be economically formed from said box, partition and tray stampings, and whereby said stampings in their initial flat configuration can be compactly stored and shipped.

4,436,244

CARTON BLANK WITH INTEGRAL HANDLE

Charles K. Morris, 529 Smiths Rd., Templestowe, Victoria, 3081, Australia

Continuation-in-part of Ser. No. 232,046, Jan. 23, 1981, abandoned. This application Jul. 2, 1982, Ser. No. 394,941
Int. Cl.³ B65D *5/46*
U.S. Cl. 229—52 B **6 Claims**



1. A carton blank for forming a carton of square or rectangular cross-section therefrom, wherein said carton blank is adapted to be folded and joined to form a carton which is provided at one end with two pairs of opposed integral flaps, the first of said pairs of flaps being adapted to overlap and close off said carton end when folded thereover, the second of said opposed pairs of flaps each reducing in width from its connection with the carton end to form narrow extended portions, whereby said narrow extended portions may be joined when said second opposed pair of flaps is folded flat over the carton end to form a composite handle member which lies generally flat over the carton end, covering and generally following the direction of a line joining the sides of the carton end to which said second opposed pair of flaps are attached and bisecting

said carton end, said composite handle member having a carry handle portion opposite ends of which join the broader sections of said second opposed pair of flaps, said carry handle portion having a width substantially less than the edges of the carton end to which said second opposed pair of flaps are attached, one flap of said first pair of opposed integral flaps including an integral strip with means for facilitating severing of said strip therefrom, said one flap being dimensioned so that said strip underlies said carry handle portion when said first and second pairs of opposed flaps are folded down over said carton end.

4,436,245

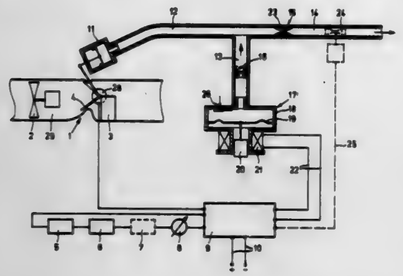
PNEUMATIC CONTROL SYSTEM, ESPECIALLY FOR VEHICLE HEATING SYSTEMS

Manfred Nonnenmann, Schwieberdingen, and Steffi Deuschle, Fellbach, both of Fed. Rep. of Germany, assignors to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 235,662, Feb. 18, 1981, abandoned, which is a continuation of Ser. No. 87,984, Oct. 25, 1979, abandoned. This application Apr. 28, 1982, Ser. No. 372,545

Int. Cl.³ F24F *13/10*

U.S. Cl. 236—49 **10 Claims**



1. In a temperature control apparatus including at least one temperature sensor means for generating a temperature signal, a controller means for generating a pump control signal as a function of said temperature signal, pump means for generating a fluid pressure in a conduit as a function of said pump control signal, and at least one actuator means connected to said conduit for positioning a control element located to control the flow of heat-carrying medium in the apparatus as a function of the pressure in said conduit, the improvement comprising:

a restriction means in said conduit for continuously venting said conduit to atmosphere; and

said controller means continuously generating pump control signals to continuously operate said pump means, once the system is powered, at selected capacities to maintain a pressure in said conduit sufficient to operate said actuator means to position said control element to a desired position with said restriction means continuously venting said conduit.

4,436,246

TRACTION DEVICES

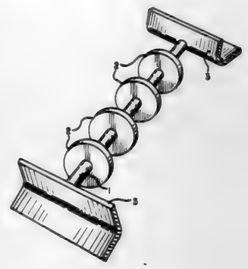
David S. Goldsmith, 420 Park Ave., Highland Park, Ill. 60035

Filed Aug. 3, 1979, Ser. No. 35,920

Int. Cl.³ E01B *23/00*

U.S. Cl. 238—14 **1 Claim**

1. A traction device to serve as a traction base for a drive wheel of an automotive vehicle, comprising in combination, a length of ferrous metal straight stock, ferrous metal washers situated at points along the length of said straight stock in surrounding relation thereto, a section of ferrous metal angle stock, said straight stock intersecting with said angle stock generally at the center of said angle stock and at right angles



thereto, said straight stock, angled stock, and washers being welded together so as to constitute a unitized whole.

4,436,247

FUEL INJECTION NOZZLE AND HOLDER ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

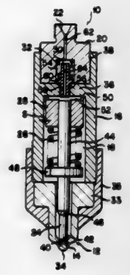
Jiro Akagi, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 13, 1982, Ser. No. 367,985

Claims priority, application Japan, Oct. 29, 1981, 56-160228[U]

Int. Cl.³ F02M *61/08*

U.S. Cl. 239—533.7 **6 Claims**



1. A device for the injection of fuel under pressure into a combustion chamber of an internal combustion engine, comprising:

(a) a body having formed therein a fuel inlet for admitting pressurized fuel, a storage chamber for receiving the incoming pressurized fuel, and a spray orifice for discharging in the form of droplets the pressurized fuel from the storage chamber

(b) a first spring within the body;

(c) a needle valve, including a stem, within the body for covering and uncovering the spray orifice, the needle valve being normally held in a position to cover the spray orifice under the bias of the first spring and adapted to be acted upon by the pressurized fuel in the storage chamber for uncovering the spray orifice against the bias of the first spring;

(d) a check valve slidably fitted over the stem of the needle valve and acted upon by the first spring for blocking communication between the fuel inlet and the storage chamber upon admission of each required amount of pressurized fuel into the storage chamber;

(e) a second spring within the body;

(f) a yieldable abutment disposed opposite to an end of the needle valve, the abutment being biased by the second spring toward the needle valve and normally retained a prescribed distance away therefrom; and

(g) whereby the needle valve is unseated to uncover the spray orifice only against the force of the first spring when the fuel introduced into the storage chamber is at relatively low pressure, and against the resultant of the forces of the first and the second springs when the fuel in the storage chamber is at higher pressure.

4,436,248

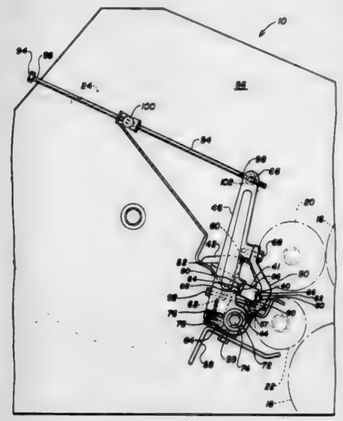
ADJUSTABLE SHEARBAR APPARATUS

Curtis H. Lindblom, New Holland; H. Nevin Lausch, Denver, and Edward H. Priepke, Lancaster, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Feb. 1, 1982, Ser. No. 344,654

Int. Cl.³ B02C *18/16*

U.S. Cl. 241—101.7 **5 Claims**



1. In a forage harvester, adjustable shearbar apparatus comprising,

spaced opposing side sheets,

an elongated shearbar having opposing sides,

lower support means for supporting the shearbar, said lower support means being an elongated support member extending between and connected to said side sheets and extending substantially along the length of said shearbar,

upper support means connected to said side sheets for urging said shearbar against said lower support means adjacent opposite ends of said shearbar,

a pair of levers pivotally connected to said lower support means, said levers each having first and second portions disposed on said opposing sides of said shearbar,

means for securely clamping said first and second portions against said opposing sides of said shearbar, and

means for pivoting said levers and moving said shearbar linearly relative to said lower support means, said means for pivoting including adjustment members coupled directly to said levers.

4,436,249

WINDING SYSTEM

Jack Santa Lucia, N. Haledon, and Kenneth Trapp, West New York, both of N.J., assignors to Independent Maching Company, Paterson, N.J.

Filed Feb. 1, 1982, Ser. No. 344,807

Int. Cl.³ B65H *54/02, 54/40, 54/54*

U.S. Cl. 242—18 R **3 Claims**

1. A winding system including:

frame means;

power driven shaft means mounted on said frame means;

a work fluid source for providing work fluid at a selected variable pressure;

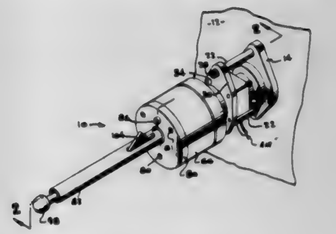
a mandrel carrier block mounted for rotation;

mandrel means mounted on said mandrel carrier block for rotation therewith and including wound material support means for receiving material being wound;

work fluid controlled drive coupling means connected to said work fluid source for providing a selectively determined variable maximum drive torque to the carrier block from the power driven shaft means in accordance with the pressure of work fluid from said work fluid source; and

wherein said mandrel means comprises;

a coupling disc removably connected to a side of said driven mandrel carrier block for coaxial rotation therewith;



a hollow mandrel sleeve extending outwardly in cantilever manner with respect to said coupling disc;

pivotal latch means mounted to extend outwardly of said mandrel sleeve for engaging a latch surface of spool means axially positionable over said mandrel sleeve;

ejector shaft means mounted in said mandrel sleeve for axial reciprocation between an outer latch portion and an inner latch release position in which a portion of said ejector shaft engages said latch member to pivot said latch member downwardly out of latching position to permit the removal of a spool from said mandrel sleeve; and

manually operable handle means on an outer end of said ejector shaft for axially moving said ejector shaft.

4,436,250

DRIVE UNIT FOR A TRANSPORT CABLE

Herbert Becker, Coburg, Fed. Rep. of Germany, assignor to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,560

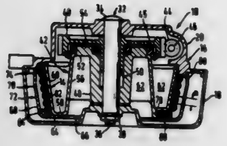
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 8022252[U]

Int. Cl.³ B65H *75/44, 75/48*

U.S. Cl. 242—54 R **14 Claims**

1. Drive unit for winding and unwinding a transport cable, such as for use with a safety belt employed in a motor vehicle in moving the safety belt between the engaged and released conditions, comprising a housing, a motor-driven take-up roll mounted within said housing, said take-up roll having an annular surface on which said transport cable can be wound around a winding axis with said annular surface encircling and facing radially outwardly from the winding axis so that the annular surface extends circumferentially and in the axial direction of the winding axis, a casing spaced radially outwardly from and enclosing said annular surface and having a radially inwardly circumferentially extending surface facing toward said radially outwardly facing annular surface, said radially outwardly facing annular surface having a first end and a second end spaced apart in the axial direction of said winding axis, said transport cable is secured at the first end of said radially outwardly facing surface to said take-up roll, said housing having an opening through which said transport cable extends out of said housing with said opening spaced in the axial direction of the winding axis from the first end of said radially outwardly facing annular surface and being closer to the second end

thereof, said transport cable contacts said radially outwardly facing annular surface of said take-up roll when said cable is wound into said housing and contacts said radially inwardly facing surface of said casing when said cable in unwound out of said housing, said radially inwardly facing surface is frusto-conical for at least a portion of its dimension extending in the axial direction of the winding axis with the smaller diameter end of said radially inwardly facing surface located opposite the first end of said radially outwardly facing annular surface and the larger diameter end spaced axially therefrom toward the second end of said annular surface, said housing having a cable guide surface thereon facing into the space between said



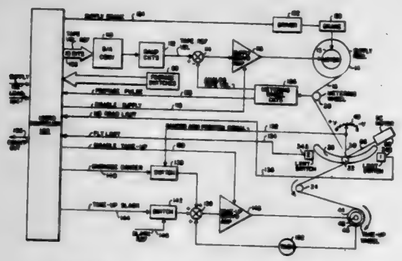
radially inwardly and radially outwardly facing surfaces, said radially inwardly facing surface having the larger diameter end thereof merging into said cable guide surface, said radially inwardly facing surface having a surface part adjacent to and spaced in the axial direction of said winding axis from said cable guide surface with said surface part extending transversely of the axial direction of and circumferentially relative to said winding axis and said surface part projecting radially inwardly toward said radially outwardly facing annular surface from said radially inwardly facing surface extending between said surface part and the larger diameter end of said radially inwardly facing surface.

4,436,251

TAPE WINDING SYSTEM

Joseph P. Deyesso, Walpole, Mass.; David Sarser, Northport, N.Y., and Richard G. Berube, Marlboro, Mass., assignors to King Instrument Corporation, Westboro, Mass.

Filed Aug. 6, 1981, Ser. No. 290,417
Int. Cl.³ B65H 59/38, 77/00; H02P 5/46
U.S. Cl. 242—56 R 14 Claims



1. Apparatus for winding tape onto a hub, said apparatus comprising, in combination:

first drive means for feeding from a supply of said tape a preselected, programmable amount of said tape at a speed which is variable in accordance with a predetermined function; said first drive means comprising tape measuring means for measuring the length of tape fed by said first drive means and means for comparing said length of said tape with said preselected amount;

second drive means for driving said hub so as to wind tape fed by said first drive means onto said hub; and

tension monitoring means for maintaining at a predetermined level substantially constant tension on said tape as said tape is fed by said first drive means and wound onto said hub said second drive means, said tension monitoring means including (1) a pivotally mounted dancer arm for supporting the tape as said tape is fed by said first drive means and wound onto said hub by said second drive means, said dancer arm being mounted so that its pivotal position varies with the tension on said tape, and (2) means for adjusting said second drive means responsively to changes in the position of said dancer arm so as to vary the speed at which said tape is wound onto said hub in a direction and by an amount which will maintain the tape wound onto said hub at a substantially constant tension; and

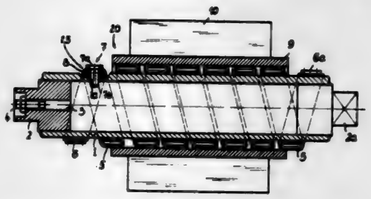
means responsive to said comparison between the length of tape measured by said tape measuring means and said preselected amount for disabling said first and second drive means when said length of tape measured by said tape measuring means equals said preselected amount.

4,436,252

TENSION SHAFT FOR WINDING FRAMES

Wolfgang Bürkle, Zum Bohrturm 3, 3250 Hameln 1, and Dieter Opitz, Ringstrasse 32, 8671 Forbau, both of Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,788
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 8125169[U]
Int. Cl.³ B23B 31/40, 5/22; B65H 75/18
U.S. Cl. 242—72 B 13 Claims



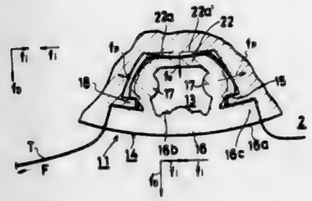
1. In a tension shaft for a winding machine including a central shaft piece for winding widths of sheet material thereon with a flexible tube wound about the outside of the central shaft piece, the outside diameter of the central shaft piece being variable by inflating or deflating the flexible tube, a valve for feeding or discharging air into the interior of the central shaft piece and an air inlet to the tube for coupling the interior of the central shaft piece with the interior of the flexible tube, the improvement which comprises an air inlet to the tube comprising a screw having a shaft and a screw head, an axial opening extending from the end of the screw shaft along the screw shaft, at least one radial hole emanating from the axial opening to the exterior of the screw shaft, an intermediate piece disposed within the tube, the intermediate piece adapted to receive the screw shaft and formed with at least one radial hole for cooperating with the radial hole in the screw shaft, the intermediate piece clamped to the interior surfaces of the flexible tube disposed opposite thereto by the screw head.

4,436,253

DEVICE FOR CLAMPING ONE TERMINAL END OF A TAPE IN A TAPE REEL

Koji Watanabe, Fujisawa, Japan, assignor to NIFCO, Inc., Yokohama, Japan

Filed Nov. 16, 1981, Ser. No. 322,009
Claims priority, application Japan, Nov. 26, 1980, 55-168233[U]
Int. Cl.³ B65H 75/28
U.S. Cl. 242—74.1 8 Claims



1. The combination of a tape reel hub and a device for clamping the terminal end portion of a tape within a recess defined within said tape reel hub, comprising:

first fastening means mounted upon said tape reel hub;

a base member defined upon said device;

a pair of legs extending substantially radially inwardly from said base member toward said tape reel hub;

second fastening means defined upon said pair of legs of said device for operatively engaging said first fastening means of said tape reel hub; and

a bridge member connecting the radially inner ends of said pair of legs,

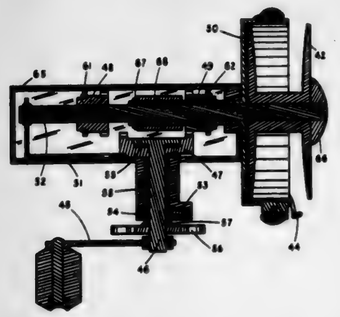
the radial distance defined between said device base member and said bridge member being greater than the effective radial depth of said recess so as to cause circumferential expansion of said clamping device legs and said second fastening means, in response to radial contraction of said clamping device as a result of engagement between said clamping device bridge member and the radially inner portion of said hub defining said recess as said clamping device is radially inserted into said tape reel hub recess, whereby said second fastening means of said device operatively engage said first fastening means of said hub.

4,436,254

SPINNING REEL FOR FLY-FISHING

Carl N. Normann, 2332 Barcelona Way, Sacramento, Calif. 95825

Filed Apr. 9, 1982, Ser. No. 367,096
Int. Cl.³ A01K 89/01
U.S. Cl. 242—84.21 R 1 Claim



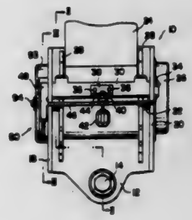
1. A fishing reel comprising a gear casing, crank means carried by the gear casing, hollow bail means open at both ends, means rotatably mounting the bail means on said gear casing, spool means, means rotatably and reciprocally mounting the spool means concentrically in said bail means with the spool means suitably projecting from both ends thereof for reciprocation and rotation of said spool means within said bail means and for rotation of said bail means about said spool means, spool gear means, means reciprocally mounting the spool gear means on said spool means for possible engagement with said crank means, bail gear means, means reciprocally mounting the bail gear means on said bail means for possible engagement with said crank means, spool stop means, means mounting the spool stop means on said gear casing for possible engagement with said spool gear means, bail stop means, means mounting the bail stop means on said gear casing for possible engagement with said bail gear means, drive selector means, means rotatably mounting one end of the drive selector means on said spool gear means and the other end on said bail gear means, means reciprocally mounting said drive selector means on said gear casing with portion of former suitably projecting through a side wall of latter; said drive selector means having first and second reciprocal positions relative to said gear casing, respectively closer to and farther from said bail means; whenever said drive selector means is in said first position, said bail gear means is engaged with and held stationary by said bail stop means while said spool gear means is engaged with said crank means, to be rotated by said crank means in predetermined direction, with said spool means, when said crank means is rotated in conventional direction; and whenever said drive selector means is in said second position, said spool gear means is engaged with and held rotationally stationary by said spool stop means while said bail gear means is engaged with said crank means, to be rotated by said crank means opposite to said predetermined direction, with said bail means, when said crank means is rotated in conventional direction.

4,436,255

SEATBELT RETRACTOR

Kenji Matsui, Higashikamo, and Fuminori Teraoka, Nishikamo, both of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Jan. 15, 1982, Ser. No. 339,707
Claims priority, application Japan, Jan. 20, 1981, 56-7152[U]
Int. Cl.³ A62B 35/02; B65H 75/48
U.S. Cl. 242—107.4 A 14 Claims



1. A seatbelt retractor for retracting a passenger retraining seatbelt, comprising:

a takeup shaft around which the seatbelt is wound by a biasing force;

locking means for stopping the belt-unwinding rotation of said takeup shaft;

acceleration sensing means for sensing a vehicular emergency situation and operating said locking means; and

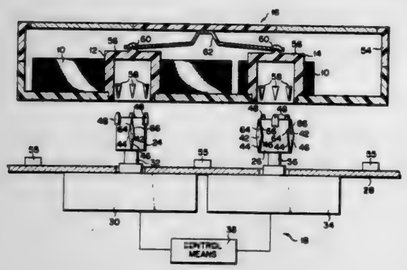
cam means responsive to unwinding of the seatbelt more than a predetermined value from said takeup shaft for operating said locking means to stop belt unwinding rotation of said takeup shaft.

4,436,256

REEL SHAFT/REEL HUB FITTING APPARATUS

Sinichi Saitou, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,416
Claims priority, application Japan, Jun. 4, 1980, 55-77523[U]; Jun. 4, 1980, 55-77525[U]
Int. Cl.³ G03B *1/04*; G11B *15/32, 23/04*
U.S. Cl. 242—200 12 Claims



1. A reel shaft/reel hub fitting apparatus for fitting a reel hub of a tape cassette on a reel shaft of a magnetic recording tape running apparatus, said reel shaft/reel hub fitting apparatus comprising:

at least one engaging projection mounting on the outer circumferential surface of said reel shaft and having two side faces which edge away from each other along the circumferential direction as said side faces extend in the direction in which said reel shaft is fitted in said reel hub;

locating means disposed on said reel hub and engaging said reel shaft along the axis of rotation thereof when said reel hub is fitted on said reel shaft, thereby defining the position of said reel hub relative to said reel shaft along said axis of rotation;

said locating means comprising a wall inwardly projecting from said reel hub in the radial direction thereof;

said reel shaft being provided with a plurality of protrusions projecting along said axis of rotation of said reel shaft so as to abut against said inwardly projecting wall of said reel hub; and at least one engaged projection formed on the inner circumferential surface of said reel hub and adapted to engage at least one of said side faces of an engaging projection of said reel shaft, said at least one engaging projection being located within the locus of rotation of said two side faces of said engaging projection when the position of said reel hub relative to said reel shaft along said axis of rotation is defined by said locating means.

4,436,257

REEL DRIVING METHOD FOR TAPE RECORDER AND A DRIVING MECHANISM FOR ITS PRACTICE

Akira Osanai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

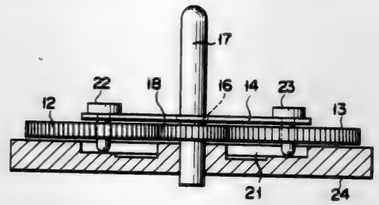
Filed Dec. 9, 1981, Ser. No. 329,031
Claims priority, application Japan, Dec. 15, 1980, 55-176876
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—201 6 Claims

2. A reel driving mechanism for a tape recorder including a pair of reel shafts and a capstan shaft which can be reversed in rotation, comprising:

a flywheel fixed coaxially to the capstan shaft,

a rockable support lever arranged over the flywheel for rocking movement about a rocking center of the support lever, and

a pair of idlers provided on the support lever on both sides of the rocking center of the support lever and engaging the capstan shaft to be driven by the capstan shaft, wherein each of the idlers is arranged to selectively engage a corresponding one of said reel shafts, each of the idlers including an idler shaft having a lower end or side face arranged for frictional contact with the flywheel, so that the support lever rocks correspondingly to the rotating direction of the capstan shaft by the frictional force between the flywheel and the idler shafts and one of the idlers on the support lever engages the corresponding reel shaft to drive the reel shaft.

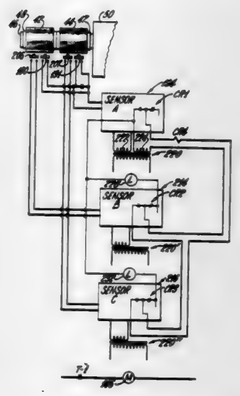


4,436,258

METHOD OF AND APPARATUS FOR SIMULTANEOUSLY PACKAGING LINEAR BUNDLES OF FILAMENTS INTO INDIVIDUAL PACKAGES

Robert R. Jackson, Toledo, and Jerome P. Klink, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 29, 1982, Ser. No. 373,087
Int. Cl.³ B65H *54/02, 54/20*
U.S. Cl. 242—18 G 9 Claims



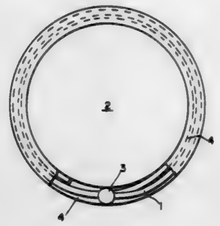
1. The method of simultaneously winding linear elements into more than one package including advancing a plurality of linear elements, forming the advancing linear elements into more than one wound package each rotated at the same angular speed, intermittently supplying indications of the size of the packages being wound at a normal increase in the sizes of the several packages, and indicating a deviation in said normal increase in size of any of the packages when any of the packages have a predetermined lesser size than the largest package.

4,436,259

APPARATUS FOR THE CONTROLLED ADVANCE AND RETRACTION OF A FLEXIBLE PAY-OUT CONNECTION FIXED TO A SATELLITE BODY

Günther Schmidt, Immenstaad, and Carl-Christian Etzler, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Dornier System GmbH, Fed. Rep. of Germany

Filed Jul. 28, 1981, Ser. No. 287,805
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038095
Int. Cl.³ B64G *1/38*
U.S. Cl. 244—3.1 5 Claims



1. In an apparatus comprising a spin-imparted satellite body having a pay-out cable fixed thereto with a pay-out means mounted on said pay-out cable,

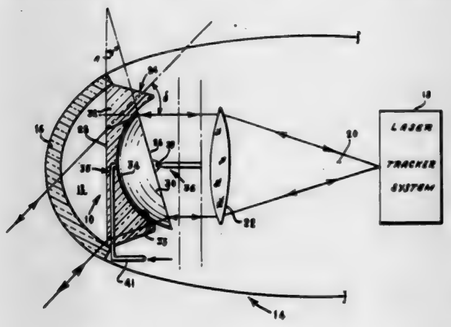
the improvement which comprises at least one groove means at the periphery of the satellite body to receive the pay-out cable, and at least one elastic holding means to hold the pay-out cable at the groove opening.

4,436,260

OPTICAL SCANNER FOR USE IN CONFINED AREAS

Edward J. Donelan, Andover, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 21, 1981, Ser. No. 332,785
Int. Cl.³ F41G *7/22*; G02B *27/17*
U.S. Cl. 244—3.16 15 Claims



11. In an elongated, slender missile having a laser tracker system for emitting a beam of optical energy of preselected wavelength, a nose cone, a window within said nose cone transparent to said preselected wavelength, the improvement therein being in the form of an optical scanner positioned adjacent said window and optically aligned between said laser tracker system and said window, said optical scanner comprising:

a movable prism assembly, said movable prism assembly including a first optical component having a flat surface on one side thereof and a spherically-shaped convex portion adjacent said flat surface, and a second optical component having a flat surface on one side thereof and a spherically-shaped concave portion therein sized to receive said spherically-shaped convex portion of said first optical component therein, both said optical components having the same index of refaction;

said first optical component and said second optical component being mounted with respect to one another for relative movement therebetween;

means interposed between said first optical component and said second optical component for allowing said movement to take place, said means for allowing movement between said optical components being in the form of an air bearing; and

means operably connected to at least said first of said optical components for moving said first optical component with respect to said second optical component;

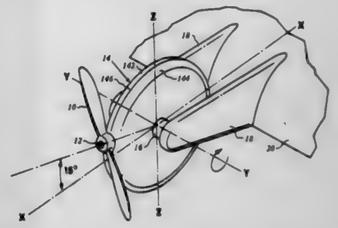
whereby said beam of optical energy directed toward said flat surface of said first optical component exits said flat surface of said second optical component as said first and second optical components move with respect to one another.

4,436,261

V/STOL AIRCRAFT

Kollo Koleff, 1440 County Line Rd., Alden, N.Y. 14004

Continuation of Ser. No. 142,914, Apr. 23, 1980, abandoned.
This application Dec. 7, 1981, Ser. No. 328,250
Int. Cl.³ B64C *15/00*
U.S. Cl. 244—51 9 Claims



1. A V/STOL heavier than air aircraft, including:

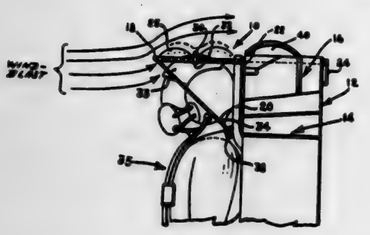
an aircraft body;

a thrust producing member;

means for mounting said member exteriorly of said body in spaced relation thereto and constraining said member for pivotal movement, with respect to said body, about a single axis;

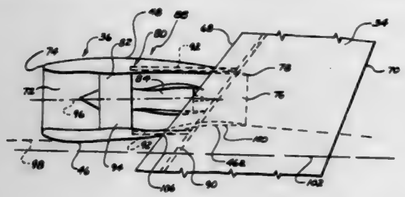
an exterior rigid housing spaced from said body and fixed for movement with said thrust producing member, said housing formed substantially in the shape of two smooth based dishes substantially in the shape of two partial circular conoids having their bases in abutting engagement, the outer surface of each of said conoids being maxially spaced from said axis at its respective geometric center and being progressively and gradually spaced closer and closer to said axis from a surface thereof that is at least adjacent said geometric center to the radial extremity thereof to provide a closed hollow chamber therebetween and being completely symmetrical about all lines which intersect said axis and which are contained within the plane of movement of said exterior housing in all pivotal positions thereof.

4,436,262
WINDBLAST HEAD PROTECTOR FOR USE DURING PILOT EJECTION FROM AN AIRCRAFT
Robert J. Cummings, Hermosa Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 22, 1982, Ser. No. 370,693
Int. Cl.³ B64D 25/04
U.S. Cl. 244—122 AG 9 Claims



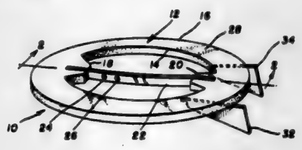
1. A windblast head protector for use with an ejection seat of an aircraft comprising:
a tubular frame, said frame having a canopy thereon and means slidably connected to said frame for supporting said frame on top of a helmet of a crew member positioned within said ejection seat when said head protector is in a fully deployed condition;
means connected between said frame and said ejection seat for providing support for said frame and for contacting the sides of said helmet when said head protector is in said fully deployed condition; and
means operably connected to said frame for securely positioning said frame against said ejection seat in said fully deployed condition and for moving said frame from a stowed position within a pilot chute compartment of said ejection seat to said fully deployed condition.

4,436,263
AERODYNAMICALLY CONTOURED, LOW DRAG WING, ENGINE AND ENGINE NACELLE COMBINATION
Louis B. Gratzer, Seattle, and Walter B. Gillette, Issaquah, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Continuation of Ser. No. 000,698, Jan. 3, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,829
Int. Cl.³ B64C 1/38; B64D 29/02
U.S. Cl. 244—130 14 Claims



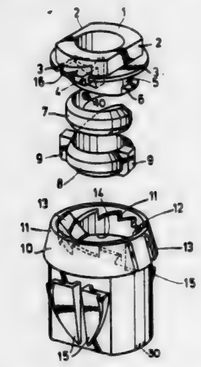
1. In an aircraft having a longitudinal axis and designed for flight at a predetermined design speed through a main airstream having a main flow direction, a combination of an airfoil, engine and engine nacelle, said combination comprising:
(a.) an airfoil having a leading edge, a trailing edge, and a lower aerodynamic surface, said airfoil having a predetermined (weep) sweep angle of at least 10°, and having an outboard end and an inboard end,
(b.) a nacelle mounted directly adjacent to said airfoil at a location below and forwardly of said airfoil, said nacelle having a forward section extending forwardly of the leading edge and a rear section positioned rearwardly of the leading edge, said nacelle having an inboard side surface portion and an outboard side surface portion,
(c.) an engine mounted in said nacelle,
(d.) said airfoil being characterized in that in a situation where the airfoil would be passing in flight through said airstream at the design speed, but without aerodynamic interference from other objects in proximity thereto, said airfoil would create in said airstream an airstream flow pattern having a plurality of streamlines which approach the leading edge and pass under the airfoil, with the airfoil creating in said airstream flow pattern a critical zone, which zone includes a general area in said airstream flow proximate said airfoil, where at least one of the following conditions occur:
1. a local pressure coefficient in said airstream flow has an absolute magnitude greater than 0.05,
2. said airstream flow about said airfoil is supersonic,
(e) said nacelle having a critical surface region which comprises the nacelle side surface portions adjacent an airfoil portion that sweeps laterally and forwardly from the nacelle,
(f) said nacelle having a critical contour area which comprises an area where any portion of the critical surface region is within said critical zone,
(g) the critical contour area of the nacelle being in substantial contour alignment with the streamlines immediately adjacent the critical contour area to thereby reduce interference between said nacelle and said airfoil, which streamlines form a stream sheet, said critical contour area having a forward portion forward of the leading edge and sloping rearwardly in a direction slanted from said main flow direction in a direction of rearward sweep of said airfoil, said critical contour area having a rear portion rearward of said leading edge sloping rearwardly in a direction from said main flow direction also in the direction of rearward sweep of the airfoil,
(h) other nacelle surface portions which are not included in the critical contour area being collectively a non-critical contour area, said non-critical contour area having at least a substantial portion thereof shaped to conform to configuration requirements of said engine, with at least part of the substantial portion of the non-critical contour area departing from substantial contour alignment with adjacent streamlines.

4,436,264
FLYING DEVICE
Elmer B. Brumfield, 1136 W. Long, Stephenville, Tex. 76401
Filed Aug. 9, 1982, Ser. No. 406,491
Int. Cl.³ B64C 31/06
U.S. Cl. 244—153 R 9 Claims



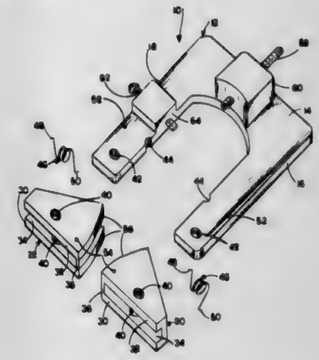
1. A kite fabricated of a lightweight material and comprising:
an annular body having a circular outer periphery, at least a generally circular inner periphery, and a relatively thin height with respect to its radial extent;
the annular body having a flat unobstructed top surface and a bottom surface which is part of the surface of a sphere;
a bar element lying on a diameter of the annular body and secured at its ends to the annular body at said inner periphery;
the bar element limited in height to confinement between the plane of said top surface and the surface of the sphere;
the bar element being structured so as to directly accommodate the kit tow line at a forward location; and
rudder means disposed at the trailing location of the annular body and in symmetry with said diameter.

4,436,265
CABLE SOCKET WITH TRACTION RELIEF FOR THE HOUSINGS OF ELECTRIC MACHINES
Hans Simon, Bruchhausener Strasse, 5463 Unkel am Rhein, Fed. Rep. of Germany
Filed May 6, 1981, Ser. No. 261,241
Claims priority, application Fed. Rep. of Germany, May 12, 1980, 3018119
Int. Cl.³ H02G 3/18; H01B 17/26; F16L 5/00
U.S. Cl. 248—56 16 Claims



1. A cable socket providing traction relief adapted to be mounted in an opening formed in a wall of a housing for electrical components, comprising:
a tubular grommet insertable into an opening in a housing wall and including a grommet head for supporting the grommet on a housing wall;
an inner socket portion coaxially situated within said tubular grommet so as to be twistable therein around a common axis of the grommet and inner portion, said inner portion having a passage opening for receiving a cable and including a head portion and a flexible extension for encompassing a cable passing through said passage opening, said flexible extension having a first end connected to said head portion and a free end region spaced from said head portion;
means for securing said free end region of said flexible extension of said inner socket portion to said tubular grommet so that said free end region is prevented from twisting with respect to said grommet when said inner socket portion is twisted within said grommet; and
means for locking said inner socket portion to said grommet against rotation therein,
whereby upon twisting said inner portion with respect to said grommet with a cable received in said passage opening and said free end region of said flexible extension secured to said grommet by said securing means so as to be prevented from twisting with respect to said grommet, said flexible extension is twisted to compress against the cable to hold the same in the socket.

4,436,266
CONDUIT SUPPORT DEVICE
Thomas W. Gerding, 5805 Hawkins- Fuchs Rd., St. Louis, Mo. 63129
Filed Mar. 26, 1982, Ser. No. 362,551
Int. Cl.³ F16L 3/08
U.S. Cl. 248—74 R 23 Claims



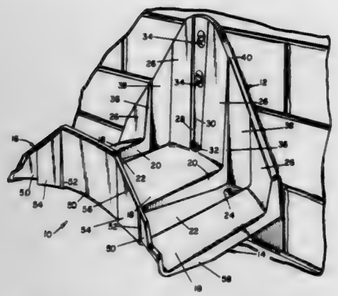
1. A conduit support device operable in all angular orientations for holding and supporting a conduit member therein, said device comprising a frame member having a pair of laterally spaced leg members extending therefrom defining a space therebetween, closure means including a closure member and journal means pivotally attaching the closure member to one of said leg members adjacent the free end thereof for controlling access to the space defined between said leg members, said closure member being rotatably movable about the journal means between a closed position restricting access to the space between said leg members and an open position angularly related thereto to open the space between said leg members for admitting a conduit member therebetween, said closure member having a first portion movable between the open position substantially in alignment with the leg member to which it is pivotally attached and the closed position substantially normal thereto extending between said leg members, said closure member having a second portion engageable with the leg portion in the closed position thereof to limit movement thereof, said closure member being movable to its open position in response to a force exerted thereagainst, said force being applied in a direction towards the space defined between said leg members, and yieldable means biasing said closure member towards the closed position thereof.

4,436,267
HOSE HANGER
Harold O. Eads, Parkersburg, W. Va., and Ronald R. Fowler, Coolville, Ohio, assignors to O. Ames Co., Parkersburg, W. Va.
Filed Mar. 29, 1982, Ser. No. 363,374
Int. Cl.³ A62C 23/04; B05B 15/06
U.S. Cl. 248—75 12 Claims

1. In a hanger adapted to be fixedly attached to a mounting wall for supporting a length of hose in coiled formation which comprises a one-piece body molded of plastic material, said body including an upright mounting wall engaging section adapted to be fixedly attached to a mounting wall, a hose coil supporting section extending horizontally from the bottom of said mounting wall engaging section and a hose coil retaining section extending upwardly from the horizontally outwardly extending end of said hose coil supporting section, the improvement which comprises:
said hose coil supporting section including spaced thin wall saddle portions defining hose coil engaging surfaces facing generally upwardly and disposed generally in an arcu-

ate plane and thin wall channel means integrally interconnected between said spaced thin wall saddle portions disposed below the adjacent hose coil engaging surfaces thereof and opening generally in a direction toward the same,

said mounting wall engaging section including spaced thin wall side portions defining hose coil retaining surfaces disposed in upwardly extending relation with respect to associated hose coil engaging surfaces of said saddle portions and facing generally in a direction thereabove and



thin wall channel means integrally interconnected between said spaced thin wall side portions disposed horizontally outwardly from the adjacent hose coil retaining surfaces thereof and opening generally in a direction toward the same,

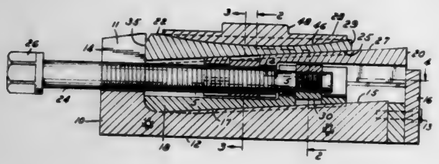
the thin wall channel means in said mounting wall engaging section being integrally connected with the thin wall channel means in said hose coil supporting section and providing mounting wall engaging surface means adjacent the integral connection thereof with the thin wall channel means in said hose coil supporting section.

4,436,268

SELF-ALIGNING LOAD LEVELING DEVICE

Frederick G. Schriever, 64 Clairevlew, Grosse Pointe Shores, Mich. 48236

Filed Jul. 20, 1981, Ser. No. 285,368
Int. Cl.³ F16M *11/24*
U.S. Cl. 248—188.3 **13 Claims**



1. A leveling device for supporting heavy loads comprising, in combination:

a. a base member;

b. a load supporting member disposed above the base member;

c. a pair of wedges positioned one above the other and disposed between said members, each wedge slidably engaging one of said members along an inclined interface;

d. said wedges slidably engaging one another along a non-inclined interface;

e. means connected to each of said wedges for slidably shifting them along said interface and relative to each other and to said base and load supporting members to thereby vary the height of the load supporting member relative to the base member; and

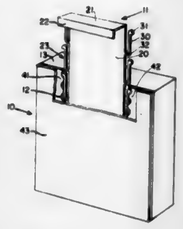
f. alignment compensating means for distributing a load evenly over the wedges despite misalignment between the load to be carried and the floor upon which the base may be rested.

4,436,269

DISPENSER SUSPENSION MEANS EMPLOYING PLANAR SPRING-LOADED DETENT

Robert S. Dirksing, Cincinnati, and Dale E. Barker, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 28, 1980, Ser. No. 210,965
Int. Cl.³ A47G *55/00*
U.S. Cl. 248—214 **16 Claims**



1. A vertically adjustable hanger for supporting a dispenser for adding a chemical to a toilet tank on a vertical wall member of said toilet tank at a predetermined height selected by the user, said hanger comprising:

(a) a planar bayonet member having a predetermined length, width and thickness, said bayonet member having means for being attached to said wall member, said bayonet member including at least one resiliently deformable projection located along a longitudinal edge thereof and extending outwardly in a direction generally parallel to the width of said bayonet member, said projection being resiliently deformable in the plane of said bayonet member in a direction generally parallel to the width thereof; and

(b) a channel means secured to said dispenser, said channel means having a predetermined length, width and thickness, said channel means having opposed longitudinal edges located in the plane of said bayonet member, said opposed longitudinal edges of said channel means being adapted to engage opposed longitudinal edges of said bayonet member, at least one of said longitudinal edges of said channel means having a multiplicity of vertically spaced projection receiving means having a shape substantially complementary to that of said projection located along at least one of said longitudinal edges of said bayonet member and adapted to engage said projection on said longitudinal edge of said bayonet member, whereby the vertical position of said dispenser may be adjusted as desired by advancing or retracting said bayonet member in said channel means in a direction generally parallel to its length by engaging said resiliently deformable projection on said bayonet member in one of said projection receiving means located along the adjacent longitudinal edge of said channel means.

4,436,270

SUPPORT MECHANISM OF SWIVEL SEAT STRUCTURE

Masakazu Muraishi, Higashimurayama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jun. 25, 1981, Ser. No. 277,234
Claims priority, application Japan, Jul. 16, 1980, 55-97181
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—416 **11 Claims**

1. A support mechanism of a swivel seat structure having a seat cushion horizontally positioned over a floor surface, comprising:

a pivot element located below the seat cushion and having a center axis about which the seat cushion is horizontally turnable with respect to the floor surface, the center of the pivot element being closer to the rear end of the seat cushion than to the front end of the seat cushion;

a base member which is held stationary with respect to the floor surface;

a swivel member carrying the seat cushion thereon and pivotally mounted on said base member by means of said pivot element, the swivel member being horizontally turnable on the base member about the center axis of the pivot element;

guide rails positioned below the seat cushion and in front of said pivot element and having an arcuate stationary guide rail which is held stationary with respect to the floor



surface and an arcuate movable guide rail which is slidable on and along the stationary guide rail and which is secured to said swivel member for being turnable with the swivel member and the seat cushion about the center axis of said pivot element; and

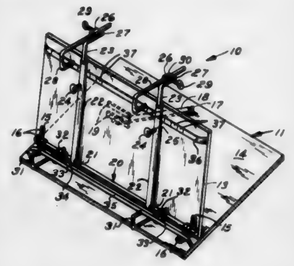
retaining means positioned between said pivot element and said guide rails and arranged to provide retaining engagement between the base member and the swivel member while permitting the swivel member to turn on and with respect to the base member, the retaining means comprising a retainer pin which is axially clamped to the base member and the swivel member for providing said retaining engagement between the base member and the swivel member.

4,436,271

BOOK HOLDING DEVICE

Hipolito S. Manso, 95 Ten Eyck Walk, Apt. 73, Brooklyn, N.Y. 11206

Filed Jul. 16, 1982, Ser. No. 398,986
Int. Cl.³ A47B *97/04*
U.S. Cl. 248—460 **1 Claim**



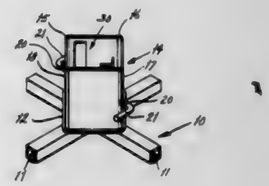
1. A book holding device, comprising, in combination, a flat base, a panel hinged by means of a pair of spaced-apart hinges upon a forward portion of said base, a plurality of spaced-apart cleats on a rear side of said panel, a brace pivoted upon a rear portion of said base for being propped under a selected one of said cleats, an elongated axle rod forming a single hinge pin extending through both said hinges, a pair of sleeves each having a transverse hole therethrough for being slidable along said axle rod, and in front of a front side of said panel, an "L"-shaped rod adjustably secured in an upper end of each said sleeve, a forwardly extending upper hook adjustably carried by each said "L"-shaped rod, a pair of bushing sleeves slidable along said axle rod, a bushing affixed on each said bushing sleeve, a forwardly extending lower hook adjustably carried by each said bushing, a horizontal book rest located forwardly of a lower portion of said sleeves and supported at opposite ends upon opposite ends of said base forward portion, and a horizontal bar extending across a front upper portion of said panel being located between said panel and the first said sleeves, a plurality of plastic segments being along a front side of said bar.

4,436,272

CHRISTMAS TREE STAND HAVING STABILIZED CLAMPING MEMBERS

James B. Lile, Rte. 1, Russellville, Ark. 72801, and Dan C. Mathes, Jr., 301 Ridgeway, Little Rock, Ark. 72205

Filed Apr. 2, 1982, Ser. No. 364,791
Int. Cl.³ A47G *33/12*
U.S. Cl. 248—527 **6 Claims**



1. A clamping stand for Christmas trees and the like, comprising a vessel having a continuous vertical wall, whereby the bottom of the trunk of such tree may be received therein, base means secured thereunder, a pair of horizontal clamping screws threaded through the vertical wall of the vessel and presented opposite to each other, and a vertical clamping member mounted on the inner end of each clamping screw, characterized in that each clamping screw has, spaced from its inner end, a reduced diameter neck portion terminating outwardly in a shoulder, further characterized in that each vertical clamping member has, substantially along its mid-height, a vertical slot including a rounded lower end portion sufficiently large to pass over the inner end of a clamping screw and a narrower slot portion extending upwardly therefrom, said narrower portion being sufficiently wide to engage slidingly on the neck portion of the clamping screw but smaller than the shoulder thereof, whereby on so screwing a screw inner end through the vessel wall as to project inwardly into the vessel, the clamping member may be mounted thereon by passing the lower end of said mid-level slot over the clamping screw inner end and sliding the said slot downward along the neck portion, and whereby clamping may thereafter be achieved by pressure of the shoulder against the clamping member.

4,436,273

FASTENING MEANS FOR REARVIEW MIRROR IN AUTOMOBILE INTERIOR

Takuo Yuda, Yokohama, and Yoshiaki Notoya, Zushi, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Dec. 10, 1981, Ser. No. 329,491
Claims priority, application Japan, Dec. 16, 1980, 55-179562[U]
Int. Cl.³ F16M 13/00
U.S. Cl. 248—549
2 Claims



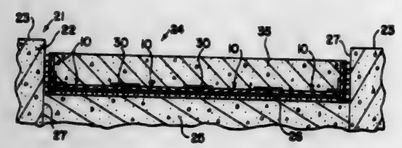
1. A fastening means for a rearview mirror in an automobile body, which comprises a fastening base integrally formed at the basal end of an arm for supporting the rearview mirror, a fixing member made of a synthetic resin, and a setscrew adapted to secure said fixing member to the automobile body, said fixing member being provided with a tubular screw-receiving portion and a domelike flange-shaped engaging head portion extended from the peripheral surface of said screw-receiving portion, said engaging portion on the side opposite to the tubular portion being convex and having an underlying peripheral surface engageable with said base, said engaging head portion being provided with thin-walled portions for enabling said flange shape of the engaging portion to be broken under an impact, said thin walled portion comprises an annular groove encircling said tubular member and a plurality of grooves radiating outwardly therefrom, said fastening base being provided with a perforation for permitting insertion therein of the screw-receiving portion of said fixing member thereby enabling said engaging portion to come into fast engagement with the edge of the perforation, and said setscrew being adapted to be passed through the hollow part of said screw-receiving portion and driven helically into the automobile body, whereby said fastening base is attached fast to the automobile body through the medium of said fixing member.

4,436,274

VIBRATION DAMPENING SUPPORT

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,232
Int. Cl.³ F16M 1/00
U.S. Cl. 248—633
5 Claims



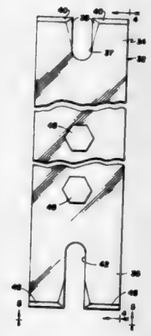
1. A vibration isolation pad for the support of machinery wherein a concrete floor is to support such machinery, said floor having a pit with sidewalls and a support base of concrete, a first set of flat composite pads laying on said support base in abutting relationship to cover said base, a second set of flat composite pads lying in planes normal to said first set and abuttingly contacting said sidewalls, a concrete pad in said pit frictionally engaging all of said composite pads, each of said pads having an outer layer of ultra-high molecular weight polyethylene that contacts said concrete pad, each of said pads having an inner layer of elastomeric material bonded to said outer adjacent layer, and each of said inner layer of elastomeric material having laterally and longitudinally spaced elastomeric projections molded thereto to provide vibration isolation to a machine mounded on said concrete pad.

4,436,275

CONCRETE FORM EXTENDER DEVICE

Gary L. Hendershot, 7164 Groveland Rd., Holly, Mich. 48442

Filed Mar. 25, 1982, Ser. No. 361,559
Int. Cl.³ E04G 11/06
U.S. Cl. 249—47
6 Claims



1. A concrete form assembly including a plurality of forms arranged in top to bottom relationship, each of such forms including a transverse metal strap including at least one outstanding scaffold bolt, the invention comprising:

a plurality of separate extender devices for holding said forms in assembled top to bottom relationship, each of said extender devices including a slotted upper end and slotted lower end, said slotted ends engaging respective scaffold bolts in tight holding relationship, said slotted ends further including sharpened slot portions and beveled end portions to facilitate assembly and clean-off of said bolts, said extender devices each including a pair of off-set portions proximate each of its end portions and adjacent to and abutting the corresponding straps, said extender portions further including a flat portion intermediate said off-set portions and in firm engagement with the forces of the adjacent upper and lower forms.

4,436,276

PIN SUPPORT AND MOLD FOR FOAMING AND CURING RESIN EXTERIOR OVER BALL CORE

Gordon J. Donahue, West Henrietta, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.

Continuation of Ser. No. 341,743, Jan. 22, 1982, abandoned, which is a continuation of Ser. No. 182,816, Aug. 29, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 419,904
Int. Cl.³ B29D 27/04
U.S. Cl. 249—91
3 Claims

1. A pin support and mold for foaming and curing a spherical resin exterior over a spherical ball core that is about one-half the diameter of said resin exterior, said pin support and mold comprising:

a. a two-part mold having a spherical cavity and a mold parting plane intersecting the center of said spherical cavity;

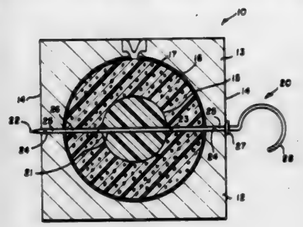
b. a bore hole extending through said mold parts at said mold parting plane, the axis of said bore hole being oriented to pass through said center of said spherical cavity;

c. a pin support including a straight shaft extending through a diameter of said core;

d. said shaft fitting snugly within said bore hole and extending for the length of said bore hole from one exterior side of said mold to an opposite exterior side of said mold to support said core within said spherical cavity;

e. said shaft having a locator abutment arranged to engage one of said exterior sides of said mold to locate said shaft axially relative to said mold exterior and thus locate said core within said spherical cavity;

f. said pin support extending outward beyond said locator abutment away from said engaged exterior side of said mold;



g. said outward extension of said pin support being formed as a coupling element disposed outside said mold;

h. said pin support being arranged so that, without moving said pin support, said mold parts can be separated when said foamed spherical resin exterior is partly cured, and said pin support can be moved clear of said mold to move said ball clear of said spherical cavity; and

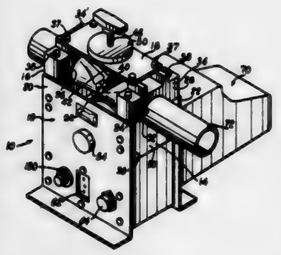
i. said coupling element being shaped for hanging up said shaft to support said ball for curing in air out of contact with other surfaces for a curing time following molding of said resin exterior over said core.

4,436,277

TORQUE PINCH VALVE

Edward Robak, 5520 San Juan Dr., Orange, Calif. 92669, and Carter K. Reh, 13312 Loretta Dr., Santa Ana, Calif. 92705

Filed Aug. 10, 1981, Ser. No. 291,616
Int. Cl.³ F16K 7/06
U.S. Cl. 251—6
14 Claims



1. A pinch valve comprising:

(a) a housing formed of upper and lower half housings, having distal and opposite ports and a flexible conduit extending therebetween to form a fluid passageway through said housing,

(b) a pinch bar attached to an arm pivotally attached to the inside top wall of said upper half housing and a lead screw engaged in a threaded aperture in said top wall to provide an adjustment abutment stop for said arm; and

(c) a valve member movably mounted to the lower half housing with actuator means to urge said valve member between an open position permitting unobstructed flow through said conduit and a throttling position constricting said flexible conduit between said valve member and anvil means,

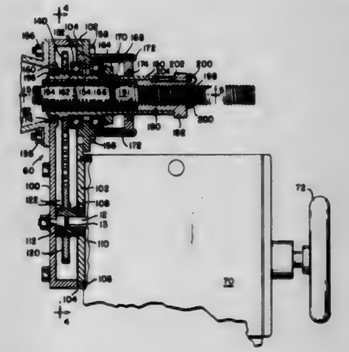
whereby said valve is operable to control rate of flow and to shut off flow, as determined by the adjustable position of said anvil means.

4,436,278

DISCONNECTABLE VALVE MOTOR DRIVE

Glen H. Smith, Algona, Wash., assignor to Morgan Industries, Inc., Seattle, Wash.

Continuation of Ser. No. 128,958, Mar. 10, 1980, abandoned.
This application Jan. 19, 1981, Ser. No. 275,340
Int. Cl.³ F16K 31/05; F16D 1/00
U.S. Cl. 251—130
13 Claims



1. An offset drive assembly for coupling a valve stem to a motor, comprising:

a drive motor having an output shaft;

a valve having a stem offset from the motor shaft, the stem having a threaded end;

means for driving the stem of the valve from the motor which comprises:

a collar rotatably coupled to the drive motor output shaft;

a stem nut releasably and drivably engaged with said collar and threaded on the threaded end of the stem, said stem nut and collar being co-axial with one another; and

a removable locking member releasably locking the stem nut and the collar together in fixed relative relation for co-axial rotation, the locking member interconnecting the stem nut and collar and being accessible from the exterior of the offset drive assembly for rapid and easy release of the collar from driving engagement with the stem nut by removal of the member without further disassembly of the offset drive assembly to allow manual rotation of the stem nut to drive the stem independent of the drive motor.

4,436,279

STEM CONNECTION FOR GATE VALVE

James V. Bonds, Houston, and Paul R. Orum, Stafford, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

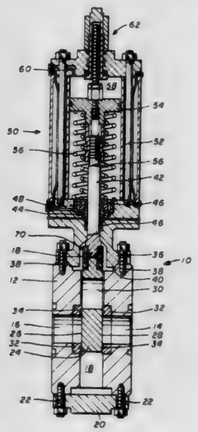
Filed Dec. 27, 1982, Ser. No. 453,568
Int. Cl.³ F16K 25/00, 31/143
U.S. Cl. 251—86
7 Claims

1. An improved stem connection structure for connecting a stem to a gate member in a reciprocating gate valve of the type having a valve body with a valve chamber and inlet and outlet flow passages communicating with the valve chamber, a gate member slidably mounted within the valve chamber for movement between open and closed positions relative to the flow passages and having an externally threaded upper gate extension thereon, the gate extension having a first slot formed

therein being disposed in substantially parallel relation with the longitudinal axes of the inlet and outlet flow passages, a bonnet connected to the valve body to form a closure for the valve body, an operating stem carried by the bonnet and having a stem extension on the lower end thereof disposed within the valve chamber, the stem extension having an elongated key formed on its lowermost end received by the first slot of the gate extension to form a key-slot combination, and the stem having operator means connected to an upper end thereof for moving the stem and gate member in a direction transversely to the direction of fluid flow through the flow passages, wherein the improvement comprises:

the stem extension having an externally threaded portion contained thereon adjacent and above the elongated key;

an internally threaded collar threadably engaging the stem extension and having an axial bore therethrough in axial alignment with the longitudinal axis of the stem surrounding the key-slot combination, and having a second slot extending therethrough in the direction of fluid flow



through the gate valve, releasable locking means on the collar for releasably securing the collar to the stem extension at a predetermined position;

an adjusting nut fitting within the second slot and threaded onto the gate extension for providing a connection between the stem and gate member, the second slot having supporting means for retaining the nut and collar in engaging relationship and retaining the key-slot combination in engaging relationship, the second slot permitting movement of the nut and gate member relative to the longitudinal axis of the stem in a direction generally parallel to the longitudinal axis of the flow passage, the adjusting nut being accessible through the second slot without disassembly of the stem and gate member for manual axial adjustment of the gate member relative to the longitudinal axis of the stem so that the gate member port can be aligned with the inlet and outlet flow passages when the gate member is in the open position; and

releasable locking means on the nut for releasably securing the nut to the gate extension at a predetermined position.

4,436,280

VALVE ACTUATOR MECHANISM FOR LIFT-TURN TYPE VALVES

Bernard H. Geisow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 429,300
Int. Cl.³ F16K *31/50, 31/52, 31/54*
U.S. Cl. 251—229 **23 Claims**

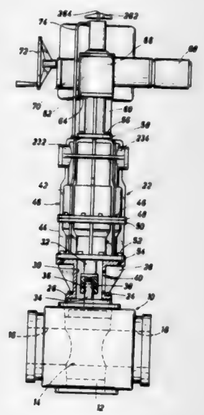
1. A valve actuator mechanism for a lift-turn type plug valve having an internal valve element for movement between an opened and closed positions and incorporating a valve stem, which valve element is operated by linear unseating movement, rotational repositioning movement and linear reseating movement, said valve actuator mechanism comprising:

an actuator housing adapted for fixed assembly with said plug valve;

a first actuator stem extending from said housing and adapted to be connected in nonrotatable and linearly immovable relation with said valve stem;

a second actuator stem being movably positioned within said actuator housing and being in co-axial spaced relation with said first actuator stem;

means imparting linear and rotational movement to said second actuator stem; and



movement translation means incorporating gear means and operatively interconnecting said first and second actuator stems, said movement translation means moves said valve element in one of said valve element positions and being operative during a first linear movement of said second actuator stem to impart linear movement to said first actuator stem in one direction to unseat said valve element, being operative upon combined linear and rotational movement of said second actuator stem to impart solely rotational movement to said first actuator stem and being operative upon further linear movement of said second actuator stem in said one direction to impart solely linear movement to said first actuator stem in an opposite direction to reseat the valve element.

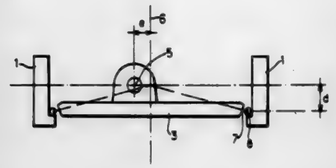
4,436,281

BUTTERFLY VALVE WITH AN IMPROVED OBTURATION DEVICE

Alain Chiron, Oloron Sainte Marie, France, assignor to Applications Mecaniques et Robinetterie Industrielle, France

Continuation of Ser. No. 152,411, May 22, 1980. This application Jan. 29, 1982, Ser. No. 344,046
Claims priority, application France, May 23, 1979, 79 13175
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—305 **9 Claims**

1. A butterfly valve having an unwedged butterfly gate, optionally off-centered in relation to its drive axis, and a seat perpendicular to the axis of the valve body, characterized in that the peripheral edge surface of said butterfly gate is formed by two surfaces whose cross-sections are curves of the same family, and has a configuration such that normals to it in the regions on both sides of the plane of symmetry of the butterfly gate containing the axis of rotation or parallel to it intersect the axis of symmetry of the seat, normal to the seat plane, at two distinct points, C1 and C2, when the butterfly gate is in the closed position, and the normals to one of the two surfaces converge at point C1, situated on said axis of symmetry, above said axis of rotation and the normals to the second surface converge at point C2 situated on said axis of symmetry under said axis or rotation, and that, for zones situated at the level of passage of the axis of rotation of the butterfly gate defined by



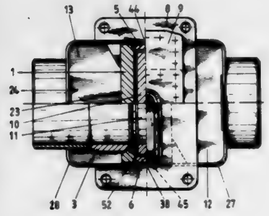
sectors forming an angle δ on both sides of the plane of symmetry of the butterfly gate containing the said axis, or parallel to it, the points of intersection of the normals intersect the segment limited by said points C1 and C2, with the resulting variations of points of intersection being effected progressively in a continuous manner.

4,436,282

GATE VALVE WITH REINFORCING RIBS

Jan de Vries, Amsterdam, Netherlands, assignor to Thomassen Amsterdam B.V., Amsterdam, Netherlands

Filed Oct. 22, 1981, Ser. No. 313,644
Int. Cl.³ F16K *27/04*
U.S. Cl. 251—329 **4 Claims**



1. A gate valve comprising a body formed of flat end walls and flat side walls interconnected by welding to form a substantially rectangular cross section in a plane perpendicular to said end walls, said end walls having aligned openings forming flow passages, a plurality of metal reinforcing ribs extending across the exterior faces of said end walls and in engagement with said end walls on opposite sides of the body, said ribs being disposed in parallel planes parallel to the axis of the flow passage and perpendicular to the longitudinal axis of the body, each rib on one side of the body being in the same plane as a rib on the other side of said body, each rib having an inner portion of the periphery in contact with an end wall and an outer portion of the periphery spaced away from the end walls and extending parallel thereto, the improvement comprising a strap extending around each pair of opposite ribs, the straps extending parallel to the side walls of the body, the straps being securely attached to the ribs only at said outer portions of the periphery.

4,436,283

GATE VALVE

John H. Shore, 8 Cherokee St., Shawnee, Okla. 74801

Filed Apr. 29, 1982, Ser. No. 373,004
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—174 **2 Claims**

1. A gate valve especially adapted for use in a horizontal position in which the gate thereof reciprocates in a substantially horizontal plane comprising:

a valve body having a cylindrical bore projecting into one side of the body and forming a gate chamber in the body for the accommodation of the gate of the valve;

a gate reciprocably mounted in said gate chamber;

a closure plate removably secured to said valve body and extending across and closing the opening to said bore at one side of the valve body;

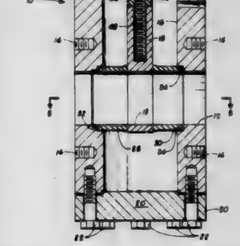
a bonnet opening formed in said valve body on the opposite side thereof from said closure plate and communicating with said bore;

fluid flow passageway means in said valve body for permitting fluid to flow through said gate valve when said gate is open, said fluid flow passageway means comprising:

a first bore portion projecting into said valve body along an axis extending normal to the axis of said cylindrical bore forming said gate valve chamber;

an upstream seat counterbore registering with and opening into said first bore portion, said upstream seat counterbore being disposed in concentric and coaxial relationship to said first bore portion and projecting from said first bore portion to said gate bore, and communicating at one of its open ends with said gate bore;

a second bore portion projecting into the opposite side of



said valve body from said first bore portion and in axial alignment with said first bore portion;

a downstream seat counterbore aligned with and opening into said second bore portion, said downstream seat counterbore being concentric and coaxially related to said second bore portion, and said downstream seat counterbore extending from said second bore portion to said gate bore and opening into said gate bore on the opposite side thereof from said upstream seat counterbore;

a first shoulder formed at the intersection of said first bore portion and said upstream seat counterbore; and

a second shoulder formed at the intersection of said second bore portion and said upstream seat counterbore;

an annular wave spring bearing against said first shoulder and concentrically surrounding the axes of said upstream seat counterbore and said first bore portion;

an annular upstream seat slidably mounted in said upstream seat counterbore and having a first end bearing against said wave spring and a second end bearing against one side of said gate;

an annular downstream seat slidably mounted in said downstream seat counterbore and concentrically surrounding the axes of said downstream seat counterbore and said second bore portion, said downstream seat having a first end adjacent said second shoulder and having a second

end in contact with the opposite side of said gate from the side contacted by said upstream seat;
a bonnet including a neck portion projecting through said bonnet opening and carrying external threads at a location outside said valve body, said bonnet further including an annular flange at the end of said neck portion inside said valve body;
sealing means between said annular flange and said valve body;
bonnet retainer means threadedly engaged with the external threads on said neck portion and located outside said valve body;
a valve stem having a first end threadedly and adjustably connected with said gate for causing reciprocation of said gate when said valve stem is rotated, and having a second end outside said valve body;
an operating handle outside said body and connected to said valve stem for rotation of the valve stem when said operating handle is rotated; and
packing means secured to the end of said bonnet outside said valve body and packingly surrounding said valve stem.

4,436,284

TENSED WIRE SUSPENSION SYSTEM

Arturo G. Varela-Hernandez, California 2040 Apt. 152, Santiago, Chile

Filed Aug. 5, 1982, Ser. No. 405,547
Int. Cl.³ E04H 17/02
U.S. Cl. 256—35
4 Claims



1. A system for forming trellises, fences, and self-supporting structures comprising: a plurality of wires of substantially equal length, each having first and second ends; first and second means for anchoring said wires at said ends to place said wires under substantial tension and position the same in substantially mutually parallel relation; and laterally extending link elements interconnecting said plurality of wires at periodic intervals between said first and second terminals, for the transmission of laterally applied forces exerted thereon, said link elements being free of other interconnection and comprising lengths of relatively rigid wire bent at intervals to form Z-shaped loops each comprising two offset parallel portions and an angular connecting portion disposed at acute angles to said parallel portions and extending linearly therebetween, said wires being interlaced between the same sides of said parallel portions and around the facing side of said connecting portion intermediate the linear extent thereof to be held in laterally non-slipping engagement with said like elements.

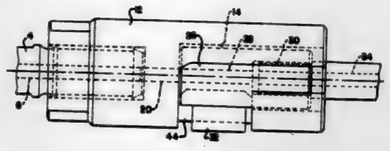
4,436,285

METHOD AND APPARATUS FOR OPENING BLAST-FURNACE TAP HOLES

Robert T. Woodings, Box W, Mars, Pa. 16046

Filed Jan. 20, 1982, Ser. No. 340,866
Int. Cl.³ C21C 5/48
U.S. Cl. 266—45
4 Claims

1. In apparatus for opening the iron notch of a blast furnace, said apparatus comprising:
a striking bar,
pneumatic means for imparting rotary motion to said striking bar about its longitudinal axis and reciprocating hammering motion to said striking bar, and
a drill rod having a connection to said striking bar, said drill rod having at an extremity thereof remote from said connection a drill bit for removing clay or mud from said iron notch, the improvement wherein:



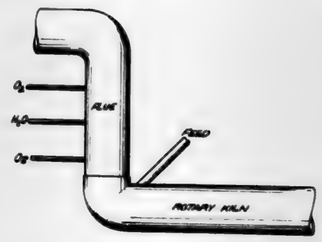
(a) said connection is of a quick-change type and (b) said apparatus further includes an elongated poking bar having at one end thereof means for securing said poking bar to said connection of a quick-change type.

4,436,286

PROCESS OF AFTERBURNING COMBUSTIBLE CONSTITUENTS OF EXHAUST GASES FROM ROTARY KILNS

Wolfram Schnabel, Idstein; Ernst Scheu, Frankfurt am Main, and Harry Serbent, Hanau, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,956
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3208987
Int. Cl.³ C21B 13/08
U.S. Cl. 266—44
7 Claims



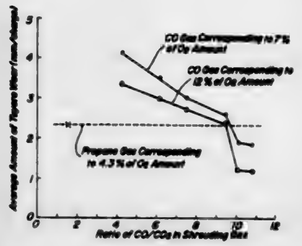
1. In a process of afterburning combustible constituents of exhaust gases from rotary kilns used for metallurgical processes, comprising afterburning the exhaust gases from the rotary kiln at a temperature above their ignition temperature in an afterburning chamber and supplying oxygen-containing gases to said afterburning chamber, the improvement comprising burning part of the combustible constituents in each of a plurality of series connected stages in said afterburner, supplying each of such stages with oxygen at a controlled rate, and cooling the gas which is about to enter each succeeding stage by injecting water to a temperature above the ignition temperature of the gas and below the caking temperature of the entrained fine dust.

4,436,287

METHOD FOR PROTECTING TUYERES FOR REFINING A MOLTEN IRON

Toshikazu Sakuraya; Hideo Nakamura; Nobuo Harada; Tetsuya Fujii, and Toshihiko Emi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 6, 1983, Ser. No. 511,511
Claims priority, application Japan, Jul. 12, 1982, 57-120961; Jul. 12, 1982, 57-120962; Jul. 12, 1982, 57-120963; Jul. 12, 1982, 57-120964
Int. Cl.³ C21B 7/16
U.S. Cl. 266—47
8 Claims



1. A method for protecting tuyeres for refining a molten iron which penetrate a wall of a refining vessel and through which a refining gas flow consisting of oxygen gas or a gas containing oxygen is blown together with a shrouding gas flow surrounding the refining gas flow into a molten iron charged in a refining vessel, which comprises supplying a carbon monoxide-containing gas so as to satisfy the following equation

$$q_c \geq 4.8 q_o / x$$

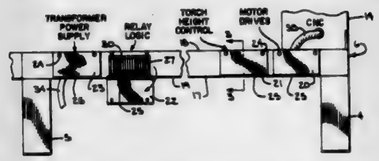
wherein x shows a concentration (%) of carbon monoxide in the shrouding gas, q_c shows an amount (Nm^3/hr) of the shrouding gas flowed and q_o shows an amount (Nm^3/hr) of oxygen gas flowed from an inner pipe, to said tuyeres as the shrouding gas.

4,436,288

METAL MACHINING DEVICE WITH CONTROL CIRCUIT ISOLATION

James D. Kellogg, and August C. Mingeer, both of Milwaukee, Wis., assignors to C-R-O, Inc., Menomonee Falls, Wis.

Filed Sep. 27, 1982, Ser. No. 424,621
Int. Cl.³ B23K 7/02
U.S. Cl. 266—69
4 Claims



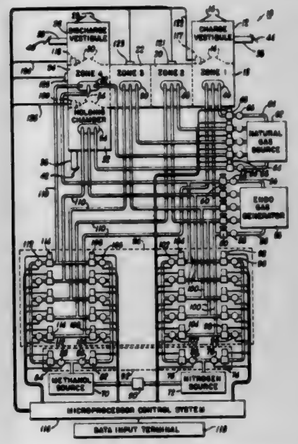
1. In a device for machining horizontally disposed fixed metal workpieces:
(a) a pair of gantries mounted for movement along longitudinally extending rails,
(b) an elongated transverse tool carrying bridge extending between said gantries and with said bridge having tool means mounted for movement therealong,
(c) a programmable computerized numerical machining control unit mounted adjacent one end of said bridge,
(d) supplemental electronic circuit means connected to said control unit,
(e) and said tool carrying bridge enclosing said circuit means therewithin so that electronic noise emanating from said circuit means is isolated thereby from said computerized control unit.

4,436,289

METHOD AND APPARATUS FOR CONTROLLING THE ATMOSPHERE IN A CARBURIZING FURNACE UTILIZING A CASCADED VALVING SYSTEM

John J. Connelly, Naperville, and Raymond A. Cellitti, Hinsdale, both of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Sep. 17, 1981, Ser. No. 303,289
Int. Cl.³ C21B 7/24
U.S. Cl. 266—80
20 Claims



1. In carburizing apparatus of the type utilizing a carburizing furnace having multiple zones, and apparatus for applying nitrogen and methanol to the various zones, the improvement comprising:
first means for controlling the flow rate of the nitrogen and methanol into the furnace, said first means including means for providing a high flow rate to the furnace and for providing a low flow rate to the furnace, and second flow control means cooperating with said first flow control means for distributing the nitrogen and methanol to the various zones of the furnace in varying proportions, said system further including control means responsive to one or more components of the gas composition within the various zones for individually altering the proportions of nitrogen and methanol applied to the various individual zones to obtain a predetermined carbon potential in each zone.

4,436,290

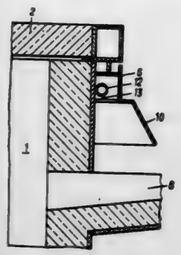
PLASMA MELTING FURNACE ARRANGEMENT

Helmut D. Kilches, Asten; Walter Lugscheider, Linz; Ernst Riegler, Enns, and Ernst Zajicek, Ottensheim, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 27, 1982, Ser. No. 412,202
Claims priority, application Austria, Sep. 15, 1981, 3980/81
Int. Cl.³ C21B 7/22
U.S. Cl. 266—158
4 Claims

1. In a plasma melting furnace arrangement of the type including a cover, a melt container having a side wall and an upper rim, plasma burners arranged so as to be inclined towards the furnace axis and guided through said side wall, a main flue gas conduit connected to said cover and equipped with a draft regulating damper, and a separate discharge means provided for flue gases from other furnace openings, the im-

provement wherein said separate discharge means comprises a downwardly open channel attached to the outer periphery of said melt container adjacent said upper rim and wherein means



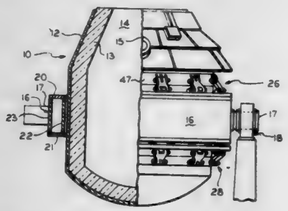
are provided within said downwardly open channel for supplying a protective gas downwardly in an area above said furnace openings.

4,436,291

METALLURGICAL VESSEL SUSPENSION SYSTEM

Rashed N. Nagati, Mars, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1982, Ser. No. 340,316
Int. Cl.³ C21C 5/50
U.S. Cl. 266—246 **5 Claims**



1. A metallurgical vessel subject to expansion and contraction during its operating cycles and including trunnion support means having a support surface at least partially surrounding the vessel and a plurality of link members each having a first pair of spaced apart legs extending longitudinally from one end and a second pair of spaced apart legs extending from the opposite end,

an auxiliary support,

the first and second pairs of legs of each member are respectively pivotally coupled to a first hinge means mounted on the vessel and a second hinge means mounted on the auxiliary support,

each hinge means including a first hinge member disposed between the legs of its pivotally connected link member and second and third hinge members disposed adjacent the opposite sides thereof,

and first and second pin means extending respectively through said first and second pairs of legs and the hinge members associated therewith, said pin means extending generally tangentially relative to said vessel,

the gap between the legs of the pair which is coupled to the vessel and the width of the hinge member disposed therebetween is less than the gap between the legs and of the pair which is coupled to the auxiliary support and the width of the hinge member disposed therebetween,

said auxiliary support having a surface substantially coextensive with and disposed in an opposed relation to said support surface, and

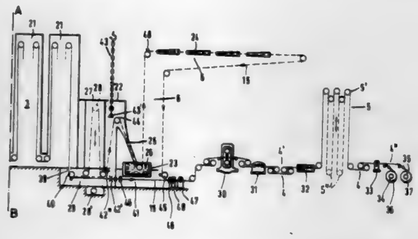
resilient means being disposed between said surfaces.

4,436,292

SYSTEM FOR THE TREATMENT OF A CONTINUOUS METAL WEB

Martin Pfannschmidt, Heiligenhaus, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag AG, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 363,836
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106811; Apr. 9, 1981, 3114412
Int. Cl.³ C21D 9/56; C23D 1/02
U.S. Cl. 266—107 **13 Claims**



1. A system for the continuous and uninterrupted treatment of a continuous metal web, comprising an apparatus having a web feed station and a discharge station with an annealing station therebetween, a web entry storage station upstream of the annealing station in the direction of web travel, the discharge station including a web discharge storage station, means for continuously moving the web through said stations, whereby a continuous web annealing operation may be carried out, and a hot-dip coating station located between the anealing and discharge stations, means for selectively directing the web through the coating station for combining the annealing operation with a hot-dip web coating operation, and means for selectively by-passing the web from the coating station and directing the web into the discharge station to reconvert the combined annealing and coating operations solely into the web annealing operation, the means for by-passing the web and directing the web into the discharge station including means for severing the web between the annealing and coating stations to define a first leading web end and between the coating and discharge stations to define a first trailing web end, and means for joining the leading and trailing ends together.

4,436,293

ROTARY SUPPORT FOR CONTINUOUS CASTING LADLES

Paul Schmidt, Cologne, Fed. Rep. of Germany, and Edouard Legille, Luxembourg, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Nov. 4, 1982, Ser. No. 439,354
Claims priority, application Luxembourg, Nov. 13, 1981, 83753
Int. Cl.³ C21B 3/00
U.S. Cl. 266—276 **16 Claims**

1. In a rotary support for continuous casting ladles, which includes a vertical column, a drive mechanism for rotating the vertical column about its vertical axis, a cross arm carried by the vertical column and having at least one of its ends bifurcated to form a pair of support arms, each of the two arms comprising means for carrying between them a casting ladle, the improvement comprising:

a support housing carried at the end of each of said support arms;

weighing cell means attached to said housing at the bottom thereof;

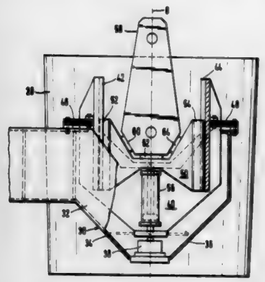
a U-shaped weighing frame vertically mounted in said housing, said weighing frame having an axis of symmetry;

said weighing frame being on said weighing cell and said

weighing cell being positioned along said axis of symmetry;

said U-shaped weighing frame having a pair of guide rails forming vertical guide arms;

ladle carrier carriage means adjustably mounted in said weighing frame and movable on said guide rails of said



weighing frame, said carriage means being symmetrical with respect to said axis of symmetry;

means for raising and lowering said ladle carrier carriage means; and

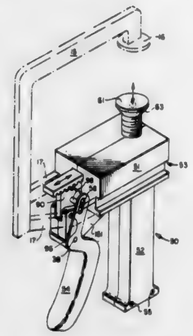
stabilization means between said weighing frame and said housing.

4,436,294

ONE HAND CLAMPING DEVICE

Robert L. Irelan, 500 Fitch St., Socorro, N. Mex. 87801

Filed Feb. 22, 1982, Ser. No. 351,261
Int. Cl.³ B66F 3/00
U.S. Cl. 269—6 **11 Claims**



1. A clamping device comprising:

a main unit holdable in one hand by a user of the device;

first clamp means mounted on the main unit in a relatively fixed relationship thereto for engagement with one side of a work-piece to be clamped;

second clamp means mounted on the main unit in movable relationship thereto for in and out movement relative to the main unit for engaging the opposite side of the work-piece;

activating means for effecting the in and out movement of said second clamp means by the same hand holding the main unit;

means for permitting reversibility of operation of the device;

said second clamp means including an elongated screw mounted in said main unit with one end thereof extending out of said main unit, said elongated screw having means associated therewith for preventing rotation thereof;

said means for preventing rotation of said elongated screw consists of a slot lengthwise of the screw, and a guide plate removably mounted in the main unit which engages in the slot to prevent screw rotation;

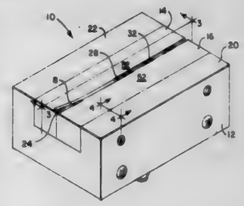
said main unit having head and handle portions, the head portion receiving said guide plate, the guide plate having a recess therein, and a spring mounted detent also in the head portion which cooperates with said recess to resiliently retain the guide plate in the head portion.

4,436,295

VACUUM CHUCK FOR HOLDING FILAMENTS

Robert A. Wey, Plainville, and Harold A. Roberts, North Attleboro, both of Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Jun. 12, 1981, Ser. No. 273,072
Int. Cl.³ B25B 11/00
U.S. Cl. 269—21 **10 Claims**



1. A vacuum chuck comprising:

first and second blocks each having adjacent top and side surfaces set at substantially right angles to each other and having chamfered edges between said surfaces;

means for holding said first and second blocks with the side surfaces thereof in butting relationship and with said top surfaces having a V-shaped channel running thereacross formed by the chamfered edges;

the butted side surfaces of said first and second blocks having one or more matching slots forming one or more passages communicating with the V-shaped channel; and

means adapted for connecting a source of vacuum to said one or more passages;

wherein said holding means includes:

a cradle having a bottom and a pair of upwardly extending arms passing adjacent to sides of said first and second blocks opposite the abutting side surfaces; and

means for securing said first and second blocks to said cradle from said arms and for pressing said butting side surfaces together.

4,436,296

FEEDER DEVICE FOR FOLDING MACHINES

Carlo Fonio, Galliate, Italy, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 24, 1981, Ser. No. 276,855
Claims priority, application Italy, Jun. 18, 1980, 22842 A/80
Int. Cl.³ B65H 29/46
U.S. Cl. 270—31 **4 Claims**

1. A feeder device for withdrawing web material from a supply roll supported on a shaft (29) mounted on a folding machine of the type having a worksurface and a carriage mounted for reciprocating movement thereon for effecting advance of the web material onto the worksurface in folded superposed layers, said feeder device comprising:

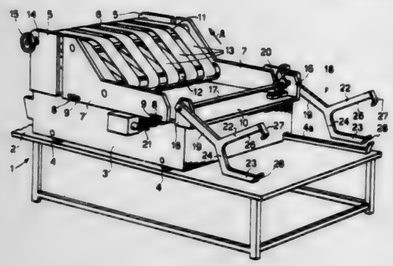
(a) a conveyor supported on one end of the carriage including:

(i) a plurality of spaced rotatably driven cylindrical rollers (6, 11, 12);

(ii) at least one conveyor belt (13) in driving engagement with each said cylindrical rollers;

(b) a loader device (18) pivotally mounted at one end thereof to an end of the carriage opposite said conveyor and being bifurcated at an opposite end, said bifurcation being

formed by opposed arms, one of said arms having a support shaft (29) receiving portion for lifting the shaft (29) and web supply roll (25) mounted thereon from a loading position, the other arm includes a support surface (26) that supports the shaft to allow the supply roll (25) to lie against the conveyor belt (13) when said loader device is in a feed position to cause paying out of material from the roll (25), said support surface (26) of said other arm being elongated and merging with the shaft receiving portion to



form a continuous path for the shaft (29) to move along, said support surface (26) forming an inclined ramp when the loader device (18) is situated in the feed position to cause the shaft (29) to move there along and carry the support roll (25) into and for continuous engagement with the conveyor belt (13); and

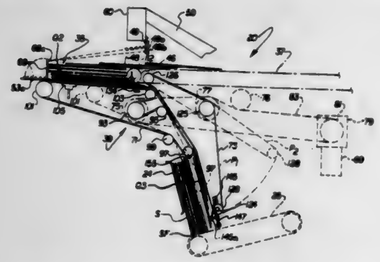
(c) drive means for pivoting said loader device with said web supply roll between the loading position adjacent the worksurface to the feed position.

4,436,297

HORIZONTAL BINDERY LOADER ADAPTOR FOR FEEDING SIGNATURES INTO A VERTICAL POCKET

Mohanjit S. Chandhoke, Plattsburgh, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed May 29, 1981, Ser. No. 268,170
Int. Cl.³ B65H *1/30, 1/02, 3/12*
U.S. Cl. 271—3.1 **9 Claims**



1. Apparatus for feeding signatures into a generally vertically extending pocket in which the signatures are supported on a folded edge and from which the signatures are fed by a feed mechanism, said apparatus comprising a frame,

a generally horizontally oriented hopper arranged to receive signatures in a generally horizontal array,

first feeding means for feeding said signatures from a loading position in a shingled stream with the folded edge trailing into said hopper, and

second feeding means for feeding a shingled stream of said signatures from said hopper, said second feeding means including means for feeding the signatures sequentially from the bottom of said hopper with the folded edge of each signature leading and for directing the signatures on folded edge into the generally vertically extending pocket, said second feeding means including bottom feeding means for sequentially feeding the signatures individually off the bottom of the pack of signatures in the hopper in a reshingled stream into said generally vertically extending feed pocket, said bottom feeding means including conveyor means forming the bottom of said hopper, and

a vacuum manifold,

said conveyor means including a perforated conveyor belt operatively traveling over the inlet side of said vacuum manifold for feeding said signatures into said reshingled stream relationship while signatures are fed off the bottom of the pack in the hopper,

a signature stop adjustably mounted on the frame and movable relative to said pack of signatures for permitting said pack of signatures to have different lengths of signatures therein, and

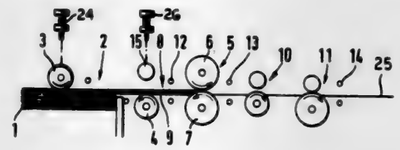
means for simultaneously moving said vacuum manifold and signature stop for maintaining the same length overlap step in the shingled stream of signatures for different length signatures.

4,436,298

SHEET FEEDER

Siegmar Donner, Friedberg; Günter Strempler, and Manfred Schmid, both of Augsburg, all of Fed. Rep. of Germany, assignors to Kleindienst GmbH & Co. and KG Maschinenfabrik, both of, Fed. Rep. of Germany

Filed Jul. 31, 1981, Ser. No. 288,934
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029458
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—10 **6 Claims**



1. A sheet feeder comprising:

a support adapted to hold a stack of sheets;

a straight guide rail extending from said stack parallel to a transport direction and defining a transport path extending in said direction;

a generically cylindrical sheet-forwarding roller above said support and vertically engageable with the topmost sheet of said stack said sheet-forwarding roller being centered on and rotatable about an axis inclined to said direction and rail;

means for rotating said sheet-forwarding roller about the respective axis while in contact with the top-most sheet of said stack for displacing said topmost sheet in said direction and toward said rail;

feed rollers downstream of said sheet-forwarding

means for rotating said feed rollers and thereby advancing a sheet engaged thereby along said path in said direction;

means for vertically displacing said sheet-forwarding roller and urging same periodically down into contact with the topmost sheet of said stack;

a stripper roller underneath said path immediately downstream of said stack;

means for rotating said stripper roller in a direction to displace a sheet resting on it back against said transport direction;

a freely rotatable stripper roller above the first-mentioned stripper roller and vertically displaceable into engagement therewith; and

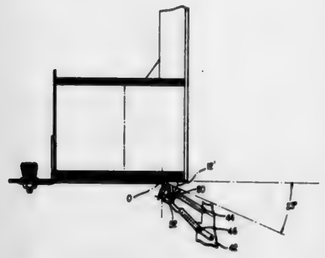
means for vertically displacing said freely rotatable roller.

4,436,299

SHEET FEEDING DEVICE

Winston A. Orsinger, Nazareth, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed May 26, 1981, Ser. No. 267,277
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—100 **17 Claims**



1. A pivoting-type of sheet separating mechanism for separating a bottom-most sheet from a main portion of a sheet stack comprising:

a main frame;

a hopper assembly mounted on said main frame for supporting a stack of sheets;

a sheet separating means for gripping a bottom-most sheet of the sheet stack and then moving along an arcuate path away from said sheet stack in a direction down and under said sheet stack, thereby bending a separated edge of said bottom-most sheet away from a main portion of said sheet stack; and

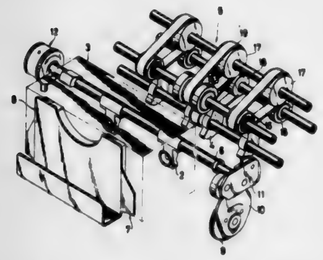
a linkage means for mounting said sheet separating means to said main frame for causing said sheet separating means to move in said arcuate path in said direction down and under said sheet stack so that the apparent pivot point of said sheet separating means is on the concave side of said arcuate path, said linkage means being mounted to said main frame on the convex side of said arcuate path, however, so that the actual pivot point of said sheet separating means is on the convex side of said arcuate path.

4,436,300

PAPER SHEET STRIPPER DEVICE

Kouichi Goi, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1981, Ser. No. 298,618
Claims priority, application Japan, Sep. 4, 1980, 55-122639
Int. Cl.³ B65H *7/16, 3/08*
U.S. Cl. 271—107 **5 Claims**



1. A paper sheet stripper device for stripping sheets of paper one by one from a paper sheet bundle to feed the same to a conveyer assembly, comprising:

a vacuum source for generating a substantially constant reduced pressure,

a suction head assembly pneumatically connected with said vacuum source for sucking a low portion of the first sheet of the paper sheet bundle,

swinging means for swinging said suction head assembly from a suction position engaging with said lower portion of the first sheet of said paper sheet bundle to a take-up position for passing the paper sheets to said conveyer assembly, and

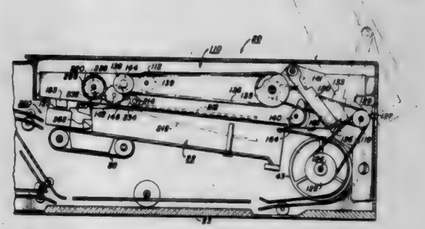
a valve interposed between said vacuum source and said suction head assembly for selectively communicating said suction head assembly with said vacuum source, said valve including a circular housing in communication with said vacuum source, a hollow timing member having a slit and being rotatably received within said housing, and a hollow cylindrical shaft for carrying said suction head assembly and for providing communication therewith, an end of said cylindrical shaft being received within said timing member and having a cut-out portion, the rotation of said timing member and the swinging movement of said cylindrical shaft being in synchronism with each other so that said suction head assembly communicates with said vacuum source and is under a substantially constant reduced pressure when in the suction position, and is out of communication with said vacuum source when in the take-up position.

4,436,301

DOCUMENT RESTACK TRANSPORT

Michael S. Doery, Rochester; Edward W. C. Hanzlik, Webster; John A. Adamek, Rochester, and William J. McLaughlin, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,630
Int. Cl.³ B65H *29/32, 29/54*
U.S. Cl. 271—177 **1 Claim**



1. In a recirculating document handler for sequentially feeding document sheets at a high rate of speed from the bottom of a document restacking tray to an imaging station of a copier and for sequentially returning the document sheets to said document restacking tray, the improvement in controlled high speed restacking of flimsy document sheets in said document tray comprising:

a plurality of vacuum sheet transport belts extending over said document restacking tray for retaining thereagainst and transporting flimsy document sheets out over said document restacking tray from adjacent an upstream (entrance) end thereof toward a downstream end thereof,

wherein one said vacuum belt is adapted to vacuum-retain one edge of each said flimsy document sheet,

and wherein a second said vacuum belt is spaced from said one belt by plural intervening said belts, and has a width greater than said intervening belts, so as to vacuum-retain the opposite edge of various popular lengths of said sheets,

sheet sensing means for sensing the transporting of a docu-

ment sheet over said document tray by said transport belts.

document sheet knockdown means actuated by said sheet sensing means for rapidly separating a transported document sheet from said transport belts and mechanically pushing that document sheet down into said document restacking tray when the document sheet is in a restacking position,

said document sheet knockdown means comprising a plurality of elongated bars interdigitated with said plurality of vacuum transport belts and recessed out of the document sheet path of said vacuum transport belts when not so actuating,

said elongated bars being pivotally mounted, relative to the sheet transport path of said vacuum sheet transport belts, to have a maximum knockdown effect on the trailing portion of a document sheet adjacent said upstream (entrance) end of said document restacking tray when so actuated,

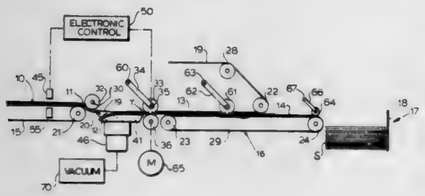
and means actuated in coordination with said document sheet knockdown means to remove vacuum from said vacuum sheet transport belts during said actuation of said knockdown means.

4,436,302

APPARATUS FOR SLOWING DOWN AND PREVENTING EDGE DAMAGE ON MOVING SHEETS

Kenneth G. Frye, South Egremont, Mass.; Donald C. Fitzpatrick, Chatham, N.Y., and Arthur T. Karis, Lenox, Mass., assignors to Beloit Corporation, Beloit, Wis.

Filed May 28, 1981, Ser. No. 268,002
Int. Cl.³ B65H *29/68*
U.S. Cl. 271—202 **34 Claims**



30. A method for overlapping cut-size sheets passing in seriatim flow from a relatively high-speed tape conveyor system to a relatively low-speed tape conveyor system, wherein said low-speed tape conveyor has sheet carrying surfaces at a level substantially lower than sheet-carrying surfaces for said high-speed tape conveyor system, comprising:

dropping sheets off a delivery end of said high-speed tape conveyor system onto a support plate such that the leading edge of each sheet extends horizontally outward initially and then gently curves toward said support plate and the trailing edge of each sheet bends off said delivery end so as to be snapped down flush with said support plate,

delaying each sheet downstream of said support plate by passing each sheet through a slowdown nip formed at the level of the carrying surfaces of said low-speed conveyor by upper and lower roll means such that the trailing edge of each sheet is overlapped by the leading edge of the next succeeding sheet as the leading edge of the next succeeding sheet drops off said high-speed delivery end,

slowing each sheet down to the speed of said low-speed tape conveyor system after each sheet has passed through said slowdown nip with a stop roll means rotatably disposed over said low-speed tape conveyor system, and

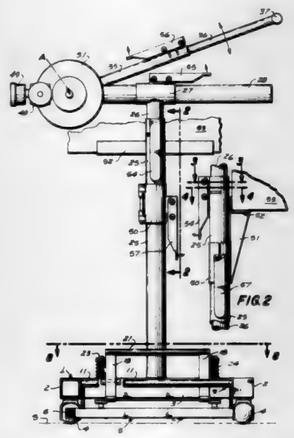
directing each sheet through said slowdown nip at a constant speed less than speed of said high-speed tape conveyor system but greater than the speed of said low-speed tape conveyor such that the trailing edge of each slowed sheet is further overlapped by the leading edge of the next succeeding sheet passing through said slowdown nip.

4,436,303

PHYSICAL THERAPY APPARATUS

James B. McKillip, 15243 Vanowen, Van Nuys, Calif. 91405, and Edmund J. Brown, 3186 N. Rossini St., Topanga, Calif. 90290

Continuation of Ser. No. 173,613, Jul. 30, 1980, abandoned, which is a continuation of Ser. No. 937,070, Aug. 28, 1978, abandoned. This application Jul. 18, 1981, Ser. No. 283,929
Int. Cl.³ A63B *21/22*
U.S. Cl. 272—132 **10 Claims**



1. An apparatus suitable for physical therapy comprising:

(a) a frame structure;

(b) an angularly movable shaft carried by the frame structure and engaged by a patient;

(c) (i) first and second clutch discs mounted on the shaft, (ii) a first one way drive means for moving the first clutch disc with the shaft only when the shaft angularly moves in a first direction, and (iii) a second one way drive means for moving the second clutch disc with the shaft only when the shaft angularly moves in a second direction opposite the first direction; and

(d) a pair of frictional adjusting means mounted proximate to the clutch discs, each adjusting means comprising a cylinder containing hydraulic fluid, a piston positioned in each cylinder for engaging a respective one of the clutch discs, and means associated with each cylinder for varying the pressure of the hydraulic fluid in each cylinder for varying the friction between each piston and its respective clutch disc, and thereby independently varying the frictional resistance of the shaft's angular movement alternately in the first direction and then in the second directions.

4,436,304

TENNIS TEACHING AID

Bonnie L. Castleman, 43 Ellen La., and Mary Jean, 25 Cliffside Dr., both of Manchester, Conn. 06040

Filed Jun. 18, 1981, Ser. No. 275,126
Int. Cl.³ A63B *61/00*
U.S. Cl. 273—29 A **3 Claims**

1. A tennis teaching aid for use on a tennis court having two net posts between which a standard net is stretched, said teaching aid comprising:

two auxiliary posts attachable respectively to said two net posts so as to extend vertically upwardly from said net posts, and

a target band assembly adapted for connection at its opposite ends to said two auxiliary posts so as to stretch between said posts in vertically spaced relation to the top of said standard net stretched between said net posts,

said target band assembly including at least one rope adapted to extend between and to be connected at its opposite ends to said auxiliary posts, and a target band attached to said rope and of a length approximately equal to the length of the said standard net stretched between said net posts,

means for releasably connecting one end of said rope to one of said auxiliary posts, and

means carried by the other of said auxiliary posts for releasably receiving the other end of said rope and for holding said end in a tightened condition with adjustable tension,



each of said auxiliary posts having a plurality of vertically spaced openings extending therethrough, said means for releasably connecting one end of said rope to one of said auxiliary posts including a snap hook connected to said one rope end and selectively receivable in any one of said openings of said one auxiliary post, and said means for releasably receiving the other end of said rope and for holding it in a tightened condition with adjustable tension comprising a jamb cleat device carried by said other auxiliary post below said vertically spaced openings therein so that said other end of said rope may be inserted through any selected one of said openings in said other auxiliary post to determine the heighth of said other end and may be received by said jamb cleat device to hold it in tightened condition.

4,436,305

COMPOSITE REINFORCED RACKET STRUCTURE

David Fernandez, Camarillo, Calif., assignor to American Sports Equipment, Camarillo, Calif.

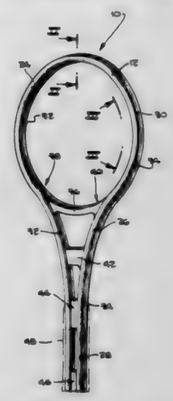
Filed Aug. 26, 1981, Ser. No. 296,255
Int. Cl.³ A63B *49/02, 49/12*
U.S. Cl. 273—73 C **10 Claims**

1. A frame structure adapted for use as a tennis racket comprising:

a tubular frame in the shape of a racket, said racket having a handle, yoke and head, said frame including interior, exterior and side surfaces and having first and second end portions adjacent and parallel each other to form the racket handle, a semi-circular central portion forming the racket head and first and second mid portions located between the racket handle and racket head to form the racket yoke wherein said first and second mid portions diverge from each other from the racket handle to the racket head to form an open space between said mid portions where they join said central portion;

a plurality of surfaces defining elongated slots in said frame passing from said exterior frame surface to said interior frame surface, said slots being located at spaced locations in the racket handle, yoke and head

a unitary composite material racket support frame having an outer rim extending continuously around and adjacent to the frame exterior surface from said first end portion to said second end portion, an inner rim extending continuously around and adjacent to the frame interior surface from said first end portion to said second end portion, and a plurality of integral ribs extending through said elongated slots and joining said outer rim to said inner rim at the racket handle, yoke and head, said racket support frame further including one or more spaced integral support bars located in the racket handle and yoke and extending between and joining the inner rim of said support frame, wherein one of said support bars provides a string mounting and racket support bar integral with said inner



rim and extending across said open space between said inner rim where said frame mid portions join the frame central portion, said string mounting and racket support bar including a plurality of surfaces defining spaced holes adapted for mounting racket string;

a plurality of surfaces defining holes adapted for mounting racket string extending through said inner rim, outer rim and integral rib, said holes passing laterally through the elongated slots in said frame central portion.

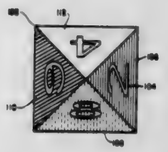
4,436,306

EIGHT-SIDED GAME DICE WITH SUIT ATTRIBUTE MARKINGS

David M. Sanders, 705 Bay Ave., Capitola, Calif. 95010

Filed May 26, 1981, Ser. No. 267,147
Int. Cl.³ A63F *9/04*
U.S. Cl. 273—146 **3 Claims**





1. A set of five game dice, each die having eight faces, each

face bearing a numerical attribute marking selected from a range of eight ranked numerical attribute markings and a suit attribute marking selected from a set of five suit attribute markings, the suit attribute and numerical attribute markings for each face being selected so that:

each die bears one each of two of the five suit attribute markings thereon and two each of the remaining three suit attribute markings with the combinations of said two of the five and the combinations of said three of the remaining five suit attribute markings both being of differing combinations on each respective die;

each die bears each numerical attribute marking on exactly one face;

every possible combination of a suit attribute marking and a numerical attribute marking appears on exactly one face of the set of five dice with each of the two numerical attribute markings in the middle of said range of eight ranked numerical attribute markings appearing in combination with said one each of two of the five suit atribute markings on each respective die;

said two numerical attribute markings in the middle of said range of light ranked numerical attribute markings effectively dividing said range into three groups, a first group having the three lowest ranked numerical attributes, a second group having the middle two numerical attributes, and a third group having the three highest ranked numerical attributes; and

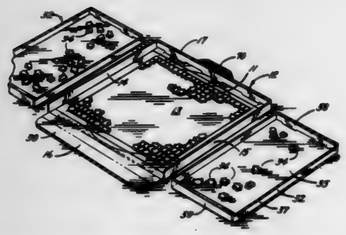
on each die, any two faces bearing the same suit attribute marking bear numerical attribute markings which occupy the same relative positions within said first and third groups of numerical attributes to permit the throwing of both ordinary and straight flushes.

4,436,307

DEVICE FOR FACILITATING ASSEMBLY, STORAGE AND TRANSPORTATION OF A JIGSAW PUZZLE

T. Francis Caldwell, Rockford, Ill., assignor to Puzzle Specialties, St. Charles, Ill.

Filed Jun. 10, 1982, Ser. No. 386,926
Int. Cl.³ A63F 9/10
U.S. Cl. 273—157 R **11 Claims**



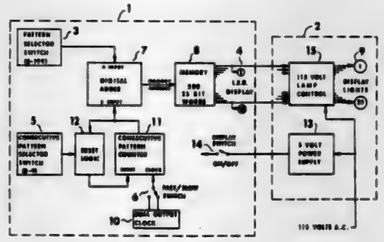
1. A device for facilitating assembly of a jigsaw puzzle and for enabling the puzzle to be transported, said device comprising a generally rectangular assembly tray for holding assembled puzzle pieces, a plurality of generally rectangular storage trays for holding unassembled puzzle pieces, each of said trays having a bottom wall and four upstanding side walls, the overall height of each storage tray being approximately equal to the overall height of the assembly tray, the overall length of each storage tray being slightly less than the overall length of the assembly tray, and the combined overall widths of the plurality of storage trays being slightly less than the overall width of the assembly tray whereby said storage trays may nest removably within and substantially fill said assembly tray, the bottoms of said storage trays being located adjacent the bottom of said assembly tray and engaging any assembled puzzle pieces therein to hold such pieces in assembled relationship when said assembly tray is turned on edge and transported, generally rectangular filler blocks for each of said storage trays, each of said filler blocks having an overall height approximately equal to the overall height of the respective filler tray and having an overall length and width somewhat less than the overall length and width of the respective filler tray whereby said filler blocks may nest removably within and substantially fill the respective storage tray, the bottoms of said blocks engaging any unassembled puzzle pieces in said storage trays and preventing such pieces from becoming inverted within said storage trays, and a removable cover disposed in covering relation with the outer sides of said blocks and connected to said assembly tray, said cover holding said blocks in said storage trays and holding said storage trays in said assembly tray.

4,436,308

BINGO GAME DISPLAY

William Rose, 7862 Naylor Ave., Los Angeles, Calif. 90045, and David M. Rose, 12849 Via Caballo Rojo, San Diego, Calif. 92129

Filed Jul. 17, 1981, Ser. No. 284,251
Int. Cl.³ A63F 3/06
U.S. Cl. 273—237 **12 Claims**



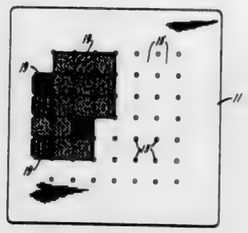
1. A bingo game display comprising display means including a plurality of light means arranged in a matrix form corresponding to a bingo card, and control means coupled to the display means, the control means including memory means having stored therein information corresponding to a plurality of patterns desired to be displayed, and a single pattern selector switch means coupled to the memory means for providing an output for application to the memory means corresponding to a desired pattern to be displayed, the memory means being responsive at least to the output of the pattern selector switch means for supplying an output to the light means in accordance with the pattern selected for enabling energization of the light means according to the pattern selected, automatic sequencing means coupled to the memory means for providing an output to the memory means which automatically changes at predetermined intervals, said automatic sequencing means includes a counter means for being set to a predetermined number and for counting up to the predetermined number, consecutive pattern selector switch means for setting the predetermined number into the counter means, and means for varying the predetermined intervals including clock means for supplying clock pulses to the counter means, the counter means counting the clock pulses and supplying an output to the adder means in accordance with the count thereof, said clock means provides clock pulses at a fast and a slow rate, and the means for varying the predetermined intervals includes switch means for selecting one of the fast and slow rate clock pulses for application to the counter means, the memory address supplied by the adder means being changed at the rate of the clock pulses for causing sequencing of the memory means and the display patterns displayed by the light means, said memory means being responsive to the automatic sequencing means for automatically changing the output thereof at the predetermined intervals to energize the light means in accordance with different predetermined pattern according to the outputs of the pattern selector switch means and the automatic sequencing means, and digital adder means for supplying a memory address to the memory means, the digital adder means receiving an input from the pattern selector switch means and an input from the automatic sequencing means for supplying as a memory address the sum of the two inputs, and reset means for resetting the counter means in response to the counter means counting up to the predetermined number, whereby different predetermined patterns are displayed during a game.

4,436,309

STRATEGY CARD GAME

Gordon A. Barlow, Glenview; John R. Newcomer, Des Plaines, and Fred Bezark, Northbrook, all of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Feb. 8, 1982, Ser. No. 347,016
Int. Cl.³ A63F 3/00
U.S. Cl. 273—267 **3 Claims**



1. A game including:

a game board having a base and pegs upstanding on the base arranged in columns and rows to define a grid of uniformly sized squares,

a plurality of square cards,

each card being divided into nine colored squares identical in size to the squares of the game board,

notches formed along the sides of each card at the corners of each square and openings formed in the card at the corners of the center square so that the cards can be fitted over the pegs and against one another and the base of the game board,

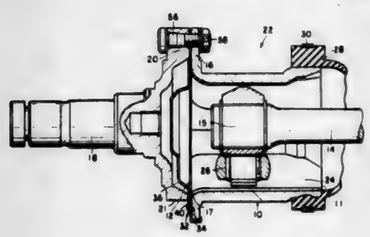
the squares on the cards being arranged in patterns of color so that the cards can be placed on top of one another in a partially overlapping manner to ultimately form a pattern of nine contiguous squares of the same color when viewed from above.

4,436,310

SEALING DEVICE FOR JOINT

Masaki Sawabe, Okazaki, and Tadanobu Kumagai, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 24, 1982, Ser. No. 391,832
Claims priority, application Japan, Oct. 6, 1981, 56-147728[U]
Int. Cl.³ F16D 3/84; F16J 3/00
U.S. Cl. 277—11 **14 Claims**



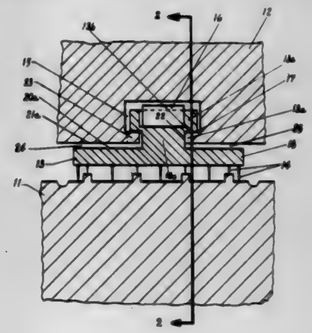
1. A combination including a joint and a sealing device, said joint comprising a first shaft, a casing receiving an end portion of the first shaft through one end and provided with a flange on the periphery of the other end thereof, and a second shaft provided with a flange at one end thereof to be joined to the flange of the casing, said sealing device comprising a sealing member having an endless shape and provided with a plurality of projections, and an end cover with its periphery held between said flanges and adapted to hold the sealing member in association with the flange of said casing, said end cover being provided with a plurality of through holes each of which receives one of the projections of the sealing member, and said flange of said second shaft being formed so as to make visible from outside of said joint, when said flanges are joined, the reception of said projections in said holes.

4,436,311

SEGMENTED LABYRINTH-TYPE SHAFT SEALING SYSTEM FOR FLUID TURBINES

Ronald E. Brandon, 1734 Lenox Rd., Schenectady, N.Y. 12308

Filed Apr. 20, 1982, Ser. No. 370,093
Int. Cl.³ F16J 15/44
U.S. Cl. 277—27 **7 Claims**



1. In an elastic fluid turbine employing seals to minimize leakage between rotating and stationary components, an improvement in the seal arrangement utilizing the combination of:

a segmented seal ring supported by and at least partially contained in an annular groove formed in a stationary casing to permit motion of said seal ring between a large diameter position and a small diameter position corresponding respectively to large and small clearance of said seal ring with regard to the rotating shaft, said seal ring groove being partially defined by a pair of opposing, spaced apart shoulders on said casing which form an opening of said groove extending radially into the clearance area between said casing and said rotating shaft;

each segment of said seal ring including an inner arcuate portion hving seal teeth extending therefrom in the direction of and adjacent to said rotating shaft, a radially outwardly facing arcuate surface on said seal ring segment which is located opposite to a radially inward facing arcuate surface of said casing for limiting said large clearance position by contact between said opposing surfaces, an outer ring portion disposed within said seal ring groove for both axial and radial movement therein and having a pair of shoulders, extending axially in opposite directions for making radial contact respectively with said pair of spaced apart shoulders on said casing and thereby limiting said small clearance position, and a neck portion connected between said inner arcuate portion and said outer ring portion and extending between said casing shoulders, said neck portion having an axial thickness which is less than the distance between said opposing casing shoulders

to thereby axially locate said seal ring segment against one of said casing shoulders and provide a contact pressure seal at the said of said neck portion which is subject to lower turbine fluid pressure; and

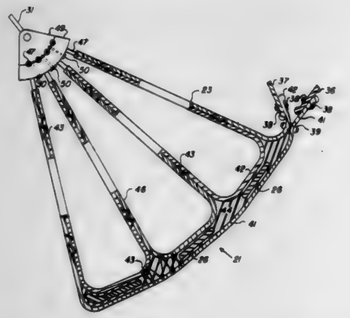
a radial positioning means comprising a compressed spring means biased against said ring segments to forcibly cause said segments to move to said large clearance position, while working fluid which is freely admitted to the annular space between said casing and said ring segments will urge said segments toward said small clearance position, whereby at low speed and small turbine loads the spring forces will predominate, while at high flows and high working fluid pressure the pressure forces will predominate.

4,436,312

TRANSVERSELY SUPPORTED SEAL

Sydney Davis, 704 Lamberton Dr., Silver Spring, Md. 20902, and Alexander Malakhoff, 590 S. Harrison St., Arlington, Va. 22204

Filed Jan. 29, 1982, Ser. No. 344,132
Int. Cl.³ B63B *1/38*
U.S. Cl. 277—34 **11 Claims**



1. A seal structure for an air cushion marine vessel of the type having a hull with spaced, depending sidewalls for forming a plenum chamber therebetween, comprising:

a flexible bag secured to the hull and positioned between the sidewalls to form an expansible chamber, said bag being deformable in response to fluid pressures exerted thereon;

a stiffened lobe portion positioned beneath said bag, said stiffened lobe portion including a membrane section and a plurality of elongated stiffener members connected to and extending traversely across said membrane section; and

support means connected to the hull for flexibly supporting said stiffened lobe portion beneath said bag;

wherein said support means includes positioning elements connected to the longitudinal end portions of said stiffener members, and adjusting straps connected to the hull and said positioning elements for limiting the downward deflection of said stiffened lobe portion.

4,436,313

DEVICE FOR SEALING A PROPELLER SHAFT AGAINST INVASION OF SEA WATER

Hiroshi Tamama; Yukio Ozawa, both of Saitama; Jingo Miyazaki, Tokyo; Hiroshi Ito, Saitama, and Toyohiro Kinoshita, Tokyo, all of Japan, assignors to Japanese National Railways, Tokyo, Japan

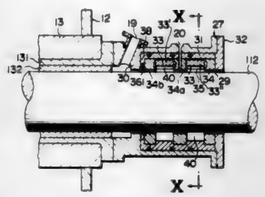
Filed Apr. 30, 1982, Ser. No. 373,803
Int. Cl.³ F16J *15/54, 15/40*
U.S. Cl. 277—80 **9 Claims**

1. A device for sealing a propeller shaft extending aftward from a surface of a ship against invasion of water, comprising:

(1) a cylindrical housing having a longitudinal axis and an inside surface having radial dimensions in excess of the radius of said shaft, concentrically surrounding said shaft, said housing having an aft end facing aftward;

(2) a plurality of longitudinally spaced annular iron pole blocks having radially outward surfaces, fixed on first concentric circles of said housing to said inside surface and radially inward surfaces spaced from the outer surface of said shaft adjacent said aft end of said housing, said iron pole blocks defining at least one annular space between at least two adjacent ones of said iron pole blocks, having a radially outward portion and a radially inward portion;

(3) a plurality of circularly arched circumferentially spaced permanent magnets mounted in said radially outward portion of each of said at least one annular space so as to



bridge said at least two adjacent ones of said iron pole blocks, leaving a first gap in said radially inward portion and inwardly of said iron pole blocks between the radially inward surfaces of each of said plurality of permanent magnets and said plurality of iron pole blocks on the one hand, and the outer surface of said shaft on the other hand; and

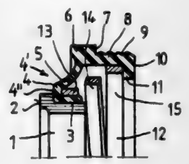
(4) magnetic fluid comprising magnetic material held in each said first gap; the aftmost one of said at least two adjacent ones of said iron pole blocks forming the aftmost magnetic element of said device in the magnetic circuit inclusive of said magnetic fluid in said each first gap; said magnetic fluid, said permanent magnet, said housing and said iron pole blocks defining a non-contact high-pressure seal.

4,436,314

SLIDE RING SEAL WITH SPRING TO RADIALLY BIAS IN OPPOSITE RADIAL DIRECTIONS

Paul Vossieck, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,191
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1982, 3202274; Jun. 18, 1982, 3222759
Int. Cl.³ F16J *15/36*
U.S. Cl. 277—86 **19 Claims**



1. A slide ring seal comprising a slide ring having a central axis and a circumferential face; a tubular sleeve member comprising a bellows overlapping at least a portion of said circumferential face and an adhering part integral with said bellows and extending axially from said slide ring; and a compression spring approximately conical in configuration positioned within said tubular sleeve member comprising at least three spring turns positioned in different radial planes with respect to said central axis, at least two of said spring turns having different diameters, and wherein the spring turns having the smallest and largest diameter cooperate with said adhering part and

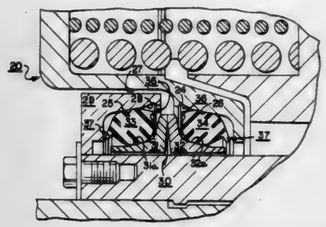
that portion of said bellows which overlaps said slide ring to radially bias said slide ring seal in opposite radial directions.

4,436,315

TWO PIECE SEAL ADAPTED FOR SIMPLIFIED INSTALLATION

Seymour A. Hatch, Bensenville, and James P. Morley, Arlington Heights, both of Ill., assignors to CR Industries, Elgin, Ill.

Filed Oct. 13, 1981, Ser. No. 311,148
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—92 **9 Claims**



1. A mechanical end face seal assembly comprising, in combination, a rigid, abrasion-resistant primary seal ring and an elastomeric, abrasion-resistant secondary seal ring, said primary seal ring being an annular ring having a body which includes first and second axial end face portions and a generally radially inwardly directed, axially extending annular surface portion joining said end portions at their respective inner diameters, a portion of one of said end faces being finished so as to provide, in cooperation with a mating ring, a primary seal band area, said primary ring further includipg a radially outwardly directed annular surface having a tapered portion with the larger diameter portion lying closer to said end face having said seal band area thereon, and including a substantially cylindrical portion lying opposite said end face having said sealing band area thereon, said secondary seal ring being of an annular configuration and having a body with a body center section of substantially circular cross section and including an outer surface adapted in use to roll up and down said tapered surface of said primary seal ring to provide an axial sealing load for said primary ring, said secondary ring further including a substantially cylindrical axial portion formed on an inner diameter thereof and extending axially a distance substantially equal to said substantially cylindrical portion of said primary sealing ring for positioning said secondary seal ring thereon and further including at least one annular positioning rib lying outside said body center section, with said rib including a radially inwardly directed, axially facing shoulder surface adapted to engage said primary ring end face surface opposite said seal band surface in abutting relation to prevent axial movement of said secondary seal ring relative to said primary seal ring during installation of said seal assembly.

4,436,316

FLUID SEAL

Michael A. Karr, Jr., 9353 Roastown Way, Houston, Tex. 77080

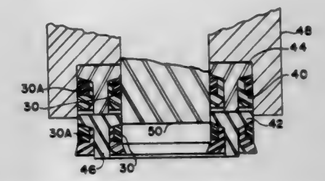
Filed Apr. 5, 1982, Ser. No. 365,350
Int. Cl.³ F16J *15/16*
U.S. Cl. 277—124 **7 Claims**

1. A seal assembly which comprises:

a first seal ring having a geometric axis, said first seal ring having a unitary substantially rigid support member having a cross section which is generally T-shaped, said T-shaped cross section being defined by a hoop shaped section, having inner and outer faces, which is coaxial with said geometric axis and a section of a generally disc shaped section which is also coaxial with said geometric axis; a first annular elastic seal abutting one of said faces;

and a second annular elastic seal abutting the other of said faces;

a second seal ring which also has a geometric axis, said second seal ring has a unitary substantially rigid support member having a cross section which is generally T-shaped, the T-shape being defined by a hoop shaped section having inner and outer faces, which is coaxial with said geometric axis, and a section of a generally disc shaped section which is also coaxial with said geometric axis; a first annular elastic seal abutting one of said faces;



and a second annular elastic seal abutting the other of said faces;

said first and said second seal rings and said respective unitary substantially rigid support members thereof are disposed in coaxial and axially abutting relationship;

said seal assembly includes a cylindrical housing thereabout which includes a weep hole; and

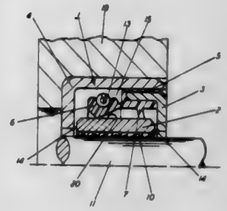
a hoop shaped backup member extends around the outer circumference of each seal assembly in abutting relationship to one of said annular elastic seals.

4,436,317

CASSETTE SEAL HAVING A COUNTERRING FREE FROM UNRELIEVED INTERNAL STRESS

Wilhelm Schmitt, Heppenheim-Erbach, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jan. 7, 1983, Ser. No. 456,447
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213809
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—134 **17 Claims**



1. In a cassette seal compring a U-ring having legs projecting in the direction of a relatively rotating machine part, a counterring connected to the relatively rotating machine part, and at least one sealing lip fabricated from an elastomer material which rests under pretention against the running surface of the counterring extending in the axial direction thereby forming a seal, the improvement which comprises

said counterring is in the shape of a hollow cylinder and is free of unrelieved internal stresses;

said counterring is associated with said legs of said U-ring with a small axial clearance on both sides whereby said counterring and said U-ring enclose a hollow space having substantially rectangular boundaries; and

said sealing lip is mounted on said U-ring and extends into

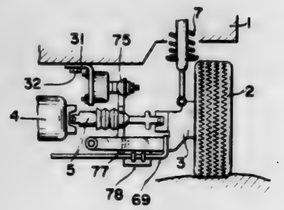
said hollow space formed by said counterring and said U-ring.

4,436,318

VEHICLE LEVEL DETECTOR WITH FAIL-SAFE MECHANISM

Mamoru Ichikawa, Atsugi, and Sachio Satake, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Atsugi Motor Parts Company Limited, Atsugi, both of, Japan

Filed Jul. 16, 1981, Ser. No. 283,795
Claims priority, application Japan, Sep. 27, 1980, 55-134645
Int. Cl.³ B60G 3/14
U.S. Cl. 280—104 **20 Claims**



1. A vehicle level detector comprising:
- a detector housing secured onto a vehicle body for motion therewith;
- a stationary transducer element secured with said detector housing;
- a movable transducer element disposed within said detector housing in an opposing relationship with respect to said stationary transducer element, said movable transducer element cooperatively producing a first signal indicative of the vehicle body elevation relative to a vehicle suspension member lowered across a first predetermined value and a second signal indicative of the vehicle body elevation relative to said vehicle suspension member raised across a second predetermined; value
- a link mechanism connected to said movable transducer element and operating said movable transducer element among the first position where said transducer elements produce said first signal, the second position where said transducer elements produce said second signal and the third position where said transducer elements are in an inoperative position; and
- a resilient means associated with said movable transducer element for resiliently positioning said movable transducer element to said third position.

4,436,319

VEHICLE WHEEL SPLASH GUARD

James E. Clutter, 1703 Redbud Ct., Plainfield, Ind. 46168

Filed Oct. 7, 1981, Ser. No. 309,261
Int. Cl.³ B62D 25/16
U.S. Cl. 280—154.5 R **15 Claims**

1. A vehicle wheel splash guard for mounting to wheeled vehicles so as to partially enclose or cover the tires of such vehicles, said splash guard comprising:

(a) an inner wall having:

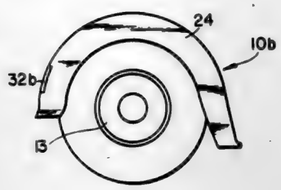
(1) an elongated top portion having longitudinal and transverse edges aligned with and above a corresponding vehicle tire when mounted to a corresponding vehicle;

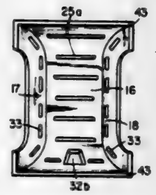
(2) a pair of side portions extending radially inward from the longitudinal edges of said top portion toward the axis of said tire, one side portion adjacent to each side of said tire;

(3) a plurality of first apertures in said top portion which extend generally parallel to the axis of said tire; and

(4) a plurality of second apertures in said side portions running in generally the same direction as the junctions of said top and side portions; and

(b) an outer wall located on the opposite side of said inner wall from said tire and cooperatively arranged to reduce





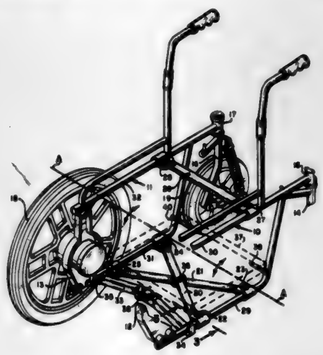
splash and spray from said tire, said outer wall being joined to said inner wall at the radially inward edges of said side portions, said jointed location being sealed to substantially prevent leakage of fluids therethrough.

4,436,320

CHASSIS FOR INVALID WHEELCHAIRS

Uwe Brudermann, Heikendorf; Karl-H. Kunze; Gunter Krehl, both of Kiel; E. Volker Linde, Klausdorf, and Dieter R. Lorenz, Kiel, all of Fed. Rep. of Germany, assignors to Everest & Jennings, Inc., Camarillo, Calif.

Filed Apr. 30, 1982, Ser. No. 373,740
Claims priority, application Fed. Rep. of Germany, May 7, 1981, 31118112
Int. Cl.³ B62M 1/14
U.S. Cl. 280—242 WC **9 Claims**



1. A chassis for invalid wheelchairs including, in combination:

(a) left and right lateral frames for rotatably supporting at their forward and rear ends front and rear wheels respectively, said lateral frames lying in spaced generally vertical parallel planes;

(b) first and second connecting members arranged in a cross,

lying generally in an horizontal plane between said vertical parallel planes, the extending ends of said members being attached to said lateral frames; and

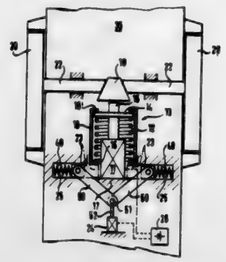
(c) a third connecting member extending horizontally between and attached to said lateral frames in a position spaced above said horizontal plane, said third member being normal to said vertical planes, so that when said chassis is viewed from the side, at the most only two frame mounting points fall on a straight line, said first, second and third connecting members constituting leaf springs providing an elastic connection between the lateral frames permitting slight rotations of the frames in their own planes about an horizontal axis, the attachment points of said members to said lateral frames permitting further elastic relative movements between said lateral frames.

4,436,321

ELECTRICALLY RELEASABLE SAFETY SKI BINDING

Ralf Storandt; Georg Scheck, and Peter Biermann, all of Leonberg, Fed. Rep. of Germany, assignors to Gesa GmbH, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,496
Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017841
Int. Cl.³ A63C 9/085
U.S. Cl. 280—612 **22 Claims**



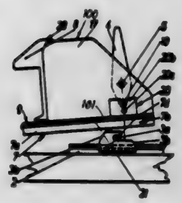
1. An electrically releasable safety ski binding comprising a fixed binding part; retaining means for releasably retaining a ski boot in the binding; a battery operated power supply; electrical measuring sensor means for sensing the load on a skier's leg; a signal former connected to said electrical measuring sensor means for forming a release signal when said load reaches a predetermined value; a release mechanism including an electromagnetic converter, wherein said electromagnetic converter is responsive to said release signal to release said retaining means for movement away from said ski boot; a normally inoperative release spring associated with said release mechanism, said release spring having first and second ends; and means for placing said release spring in an operative state on failure of said power supply; wherein, in said operative state, said release spring is disposed operatively in parallel with said electromagnetic converter, with said first end being braced against a fixed housing part and said second end bearing on said release mechanism; and wherein said release spring is arranged to yield in said operative state to permit release of said binding once a predetermined release setting is reached.

4,436,322

LOCKING MECHANISM

Heinz Wittmann, and Vladimir Kouvitza, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Oct. 27, 1981, Ser. No. 315,393
Claims priority, application Austria, Oct. 28, 1980, 5303/80; Feb. 4, 1981, 501/81
Int. Cl.³ A63C 9/08
U.S. Cl. 280—614 **14 Claims**



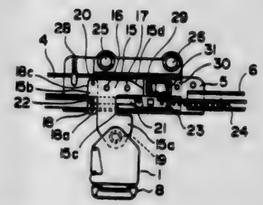
1. A safety ski binding for use in cross-country skiing and downhill skiing, comprising:
- a cross-country plate having a bearing block thereon adjacent the rear portion thereof to which a heel holder is supported;
- locking means for facilitating a locking of at least the rear portion of said cross-country plate to said ski, said locking means having a locking element which, in the locked position of said cross-country plate, is received in an opening through said cross-country plate, said locking means further including a slide member movably supported on said cross-country plate and being movable between a first position operatively engaging said locking element to lock said cross-country plate to said ski and a second position free of engagement with said locking element to unlock said cross-country plate from said ski, said locking means further including an elongated rail fixed to said ski and means on said rail and said locking element for movably guiding said locking element along the length of said rail; and
- lever means for effecting a movement of said slide member between said first and second positions.

4,436,323

LOCKING DEVICE FOR A MOVING ANCHOR OF A SEAT BELT

Kazuo Yamamoto, Sagamihara, Japan, assignor to NSK-Warner K.K., Japan

Filed Jul. 30, 1982, Ser. No. 403,406
Claims priority, application Japan, Sep. 3, 1981, 56-130376[U]
Int. Cl.³ B60R 21/10
U.S. Cl. 280—804 **5 Claims**



1. A locking device for a moving anchor used in an automatic seat belt system, having:
- an anchor member movable between a rearward, seat occupant restraining position and a forward, seat occupant liberating position along a guide member secured to a vehicle body;

a pivotable member pivotably mounted on said anchor member;

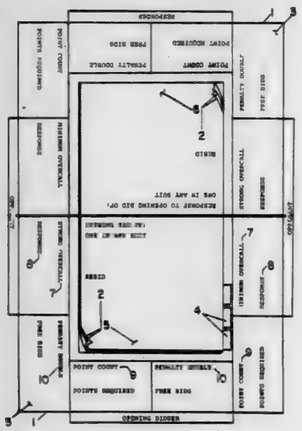
a driving member operatively connected to said pivotable member so as to pivotally move said pivotable member between a first position and a second position, said driving member moving said pivotable member to said first position when said driving member is moved from the seat occupant liberating position toward the seat occupant restraining position in response to the closing of a door and thereafter moving said pivotable member and said anchor member together to the seat occupant restraining position, said driving member moving said pivotable member to said second position when said driving member is moved from the seat occupant restraining position toward the seat occupant liberating position in response to the opening of the door and thereafter moving said pivotable member and said anchor member together to the seat occupant liberating position;

a locking member provided on a base member secured to the vehicle body and adapted for movement between a locking position at which the locking member prevents the movement of said anchor member to the seat occupant liberating position and a non-locking position at which the locking member permits movement of said anchor member to the seat occupant liberating position; and

a biasing member biasing said locking member toward said locking position;

at least one of said pivotable member and said anchor member forming a locking surface engageable with said locking member in its locking position when said anchor member is in said seat occupant restraining position and said pivotable member is in said first position in order to prevent movement of said anchor member to said seat occupant liberating position, said locking member being located forwardly of said locking surface when said anchor member is in said seat occupant restraining position, and said pivotable member in said second position forming a cam surface which moves said locking member to its non-locking position when said anchor member and said pivotable member are about to be moved from the seat occupant restraining position toward the seat occupant liberating position by said driving member.

4,436,324
BRIDGE BIDDING AID
Lyndon O. Barton, 26 Shull Dr., Newark, Del. 19711
Filed Aug. 5, 1981, Ser. No. 290,310
Int. Cl.³ G09B *19/22*; A63F *3/00*
U.S. Cl. 283—50 **4 Claims**



1. A booklet having an oversized cover and a plurality of sheets, devised to aid bridge players in bidding situations, wherein

a. said sheets and said cover are permanently secured to a spine, and contain notes so arranged that, when said booklet is unfolded, four players seated around a table can simultaneously and independently consult said notes to decide on their respective bids,

b. said oversized cover has a portion extending beyond said sheets such that when said booklet is unfolded, said extended portion forms a border around said sheets,

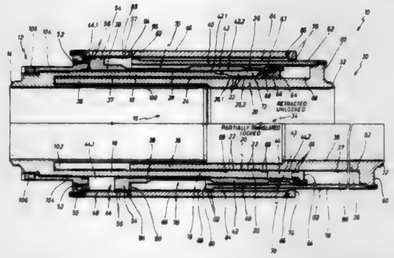
c. said notes contained on said sheets are so arranged that, when said booklet is unfolded, the notes relating to the opening bidding sequence are positioned typically on one page and face, or are readable only by, the opening bidder, while the notes relating to the response bidding sequence are positioned typically on the opposite page and face, or are readable only by, the responder,

d. said notes contained on said cover are recorded on said extended portion and arranged such that, when said booklet is unfolded, they directly face each player,

e. said notes on said sheets and said cover facing each player are in immediate proximity to each player,

f. said booklet when unfolded and placed on a level surface will permit said sheets to be maintained in a flat and stable position.

4,436,325
COUPLING
Jack E. Miller, Houston, Tex., assignor to Big Inch Marine Systems, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 214,251, Dec. 8, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 320,889
Int. Cl.³ F16L *55/00, 37/18, 25/00*; F16J *15/00*
U.S. Cl. 285—18 **50 Claims**



1. A coupling for coupling two tubular elements in sealed relationship, the coupling comprising:

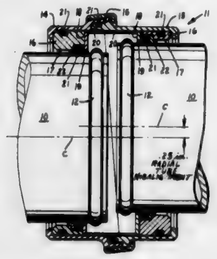
(a) a first tubular member having an outer end for connection to one tubular element, and having an inner end comprising an axially extending locking sleeve, the locking sleeve having an annular gripping zone defined by the locking sleeve having at least one annular gripping member along its inner surface in the gripping zone, having cam means along its outer surface in the gripping zone, and by the locking sleeve being radially compressible in the gripping zone;

(b) a second tubular member having an outer end for connection to another tubular element, and having an inner end comprising an inner barrel located within the locking sleeve;

(c) an annular locking piston which surrounds the gripping zone, the locking piston being axially displaceable relatively to the first tubular member between an inoperative position and an operative locking position, and the locking piston having a locking zone with complementary cam means along the inner surface of the piston in the locking zone to cooperate with the cam means of the gripping zone in the operative position of the piston to radially compress the gripping zone and thus compress the annular gripping member into sealing engagement with the inner barrel to lock the coupling;

(d) the locking piston being positioned to define a compression chamber in the coupling for receiving a compression fluid under pressure to displace the piston into its operative position, the compression chamber extending through between the cam means and the complementary cam means for compression fluid pressure within the compression chamber to resiliently expand the locking zone relatively to the gripping zone to reduce interference between the cam means and complementary cam means during translation of the piston into its operative position.

4,436,326
FLEXIBLE COUPLING FOR FLUID DUCTS
Bertram A. Peaster, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.
Filed Jul. 13, 1981, Ser. No. 282,760
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—178 **7 Claims**



1. A flexible coupling for fluid ducts when disposed end to end comprising:

a pair of coupling half assemblies, one adapted to overlie and surround each of said duct ends, at least one of said assemblies including an insert having an eccentric opening for the passage therethrough of the associated duct end and each of said assemblies having an engagement complemental to the engagement of the other assembly;

a connector operative on said engagements to thereby secure them one to the other against relative movement;

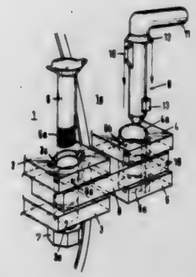
a ring spacer having an overall diameter substantially equal to the internal diameter of said coupling half assemblies;

a pair of discs, each provided with a central eccentric opening substantially equal in diameter to the external dimension of each respective one of said duct ends for the passage therethrough of said one duct end, one of said discs being disposed between each said coupling half assembly and said ring spacer; and

a seal between each coupling half assembly and the associated disc.

4,436,327
CLAMP JOINT FOR PIPES
Rudolf Schaefer, Brauerstrasse 35, D-4100 Duisburg 1, Fed. Rep. of Germany
Filed Aug. 20, 1981, Ser. No. 294,562
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031314
Int. Cl.³ F16L *23/00, 19/00, 25/00*
U.S. Cl. 285—364 **9 Claims**

1. Clamp joint for axially clamping together the end faces of first and second coaxial cylindrical members having identical diameters, said clamp joint comprising: at least one first projection secured to the first member near the end face thereof and at least one second projection secured to the second member near the end face thereof, each projection projecting substantially radially outwardly from its associated member, and lying in a plane parallel to the common longitudinal axis of the members, said second projection being provided with a bore whose axis is transverse to the common longitudinal axis of the members; a connecting part articulated to said first projection, extending axially from the first member to the region of said second projection and lying in a plane parallel to the common longitudinal axis of the members, said connecting part being provided with a first bore whose axis is transverse to the common longitudinal axis of the members and located to be aligned with said bore in said second projection when the end faces of the members are in proximity to one another; and a first bolt arranged to be inserted into said first bore in said connecting part and said bore in said second projection in the direction of the axes of said bores, said first bolt being provided with a laterally projecting eccentric portion extending along a selected region of its length to engage one of said bores when said first bolt is inserted therein; with said one of said bores having a diameter which corresponds to the diameter of said first bolt and the lateral extent of said projecting eccentric portion and the other of said bores having a diameter which is smaller than that of said one of said bores and which corresponds to the diameter of said first bolt outside of said selected region of its length, and wherein said first projection is provided with a bore whose axis is transverse to the common



longitudinal axis of the members, and said connecting part is provided with a second bore whose axis is transverse to the common longitudinal axis of the members and which is aligned with said bore in said first projection, and further comprising means articulating said connecting part to said first projection, said means being composed of a second bolt arranged to be inserted into said second bore in said connecting part and said bore in said first projection in the direction of the axes of those bores, said second bolt being provided with a laterally projecting eccentric portion extending along a selected region of its length at a location such that when said second bolt is inserted into said bore in said first projection and said second bore in said connecting part, said projecting eccentric portion of said second bolt engages one of said bores into which said second bolt is inserted, with said bore which is engaged by said projecting eccentric portion of said second bolt having a diameter which corresponds to the diameter of said second bolt and the lateral extent of said projecting eccentric portion of said second bolt, and the other of said bores into which said second bolt is inserted having a diameter which is smaller than that of said bore which is engaged by said projecting eccentric portion of said second bolt and which corresponds to the diameter of said second bolt outside of said selected region of its length.

4,436,328
KEYLESS LOCK
John E. Chernosky, 5 Malcolm St., West Babylon, N.Y. 11704
Filed Feb. 22, 1982, Ser. No. 351,288
Int. Cl.³ E05C *5/02*
U.S. Cl. 292—67 **5 Claims**

1. An improved keyless lock which comprises:

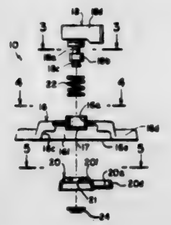
(a) a helical spring;

(b) a rectangular housing having a plurality of mounting

holes, a recessed central square aperture surrounded by an annular lip on top, a slot in a long side wall and an open bottom;

(c) a latch consisting of a round portion having a square aperture, a tongue on the one side and a corner stop on other side;

(d) a latch release having a finger grip handle and a shaft with a square mating portion placed through said helical spring, said square aperture in said housing and said square aperture in said latch so that said finger grip handle is in line with said tongue of said latch;



(e) means for fastening said latch release to said latch so that when said finger grip handle is depressed compressing said helical spring, said square mating portion of said latch release will disengage with said square aperture of said housing allowing said latch release and said latch to rotate to a locked position through said slot in said long side wall of said housing whereby said corner stop engages the solid long wall of said housing preventing further rotation; and

(f) means for mounting said rectangular housing to a frame.

4,436,329

LOCKING MECHANISM

Thomas J. Metzger, 6501 NW. 87th Ave., Parkland, Fla. 33067

Filed Feb. 23, 1982, Ser. No. 351,339
Int. Cl.³ E05C 1/06
U.S. Cl. 292—150 4 Claims



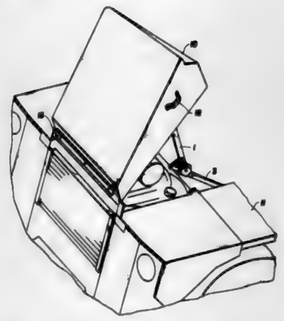
1. A locking mechanism for a sliding window or door of the type having an inner transparent pane mounted to a rectangular inner frame and an outer surrounding rectangular frame mounted to a wall, said locking mechanism being incorporated within one side of said inner frame and comprising a slide, a latch adapted to move and lock said slide, a deadbolt attached to said slide and adapted to extend into said outer frame to lock said frames together, said inner frame defining a latch port adjacent said latch, said latch port comprising a wider locking segment and a narrower adjacent unlocking segment, said latch comprising a latch post, a latch button, a latch casing, and a latch spring, said latch post being coupled to said slide and extending therefrom to said latch port, said latch button being slideably mounted on said latch post and defining a raised button portion and a lower button portion, and latch spring surrounding said latch post between said latch button and said slide, so that said raised button portion will extend through said locking segment when said latch button is manipulated to move said slide to engage said deadbolt with said outer frame, said latch spring maintaining said raised button portion in said locking segment until said latch button is depressed, said latch casing being positioned between said slide and said latch port, said casing surrounding said latch button and defining slot means for passage of said latch bolt between said latch button and said slide, said latch casing being adapted to prevent excursion of said latch button and said slide beyond said latch port within said inner frame.

4,436,330

FOLDING SUPPORT WITH DOUBLE-POSITIVE LOCK

Henry C. Mayo, Alexandria, and Joseph E. Korsendorfer, Manassas, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1981, Ser. No. 327,530
Int. Cl.³ E05C 17/32
U.S. Cl. 292—263 9 Claims



1. A folding support assembly which opens to hold a supported object a predetermined distance from a supporting object having a first arm with a slot at one end, a second arm having a first end and a second end, said first end being pivotally connected to one of said supporting object and said supported object, and having a bracket assembly extending from the second arm mounted along the length of the second arm between the first and second ends of the second arm, a pin mounted in the bracket assembly, wherein the first arm is connected to the second arm at the bracket assembly such that the pin of the second arm extends through the slot of the first arm and the first arm is pivotable about the pin, and further having:

a latch assembly positioned on the second arm on said second end which locks the pivotable movement of the first arm when the support assembly is in an open position.

4,436,331

MULTIPLE-POSITION HASP-TYPE DOOR CHECK

Howard E. Glickman, 4 Nantucket La., Olivette, Mo. 63132; Alan J. Broddon, 7400 Buckingham, Clayton, Mo. 63105, and Norman C. Broddon, 10964 Chambray Ct., Creve Coeur, Mo. 63141

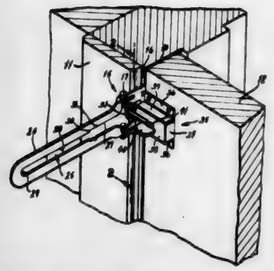
Filed Nov. 9, 1981, Ser. No. 319,220
Int. Cl.³ E05C 17/16
U.S. Cl. 292—270 5 Claims

1. A door check of the type having, for affixing to the inner surface of a door jamb, a hasp hinged on a fixed vertical axis, the hasp being elongated and having perpendicular to said axis an elongated slot terminating at the hinge axis in an enlarged yoke-like opening, the door check further having, for affixing to the inner surface of a door, a slide-supporting member from which a headed slide member projects horizontally parallel to such door surface, for reception within the opening of the hasp for sliding within its slot, characterized in that:

A. the slot has, continuing from the yoke-like opening, a broader slot portion extending to a shoulder-like junction, from which a narrower slot portion continues, and

B. the slide member has a deeper portion slidable within the broader slot portion and a shallower slide portion alternatively slidable within the narrower slot portion, and terminates in a head whose depth is less than such yoke-like opening and greater than either said slot portions,

whereby by moving the hasp on its hinge and on fitting the slide member head through the yoke-like opening, a person inside the door may select between the extent of opening permitted by the said two slot portions.



4,436,332

MOP HEAD INSTALLATION TOOL

Elmer L. Ellison, 1157 N. 33rd St., Springfield, Oreg. 97477

Filed Aug. 3, 1981, Ser. No. 289,394
Int. Cl.³ A47L 13/25
U.S. Cl. 294—1 R 2 Claims



1. A hand held tool for temporary engagement with and manually stretching fabric mop heads during installation of same on elongate mop frames, said tool comprising,

a handgrip, and

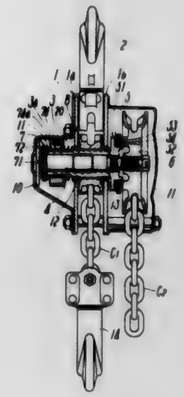
a guide structure of semi-circular section integral with one end of said handgrip, said guide structure including a lip remote from the handgrip and adapted for temporary inserted engagement with one end of a mop head, said guide structure including a curved surface area along which one end of the mop frame may slide into inserted engagement with that portion of the mop head temporarily engaged by said lip of the guide structure.

4,436,333

HAND OPERATED HOIST HAVING IMPROVED MEANS CONTROLLING FREE ROTATION OF A LOAD SHEAVE

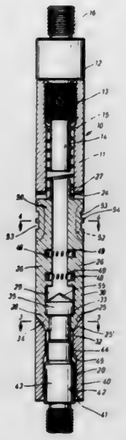
Kinji Tsuda, Osaka, Japan, assignor to Elephant Chain Block Company Limited, Osaka, Japan

Filed Apr. 2, 1981, Ser. No. 250,157
Claims priority, application Japan, Apr. 1, 1980, 55-43130
Int. Cl.³ B66D 1/04
U.S. Cl. 294—82 R 5 Claims



1. A hand-operated hoist comprising a hoist body, means for hanging said body, a sheave shaft having a load sheave supported rotatably to said body, power operation means for driving said sheave shaft, and control means for permitting rotation of said sheave shaft, said power operation means comprising a drive shaft, a rotatably driven hand wheel driven by an endless chain, said hand wheel being coupled with said drive shaft by screw means, a mechanical brake for locking reverse rotation of said sheave shaft and for transmitting a driving force from said hand wheel when it rotates in a driving direction to said drive shaft, and a reduction gear mechanism comprising a plurality of gears through which the driving force from said hand wheel is reduced in speed and transmitted to said sheave shaft, said drive shaft being supported to said sheave shaft so as to be axially movably with respect thereto and having an urging member for urging said hand wheel toward said mechanical brake, so that when said hand wheel is unscrewed by being rotated reversely to said driving direction, when said load sheave bears no load, said drive shaft axially moves in a first direction under the action of said urging member and at least one of the gears of said reduction gear mechanism axially moves in said first direction to follow axial movement of said drive shaft, said control means including a clutch mechanism which functions upon axial movement of said gear following axial movement of said drive shaft to disengage and interrupt the driving force transmitted to said sheave shaft thereby allowing said sheave shaft to freely rotate, said at least one gear being provided with a spring means for biasing said clutch mechanism in a disengaging position so that when said hand wheel is rotated reversely the axial movement of said gear following said drive shaft in said first direction causes said spring means to operate to disengage said clutch mechanism permitting free rotation of said load sheave, and means for axially forcibly moving said driving shaft and said gear in a second direction opposite the first upon relative rotation of said hand wheel with respect to said driving shaft when said hand wheel is changed in rotational direction from a reverse rotation direction to said driving direction.

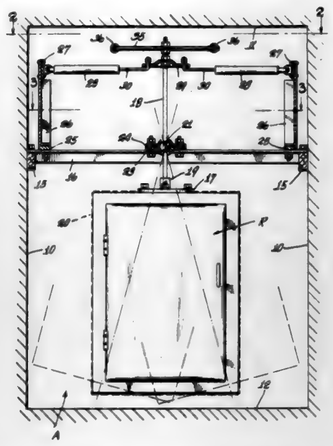
4,436,334
RELEASING OVERSHOT APPARATUS
Lloyd C. Rathburn, Friendswood, Tex., assignor to Loomis International Inc., Pasadena, Tex.
Filed Oct. 19, 1981, Ser. No. 312,770
Int. Cl.³ E21B 31/12
U.S. Cl. 294—86.3 11 Claims



8. A retrieving apparatus comprising: a tubular body having oppositely disposed longitudinally extending slots in the wall thereof, each of said slots having an inclined surface at its lower end; an elongated gripping member carried in each of said slots and being movable longitudinally and laterally with respect thereto; first resilient means reacting between said body and said gripping members for urging the lower end portions thereof into engagement with said inclined surfaces to cause said lower end portions to move inwardly to a gripping position; second resilient means reacting between central portions of said gripping members and urging said central portions laterally outward whereby inward pressure on the upper end portions thereof can be employed to pivot said gripping members about said central portions to cause outward movement of said lower end portions to a released position; and means projecting from the upper end of each gripping member for limiting outward movement with respect to said body, said first resilient means being constituted by a coil spring having its lower end section received over said limiting means.

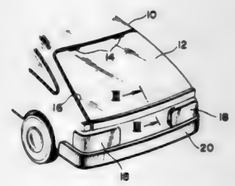
4,436,335
APPLIANCE SUPPORTS
Charles J. Yoos, 39182 S.R. 517, Lisbon, Ohio 44432
Filed Jan. 11, 1982, Ser. No. 338,254
Int. Cl.³ B60N 3/10
U.S. Cl. 296—24 R 6 Claims

1. A support for a refrigerator housed in a travel trailer, comprising:
- support means rigidly connected to a surface of said trailer and disposed above a floor space of said trailer a distance greater than the height of said refrigerator,
- a rod rigidly secured to said refrigerator and extending upwardly therefrom to said support means,
- a ball and socket connection between the refrigerator rod and said support means thereby to suspend said refrigerator and permit it to swing to level condition when said travel trailer is in any tilted position,
- a plurality of dash pots having the cylinders and rods thereof respectively interconnected between said refrigerator rod and a laterally adjacent surface of the trailer with said dash pots in angular spaced relation about the axis of said refrigerator rod, thereby to dampen oscillation movements of said refrigerator and refrigerator rod, and,



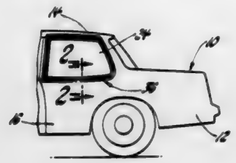
means connected to said rod and to a wall of said trailer to restrain movement of said refrigerator rod about its longitudinal axis, thereby to prevent said refrigerator from excessively rotating during any tilting movement.

4,436,336
HATCHBACK DOOR OF A MOTOR VEHICLE
Tetsuo Shimizu, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Nov. 3, 1981, Ser. No. 317,772
Claims priority, application Japan, Dec. 3, 1980, 55-173365[U]
Int. Cl.³ B62D 25/00
U.S. Cl. 296—76 3 Claims



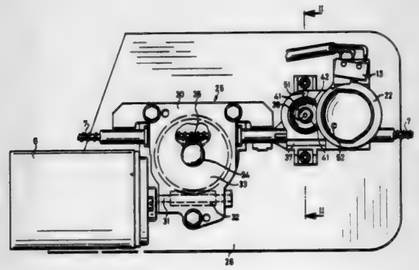
1. A hatchback door assembly for a vehicle comprising:
- a hatchback door of glass hinged at its one edge portion to the vehicle body to be swingable upward and downward relative to the vehicle body to open and close a door opening formed in said vehicle body;
- an elongate strip of flexible elastic material which is attached to the other edge portion of said door in a manner to extend along the entire of the other edge portion and to cover at least the extreme edge of same, said elongate strip including a main-portion covering the outside surface of the other edge portion and a sub-portion straddling the extreme edge of the other edge portion to cover the inside surface of the other edge portion;
- an elongate retainer embedded in the main-portion of said strip to extend along the length of said strip; and
- bolts and nuts for securing said strip to said glass door, each bolt being secured to said retainer and extending therefrom to be inserted in the corresponding hole formed in the glass door having its leading end projected from the inside surface of the glass door, each nut being screwed to the projected end of the corresponding bolt to assure the connection of the strip to said glass door.

4,436,337
VEHICLE BODY MOLDING ASSEMBLY
Laurence B. Bowes, Utica, and Thomas J. Gray, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 2, 1982, Ser. No. 404,562
Int. Cl.³ B62D 25/02
U.S. Cl. 296—201 3 Claims



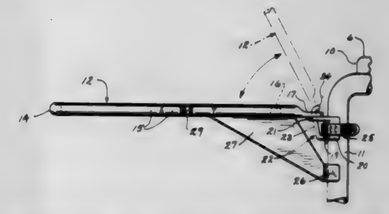
1. A vehicle body reveal molding assembly comprising, in combination,
- an elongated body member of angular cross-section for abutting a complementary shaped portion of a vehicle body panel,
- an angular cross-section molding attachment portion extending outwardly of the plane of the body member,
- means integrally attaching opposite end edges of the attachment portion to the body member,
- the body member including an opening therethrough underneath each side edge of the attachment portion,
- and an elongated molding of angular cross-section having side edge portions provided with elongated terminal flanges reversely bent underneath the molding, the edge portions and flanges overlying and concealing the openings in the body member underneath each side edge of the attachment portion, and seating on the body member to each side of each opening, the flanges edgewise engaging the side edges of the molding attachment portion to releasably secure the molding to the body member.

4,436,338
OPERATING MECHANISM FOR A TILTABLE SLIDING COVER
Hans Jardin, Inning, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany
Filed Feb. 17, 1982, Ser. No. 349,530
Int. Cl.³ B60J 7/04
U.S. Cl. 296—223 12 Claims



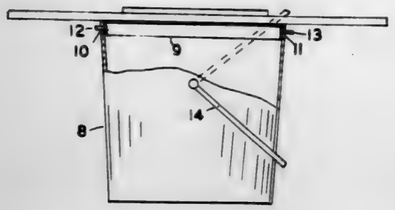
1. An operating mechanism for a tiltable sliding cover of a roof of a motor vehicle having an electric motor by means of which the sliding cover can be operated via a transmission, at least one threaded cable and a cover-adjusting unit connected with the threaded cable, and having a switching arrangement that is in operating connection with the cover-adjusting unit and is rendered operative as a function of the position of the cover-adjusting unit, said switching arrangement switching off current supply to the electric motor in a position of the cover-adjusting unit that corresponds to a closed position of the sliding cover, wherein, between the cover-adjusting unit and the switching arrangement, a clutch means is provided for interrupting the operating connection between the cover-adjusting unit and the switching arrangement.

4,436,339
LAP DEVICE FOR WHEELCHAIR PATIENTS
Arthur L. H. Albers, 1916 Green Bay Rd., Grafton, Wis. 53024
Filed Oct. 16, 1981, Ser. No. 311,996
Int. Cl.³ A47B 83/02
U.S. Cl. 297—153 1 Claim



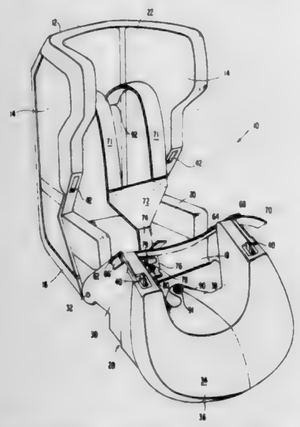
1. In combination with a wheelchair having a seat with a front edge, a back, armrests set back from the said front edge of said seat, and vertical bracing members extending downwardly from the front terminus portions of said armrests:
- (a) a lap device for positioning in front of the patient,
- (b) coupling means for removably attaching the rear portion of said lap device to said vertical bracing members below the plane of said armrests,
- (c) said coupling means being constructed to respectively connect or disconnect said lap device from said vertical bracing members by arcuate downward or upward pivoting of said lap device rear portion about a transverse horizontal axis extending between said bracing members, said coupling means comprising:
  - (1) coupling assemblies secured to said vertical bracing members,
  - (2) said coupling assemblies each including a base, an upper lip, and a hook having an upwardly forwardly inclined body portion which merges at its upper end into a rearwardly bent tail,
  - (3) and opening means formed in the rear corner of said lap device for being received over said hooks,
  - (4) said tails forming means to confine said rear corners against said upper lips when said lap device is in its lowered coupled position,
- (d) and stabilizing locator means connected to said lap device and engageable with said bracing members upon downward pivoting of said lap device,
- (e) the said opening means of said lap device being automatically movable over said hook tails upon forward tipping of the wheelchair to the floor to thereby automatically decouple said frame from the wheelchair.

4,436,340
FISHING SEAT, ROD HOLDER AND PAIL
Henry Hernandez, 1085 Admont Ave., Franklin Square, N.Y. 11010
Filed Jul. 27, 1981, Ser. No. 287,188
Int. Cl.³ A47C 9/00
U.S. Cl. 297—193 2 Claims



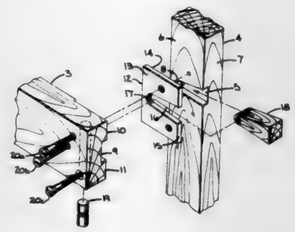
1. A combined fishing seat, rod holder and pail, comprising:
an elongated horizontal seat member,
a pail positioned under said seat, a pair of holes in the side of the pail along a diameter,
a mounting member fixedly connected to the underside of the seat and adapted to fit into the pail,
a pair of extension members extending from the ends of the mounting member, the extension members being adapted to fit into the holes in the pail,
a pair of members hinged to the elongated seat member so as to cover the pail opening, and
a plurality of mounting holes mounted adjacent the ends of the horizontal seat member whereby fishing rods, warning indicators and containers may be mounted in said holes.

4,436,341
INFANT SAFETY CAR SEAT
Maurice Converse, 1311 Briarhill Dr., Akron, Ohio 44313
Filed Jun. 22, 1981, Ser. No. 276,300
Int. Cl.³ A47C 1/08
U.S. Cl. 297—250 5 Claims



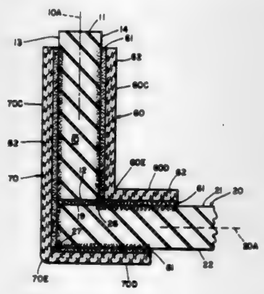
1. A safety car seat of the type used for infants and adapted to rest on and be releasably secured to a conventional automobile seat comprising bottom, seat, back and side portions integrally secured together, a front portion comprising a rigid cross member fixed above said seat portion and a crotch portion extending downwardly from said cross member to said seat portion to define a pair of leg openings, means detachably connecting said cross member to said side portions, infant harness means including shoulder portions and a crotch portion, means for connecting said shoulder portions to said back portion and quick release means for detachably connecting said crotch portion of said harness portion to said seat portion and said crotch portion of said front portion.

4,436,342
FURNITURE JOINT ASSEMBLY
Warren C. Nilson, Omro, and Thomas L. Rabe, Oshkosh, both of Wis., assignors to The Buckstaff Company, Inc., Oskosh, Wis.
Filed Nov. 2, 1981, Ser. No. 317,499
Int. Cl.³ A47C 1/12
U.S. Cl. 297—445 14 Claims



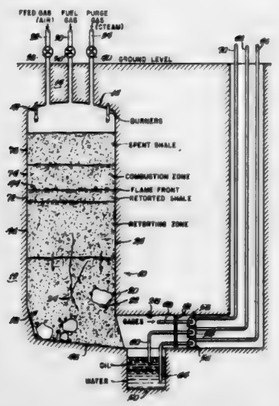
1. A joint assembly in an article of furniture comprising:
a first elongated furniture component having a surface and having a wedge shaped groove extending inwardly along said surface of said component,
a second elongated furniture component connected to said first component such that the longitudinal axes of said components are substantially perpendicular to each other and one of said longitudinal axes lies in a substantially vertical plane and said second component having a surface, said surface having a wedge shaped groove extending inwardly along said surface, said wedge shaped grooves in said first and second furniture components having substantially equal dimensions and being in alignment, said grooves in said first and second components cooperating to define a wedge receiving recess located along the surface formed by the joining of said first and second components, and
a wedge member disposed within said wedge receiving recess.

4,436,343
FRAMELESS FOAM BASE FOR UPHOLSTERED SEATING FURNITURE AND METHOD
Charles Schneider, 314 South 67th St., Omaha, Nebr. 68132
Filed Nov. 20, 1981, Ser. No. 323,190
Int. Cl.³ A47C 7/18, 7/24
U.S. Cl. 297—456 12 Claims



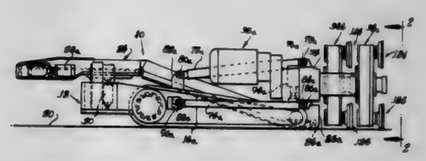
1. Foam base for furniture seating comprising a plurality of angularly intersecting panels of low-density resiliently-compressive foam material, said plurality of foam panels including a spaced apart pair of upright arm-panels and at least one intersecting-panel, each upright arm-panel including a non-vertical top-edge and a pair of upright surfaces including an outward-surface remote from the intervening-panel and an inward-surface closer to the intervening-panel, the angularity between each upright arm-panel and the intervening-panel being maintained with opposed angular stiffener connections including an internal-angle connector and an external-angle connector located respectively at the interior-angle and at the exterior-angle formed by each arm-panel and an intervening panel, each angular stiffener connection being provided by flexible fabric sheeting adhered to the arm-panel and to the intervening-panel, said adhesively attached fabric sheeting being of low permeability to airflow so to also, in addition to providing angularity maintenance means, provide a barrier to airflow whereby the arm-panel is resistent to decompression whenever the furniture occupant bears his weight against the arm-panel, and each said internal-angle connector being wholly relegated in elevation a finite distance below the armresting top-edge of the upright arm-panel so as to enhance comfort to the seated occupant's arm resting downwardly thereagainst.

4,436,344
IN SITU RETORTING OF OIL SHALE WITH PULSED COMBUSTION
John M. Forgac, Elmhurst, Ill., and Gerald B. Hoekstra, deceased, late of South Holland, Ill. (by Edith Hoekstra, executrix), assignors to Standard Oil Company (Indiana), Chicago, Ill.
Filed May 20, 1981, Ser. No. 265,687
Int. Cl.³ E21B 43/243; E21C 41/10
U.S. Cl. 299—2 24 Claims



1. A process for retorting oil shale, comprising the steps of:
heating a portion of a rubblized mass of oil shale to a retorting temperature to liberate shale oil and off gases containing hydrocarbons from said oil shale leaving retorted shale containing residual carbon;
combusting said residual carbon in said oil shale in a combustion zone behind said retorting zone in said underground retort with a flame front fed by a feed gas, said flame front advancing generally in the direction of flow of said feed gas;
quenching said flame front by blanketing said flame front with a purge gas consisting of stripped recycled off gases and subsequently reigniting said flame front while continuing to liberate shale oil and off gases containing hydrocarbons in said retorting zone;
withdrawing said liberated shale oil and off gases containing hydrocarbons from said underground retort;
stripping said hydrocarbons from said off gases; and
recycling said stripped of gases to said retort for use as said purge gas.

4,436,345
CONTINUOUS MINING MACHINE HAVING CONTOUR CUTTERS
Walter Silks, Downers Grove, and Joseph Gonski, Oak Lawn, both of Ill., assignors to Goodman Equipment Corporation, Chicago, Ill.
Filed Aug. 26, 1981, Ser. No. 296,497
Int. Cl.³ E21C 27/24
U.S. Cl. 299—59 32 Claims

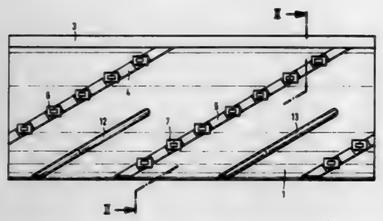


1. A rotary boring head for use in a continuous boring operation or the like comprising:
a primary cutter head having a longitudinal axis defining a first rotational axis and being operative to rotate and cut a bore of predetermined transverse cross-sectional configuration in a mine face or the like when advanced thereagainst while rotating about said first rotational axis,
at least one contour cutter carried by said primary cutter head about said first rotational axis as said primary cutter head rotates, said contour cutter being rotatable about a second rotational axis parallel to and spaced from said first rotational axis and in predetermined timed relation to the rotation of said primary cutter head,
said contour cutter having at least one cutter tooth thereon operative to cut selected circumferentially spaced areas radially outwardly of the bore cut by said primary cutter head during said rotation of said primary cutter head and said contour cutter in said predetermined timed relation so as to enlarge said bore and give it a cross-sectional shape approximating a square,
and means for rotating said primary cutter head and said contour cutter in said predetermined timed relation.

4,436,346
CUTTING ROLLER FOR A MINING MACHINE
Gerd Best, Sprockhövel, and Norbert B. Welkert, Dortmund, both of Fed. Rep. of Germany, assignors to Krampe & Co. Fertigung in Bergbaubedarf GmbH, Hamm, Fed. Rep. of Germany
Filed Jan. 19, 1982, Ser. No. 340,724
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105732
Int. Cl.³ E21C 25/10
U.S. Cl. 299—87 13 Claims

1. A cutting roller for a mining machine, comprising a tubular body member having a longitudinal central axis, an end nearer the workings and a discharge end; a closure member adjacent said end nearer the workings and arranged to face the workings; at least two blades helically extending along an outer surface of the body member parallel one to another to form a space therebetween; and at least one charging coil on said body member mounted in said space, said charging coil extending only over a part of the length of the tubular body member in a direction of said longitudinal axis, said charging coil extending along said outer surface parallel to said blades,

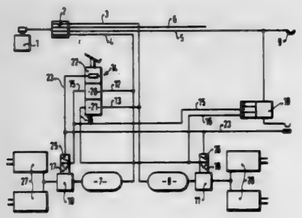
said blades and charging coil extending about said outer surface with an equal angle of inclination, and wherein said charging coil has its largest size in a radial direction at said discharge end of the tubular body member.



4,436,347
PRESSURE MEDIUM BRAKE SYSTEM HAVING A DUAL-VALVE CONTROL

Werner Stumpe, Kornwestheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 24, 1982, Ser. No. 411,140
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204185
Int. Cl.³ B60T *15/18*
U.S. Cl. 303—6 R 4 Claims



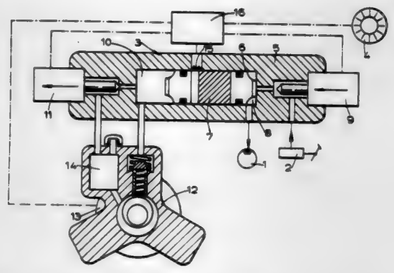
1. A pressure-medium brake system for vehicles having at least two brake circuits, each of said brake circuits having its own source of pressure-medium, and each having one relay valve, said brake circuits controlled by a multi-circuit service brake valve, said multi-circuit service brake valve being in a line extending to control chambers associated with each of said relay valves, said control chambers arranged to control a braking medium, characterized in that said sources of pressure medium supplies a control for each of said relay valves and a working medium for actuation of the brake circuit and further that an electrical supply means for additional control of said relay valves is provided at said multi-circuit service brake valve.

4,436,348
ANTI-SKID HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 7, 1982, Ser. No. 433,233
Claims priority, application United Kingdom, Oct. 13, 1981, 8130683
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—115 24 Claims

1. An anti-skid hydraulic braking system for vehicles comprising a wheel brake, a source of hydraulic fluid under pressure for applying said brake, skid sensing means for emitting skid signals responsive to behaviour of said wheel when said brake is applied, a modulator assembly for modulating the supply of fluid from said source to said brake in response to said skid signals from said skid sensing means, said modulator assembly comprising a housing having a bore, a de-boost piston working in said bore, a first valve, means in said housing defining an expander chamber between an end of said de-boost piston and said first valve, said first valve being disposed between said source and said expander chamber, means in said housing defining a support chamber to which said de-boost piston is subjected, and a second valve for controlling application to said de-boost piston of support fluid in said support chamber to determine the relative position of said de-boost piston in said bore, said support fluid normally being adapted to provide a biassing force for holding said de-boost piston in an advanced position in which the effective volume of said expander piston is at a minimum value, and said first valve being movable between an open position at least when said

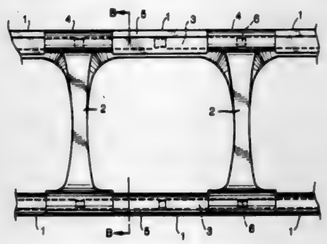


de-boost piston is in said advanced position and a closed position when said de-boost piston is displaced from said advanced position and into a retracted position, and means responsive to a skid signal to manipulate said second valve in order to release said support fluid thereby reducing said biassing force whereafter said piston can move away from said advanced position and into said retracted position in which said effective volume of said expander chamber is increased thereby reducing said pressure of fluid applied to said brake, wherein means are provided for normally biassing said first valve into a fully open position, and operation of said first valve is controlled independently of the de-boost piston, inhibit means being incorporated to ensure that at the termination of a skid signal said first valve is maintained in a closed position at least until said de-boost piston has returned to said advanced position.

4,436,349
ROLLING BEARING

Stig L. Hallerbäck, Västra Frölunda, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Filed May 14, 1982, Ser. No. 378,136
Claims priority, application Sweden, Jun. 10, 1981, 8103629
Int. Cl.³ F16C *19/00, 33/38, 33/44*
U.S. Cl. 308—189 R 7 Claims



1. A retainer for a rolling bearing including inner and outer race rings and rolling elements in the annular space between the rings comprising a pair of annular members and a series of circumferentially spaced webs between the annular members defining pockets for the rolling elements, said annular members

consisting of a ring-like reinforcing member of a metallic material having substantially the same coefficient of thermal expansion as the race rings and embedded in an outer shell of a plastic material having a different coefficient of thermal expansion, said metallic ring-like reinforcing members being anchored to said plastic outer shell at said web locations and said outer shell being of a greater cross sectional area at said web locations than the areas in between whereby the thermal expansion properties of said metallic reinforcing members dominates.

4,436,350
HOUSING AND RELATED MOUNTING SYSTEM FOR STEREO SYSTEMS ON MOTORCYCLES

Bart Jolin, 2265 W. Broadway Apt. H-101, Anaheim, Calif. 92804

Filed Apr. 10, 1981, Ser. No. 236,803
Int. Cl.³ A47B *81/06, 96/06;* B62J *7/00*
U.S. Cl. 312—7.1 4 Claims



1. A housing and mounting system for stereos, radios, mobile communication broadcasting systems, and the like, with their related units for motorcycle comprising:

(a) A plastic hollow housing unit suitably shaped to contain a stereo, radio, C.B. or the like with necessary auxiliary elements; and

(b) (Means to support said housing unit and connect said unit to the handlebars of a motorcycle (.) comprising two or more support arms with means to connect such support arms to said housing unit and means to connect said support arms to the handlebars of a motorcycle.) Two or more support arms;

(c) Means to connect said support arms to said housing unit comprising two housing brackets connected to or integral with said housing unit;

(d) Said housing brackets containing a channel and appropriate nuts and bolts to contain said support arms insertable in said channel.

4,436,351
APPARATUS FOR MOUNTING ELECTRONICS EQUIPMENT

John V. Kitrell, Lincoln, Nebr., assignor to Radio Engineering Service, Inc., Omaha, Nebr.

Filed Nov. 20, 1981, Ser. No. 323,542
Int. Cl.³ A47B *77/08;* F16L *5/00*
U.S. Cl. 312—223 4 Claims

1. An apparatus for mounting electronics equipment, comprising,

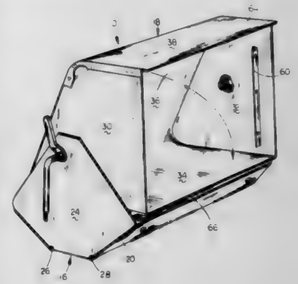
a substantially U-shaped bracket comprising a bottom mount portion having first and spacing-apart side walls extending upwardly from said bottom mount portion,

a hollow case selectively pivotally mounted on said side walls and being received therebetween,

said case comprising first and second spaced-apart side portions having rearward and forward ends and upper and lower ends, a back portion extending between the rearward ends of said side portions, a top portion extending between the upper ends of said side portions, a front portion extending between the forward ends of said side portions, said case having an open bottom portion adapted to receive electronics equipment therein, means on said case for mounting the electronics equipment in said case,

said case being selectively pivotally movable between open and closed positions relative to said bottom mount portion,

said case, when in its open position, presenting said open bottom portion in a forwardly manner whereby said electronics equipment is exposed for operation,



said case, when in its closed position, extending over and around the electronics equipment to shield the electronics equipment from the elements of weather,

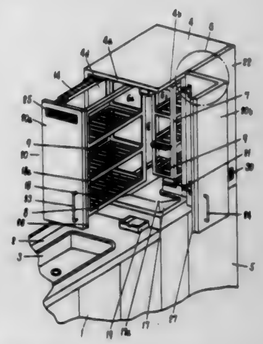
a pivotal mounting means pivotally connecting each of said side portions of said case to one of the side walls of said bracket,

at least one of said pivotal mounting means including selective locking means for selectively maintaining said case in its said open and closed positions.

4,436,352
KITCHEN FURNISHINGS

Yoshio Okada, Katano; Yoshiaki Suzuki, Suita; Ryohei Murakami, Habikino, and Yoshiaki Segawa, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP81/00029, § 371 Date Oct. 15, 1981, § 102(e) Date Oct. 15, 1981, PCT Pub. No. WO81/02382, PCT Pub. Date Sep. 3, 1981
PCT Filed Feb. 16, 1981, Ser. No. 314,096
Claims priority, application Japan, Feb. 20, 1980, 55-20713
Int. Cl.³ A47B *77/06;* A47L *19/02*
U.S. Cl. 312—228 6 Claims



1. A kitchen arrangement comprising:

a. a sink having a front side facing frontward, a rear side facing rearward, and two opposite sides connecting said front and rear sides, one of said two sides having an upper side edge;

b. a countertop adjacent said upper side edge on said one of said two sides of said sink defining an open space thereabove above said upper side edge; and

c. a storage cabinet on said one of said two sides of said sink above said countertop and said upper side edge, adjacent said countertop and horizontally spaced from said upper side edge, said cabinet including:

(1) outer walls defining an interior space therein, including a near side wall facing said sink, and a frontward facing front wall contiguous to said near side wall, a continuous opening being provided in said near side wall and in said front wall,

(2) a plurality of rack assemblies having rack shelves mounted thereon, slidably mounted to said outer walls within said interior space forwardly and rearwardly side-by-side for movement toward and away from said sink, such that said rack shelves are freely movable between said interior space and said open space adjacent said sink, and

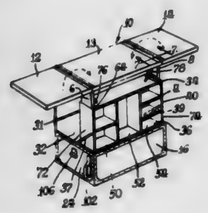
(3) a lower drain tray within said interior space below said rack assemblies for receiving water drops falling from any items accommodated on said rack shelves.

4,436,353

PORTABLE STORAGE DEVICE AND TABLE

Myron B. Tucker, 6600 Hill Rd., Boise, Id. 83703

Filed Aug. 6, 1981, Ser. No. 290,610
Int. Cl.³ A47B *85/00*
U.S. Cl. 312—241 **3 Claims**



1. A container and foldable support surface compriaing:

a container means including a top, bottom, front, back and two side panels;

a shelf face including a means for pivotally connecting said shelf face with said front panel;

a table top including a means for pivotally connecting said table top with said top panel, said table top having a folded closed position and an unfolded open position;

said top panel including a means for pivotally connecting said top panel with said back panel, said top panel pivoting to an open position and acting as a support for said table top in said open position;

said shelf face including a top cross member; a bottom cross member parallel to said top cross member; two parallel side members which are substantially perpendicular to said cross members; two wing braces including a means for pivotally connecting said wing braces with said top cross member, said wing braces pivoting from said closed position where said wing braces are folded inwardly and are substantially parallel to said top cross member, to said open position where said wing braces are unfolded and substantially perpendicular to said top cross member, said wing braces in said unfolded position for the support of said table top;

said shelf face substantially parallel to and spaced from said bottom panel in said folded closed position, said shelf face substantially parallel to said front panel in said open position, said shelf face acting as a means for support for said table top in said open unfolded position; and

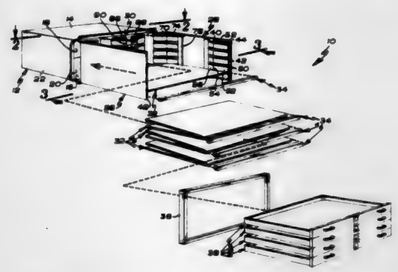
said table top parallel and interior to said top panel in said folded closed position, and said table top perpendicular to said top panel in said open position.

4,436,354

FLAT-FILE

Stanley R. Thorud, Brooklyn Center, Minn., assignor to Liberty Carton Co., Minneapolis, Minn.

Filed Nov. 16, 1981, Ser. No. 321,699
Int. Cl.³ A47B *43/02*
U.S. Cl. 312—259 **8 Claims**



1. A flat-file having a plurality of drawers located in a shell having a top, a bottom, a back, an open front, first and second sides and at least one shelf located between and parallel to the said top and said bottom, the improvement comprising at least one shelf support member, said shell and said support member being formed of a foldable material, said support member comprising:

a main panel located inside of and parallel to one of said sides; and

at least one front shelf support panel attached to the front of said main panel, said front support panel comprising at least one slot therein for engaging and supporting a shelf;

a front spacing panel spacing said front support panel from said main panel, said front support panel and said front spacing panel overlying said main panel; and

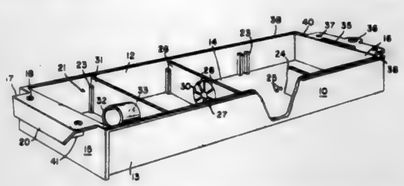
a rear support panel attached to the rear of said main panel, said rear support panel comprising at least one slot therein for engaging and supporting a shelf.

4,436,355

MODULAR STORAGE SYSTEM

William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265

Continuation of Ser. No. 67,841, Aug. 20, 1979. This application May 1, 1981, Ser. No. 259,615
Int. Cl.³ A47B *88/00*; F16B *12/00*
U.S. Cl. 312—270 **6 Claims**



1. A modular storage system for product packaging parts comprising:

(a) a plurality of housings;

(b) a drawer for each of said housings;

(c) each of said housings including a top wall and two parallel side walls, said top wall having a plurality of alignment slots adjacent said side walls, alignment tabs extending downwardly from said side walls and registering with alignment slots of a housing thereabove;

(d) each of said housings having on its top wall a recess and having on the bottom of the side wall opposite said recess a lateral rail extending therefrom and adapted to fit the recess of a laterally adjacent housing, and alignment slots on said rail; and

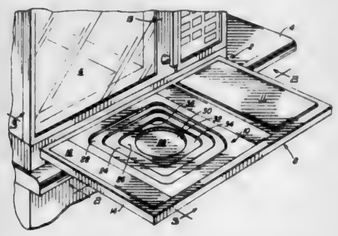
(e) each of said drawers having a bottom wall and two side walls, a front wall including a portion for removably inserting or withdrawing said drawer into or from one of said housings, and a rear wall including a horizontally projecting surface having an upward projection to cooperate with a downwardly extending ridge on the end of the top wall of said housing, thereby to form a stop.

4,436,356

OVEN SUPPORTING APPARATUS INCORPORATING SLIDABLE COOKWARE SUPPORT

Desi D. Stelling, 19218 N. 17th Ave., Phoenix, Ariz. 85027

Filed Sep. 8, 1980, Ser. No. 185,190
Int. Cl.³ F24C *15/16*
U.S. Cl. 312—281 **7 Claims**



1. A cookware support for use in conjunction with an oven and for supporting at least first and second food containers each having a bottom portion, the bottom portion of the first food container being larger than the bottom portion of the second food container, said cookware support comprising in combination:

a. a base;

b. a first supporting surface supported by said base, said first supporting surface having an area commensurate with the bottom portion of the first food container for supporting the first food container, said first supporting surface including a first horizontally disposed region having an outer periphery commensurate with the bottom portion of the first food container, said first supporting surface also including a first side wall extending upwardly from the outer periphery of said first horizontally disposed region for maintaining the first food container upon said first horizontally disposed region; and

c. a second supporting surface supported by said base concentric with and depressed within and below said first supporting surface, said second supporting surface having an area commensurate with the bottom portion of the second food container for supporting the second food container, said second supporting surface including a second horizontally disposed region having an outer periphery commensurate with the bottom portion of the second food container, said second supporting surface also including a second side wall extending upwardly from the outer periphery of said second horizontally disposed region to said first horizontally disposed region for maintaining the second food container upon said second horizontally disposed region;

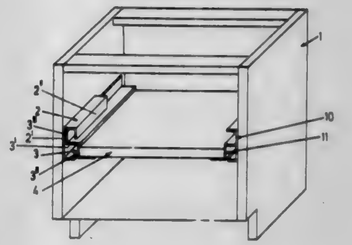
d. said first and second supporting surfaces being made of an elastic material for enabling said first and second side walls to grippingly engage the bottom portions of the first and second food containers, respectively.

4,436,357

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS, SHELVES OR THE LIKE

Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Ges. m.b.H., Höchst, Austria

Filed Feb. 8, 1982, Ser. No. 347,234
Claims priority, application Austria, Feb. 19, 1981, 746/81
Int. Cl.³ F16C *21/00*
U.S. Cl. 312—338 **4 Claims**



1. In a pull-out guide arrangement for use on opposite sides of a drawer, shelf or the like for guiding movement thereof into and out of a body of a piece of furniture, said arrangement being of the type including, for use on respective opposite sides of the drawer, shelf or the like, first and second assemblies each comprising a supporting rail adapted to be mounted on a side panel of the body of the piece of furniture, a pull-out rail adapted to be mounted on the respective side of the drawer, shelf or the like, a roller carrier positioned between said supporting and pull-out rails, and rollers retained by said roller carrier, the improvement wherein:

said first assembly comprises:

a said supporting rail having spaced outer and inner vertical flanges and spaced upper and lower horizontal flanges;

a said pull-out rail having outer and inner vertical flanges extending in opposite directions from opposite ends of a horizontal flange;

a said roller carrier positioned between said supporting and pull-out rails;

said rollers including plural cylindrical vertical load bearing rollers retained by said roller carrier, at least one said vertical load bearing roller being in rolling contact with said upper horizontal flange of said supporting rail and said horizontal flange of said pull-out rail, and at least one said vertical load bearing roller being in rolling contact with said horizontal flange of said pull-out rail and said lower horizontal flange of said supporting rail; and

said rollers further including plural cylindrical, lateral guide rollers retained by said roller carrier, at least one said guide roller being above said horizontal flange of said pull-out rail and in rolling contact with a first said vertical flange of said supporting rail and a first said vertical flange of said pull-out rail, and at least one said guide roller being below said horizontal flange of said pull-out rail and in rolling contact with a second said vertical flange of said supporting rail and a second said vertical flange of said pull-out rail; and

said second assembly comprises said supporting and pull-out rails each having only a single vertical flange;

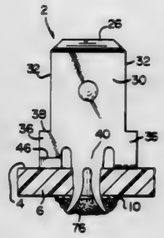
whereby said first assembly provides precise lateral stability for the drawer, shelf or the like, and said second assembly is laterally open to allow for manufacturing tolerances of the drawer, shelf or the like.

4,436,358

TERMINAL TAB INTENDED FOR MOUNTING ON A CIRCUIT BOARD

Daniel R. Coldren, Enola, and Dennis P. Schwenk, Hummelstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,151
Int. Cl.³ H01R 9/09
U.S. Cl. 339—17 C **7 Claims**



1. A tab-type terminal of the type comprising a flat rectangular tab having a free end and a mounting end, the mounting end having mounting means for mounting the terminal on a circuit board, the tab having oppositely facing parallel major surfaces and oppositely facing parallel edge surfaces extending from the free end to the mounting end, the terminal being characterized in that:

the mounting end comprises a base portion having oppositely facing major surfaces which are co-planar with the major surfaces of the tab, the base portion extending laterally beyond the edge surfaces of the tab whereby stop shoulders, directed towards the free end of the tab, are provided for a receptacle coupled to the tab,

a mounting leg extends from the base portion, the mounting leg being located between the side edges of the base portion, the mounting leg having convergent side edges extending towards the base portion, the slot dividing the mounting leg into two side-by-side co-planar sections,

a pair of stabilizing arms extend in opposite directions from the base portion normally of the planes of the major surfaces of the base portion, the stabilizing arms having co-planar support surfaces for stabilizing the terminal on one surface of a circuit board, the stabilizing arms having been formed by bending portions of the flat blank of the terminal in opposite directions until the arms extend at substantially right angles from the flat base portion, the co-planar support surfaces being extensions of the major surfaces of the base portion and not edge surfaces whereby the tab can be mounted on a circuit board by inserting the mounting leg through a hole in the circuit board until the support surfaces are against the one surface of the circuit board and thereafter bending the two sections of the mounting leg into engagement with the circuit board at the other surface thereof.

4,436,359

ELECTRICAL CONNECTOR TERMINATION SYSTEM FOR QUICK FIELD SERVICE

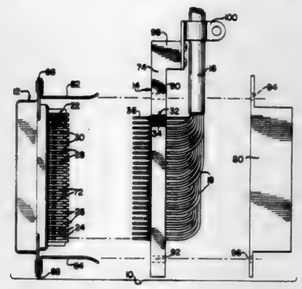
Alan H. Kasper, and Istvan Mathe, both of Cicero, Ill., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 14, 1977, Ser. No. 842,186
Int. Cl.³ H01R 13/422, 13/627
U.S. Cl. 339—61 M **9 Claims**

1. An electrical connector termination system comprising:

a connector component defining a plurality of open ended, elongate mounting cavities therein and including a plurality of contact members disposed respectively in said cavities, each said cavity including a restrictive guide orifice defined by inner embossment means disposed proximate one open end thereof, each said contact member including a terminal socket element disposed within one said cavity inwardly of said embossment means; and

a termination component including a support member defining at least one open ended, elongate slot therein with each said slot communicating longitudinally therealong with the exterior of said support member by a longitudinal side opening, said support member including inner restrictive lip means disposed in each said slot proximate the open end thereof, and a pin contact member at least partially disposed in each said slot and disengageable therefrom through said side opening, each said pin contact



member including a terminal portion, an active pin portion for electrically and mechanically engaging within one said socket element and at least one neck portion intermediate said terminal and active pin portion for releasable engagement with one said restrictive lip means, each said active pin portion cooperating with one said restrictive guide orifice to releasably maintain said connector and termination components in a fully terminated condition, all said pin contact members being simultaneously disengageable from said support member after engagement within said socket elements.

4,436,360

ELECTRICAL CONNECTORS AND TERMINAL CONNECTING BLOCK

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Continuation of Ser. No. 262,495, Jun. 14, 1972, Pat. No. 4,084,877, which is a continuation of Ser. No. 868,417, Oct. 22, 1969, abandoned. This application Feb. 21, 1978, Ser. No. 879,268
Int. Cl.³ H01R 9/08
U.S. Cl. 339—97 P **4 Claims**

1. A two-wire clip terminal comprising an elongate flat body formed from flat resilient metal and having two notches at its upper part, a base portion at its lower part, and a slot communicating with the lower end of each notch, said slots providing a center arm and two end arms extending in the same direction

from a common base, the outer ends of said arms being free so as to provide three cantilever beams arranged side by side, the



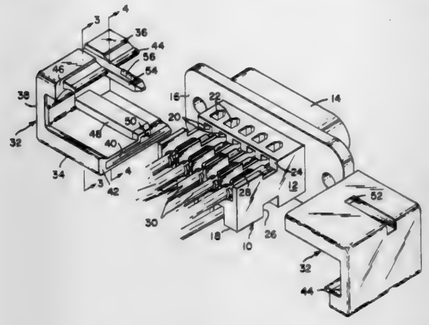
effective width of each end arm being less than the effective width of said center arm.

4,436,361

HERMAPHRODITIC BACK SHELL COVER

Earl W. McCleerey, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 20, 1981, Ser. No. 323,207
Int. Cl.³ H01R 4/24
U.S. Cl. 339—97 P **5 Claims**



5. A back shell assembly for enclosing an open rear portion of an elongated electrical connector designed to terminate a plurality of electrical conductors in said open rear portion and having at least one transverse channel extending across said connector at a location spaced from a mating face of said connector, said back shell assembly enclosing and protecting the termination of said conductors and comprising:

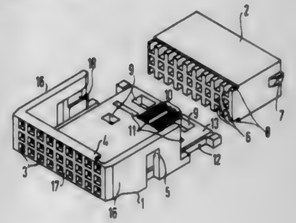
a pair of hermaphroditic cover members together defining a through cavity for receiving a portion of said connector therein, each said cover member having a first long wall, a second parallel spaced short wall, and an intermediate wall interconnecting said first and second walls along one aligned marginal edge of each said first and second walls, said first wall having an elongated groove extending along substantially the entire free edge thereof and said second short wall having an elongated flange extending along substantially the entire free edge thereof adapted to be received in the groove of said long wall of another cover member, a transversely extending rib on an inner surface of said long wall forming a channel intersecting said groove and opening outwardly to define a shoulder, latching means on said short wall including an outwardly directed lug, said latching means adapted to extend through said channel with said lug engaging said shoulder, whereby, a pair of oppositely oriented cover members are snap fitted together to enclose a rear terminating portion of an electrical connector.

4,436,362

CONNECTOR FOR PRINTED CIRCUIT BOARDS

Richard Hoffmann, and Franz Zobawa, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich

Filed Dec. 2, 1981, Ser. No. 326,708
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1981, 3103455
Int. Cl.³ H01R 13/58
U.S. Cl. 339—103 M **10 Claims**



1. A connecting plug comprising:

a rectangular parallelopiped contact strip including a front face and a plurality of elongate rectangular chambers therein for supporting a plurality of contacts in a predetermined pattern, and a pair of oppositely-directed detents; and a receiving part including a front cross bar having a front face, a rear face and a plurality of beveled openings therethrough in the same pattern as and for alignment with said chambers, a floor extending rearwardly from said front cross bar and including a rear section, strain relief grooves in said rear section and a pair of openings on respective sides adjacent said rear face of said front cross bar, said side walls including respective openings for snap-in retention of said oppositely-directed detents and respective guide tracks for said detents extending from the rear ends of said side walls to said openings.

4,436,363

BROADBAND ANTIREFLECTION COATING FOR INFRARED TRANSMISSIVE MATERIALS

Kenneth B. Steinbruegge; Johanna S. Schruben, and Lyle H. Taylor, all of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

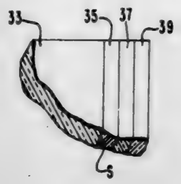
Filed Aug. 6, 1982, Ser. No. 405,825
Int. Cl.³ G02B 5/28
U.S. Cl. 350—1.6 **16 Claims**

1. A broadband antireflection coating for use on infrared transmissive materials comprising:

a first thin layer, of a compound selected from the group consisting of zinc-selenide (ZnSe) and zinc-sulfide (ZnS), disposed on the transmissive material;

a second thin layer, of a compound selected from the group consisting of lead-fluoride (PbF_2) and aluminum oxide (Al_2O_3), disposed on said first layer; and

a third thin layer of a compound, selected from the group consisting of magnesium-fluoride (MgF_2), barium-fluoride



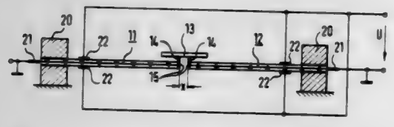
(BaF_2) and calcium-fluoride (CaF_2), disposed on said second layer.

4,436,364

PIEZOELECTRIC APPARATUS FOR PRODUCING ROTARY OSCILLATION OF A MIRROR

Reinhard Lauer, Denzlingen, and Dietmar Pfefferle, Pfaffenweiler, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,366
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035315
Int. Cl.³ G02B 27/17; G02F 1/34
U.S. Cl. 350—6.6 9 Claims



1. Piezoelectric apparatus for producing rotary oscillation of a mirror, the apparatus comprising first and second piezoceramic flexible strips each having a clamped end and a free end, said strips being substantially aligned in one plane with their free ends facing and spaced apart from each other; AC voltage generating means for generating an AC voltage with a frequency which differs significantly from a natural resonant frequency of said strips; means for applying said AC voltage to said strips to energise them to execute oscillations so that said free ends are periodically displaced in counterphase out of said plane; respective resilient mounting means extending between said free ends and said mirror for mounting said mirror on strips feedback electrode means on at least one of said strips for generating a feedback voltage, means for time delaying said feedback voltage by an amount equal to one half of a period of said natural resonant frequency and means for feeding said feedback voltage back to said strips together with said AC voltage.

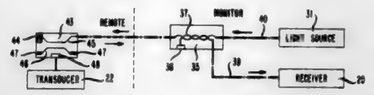
4,436,365

DATA LINK USING INTEGRATED OPTICS DEVICES

Martin G. Hodgins, Yorktown Heights, N.Y., and William J. Jordan, Whippany, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 21, 1981, Ser. No. 313,600
Int. Cl.³ G02B 5/174
U.S. Cl. 350—96.16 10 Claims

3. A signal transmission system including at least one optical fiber as the medium of transmission comprising
first and second terminals for said transmission system,
first and second optical couplers including main and auxiliary channels in cross-coupling proximity at the respective terminals of said transmission system,
a light source at said first terminal for providing continuous lightwaves through said main channel in said first optical coupler for an optical fiber,
a receiver at said first terminal accepting lightwaves from said auxiliary channel in said first optical coupler,



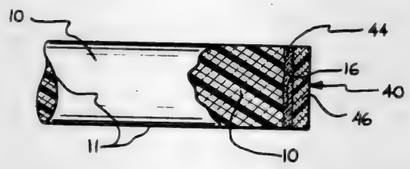
a reflector at said second terminal for lightwaves incoming from an optical fiber to said main channel in said second optical coupler, and
electrical signaling means at said second terminal for modulating reflected lightwaves in said auxiliary channel in said second optical coupler.

4,436,366

END CAPPING AN OPTICAL FIBER

Edward A. Abramson, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1981, Ser. No. 235,036
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 5 Claims



1. A cut optical fiber end capped with a light transmissible smooth flat surface comprising a hardened photopolymerizable layer having a maximum thickness about 0.45 times the diameter of the core divided by the numerical aperture of said core and a minimum thickness of 20 μm.

2. An end capped optical fiber according to claim 1 wherein the photopolymerizable layer is derived from a composition comprising trimethylol propane triacrylate, polyoxyethyl trimethylolpropane, polyethyleneoxide lauryl ether, 2-mercapto benzoxazole, styrene/maleic anhydride copolymer, 2,-2'-(o-chlorophenyl)-4,4',5,5'-tetraphenylbiimidazole and Michler's ketone.

3. A cut optical fiber end capped with a light transmissible smooth flat surface comprising a hardened thermally polymerizable layer having a maximum thickness about 0.45 times the diameter of the core divided by the numerical aperture of said core and a minimum thickness of 20 μm.

4,436,367

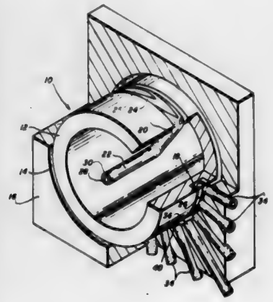
OPTICAL SLIP RING ASSEMBLY

Norris E. Lewis, Christiansburg, and Michael B. Miller, Blacksburg, both of Va., assignors to Litton Systems, Inc., Blacksburg, Va.

Filed Mar. 9, 1981, Ser. No. 241,588
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 11 Claims

6. An optical slip ring assembly for coupling an optic signal from a rotor source to a stator detector, the assembly comprising:
a rotor optic fiber having a first end for coupling with the optic signal source and a second end portion having one side progressively removed so that both the width and the depth of the removed area increases along the length of the fiber to form a light-emitting area of a selected length,

cylindrical rotor means having a circular groove means for mounting said fiber second end portion therein so that said light-emitting area faces radially outwardly,
a plurality of stator fibers each having a first pickup end, said pickup ends being grouped into a radial symmetric array of selectively inwardly directed multistrand fiber blocks which collectively comprise a pickup area,
stator means for mounting said fiber pickup ends in said



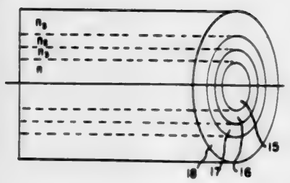
radially symmetric, selectively inwardly directed array concentrically about said circular groove means defining said pickup area so that said light-emitting area rotates concentrically therein whereby an optic signal transmitted from the source through the rotor fiber is picked up by said stator fibers, and
each said stator fiber having a second end grouped in a collective bundle for coupling the optic signal picked up by said stator fibers to the stator detector.

4,436,368

MULTIPLE CORE OPTICAL WAVEGUIDE FOR SECURE TRANSMISSION

Donald B. Keck, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 803,772, Jun. 6, 1977, abandoned. This application Jul. 31, 1981, Ser. No. 288,925
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.33 21 Claims





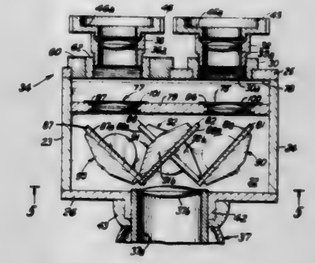
11. Apparatus for detecting intrusion upon an optical waveguide communication system comprising:
a glass optical waveguide having multiple cores and cladding, the index of refraction of each core being greater than the index of refraction of its cladding, the relative light loss between a primary core and a secondary core being much different upon perturbation of the waveguide because of a substantial difference in at least one of the following: the relative core cladding index difference, wherein the index of refraction of said primary core is substantially greater than the index of refraction of said secondary core, wavelengths of light transmitted in the cores, and diameters of said primary and secondary cores;
means for propagating and detecting light signals along said optical waveguide; and
means for detecting a change in said relative light loss between said primary and secondary cores to identify perturbation of said optical fiber.

4,436,369

STEREOSCOPIC LENS SYSTEM

William A. Bukowski, New York, N.Y., assignor to Optimax III, Inc., New York, N.Y.

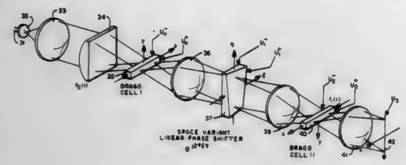
Filed Sep. 8, 1981, Ser. No. 300,255
Int. Cl.³ G02B 27/24; G03B 35/10
U.S. Cl. 350—130 15 Claims



4,436,370
SPACE VARIANT LINEAR PHASE SHIFTER FOR OPTICAL AMBIGUITY FUNCTION GENERATOR

Joseph J. Rebholz, Burnsville, and Poohsan N. Tamura, Bloomington, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 9, 1981, Ser. No. 232,927
Int. Cl.³ G06G *9/00*; G01S *13/58*
U.S. Cl. 350—162.12 **3 Claims**



1. An optical system utilizing a beam of substantially coherent light to create the ambiguity function arising from a first signal and a second signal; said system comprising:
- a first data input means for coding said light beam with said first signal, said first means defining an x, y coordinate system;
- a first Fourier Transform lens means lying in the path of said light beam and a Fourier Transform plane associated with said first Fourier Transform lens means;
- a linear phase shifter comprising a lens pair including a cylindrical lens and a spherical lens fastened together, the spherical lens having a sign opposite from that of the cylindrical lens and said lens pair lying in the path of said light beam in said Fourier Transform plane and wherein, in order to generate the proper transmissivity function, the lens pair is rotated about the optical axis by 45° with respect to the x, y coordinate system;
- a second data input means for coding said light beam with said second signal; and,
- a final Fourier Transform lens means lying in the path of said light beam for producing the ambiguity function at an ambiguity plane.

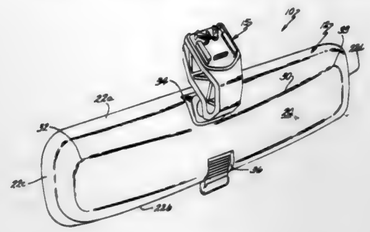
4,436,371
VEHICLE MIRROR ASSEMBLY

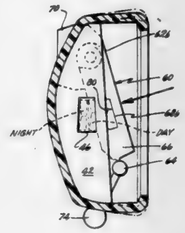
Denis Wood, Dublin, Ireland; John F. Thomas, Jr., Holland, Mich., and Barry Dipper, Cardiff, Wales, assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed Jun. 24, 1981, Ser. No. 276,969
Int. Cl.³ G02B *17/00*
U.S. Cl. 350—281 **65 Claims**

1. In a day/night rearview mirror assembly for vehicles including a mirror case and a pivot actuator, said case being formed in one piece from a resinous material and having a back, a continuous peripheral side wall adapted to outline the peripheral edge of a mirror element, and support means for supporting said pivot actuator within said case, said pivot actuator having mounting means for mounting a bracket for securing said assembly on a support and pivot means for pivoting said actuator and case between at least two different positions with respect to said mounting means, the improvement comprising:

said molded case including flexible, resilient portions and having a preformed lip on said continuous peripheral side wall for retaining a mirror element within said case; said pivot actuator being substantially rigid; said case portions being sufficiently flexible and resilient to bias said actuator toward one or the other of said actuator positions; said support means supporting said actuator in a prestressed position when assembled in said case while said lip extends inwardly a distance sufficient such that when a mirror element is received within said case, and said actuator is pivoted with said pivot means, said case will flex with respect to said rigid actuator to allow the pivotal movement while said lip will continue to cover the edge of the mirror element and a predetermined portion of the mirror element spaced inwardly from the edge thereof regardless



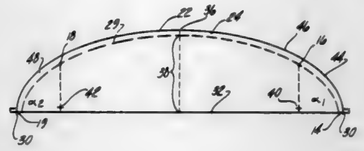


of the flexing action of said case and said lip during such pivoting.

4,436,372
ELLIPTICAL MIRROR FOR VEHICULAR USE

William P. Schmidt, Rockwood, and Franklin D. Hutchinson, New Boston, both of Mich., assignors to Mirror Lite Company, Rockwood, Mich.

Filed Feb. 5, 1981, Ser. No. 231,662
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—293 **27 Claims**



1. A mirror comprising:
- a convex reflecting surface having a continuous peripheral edge, said continuous peripheral edge defining a plane, said convex reflecting surface further having an apex extending a predetermined distance H from said plane, said convex reflecting surface at said continuous peripheral edge having an outer diameter D, said outer diameter D and said predetermined distance H having a relationship of D/H in the range of 2.5 to 3.00.

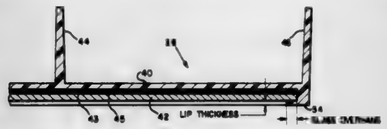
4,436,373
SOLAR REFLECTOR PANEL

Paul A. Kirsch, Bensalem, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jun. 25, 1981, Ser. No. 277,097
Int. Cl.³ G02B *7/18*, *5/10*
U.S. Cl. 350—296 **1 Claim**

1. A parabolic solar reflector panel for focusing energy received from the sun comprising:

(a) a glass sheet with four side edges and having front and rear surfaces;
(b) said rear surface of said glass sheet having a reflective coating thereon;
(c) said reflective coating having a protective coating thereon;
(d) an integral fiberglass reinforced thermoset piece having a plurality of rib portions secured to said protective coating to provide a backing of uniform thickness for said glass sheet with said reflective and protective coatings;
(e) said piece extending around the four side edges of said glass sheet and extending partly across the front surface

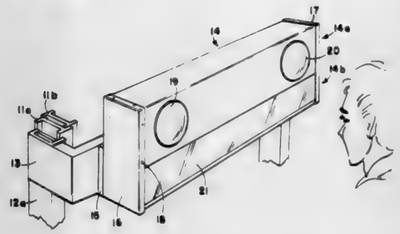


thereof to provide a lip portion about the periphery of said glass sheet to mechanically lock said sheet to said piece;
(f) said lip portion extending from 0.25" to 0.125" over the front surface of said glass sheet and having a thickness between 0.040" to 0.125";
(g) attachment elements disposed on said solar panel;
(h) a strongback assembly;
(i) means including said attachment elements to connect said solar reflector panel to said strongback; and
(j) said strongback assembly being movable to move said reflector panel in a direction to receive maximum energy from the sun.

4,436,374
FORKLIFT SAFETY SCOPE

Henry A. Krueger, 4920 S. Linder Ave., Chicago, Ill. 60638

Filed Jan. 18, 1982, Ser. No. 339,997
Int. Cl.³ G02B *5/08*, *5/10*
U.S. Cl. 350—302 **8 Claims**



1. In a forklift truck having a front lift assembly including a frame with two vertical side posts projecting upwardly at the front end of the truck and a horizontal cross member joining the two posts at an elevated position which blocks the forward view of the truck operator during normal operating conditions, the improvement which comprises:

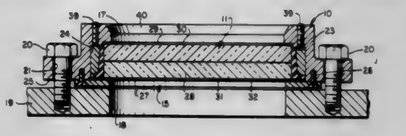
periscope means including an elongated tubular housing arranged on the back side of said cross member, said housing having an upper portion rising above said cross member with a front transparent window and a lower portion located behind said cross member with a back transparent window, each window extending over most of the length of the housing, a paired set of periscopic mirrors mounted diagonally within said housing in substantially parallel facing relationship for periscopic viewing from the upper front window down to the lower back window; and

two convex mirrors, each being mounted near the opposite ends of said housing on the back side of its upper portion for wide-angle viewing to the rear of the operator.

4,436,375
SIGHT GLASS APPARATUS

Charles E. Meginnis, deceased, late of Charleston, W. Va. (by Stanley T. McKeny, executor), assignor to Pressure Products Company, Charleston, W. Va.

Filed Mar. 2, 1982, Ser. No. 353,924
Int. Cl.³ G02B *5/00*, *7/00*; G01F *23/02*
U.S. Cl. 350—319 **10 Claims**

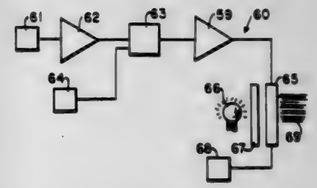


1. A sight glass assembly comprising a housing structure having a circular opening therethrough, said opening having an enlarged section, a lens disposed across said opening and having a peripheral portion received within said enlarged section, a sealing ring assembly disposed in said enlarged section, said sealing ring assembly comprising a rigid compression ring and a resilient packing member mounted on said compression ring, said packing member having an L-shaped cross-sectional configuration including a wall portion mounted on an inner side of said compression ring and engaging the periphery of said lens and a flange portion mounted on said compression ring and engaging said housing structure, and means mounted on said housing structure and engageable with said compression ring for urging said compression ring against said packing member, causing said packing member to expand radially, thereby effecting a seal between said housing structure and the periphery of said lens and placing said lens in radial compression.

4,436,376
LIGHT MODULATOR, DEMODULATOR AND METHOD OF COMMUNICATION EMPLOYING THE SAME

James L. Fergason, 5806 Horning Rd., Kent, Ohio 44240

Continuation-in-part of Ser. No. 121,071, Feb. 13, 1980, Pat. No. 4,385,806, which is a continuation-in-part of Ser. No. 913,618, Jun. 8, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 235,006
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—332 **27 Claims**



1. A light modulator comprising at least one liquid crystal cell comprising two parallel transparent plates; a transparent electrical conductive layer applied to the confronting surfaces of the said two plates; each said conductive layer having parallel surface alignment, the said alignment of the two adjoining surfaces being parallel; a continuous layer of nematic liquid crystal having positive dielectric anisotropy between the two electrical conducting coatings;

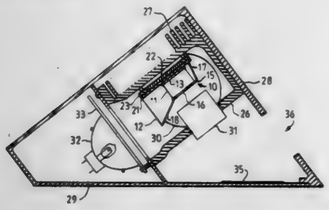
means for applying a fixed electrical bias to the two said electrical conducting coatings;
means for applying an amplitude modulated oscillatory electrical signal having a frequency greater than 10 hertz across the said continuous layer;
a source of polarized light directed through the said two transparent plates;
whereby the light which passes through the said two transparent plates is a phase-shifted beam which is distinguishable from the light from the said source in a manner which corresponds to the said oscillatory electrical signal.

4,436,377
TRANSMISSIVE REFLECTOR INCLUDING NACREOUS, PRESSURE SENSITIVE ADHESIVE LAYER
James A. Miller, Silver Lake, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio
Filed Nov. 6, 1980, Ser. No. 204,581
Int. Cl.³ G02F 1/133; G42D 15/00; C09K 3/34; B32B 5/16
U.S. Cl. 350—345 **21 Claims**



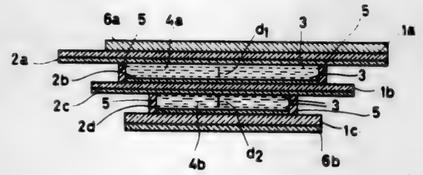
1. A transmissive reflector, comprising;
a nacreous pigment and a transparent adhesive, the amount of said nacreous pigment being from 15 to 30 parts by weight based upon 100 parts by weight of said adhesive, said nacreous pigment having a particle size of from 2 to 50 microns, said nacreous pigment being in combination with said adhesive, said combination being a mixture.

4,436,378
PASSIVE DISPLAY MODULE AND SYSTEM
David H. Kirkman, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 2, 1981, Ser. No. 307,914
Claims priority, application European Pat. Off., Dec. 31, 1980, 80304781.0
Int. Cl.³ G02F 1/17
U.S. Cl. 350—345 **9 Claims**



1. A passive display module for use in a display system having a source of illumination and a projection lens comprising:
a counter electrode,
a display electrode area,
a liquid filled cell having a transparent top portion and a wall surrounding said display electrode area,
a side light guide coextensive with said display electrode area in one dimension, said guide having an inner face forming at least a part of said wall and an outer face for receiving light from an external source, said guide having a reflective upper surface inclined downwardly towards said display electrode area.

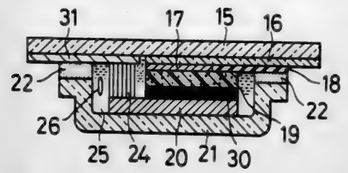
4,436,379
TWO-LAYER LIQUID CRYSTAL DISPLAY PANEL
Fumiaki Funada, Yamatokoriyama; Syuichi Kozaki, Nara; Masataka Matsuura, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 13, 1980, Ser. No. 206,532
Claims priority, application Japan, Nov. 13, 1979, 54-147244
Int. Cl.³ G02F 1/13
U.S. Cl. 350—347 E **3 Claims**



1. A liquid crystal display cell comprising:
first, second and third substrate means;
a first pair of patterned electrode means formed on said first and said second substrate means, and a second pair of patterned electrode means formed on said second and said third substrate means;
said first and said second substrate means forming a first cavity therebetween and said second and said third substrate means forming a second cavity therebetween;
a first liquid crystal layer disposed in said first cavity and a second liquid crystal layer disposed in said second cavity; and
a pair of polarizers each adhered to an outer surface of said first substrate means and said third substrate means, respectively;
each of said polarizers having a plane of polarization substantially perpendicular to or parallel to the plane of polarization of the other of said polarizers;
the plane of polarization of each of said polarizers being substantially perpendicular to or parallel to the direction of the longitudinal axes of liquid crystal molecules in each of said first liquid crystal layer and said second liquid crystal layer;
where the value of the product $\Delta n_1 \cdot d_1$ wherein Δn_1 is the double refractive index of said first liquid crystal layer and d_1 is the thickness of said first liquid crystal layer, deviates from the value of the product $\Delta n_2 \cdot d_2$, wherein Δn_2 is the double refractive index of said second liquid crystal layer and d_2 is the thickness of said second liquid crystal layer, by about 10% to about 20% and both $\Delta n_1 \cdot d_1$ and $\Delta n_2 \cdot d_2$ for visible light are less than 2 μm.

4,436,380
ELECTROCHROMIC DISPLAY DEVICE
Kohzo Yano, Yamatokoriyama; Hiroshi Hamada, Nara; Yasuhiko Inami, Nara, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 27, 1981, Ser. No. 287,047
Claims priority, application Japan, Jul. 31, 1980, 55-106885
Int. Cl.³ G02F 1/17
U.S. Cl. 350—357 **20 Claims**

1. An electrochromic display device having an electrolyte a display electrode formed of an electrochromic substance and a counter-electrode therefor in which a redox layer of said counter-electrode is formed from a burnt material comprising a self-film-forming compound and a carbonaceous electroconductive substance and including substantially no binder.

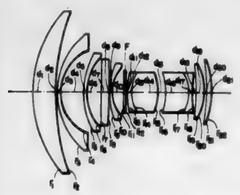


4,436,381
PRECISION PRESSED GLASS OBJECT
Hendrik J. M. Joormann; Hendrik Verweij, and Jan Haisma, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Division of Ser. No. 396,533, Jul. 8, 1982, which is a division of Ser. No. 161,196, Jun. 19, 1980, Pat. No. 4,348,484, which is a continuation-in-part of Ser. No. 119,324, Feb. 7, 1980, abandoned. This application Jun. 24, 1983, Ser. No. 507,404
Claims priority, application Netherlands, May 18, 1979, 7903914
Int. Cl.³ G02B 3/00; C03C 3/16
U.S. Cl. 350—432 **3 Claims**



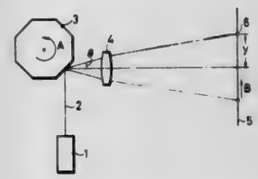
1. A precision pressed object of glass comprising a glass having a composition consisting essentially of 45–55 mol. % P_2O_5, 15–40 mol. % BaO, 5–35 mol. % PbO, 5–15 mol. % Li_2O, 0–2 mol. % Al_2O_3, and 0–6 mol. % F in the form of fluoride wherein up to 25% of BaO may be replaced by an equimolar quantity of at least one of CaO, MgO and SrO, and up to 25% of Li_2O may be replaced by an equimolar quantity of at least one other alkali metal oxide; and a lens arrangement of said glass composition, said lens arrangement not deviating at any single point of its surface by more than 0.5 micrometers from a predetermined curvature, and said lens arrangement having a surface roughness less than 0.02 micrometers.

4,436,382
RETROFOCUS TYPE SUPER WIDE ANGLE LENS SYSTEM
Kazuo Ikari, Hachiouji, and Toru Fujii, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 30, 1981, Ser. No. 316,915
Claims priority, application Japan, Nov. 4, 1980, 55-153790
Int. Cl.³ G02B 9/64, 13/04
U.S. Cl. 350—458 **7 Claims**



1. A retrofocus type superwide angle lens system comprising a first positive meniscus lens component having the convex surface on the object side, a second negative meniscus lens component having the convex surface on the object side, a third negative meniscus lens component having the convex surface on the object side, a fourth positive lens component, a fifth negative meniscus lens component, a sixth positive cemented lens component, a seventh negative cemented lens component, an eighth positive meniscus lens component having the convex surface on the object side, a ninth positive lens component and a filter disposed between said fifth and sixth lens components, said lens system satisfying the following respective conditions:
(1) $\nu_1 > 70$
(2) $5.5f < f_1 < 7.2f$
(3) $n_2, n_3 > 1.75$
(4) $0.65f < |f_{12345}| < 0.75f$, $f_{12345} < 0$
(5) $0.2f < d_{10} + d_{11}/N + d_{12} < 0.3f$
(6) $0.44f < D_6 < 0.55f$
wherein the reference symbol f represents a composite focal length of the entire system, the reference symbol f_1 represents a focal length of the first lens component, the reference symbol f_{12345} represents a composite focal length from the first lens component to fifth lens component, the reference symbols n_2 and n_3 represent refractive indices respectively of the second lens component and third lens component, the reference symbol ν_1 represents an Abbe's number of the first lens component, the reference symbol d_{11} represents a thickness of the filter, the reference symbols d_{10} and d_{12} represent air spaces respectively between the fifth lens component and filter and between the filter and sixth lens component, the reference symbol N represents a refractive index of the filter, and the reference symbol D_6 represents a thickness of the sixth lens component.

4,436,383
F-θ LENS SYSTEM
Haruo Maeda, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sep. 2, 1982, Ser. No. 414,311
Claims priority, application Japan, Sep. 11, 1981, 56-142404
Int. Cl.³ G02B 9/34, 27/17
U.S. Cl. 350—469 **7 Claims**



1. An F-θ lens system comprising a first lens group consisting of a first positive meniscus lens component having a concave surface on the incidence side and a second negative lens component, and a second lens group consisting of a third positive lens component and a fourth positive lens component, said lens system being so designed as to satisfy the following conditions:

$$0.24 < \frac{e_{I\,II}}{f_{II}} < 0.29 \quad (1)$$

$$3.2 < \frac{f_1}{|f_2|} < 7.1 \quad (2)$$

$$0.95 < \frac{r_2}{r_3} < 1.1 \quad (3)$$

wherein the reference symbol $e_{I\,II}$ represents distance between the principal points of said first lens group and said second lens group, the reference symbol f_{II} designates focal length of said second lens group, the reference symbols f_1 and f_2 denote focal

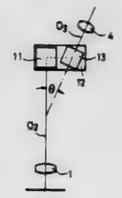
lengths of said first and second lens components respectively, and the reference symbols r_2 and r_3 represent radii of curvature on the image side surface of said first lens component and incidence side surface of said second lens component respectively.

4,436,384

BINOCULAR STEREO-MICROSCOPE

Akio Taira, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1981, Ser. No. 259,239
Claims priority, application Japan, May 8, 1980, 55-59993
Int. Cl.³ G02B *21/22*
U.S. Cl. 350—515 **1 Claim**



1. A binocular stereo-microscope comprising a right and left objective, a right and left eyepiece, a right porro prism arranged between said right objective and right eyepiece and a left porro prism arranged between said left objective and left eyepiece, each of said right and left porro prisms having a first, second, third and fourth reflecting surfaces, both said first and fourth reflecting surfaces being at 45 degrees to the plane vertical to the optical axis of the rays reflected by said first reflecting surface, said binocular stereo-microscope being arranged so that rays from an object pass through said objective and are reflected by said first, second, third and fourth reflecting surfaces in this order and an image formed by said rays is observed through said eyepiece, and said four reflecting surfaces being arranged to satisfy the relation expressed by the following formula:

$$\sin\beta\cos\omega-\cos\beta\tan(\beta-\nu)-\tan\alpha\sin\omega=0$$

$$[\omega=\omega_1+\omega_2 \text{ and } \nu=\omega_1-\omega_2]$$

$$\omega=\omega_1+\omega_2,\ \nu=\omega_1-\omega_2\neq 0,\ \alpha\neq 0 \text{ and } \beta\neq 0$$

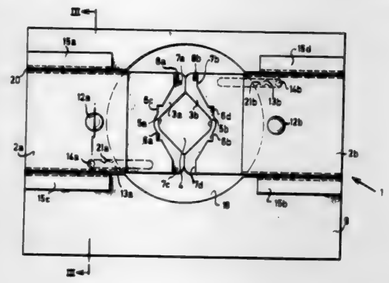
wherein reference symbol ω_1 represents the angle between the plane vertical to the optical axis of said objective and the plane including the optical axis of the rays reflected by said second reflecting surface and directed toward said third reflecting surface, reference symbol ω_2 represents the angle between the plane vertical to the optical axis of the rays reflected by said second reflecting surface and directed toward said third reflecting surface and the plane including the optical axis of said eyepiece, reference symbol β represents the rotational angle of said porro prism in the clockwise direction from the plane including the optical axes of said objective and eyepieces around the optical axis of said objective, and reference symbol 2α represents the internal angle between said right and left objectives.

4,436,385

SPECIMEN HOLDER FOR INVERTED MICROSCOPES

Horst Fischer, and Friedrich K. Möllring, both of Aalen, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 287,379
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028154
Int. Cl.³ G02B *21/26*; B25B *5/02, 5/16*
U.S. Cl. 350—529 **8 Claims**



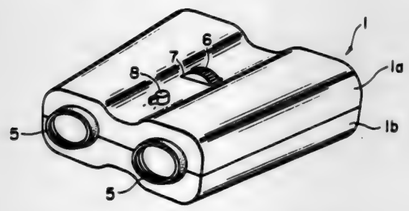
1. A specimen holder mounted on the stage of an inverted microscope for receiving specimens of different dimensions, characterized by the fact that the specimen holder (1) consists essentially of two plates (*2a, 2b*) which are horizontally mounted for displacement with respect to each other, the two opposite sides of said plates having indentations (*5a, 5b*) provided with steps (*3a, 3b*) for disposing the specimens thereon, said indentations supplementing each other to form an opening (4) the dimensions of which can be varied by displacing the plates (*2a, 2b*).

4,436,386

BINOCULARS HOUSING

Isao Ishibai, and Kunimitsu Kobayashi, both of Toyko, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jul. 9, 1981, Ser. No. 281,627
Claims priority, application Japan, Aug. 27, 1980, 55-120507[U]
Int. Cl.³ G02B *23/18*
U.S. Cl. 350—550 **4 Claims**



1. A housing for binoculars comprising: upper and lower housing halves, said halves having objective lens frames and ocular lens frames integrally molded therewith; said objective lens frames and said ocular lens frames projecting outwardly from said upper and lower housing halves with a half of each of said frames being integrally molded with one of said halves and the other half of each of said frames being integrally molded with the other said housing halves and each of said frames having at least one projection formed integrally therewith and ring members each having at least one groove affixed to said objective lens frames and said ocular lens frames with said projections in said grooves for joining said upper and lower halves, said upper and lower halves, when assembled,

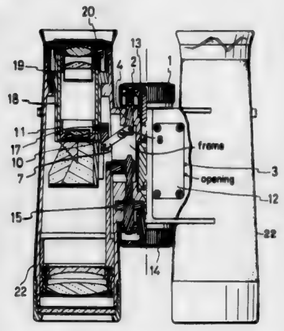
completely protecting left and right optical systems, a focusing mechanism, and an eyepiece adjustment mechanism of said binoculars.

4,436,387

LENS GROUP SHIFTING MECHANISM FOR ZOOM BINOCULARS

Fumio Shimizu, Minowa, Japan, assignor to Light Koki Co., Ltd., Nagano, Japan

Filed Dec. 24, 1981, Ser. No. 334,178
Claims priority, application Japan, Dec. 26, 1980, 55-183856
Int. Cl.³ G02B *7/06*
U.S. Cl. 350—556 **3 Claims**



1. In a zoom lens system including at least one outer cylinder having a longitudinal axis, a frame connected to said cylinder, and a lens group in said cylinder which is movable along said axis, a mechanism for longitudinally shifting said lens group comprising:

a lever having opposite ends and being pivotally mounted in the frame between said ends, each end having a rotatable pin mounted thereon;

a terminal member mounted on said lens group having a groove therein extending perpendicularly to said axis, one pin of one end of said lever riding in the groove;

a shift bar mounted in said frame movable only in parallel with said axis and having opposite ends, one end of said bar having a groove therein extending perpendicularly to said axis, the other pin of said lever riding in the groove; and

rotatable means in the frame for moving said shift bar longitudinally so that, upon such movement, the engagement of the pin in the groove of the bar pivots the lever so that the engagement of the other pin in the groove of the terminal members shifts the lens group longitudinally.

4,436,388

EYE-FUNDUS CAMERA PROVIDED WITH AUTOMATIC FOCUSING FUNCTION

Junichi Takahashi, Kawasaki; Toshio Sakane, Yokohama, and Yuji Itoh, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,878
Claims priority, application Japan, Apr. 25, 1980, 55-55068
Int. Cl.³ A61B *3/14*
U.S. Cl. 351—206 **12 Claims**

1. An eye-fundus camera comprising:

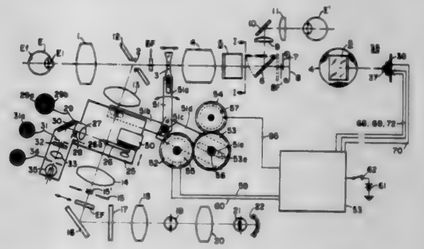
means for obtaining a picture of the fundus of an eye being examined and including illumination means for illuminating the fundus with an illumination light of wavelength within a first range, imaging optical means for forming an image of the illuminated fundus, photodetecting means for detecting the image, and focusing means for causing said optical means to focus the image on said detecting means;

mark forming means for forming a detection mark on the fundus with light of wavelength within the first range and light of wavelength within a second range different from the first range, operation of said mark forming means being coordinated with said focusing means;

photosensing means disposed in an optical path of said imaging optical means for sensing the detection mark reflected from the fundus;

filtering means for filtering the light incident on said photosensing means, said filtering means being able to cut off said light of wavelength within the first range and to transmit light of wavelength within the second range;

observation means disposed in an optical path of said imaging optical means for permitting an observer to observe



the fundus and the detection mark and also for providing a visual field for observation by the observer;

comparative mark providing means for providing a comparative mark locatable in the visual field for observation relative to the detection mark reflected from the fundus in a predetermined relation when said focusing means causes said optical means to focus the image on said photo-detecting means; and

control means for operating said focusing means and said mark forming means until the detection mark and the comparative mark are located in the predetermined relation, whereby

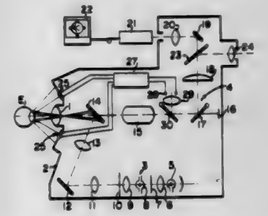
said focusing means causes said optical means to focus the image on said photo-detecting means.

4,436,389

OPHTHALMIC INSTRUMENT HAVING WORKING DISTANCE DETECTING MEANS

Eiichi Sano, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Jun. 25, 1980, Ser. No. 162,685
Claims priority, application Japan, Jun. 28, 1979, 54-81631
Int. Cl.³ A61B *3/14*; G03B *29/00*
U.S. Cl. 351—208 **8 Claims**



1. An ophthalmic instrument comprising objective lens means adapted to be located adjacent a patient's eye having a cornea with a working distance between the objective lens means and the patient's eye, an illuminating system including light source means and ring-shaped aperture means located substantially in conjugate with the patient's eye with respect to

said objective lens means so that illumination light is projected through said aperture means and said objective lens means to the patient's eye, working distance detecting means including light receiving means provided at a plurality of points around the objective lens means for detecting the location of a radially inner boundary of an image of said ring-shaped aperture means as produced around the objective lens means by the light projected from said illumination system and reflected at the cornea of the patient's eye, said light receiving means having means for detecting radial positions of at least a plurality of points of said radially inner boundary of the image to determine the working distance and the alignment between the optical axis of the eye an the optical axis of the instrument.

4,436,390

OPHTHALMIC INSTRUMENT HAVING A CROSS CYLINDER LENS

Mitsugu Aoki, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Feb. 11, 1982, Ser. No. 347,898
Claims priority, application Japan, Feb. 16, 1981, 56-20300[U]; Feb. 27, 1981, 56-26962[U]
Int. Cl.³ A61B 3/02
U.S. Cl. 351—234 **9 Claims**



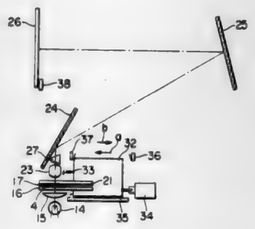
1. An ophthalmic instrument comprising cylindrical lens means and cross cylinder means which are adapted to be located in an examining optical path having an optical axis, housing means containing said cylindrical lens means and said cross cylinder means, swingable lever means mounted on said housing means for swingable movement about an axis substantially parallel with said optical axis of the optical path, said cross cylinder means being carried by said swingable lever means so that it can be moved into and out of said examining optical path in response to the swingable movement of the swingable lever means, said cross cylinder means including cross cylinder lens means having an intermediate axis, inner tube means supporting said cross cylinder lens means for rotation about said intermediate axis by an angle of 180°, and outer tube means supporting said inner tube means and mounted on said swingable lever means for rotation about an axis parallel with said optical axis, first rotatable disc means coaxial with said axis of swingable movement of said swingable member, first means for interconnecting said outer tube means with said first rotatable disc means so that a rotation of said outer tube means is transmitted to said first disc means, second means for interconnecting said first rotatable disc means with second rotatable disc means which is adapted to rotating said cylindrical lens means about said optical axis so that a rotation of said first means is transmitted to said second disc means.

4,436,391

APPARATUS FOR PROJECTING ANY SELECTED IMAGE IN A RECORDING MEDIUM HAVING IMAGES RECORDED THEREON IN AT LEAST TWO LINES

Kazuo Kashiwagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,450
Claims priority, application Japan, Sep. 12, 1981, 56-144138; Sep. 12, 1981, 56-144139
Int. Cl.³ G03B 23/12
U.S. Cl. 353—26 R **15 Claims**



1. Apparatus for projecting on a projection surface any selected image in a recording medium having images recorded thereon in at least two lines, said apparatus comprising:
- optical means for projecting on the projection surface any image in one line on said recording medium;
- image rotating means for changing the orientation of the image projected on said projection surface;
- line changing means for changing the line of images to be projected; and
- means for driving said image rotating means in response to the operation of said line changing means.

4,436,392

DISTORTION CORRECTION FOR AN OVERHEAD PROJECTOR SYSTEM

Dennis F. Vanderwerf, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 3, 1983, Ser. No. 455,424
Int. Cl.³ G03B 21/14
U.S. Cl. 353—38 **6 Claims**



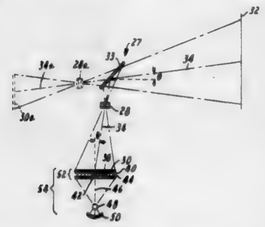
1. An overhead projector for projecting an undistorted image of a transparency onto a vertical projection surface at an oblique angle above a horizontal plane, comprising:
- a horizontal stage upon which the transparency to be imaged is placed;
- a projection lens having a predetermined optic axis oriented in a vertical plane and positioned on one side of said stage and offset from the center of said stage toward said projection surface along a line extending from the center of said stage and inclined toward said projection surface at an angle with respect to a vertical plane equal to said oblique angle;
- lighting means disposed opposite said projection lens with respect to said stage and including a light source having a predetermined optic axis oriented in a vertical plane for directing light toward said transparency and a condensing lens positioned between said light source and said stage and having a predetermined optic axis oriented in a vertical plane for directing light through said stage and said transparency and focusing said light at a focal position above the center of said stage so that light exiting said condensing lens is convergent at said focal position;
- a Fresnel prism having a series of parallel, linear grooves oriented perpendicular to the direction of said offset of said projection lens, said grooves including inclined planar surfaces angled with respect to a horizontal plane at varying angles, said prism being disposed between said condensing lens of said lighting means and said stage for redirecting said convergent light focused by said condensing lens to a position along said line extending from the center of said stage and inclined toward said projection surface at an angle with respect to a vertical plane equal to said oblique angle, said position along said line corresponding to the position of said projection lens; and
- a planar mirror disposed opposite said stage with respect to said projection lens to reflect light transmitted by said projection lens to said projection surface.

4,436,393

DISTORTION CORRECTION FOR AN OVERHEAD PROJECTOR SYSTEM

Dennis F. Vanderwerf, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 3, 1983, Ser. No. 455,425
Int. Cl.³ G03B 21/14
U.S. Cl. 353—38 **4 Claims**



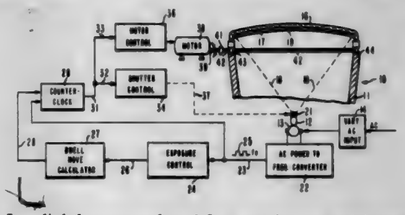
1. An overhead projector for projecting an undistorted image of a transparency onto a vertical projection surface at a selected oblique projection angle above a horizontal plane within a range of oblique projection angles, comprising:
- a horizontal transparency stage upon which the transparency to be imaged is placed;
- a projection lens having a predetermined optic axis oriented in a vertial plane, said lens being positioned above said stage and offset from the center of said stage toward said projection surface so that said lens will intersect a line extending from the center of said stage and inclined toward said projection surface at an angle with respect to a vertical plane equal to said selected oblique projection angle;
- means for illuminating said transparency including a light source disposed below said stage and having a predetermined optic axis oriented in a vertical plane and intersecting the center of said stage;
- means disposed between said means for illuminating said transparency and said stage for redirecting light produced by said light source to said projection lens at said angle to a vertical plane equal to said selected oblique projection angle including a first annular Fresnel lens parallel to said stage and having a predetermined optic axis oriented in a vertical plane and coincident with said optic axis of said light source and disposed between said light source and said stage, and a second annular Fresnel lens parallel to said stage and having a predetermined optic axis oriented in a vertical plane and displaced from said optic axis of said first annular Fresnel lens and said optic axis of said light source in the direction of said offset of said projection lens, and first and second annular Fresnel lenses cooperating to focus light produced by said light source at said offset position of said projection lens; and
- a mirror disposed adjacent said projection lens for reflecting light exiting said projection lens toward said projection surface at said oblique projection angle.

4,436,394

SYSTEM AND METHOD FOR CONTROLLING THE EXPOSURE OF COLOR PICTURE TUBE PHOSPHOR SCREENS

William R. Kelly, and Ernesto J. Alvero, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed May 28, 1981, Ser. No. 267,750
Int. Cl.³ G03B 41/00
U.S. Cl. 354—1 **10 Claims**



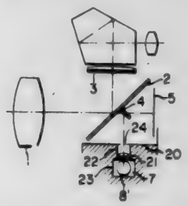
1. In a lighthouse employed for exposing an actinic energy sensitive coating present on the inside surface of a picture tube panel and having an actinic energy source and a power supply for energizing said energy source, an improved system for maintaining a constant energy intensity-time relationship comprising:
- means directly responsive to the energizing power provided to said actinic energy source for providing an output signal having a characteristic related to the intensity of said energy source;
- means responsive to said output signal for providing a control signal, said control signal having a frequency determined by said output signal characteristic; and
- means responsive to said control signal for controlling the exposure of said actinic energy sensitive coating in accordance with said control signal frequency, said means responsive to said control signal including means for providing a reference signal representative of a reference frequency and means receiving said reference signal and said control signal frequency for providing a signal related to the ratio of said reference frequency and said control signal frequency.

4,436,395

FOCUS DETECTING DEVICE IN A SINGLE LENS REFLEX CAMERA

Toru Fukuhara, Isehara, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,728
Claims priority, application Japan, Feb. 6, 1981, 56-15830[U]; Feb. 13, 1981, 56-18185[U]
Int. Cl.³ G03B 3/00, 19/12
U.S. Cl. 354—406 **2 Claims**



1. In a single lens reflex camera including a housing, a main reflecting mirror capable of partially transmitting incident

light therethrough and disposed in a light path passing through a mirror box provided between an objective lens and a film surface so as to direct a light beam passing through said objective lens to a viewfinder optical system, an auxiliary reflecting mirror for reflecting the light transmitted through said main reflecting mirror toward a predetermined wall surface of said mirror box lying at a location opposed to said viewfinder optical system with said main reflecting mirror interposed therebetween, and an optical device for detecting the focused condition of said objective lens with respect to an object to be photographed, the housing having a lengthwise dimension perpendicular to the optical axis of the objective lens that is greater than its dimension in the direction of the optical axis, the improvement wherein said mirror box is formed with a depression in said predetermined wall surface and said optical device is disposed in the depression, said predetermined wall surface being substantially coincident with a pre-imaging plane of the objective lens that is conjugate with said film surface, and wherein said optical device comprises field stop means formed at an opening of said depression and located in said predetermined wall surface, field lens means disposed in an optical path leading from said field stop means, reflecting means having first and second reflecting surfaces for separating the light from said field lens means into two mutually opposed directions substantially parallel to said lengthwise dimension of the housing, first and second photoelectric converter means provided on the optical paths of the light beams separated by said first and second reflecting surfaces and spaced along the lengthwise dimension of the housing, the distance between said reflecting means and each of said photoelectric converter means along said lengthwise dimension being substantially greater than the distance between said pre-imaging plane and said reflecting means, and a pair of re-imaging lens means disposed in the optical paths leading from said reflecting means to said first and second photoelectric converter means for forming first and second images on said first and second photoelectric converter means, respectively, from an image formed by said objective lens at said pre-imaging plane.

4,436,396

ELECTROFLASH UNIT

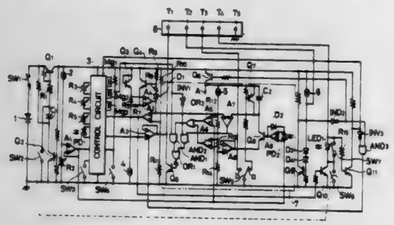
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 358,836, Mar. 16, 1982, abandoned. This application Jun. 8, 1983, Ser. No. 501,545

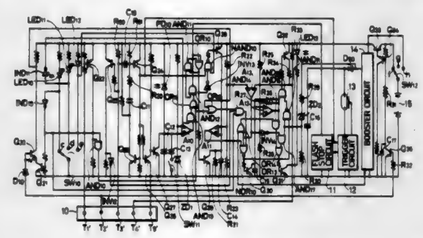
Claims priority, application Japan, Mar. 23, 1981, 56-40505; Mar. 23, 1981, 56-40503

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—416 **28 Claims**



1. An electroflash unit attachable to a camera having means for measuring light received through a photographing lens thereof, said electroflash unit comprising:
- a power source;
- terminal means for connecting the electroflash unit to the camera;
- means for effecting flash light emission;
- means for terminating said flash unit emission;
- means for generating, on said terminal means, a predetermined signal for plasting the light measuring means in a state in which it is ready for operation; and
- selection means for alternately selecting a first mode in which flash light emission is terminated in accordance with an output from said light measuring means or a second mode that is different from said first mode, and wherein said signal generating means generates said predetermined signal upon power being supplied to the electroflash unit from said power source and upon said first mode being selected by said selection means.



4,436,397

PHOTOGRAPHIC INFORMATION DISPLAY SYSTEMS FOR USE IN PHOTOGRAPHIC CAMERAS

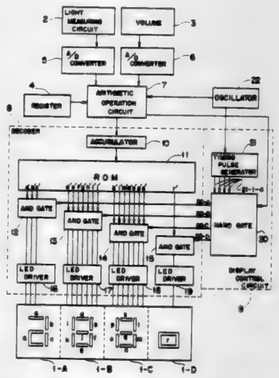
Takeo Kobayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 363,006

Claims priority, application Japan, May 28, 1981, 56-81297

Int. Cl.³ G03B *17/20*

U.S. Cl. 354—465 **7 Claims**



1. A photographic information display system of a photographic camera having a finder comprising:
- (a) a plurality of digits arranged in a field of view of said finder,
- (b) an arithmetic operation circuit inputted with digital photographic information for producing digital code bits,
- (c) a memory circuit for storing outputs of said arithmetic operation circuit,
- (d) a timing pulse generator supplied with the output signal of an oscillator for producing successively lagged pulse signals,
- (e) a NAND gate circuit supplied with the output signal of said arithmetic operation circuit and the pulse signals outputted by said timing pulse generator for judging whether a photographic information outputted by said arithmetic operation circuit is adequate or not for outputting successively lagged pulse signals,
- (f) AND gate circuits of a number corresponding to that of said digits and respectively supplied with binary informations read out from said memory circuit and said lagged pulse signals outputted by the NAND gate circuit, and
- (g) digit drivers respectively supplied with binary informations outputted from said AND gate circuits for driving said digits,

whereby sequentially to turn on or off said digits at a predetermined period for giving an alarm to a user of said photographic camera.

4,436,398

DEVICE FOR SPLITTING PART OF LIGHT INCIDENT ON AN IMAGE FORMING OPTICAL SYSTEM

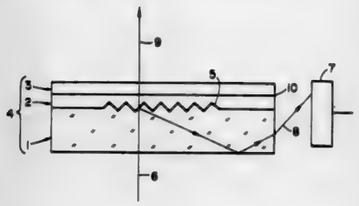
Kiyonobu Endo, and Noriyuki Nose, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 280,347, Jul. 6, 1981, abandoned. This application Mar. 22, 1983, Ser. No. 476,398

Claims priority, application Japan, Jul. 25, 1980, 55-101909

Int. Cl.³ G03B *13/08*; G02B *5/02*

U.S. Cl. 354—476 **5 Claims**



1. A device for splitting part of the light incident on an image forming optical system, comprising:
- a transparent substrate having a surface on which a periodic relief is formed; and
- a transparent filling layer filling up completely said relief surface of said transparent substrate to form a relief type diffraction grating therein,
- whereby said relief type diffraction grating serves to separate N_0-th order of reflected diffraction light ($N_0 \geq 2$) out of the optical path of said incident light, each of the transmitted diffraction light beams of orders lower than the N_0-th order, except for zero order, having a diffraction efficiency not more than 6%.
- a photodetector disposed outside of the optical path of said incident light for detecting the N_0-th order of reflected diffraction light beam which has been diffracted at said relief type diffraction grating.

4,436,399

APPARATUS FOR TRANSPORTING OR POSITIONING OF A STRIP-SHAPED LIGHT-SENSITIVE MATERIAL WITH REFERENCE TO A PICTURE WINDOW

Carl Koch, Im Santenbühl No. 82, Stetten, and Karl Gfeller, Kirchweg 120, Langwiesen, both of Switzerland

Continuation-in-part of Ser. No. 404,421, Jul. 28, 1982, abandoned, which is a continuation of Ser. No. 161,647, Jun. 20, 1980, abandoned. This application Aug. 27, 1982, Ser. No. 412,376

Claims priority, application Switzerland, Jun. 2, 1979, 5794/79

Int. Cl.³ G03B *17/02*

U.S. Cl. 354—159 **24 Claims**

1. A device for use in making photographic exposures on a strip-shaped, light-sensitive material, said device comprising a housing having a picture area-limiting frame providing a fixed light-path opening, means for guiding the strip-shaped light-sensitive material within the housing and behind the light-path opening, a transport arrangement for the forward transport of the strip-shaped material in steps in its longitudinal direction, at least one adjustable mask for covering portions of the light-path opening to thereby form a picture window which is smaller than the light-path opening, the portions of the light-path opening which can be covered by the mask adjoining opposite edges of the light-path opening that are at right angles to the longitudinal direction of the strip-shaped material so that a first edge of the picture window as well as a second edge of the picture window as seen with respect to the forward transport direction of the strip-shaped material are alterable in position by displacement of the mask, adjustable means for selecting a desired picture window as to its size and/or position within the picture area, first mechanical-electrical transducer means coupled with said means for selecting the picture window for producing electrical signals in response to the selected picture window, second mechanical-electrical transducer means associated with said transport arrangement for producing electrical signals in response to any displacement of the strip-shaped material in its longitudinal direction, at least one electronic logical circuit arrangement having a plurality of signal inputs and outputs, said first and second transducer means being electrically connected with some of the signal inputs of said electronic logical circuit arrangement, and electrically-operated transport control means associated with the transport arrangement for the strip-shaped material, said transport control means being connected with some of the signal outputs of the logical circuit arrangement, said logical control arrangement being connected to deliver to said transport control means output signals dependent on the signals from said first and second transducer means for controlling the transport arrangement such that the steps of forward transport caused by the transport arrangement for the strip-shaped material area automatically limited in accordance with the size of the picture window defined by the mask and such that each adjustment of the means for selecting the picture window, which calls for a positional change of the second edge of the picture window in the forward transport direction of the strip-shaped material, automatically produces a forward correction transport of the strip-shaped material at least equal to said positional change.



4,436,400

APPARATUS FOR POSITIVE VIGNETTING

Phillip S. Charis, 2631 Buenos Aires, Covina, Calif. 91724, and Roy Sweeney, Pasadena, Calif., assignors to Phillip Stewart Charis, Pasadena, Calif., a part interest

Filed Dec. 3, 1981, Ser. No. 326,859

Int. Cl.³ G03B *11/00*

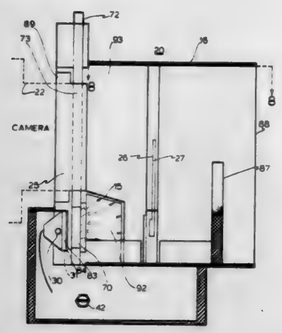
U.S. Cl. 354—296 **4 Claims**

1. A positive vignetting apparatus for positioning between a camera lens and a subject to be photographed to allow the addition of lighting to the peripheral region of a photographic image of the subject without interference with the central subject region thereof comprising:
- a housing for positioning between the lens of a camera and the subject to be photographed;
- said housing including a direct optical path therethrough between the subject and the lens of the camera with which the apparatus is associated, said optical path being free of optical elements in the region of the optical path directed at the subject;

vignetting means for partially obstructing a portion of the direct optical path between the subject and the lens of said camera;

an auxiliary light source contained within said housing and positioned between said vignetting means and the lens of said camera;

means shielding the lens of the camera from direct exposure to said auxiliary light source;



said auxiliary light source being operative to illuminate the face of said vignetting means on the side thereof exposed to the lens of said camera;

whereby said lens is illuminated directly by light from said subject without intervening optical elements in a portion of the optical path between the subject and the camera lens is illuminated indirectly at peripheral regions of the optical path to provide positive vignetting of the peripheral regions thereof.

4,436,401

TANK WITH LIGHT-TIGHT CLOSURE

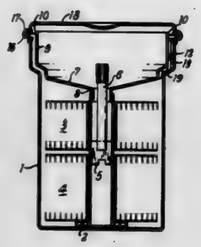
Eric Taylor, London, England, assignor to Paterson Products Limited, London, England

Filed Mar. 30, 1982, Ser. No. 363,583

Claims priority, application United Kingdom, Apr. 7, 1981, 8110891

Int. Cl.³ G03D *13/04*

U.S. Cl. 354—312 **4 Claims**



1. In a developing tank comprising a base member having the form of a hollow, generally cylindrical upwardly open tank, a film strip receiving member adapted to fit inside the tank and comprising a central spindle and a film-support mounted thereon, the film-support including a pair of spaced apart discs having on their facing surfaces spiral grooves for the reception of a film-strip, the tank additionally including a closure member adapted to close the upwardly open tank base in light-tight fashion, the improvement comprising a substantially funnel shaped closure member which extends across the entire width of the tank and has on its external periphery means which constitute, together with cooperating means on the interior cylindrical surface of the walls of the tank, a bayonet fitting comprising at least one bead on the interior of the tank base and at least one bead and stop formation located on the exterior of the closure member to enable the closure member to be latched into a position in which it cannot be axially extracted from the base.

4,436,402

COPYING MACHINE

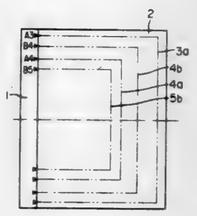
Ryubun Seimiya; Fumio Iwai, and Isao Nosaka, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,694

Claims priority, application Japan, Nov. 12, 1979, 54-145514

Int. Cl.³ G03G *15/04*

U.S. Cl. 355—3 R **1 Claim**



1. In an electrophotographic copying machine of the type in which an original placed upon a copy board is scanned and its image projected upon a photosensitive surface, and in which the effective distance between said original and the photosensitive surface may be varied depending upon the size of the original to be scanned, the improvement comprising indexing means on said copy board indicating the placement of the original to be scanned relative to a central base line, said indexing means being so dimensioned that the shorter side of the original always corresponds to the direction of scanning.

4,436,403

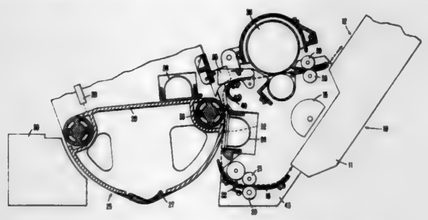
GUIDANCE CORRECTION METHOD AND APPARATUS FOR COPY PAPER PATH IN A COPIER

John H. Rhodes, Jr., and Alfonso A. Rosati, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,592

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **7 Claims**



1. In a copier having first means for driving copy sheets through an image transfer station and thence into second driving means such as fuser rollers and the like for withdrawing the copy sheets from the transfer station and wherein the copy sheet follows a curved path between said transfer station and said second driving means, an improvement comprising:

a bender bar having at least a portion of the surface thereof formed as an elongated edge; and

means mounting said bender bar with said edge forming an inner guide for copy sheets passing through said curved path, said mounting means including means establishing different path lengths as between opposite ends of said bar for copy sheets traveling from said image transfer station to said second driving means, whereby said path length establishing means compensates for twisting motions to copy sheets which cause distortion and blurring in image transfer to the copy sheets.

4,436,404

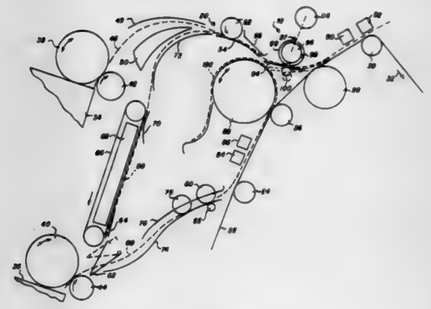
SHEET HANDLING APPARATUS

William J. Simmons, and Richard Tinder, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 8, 1981, Ser. No. 309,733

Int. Cl.³ G03G *15/14, 15/22*

U.S. Cl. 355—3 SH **15 Claims**



1. Sheet handling apparatus comprising:

means for defining first and second convergent paths along which sheets are moved seriatim;

means located adjacent to said first path near the convergence of said first and second paths for engaging sheets moved along said first path, said means being moveable into and out of said first path;

guide means located adjacent to said engaging means for guiding a sheet moved along one of said paths, said guide means being moveable between a first position adjacent to said first path and a second position adjacent to said second path; and

means (1) for moving said guide means to said first position and for latching said engaging means so that it extends into said first path to engage a sheet moved along said first path; and (2) for moving said guide means to said second position, and for latching said engaging means so that it is held remote from said first and second paths.

4,436,405

APPARATUS AND METHOD FOR REGISTERING RELATED TRANSFERABLE IMAGES IN ACCURATE SUPERPOSITION ON A RECEIVER MEMBER

Robert J. Kindt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,238

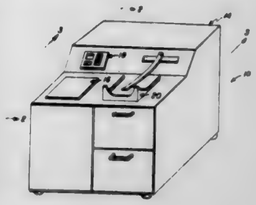
Int. Cl.³ G03G *15/01*

U.S. Cl. 355—3 TR **12 Claims**

1. In an electrographic copier having means for forming related transferable images at spaced locations on image-carrier means movable along a travel path, means for stopping such image-carrier means to position one transferable image at a predetermined location in said path, and transferring means mounted adjacent to said path and movable relative to such stopped image-carrier means for transferring a transferable image from such image-carrier means to a receiver member, the improvement comprising:

means for clamping a receiver member to said stopping means; and

means, operatively associated with said transferring means, for (i) positioning such clamped receiver member, during movement of said transferring means, in transfer relation with such one transferable image on the stopped image-carrier means, and following transfer of such one transferable image, (ii) removing such receiver member from such



transfer relation while keeping such receiver member clamped to said stopping means so that such image-carrier means can be stopped to position another related transferable image at said predetermined location, whereat such receiver member has the same position relative to such other related transferable image as it had to such one transferable image, whereby such related images when transferred are in accurate superposed register on such receiver member.

4,436,406

PAPER FEEDER FOR RECORDING APPARATUS

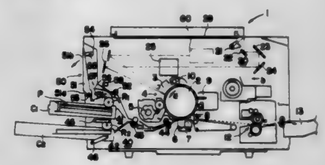
Hiroshi Murasaki, Sakai; Masaya Ogawa, Osaka; Yuji Enoguchi, Higashiosaka, and Mikio Masui, Itami, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

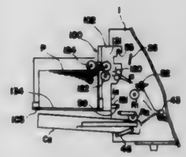
Filed Jun. 21, 1982, Ser. No. 390,624

Claims priority, application Japan, Jun. 30, 1981, 56-102668

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **14 Claims**





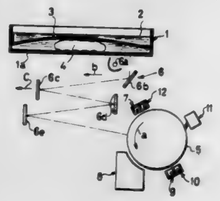
1. The combination of:

a recording apparatus having a main body with means for driving the apparatus therein, an automatic feed mechanism therein including paper storage means and means for automatically feeding recording paper from said storage means, and a manual feed mechanism for feeding into said apparatus recording paper manually inserted thereinto;

a paper feeder for supplying recording paper into the interior of the record apparatus and comprising a recording paper accommodating unit for accommodating a larger number of sheets of recording paper than the paper storage means of the automatic feed mechanism, said unit having means for feeding the recording paper out of the

unit, and releasable engaging means for removably attaching the unit to said main body with the feeding means positioned in a position opposed to said manual feed mechanism of the apparatus for delivering sheets of recording paper to said manual feed means;
holding means on said main body and engagable with said engaging means for holding said unit; and
coupling means for coupling said apparatus driving means and said feeding means when said unit is attached to said main body;
whereby when said unit is attached to said main body with a multiplicity of sheets of recording paper accommodated therein, the sheets can be fed to the interior of the apparatus through the manual feed mechanism.

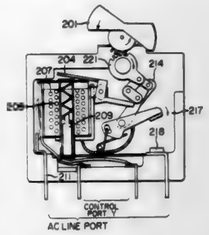
4,436,407
ELECTROPHOTOGRAPHIC REPRODUCTION OF A THREE-DIMENSIONAL OBJECT
Toyokazu Satomi, Yokohama, and Nobuo Sakuma, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Jan. 25, 1982, Ser. No. 342,487
Claims priority, application Japan, May 25, 1981, 56-79044
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—11 **8 Claims**



1. An electrophotographic copying machine capable of making a two-dimensional copy either from a two-dimensional or three-dimensional object comprising:
holder means having a holding surface for holding a two-dimensional object on said surface or for holding a three-dimensional object extending above said surface;
a photosensitive member;
an optical system for directing a light image reflected from said object to said photosensitive member;
adjusting means for adjusting said optical system to maintain a conjugate image forming relation between a field of a focal distance coincident with said holding surface and said photosensitive member, and between a field of a focal distance at a selected height above said holding surface and said photosensitive member; and
electrophotographic processing means including charging means and developing means to be applied to said photosensitive member in forming an image thereon.

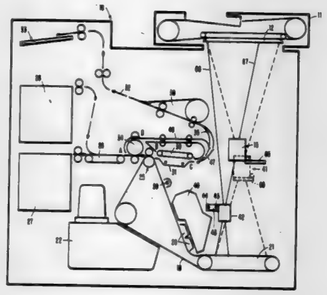
4,436,408
IMAGE FORMING APPARATUS INCLUDING POWER SWITCH OPERATING MEANS
Tsuneki Inuzuka, Machida; Masato Ishida, Kawasaki; Hiroshi Tanioka, Tokyo, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 24, 1980, Ser. No. 219,975
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **8 Claims**

1. Copying apparatus comprising:
process means for forming a visible image on a copy material;
process control means for operatively controlling said process means;
a manual power switch unit for supplying power to electric loads of said process means and said process control means, said manual power switch unit including switch contacts and manually activated actuator means to maintain an "on" condition of said contacts during the time from the beginning of manual turning on to activating of manual turning off, and said power switch unit further including a coil to release the "on" condition of said actuator means before the manual activation thereof to turn "off" said contacts;
timer means for measuring the time lapse from completion of copying operation, said timer means being controlled by said process control means;



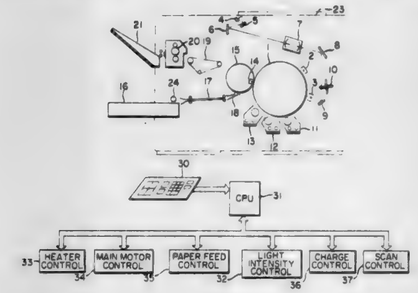
power control means for driving said coil to release said actuator means from the "on" condition to the "off" condition when a predetermined period of time is measured by said timer means; and
input means comprising instruction keys, wherein the measuring operation of said timer means is reset by operation of a said instruction key.

4,436,409
FILE COMPACTION APPARATUS AND METHOD FOR COPIERS
Carl A. Queener, Lyons, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1981, Ser. No. 335,932
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **17 Claims**



1. In an apparatus having a photosensitive surface for electrostatically recording images and means synchronously moving copy sheets relative to the photosensitive surface for transferring images corresponding to the electrostatically recorded images to a copy sheet at a transfer station, an improvement for recording a plurality of original document images on a single copy sheet comprising:
original document image producing means for producing a light image at the photosensitive surface with said light image being no greater than half the size of the surface area of the copy sheet,
means controlling the orientation of said light image on said photosensitive surface with respect to the synchronous movement of the copy sheet for causing said light images corresponding to sequential original document images to be transferred to the copy sheet on separate portions of the surface area thereof in a predetermined sequence, and
means selectively operable for commanding said controlling means to initiate image production at the photosensitive surface at a location other than the first location of the predetermined sequence.

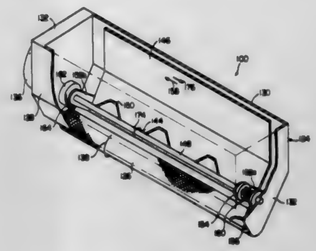
4,436,410
IMAGE FORMING APPARATUS
Yutaka Komiya, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 15, 1982, Ser. No. 368,675
Claims priority, application Japan, Apr. 20, 1981, 56-58585
Int. Cl.³ G03G *15/01, 15/04*
U.S. Cl. 355—14 E **11 Claims**



8. A color image forming apparatus having a variable magnification ratio copy function comprising:
specifying means for specifying a magnification ratio of an image to be formed on a record medium;
image forming means for forming a color image on said record medium at the magnification ratio specified by said specifying means, said image forming means including exposure means for exposing an original and a plurality of spectrometric means for selection to color-decompose light from said original; and
control means for controlling said exposure means in accordance with the magnification ratio specified by said specifying means and the selected one of said plurality of spectrometric means, wherein said control means corrects the light intensity by controlling a voltage applied to said exposure means.

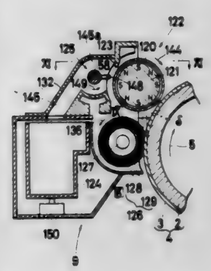
4,436,411
TONER DISPENSER AND DETECTOR FOR AN ELECTROSTATIC COPYING APPARATUS
Hideo Miyoshi, Habikino; Tadashi Umeda, Yamato Takada, and Takashi Aoki, Kusatsu, all of Japan, assignors to Mita Industrial Co., Ltd., Japan
Division of Ser. No. 250,829, Apr. 3, 1981, Pat. No. 4,382,674.
This application Feb. 8, 1983, Ser. No. 465,062
Claims priority, application Japan, Apr. 15, 1980, 55-49497
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—14 D **12 Claims**

1. In a developing device for an electrostatic copying apparatus, said developing device comprising a developer receptacle, a developer applicator mechanism for holding a part of a developer in the receptacle on its surface and applying toner particles to a latent electrostatic image to be developed, and a toner particle dispenser mechanism, said toner particle dispenser having a toner particle receptacle with an open bottom and a feed roller disposed rotatably at the opening of the toner particle receptacle and adapted to dispense the toner particles in the toner particle receptacle to the developer receptacle; the improvement wherein a slide plate capable of reciprocating in the widthwise direction along the inner surface of at least one



side wall of the toner particle receptacle is mounted to at least the lower portion of the inner surface of said side wall.

4,436,412
CLEANING DEVICE FOR USE ON AN ELECTROSTATIC COPYING APPARATUS
Ryutaro Yamagata, Hyogo; Nobuhiko Kozuka, Osaka; Hitoshi Nishihama, Osaka; Shigeo Koyama, Osaka, and Kazutada Sakai, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan
Filed May 20, 1981, Ser. No. 265,565
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **8 Claims**



1. A cleaning device for use in a transfer type electrostatic copying apparatus for removing residual magnetizable toner from a photosensitive surface of the copying apparatus after an operation of transfer of an electrostatic latent toner image from the photosensitive surface, said cleaning device comprising:
magnetic brush cleaning means, adapted to be positioned adjacent the photosensitive surface at a downstream position with respect to the position of a transfer operation, for magnetically removing residual toner from the photosensitive surface, said magnetic brush cleaning means comprising a permanent magnet member fixedly positioned within a hollow sleeve which is formed of a non-magnetizable material and which is rotatable adjacent the photosensitive surface, such that there is formed on the peripheral surface of said sleeve a magnetic brush of toner removed from the photosensitive surface;
a restricting member positioned adjacent said sleeve for restricting the length of the bristles of said magnetic brush formed on said peripheral surface;
a toner receptacle for receiving toner removed from the photosensitive surface by said magnetic brush cleaning means, said receptacle being mounted for downward movement as the weight of toner accumulated in said receptacle increases;
switch means positioned with respect to said receptacle to be actuated thereby when the weight of toner accumulated

therein has reached a predetermined value and thereby to provide an indication of such accumulation;

feed-in means for forcibly feeding said removed toner to said receptacle means; and

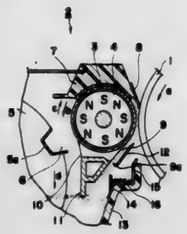
brush roller means, adapted to be positioned upstream of said magnetic brush cleaning means, for removing a charge from the photosensitive surface prior to removal therefrom of the residual toner by said magnetic brush cleaning means, said brush roller means comprising a cylindrical member formed of a light transmitting material and mounted for rotation, a charge eraser lamp positioned within said cylindrical member, and a brush arranged on the peripheral surface of said cylindrical member to brush against the photosensitive surface, said brush being arranged on said peripheral surface in a manner to define light transmitting areas to enable light from said charge eraser lamp to pass through said brush onto the photosensitive surface.

4,436,413

MAGNETIC BRUSH DEVELOPING APPARATUS

Tateki Oka, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 1, 1982, Ser. No. 413,724
Claims priority, application Japan, Sep. 11, 1981, 56-145650
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—15 **7 Claims**



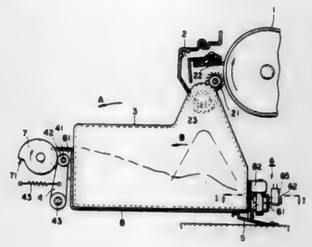
1. A magnetic brush developing apparatus comprising a developing sleeve made of a nonmagnetic material, a magnetic roller rotatably mounted within said developing sleeve, means for supplying a magnetic developer onto the peripheral surface of said developing sleeve, drive means connected to said magnetic roller for rotating said magnetic roller to transport the supplied developer along the peripheral surface of said developing sleeve, a developer scraping member made of a nonmagnetic material and having a free end engaged with said developing sleeve for scraping developer off the peripheral surface of said developing sleeve and guiding the developer along a guide surface on said scraping member in a direction away from the surface of said developing sleeve, and a foreign material separating member made of a magnetic material and disposed within a region which is subject to the magnetic action of said magnetic roller and having an edge opposed to said magnetic roller around which an alternating magnetic field is set up when the magnetic roller is rotated, whereby said alternating magnetic field agitates the developer which is scraped off the peripheral surface of the developing sleeve for separating foreign material therefrom.

4,436,414

TONER COLLECTION DEVICE

Shin-ichi Kamiyama, Yokohama, and Yutaka Hasegawa, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Sep. 21, 1982, Ser. No. 420,864
Claims priority, application Japan, Sep. 25, 1981, 56-152327; Sep. 25, 1981, 56-152328; Sep. 25, 1981, 56-152329
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—15 **10 Claims**



1. A toner collecting device comprising:

a container provided with an opening through which toner is collected therein;

a holder generally in the shape of a tray for holding said container; and

rocking means for rocking said holder back and forth such that said holder moves at an accelerated speed while being rocked in a predetermined direction and moves at a slower speed while being rocked back to the original position.

4,436,415

EXPOSURE PROCESS FOR USE IN A VARIABLE MAGNIFICATION COPYING MACHINE

Masami Emoto, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 21, 1981, Ser. No. 332,872
Claims priority, application Japan, Dec. 22, 1980, 55-181648
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—55 **24 Claims**



1. An exposure process for use in a variable magnification copying machine in which a photosensitive member is subject to a slitwise exposure progressively in accordance with a scan direction normal to a lengthwise direction of an exposure slit, and an imaging lens system having an optical axis therefor being movable in the scan direction in conjunction with said progressive slitwise exposure and being displaceable in accordance with a particular magnitude of copying magnification

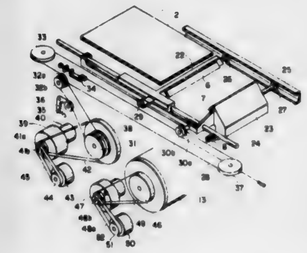
which is utilized during a copying operation, the exposure process comprising the steps of providing at least one rectangular light shield member adjacent to the end face of a lens and oriented so that its lengthwise direction corresponds to said scan direction, the light shield member being integral with the imaging lens system as the latter is displaced, the light shield member being disposed so that it is wedged partly into an exposure light flux as viewed in the lengthwise direction of the exposure slit when the light shield member is to intercept light, and changing the extent of intercepting the exposure light flux by the light shield member as a copying magnification is changed, whereby the distribution of exposure light in the lengthwise direction of the exposure slit is made uniform.

4,436,416

MIRROR SCANNING CONTROL MECHANISM IN VARIABLE MAGNIFICATION TYPE COPYING MACHINE

Ikuo Negoro, and Hisao Iwanade, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 326,977
Claims priority, application Japan, Dec. 11, 1980, 55-174989
Int. Cl.³ G03B *27/34, 27/40, 27/70*
U.S. Cl. 355—57 **12 Claims**



1. In a copying machine of the type having means for holding an original document in a substantially fixed position, a full speed mirror, movable a scanning distance which is at least the length of said original at a scanning speed for reflecting light from said original, half-speed mirrors movable in synchronism with said full speed mirror at substantially half the speed thereof for receiving and reflecting said light from said full speed mirror, a magnification varying device including a zoom lens system for receiving said reflected light from said half-speed mirrors and for varying the magnification factor of said copy machine, and a recording medium for receiving said light from said magnification varying device and recording an image of said original with a desired magnification factor, a mirror scanning control mechanism comprising:

control means for controlling said scanning speed in accordance with at least said desired magnification factor.

4,436,417

BEAM DIRECTOR FOR OPTICAL RANGING SYSTEM

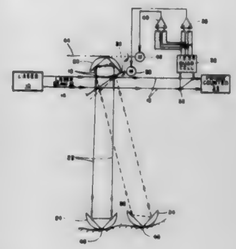
Richard A. Hutchin, Marlboro, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 14, 1982, Ser. No. 368,335
Int. Cl.³ G01G *9/02*
U.S. Cl. 356—4.5 **4 Claims**

1. An optical ranging system, comprising:

a. first and second reflectors, the distance between which is being measured optically;

b. means for introducing a beam of radiation between said first and second reflectors such that the radiation beam is reflected therebetween, including a steering beam splitter positioned obliquely in the radiation beam between the first and second reflectors with the beam of radiation being introduced obliquely onto the beam splitter and a portion of the beam being reflected by the beam splitter onto the first reflector which reflects it back through the beam splitter onto the second reflector which reflects it back onto the beam splitter where it interferes with the radiation beam being initially introduced onto the beam splitter, said beam splitter being rotatable about at least a



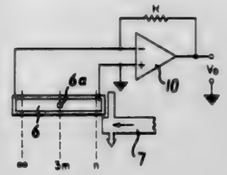
first axis substantially perpendicular to the radiation beam reflected between the first and second reflectors for steering the beam between the reflectors to compensate for relative movements therebetween, such that translation of the steering beam splitter in any direction does affect the optical path difference between the reflectors.

4,436,418

DISTANCE DETECTOR DEVICE

Yukio Morino, Shikawatashi, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,528
Claims priority, application Japan, Sep. 8, 1980, 55-124268
Int. Cl.³ G01C *3/10*; G03B *7/08*
U.S. Cl. 356—1 **7 Claims**



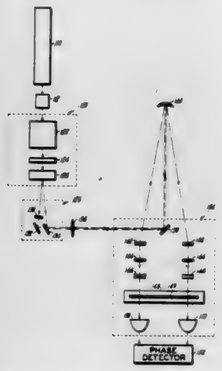
1. A distance detector device comprising: light projecting means for projecting light toward an object whose distance is to be measured, said light projecting means comprising a light emitting element and a light projecting lens for projecting light from said light emitting element; image forming means for receiving reflected light from the object whose distance is to be measured and for forming an image thereof; a light sensitive element positioned at an image forming part of said image forming means for developing a photoelectric output in response to light incident thereon; a light-blocking shade movable over a surface of said light sensitive element to vary its position along the length of said light sensitive element and accordingly vary the photoelectric output thereof in dependence upon the distance to the object whose distance is to be measured; and a sensor circuit for sensing a variation of the photoelectric output of said light sensitive element caused by shielding of the light reflected from the object whose distance is to be measured when said shade is operated.

4,436,419

OPTICAL STRAIN GAUGE

Karl A. Stetson, Coventry, and Irene R. Harrison, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 16, 1982, Ser. No. 349,238
Int. Cl.³ G01B 9/02
U.S. Cl. 356—35.5 **1 Claim**



1. An optical system for measuring strain in a test object comprising:
- means for generating first and second optical beams having first and second frequencies;
- means for directing said first and second beams on said test object;
- at least two means for focusing radiation of said first and second frequencies diffusely reflected from said test object onto a focus plane;
- a predetermined moire interference pattern recording positioned in said focus plane to intercept said focused radiation, said moire pattern representing an exposure when the amount of said strain is zero;
- at least two detectors responsive to radiation focused by said at least two means for focusing for generating electrical signals in response to radiation of said first and second frequencies impinging thereon, said electrical signals having first and second phases;
- means for measuring the phase difference between said first and second phases of said electrical signals to form a representation of said strain.

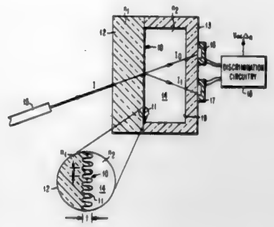
4,436,420

OPTICAL FLUID ANALYZING APPARATUS AND METHOD

Steven W. Depp, and Glenn T. Sincerbox, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,269
Int. Cl.³ G01N 21/41
U.S. Cl. 356—128 **7 Claims**

1. An optical fluid analyzing apparatus comprising:
- transparent means having a known refractive index and defining between first and second portions thereof a cell for receiving a fluid sample having an unknown refractive index, said first portion having a diffraction grating formed on an inner surface facing the cell;
- a light source positioned at an incident angle with said grating to satisfy the Bragg condition;
- first detector means for sensing the intensity of the light from said source that has been diffracted by said grating through the sample;
- second detector means for sensing the intensity of the light from said source that has been transmitted by said grating through said second transparent portion; and



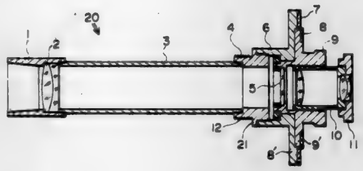
- means responsive to signals generated by said first and second detector means for providing an output related to the refractive index of the sample.

4,436,421

POLARIS AXIS FINDER

Kozaburo Suzuki, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,141
Claims priority, application Japan, Sep. 3, 1980, 55-125506[U]
Int. Cl.³ G01B 11/26; G01C 17/34
U.S. Cl. 356—153 **13 Claims**



1. A polar axis finder for an equatorial mounting telescope, comprising:
- an objective lens;
- a focus mirror disposed at a focal point of said objective lens, said focus mirror being rotatable about an axis of rotation and having a Polaris collimating mark thereon which is asymmetrically disposed with respect to said axis of rotation;
- a date scale;
- a time scale fixedly secured for rotation with said focus mirror relative to said date scale; and
- an eyepiece for viewing an image of Polaris via said objective lens and focus mirror.

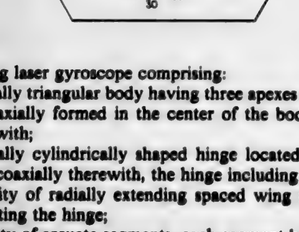
4,436,422

SENSOR WHICH IS SENSITIVE TO PRESSURE, TENSION, TORSION AND HEAT AND A PROCESS OF OPERATION

Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,665
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936303
Int. Cl.³ G01B 9/02
U.S. Cl. 356—349 **5 Claims**

1. A process of utilizing a sensor which is sensitive to influences including pressure, heat, tension and torsion, said process including: providing a sensor having means for receiving influences from pressure, heat, tension and torsion, said means comprising a ring interferometer having a light source, a pair of detectors, and a waveguide wound in a coil with a coupling point at each end, said waveguide being capable of propagating only one mode of specific first and second polarization states with the second polarization state being of a fixed relationship to said first polarization state; said ring interferometer having (1) means for coupling light of said first polarization state from said source into each coupling point of the waveguide for propagation therein to the other coupling point for output coupling therefrom, (2) means for receiving said output coupled light from said pair of coupling points, for superimposing



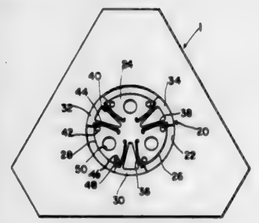
components thereof into two separate superimposed beams, and for separately directing said two separate beams at said pair of detectors, and (3) a polarizer which is transparent to only said second polarization state and which is located in the path of each separate superimposed beam adjacent a light receiving surface of the respective detector; subjecting said interferometer to one of said influences to cause a changeover of light of said first polarization state to the second polarization state to change the intensity of the light of said second polarization state; and measuring the change in the intensity of the light of the second polarization state received at said detectors.

4,436,423

RING LASER GYROSCOPE SUSPENSION

Shri A. Kumar, Parsippany; Bo H. G. Ljung, and James G. Koper, both of Wayne, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Sep. 14, 1981, Ser. No. 301,608
Int. Cl.³ G01C 19/64
U.S. Cl. 356—350 **4 Claims**



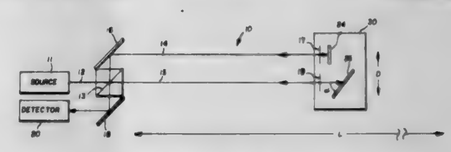
1. A ring laser gyroscope comprising:
- a generally triangular body having three apexes and an axis;
- a bore axially formed in the center of the body coaxially therewith;
- a generally cylindrically shaped hinge located within the bore coaxially therewith, the hinge including:
- a plurality of radially extending spaced wing sections for mounting the hinge;
- a plurality of arcuate segments, each segment bridging two adjacent wing sections and extending radially outwardly therefrom for contact with the bore, the segments subtending predetermined arcuate areas of contact with the bore, the segments being positioned in a preselected orientation so that the centers of the contact areas are located approximately midway between the apexes of the triangular body; and
- a plurality of slits longitudinally formed between the wing sections and the arcuate segments for permitting oscillating displacement of the body relative to the wing sections about the axis.

4,436,424

INTERFEROMETER USING TRANSVERSE DEVIATION OF TEST BEAM

Joachim Bunkenburg, Rochester, N.Y., assignor to GCA Corporation, Bedford, Mass.

Filed Jul. 27, 1981, Ser. No. 287,269
Int. Cl.³ G01B 9/02
U.S. Cl. 356—356 **13 Claims**



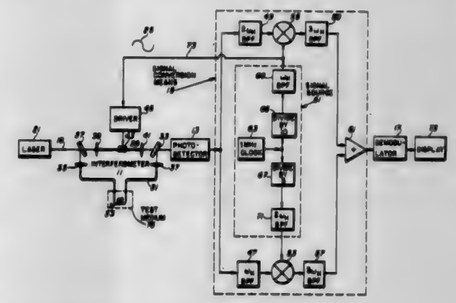
1. An interferometer using light divided into reference and test beams traveling different paths from which said beams are reflected and recombined for detecting interference fringes, the path for said test beam being arranged to change in length with deviation transverse to said test beam path, said interferometer comprising:
- a. a test-beam reflector formed as a reflective diffration grating;
- b. said diffraction grating being inclined relative to said test beam at the autocollimation angle of said grating so said grating reflects said test beam back on itself;
- c. means responsive to said deviation transverse to said test beam path for moving the region where said test beam is incident on said inclined grating; and
- d. said inclination of said diffraction grating being oriented relative to said test beam so that movement of said region where said test beam is incident on said inclined grating changes the path length of said test beam.

4,436,425

SIGNAL WAVEFORM DETECTOR USING SYNTHETIC FM DEMODULATION

James H. Cole, Great Falls, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1982, Ser. No. 362,813
Int. Cl.³ G01B 9/02
U.S. Cl. 356—361 **7 Claims**



1. A test signal waveform detector comprising:
- an interferometer for splitting into two parts a light beam from an external coherent light source, for modulating the phase

difference of the two parts by the waveform of a sinusoidal test signal and the waveform of a sinusoidal reference signal, the reference signal having a frequency ω_H and acting as a carrier to the test signal information, and for recombining the two parts of the split beam to form an interference pattern;

a photodetector disposed at the output of the interferometer and responsive to forming of the interference pattern for producing an ac signal that is proportional to the cosine of the phase difference of the recombined two parts of the split beam;

signal conversion means connected to the photodetector for converting the ac signal produced by the photodetector to another ac signal that carries the test signal information as an equivalent frequency modulation; and

a demodulator connected to the signal conversion means for extracting the test signal information from the other ac signal.

4,436,426

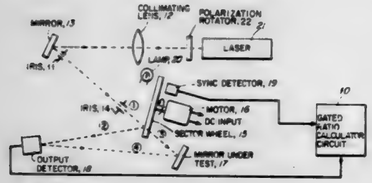
HIGH-PRECISION REFLECTOMETER

Irl W. Smith, Newton, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 866,893, Jan. 3, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,404

Int. Cl.³ G01B *11/30*; G01J *4/00*; G01N *21/55*

U.S. Cl. 356—369 **16 Claims**



1. A reflectometer for determining the reflectivity of reflecting means comprising:

means for producing a beam of light;

first and second reflecting means;

means for producing a first signal which is a function of the difference of the reflectivities of said first and second reflecting means;

means for producing a second signal which is a function of the product of said reflectivities; and

means for producing an output signal as a function of said first and second signals, said output signal being a function of the reflectivity of at least one of said first and second reflecting means.

4,436,427

PHOTOELECTRIC MEASUREMENT OF MOVING FILAMENTARY MATERIAL

Hermann Schwartz, Pfäffikon, assignor to Siegfried Preyer, Switzerland

Filed Feb. 9, 1982, Ser. No. 347,277

Claims priority, application Switzerland, Feb. 18, 1981, 1078/81

Int. Cl.³ G01B *11/10*

U.S. Cl. 356—385 **6 Claims**

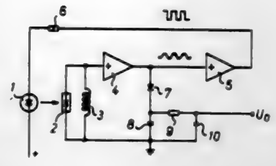
1. A method of measuring the diameter of longitudinally moving filamentary material including

providing a pulsed source of light and a photoresponsive detector facing and on opposite sides of a measuring gap,

running the filamentary material through the gap,

providing a resonant circuit coupled to the output of the photoresponsive detector for rejecting signals other than those resulting from the pulsed source of light, and

energizing the source of light with pulses from the same resonant circuit, thereby synchronizing the light pulses



from the source with the photoresponsive circuit to permit noise rejection.

4,436,428

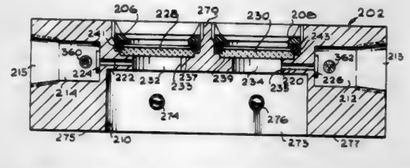
PHOTOACOUSTIC SPECTROMETER

Atsuo Watanabe, and Masahiro Uno, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 55,271, Jul. 6, 1979, abandoned, and a continuation-in-part of Ser. No. 55,272, Jul. 6, 1979, abandoned, and a continuation-in-part of Ser. No. 58,207, Jul. 17, 1979, abandoned. This application Nov. 25, 1980, Ser. No. 210,407

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—432 **1 Claim**



1. A photoacoustic spectometer including a mounting block and a detector block carried thereby, said mounting block having a vertically-oriented opening therethrough and a horizontal opening therein communicating with said vertical opening;

support means movably carried in said vertically oriented opening;

vertical adjustment means carried by said horizontal opening and engaging said support means for effecting vertical motion thereof;

said detector block being supported from said mounting block and have an overhanging portion, said overhanging portion including at least one opening therethrough;

said detector block including, in addition, a sample bed portion, said sample bed portion including a recess in the lower surface thereof adapted to receive said support and at least one upper recess in the upper surface thereof adapted to receive a sample dish, said upper recess being positioned to be, in use, aligned with said at least one opening in said overhanging portion of said detector block;

a window covering said upper recess;

an O-ring surrounding said window;

said sample bed portion including, in addition, a reference chamber;

a tunnel fluid-coupling said reference chamber to said upper recess;

a pair of thermo-sensitive elements supported at the reference chamber end of said tunnel and each having terminals for connection to external electrical circuits;

said reference chamber having means for connecting to an external source of a fluid;

said sample bed portion and said "O"-ring being forced into sealing engagement with said overhanging portion upon

upward movement of said support means by adjustment of said vertical adjustment means, to form a sealed chamber.

4,436,429

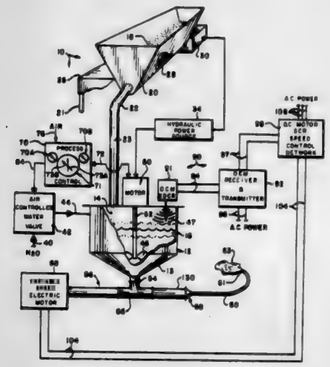
SLURRY PRODUCTION SYSTEM

William A. Strong, Rte. 11, Box 1150, Brinkley Rd., Pine Bluff, Ark. 71611, and Kenneth Church, Pine Bluff, Ark., assignors to William A. Strong, Pine Bluff, Ark.

Division of Ser. No. 262,754, May 11, 1981. This application Sep. 27, 1982, Ser. No. 424,400

Int. Cl.³ B01F *3/12*

U.S. Cl. 366—2 **11 Claims**



1. An automatic slurry production system comprising:

means for receiving a powdered or aggregate raw material material and a liquid to be mixed therewith whereby to form a slurry mixture;

agitator means for blending said slurry mixture;

hydraulic motor means for actuating said agitator means;

means for sensing hydraulic pressure variations experienced by said hydraulic motor means whereby to derive a control signal proportional to slurry viscosity;

valve means for controlling the introduction of liquid into said means for receiving a powdered or aggregate raw material, said valve means responsive to said control signal whereby liquid flow rate is generally proportional to the viscosity of said slurry mixture;

pump means for outputting slurry from said system;

means for regulating slurry output volume, said last mentioned means comprising:

sensing means for monitoring slurry head level within said means for receiving a powdered or aggregate raw material; and,

means responsive to said last mentioned sensing means for controlling the speed of said pump means whereby to control slurry output volume in response to said slurry head level.

4,436,430

DEVICE FOR THE CONTINUOUS MIXING OF A DRY FINISHED MORTAR

Karl M. Mayer, Immenhofen 55, 8951 Ruderatshofen, and Rudolf Schäfer, Blaichacher Str. 21, 8971 Burgberg, both of Fed. Rep. of Germany

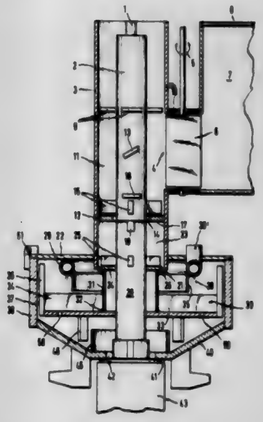
Continuation of Ser. No. 149,695, May 14, 1980, abandoned. This application May 11, 1982, Ser. No. 377,168

Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2920025

Int. Cl.³ B28C *5/08, 5/16*

U.S. Cl. 366—13 **10 Claims**

1. In a device for the continuous mixing of a powdery, dry mortar with a liquid and/or foam material, wherein said device includes a cylindrical mixing chamber having a circumferential wall and an outlet connected to a suction device and an axially disposed, motor-driven mixing shaft having mixing means, the improvement comprising said mixing chamber including a disc member surrounding said shaft and rotatable therewith, said disc member extending substantially perpendicular to said shaft and having on a face thereof opposite said outlet said mixing means, said mixing means comprising a plurality of generally upstanding and radially extending beaters being secured on said face of said disc member, each said beater



having a free outer edge, said free outer edges of said beaters and outer edge of said disc member being spaced from said mixing chamber wall to define an annular gap having a width just exceeding the largest grain diameter of the dry mortar, said mixing chamber comprising further an annular liquid supply member surrounding and radially spaced apart from said mixing shaft, and said mixing chamber including furthermore baffle means for diverting the material being mixed from said suction device.

4,436,431

SLURRY PRODUCTION SYSTEM

William A. Strong, Rte. 11, Box 1150, Brinkley Rd., Pine Bluff, Ark. 71611, and Kenneth Church, Pine Bluff, Ark., assignors to William A. Strong, Pine Bluff, Ark.

Division of Ser. No. 262,754, May 11, 1981, Pat. No. 4,397,561. This application Sep. 27, 1982, Ser. No. 424,278

Int. Cl.³ B01F *15/02*

U.S. Cl. 366—17 **2 Claims**

1. Automatic slurry mixing and pumping apparatus comprising:

vat means for receiving a powdered or aggregate raw incoming material and a liquid to be mixed therewith whereby to form a slurry mixture;

agitator means dispossed within said vat means for blending said slurry mixture;

hydraulic motor means for actuating said agitator means;

pump means in fluid flow communication with said vat means for outputting slurry from said apparatus;

variable speed electric motor means for driving said pump means;

means for automatically controlling output volume, said last mentioned means comprising:

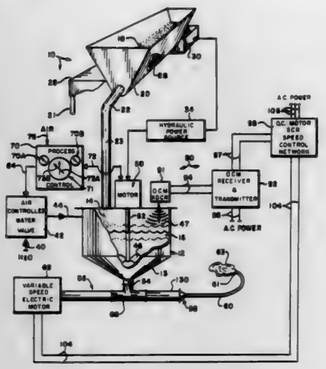
ultrasonic, open channel monitoring means for monitoring slurry head level within said vat means and for controlling said variable speed electric motor means in response thereto; and,

means responsive to said head monitoring means for controlling the speed of said pump means whereby to regulate the volume of slurry outputted from said apparatus; and,

means for continuously and automatically regulating slurry viscosity concurrently with operation of said means for controlling slurry output volume, said last mentioned means comprising:

means for sensing hydraulic pressure variations experienced by said hydraulic motor means hereby to derive a control signal proportional to slurry viscosity; and,

valve means for controlling the introduction of liquid in to said vat means, said valve means responsive to said control signal whereby liquid flow rate is generally proportional to the viscosity of said slurry mixture.



4,436,432

KNEADING MACHINE

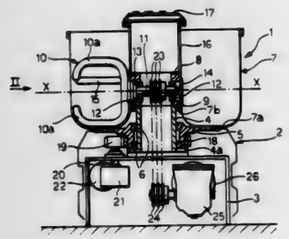
Amabile Drocco, Alba, Italy, assignor to Sancassiano S.p.A., Cuneo, Italy

Filed Nov. 13, 1981, Ser. No. 321,049

Claims priority, application Italy, Nov. 13, 1980, 68740 A/80

Int. Cl.³ A21C *1/06, 1/14;* B28C *1/16;* B29B *1/06*

U.S. Cl. 366—95 **6 Claims**



1. A kneading machine including:

a fixed support structure;

a kneading trough centrally supported by said support structure for rotation about a vertical axis, and

a rotary kneading tool located within said kneading trough, wherein the improvement comprises providing:

said kneading tool with means for rotating said tool about a substantially horizontal axis, and

said machine being further provided with fixed countermembers which comprise two arms supported in a substantially horizontal plane by a central shaft and disposed at both sides of said kneading tool, said fixed countermembers cooperating with said kneading tool to separate the dough entrained by said tool during rotation, wherein the axis of rotation of said kneading tool extends substantially radially of the vertical axis of rotation of said kneading trough.

4,436,433

BLENDING OF FLUID MATERIALS

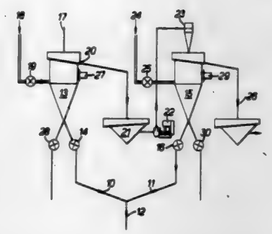
George D. Barnes, Camberley, England, assignor to Wilkinson Rubber Linatex Limited, Great Britain

Filed Feb. 3, 1982, Ser. No. 345,407

Claims priority, application United Kingdom, Feb. 9, 1981, 8103909

Int. Cl.³ G05D *11/02*

U.S. Cl. 366—152 **20 Claims**



1. Apparatus for treating a particulate material, the constituent particles of which are of non-uniform size, in order to obtain at least one product which meets a desired particulate specification, the apparatus comprising a classifier which separates the partculate material into a relatively coarse underflow fraction and a relatively fine overflow fraction, and which has control means for varying as required the flow of the underflow fraction from the classifier, the apparatus further comprises at least a first and a second one of said classifier, the said first classifier having a first control means for varying as required the flow of a first underflow fraction from the said first classifer and the second classifier having a second control means for varying as required the flow of a second underflow fraction from the said second classifier, means for blending the consequent first and second underflow fractions including means for controlling the first and second control means so as to maintain during blending a chosen blend ratio between the rate of flow of the first underflow fraction and the rate of flow of the second underflow fraction, and means for dumping such underflow fraction as is surplus to blending requirements.

15. Apparatus to control blending of supplies of at least a first and a second fluid material comprising (1) at least a first flow control valve actuable by a first valve signal for controlling a flow of said first material and a second flow control valve actuable by a second valve signal for controlling a flow of said second material, (2) ratio-setting means for securing a chosen ratio between a rate of flow of the first fluid material through the first valve and a rate of flow of the second fluid material through the second valve and thereby obtain a desired blend of material upon mixing the said flows downstream of said valves, and (3) check means for sensing periods of time when one or more of the said supplies is not adequate for obtaining the desired blend and for halting blending until the supplies are adequate.

4,436,434

PNEUMATIC TIMER

Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany, and Hans-Heinrich Glättli, Seestrasse 252, CH-8700 Kilsnacht, Switzerland

Filed Jul. 26, 1982, Ser. No. 401,668

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129663

Int. Cl.³ G04B *1/26*

U.S. Cl. 368—65 **13 Claims**

1. A pneumatic timer having

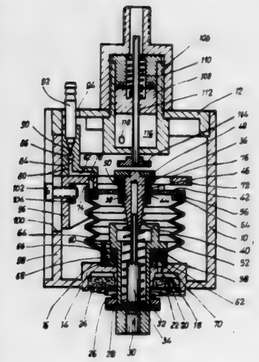
a housing,

a bellows supported by said housing and able to be changed in length along a bellows axis with a change in the amount of air within a space in the said bellows,

a spring for causing a change in length of said bellows with motion thereof along said axis,

an air valve joining said space within said bellows with the atmosphere,

a bellows driving unit for opening said valve and producing a change in the length of said bellows along said bellows axis against said spring with an exchange of air between the space inside said bellows and the atmosphere, said driving unit then moving into a starting position thereof,



an adjustable choke joining said bellows space with the atmosphere,

a sensing unit for sensing the end of a change in the length of said bellows as produced by said spring,

and a stop for limiting motion of said bellows as produced by said spring, said stop and said sensing unit being a one-piece structure, said stop being adjustably fixed to and in said housing so that it may be moved along said axis.

4,436,435

ANALOG AND DIGITAL DISPLAY TIMEPIECE

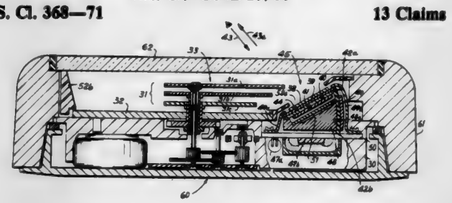
Kenichi Ushikoshi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

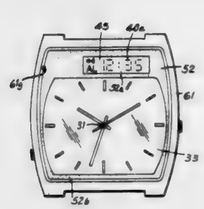
Continuation of Ser. No. 147,881, May 8, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 430,426

Claims priority, application Japan, May 8, 1979, 54-61172; Oct. 11, 1979, 54-131001

Int. Cl.³ G04B *25/00*

U.S. Cl. 368—71 **13 Claims**





1. A hybrid display watch comprising:

a watch case having an upper display surface and an interior, said display surface having at least one display opening;

a transparent cover panel within said display opening;

watch movement means including at least timekeeping circuit means and a gear train and motor for driving an analog display, and driving circuit means for driving a digital display, said movement disposed within said interior;

analog display means disposed within said interior between said movement and said transparent cover panel in registration with said display opening, said analog display means including a substantially planar analog dial covering at least a portion of said movement and at least an hour hand and a minute hand, said hands driven by said gear train and motor; and

liquid crystal digital display means within said interior between said movement means and said transparent cover panel in the space occupied by said hands, said digital display means driven by said driving circuit means in said movement means and disposed adjacent said analog display means in registration with said at least one display opening, said digital display means occupying a smaller surface area than that of said analog display and mounted to said watch movement means and disposed in a direction of 12 o'clock of said analog display, the face of the liquid crystal digital display means being inclined to the direction of six o'clock with respect to said dial so that one side of the liquid crystal digital display means is adjacent to the dial and the other side of the display means is adjacent to the under surface of the transparent cover panel and further, said digitsal display and said hands being disposed in the same region defined by the space between said cover panel and said analog dial.

4,436,436

DETECTION CIRCUIT FOR AN ELECTRONIC TIMEPIECE

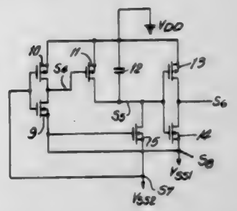
Masuo Kitano, Matsumoto, Japan, assignor to Shimauchi Seiki Kabushiki Kaisha, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Sep. 2, 1982, Ser. No. 414,208

Claims priority, application Japan, Sep. 3, 1981, 56-138909; Jun. 16, 1982, 57-103625

Int. Cl.³ G04B *1/00;* H03K *17/22*

U.S. Cl. 368—204 **8 Claims**



1. In an electronic timepiece comprising an oscillator circuit outputting a standard frequency signal, a divider network dividing down said standard frequency signal to provide timekeeping data, display means for displaying at least said timekeeping data, a battery, said battery when applied, providing power to operate said electronic timepiece, a voltage circuit for boosting the voltage out of said battery, operation of said voltage boosting circuit being subject to input thereto of a frequency signal derived from operation of said oscillator circuit, the improvement therein comprising:

a detection circuit for detecting the application of said battery in said timepiece, said detection circuit including:

a capacitor having first and second terminals;

a first switching element in parallel with said capacitor, said

first switching element when OFF being an open circuit and when ON being of low resistance;

a second switching element electrically connected at one end to said second capacitor terminal, boosted voltage terminals of said voltage circuit being electrically connected respectively to said first capacitor terminal and to the other end of said second switching element;

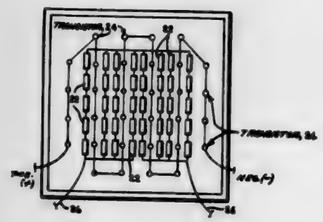
circuit means operating in a first mode turning said first switching element OFF and said second switching element ON when said boosted output at said voltage circuit terminals exceeds the voltage of said battery, and in a second mode turning said first switching element ON and said second switching element OFF when said output at said voltage circuit terminals is less than said battery voltage, said capacitor charging through said second switching element in said first mode, charging of said capacitor to a selected level in said first mode causing an output signal indicative of battery application and operation of said oscillator circuit.

4,436,437

HIGH ENERGY SINGLE PULSE LASER CALORIMETER

William R. Beggs, Albuquerque, N. Mex., and Barry D. Crane, USAF Academy, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1981, Ser. No. 286,818
Int. Cl.³ G01J 5/24; G01K 17/00
U.S. Cl. 374—32 3 Claims



1. A high energy, single pulse laser calorimeter apparatus comprising in combination:

an energy absorbing means for absorbing the energy in a laser beam, said energy absorbing means converting the energy in said laser beam to a heat signal,

an energy equilibrating means to receive and absorb said heat signal,

a bonding means to bond said energy absorbing means and said energy equilibrating means together, said bonding means being thermally conductive, and,

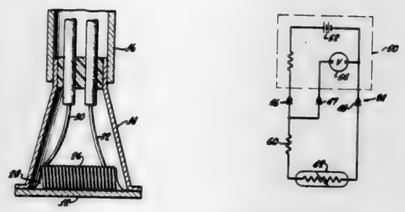
a heat sensing means to receive said heat signal from said energy equilibrating means, said heat sensing means detecting and converting said heat signal to a voltage signal, said heat sensing means comprising a plurality of transistors of which the base and emitter leads between respective adjacent transistors are connected together to form a series circuit of diode junctions, and a constant current source to forward bias said series circuit of diode junctions to provide a voltage drop thereacross.

4,436,438

MULTIPLE PROBE TEMPERATURE MEASURING SYSTEM AND PROBES THEREFOR

Henry P. Voznick, Arcadia, Calif., assignor to Wahl Instruments, Inc., Culver City, Calif.

Filed Jul. 21, 1981, Ser. No. 285,531
Int. Cl.³ G01K 7/20
U.S. Cl. 374—165 8 Claims



1. A resistance heat measuring system comprising

a plurality of independent, individually separate and mutually unconnected probes including at least an immersion probe and a surface probe, each said probe having a probe body and a resistive sensor mounted therein, said immersion probe sensor having a nominal resistance at a reference temperature and a nontemperature varying resistor connected in series therewith,

a first detachable electrical connector attached to said immersion probe body and electrically connected to the immersion probe sensor,

a second detachable electrical connector attached to said surface probe body and electrically connected to the surface probe sensor,

a meter for indicating temperature in accordance with measured resistance of a probe sensor, said meter being calibrated to the resistance temperature curve of a resistive sensor having said nominal resistance at said reference temperature,

means including said connectors for alternatively and detachably connecting one or the other of said probes to said meter,

said surface probe sensor having a resistance at said reference temperature that is substantially the same as the sum of the resistance of said immersion probe sensor, and said nontemperature varying resistor at said reference temperature whereby the resistance of said surface probe sensor changes at a greater rate with equal temperature changes in said sensors than does the resistance of said immersion probe sensor to thereby decrease errors due to loss of heat from said surface probe body to ambient atmosphere when said surface probe is connected to the meter and said surface probe body is in contact with a surface of which temperature is to be measured, and whereby each said probe may be interchangeably and individually connected to said meter for temperature measurement without changing calibration of the meter.

4,436,439

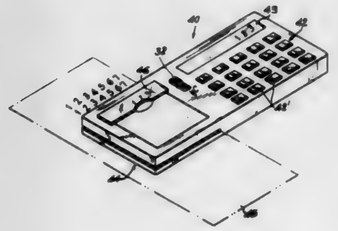
SMALL PRINTER

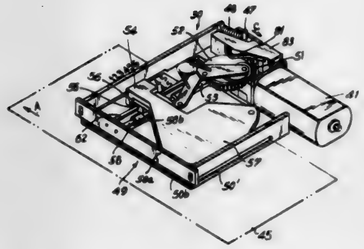
Haruhiko Koto, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Aug. 26, 1981, Ser. No. 296,610
Claims priority, application Japan, Aug. 27, 1980, 55-117890; Aug. 27, 1980, 55-117891
Int. Cl.³ G01D 15/18
U.S. Cl. 400—126 66 Claims

1. A printer for printing characters on a printing medium comprising a frame, carriage means slidably mounted on said frame for reciprocal lateral displacement across said printing medium, a first end of said carriage means being slidably

mounted on said frame, said carriage means including a second end pivotally coupled to said frame, printing means carried on said carriage means for selectively printing characters at predetermined positions along lines of said printing medium, motor means for providing a rotary motion, coupling means coupling said motor means to said carriage means for selectively converting the rotary motion of said motor means into non-uniform reciprocation of said carriage means so that said printing means reciprocates through said predetermined positions, said coupling means being a crank means including a





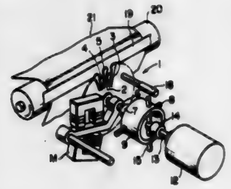
crank gear means rotatably mounted on said frame and engaged with said motor means for rotation thereby and a transmission lever means coupled intermediate said crank gear means and said carriage means for converting the rotation of said crank gear means into reciprocation of said carriage means, and printing position control circuit means for determining when said printing means is in each said predetermined position and for selectively supplying a printing signal to said printing means so that said printing means will print a character at said selected predetermined positions.

4,436,440

SHIFTABLE DAISY WHEEL PRINTER

Nobuo Iwata, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 27, 1981, Ser. No. 315,443
Claims priority, application Japan, Nov. 10, 1980, 55-157833
Int. Cl.³ B41J 1/24
U.S. Cl. 400—144.2 17 Claims



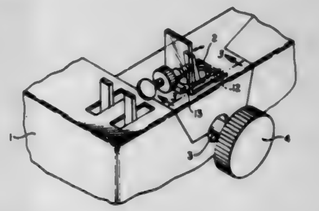
1. A printer including a type wheel carrying a multiplicity of fingers carrying type in a plurality of tiers and centrally provided with a rotary shaft, means for achieving a printing operation by imparting to the type wheel a motion to select one of the plurality of tiers and a rotary motion to select one of the muliplicity of fingers; characterized in that said means includes a rotatable drive shaft for transmitting torque to said rotary shaft of the type wheel through a joint comprising a pair of pins substantially orthogonal to each other and a coupling member having portions slidably receiving each of said pins, said portions being spaced radially outwards from each of said shafts.

4,436,441

TYPEWRITER ACCESSORY DEVICE FOR BOLD FACE TYPING

George R. Robert, 11 Hackfeld Rd., Worcester, Mass. 01609

Filed Jul. 6, 1982, Ser. No. 395,680
Int. Cl.³ B41J 7/18
U.S. Cl. 400—304 3 Claims



1. A device for creating bold type for use with a typewriter having a half-space lever, the device comprising: (a) a frame adapted to be positioned adjacent the half-space lever said frame having: (i) a base with securing lugs affixed to said base, and (ii) a support member integral with said base, (b) first means adjustably mounted on said support member for contacting said lever, (c) and second means for securing said first means into a pre-selected position with respect to said support member.

4,436,442

DIRECTORY HOLDER

Ronald A. Miskin, 1722 Roberta St., Salt Lake City, Utah 84115

Continuation of Ser. No. 159,960, Jun. 16, 1980, abandoned, which is a continuation of Ser. No. 892,997, Apr. 3, 1978, abandoned. This application Sep. 29, 1982, Ser. No. 427,585
Int. Cl.³ B42F 13/00
U.S. Cl. 402—73 10 Claims



1. A directory holding device for containing, preserving and securing a directory such as a telephone directory, said directory holding device comprising:

(a) bed means adapted to receive a directory;

(b) cover means;

(c) hinge means adapted for hingedly attaching said cover means, along one side thereof, to a mutually respective

side of said bed means, so that the cover means can be moved from a closed position in which it substantially overlies said bed means to an open position in which it lies substantially adjacent to said bed means, whereby said cover means is adapted to cover the directory when said cover means is in the closed position overlying said bed means and to receive any portion of the directory when said cover means is in the open position lying adjacent to said bed means;

(d) flange support means at the respective bottom ends of said bed means and said cover means for supporting the pages of a directory when any portion of said directory is received in said bed means and said cover means;

(e) positioning pin means comprising a generally inverted U-shaped member having a front portion and a straight back portion which is bent back over said front portion, with said straight back portion being adapted to serve as a hinge pin in said hinge means, whereby said positioning pin means may pivot about the hinge line of said hinge means, and with said front portion of said positioning pin means being adapted to extend downwardly between pages of the directory to maintain the top side of the directory in a proper position;

(f) cradle pin means comprising an elongate pin member having a straight central portion with opposite end portions which are bent back in opposite directions over the central portion so as to form a top loop defined by one of the end portions and the central portion and a bottom loop defined by the other end portion and the central portion, with the one end portion forming said top loop serving as a hinge pin in said hinge means whereby said cradle pin means is adapted to pivot about the hinge line of said hinge means, and whereby the other end portion forming said bottom loop being adapted to extend upwardly between pages of the directory such that the directory is supported by said bottom loop; and

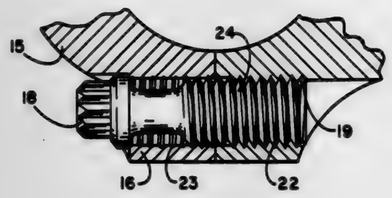
(g) security means adapted to prevent easy removal of said positioning pin means from said hinge means and subsequently easy removal of a directory from said directory holding device, said security means comprising an elongate tab means mounted for movement from a first position to a second position, wherein in said first position a portion of said tab means extends over said positioning pin means blocking the removal of said positioning pin means from said hinge means, and wherein in said second positon, the tab means clears said positioning pin means so that said positioning pin means can be removed from said hinge means.

4,436,443

CONNECTING ROD

Daniel F. McCormick, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Nov. 15, 1982, Ser. No. 441,343
Int. Cl.³ F16B *19/02*
U.S. Cl. 403—14 **10 Claims**



1. A connecting rod assembly for connecting a piston to a crankshaft, said assembly comprising:

(A) a connecting rod having a first threaded bore, said first bore including female threads;

(B) a connecting rod having a second threaded bore aligned with said first threaded bore, said second bore including female screw threads, said rod and cap joining together to form a circular bearing surface; and

(C) a bolt having male screw threads, a first segment of said male threads engaging the female threads of said first threaded bore and a second segment of said male threads engaging the female threads of said second threaded bore, one of said threaded bores or one of said segments of male threads having truncated threads to reduce the length of engagement of the corresponding threads with said truncated threads and to act with the corresponding threads to distort said engaging threads as said bolt is tightened;

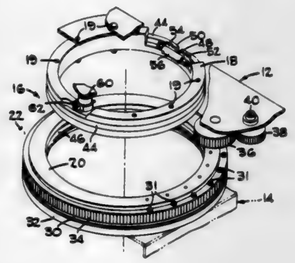
thereby providing a centering action to assure alignment of said first bore and said second bore and a locking action to resist loosening of said bolt.

4,436,444

MECHANISM FOR CONNECTING AND DISCONNECTING CRANE SECTIONS

Edward P. Scherrer, North Liberty, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Jan. 25, 1982, Ser. No. 342,298
Int. Cl.³ F16D *1/00*; F16G *11/00*
U.S. Cl. 403—24 **14 Claims**



1. In a crane having a split locking ring for assembling and disassembling the crane upper respectively to and from the crane lower, a first hydraulic ram connected between the free ends of the ring to exert substantially circumferencial forces to expand and contract the ring; the improvement comprising:

a second hydraulic ram arranged to exert a substantially radial force on said ring when assembling said crane.

4,436,445

STUD ANCHOR FOR SECURING A HOLLOW NON-ROUND EXTENSION BASE

Arthur R. Templeman, Overland Park, Kans., assignor to Peterson Manufacturing Co., Grandview, Mo.

Filed Nov. 3, 1981, Ser. No. 317,888
Int. Cl.³ F16B *7/08*; F16L *41/00*
U.S. Cl. 403—189 **8 Claims**

1. A stud anchor in an operational combination with a hollow extension and a mounting bracket, wherein said stud anchor firmly connects said hollow extension to said mounting bracket;

(a) said stud anchor comprising an anchor member having a base, a shank, and a head; a biasing member; and anchor member securing means;

(1) said base being on an end of said anchor member abutting said mounting bracket; said base having a locking means comprising a non-round lug depending from said base and adapted to snugly mate with an aperture in said mounting bracket, thereby preventing free rotation of said anchor member relative to said mounting bracket and ensuring proper orientation of said stud anchor relative to said mounting bracket;

(2) said shank being an extension between said base and said head of said anchor member;

(3) said head including a plurality of resiliently deformable segments flexibly attached to said shank, said segments each having an outer wall surface;

(4) said biasing member having selective activation means adapted for selective biasing of said segments outwardly from an axis of said anchor member and into frictional engagement with said hollow extension;

(5) said anchor member securing means adapted for selective, secure attachment of said anchor member to said mounting bracket;



(b) said hollow extension having inner wall surfaces snugly enclosing said stud anchor; said stud anchor is operably positioned in the extension and with an end of said hollow extension being of configuration requiring fixed and predetermined orientation relative to said mounting bracket; said non-round lug on said anchor member controlling and fixing said orientation;

(c) whereby when said segments are selectively biased outwardly by said biasing member into frictional engagement with said hollow extension inner wall surfaces, said stud anchor securely retains said extension onto said mounting bracket.

4,436,446

ADJUSTABLE, QUICK-RELEASE BARRIER CLAMP

James R. Gordon, 301 W. Boling, Benton, Ill. 62812

Filed Sep. 21, 1981, Ser. No. 303,833
Int. Cl.³ B25G *3/36*; E04G *7/00*
U.S. Cl. 403—384 **10 Claims**

1. An adjustable quick-release clamp which clamps a barrier member to a base, comprising:

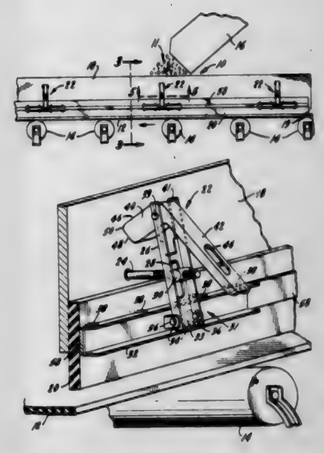
a clamp support member affixed to and projecting outwardly from the base;

an elongated main lever having a central aperture through which the clamp support member projects;

a retainer member, mounted on the clamp support member outwardly of the main lever in position to retain the main lever on the clamp support member and acting as a fulcrum for the main lever, the retainer member being adjustably mounted on the support member for movement toward and away from the base adjusting the fulcrum for the main lever to accommodate barrier members of varying thickness, and permitting adjustment of the clamping pressure;

gripper means mounted on a first end of the main lever, on the side of the main lever facing the base, adapted to engage a barrier member;

an overcenter toggle cam, pivotally mounted on the second end of the main lever for movement between a release position, affording minimal spacing between the base and the second end of the main lever, and a range of clamp positions in which the cam holds the second end of the main lever at a substantial displacement from the base, movement of the cam to a clamp position causing the main lever to engage the retainer member and pivot about the retainer member as a fulcrum, moving the first end of the



main lever toward the base so that the gripper means securely clamps the barrier member to the base;

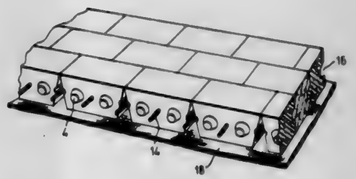
and a handle lever, attached to the cam, for manually pivoting the cam between its release and clamp positions.

4,436,447

EROSION CONTROL BLOCKS

Robert E. Crowe, Milton, Canada, assignor to Terrafix Erosion Control Products, Inc., Islington, Canada

Filed Jul. 14, 1981, Ser. No. 283,271
Claims priority, application Canada, Sep. 17, 1980, 360539
Int. Cl.³ E02B *3/14*
U.S. Cl. 405—16 **8 Claims**



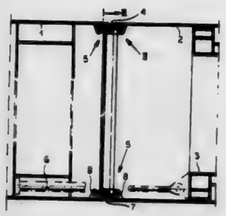
1. A concrete erosion control block having a pair of parallel opposed oblong rectangular outer surfaces, a pair of parallel opposed side surfaces extending lengthwise of said outer surfaces, a pair of longitudinally spaced frustoconical spigots formed on one of said parallel side surfaces and at least one longitudinally elongated slot in the opposite side surface, the spigots and the at least one slot being located to interengage respectively with slots and spigots of similar quincuncially related blocks when the blocks are layed in bond in adjacent parallel courses with their outer surfaces substantially in common planes, whereby to permit relative movement of said courses in a direction parallel to said side surfaces and relative angular movement between adjacent blocks in both the same and adjacent courses, whilst restraining movement of individual blocks out of said common planes.

4,436,448

EXCAVATING MACHINE FOR TUNNELS AND GALLERIES

Wolf Magnus, Tangstedt-Wilstedt; Otto Braach, Heiligenhaus; Dirk Fischer, Burgwedel, and Werner Wippig, Lehrte, all of Fed. Rep. of Germany, assignors to Hochtief AG, vorm. Gebr. Helfmann, Essen and Bade & Theelen GmbH, Lehrte, both of, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,462
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952744
Int. Cl.³ E02D 9/06
U.S. Cl. 405—143 2 Claims



1. In a machine for excavating tunnels and galleries and comprising a shield advanced along an excavated stretch by hydraulic means braced against a pressure ring, the improvement wherein said shield comprises in combination:

at least two annular shell sections separated axially from one another and defining a separation gap;

a seal bridging said gap;

a plurality of peripherally spaced piston-and-cylinder arrangements bridging said gap and braced at opposite ends against said shell sections, each of said piston-and-cylinder arrangements being a double-acting hydraulic cylinder; and

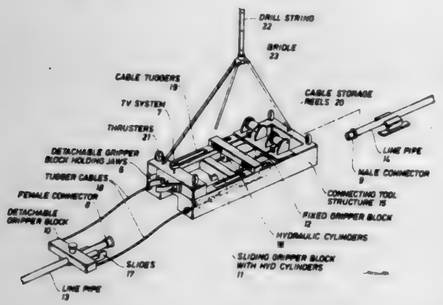
means forming at least one closed passive hydraulic network and connected to said piston-and-cylinder arrangements to connect said double-acting cylinders in parallel for enabling variation in the effective lengths thereof to permit angular offsetting of axes of said shell sections.

4,436,449

DRILL SHIP PIPE CAPTURE

Arren F. Smoot, and Sijtze De Jong, both of San Jose, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 22, 1982, Ser. No. 452,245
Int. Cl.³ F16L 1/00; B23P 19/04; B63C 11/00
U.S. Cl. 405—170 12 Claims



1. A method for aligning a pipe string with a previously installed pipe segment comprising:

positioning an end of the pipe string within a predetermined range of an end of the pipe segment;

attaching a first gripper block to the end of the pipe string;

moving an alignment tool over to the pipe segment while paying out connecting means between the alignment tool and the first gripper block;

attaching a second gripper block of the alignment tool to the end of the pipe segment;

tensioning the connecting means to draw the end of the pipe segment and the end of the pipe string within close proximity of each other;

attaching a third gripper block of the alignment tool to the end of the pipe string, the second gripper block and the third gripper block being in a spaced-apart position; and

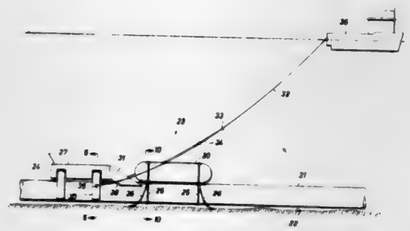
drawing the second gripper block and the third gripper block toward each other, thereby aligning the end of the pipe string with the end of the pipe segment.

4,436,450

APPARATUS AND METHOD FOR REMOVING BUOYANCY MODULES FROM SUBMERGED PIPE

Don C. Reed, Humble, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Aug. 21, 1981, Ser. No. 294,968
Int. Cl.³ F16L 1/04; B63B 21/52
U.S. Cl. 405—171 11 Claims



1. Apparatus for releasably attaching a buoyant module to a submerged pipeline. comprising:

a first strap wrapped over the top of the module;

a second strap wrapped around the underside of the pipeline;

a first link connected between one pair of opposing ends of said first and second straps, said first link being breakable upon application thereto of a preselected tension greater than that exerted thereon by the positive buoyant force of the module;

a second link releasably connected between the other pair of opposing ends of said first and second straps; and

means for releasing said second link from between said first and second straps in response to the first link being broken.

4,436,451

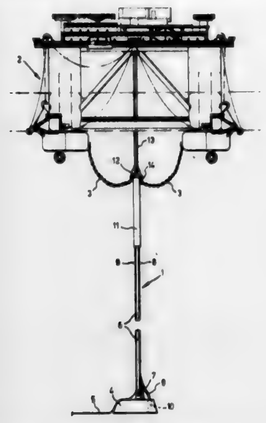
SELF-STANDING MARINE RISER

Harold E. Anderson, 26 Dover St., London, England W1X 3PA

Filed May 18, 1981, Ser. No. 264,867
Claims priority, application United Kingdom, Feb. 20, 1980, 8005655
Int. Cl.³ E21B 7/12
U.S. Cl. 405—195 14 Claims

1. A self-standing marine riser which comprises a base, a riser column, a flexible joint between the base and the riser column, and a plurality of catenary chains attached to the top of the riser column for providing a loose coupling between the top of the riser column and a surface structure including a vessel, rig, platform and the like on the surface above the location of the riser, said chains providing a direct connection between said riser column and said surface structure, said riser

column comprising a lower relatively slender column section and an upper column section which includes at least one variable buoyancy chamber, said riser supporting at least one conduit for the conveyance of a fluid.

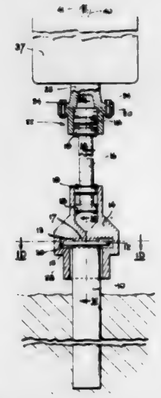


4,436,452

SONIC PILE DRIVER SYSTEM EMPLOYING RESONANT DRIVE MEMBER AND PHASED COUPLING

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Jul. 12, 1982, Ser. No. 397,563
Int. Cl.³ E02D 7/18
U.S. Cl. 405—232 15 Claims



1. A sonic system for driving an elongated member into earthen material comprising

means for generating sonic energy,

an elongated compliant resonator member,

means for coupling sonic energy from said generating means to said compliant resonator member, the frequency of said sonic energy being such as to cause resonant longitudinal standing wave vibration of said resonator member,

coupler member means for coupling sonic energy from the resonator member to the elongated member and,

means for adjusting the coupling of sonic energy to the elongated member to a preselected fractional portion of the total vibrational cycle of said resonant member,

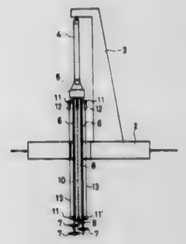
said elongated member being driven non-resonantly along the longitudinal axis thereof during said predetermined fractional portion of the vibrational cycle.

4,436,453

MACHINE FOR AND METHOD OF HARDENING SOFT GROUND IN DEPTHS

Mituo Miura; Yoshinori Kukino, and Takumi Fujii, all of Tokyo, Japan, assignors to Takenaka Komuten Co., Ltd. and Takenaka Doboku Co., Ltd., both of, Japan

Filed Mar. 8, 1982, Ser. No. 355,648
Int. Cl.³ E02D 3/12
U.S. Cl. 405—263 5 Claims



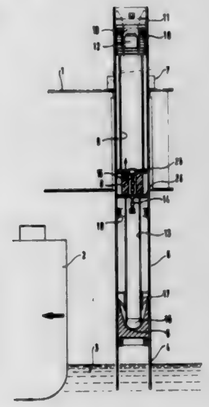
1. A machine for hardening the soft ground in depths, having elongated agitation shafts provided with agitation vanes at lower portions thereof and fastened rotatably to an elongated support cylinder, a rotary driving means to which the upper ends of said agitation shafts are connected, and a hardener supply unit adapted to discharge a hardener in the vicinity of said agitation vanes, comprising suitable pairs of brackets provided on the outer circumferential surfaces of upper and lower end portions of said support cylinder so as to project outward therefrom, and connecting means for joining together via jacks said pairs of brackets each pair of which are vertically opposed to each other, said jacks being adapted to be expanded and contracted so as to correct the direction in which a lower end portion of said machine is inserted into the soft ground.

4,436,454

DEVICE FOR POSITIONING AN OFF-SHORE PLATFORM ON ITS SUPPORT STRUCTURE

Jean-Louis Ninet, and Robert Vaillant, both of Nantes, France, assignors to Ateliers et Chantiers de Bretagne-ABC, Nantes, France

Filed Aug. 24, 1981, Ser. No. 295,456
Claims priority, application France, Dec. 23, 1980, 80 27347
Int. Cl.³ E02D 21/00
U.S. Cl. 405—204 9 Claims



1. A device for positioning an off-shore platform on a previ-

ously-installed support structure, said support structure including vertically upstanding legs, said platform having support piles designed to axially align with and to rest on the legs of the support structure, said platform further comprising means for moving said piles vertically to move said piles downwardly towards said legs and for locking said piles at an axially displaced position with respect to said platform, said legs including upwardly open centering cones, each pile being constituted by a hollow tube, a rod slidably positioned coaxially within said tube, said rod terminating at its lower end in a centering pin for reception within said centering cone of said leg, a resilient, compressible shock-absorbing component fixed to said rod and operatively interposed between said rod and said hollow tube, and means for effecting controlled sliding of said rod bearing said reslient, compressible shock-absorbing component within said hollow tube to effect precompresion of said shock-absorbing component during transport of said platform to the situs of said previously installed support structure and for facilitating final positioning of said pile against said leg without impact and for taking up the load of the platform as transmitted to the leg to facilitate welding of said pile to said leg at the interface between the pile hollow tube and said leg about said centering cone.

9. A process for positioning of an off-shore platform on a previously installed support structure, said support structure including vertically raised legs, said platform having support piles corresponding to said legs and intended to rest on said legs of said support structure, and means for mounting said piles on said platform for vertical movement to said platform and for selective locking of said piles in position on said platform, and wherein each pile is constituted by a tube bearing a slidable rod abutting a shock-absorbing component and having means for controlled sliding of the rod in said pile, and wherein the lower part of the rod contains a centering pin extending beneath the lower end of the pile for reception within a support cone borne by said leg, said process comprising, during transport of said platform:

partially compressing said shock-absorbing component by the weight of the platform and by operation of said means for effecting controlled sliding of said rod within said pile,

partially releasing the precompression of said shock-absorbing component when the piles are aligned with said legs,

driving said piles vertically downwardly relative to said platform to engage the centering pin of said hollow rod with the support cone of said leg, while completely compressing said shock-absorbing component,

effecting controlled sliding of said rod to partially release the compressed shock-absorbing component and to remove the clearance between the pile and said leg,

welding said pile to said leg,

cutting said pile subsequent to platform installing, and

removing and hoisting said hollow rod and said shock-absorbing component from the interior of said pile for subsequent re-use without affecting the positioned offshore platform relative to the support structure.

4,436,455

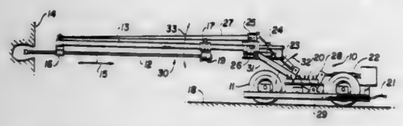
UNIVERSALLY POSITIONABLE LOW PROFILE MINE DRILLING MACHINE AND METHOD

Ershell C. Vance, Box 86, Jewell Ridge, Va. 24622

Continuation-in-part of Ser. No. 142,871, Apr. 23, 1980. This application Mar. 15, 1982, Ser. No. 358,239

Int. Cl.³ E21D *11/00*; E21B *7/00*

U.S. Cl. 405—303 **4 Claims**



1. The method of bracing the walls of a mine tunnel having a floor and walls defining a tunnel cross section of a predetermined height and width, by mounting support members in holes drilled at an acute angle to the tunnel walls, comprising the steps of,

(a) entering a steerable low profile mine drilling rig with a height less than the tunnel height and supported by two sets of rubber tired wheels with a wheelbase shorter than the tunnel width into the tunnel and supporting the rig on its rubber tires,

(b) extending from a position between the wheels of one wheel set a boom member of predetermined length to fit with said rig across the width of said tunnel carrying a drill movable along the length of the boom generally perpendicular to the wheel set and positionable at various angles relative to the tunnel walls by a mechanism carried by said rig,

(c) orienting the drilling rib transversely in the tunnel with the boom member directed generally across the width of the tunnel and manipulating the boom by means on the rig providing direction and support for the boom in a selected position to direct a drill into the walls,

(d) positioning the boom member with one end disposed to direct the drill into a wall at said angle,

(e) anchoring the other end of the boom from the drill on the floor of the tunnel to counteract drilling force, and

(f) drilling the holes at said angle into the walls for mounting the support members with the boom member anchored to the floor.

4,436,456

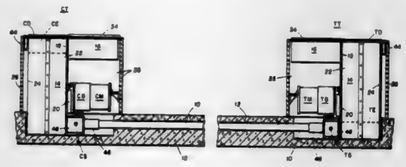
PNEUMATIC COMMUNICATION SYSTEM FOR BANKING AND THE LIKE

William D. Thomas, Marion, Iowa, assignor to Kidde, Inc., Clifton, N.J.

Filed Sep. 28, 1981, Ser. No. 306,289

Int. Cl.³ B65G *51/08, 51/26*

U.S. Cl. 406—19 **9 Claims**



1. In a pneumatic communication system having a pair of spaced apart first and second carrier terminals, each of the terminals defining an upright enclosure having upper and lower ends; a carrier transit tube interconnecting and opening into each terminal adjacent its lower end; first and second carrier elevators respectively in the first and second terminals and movable therein between upper positions adjacent the terminal upper ends and lower positions adjacent the terminal lower ends; a carrier for containing items to be transported back and forth between the terminals through the transit tube, each carrier elevator and the carrier having corresponding leading and trailing transverse ends with respect to each terminal and the respective directions of travel of the carrier through the transit tube, the carrier being receivable on each carrier elevator from the transit tube through an opening in the leading end of the carrier elevator when in its lower position and movable through the transit tube by pneumatic pressure upon the carrier trailing end, each carrier elevator with the carrier thereon being gravitationally descendable from its upper to its lower position and elevatable from its lower to its upper position by pneumatic pressure; first and second selectively operable releasable means respectively retaining the first and second elevators with the carrier thereon in their upper positions and releasable to allow the same to descend to their lower positions; and first and second selectively operable pneumatic pressure producing means communicating with the atmosphere and respectively associated with the first and second terminals, the system being characterized by: the first releasable means operating to allow the first carrier elevator with the carrier thereon to descend to its lower position; the first pressure producing means only thereupon operating to pneumatically communicate with the trailing end of the carrier when on the first carrier elevator at its lower position and thence with the transit tube through the first carrier elevator and said opening therein effective to propel the carrier from the first elevator and through the transit tube onto the second carrier elevator through said opening therein when the second carrier elevator is at its lower position; the second pressure producing means then also operating to pneumatically communicate with the second carrier elevator effective to elevate the same and the carrier thereon in the second terminal so that the operating first pressure producing means thereupon also pneumatically communicating with the second carrier elevator via the transit tube and together with the operating second pressure producing means elevates the second carrier elevator and the carrier thereon to its upper position, the second releasable means thereupon operating to retain the second carrier elevator and the carrier thereon in its upper position; the second releasable means operating to allow the second carrier elevator with the carrier thereon to descend to its lower position; the second pressure producing means only thereupon operating to pneumatically communicate with the trailing end of the carrier when on the second carrier elevator at its lower position and thence with the transit tube through the second carrier elevator and said opening therein effective to propel the carrier from the second elevator and through the transit tube onto the first carrier elevator through said opening therein when the first carrier elevator is at its lower position; the first pressure producing means then also operating to pneumatically communicate with the first carrier elevator effective to elevate the same and the carrier thereon in the first terminal so that the operating second pressure producing means thereupon also pneumatically communicates with the first carrier elevator via the transit tube and together with the operating first pressure producing means elevates the first carrier elevator and the carrier thereon to its upper position, the first releasable means thereupon operating to retain the first carrier elevator and the carrier thereon in its upper position; first and second vent means respectively associated with the first and second terminals and operable to vent the system ahead of the carrier to the atmosphere, each of the vent means having successive first, second and third stages of operation, the first stage of the second vent means operating while the first carrier elevator with the carrier thereon descends from its upper to its lower position upon release of the first releasable means, the second stage of the second vent means operating while the carrier is moving through the transit tube from the first to the second terminal, the third stage of the second vent means operating while the second carrier elevator with the carrier thereon is being elevated to its upper position, the first state of the first vent means operating while the second carrier elevator with the carrier thereon descends from its upper to its lower position upon release of the second releasable means, the second stage of the first vent means operating while the carrier is moving through the transit tube from the second to the first terminal, the third stage of the first vent means operating while the first carrier elevator with the carrier thereon is being elevated to its upper position, the second stages of operation of the first and second vent means being effective to control the speed of the carrier through the transit tube; and means controlling operation of the first and second pressure producing means, the first and second vent means, and the first and second releasable means, all as aforesaid.

4,436,457

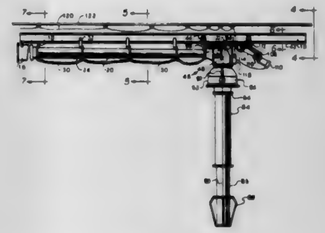
SUCTION PIPE

James T. Willingham, Lubbock, Tex., assignor to South Plains Sheet Metal, Inc., Lubbock, Tex.

Filed Nov. 17, 1981, Ser. No. 322,391

Int. Cl.³ B65G *53/52*

U.S. Cl. 406—116 **2 Claims**



1. An improved suction head comprising:

a. a top support box with

b. an upper flange adapted to be connected to a section of pipe,

c. said top support box having opposing, flat, parallel sides,

d. two co-axial support stub axles, one of the axles attached to each flat side,

e. said top support box having opposing, cylindrical sides co-axial with said stub axles,

f. a bottom hang box with

g. a lower flange adapted to be attached to a pick-up pipe,

h. said bottom hang box having opposing, flat, parallel sides,

i. two co-axial hang stub axles, one of the hang axles attached to each flat side of the hang box,

j. said bottom hang box having opposing, cylindrical sides co-axial with said hang axles,

k. a rectangular frame having

(i) two opposing, parallel sides designated as support sides, and

(ii) two opposing, parallel sides designated as hang sides,

l. said support sides of the frame journaled to said support axles,

m. said hang sides of the frame journaled to said hang axles,

n. a support seal flap attached to each of the support sides of the frame,

o. each of the support flaps rubbing against one of the flat sides of the support box on the outside of the frame and against one of the cylindrical sides of the hang box on the inside of the frame, and

p. a hang seal flap attached to each of the hang sides of the frame,

q. each of the hang flaps rubbing against a flat side of the hang box on the inside of the frame and against the cylindrical side of the support box on the outside of the frame.

4,436,458

LIQUID-SOLID CONTACTING APPARATUS

Lawrence W. Wisdom, Dallas, and Gordon R. Wilson, DeSoto, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Continuation of Ser. No. 972,404, Dec. 22, 1978, abandoned. This application Dec. 22, 1982, Ser. No. 452,329

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—135 **16 Claims**

13. Apparatus suitable for providing movement of a bed of solid particles substantially uniformly therethrough in a downwardly direction in contact with liquid comprising:

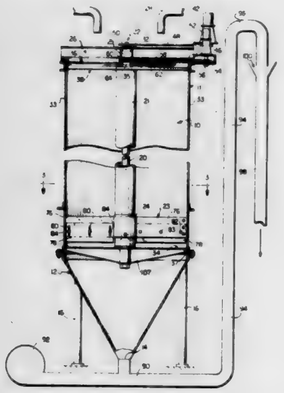
(a) a generally vertically-disposed vessel for containing a compact bed of solid particles for contact with liquid;

(b) a rotatable, generally horizontally-disposed lower disc means extending substantially throughout the cross-sectional area of a lower portion of the bed for supporting the bed, said lower disc means having at least one radially

extending, slot-like opening for passing solids therethrough from the bed, said opening having a substantially uniform slot width throughout substantially the entire radius of the cross-sectional bed area;

(c) scoop means fastened on said lower disc means and extending upwardly and over the entire radial length of said slot-like opening for deflecting a substantially uniform thickness of the solid particle bed downward through said opening in said lower disc means during one revolution of said lower disc means;

(d) means for rotating said lower disc means;



(e) vertically oriented, plate-like baffle means fixedly mounted over said lower disc means and extending horizontally just above said lower disc means substantially the entire radial dimension of the bed for preventing rotation of the bed while permitting uniform downward movement of the bed; and

(f) outlet means for discharging solid particles from the lower portion of said vessel below said lower disc means while maintaining liquid in said vessel at a substantial height above said lower disc means;

said baffle means further including an extendable portion which is adjustably secured so that said extendable portion is adjustable toward and away from the lower disc means.

4,436,459

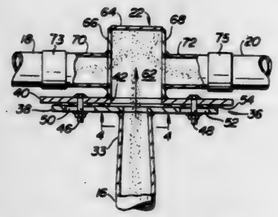
PNEUMATIC STREAM DIVIDER

Lawrence G. Caldwell, Devon, Pa., assignor to The Ducon Company, Inc., Mineola, N.Y.

Continuation-in-part of Ser. No. 837,066, Sep. 28, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,209

Int. Cl.³ B65G *53/56, 53/66*

U.S. Cl. 406—181 **10 Claims**



1. A system for dividing a dilute phase particulate laden pneumatic stream into branch streams having a predetermined amount of particulate comprising a primary conduit for conveying a particulate laden pneumatic stream to be divided, a dead pocket spaced from and aligned with the terminal end portion of said conduit, said pocket being closed at one end, second and third branch conduits communicating with said dead pocket at a location adjacent the terminal end of said first conduit and spaced from the closed end of said pocket, and means for adjusting the relative position of the longitudinal axis of said primary conduit with respect to the center of the closed end of said pocket to facilitate division of particulate in accordance with a desired ratio, said means facilitating shifting the primary conduit relative to the center of said pocket in a direction perpendicular to the center line of said primary conduit.

4,436,460

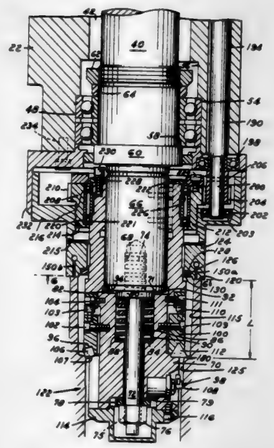
AUTOMATIC DEPTH COMPENSATING SYSTEM

Thomas A. Powell, Rockford, Ill., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jun. 11, 1981, Ser. No. 272,450

Int. Cl.³ B23B *41/12*

U.S. Cl. 408—14 **4 Claims**



1. A spindle head bore depth compensating assembly for controlling a predetermined bore depth dimension between an outer reference surface on a workpiece having a bore with an interior bore surface to be finish machined, the combination of: a spindle head slide (14) having a positive machine stop (93); a spindle head (22) carried by said slide including stop means (124) engageable with the outer reference surface; a spindle shaft (40) having a driven end (28) and frontal portion (71); bearing means (46, 48) at opposite ends of said spindle shaft for supporting said spindle shaft for axial movement and rotation relative to said spindle head; a tool holder body (70) having an outer circumference and one end insertable into the workpiece bore; connector means (72, 76) for connecting said tool holder body to said frontal portion; a spring cavity (90) in said tool holder body arranged concentrically of said connector means; mechanical spring means (84) in said cavity to spring load said tool holder whereby engagement pressure of said stop means (124) on the workpiece during a spindle head feed stroke is limited to the spring rate of said mechanical springs means as the spindle slide engages said positive machine stop; tool means (112) supported on the outer circumference of said tool holder for finish machining the interior bore surface; means (109) (110) for pre-setting said tool means at a fixed axial and radial position on said tool holder body; an adjustment sleeve (208) on said tool holder body; bearing means (220) for supporting said tool holder body for rotation within said adjustment collar and for axially fixing said adjustment sleeve with respect to said tool holder; and drive means for adjustably positioning said sleeve with respect to said stop means (124) to adjust the position of said stop means (124) axially of said sleeve (208) thereby to compensate for the depth of cut of said tool means (112).

4,436,461

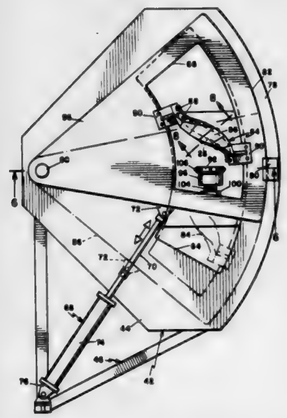
METHOD AND APPARATUS FOR FABRICATING FUSION REACTOR COILS

Michelangelo DiMartino, San Diego, Calif., assignor to Burt Precision Products, Inc., San Diego, Calif.

Filed Jun. 4, 1981, Ser. No. 270,236

Int. Cl.³ B23C *3/04;* B23D *1/02*

U.S. Cl. 409—132 **11 Claims**



9. A method for machining the surfaces of an elongate, generally helical shaped, rectangular cross-section metal work piece which is to partially encircle a toroid in both the poloidal and toroidal direction when finished, the work piece having an inside surface, an outside surface, and a pair of opposite side surfaces, the method comprising the step of:

supporting the work piece with its inside surface unobstructed;

moving the work piece in the toroidal direction;

cutting the entire inside surface of the work piece in the poloidal direction while the work piece is moving in the toroidal direction;

supporting the work piece with its outside surface unobstructed;

moving the work piece in the toroidal direction; and

cutting the entire outside surface of the work piece in the poloidal direction while the work piece is moving in the toroidal direction.

4,436,462

MULTI-STOP DEPTH CONTROL

Rafael Martinez, 101 Monroe St., Garfield, N.J. 07026

Filed Jan. 21, 1982, Ser. No. 341,164

Int. Cl.³ B23B *49/00;* B23C *1/06*

U.S. Cl. 409—218 **7 Claims**

1. A multi-stop depth control in combination with a milling machine having a quill frame, a fixed platform extending from the frame, a quill movable in a vertical direction in the frame having a projection extending beyond the frame with a through bore therein and a scale for indicating vertical distance, comprising:

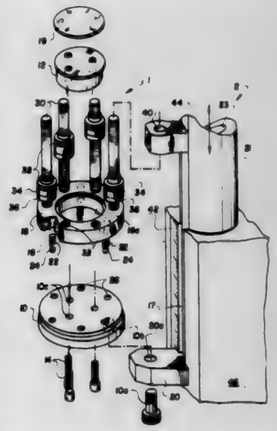
a base member fixed to the milling machine platform, the platform being vertically aligned with and below the projection;

a set wheel rotatably mounted to said base member;

position setting means connected between said wheel and said base member for establishing a plurality of firm rotary positions between said wheel and the milling machine frame;

a plurality of rods circumferentially spaced and extending upwardly from a top surface of said wheel each engageable with the quill projection through bore in one of said plurality or rotary positions when each rod is vertically aligned between the platform and the projection;

a vernier carrying element rotatably mounted on each rod and movable to any selected vertical position on each rod; and



element locking means connected to each vernier carrying element for locking each vernier carrying element at a selected vertical position on each rod respectively;

each vernier carrying element with respective rod movable into one of said plurality of said rotary positions to bring said vernier carrying element into close association with the milling machine scale for accurately setting the vertical position of each vernier carrying element on each respective rod;

each vernier carrying element functioning as a stop for abutment with the milling machine quill projection for stopping a vertical descent of the milling machine quill.

4,436,463

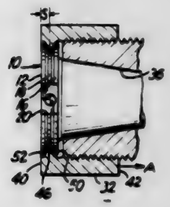
QUICK CHANGE TOOLING SYSTEM

Ike D. Rea, Mount Clemens, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Sep. 17, 1981, Ser. No. 303,080

Int. Cl.³ B23Q *3/12;* B23B *31/02*

U.S. Cl. 409—232 **10 Claims**



1. An assembly for facilitating the mounting and ejecting of cutting tools on a rotatable tool adaptor shank, said assembly comprising in combination;

an elongated tool adaptor shank having a gripping end and a driving end, with the outer surface of said shank being tapered towards said driving end and with said gripping end being defined by a cylindrical flange portion, said

flange portion having a V-shaped channel formed therein and extending circumferentially therearound, said flange portion further including a pair of opposed slots interrupting said flange portion and in communication with said channel, said slots for engaging a machine tool;

a spindle having a cylindrical configuration with the outer surface thereof being threaded and with the inner surface of said spindle being tapered and substantially conforming to the configuration of said driving end of said tool shank such that said driving end is freely receivable therein;

an elongated cylindrical nut having front and rear ends, with the inner surface of said nut, adjacent to said rear end thereof, being threaded and adapted to engage the threaded portion of said spindle and with the inner surface of said nut adjacent to the front end thereof, including two opposed projections extending radially inwardly, whereby with said driving end of said tool adaptor shank being inserted within said tapered inner surface of said spindle, and said nut being mounted over said tool adaptor shank, with said projections being initially received in said slots, said nut may be rotated causing said threaded portions of said nut and spindle to be interlocked while said projections become engaged in said channel thereby positively drawing and securely locking said tool adaptor shank within said spindle; and

wherein the distance between the front end and projections of said nut corresponds to the spacing between the center of said channel and the front surface of said gripping end of said shank so that said front end and front surface are coplanar when said projections are in said channel, to thereby facilitate the mounting of the cutting tools.

4,436,464

CLAMPING APPARATUS FOR A CUTTER

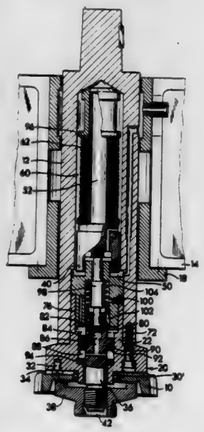
Walter Seiberlich, Ettlingen, Fed. Rep. of Germany, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Sep. 23, 1981, Ser. No. 304,824

Claims priority, application Switzerland, Oct. 7, 1980, 7478/80

Int. Cl.³ B23C *5/26*

U.S. Cl. 409—233 **5 Claims**



1. A clamping apparatus for a shaper cutter for a gear shaping machine, in particular a generating gear shaping machine for the production of gears, comprising:

a to-and-fro axially displaceable ram spindle;

a cutter holder provided at one end of said ram spindle;

said cutter holder possessing a contact surface for the shaper cutter;

means protruding axially away from said contact surface;

said protruding means serving for attachment of said shaper cutter;

a clamping plate secured to an end of said protruding means;

a clamping mandrel securing said clamping plate to said end of said protruding means;

said clamping plate and said clamping mandrel coacting with each other for clamping said shaper cutter at said contact surface of said cutter holder;

said ram spindle being hollow;

a spring arrangement arranged in said hollow ram spindle;

a piston arranged in said hollow ram spindle;

means for prebiasing said spring arrangement to exert an axial clamping force;

a coupling constructed such as to transmit said axial clamping force;

said coupling including means for easily releasing said coupling after the elimination of said clamping force;

said spring arrangement being connected to said cutter holder or shaper cutter by means of said coupling;

said piston defining a pressure chamber within said ram spindle and which is capable of connection with a pressure medium source; and

means for pressurizing said pressure chamber to thereby eliminate said clamping force of said spring arrangement by means of said piston.

4,436,465

SCROLL MANUFACTURING TOOL

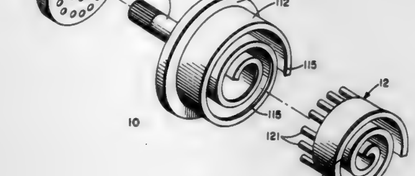
Eiji Fukushima, Fujimi, Japan; Seiichi Fukuhara, Gunma, Japan, and Masaharu Hiraga, Honjo, Japan, assignors to Sanden Corporation, Gunma, Japan

Filed May 20, 1982, Ser. No. 380,142

Claims priority, application Japan, May 20, 1981, 56-76139

Int. Cl.³ B23D *5/02, 43/06;* B23P *15/42, 15/44*

U.S. Cl. 409—243 **4 Claims**



1. A manufacturing tool for finishing a preformed scroll for use in a scroll type fluid displacement apparatus comprising:

(a) a working member having an end plate and a first involute element extending from one end surface of said end plate, a cutting edge extending along an inner side wall of an axial end of said first involute, and said end plate having a plurality of arc shaped holes along an outer side wall of said first involute element;

(b) a second involute element rotatably coupled to said working member and interfitting with said first involute element in a disposition to define a radial gap between the first and second involute elements, a cutting edge extending along an outer side wall of an axial end of said second involute, and a plurality of pins projecting axially from the other axial end of said second involute element and penetrating through said arc shaped holes, said pins being rotatably movable within said arc shaped holes; and

(c) a rotatable member having a plurality of holes extending in the axial direction, said pins having extending into axial end portions said holes in said rotatable member to couple said rotatable member to said second involute member and to transmit the rotation of said rotatable member to said second involute element to effect relative rotation between said first and second involute elements to adjust said radial gap between them and thereby position said cutting edges into contact with said preformed scroll positioned in said radial gap to trim said scroll to finished dimensions.

4,436,466

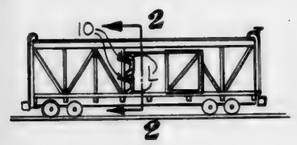
CARGO RESTRAINING APPARATUS

Frank J. Marino, 17 Battery Pl., New York, N.Y. 10017

Filed Aug. 3, 1981, Ser. No. 289,265

Int. Cl.³ B60P *7/14;* B61D *45/00;* B63B *25/24*

U.S. Cl. 410—118 **7 Claims**



1. A cargo restraining apparatus secured transversely of a transport vehicle to provide a bulkhead in said vehicle during shipment, and comprising

a rectangular panel of relatively high strength flexible sheet material, and having opposing upper and lower longitudinal edges and opposing transverse end edges, and with said upper and lower longitudinal edges being hemmed to form a passageway therealong and with the opposed ends of each passageway being open adjacent the respective corners of the panel,

flexible loading strap means slidably mounted within said passageway along each of said upper and lower longitudinal edges of said panel and crossing on one side of said panel, said flexible loading strap means generally defining a figure eight configuration on said panel, said strap means having two ends positioned adjacent each other on said one side of said panel, and means for adjustably interconnecting said two ends,

securement means connected at one end to said strap means at each of the four corners of said panel, and being connected at the other end to an adjacent anchoring structure in said transport vehicle for securing each corner of said panel thereto and in pressure contact against one side of a load to confine and restrain the load against movement during shipment, whereby said panel acts to spread the contact pressure with the load over a relatively large area, and said flexible loading strap means serves to reinforce and support said panel.

4,436,467

EASILY RELEASABLE BLIND RIVETS

Sven B. Larsson, Myrgangen 41, S-461 62 Trollhättan, and Bengt U. I. Andersson, Björkvägen 8, S-460 20 Sjuntorp, both of Sweden

Filed Jul. 22, 1981, Ser. No. 285,855

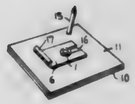
Claims priority, application Sweden, Jul. 23, 1980, 8005318

Int. Cl.³ F16B *13/04*

U.S. Cl. 411—34 **4 Claims**

1. A blind rivet comprising a tubular member insertable through aligned holes in workpieces to be rivetted together from an outer accessible side to an inner non-accessible side, an enlarged separate retainer on one end of said tubular member having a cross-section larger than said holes on the outer side of the workpieces, said one end to be installed at said outer side, an expanding pin extending coaxially through said tubular member, an enlarged head on the inner end of said pin having a cross-section larger in size than the bore through said tubular member, but smaller than the hole in the workpiece on the inner side, a tapered expanding surface on said enlarged head of said pin on the side of said head adjacent said inner side of said tubular member so that when said expanding pin is drawn





through said tubular member a limited distance said inner end of the tubular member is expanded radially outwardly to a cross-sectional size larger than the hole in the workpiece on the inner side, said retainer being removable from said tubular member so that said rivet may be removed from the workpieces without damaging them.

4,436,468

BALL HEAD LOCK NUT AS A COMPONENT ELEMENT OF BICYCLE HEAD PARTS

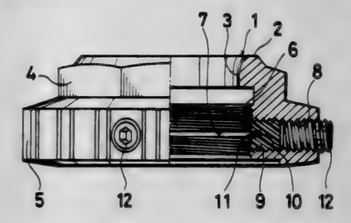
Nobuo Ozaki, and Yoshimasa Kaneko, both of Osaka, Japan, assignors to Maeda Industries, Ltd., Osaka, Japan

Filed Jul. 20, 1982, Ser. No. 399,978

Claims priority, application Japan, Jul. 20, 1981, 56-108527[U]

Int. Cl.³ F16B *39/34*

U.S. Cl. 411—248 **4 Claims**



1. A ball head lock nut as a component element of bicycle head parts, which comprises

a substantially annular body having a threaded, cylindrical internal wall,

an annular groove formed in said threaded, cylindrical internal wall,

a split clamping ring received within said annular groove,

at least one radially extending threaded through hole formed in said annular body with its inner end passing through said annular groove,

a deformable fixing piece having a diametrically extending slot formed in its inner end wall,

said deformable fixing piece being disposed within said radially extending threaded through hole, with said slot engaged with a part of said clamping ring, and

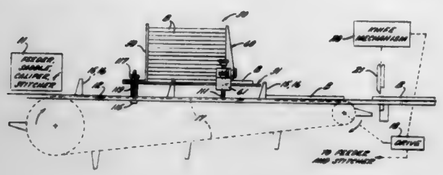
a set screw screwed into said radially extending threaded through hole to push said deformable fixing piece axially inwardly for forcible compression and deformation of said deformable fixing piece.

4,436,469

AUXILIARY FEED HOPPER FOR PERMITTING THE TRIMMING, IN A SADDLE BINDER OF PERFECT BOUND BOOKS

Eugene L. Kelly, 814 W. Shermoor St., Peoria, Ill. 61614

Filed Apr. 29, 1982, Ser. No. 373,094
Int. Cl.³ B42C *19/12*; B65H *1/00*
U.S. Cl. 412—16 7 Claims



1. A saddle binder having a delivery bed and including a three-knife trimmer at the end of the bed, the bed having a pair of slots with successive pairs of upstanding infeed lugs extending therethrough at regularly spaced intervals and with means for driving the lugs in unison synchronized with the knives in the trimmer for transporting books one by one into the trimmer, an auxiliary feed hopper for permitting the trimming, in the saddle binder, of perfect bound books comprising, in combination, a base plate having a pair of longitudinally extending slots, means for supporting the base plate horizontally superimposed above the delivery bed with the slots in the base plate and delivery bed in register with one another, a rear stock plate secured along its lower edge to the base plate and projecting vertically therefrom in a direction at right angles to the slots, a front stock guide supported on the base plate and spaced from the rear stock plate and parallel thereto, side stock guides spaced on the base plate parallel to one another, the front stock guide and side stock guides being adjustably movable with respect to the base plate and having means for clamping them in position for snugly receiving a stack of perfect bound books between them, means for supporting the front stock guide spaced above the base plate to form a gap to permit the lowermost book in the stack to feed thereunder while holding back the remainder of the stack, the front stock guide including an adjustable barrier projecting downwardly therefrom for adjusting the effective height of the gap in accordance with the thickness of the books being fed, the supporting means for the base plate including pedestals of adjustable height under the base plate spaced from one another in a two dimensional pattern for elevating the base plate relative to the delivery bed to such height that only the tips of the lugs project through the longitudinally extending slots, the height of the tips above the base plate being less than the height of the gap under the barrier.

4,436,470

RETORT CRATE LOADER AND UNLOADER

Barry L. Spletzer, and George Swiatlowski, both of Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed Oct. 30, 1980, Ser. No. 202,218
Int. Cl.³ B65G *57/08*
U.S. Cl. 414—36 7 Claims

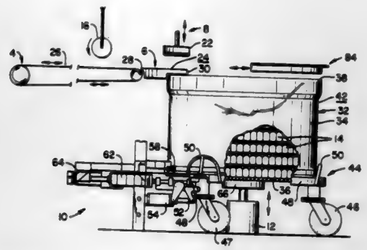
1. Apparatus for loading containers into a retort crate, said retort crate mounted on a movable carriage, said containers arranged in said retort crate in a plurality of levels, said retort crate having a movable bottom member and an open top, said top bounded by a top edge, comprising:

a container conveyor means including a dead plate at one end, said dead plate having an inner edge adjacent said one end and an outer edge opposite said inner edge;

means for positioning said carriage and retort crate therewith to a first position, said crate in said first position having a portion of said top edge below said dead plate and between said inner and outer edges of said dead plate;

means for vertically indexing said movable bottom member to a plurality of load positions;

a jar clamp mounted for vertical movement above said dead plate so that containers situated on said dead plate adja-



cent the outer edge thereof can be secured between said jar clamp and said dead plate; and

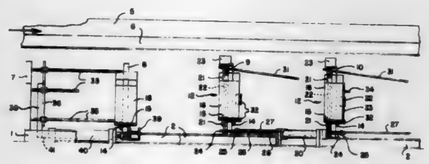
means for horizontally indexing said retort crate between said first position and a second position, said second position being farther from said inner edge of said dead plate than said first position, whereby a settling space for said containers is provided within said crate.

4,436,471

METHOD AND APPARATUS FOR STACKING FOR BARS AND THE LIKE

Charles F. Koehler, c/o American Drawn Steel Corporation, P.O. Box 54, Allison Park, Pa. 15101

Filed Feb. 2, 1981, Ser. No. 230,751
Int. Cl.³ B65G *57/03*
U.S. Cl. 414—36 9 Claims



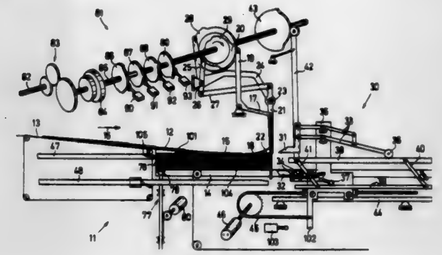
1. Stacking apparatus for bars and the like comprising an elongate run-in table having a feed axis lengthwise of said run-in table, a plurality of stacking guides arranged parallel to the run-in table and offset from the axis thereof at different distances, and bar deflector means associated with at least some stacking guides, each deflector means being rotatable about a vertical axis and movable between a first position substantially transverse to the feed axis in a plane generally sloping from the horizontal in which the deflector means bridge across the stacking guide and a second position in which the deflector means are substantially parallel to the feed axis and are clear of the stacking guide for deposit of bars and the like in the stacking guide, said deflector means when positioned in bridging position acting to receive bars from the run-in table and deflect them from the associated stacking cradle.

4,436,472

SHEET PILING DEVICES

Otto Kunzmann, Neuffen, Fed. Rep. of Germany, assignor to Bielomatik Leuze GmbH & Co., Fed. Rep. of Germany

Filed Nov. 17, 1981, Ser. No. 322,176
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046107
Int. Cl.³ B65H *31/32*
U.S. Cl. 414—50 10 Claims



2. An apparatus for successively stacking and removing piles of sheets conveyed to the apparatus, comprising:

two alternatively operable carrier elements for the piles;

means operable at the front edge of the pile, relative to the transport direction, for separating finished piles from subsequently conveyed sheets;

means for removing finished piles;

first means for alternatively driving each said carrier element along the sheet transport direction, the leading edge of each said carrier element moving near the trailing edge of a finished pile being removed and substantially in a plane defined by the top surface of the finished pile; and,

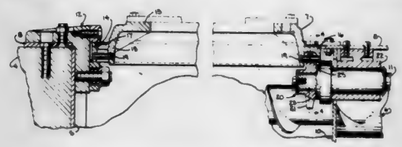
second means for alternatively driving each said carrier element along the sheet piling direction, substantially perpendicular to the sheet transport direction, whereby the carrier elements alternatively support newly forming piles until each completed pile is engaged by the pile removal means.

4,436,473

DRIVE MECHANISM FOR A ROTATABLE SWEEP ARM

George E. Olson, Arlington Heights, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Apr. 5, 1982, Ser. No. 365,495
Int. Cl.³ B65G *65/46*
U.S. Cl. 414—310 11 Claims



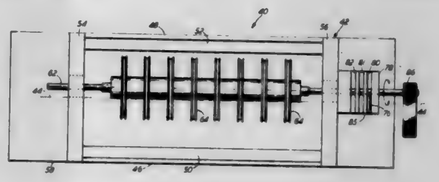
6. In a storage structure to contain a stored material, a material dislodging and conveying member mounted for rotation in the structure about a vertical axis and disposed to dislodge the stored material and convey the dislodged material toward said axis, a turntable connected to the inner end of said dislodging and conveying member and including a plurality of radially extending circumferentially spaced drive pins, a drive member having a plurality of teeth disposed to engage said drive pins, and drive means for rotating said drive member, said turntable including a plurality of vertically extending material conducting passages disposed in vertical alignment with the spaces between adjacent drive pins, the upper end of each passage having a greater cross sectional area than the lower end of said passage, said drive member comprises a sprocket, the base portions of adjacent sprocket teeth being connected by root sections, said root sections having sloping relief pockets, rotation of said drive member will rotate said turntable and said dislodging and conveying member about said axis, said teeth acting to drive the stored material upwardly through said passages and downwardly through said pockets as said sprocket rotates to thereby prevent jamming of said teeth by said stored material.

4,436,474

SELECTING ARTICLES FROM AN ARRAY THEREOF

James W. Brossman, Jr., Bethel; Carol A. Nemeth, Reading, and Alan K. Shapiro, Shillington, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,051
Int. Cl.³ B65B *19/34*
U.S. Cl. 414—417 13 Claims



1. Apparatus for selecting at least one planate article from an array thereof, comprising:

a carrier for holding such articles in a mutually spaced, substantially parallel relationship along a single file by supporting peripheral portions of each article in opposing guides formed along opposing first and second sides of said carrier;

means for positioning the carrier so the file of articles extends substantially along a positioning plane passing generally centrally of each article and of said positioning means;

a rotatable shaft extending parallel to and indexable along the file and adjacent to the articles;

at least one cam mounted eccentrically to the shaft such that when said shaft is rotated a convex portion of said cam moves arcuately toward and slidably engages edge portions of an article to displace said article; and

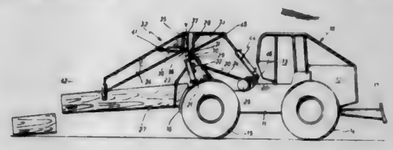
means for indexing the shaft and cam along the file and for rotating the same such that selected articles therein are engageable for displacement.

4,436,475

LOG SKIDDER WITH LOAD DISTRIBUTING BOOM ATTACHMENT

Leon Blagg, Marble Falls, Tex., assignor to Rolligon Corporation, Stafford, Tex.

Filed Feb. 16, 1982, Ser. No. 348,801
Int. Cl.³ B66D *3/00*
U.S. Cl. 414—569 10 Claims



1. Apparatus for use with a log skidder vehicle having front and rear ground-engaging wheels, a frame, a logging arch at the rear of said frame, and winch and cable means for pulling the end of a log up to the rear of the vehicle and elevating the end portion thereof, comprising: an elongated boom structure having a front section and a rear section; means for pivotally

mounting said boom structure at a location between its ends on said logging arch, said mounting means defining a transverse horizontal pivot axis; abutment means on the rear section of said boom structure arranged to engage the elevated end portion of the log in response to pivotal rotation of said boom structure about said axis; and selectively operable means connected between said front section and said frame for causing upwardly directed forces to be applied to said front section and to said arch, and downwardly directed forces to be applied to said log and said frame to thereby control the distribution of weight carried by the front and rear wheels of said vehicle.

4,436,476

ROD DEVICE FOR USE AS AN ARM OF AN EXCAVATOR

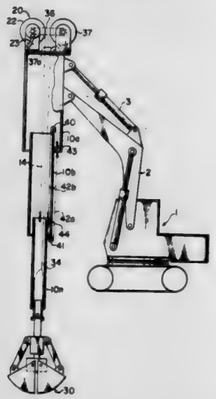
Ryutaro Yoritomi, 5-17-12, Koishikawa, Bunkyo-ku, Tokyo, Japan

Continuation of Ser. No. 90,325, Nov. 1, 1979, abandoned. This application Dec. 7, 1981, Ser. No. 327,911

Claims priority, application Japan, Nov. 24, 1978, 53-145033; Feb. 10, 1979, 54-014601; May 14, 1979, 54-058773

Int. Cl.³ E02F 5/22

U.S. Cl. 414—690 **9 Claims**



1. An excavator comprising:

a base structure;

a boom pivotally attached to said base structure at a first end and having a second end;

an excavator head;

an excavator head supporting arm including;

a plurality of telescopic tubular elements including an outermost element, at least one intermediate element and an innermost element, the outermost element being pivotally mounted to said second end of said boom at substantially an intermediate portion thereof, said excavator head being mounted to said innermost element;

movement restricting means for limiting the relative axial movement between adjacent ones of said telescoping elements; and

cable telescopic control means connected between said outermost element and innermost element of said plurality of tubular elements for controlling the axial extension of said excavator head supporting arm; and

fluid pressure operated linear actuator means having relatively movable opposite ends for pivotally tilting said excavator head supporting arm with respect to said boom, one of said opposite ends being pivotally connected to substantially a middle portion of said boom while the other of said opposite ends is pivotally connected to a portion of said outermost tubular element substantially distant from the pivot point between said outermost tubular element and said second end of said boom towards the one end thereof being opposite to the other end thereof for supporting said excavator head; wherein said relative axial movement restricting means includes first and second pulleys mounted on said at least one intermediate element of said tubular elements adjacent its opposite ends, and first and second cables engaged around said two pulleys, said cables each being connected at their opposite ends with an end portion of adjacent tubular elements which engage with opposite ends of said at least one intermediate element.

4,436,477

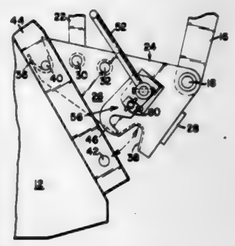
QUICK ATTACHMENT CARRIER ASSEMBLY

John B. Lenertz, Carver County, and Carroll E. Moore, Sibley County, both of Minn., assignors to Farmhand, Inc., Hopkins, Minn.

Filed Mar. 25, 1982, Ser. No. 361,509

Int. Cl.³ E02F 3/81

U.S. Cl. 414—723 **2 Claims**



1. Apparatus for releasably connecting a material handling attachment to a loader, comprising:

a pair of laterally spaced apart upper transverse pins secured to the attachment;

a pair of laterally spaced apart lower transverse pins secured to the attachment beneath said upper transverse pins;

a pair of laterally spaced apart carriers secured to the front end loader, each carrier including an upwardly open top notch adapted to receive an upper transverse pin and a forwardly open bottom notch adapted to receive a lower transverse pin;

a hook mounted on at least one of said carriers for pivotal movement between a latched position in engagement with the corresponding lower transverse pin and an unlatched position;

handle means for manually actuating said hook between the latched and unlatched positions; and

means for releasably locking said hook in either position;

said releasable locking means including;

a latch plate mounted on said carrier adjacent said hook with holes therein corresponding to the latched and unlatched positions of said hook;

a locking pin mounted on said hook for movement toward and away from said latch plate; and

means for normally biasing said locking pin toward a locked position in registry with either hole in said latch plate.

4,436,478

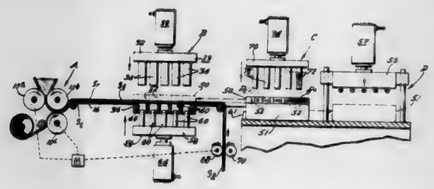
APPARATUS FOR MAKING MOLDED ARTICLES

Roland M. Allen, Kenilworth, and Andrew J. Kalocai, Pottstown, both of Pa., assignors to The West Company, Phoenixville, Pa.

Division of Ser. No. 286,977, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 142,028, Apr. 21, 1980, abandoned, which is a continuation of Ser. No. 13,252, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 743,071, Nov. 18, 1976, abandoned, which is a division of Ser. No. 473,216, May 24, 1974, abandoned. This application Feb. 7, 1983, Ser. No. 464,281

Int. Cl.³ A61J 1/06; B29H 3/06

U.S. Cl. 414—752 **3 Claims**



1. Apparatus for handling a plurality of clad elements of a predetermined configuration formed from a sheet consisting of a layer of an elastomeric material bonded to a layer of inert material and deposited in openings of a die corresponding in number and arrangement to cavities of a mold comprising a transfer mechanism having a plurality of rods having a pickup face with at least one fluid port, said rods corresponding in number and array to the die openings and mold cavities, means for selectively connecting said fluid port to a source of vacuum to retain a clad element on said pickup face when it engages the element in the die openings and to an air pressure source to discharge the clad element in the cavity of a mold, and a reciprocating punch having a plurality of punch rods for forming the clad elements from the sheet material and depositing them in the openings of the die and wherein said die and mold are positioned adjacent one another and said transfer mechanism includes means mounting it for translating movement between a first position overlying said die with the punch rods aligned with the die openings and a second position overlying the mold with the pickup rods aligned with the mold cavities.

4,436,479

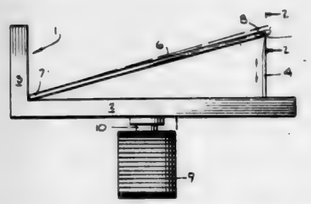
METHOD AND MEANS FOR ORIENTING BEVEL TIPPED NEEDLES AND THE LIKE

Archille Belloli, Milan, Italy, assignor to Joule' Technical Corporation, Union, N.J.

Filed Aug. 16, 1982, Ser. No. 408,466

Int. Cl.³ B65G 47/24

U.S. Cl. 414—757 **8 Claims**



1. Means for orienting an elongated article with a shank portion and a flat or bevelled portion comprising the combination of a fixture with spaced stop and knife edge means, said knife edge means positioned at a level above the stop and at a distance from the stop causing it to engage the article intermediate in the ends of its flat portion, and means for vibrating said knife edge means.

5. A method for orienting elongated articles having shank portions and bevelled tips comprising the steps of supporting the articles between a stop and a knife edge with the knife edge engaging the bevelled tips and the stop engaging the opposite end, and vibrating the knife edge.

4,436,480

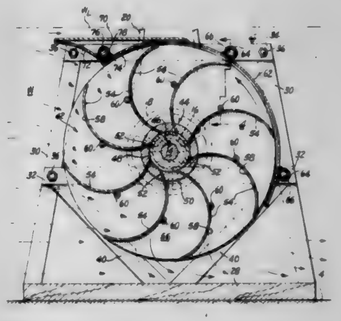
HYDRO-TURBINE DEVICE FOR GENERATING ELECTRICITY

Philip Vary, 100 SW. Hideaway, Stuart, Fla. 33494

Filed Jun. 23, 1982, Ser. No. 391,471

Int. Cl.³ F03B 7/00

U.S. Cl. 415—2 R **4 Claims**



1. A hydro-turbine device for generating electricity from the flow of water through a channel, comprising:

frame means mountable in said channel;

a horizontal, rotatable shaft carried by said frame means and disposed to extend transversely of the direction of water flow through said channel, said shaft being adapted to be connected to generator means;

hub means mounted on said shaft;

a pair of spaced end plates received on said shaft, said hub means extending between said end plates;

at least six equally spaced vanes fixedly mounted to extend between said end plates parallel with said shaft, said vanes extending radially from said hub means and being curved so that the rear faces thereof are concave;

said end plates, said hub means and said vanes forming a turbine wheel disposed so that the front thereof faces water flowing through said channel and so that the rear faces of said vanes are exposed to said flowing water as they move downwardly from the top toward the bottom of said wheel;

cover means mounted over the rear of said turbine wheel, said cover means being carried by said frame means and extending from the top of said wheel rearwardly and downwardly to a termination point spaced upwardly from the bottom of the wheel but below a horizontal plane containing the axis of said shaft;

an extension on said cover means extending forwardly generally tangentially from the top of said wheel, the forward edge thereof being positioned generally above the forward edge of said turbine wheel; and

an arcuate scoop mounted on said extension and extending downwardly and rearwardly from the forward edge thereof toward and nearly into engagement with said vanes of said turbine wheel, the inner, lower edge of said arcuate scoop being positioned about 30 degrees removed from a vertical plane containing said shaft, said scoop serving to capture water flowing toward said wheel and direct it centrally against the concave rear face of each

vane as the vane moves downwardly between about 30 and 60 degrees from said vertical position;

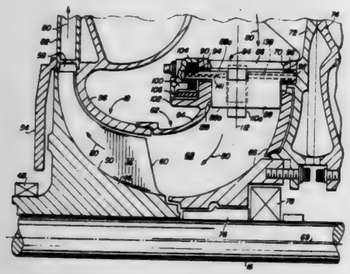
said frame means being arranged to mount said shaft so that the bottom of said turbine wheel is spaced above the bottom of said channel so that a substantial flow of water passes under the wheel, said water flowing under the turbine wheel being effective to remove spent water from behind the vanes in the region between the bottom of said wheel and the bottom edge of said cover means, through aspirator-like action.

4,436,481

INTAKE VORTEX WHISTLE SILENCING APPARATUS AND METHODS

Charles G. Linder, Chandler, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 15, 1981, Ser. No. 273,716
Int. Cl.³ F04B *29/66*
U.S. Cl. 415—119 **22 Claims**



1. A gas intake assembly comprising:

(a) a body having an axis, a gas inlet, a gas outlet spaced apart from said inlet, and a gas flow passage communicating with said inlet and outlet, each of said inlet, said outlet and said flow passage circumscribing said axis;

(b) means for inparting to gas entering said inlet and traversing said flow passage a vortex flow pattern in which the gas swirls about said axis; and

(c) means for disturbing only a relatively small, radially outermost portion of said vortex flow pattern, without significantly distupting the remainder thereof, to attenuate whistle noise generated by said vortex flow patters,

said imparting means including a series of inlet guide vane means positioned in a mutually spaced relationship around said gas inlet, said disturbing means including at least one vortex-disturbing member and means for positioning each said vortex-disturbing member in the path of said vortex flow pattern adjacent said gas inlet, said positioning means including means for connecting each said vortex-disturbing member to one of said guide vane means.

4,436,482

CONSTANT SHIP SPEED CONTROL METHOD

Morio Inoue, Yokohama; Satoshi Hoshino, Tokyo; Hideki Namura, Yokohama, and Takashi Watari, Kamakura, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1981, Ser. No. 303,021
Claims priority, application Japan, Sep. 19, 1980, 55-129198
Int. Cl.³ B63H *3/10*
U.S. Cl. 416—1 **3 Claims**

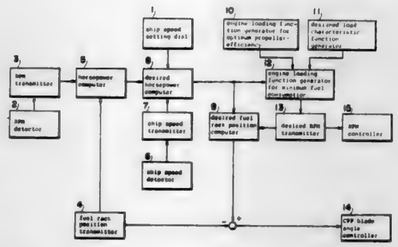
1. A method for controlling the speed of a ship which includes a main engine for driving a main shaft at a given rpm, a fuel rack adapted to be positioned for setting the horsepower generated by the main engine, a controllable pitch propeller having a variable blade angle connected to the main shaft, and a ship speed detector, said method comprising the steps of:

determining the actual horsepower of the main engine in accordance with the main engine fuel rack position and the main shaft rpm;

determining a desired horsepower corresponding to a desired ship speed in accordance with the detected ship speed from the ship speed detector, the actual horsepower of the main engine, and a preset ship speed;

generating a first function of first fuel rack position and first main shaft rpm which provides an optimum propeller efficiency in accordance with said preset ship speed and generating a second function of a second fuel rack position and a second main shaft rpm;

comparing said first and second functions so as to define a range related to said second function where use of said first function results in a rich torque and a second range where use of said first function results in no rich torque,



thereby generating a minimum fuel characteristic function;

determining a desired engine rpm in accordance with said minimum fuel characteristic function and said desired horsepower;

controlling the rpm of the main shaft in accordance with said desired rpm;

determining a desired fuel rack position in accordance with the desired rpm and said desired horsepower;

comparing said desired fuel rack position and the main engine fuel rack position to obtain a difference therebetween; and

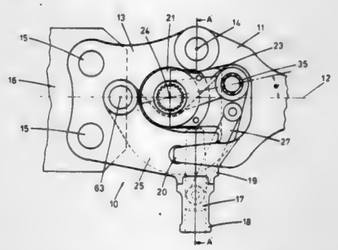
controlling the blade angle of the controllable pitch propeller in accordance with said difference thereby to attain efficiency in operation.

4,436,483

HELICOPTER ROTORS

Kenneth Watson, Yeovil, England, assignor to Westland plc, Yeovil, England

Filed Jan. 8, 1982, Ser. No. 338,103
Claims priority, application United Kingdom, Jan. 22, 1981, 8101871
Int. Cl.³ B64C *11/28, 27/50*
U.S. Cl. 416—143 **16 Claims**



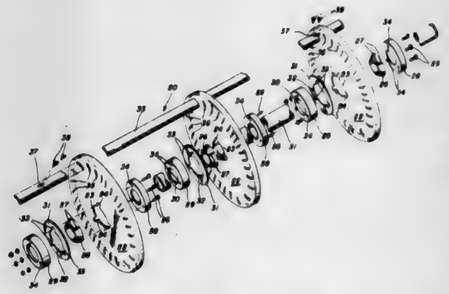
1. A helicopter rotor having a rotor hub, a blade pivotally connected to the hub for movement between an operational spread position and a folded position about a generally vertical fold axis (14) located at one side of a longitudinal centerline, at least one laterally extending lock pin for locking the blade in the spread position and a powered fold mechanism comprising a reversible rotary power source for rotation about a generally vertical rotation axis (24) coincident with the centreline, a lever (23) rotationally fixed to the power source, a curved link having one end pivotally attached to the blade about a vertical pivot axis (63) spaced-apart radially of the axis (24) and its other end pivotally attached about a vertical pivot axis (35) to the free end of said lever and an arm pivotally attached between the curved link and the said lock pin, wherein with the blade in the spread position the said vertical pivot axis (35) is located in an over-center position and at an acute angle relative a line extending through the said rotation axis (24) and the pivot axis (63) and on the same side of the line as the fold axis (14).

4,436,484

TRANSVERSE FLOW FAN ROTOR

William F. Temple, and Jesse Daniels, both of Albany, Ga., assignors to Lilliston Corporation, Albany, Ga.

Filed Apr. 19, 1982, Ser. No. 369,607
Int. Cl.³ F04D *29/28*
U.S. Cl. 416—178 **7 Claims**



1. A transverse flow fan rotor comprising a central axial rotor shaft, a plurality of axially spaced coaxial rotor discs of a uniform diameter on the rotor shaft and having central through openings receiving said shaft, said through openings having circumferentially spaced radial locator notches, conically tapered split constrictive bushings surrounding said shaft within the through openings, axially opposing substantially rigid pairs of clamping collars surrounding said shaft on opposite sides of said discs, one clamping collar of each pair having a conically tapered cavity receiving at least a part of the adjacent constrictive bushing, the opposing collar in each pair engaging the adjacent end face of the constrictive bushing to force it wedgingly into said cavity, a compressible shim element disposed between each disc and the adjacent end face of one of said clamping collars to compensate for tolerance vaiations, the clamping collars having bolt receiving openings formed therethrough in coaxial alignment with said locator notches, clamping bolts extending through the bolt receiving openings and locator notches, the discs each having a multiplicity of circumferentially equidistantly spaced fan blade mounting slots formed therethrough near and inwardly of their peripheries and spaced radially of the axis of said shaft in concentric relationship therewith, the blade mounting slots of the disc being in axial alignment, a corresponding number of elongated substantially equal length fan blades engaging through said slots of the disc and being supported therein relatively loosely, said fan blades having longitudinal slots formed therethrough at least adjacent to one of said discs and the slots being positioned within the blade mounting slots of the disc and extending on opposite sides of the disc, and pairs of releasable and readily removable spring locking elements engaged within said longitudinal slots of said blades on opposite sides of the disc and restraining the blades against axial displacement relative to said discs during the operation of the fan rotor and allowing ready removal and replacement of individual blades when required.

4,436,485

TURBINE WHEEL WITH INTEGRAL DS BLADES AND EQUIAXED HUB

George L. Vonnegut, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 896,709, Apr. 17, 1978, Pat. No. 4,240,498.
This application Jul. 31, 1980, Ser. No. 174,034
Int. Cl.³ F01D *5/14*
U.S. Cl. 416—241 R **2 Claims**



1. A cast metal turbine wheel comprising a cylindrical disc and integral turbine blades arrayed about the perimeter of said disc;

the grain structure of the metal of said blades being columnar, the grains being predominantly oriented lengthwise in the radial direction, substantially parallel to the leading and trailing edges of said blades;

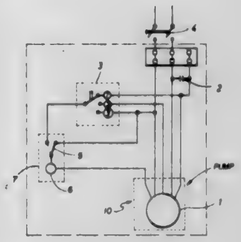
the grain structure of the metal in said disc being predominantly equiaxed.

4,436,486

CIRCULATING PUMP UNIT

Niels D. Jensen, Bjerringbro; Horst Komoess, Wittenborn, and Kurt F. Nielsen, Bjerringbro, all of Denmark, assignors to Grundfos A/S, Bjerringbro, Denmark

Filed Jun. 11, 1981, Ser. No. 272,782
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022872
Int. Cl.³ F04B *49/06*
U.S. Cl. 417—45 **3 Claims**



1. A circulating pump system, comprising:

(a) a motor capable of operating in a plurality of operating modes, including at least a highest moment mode and a lowest moment mode, said motor having a current circuit;

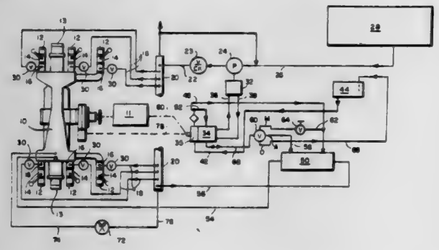
(b) a pump mechanically connected to and driven by said motor;
(c) a rotation speed switch having an input terminal and a plurality of output terminals, each of said output terminals corresponding to one of said operating modes such that when one of said output terminals is electrically connected to said input terminal, said motor operates in said corresponding mode;
(d) a plurality of output leads, each of said output leads being electrically connected at one end to one of said output terminals and in turn corresponding to one of said operating modes; and
(e) a thermostat having a temperature-sensing means and a start up switch operatively connected to said temperature-sensing means, said start up switch being responsive to a predetermined temperature condition in said motor, said predetermined temperature condition occurring only when said motor is stopped, said start up switch having a response to the detection of said predetermined temperature condition by said temperature-sensing means, said response being to override said rotation speed switch by electrically connecting said current circuit to that one of said leads which corresponds to said highest moment mode, thereby placing said motor in said highest moment mode and bypassing said rotation speed switch, and then in response to the cessation of said predetermined temperature condition, to cease overriding said rotation speed switch by electrically connecting said current circuit to said input terminal, thereby placing said motor in the mode corresponding to that one of said output terminals which is electrically connected to said input terminal.

4,436,487

FOAM LIQUID CONCENTRATE SUPPLY SYSTEM

Fay A. Purvis, Malvern; Robert W. Bennett, Dowingtown, and Roger A. Ruth, Glenmoore, all of Pa., assignors to Enterra Corporation, Radnor, Pa.

Filed Jun. 29, 1982, Ser. No. 393,511
Int. Cl.³ A62C 35/44; G05D 11/00; F04B 49/08
U.S. Cl. 417—46 **10 Claims**



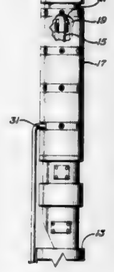
1. For use with a motor-driven water pump of the type having at least one outlet through which water may be pumped, said outlet having associated therewith a first valve and a fluid pressure drop inducing device, said first valve being operable to open and close said outlet and said pressure drop inducing device being operable to admit a liquid chemical additive into said outlet at a flow rate which is directly proportional to the flow rate of the water being pumped therethrough when said first valve is open, a system for supplying a liquid chemical additive to said pressure drop inducing device, comprising:
a liquid chemical additive storage tank;
an additive pump connected respectively by suction and discharge conduits to said storage tank and to said pressure drop inducing device;
a second valve arranged in said discharge conduit, said second valve being operable when closed to isolate said pressure drop inducing device from said additive pump, and being operable when open to a selected setting to meter the amount of liquid chemical additive supplied to said pressure drop inducing device;
a variable output hydraulic drive means for powering said additive pump; and
control means responsive to the water pressure developed by said water pump and to the liquid chemical additive pressure developed by said additive pump for varying the power output of said hydraulic drive means in order to maintain said water pressure and said liquid chemical additive pressure in balance irrespective of changes in water pump flow rate, water pump operating pressure, and the setting of said second valve.

4,436,488

BELOW MOTOR PRESSURE COMPENSATION SYSTEM FOR SUBMERSIBLE PUMP

Raymond L. Witten, Tulsa, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed May 26, 1981, Ser. No. 267,224
Int. Cl.³ F04B 35/04; H02K 5/12
U.S. Cl. 417—53 **2 Claims**



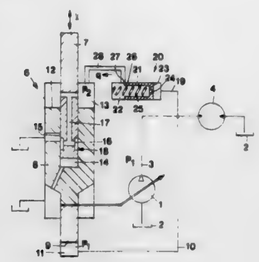
1. A method of installing in a well a submersible pump assembly of the type having an electric motor contained within a lubricant filled motor chamber below a pump, comprising:
providing a pressure compensator chamber below the motor chamber;
providing a passage between the pressure compensator chamber and a communication port in the motor chamber;
mounting in the pressure compensator chamber an expansible container having an interior sealed from lubricant in the pressure compensator chamber;
providing a port from the exterior of the pressure compensator chamber to the interior of the container;
placing into the container a liquid of specific gravity greater than the specific gravity of the lubricant and selected to provide a total weight for the container that substantially equals the weight of the lubricant in the motor chamber above the communication port; then
lowering the pump assembly into the well.

4,436,489

CONTROL DEVICE FOR A LIQUID PUMP WITH ADJUSTABLE PUMPING VOLUME

Jan Zangenberg, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Mar. 19, 1982, Ser. No. 359,756
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3112561
Int. Cl.³ F04B 49/00
U.S. Cl. 417—218 **3 Claims**



1. A control unit for a pump of the type having adjustable volume control means, comprising, a tank port, a motor speed control setting unit having first and second pressure chambers and a moveable valve element having first and second smaller and larger pressure faces as moveable walls of said pressure chambers, means connecting said moveable valve element to said pump adjustable volume control means, a pressure independent constant flow regulator having an outlet connected to said second pressure chamber, first and second pump outlet ports connected respectively to said first pressure chamber and the inlet of said constant flow regulator, said setting unit having speed setting valve means including a valve member having adjustable fixed positions relative to said moveable valve element and providing variable throttle means between said second pressure chamber and said tank port to establish a control pressure in said second pressure chamber.

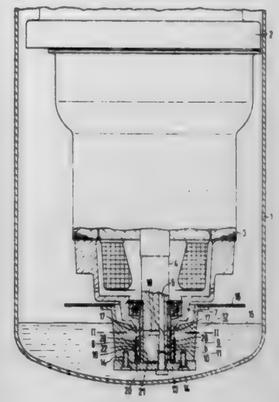
4,436,490

COMPRESSOR AND LUBRICATING PUMP ASSEMBLY

Siegfried Schönwald, Bad Neustadt-Saale, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 27, 1982, Ser. No. 382,685
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1981, 3123631
Int. Cl.³ F04B 39/02
U.S. Cl. 417—372 **6 Claims**

1. A unitary compressor assembly comprising:
a compressor with an external-rotor drive motor, both mounted on a stationary shaft which has a bore shaft canal for supplying lubricant to the compressor, a friction pump located at the opposite end of the stationary shaft from the compressor, and a unitary housing;
the friction pump further comprising:
an impeller comprising a hollow cylinder, the cylinder coupled to the external rotor of the drive motor;
a pump housing mounted on the shaft, the pump housing comprising inner and outer parts providing an annular space in which the hollow cylinder is received, the cylinder dividing the annular space into an inner gap and an outer gap;
an outlet coupling the annular space to the borehole;
an inlet coupling the annular space to a supply of oil in the bottom of the unitary housing; and



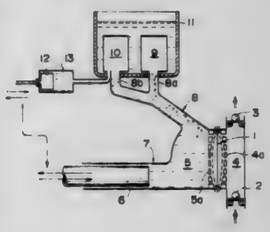
at least one constriction in each gap for impeding the flow of oil.

4,436,491

METHOD OF SUPPLYING HYDRAULIC OPERATING FLUID IN DIAPHRAGM TYPE

Masashi Ishiyama, Minami-ashigara, and Michinori Ishibashi, Higashimurayama, both of Japan, assignors to Fuji Photo Film Co., Ltd. and Nikkiso Co., Ltd., of JPX

Continuation of Ser. No. 107,647, Dec. 27, 1979, abandoned. This application Feb. 4, 1982, Ser. No. 345,704
Claims priority, application Japan, Dec. 20, 1978, 53-161579
Int. Cl.³ F04B 9/10
U.S. Cl. 417—385 **3 Claims**



1. In the method of supplying hydraulic operating fluid in a diaphragm type pump in which a diaphragm is driven by an operating fluid and operating fluid is supplied to an operating chamber from an oil reservoir at the final stage of a suction stroke in the main cylinder of the pump, the improvement comprising instantaneously supplying a predetermined minute amount, between about 0.1 and about 2% of the whole volume of the displacement of the diaphragm, of operating fluid, said predetermined minute amount being delivered through a valve,
(a) said valve being provided with a piston in a chamber operating between an enable position wherein operating fluid from said reservoir can pass to said operating chamber and a disable position wherein passage of said operating fluid is blocked;
(b) being urged into its disable position by a spring;
(c) said piston being urged by a selectively applied external pressure oil to move it to its enable position;
(d) said valve being provided with a leakage hole in the wall of the chamber, said leakage hole being just below the top of the piston when the piston is in the disable position and

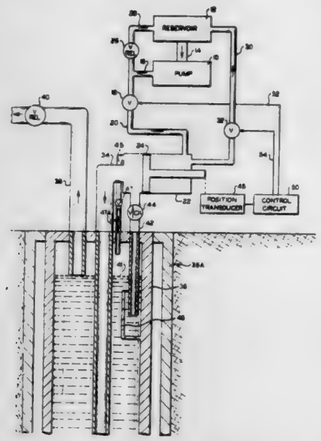
being blocked by the piston when the piston is in the disable position and being open to passage of the external pressure oil when the piston is in the enable position.

4,436,492

SURFACE POWER UNIT FOR A DOWNHOLE PUMP

Daniel G. Peterson, Los Angeles, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe, Inc., City of Commerce, Calif.

Filed Aug. 31, 1981, Ser. No. 298,121
Int. Cl.³ F04B *35/02*
U.S. Cl. 417—386 **4 Claims**



1. A surface power unit for use on a subterranean well for applying pulses of fluid to a downhole pump in the well bore comprising: cylinder means having a piston slidably disposed therein, said piston dividing said cylinder into a charging side and a power side; means responsive to the movement of said piston in said cylinder for generating control signals representing positions of said piston in said cylinder; means responsive to at least one of said control signals for connecting a source of pressurized fluid to said charging side of said cylinder, and responsive to at least another one of said control signals for alternatively venting fluid from said charging side of said cylinder; and conduit means for connecting said power side of said cylinder directly to the downhole pump; a return pipe connected between the well bore and said power side of said cylinder and having a check valve positioned therein for permitting fluid flow only from the well bore to said cylinder.

4,436,493

SELF CONTAINED PUMP AND REVERSING MECHANISM THEREFOR

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 77,544, Sep. 21, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,584
Int. Cl.³ F04B *43/06*
U.S. Cl. 417—393 **63 Claims**

1. A reciprocating pump and reversing mechanism therefor comprising in combination:

a housing having a pair of laterally spaced chambers with diaphragm members therein dividing each of said chambers into a driving section and a discharge section;

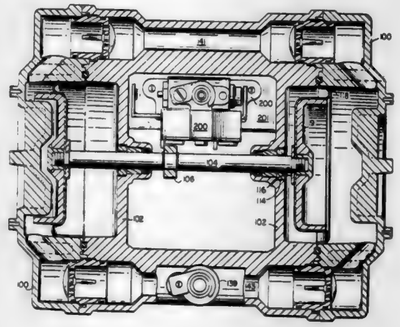
said diaphragm members being interconnected by a common shaft;

a protrusion extending from said common shaft;

manifold means in said housing for transmitting fluid to and from said driving sections and discharge sections of said chambers through fluid inlet and outlet ports therein;

inlet and outlet check valves in selected ones of said ports for controlling the flow of liquid to be pumped to and from said discharge sections through said manifold means, said check valves being contained within cartridges, said cartridges having a universal shape which will fit into either said inlet or outlet ports of oriented consistent with a proper fluid flow direction, and having coded configurations on each said check valve cartridge which preclude the insertion thereof into said inlet or outlet port inconsistent with said proper predetermined fluid flow direction; and

a reversing mechanism module contained within a common housing removably attached to said pump between said discharge chambers and adjacent said common shaft, said module including,



control valve means for directing driving fluid alternately to a selected one of said driving sections defined by said diaphragms in said lateral chambers, a valve actuating member mounted adjacent to said shaft for sliding movement on bearing surfaces between first and second positions partially in response to engagement by said protrusion, said valve actuating member constraining said control valve means to alternately direct said driving fluid to the respective driving sections in said first and second positions of said actuating member, and snap-acting means for accelerating and biasing said valve actuating member against any tendency to stop between said first and second positions, said snap-acting means including a pair of opposed coil springs attached to the bottom of said actuator and disposed on opposite sides of an axis which is parallel to a longitudinal axis of said shaft, said coil springs exerting equal and opposite forces on said valve actuating member in directions transverse to said axis throughout the positions of movement on said surfaces.

4,436,494

PLUNGER PUMP

Kazuo Yamaizumi, Tokyo, Japan, assignor to Nagano Keiki Seisakusho, Ltd., Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,169
Claims priority, application Japan, Mar. 20, 1981, 56/40839
Int. Cl.³ F04B *21/00*
U.S. Cl. 417—403 **7 Claims**

1. A plunger pump, comprising:

an elongate and hollow plunger case having an inlet port and an outlet port;

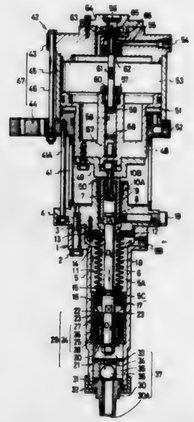
an elongate plunger reciprocally mounted in said plunger case;

drive means for effecting a reciprocal driving of said plunger;

inlet valve means on said plunger case adapted to control the input of fluid through said inlet port;

discharge valve means on said plunger spaced axially along said plunger from said inlet valve means and being adapted to control the output of fluid from said outlet port and in response to reciprocations of said plunger;

an elongate bellows encircling a portion of said plunger and being connected at one end to one end of said plunger case and extending in the interior of said plunger case, the other end of said bellows being connected to said plunger,



the outer surface of said plunger being spaced from the interior surface of said plunger case to define a flow path therebetween for said fluid;

seal means for providing a fluid tight seal at the connections of said bellows to said plunger case and said plunger; and

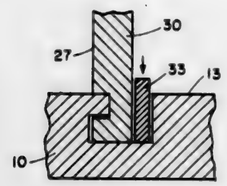
bellows deformation prevention means for preventing abnormal deformations of and maintaining a uniform diameter of said bellows as said plunger is reciprocated.

4,436,495

METHOD OF FABRICATING TWO-PIECE SCROLL MEMBERS FOR SCROLL APPARATUS AND RESULTING SCROLL MEMBERS

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 239,563
Int. Cl.³ F01C *1/02, 21/08;* B23P *11/00*
U.S. Cl. 418—55 **15 Claims**



1. A method of fabricating a scroll member having an involute wrap rigidly affixed to an end plate, comprising the steps of:

(a) forming in the surface of an end plate an involutely configured channel;

(b) forming a reentrant groove in one side wall of said channel along its length;

(c) providing an involute wrap sized and configured to seat in said channel and having a surface configured to at least partially engage said reentrant groove along its length;

(d) seating said wrap into said channel thereby to define a locking space between the flank of said wrap and the other side wall of said channel; and

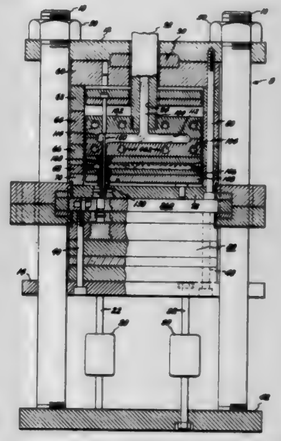
(e) locking said wrap in said channel into fixed engagement with said end plate wherein said locking comprises the steps of inserting a locking strip formed of material which has sufficient flexibility to permit it to be wound into said locking space and sufficient ductility to allow it to be coined into said locking space and coining said locking strip thereby to wedge said wrap into said channel.

4,436,496

MOLD FOR A LIQUID INJECTION MOLDING COMPOSITION

Aldo A. Laghi, Saratoga, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 10, 1981, Ser. No. 272,242
Int. Cl.³ B29F *1/05;* B29G *3/00*
U.S. Cl. 425—543 **11 Claims**



1. A mold apparatus for liquid injection molding compositions comprising:

a frame having a forward and a rear end;

support plate means mounted on said frame and supporting a support post means, said plate means having a forward end and a rear end;

a mold frame means mounted on said support post means;

a conduit for liquid molding composition slidably mounted on the forward end of said frame and on the forward end of said mold frame means;

a first plate means having passage means therein for the passage of liquid molding composition and fixedly mounted on the forward end of said conduit and adapted to slide within said support post means and within said mold frame means and located adjacent said forward end of said frame;

nozzle means at the end of said passage means in said first plate means adjacent the rear end of said mold frame means away from said conduit means, said nozzle means including pin means slidably mounted in said mold frame means and adapted to open and close a nozzle opening means in said nozzle means; and

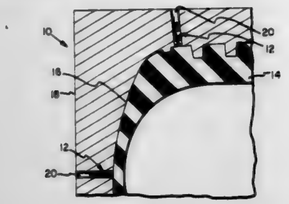
mold cavity means slidably mounted on said support post means and adapted to move toward and away from said nozzle means.

4,436,497

MOLD AND VENT PLUG THEREFOR

James M. Dahl, Stow; Bernard B. Jacobs; Joseph E. Lipovac, both of Akron; Ralph A. Meglen, Copley, and Donald W. Ward, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 27, 1982, Ser. No. 437,094
Int. Cl.³ B29H 5/02
U.S. Cl. 425—28 R 16 Claims



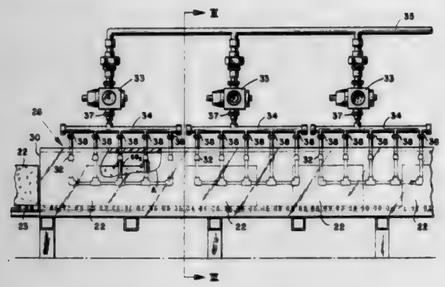
1. A vent plug for a mold used in forming elastomeric articles and the like comprising an elongated body having an axis and first and second axial ends, the overall length of said body measured parallel to said axis being greater than any external diameter of said body measured perpendicular to said axis, said body having at said first axial end a first external diameter which is constant over a predetermined portion of the length of said body equal to not more than 50 percent of said overall length, said body along the remainder of its length having an external diameter that is less than said first external diameter, and an opening extending through said body from said first axial end to said second axial end.

4,436,498

APPARATUS FOR CURING CONCRETE PRODUCTS

John A. Murray, Norristown, Pa., assignor to Conger/Murray Systems, Inc., Palm Beach, Fla.

Filed Feb. 1, 1982, Ser. No. 344,608
Int. Cl.³ B29C 25/00
U.S. Cl. 425—73 9 Claims



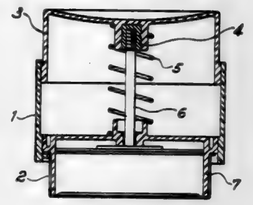
1. In an apparatus for the manufacture of concrete and like products having means for blending a desired mixture, means for molding the mixture to desired configurations, and for delivering the shapes thus formed for movement along a predetermined path, conveying means for moving the shapes thus formed to and through a chamber in which the shapes are exposed to carbon dioxide gas during the movement thereof through the chamber, the carbon dioxide gas being fed into the chamber at a controlled pressure, the improvement which comprises a series of spaced tube means along the top of the chamber, each of said tube means having a multiplicity of spaced orifices for feeding carbon dioxide gas into said chamber, said tube means and said orifices being spaced so as to permit water from carbonation and hydration reactions to escape from said shapes during feeding of said carbon dioxide gas.

4,436,499

HOUSEHOLD HAND-DEVICE FOR USE AS MEAT-PRESSER TO SHAPE MINCEMENT INTO STEAKS

Antonietta Ferrighi, Crusinallo, Italy, assignor to Acea Manodomestici S.r.l., Crusinallo, Italy

Filed Jul. 16, 1982, Ser. No. 398,961
Claims priority, application Italy, Jul. 20, 1981, 23027 A/81
Int. Cl.³ A22C 7/00; B29C 1/00
U.S. Cl. 425—195 7 Claims



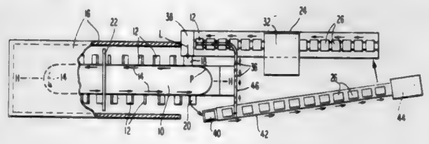
1. A hand operable device for use as a household meat presser, said device having a cylindrical central body within which a cylindrical handle member is slideably received, said handle member having a spring return means, a container member connected with said central body and having therein a plunger pressing means moveable by said handle and a cup member removeably connected with said central body and forming a bottom closure for said container member.

4,436,500

IN-LINE ROTATIONAL CASTING APPARATUS

Fred E. Allen; Bruce W. Thuener, both of Millville, and Peter R. Shadinger, Vineland, all of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Jan. 7, 1980, Ser. No. 109,798
Int. Cl.³ B29C 5/04
U.S. Cl. 425—290 27 Claims



1. Spin casting apparatus for molding hollow objects comprising:

a. loading conveyor adapted to receive at fixed intervals and to transport continuously a sucession of lower mold halves,

b. conveyor-synchronized fill dispenser including a dispenser head having at least one fill nozzle adapted to dispense a castable liquid adapted to form a hollow object by spin-casting into said lower mold halves in the course of the transporting thereof by said loading conveyor, said dispenser including means to lower said dispenser head from a starting position to a fill elevation position, to transport said head in said fill elevation position, in synchronization with said loading conveyor, to raise said dispenser head to a return elevation position, and to return said dispenser head in said return elevation position to said starting position, said dispenser including further means to dispense said fill liquid in said recepticle in the course of said synchronized movement.

c. loader for receiving sucessive mold assemblies comprising lower mold halves, castable liquid therein, and upper mold halves mated therewith and upper and lower mold half clamping means, from said loading conveyor and transferring said mold assemblies to successively presented traveling chucks, said loader including a dead plate onto which said mold assemblies are transferred by said conveyor, including a stop member to limit the travel of said mold assemblies and push bar loading means to push each of said mold assemblies perpendicularly with respect to said conveyor motion in timed sequence with said traveling chucks whereby each of said successively transferred mold assemblies is engaged to one of said successively presented chucks,

d. continuous spin caster comprising an elongated carrier means for said traveling chucks, said chucks being linearly spaced from one another along a horizontally disposed carrier means center line, further including means for continuously moving each of said chucks in a helical path about said carrier means center line, from a chuck loading position to a chuck unloading position at a predetermined rate such that the elapsed time for travel of a chuck from said loading position to said unloading position is not less than the time required for said casting material to harden in said mold, said spin caster further including means for continuously rotating each of said chucks about an axis radially projecting from said carrier means center line;

e. semi-automatic piercer adapted to form vent holes in all of molded objects disposed in said mold assemblies, said piercer comprising a tabletop adapted to receive a mold assembly with at least one perforation corresponding to the position of a molded object in said mold assembly and stop members adapted to receive and abut said mold assembly on three sides thereof, said piercer further including a manually activated swinging arm assembly having a piercing element disposed beneath

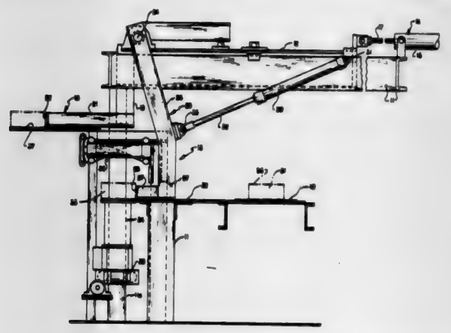
said tabletop perforation and adapted upon upward swinging thereof to protrude through said perforations and to pierce hollow molded objects disposed thereat.

4,436,501

APPARATUS FOR MAKING SPECIAL BRICK SHAPES

Samuel P. Kenworthy, Southern Pines, N.C., assignor to Basic Machinery Co., Inc., Siler City, N.C.

Filed Jul. 23, 1982, Ser. No. 401,103
Int. Cl.³ B29C 17/14
U.S. Cl. 425—308 7 Claims



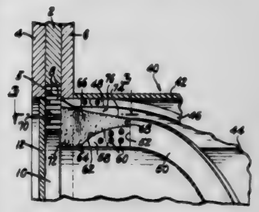
1. An apparatus for producing special brick shapes comprising conveyor means along which elongated slugs of green clay having an upper finish face and side edges are carried to a setting machine, a cutter frame adjacent to said conveyor means operable to cut slugs into special brick shapes, a pusher operable to push selected slugs off of said conveyor means to a location under said cutter frame, an elevator vertically movable between a first position below said frame in which slugs are positioned thereon by said pusher to an upper position above said frame to cause said cutter frame to cut said slugs into a plurality of shaped brick like articles, said pusher thereafter moving said articles from said elevator while said elevator remains in said second position.

4,436,502

AUGER FEED ARRANGEMENT FOR CUBING MACHINE

Garth C. Nelson, El Cajon; Henry J. White, La Jolla, and Gerald B. Nelson, San Diego, all of Calif., assignors to Papakube Corporation, San Diego, Calif.

Filed Sep. 30, 1982, Ser. No. 428,857
Int. Cl.³ B30B 9/28, 11/24
U.S. Cl. 425—331 9 Claims



1. In a cubing machine having an annular die assembly, a circular die cavity formed about the inner periphery of said die assembly, and at least one press wheel adapted to be seated in said circular die cavity and arranged to be rotated therearound, an auger arrangement for supplying feed stock to said circular die cavity, including:

an outer housing;

an auger drum mounted concentrically within said housing and spaced therefrom, said housing and auger drum being arranged generally on the central axis of said annular die assembly to extend from one side of said circular die cavity, and said auger drum being rotatable relative to said housing and having the outer end thereof disposed in closely spaced relationship to said annular die cavity;

a rigid blade mounted on said auger drum and forming an auger flight, the outer end of said blade terminating short of the outer end of said auger drum;

a mounting plate carried on the outer end of said rigid blade and extending outwardly therefrom, the outer end of said mounting plate also terminating short of the outer end of said auger drum;

a clamping plate adapted to be mated with said mounting plate;

means for connecting said clamping plate with said mounting plate; and

a flexible, resilient tip arranged to be clamped at its lower, inner corner between said mounting plate and said clamping plate, said flexible, resilient tip extending at least to the outer end of said auger drum and having a height that is generally at least equal to the height of said rigid blade.

4,436,503

APPARATUS AND PROCESS FOR THE PRODUCTION OF PILE SURFACE ARTICLES

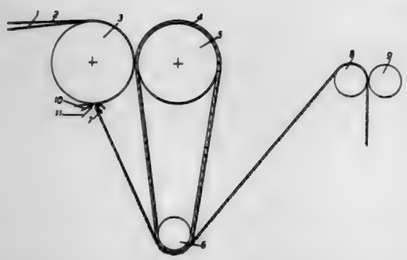
Donald J. Bye, Runcorn; Harold P. Stanistreet, Pontypool, both of England, and Werner Lindenstruth, Oestringen, Fed. Rep. of Germany, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 611,243, Sep. 8, 1975, which is a continuation of Ser. No. 417,597, Nov. 20, 1973, abandoned. This application Mar. 31, 1978, Ser. No. 892,023

Claims priority, application United Kingdom, Dec. 4, 1972, 55831/72

Int. Cl.³ B29C *17/02*

U.S. Cl. 425—384 **6 Claims**



1. Apparatus for manufacturing a pile surfaced product of the kind having a foundation layer and a pile of filament forming thermoplastic material thereon, said apparatus comprising a roll having a substantially smooth cylindrical surface heated to above the softening temperature of the thermoplastic, feed means for holding the front of the foundation layer against the thermoplastic material and the thermoplastic material against said heated surface so that the thermoplastic adheres to the surface and bonds to the backing, means to withdraw the laminate of the foundation layer and the thermoplastic from the heated surface so that filaments of softened thermoplastic material are formed by stringing said softened thermoplastic material between the foundation layer and the heated surface in a filament forming area, a rigid rod or bar of lesser diameter than the heated roll situated close to the heated surface and transverse to the direction of movement of the laminate without forming a nip with said roller, said rod or bar sharply parting the laminate from said roll, and jet means located at a position between the rod or rod and the point where the foundation parts from said roll for directing a stream of cooling fluid from the back of the foundation layer into the filament forming area.

4,436,504

APPARATUS FOR MONITORING EXHAUST GASES

Rolf Komma, Schulstrasse 43/1, D 7300 Esslingen 1 - Berkheim, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,237

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117158

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—15 **6 Claims**

1. Apparatus for monitoring exhaust gases from the combustion of fuel, particularly a heating system, comprising in combination:

a housing having an opening communicating with the exhaust gases;

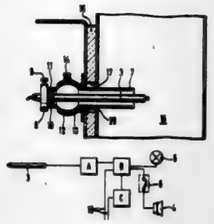
an elongated and interchangeable sensing probe in the housing extending through the opening;

probe mounting means within the housing to mount said probe selectively for swivel and longitudinal movement and locking position;

temperature indicating means responsive to signals from said probe for indicating the sensed condition;

signaling means responsive to signals from the probe for providing an audible and/or visual warning signal when the sensed condition reaches a first predetermined value;

interrupting means responsive to signals from the probe for automatically interrupting the combustion of fuel when



the sensed condition has reached a second predetermined value which exceeds said first value; and

an electric circuit including a voltage source and a plurality of relays for relaying signals from said probe to the indicating, signaling and interrupting means.

4,436,505

DEVICE FOR DETECTING FLAME IN OPEN-TYPE COMBUSTOR AND OXYGEN DENSITY OF INDOOR AIR

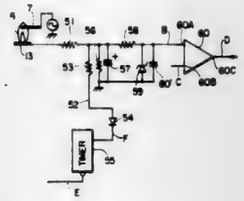
Hiroshi Yamaguchi, and Nobumasa Negishi, both of Gunma, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,505

Claims priority, application Japan, Jul. 1, 1980, 55-89475

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—76 **8 Claims**



1. A device for detecting both the presence or absence of flame in a combustor and an oxygen density of room air feeding said combustor, comprising:

a reference source for applying a reference signal across a portion of said flame;

an ion current detecting sensor for detecting an ion current in said flame produced as a result of said reference signal;

means for producing a detection output signal in response to an ion current detected by said sensor with a scale factor with respect to said detected ion current such that no erroneous detection of the presence or absence of flame occurs;

means for changing said scale factor a predetermined period of time after start of combustion of said flame to a value suitable for detecting an indoor oxygen density; and

means operating in response to said detection output signal for comparing said detection output signal with a fixed reference value for producing a final output signal sequentially indicative of the presence or absence of flame and said oxygen density.

4,436,506

CONTROL SYSTEM FOR A GAS HEATED WATER OR AIR HEATER

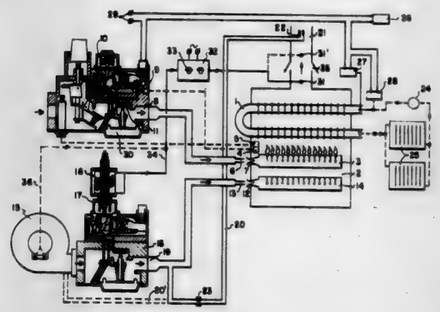
Hendrikus Berkhof, Emmen, Netherlands, assignor to Honeywell B.V., Amsterdam, Netherlands

Filed Apr. 14, 1982, Ser. No. 368,486

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1981, 3114954

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—76 **4 Claims**



1. Control system for a gas heated water or air heater having a gas control valve controlled by a temperature sensor and comprising a control member for the supply of combustion air which is controlled dependent on the gas flow, comprising a sensor for the content of oxygen or carbon dioxide in the flue gases is provided in the stack of the heater connected to an electric controller, the output signal of which controls the control member for the air volume, and further comprising a fan and a control valve connected in series with the fan and used as a controllable source of combustion air, wherein the control valve comprises a servo pressure regulator as well as a diaphragm operator for the control member of the control valve operated by the output pressure of the pressure regulator, and that a solenoid operator determining the set point of the pressure regulator is mounted on the servo pressure regulator and is controlled by the output signal of the electric controller.

4,436,507

FLUIDIZED BED REACTOR UTILIZING ZONAL FLUIDIZATION AND ANTI-MOUNDING AIR DISTRIBUTORS

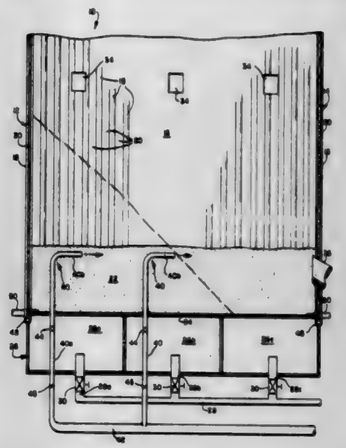
Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jul. 16, 1981, Ser. No. 283,864

Int. Cl.³ F23D *19/02*

U.S. Cl. 431—170 **3 Claims**

1. A fluidized bed reactor comprising a housing, grate means supported in said housing, a bed of combustible particulate material supported on said grate means, means extending in said housing for supplying additional combustible particulate material to said bed of particulate material, an air plenum extending immediately below said grate means, said plenum being divided into a first chamber and at least two additional chambers, means for selectively passing air from said chambers through corresponding portions of said grate means and into corresponding portions of said bed extending above said chambers to selectively fluidize said bed portions, and an air distributor extending in each of the bed portions extending above said two additional chambers and directed towards the bed portion extending above said first chamber for selectively reducing the



build-up of particulate material in the bed portions extending above said two additional chambers.

4,436,508

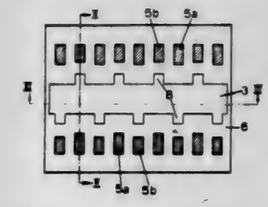
CERAMIC BURNER FOR GAS, PARTICULARLY FOR A HOT-BLAST STOVE FOR A BLAST FURNACE

Johannes C. van den Bemt, Schagen, Netherlands, assignor to Estel Hoogovens BV, Netherlands

Filed Apr. 6, 1982, Ser. No. 366,135

Int. Cl.³ C21B *9/00*; F24H *7/00*; F23C *5/00*

U.S. Cl. 432—214 **7 Claims**



1. In a ceramic burner for use in combustion gas in a combustion chamber of a hot blast stove for a blast furnace plant having a burner tip defining a vertical gas conduit and vertical air conduits on the sides of the gas conduit exiting through ports into the gas conduit, the improvement comprising the tip defining a gas conduit of rectangular cross-section in plan view having portions of the longer sides flared outwardly at an exit end, said ports exiting in said flared portions, a plurality of spaced vertical recesses of lesser number than said ports on each longer side of said gas conduit and staggered with respect to the recesses on the other side, said recesses extending along said gas conduit in the flared portions to alternating ports of said air conduits.

4,436,509

CONTROLLED ENVIRONMENT FOR DIFFUSION FURNACE

Karl H. Kocmanek, Lake Park, and Robert C. Shambelan, Tequesta, both of Fla., assignors to RCA Corporation, New York, N.Y.

Filed May 10, 1982, Ser. No. 376,572
Int. Cl.³ F27D *5/00*
U.S. Cl. 432—253 **5 Claims**



1. In a furnace system for processing silicon wafers having a cabinet region for storing and supplying gases and reactants used in the processing of the silicon wafers, a furnace zone abutting and communicating with the cabinet region having a refractory reaction tube of a given diameter extending therethrough, one end of the reaction tube communicating with the cabinet region for receiving the gases and reactants under pressure and the other end terminating in one end of a scavenger chamber to exhaust residual gases and reactants and a loading-unloading chamber abutting the other end of the scavenger chamber whereby boat members loaded with silicon wafers may be handled seriatum through the loading-unloading chamber, through the scavenger chamber and into the reaction tube, the improvement comprising:

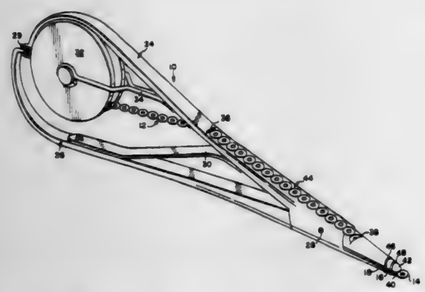
a movable control member mounted for linear movement within the reaction tube, the scavenger and loading-unloading chambers along an extension of the longitudinal axis of the reaction tube and comprising an inner tube having the same diameter as the reaction tube and an outer tube concentric with and spaced from the inner tube, both tubes fixed for parallel and simultaneous movement in the same direction.

4,436,510

ORTHODONTIC CHAIN APPLICATION TOOL

Paul E. Klein, Lake Oswego, Oreg., assignor to Modcom, Inc., Canby, Oreg.

Filed Aug. 25, 1982, Ser. No. 411,496
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—4 **2 Claims**



1. An applicator tool for use with an orthodontic loop chain to facilitate attaching, through the use of individual loops in the chain, an orthodontic archwire to orthodontic tooth appliances, where the chain is composed of a series of elastically deformable loops connected by breakaway isthmuses, said tool comprising

a pair of pivotally connected arms,

a pair of loop-gripping tips adapted for clamping an end loop in the chain in a manner permitting the end loop to be placed on a tooth appliance, to secure an archwire thereto,

a chain dispenser mounted on one of the arms, adjacent the other end thereof,

means defining a path along which the chain is intended to be advanced in a forward direction from said chain dispenser toward said tips, and

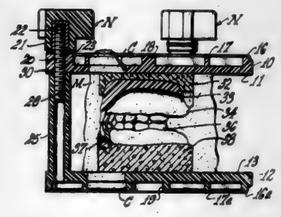
means elastically encircling said tips forming a constriction zone in said path through which an end-adjacent loop in the chain is adapted to pass, by reversible loop elongation produced by the application of a downstream force on the chain which is substantially less than that required to break an isthmus in the chain.

4,436,511

MOLDED DENTAL PRESS

John W. Mitchell, Sr., 1701 W. 168th St., Gardena, Calif. 90247

Continuation-in-part of Ser. No. 384,183, Jun. 2, 1982. This application Aug. 26, 1982, Ser. No. 411,675
Int. Cl.³ A61C *19/00*
U.S. Cl. 433—49 **5 Claims**



2. A dental press for tensioned holding during a curing period of a workpiece such as a body of moldable material adhesively supporting a matching pair of dentures and corresponding oral models, at least one of which dentures bears curable relining material conformably held intermediate the denture and its model, said press comprising in combination:

an open frame formed of separate upper and lower work-contact surfaces, each having an obverse planar face disposed facing each other, mutually parallel and vertically spaced apart by upstanding support means, tensioning means carried by said support means for frictional registration with said upper contact surface for clamping said workpiece in said frame between and in frictional contact with the respective work-contact surfaces, said upper work-contact surface having a reverse face formed with a pattern of upstanding, axially-outward directed, generally diametric ribs plus a peripheral ring which ring together with the diametric ribs form multiple spill-over catch basins, said upper work-contact surface being formed with at least one transverse aperture connecting its obverse and reverse faces and opening to one of said basins so as to enable passage thereto of small amounts of said moldable material which may be thus extruded from said workpiece upon initial pressure of the obverse faces thereagainst when the workpiece is disposed therebetween.

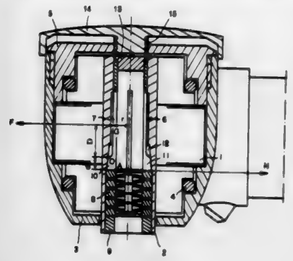
4,436,512

DEVICE FOR FIXING DRILL BITS INTO THE HEAD OF AIR MOTORS FOR HAND-HELD DENTISTS' TOOLS

Philippe Garcia, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Nov. 18, 1981, Ser. No. 322,411
Claims priority, application France, Dec. 22, 1980, 80 27642; Feb. 10, 1981, 81 02734; Feb. 10, 1981, 81 02735
Int. Cl.³ A61C *1/14*
U.S. Cl. 433—129 **12 Claims**

1. Device for securing a drill bit into the head of an air motor driven dental drill of the type including a housing mounting a rotor having a collet means for receiving the shank of the drill bit and a bit retention means to secure the bit in the collet means, the improvement wherein the retention means (6) includes longitudinal slits (7) and a head portion (10) having an inclined surface (11), the collet means of the rotor (2) having an inclined surface (12) corresponding to said inclined surface (11), a biasing means acting at one end of the retention means (6) to close the head portion (10) of the retention means onto the shank of the drill bit using the cooperation of inclined



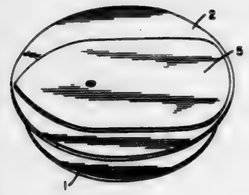
surface (11) and corresponding inclined surface (12), and a release means to release the shank of the drill bit by compressing the biasing means, said release means comprising a button (14) fitted over the housing and a closure member (13) rigidly fixed at one end of the retention means (6), wherein a turning of said button (14) causes displacement of said closure member (13).

4,436,513

FREE-SAIL SYSTEM SAILBOARD SIMULATOR

Kenneth S. Darby, R.D. 1, Box 311, Falls, Pa. 18615

Filed Apr. 5, 1982, Ser. No. 365,451
Int. Cl.³ G09B *9/06*
U.S. Cl. 434—60 **1 Claim**



1. An improvement in the design of a simulator to be used to instruct sailing on a free-sail system sailboard consisting of two complete discs of plywood or other material to form a base and a deck, having a hull-shaped non-skid area on the upper disc and within the diameter of the upper disc, having a swivel joint mount on the hull area, and inverted casters mounted on the lower disc with a pivoting bearing in the center acting as an axis around which the upper disc rotates and having an adjustable dampener for regulating the ease at which a simulator rotates and a cylindrical shape guard protruding down from the upper disc to keep fingers away from the casters.

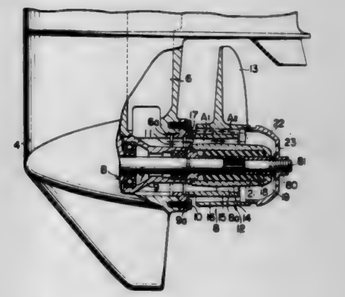
4,436,514

EXHAUST MEANS FOR MARINE PROPULSION UNIT

Masanori Takahashi, Hamamatsu, and Hidehiko Uehara, Shizuoka, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 15, 1981, Ser. No. 302,372
Claims priority, application Japan, Sep. 16, 1980, 55-128377
Int. Cl.³ B63H *1/14*
U.S. Cl. 440—89 **5 Claims**

1. A marine propulsion unit comprising housing means which is formed with engine exhaust gas passage means and has a lower portion supporting propeller shaft means, propeller means mounted on said propeller shaft means and including hub means and blade means, said hub means being formed with exhaust passage means which is extending axially along the hub means and connected at one end with said exhaust gas passage means in the housing means, the other end of the exhaust passage means being opened rearwardly of the hub means, outer pipe means having a front portion radially spaced apart from and integral with said hub means and extending substantially parallel with said hub means to surround at least the rear portion of said hub means to thereby form a substantially straight passage between the front portion of the outer



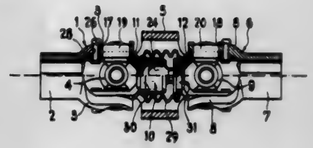
pipe means and the hub means, said outer pipe means further having a rear portion fitted to a rear end of the front portion and means extending rearwardly beyond said other end of the exhaust passage means in the hub means, said rear portion of the outer pipe means having a rear wall formed with opening means which is smaller in diameter than the rear end of said hub means, said rear wall of the rear portion of the outer pipe means having an internally threaded central hole which is in threadable engagement with an externally threaded rear end portion of said propeller shaft means, and said outer pipe means having a front end which is located forwardly of trailing edge of said blade means.

4,436,515

ARTICULATION DEVICE HAVING A DOUBLE UNIVERSAL JOINT AND A BALL JOINT UNIT

Bernard Mallet, Limay, France, assignor to Nadella, Rueil Malmaison, France

Filed Sep. 23, 1982, Ser. No. 421,802
Claims priority, application France, Oct. 23, 1981, 81 19926
Int. Cl.³ F16D *3/26, 3/30*
U.S. Cl. 464—114 **9 Claims**



1. An articulation device comprising two universal joints, intermediate connecting means for interconnecting the two universal joints, and a ball joint unit, said device being provided for transmitting a movement of rotation between a driving shaft and a driven shaft which are adapted to be rendered rigid respectively with a fork member of a first of said universal joints and a fork member of a second of said universal joints, the ball joint unit comprising a first element and a second element respectively carried by said two fork members, spiders, rolling bearings connecting said two fork members to said intermediate connecting means through said spiders, each of

the elements of the ball joint unit being constructed in the form of a fork member having branches which are respectively engaged between and in contact with branches of the corresponding fork member of said first and second universal joints, the fork members of the ball joint unit each having a web which carries a projection which cooperates with a complementary projection provided on the web of the other fork member of the ball joint unit, the fork members of the ball joint unit defining in their branches transverse apertures receiving inwardly projecting portions of said rolling bearings by means of which rolling bearings the spiders are mounted in the branches of the fork members of the first and second universal joints.

4,436,516

CYLINDRICAL ROLLER BEARING SUPPORT FOR TRUNNIONS IN FORK EYES OF UNIVERSAL JOINTS

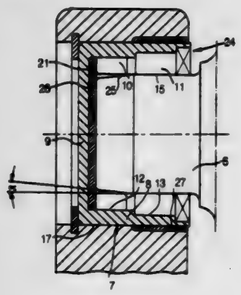
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Euscheim, and Heinrich Kunkel, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,191

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027263

Int. Cl.³ F16D *3/41*

U.S. Cl. 464—128 **8 Claims**



1. Support means for trunnions in fork eyes of universal joints having a cylindrical bore comprising a bearing bushing mounted in the cylindrical bore and consisting of a generally cylindrical sleeve section and a bottom section closing one axial end of said sleeve section adapted to axially support the trunnion, a plurality of cylindrical rollers having axial end faces arranged in at least two side by side rows in an annular space between said sleeve section and trunnion, said trunnion having an outer peripheral surface defining the inner raceways for the rows of rollers, said sleeve section having a constant uniform outer diameter and having stepped outer races formed in its bore section offset in steps radially inwardly towards said bottom section thereby to define a relatively thick walled sleeve section for a first row of rollers adjacent the bottom section and a relatively thin walled sleeve section for the rollers of a second row which are greater in diameter than said rollers of said first row, said sleeve section under the outer races being supported non-elastically at its outer peripheral surface adjacent the bottom section over its entire periphery and being supported elastically on its side opposite the bottom section at least in a radial load direction in the fork eye by means of an intermediate bushing member made of an elastically compressible material which seats between the inner wall of the bore of the fork eye and the outer peripheral surface of the bearing bushing and overlies said second row of rollers.

4,436,517

APPARATUS FOR MAKING TRANSVERSE FLOW CIGARETTE FILTERS

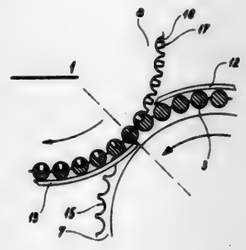
Jean-Pierre Lebet, Montreux, Switzerland, assignor to Baumgartner Papiers S.A., Renens, Switzerland

Continuation-in-part of Ser. No. 839,607, Oct. 5, 1977, Pat. No. 4,164,438. This application Mar. 14, 1979, Ser. No. 20,471

Claims priority, application Switzerland, Oct. 5, 1976, 12568/76

Int. Cl.³ A24C *5/50*

U.S. Cl. 493—45 **11 Claims**



1. Apparatus for making transverse flow cigarette filters which comprises:

means for forming cellulose acetate previously impregnated with a plasticizing agent into a rod having a porous covering:

means for cutting said rod at a cutting station into sections each having a length of several filters;

means for conveying said rod sections from said cutting station in a direction transverse to the lengths of said rod sections; and

means engaging opposite ends of said rod sections for positioning said rod sections while being thus conveyed,

said conveying means comprising a revolving drum having in its peripheral surface a plurality of longitudinal grooves into which said rod sections are fed and by which they are conveyed as said drum revolves, and a second revolving drum having in its peripheral surface longitudinal grooves into which said rod sections are transferred, said second drum having in its groove spaced projections for forming longitudinally spaced indentations in one side of each of said rod sections while said sections are being conveyed by said conveying means from said cutting station.

4,436,518

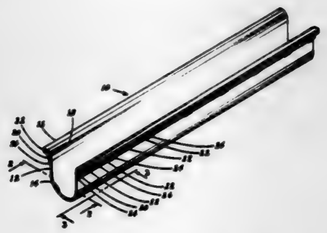
METAL TROUGH

David L. Buss, 120 E. Kraus St., St. Louis, Mo. 63111

Filed Sep. 15, 1980, Ser. No. 186,899

Int. Cl.³ B65G *15/60*

U.S. Cl. 428—595 **5 Claims**



1. A trough comprising a length of sheet metal formed into a trough having flanges along each side of the trough with a smooth continuous curve between the flanges and the body of the trough, and a bar of metal welded along the underside of each longitudinal edge of said metal sheet before said flanges are formed; said bar being formed simultaneously with said sheet, so as to produce a flange reinforcement having a smooth continuous curve, which curve is substantially identical to the smooth continuous curve of the flanges on the trough.

4,436,519

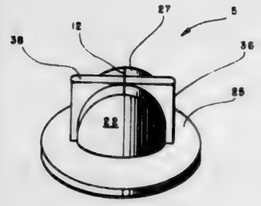
REMOVABLE HEMOSTASIS VALVE

William J. O'Neill, Garland, Tex., assignor to Argon Medical Corp., Athens, Tex.

Filed May 28, 1981, Ser. No. 267,984

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—175 **10 Claims**



1. A hemostasis valve comprising:

(a) a body having a central passage therein;

(b) a seal having a central aperture therein, said seal being mounted in said central passage; and

(c) a resilient, dome shaped diaphragm having a wall member with a single, linear slit therein, said diaphragm being mounted in said central passage, said diaphragm wall member having an inner bottom diaphragm surface, and an outer bottom diaphragm surface, said slit extending through said wall member from said inner bottom diaphragm surface to said outer bottom diaphragm surface, said wall member defining with said seal a diaphragm chamber within the space between said inner bottom diaphragm surface and said seal, whereby the side walls of said dome shaped diaphragm will act in cooperation with the walls of said central passage to resiliently urge said slit closed when no catheter is present therethrough.

4,436,520

LOW GLOSS FILMS OF ENHANCED ADHESION

Robert J. Lipko, Llewellyn, and Douglas J. Laurent, Auburn, both of Pa., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1981, Ser. No. 332,367

Int. Cl.³ A61F *13/02*

U.S. Cl. 604—385 **3 Claims**

1. A disposable diaper having a diaper back sheet of polyolefin, non-woven top sheet, absorbent inner layer and tape closure tabs, wherein the exposed surface of said diaper back sheet has a 45° gloss of no greater than 8, a mean value of maximum profile height (R_{pm}) of less than 100 microinches and a mean maximum peak to valley height (R_{tm}) of less than 200 microinches, wherein said surface has enhanced adhesion to said tape closure tabs.

4,436,521

PROCESS FOR PRODUCING DYED AND ANTI-SHRINK TREATED WOOL

Oskar Annen, Aesch; Hermann Egli, Basel, and Karl Zesiger, Allschwil, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 178,124, Aug. 14, 1980, abandoned, which is a continuation of Ser. No. 103,272, Dec. 13, 1979, abandoned. This application May 27, 1982, Ser. No. 382,681

Claims priority, application Switzerland, Oct. 18, 1979, 9366/79

Int. Cl.³ D06P *1/56, 3/16, 5/00, 5/02*

U.S. Cl. 8—493 29 Claims

1. A process for producing dyed and anti-shrink treated wool which comprises dyeing wool with an acid milling or a metal complex dye either before, after or between the steps of an anti-shrink treatment and after-treating the dyed wool with a liquor containing a mixture of a cationic fixing agent and a levelling/retarding agent having affinity for wool dyestuffs, with the proviso that where the anti-shrink treatment comprises a chlorination step the dyeing and aftertreatment are carried out after such chlorination step.

4,436,522

DISPERSE DYE COMPOSITION

Toshio Niwa, and Susumu Nagashima, both of Kanagawa, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Dec. 31, 1981, Ser. No. 336,482

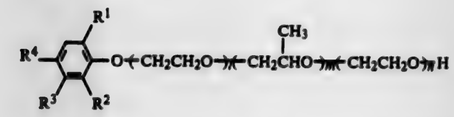
Int. Cl.³ C09B *67/38, 67/40;* D06P *1/613*

U.S. Cl. 8—524 2 Claims

1. A disperse dye composition containing:

20 to 50% by weight of a water-insoluble or sparingly soluble dye; and

1 to 5% by weight of a water-soluble surface active agent represented by the formula:



wherein R_1 is a hydrogen atom or an α-methylbenzyl group, R^2 is a hydrogen atom or an α-methylbenzyl group, R^3 is a hydrogen atom or a methyl group, R^4 is a hydrogen atom, a methyl group or an α-methybenzyl group, with the proviso that one of R^1, R^2 and R^4 is an α-methylbenzyl group, wherein one of l and n is 0 and the other is an integer of 7 to 20, and m is an integer of 0 to 5.

4,436,523

PROCESS FOR THE PREPARATION OF STORAGE STABLE COLORANT COMPOSITIONS BY ULTRAFILTRATION AND WET MILLING

Paul Hugelshofer, Muttenz; Peter Zbinden, Hölstein, and Zdenek Koci, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,660

Claims priority, application Switzerland, Sep. 29, 1981, 6258/81

Int. Cl.³ C09B *67/46;* D06P *1/16*

U.S. Cl. 8—527 20 Claims

1. A process for the preparation of storage stable compositions of sparingly soluble or water-insoluble colorants, which process comprises mixing an aqueous suspension of at least one sparingly soluble or water-insoluble colorant with at least one surface-active substance, subjecting the mixture to ultrafiltration through an asymmetrical membrane which contains ionic groups and has a pore diameter of 1 to 500 Å and a cut-off level in the molecular weight range from 300 to 500, and subsequently subjecting the resultant concentrate to wet grinding.

4,436,524

AFTER TREATING COMPOSITION FOR DIRECT OR REACTIVE DYEINGS ON CELLULOSE

Salvatore Valenti, Binningen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed May 10, 1982, Ser. No. 376,902

Claims priority, application Fed. Rep. of Germany, May 16, 1981, 3119645; Jun. 19, 1981, 3124195

Int. Cl.³ D06P *5/02*

U.S. Cl. 8—551 23 Claims

1. A composition useful as an aftertreatment agent for improving the fastness of a dyeing, printing or optical brightening on a hydroxy group-containing fibrous substrate which composition comprises

(1) a mixture of (A) and (C),

(2) a mixture of (A), (B) and (C),

(3) a precondensate prepared by reacting (A) with (B) in the presence of (C), or

(4) a mixture of (C) and a precondensate prepared by reacting (A) with (B) in the absence of (C),

wherein

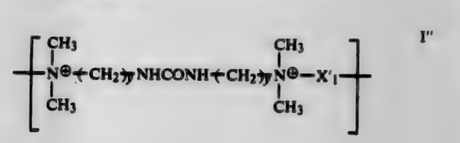
(A) is a linear or crosslinked polymer comprising repeating units of the formula I″ or I‴,

(B) is an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide;

and

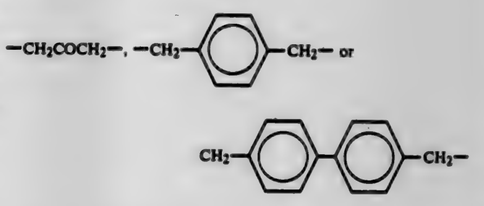
(C) is a catalyst for the cross-linking of N-methylol compounds of the type (B) above,

with the proviso that in the composition of type (1) component (A) comprises repeating units of formula I‴, said formulae I″ and I‴ being as follows:



I″

wherein X_1' is C_{2-12}alkylene,



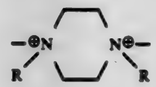
and each y, independently, is 2–4, and

I‴

in which each W independently is

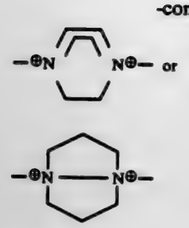


(a)



(b)

-continued



in which each

R, independently, is C_{3-6}cycloalkyl; C_{1-20}alkyl; C_{1-20}alkyl monosubstituted by —OH, —CN, R_1O—R_1S—, R_1CO—, or —$CON(R_2)_2$; C_{1-4}alkyl monosubstituted by —COOH or arylsulphonyl or mono- or di-substituted by —$COOR_1$; phenyl or benzyl unsubstituted or substituted by up to 3 groups selected from R_1—, R_1O—, —OH, —CN, halogen and —COOH; or both groups R on a single nitrogen atom, together with the nitrogen atom to which they are attached, form a 5- or 6-membered ring;

R_1 is C_{1-4}alkyl;

R_2 is hydrogen, C_{1-4}alkyl or C_{1-4}alkyl monosubstituted by —OH, aryl or C_{1-4}alkoxy;

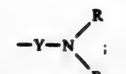
X_1 is a divalent bridging group,

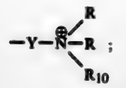
each

Y, independently, is arylene, aralkylene, alkarylene, oxyarylene or C_{1-15}alkylene, which may be interrupted by up to 7 oxygen or 3 quaternary nitrogen atoms and may be substituted by up to 3 —OH or —OR_1 groups,

and

Z is a bridging group of formula (e) or (f)

(c) a group  ;

(d) or a group  ;

in which Y and R are as defined above and R_{10} is C_{1-20}alkyl which may be unsubstituted or substituted by up to 3 hydroxy or halogen groups and/or may be interrupted by up to 3 —O—, —S—, —NR_{11}— or —$N^{\oplus}(R_1)_2$— groups, where R_{11} is hydrogen or C_{1-4}alkyl.

4,436,525

FUEL GEL FOR CHARCOAL OR WOOD FIRES

Barney J. Zmoda, Bridgewater, and Paul J. Fessock, South Plainfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,818
Int. Cl.³ C10L *7/04*
U.S. Cl. 44—7.3 **7 Claims**

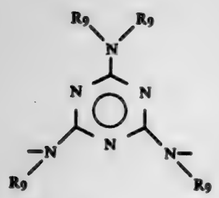
1. A solid alcohol fuel fire starter comprising a firm, free-standing molded solid anhydrous alcohol gel which does not liquify during combustion consisting essentially of a major proportion of an anhydrous alcoholic mixture of methanol and isopropanol in the weight ratio of about 3:1, and a fatty acid soap gelling agent.

4,436,526

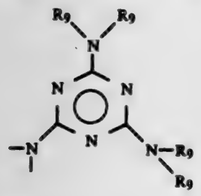
(e) METHOD FOR MAKING AN ARTIFICIAL FUEL LOG

Morris E. Holder, East Ridge, Tenn., assignor to HMVH Corporation, Chattanooga, Tenn.

Filed Jun. 25, 1982, Ser. No. 392,287
Int. Cl.³ C10L *5/00*
U.S. Cl. 44—10 B **14 Claims**



(f)



in which

R_5 is a direct bond, C_{1-12}alkylene, C_{1-12}alkylene interrupted by up to 3 N or O atoms, arylene, diaminoarylene or dioxyarylene,

R_6 is C_{1-12}alkylene or C_{2-12}alkylene interrupted by up to 3 N, O or S atoms,

R_7 is arylene,

R_8 is C_{1-12}alkylene or arylene,

and each

R_9 independently is hydrogen, C_{1-20}alkyl, unsubstituted or substituted by up to 3 hydroxy, C_{1-4}alkoxy or halogen groups,

1. A method for making an artificial fuel log comprising:
(a) providing a mixture of combustible material and binder in a hollow mold which is open at both ends;
(b) applying compressive forces having both axial and radial components at both ends of the mold to compress the mixture in the mold;
(c) closing both ends of the mold to maintain the compressed mixture therein at a fixed volume;
(d) effecting at least partial curing of the compressed mixture within the mold;
(e) removing the closures from the ends of the mold; and
(f) removing the fuel log from the mold.

4. The method of claim 1 wherein the combustible material is lignocellulosic material having a moisture content of 18% by weight or less, and the binder is a thermosetting resin.

12. An artificial fuel log made by the method comprising:
(a) providing a mixture of combustible material and binder in a hollow mold which is open at both ends;
(b) applying compressive forces having both axial and radial components at both ends of the mold to compress the mixture in the mold;
(c) closing both ends of the mold to maintain the compressed mixture therein at a fixed volume;
(d) effecting at least partial curing of the compressed mixture within the mold;
(e) removing the closures from the ends of the mold; and
(f) removing the fuel log from the mold.

4,436,527

STABILIZER FOR MIXED FUELS

Masaaki Yamamura, Wakayama; Taizo Igarashi, Amagasaki, and Toshiyuki Ukigai, Chiba, all of Japan, assignors to Kao Soap Co., Ltd.; Lion Corporation and Nippon Oil and Fats Co., Ltd., all of Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,855
Claims priority, application Japan, Sep. 16, 1980, 55/128087
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **10 Claims**

1. A mixed fuel composition which comprises a dispersion of pulverized coal dispersed in fuel oil, said dispersion containing an effective stabilizing amount of the reaction product obtained by reacting (1) polyol having at least 3 hydroxyl groups in the molecule and having a molecular weight of from 400 to 10,000, with (2) an epihalohydrin.

4,436,528

AQUEOUS SLURRIES OF CARBONACEOUS MATERIALS

Martin J. Schick, New York, N.Y., and Kathy A. Knitter, Newark, Calif., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Sep. 17, 1982, Ser. No. 419,618
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **23 Claims**

1. A stabilizer composition for aqueous carbonaceous slurries comprising:
(a) at least one dispersant selected from the group consisting of the sodium, lithium, potassium and ammonium salts of naphthalenesulfonic acid formaldehyde condensate, and
(b) at least one water soluble polymer selected from the group consisting of sodium alginate, guar gum, locust bean gum, carboxymethylhydroxypropyl guar gum, hydroxypropyl guar gum and guarpak guar gum.

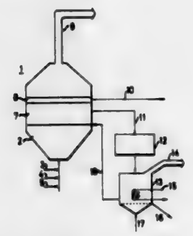
21. A process for preparing stable aqueous carbonaceous slurries comprising incorporating into said slurry the composition of claim 1 in an amount sufficient to reduced water content of the slurry, stabilize the network of carbonaceous material in water and improve pumpability.

4,436,529

METHOD FOR REMOVING SULPHUR IN CONJUNCTION WITH THE GASIFICATION OF CARBONACEOUS MATERIAL IN METAL SMELTS

Per A. H. H. Fahlström, Åkersberga, and Karl G. Görling, Lidingö, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Mar. 11, 1982, Ser. No. 357,091
Claims priority, application Sweden, Apr. 21, 1981, 8102508
Int. Cl.³ C10J *3/00*
U.S. Cl. 48—197 R **8 Claims**



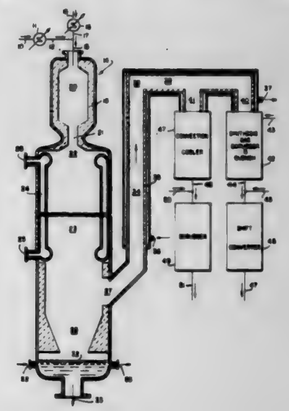
1. A method for removing sulphur when gasifying metal smelts of carbonaceous material containing sulphur, characterized in that the carbonaceous material is charged to a gasifying reactor containing an iron and/or manganese smelt with a temperature of between 1100° and 1600° C. substantially saturated with respect to sulphur and carbon to form a smelt layer, a matte layer and a slag layer; and tapping off the matte layer separated from residual mineral material which is removed with slag from said slag layer.

4,436,530

PROCESS FOR GASIFYING SOLID CARBON CONTAINING MATERIALS

Edward T. Child, Tarrytown, and William B. Crouch, Chappaqua, both of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,974
Int. Cl.³ C10J *3/46*
U.S. Cl. 48—197 R **17 Claims**



1. The method which comprises
gasifying a solid carbon-containing charge in the presence of water and an oxygen-containing gas thereby forming a hot synthesis gas containing carbon monoxide and hydrogen at 1100° C.–1600° C.;
cooling by radiation said hot synthesis gas containing carbon monoxide and hydrogen to 500° C.–800° C. thereby forming a cooled synthesis gas;
removing at least a portion of the ash components from said cooled synthesis gas thereby forming a partially deashed cooled synthesis gas;
convectively cooling said partially deashed cooled synthesis gas in a transfer line convection cooler from initial temperature of 500° C.–800° C. to a final temperature of 400° C.–700° C. thereby forming a further cooled synthesis gas;
convectively cooling a first, carbon monoxide-production portion of said further cooled synthesis gas to 150° C.–400° C. thereby forming a convectively cooled first portion;
scrubbing said convectively cooled first portion thereby forming a scrubbed first portion of said synthesis gas in amount desired for carbon monoxide production;
contacting a second portion of said cooled synthesis gas with aqueous coolant in a synthesis gas scrubbing and quench operation wherein, as said gas is cooled from 400° C.–700° C. down to 150° C.–250° C., it volatilizes therein water in predetermined desired amount for shift conversion thereby forming a shift conversion charge gas;
preheating said shift conversion charge gas to 175° C.–250° C.;
passing said preheated shift conversion charge gas to a shift conversion operation wherein at 250° C.–550° C. and 300–1200 psig water reacts with carbon monoxide forming carbon dioxide and hydrogen to yield a product synthesis gas; and
withdrawing said product synthesis gas.

4,436,531
SYNTHESIS GAS FROM SLURRIES OF SOLID CARBONACEOUS FUELS

Lawrence E. Estabrook, Whittier, Calif., and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,437
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R 28 Claims

1. A continuous process for the production of synthesis gas, fuel gas, or reducing gas from a slurry of an ash-containing solid carbonaceous fuel comprising,

(1) reacting about 75 to 95 weight percent of the carbon in said slurry of ash-containing solid carbonaceous fuel by noncatalytic partial oxidation with a free-oxygen containing gas and in the presence of a temperature moderator in the free-flow refractory lined reaction zone of a gas generator at an autogenous temperature in the range of about 2350° F. to 2900° F. and a pressure in a range of about 10 to 200 atmospheres to produce a hot stream of gas comprising H_2, CO, CO_2, and at least one material selected from the group consisting of H_2, N_2, H_2S, COS, CH_4, NH_3, A, HCl, HCN, and containing entrained matter comprising particulate carbon, the remainder of the unconverted ash-containing solid carbonaceous fuel, and molten slag;

(2) passing the hot gas stream into a gas cooling zone including a radiant cooler provided with an unobstructed central passage through which the hot gas stream is passed; contacting said hot gas stream within said cooling zone with an aqueous solution of catalyst consisting of a water soluble alkali metal compound and/or an alkaline earth metal compound and water, wherein the alkali metal and/or the alkaline earth metal constituents of the compound are selected from the metals in the Periodic Table of Elements in Groups IA and/or IIA; and intimately mixing said catalyst solution with said entrained matter and vaporizing the water;

(3) reacting in said gas cooling zone in the presence of said catalyst H_2O and at least a portion of the particulate carbon and the carbon in the remainder of the unconverted ash-containing solid carbonaceous fuel entrained in said gas stream; and simultaneously reducing the temperature of said gas stream from an entering temperature in the range of about 2300° F. - 2800° F. to a discharge temperature in the range of about 1350° F. - 1600° F. by indirect heat exchange with a coolant; and

(4) discharging from said gas cooling zone a partially cooled gas stream containing an increased amount of H_2+CO_2.

4,436,532
PROCESS FOR CONVERTING SOLID WASTES TO GASES FOR USE AS A TOWN GAS

Katsunobu Yamaguchi, Yokohama; Seiichi Matsuoka, Anjyo; Takayuki Hayashida, and Tomio Hayase, both of Yokohama, all of Japan, assignors to JGC Corporation and Tsukishima Kikai Co., Ltd., both of Tokyo, Japan, a part interest

Filed Mar. 9, 1982, Ser. No. 356,606
Claims priority, application Japan, Mar. 13, 1981, 56-35303
Int. Cl.³ C10J 3/00
U.S. Cl. 48—209 14 Claims

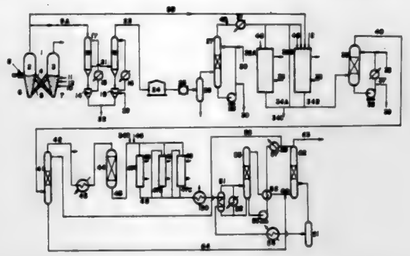
1. A process for converting solid wastes to gases suitable for use as a town gas comprising the steps of:

(1) pyrolyzing solid wastes at a temperature of at least 550° C. in a pyrolyzing furnace to produce pyrolysis gases containing hydrogen, carbon monoxide, carbonic acid gas, methane and other hydrocarbons, inert gases, chlorine-containing compounds, sulfur-containing compounds and other impurities,

(2) washing the thus produced pyrolysis gases,

(3) refining the thus washed pyrolysis gases,

(4) reforming the thus refined pyrolysis gases with the steam contained therein by at least one member selected from low-temperature steam reforming, high-temperature steam reforming, CO conversion and methanation and



(5) separating at least one member selected from the steam and carbonic acid gas from the thus reformed pyrolysis gases thereby to obtain the gases suitable for use as a town gas.

4,436,533
ADSORPTION PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 2, 1982, Ser. No. 446,299
Int. Cl.³ B01D 53/04
U.S. Cl. 55—26 8 Claims

1. A improved process for using at least three molecular sieve adsorbent beds and a continuous flow of a vapor-phase eluent to effect the resolution of a continuous flow of a vapor-phase hydrocarbon feed mixture containing normal paraffins and non-normal paraffin hydrocarbons into an adsorbate product fraction comprising normal paraffins and a raffinate product fraction comprising non-normal paraffin hydrocarbons, which process comprises repeated sequential performance of the following steps: step one, in which

the feed mixture is passed through a first adsorbent bed,
effluent is withdrawn from the first bed and passed through a second adsorbent bed,
the eluent flow is passed through a third adsorbent bed,
adsorbate product is withdrawn as an effluent from the third bed, and
raffinate product is withdrawn as an effluent from the second bed;

step two, in which

the feed mixture is passed through the second bed,
the eluent flow is passed through the first bed,
effluent from the first bed is withdrawn and is passed through the third bed, and
raffinate product is withdrawn as effluent from the second bed and from the third bed;

step three, in which

the feed mixture is passed through the second bed,
the eluent flow is passed through the first bed,
adsorbate product is withdrawn as effluent from the first bed,
effluent from the second bed is withdrawn and is divided into a major fraction containing between about 50 and 95 volume percent and a minor fraction containing between about 5 and 50 volume percent,
said minor fraction is passed through the third bed, and
raffinate product is withdrawn as said major fraction of effluent from the second bed and as effluent from the third bed;

step four, in which

the feed mixture is passed through the second bed,
effluent is withdrawn from the second bed and passed through the third bed,
the eluent flow is passed through the first bed,
adsorbate product is withdrawn as effluent from the first bed, and

raffinate product is withdrawn as effluent from the third bed,

step five, in which

the feed mixture is passed through the third bed,
the eluent flow is passed through the second bed,
effluent from the second bed is withdrawn and is passed through the first bed, and
raffinate product is withdrawn as effluent from the first bed and from the third bed;

step six, in which

the feed mixture is passed through the third bed,
the eluent flow is passed through the second bed,
adsorbate product is withdrawn as effluent from the second bed,
effluent from the third bed is withdrawn and is divided into a major fraction containing between about 50 and 95 volume percent and a minor fraction containing between about 5 and 50 volume percent,
said minor fraction is passed through the first bed, and
raffinate product is withdrawn as said major fraction of effluent from the third bed and as effluent from the first bed;

step seven, in which

the feed mixture is passed through the third bed,
effluent is withdrawn from the third bed and passed through the first bed,
the eluent flow is passed through the second bed,
adsorbate product is withdrawn as effluent from the second bed, and
raffinate product is withdrawn as effluent from the first bed; and

step eight, in which

the feed mixture is passed through the first bed,
the eluent flow is passed through the third bed,
effluent from the third bed is withdrawn and is passed through the second bed, and
raffinate product is withdrawn as effluent from the first bed and from the second bed; and

step nine, in which

the feed mixture is passed through the first bed,
the eluent flow is passed through the third bed,
adsorbate product is withdrawn as effluent from the third bed,
effluent from the first bed is withdrawn and is divided into a major fraction containing between about 50 and 95 volume percent and a minor fraction containing between about 5 and 50 volume percent,
said minor fraction is passed through the second bed, and
raffinate product is withdrawn as said major fraction of effluent from the first bed and as effluent from the second bed.

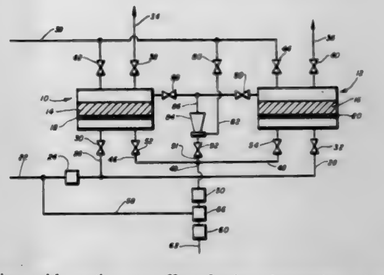
4,436,534
METHOD FOR REDUCING DESORBENT CONSUMPTION IN RECOVERY SYSTEMS

Bernard R. Seguy, Amcec Corporation, 2625 Butterfield Rd., Oak Brook, Ill. 60521

Filed Nov. 8, 1982, Ser. No. 440,076
Int. Cl.³ B01D 53/04
U.S. Cl. 55—58 22 Claims

1. In a desorption stage in the operation of a system for recovering a chemical substance from a carrier medium, wherein an externally supplied desorbent used in the desorption of an adsorber in said system is heated prior to its introduction to said adsorber, the method for reducing consumption of said preheated desorbent during the desorption of said adsorber comprising the steps of:

initiating a flow of said preheated desorbent through the adsorber to commence the desorption operation;
reducing the flow of said preheated desorbent entering the adsorber at a predetermined time during the desorption operation; and
recirculating through the adsorber for a predetermined time a portion of the mixture leaving the adsorber, without

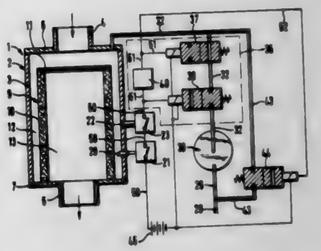


heating said portion, to effect further desorption of the adsorber.

4,436,535
METHOD AND DEVICE FOR REMOVING SOOT FROM EXHAUST GASES

Hans Erdmannsdörfer, Ludwigsburg; Manfred Wagner, Stuttgart, and Gerd Weyh, Leonberg-Eltingen, all of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,650
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111228
Int. Cl.³ B01D 46/04
U.S. Cl. 55—96 15 Claims



1. A method of removing soot from the exhaust gases of an internal combustion engine, particularly of a diesel engine, comprising the steps of:

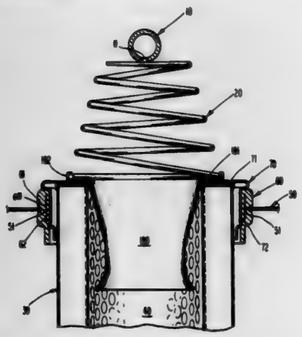
filtering the soot particles from the exhaust gas by means of an exhaust filter which retains and collects the soot;
during operation of the engine, from time to time burning off the collected soot to a gas which passes through the exhaust filter by adding to the soot a dose of a flowable combustion-inducing substance which lowers the soot ignition temperature and a supply of combustion air;
monitoring the temperature inside the exhaust filter and using the presence of an operating temperature above a predetermined level as a precondition for the initiation of the burn-off step; and
monitoring the accumulation of soot in the exhaust filter, in terms of the resultant increase in the flow resistance of the filter, and using the presence of a predetermined flow resistance as a trigger condition for the initiation of the burn-off step.

4,436,536

DUST COLLECTING FILTER CARTRIDGE AND ATTACHMENT STRUCTURE FOR SUSPENDING SAME FROM BAGHOUSE TUBE SHEET

James W. Robinson, Woodridge, Ill., assignor to Flex-Kleen Corporation, Chicago, Ill.

Filed Sep. 29, 1982, Ser. No. 428,324
Int. Cl.³ B01D 46/52
U.S. Cl. 55—341 R 3 Claims



1. A dust filter baghouse comprising;
A. A baghouse tube sheet having a plurality of openings therein;
B. A plurality of small-diameter filter cartridges, each filter cartridge comprising a cylindrical perforated sleeve, an annular pleated filter media which encircules said sleeve, and a cap secured to the upper end of said filter media,
C. Attachment structure suspending each of said filter cartridges from said baghouse tube sheet in registry with one of said openings, said attachment structure comprising:
a. a collar having an annular upper horizontal shoulder portion, an enlarged rim portion, and an annular portion depending downwardly from said rim portion;
b. means securing said shoulder portion of said collar to said cap;
c. an annular double-beaded cuff, said cuff having an upper bead, a lower bead and an outer annular groove between said upper and lower beads receiving the edge of one of said openings in the tube sheet, said upper bead of said cuff being positioned to rest on and be supported by said tube sheet, said cuff including spring means so as to be spring biased in an outward direction toward said edge of said opening in said tube sheet; thereby to effect a dust-tight seal between said opening edge and said cuff;
d. said rim of said collar resting on and be supported by said cuff,
e. said depending portion of said collar being press fitted into said cuff to effect a dust-tight seal between said depending collar portion and said cuff.

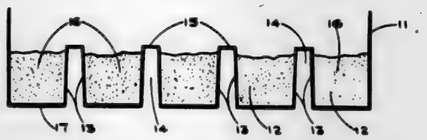
4,436,537

MODULAR HYDRIDE CONTAINER

Pierre P. Turillon, Ramsey, N.J., assignor to MPD Technology Corporation, Wyckoff, N.J.

Continuation of Ser. No. 19,658, Mar. 12, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,325
Int. Cl.³ B01D 53/04
U.S. Cl. 55—387 3 Claims

1. A hydrogen containment unit comprising
a. a container for gaseous hydrogen,
b. valved piping means to introduce gaseous hydrogen into and withdraw gaseous hydrogen from said container,
c. a multiplicity of open-topped metallic trays in said container each tray
1. having at least one depressed storage zone for pulverized solid material and
2. being made of a hydrogen resistant material of good heat conductivity
d. a multiplicity of masses of pulverized solid hydridable material in said depressed storage zones of said multiplicity of trays said masses of hydridable material being confined solely by said depressed storage zones and being



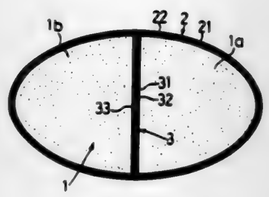
open to reaction with gaseous hydrogen in said container, and
e. said multiplicity of trays being stacked unnested in said container to thereby define a labyrinth of hydrogen gas transport passages devoid of pressure drop barriers and communicating with all of said multiplicity of masses of hydridable material and a heat transfer network extending throughout the bulk of the volume of said container.

4,436,538

FILTER FOR CLEANING EXHAUST GASES FROM DIESEL ENGINE

Masahiro Tomita, and Shigeru Takagi, both of Anjo, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 21, 1982, Ser. No. 370,348
Claims priority, application Japan, Apr. 22, 1981, 56-61824; Apr. 24, 1981, 56-62787; Apr. 28, 1981, 56-64432
Int. Cl.³ B01D 39/20
U.S. Cl. 55—482 7 Claims



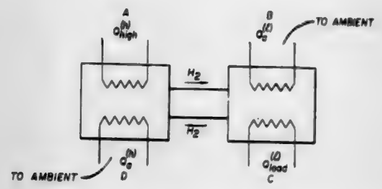
1. A filter for collecting carbon particulates in the exhaust gases emitted from a diesel engine, comprising:
an exhaust gas cleaning portion provided with a large number of interconnected fine pores through which exhaust gases flow; said exhaust gas cleaning portion being provided with an exhaust gas inlet surface and an exhaust gas outlet surface; and
an outer wall portion which is formed around the outer peripheral surface of said cleaning portion so as to be integral therewith, except for said exhaust gas inlet surface and said exhaust gas outlet surface of said cleaning portion;
said exhaust gas cleaning portion being formed of porous ceramic, the whole of which has uniform bulk density;
said outer wall portion being formed of porous ceramic, the bulk density of said outer wall portion increasing from the inner periphery thereof toward the outer periphery thereof so that the inner periphery of said outer wall portion has a bulk density slightly larger than that of the outer periphery of said cleaning portion while the outer periphery of said outer wall portion has such a high bulk density that the exhaust gases do not flow therethrough.

4,436,539

METHOD AND APPARATUS FOR AIR-CONDITIONING BY MEANS OF A HYDROGEN HEAT PUMP

Moshe Ron; Matvei Kleiner, and Uri Navon, all of Haifa, Israel, assignors to Technion Research and Development Foundation Ltd., Haifa, Israel

Filed Oct. 6, 1981, Ser. No. 309,225
Int. Cl.³ F25B 13/00
U.S. Cl. 62—4 10 Claims



1. A method of air-conditioning a vehicle using a hydrogen-based chemical heat pump including a dual metal hydride system of two different hydrides capable of passing hydrogen therebetween, and wherein one of the hydrides is a low-temperature hydride and the other a high-temperature hydride, said method comprising
providing said low temperature hydride in the form of a porous metal compact;
heating with waste heat from said vehicle high-temperature hydride having hydrogen absorbed therein to cause desorption of said hydrogen from said high-temperature hydride and flow to said low-temperature hydride;
absorbing said hydrogen by said low-temperature hydride while cooling said low-temperature hydride by heat exchange with the ambient atmosphere;
stopping the flow of waste heat to said high-temperature hydride upon completion of desorption; and
cooling said high-temperature hydride by heat exchange with the ambient atmosphere to provide said high-temperature hydride with a sufficiently low-temperature at which it is capable of absorbing hydrogen from said low-temperature hydride; and
further cooling said cooled low-temperature hydride containing said hydrogen absorbed therein by desorbing hydrogen therefrom and then heating at a high heat transfer rate said cooled low-temperature hydride by heat exchange with the environment being air-conditioned and further desorbing said hydrogen from said low-temperature hydride and passing said hydrogen to said cooled high-temperature hydride where said hydrogen is absorbed thereby.

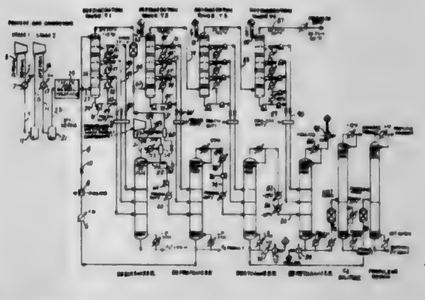
3. An air-conditioning unit for a vehicle based on a hydrogen heat pump, comprising:
a high-temperature hydride tank and a low temperature hydride tank, a fixed quantity of hydrogen disposed within at least one of said tanks, means for passing said hydrogen between said tanks, first heat exchange means between a source of waste heat from said vehicle at a high-temperature and said high-temperature hydride tank, second heat exchange means between ambient and said high-temperature hydride tank, third heat exchange means between ambient and said low-temperature hydride tank, fourth heat exchange means between a space to be cooled and said low-temperature hydride tank, and
control means to control the operation of all said heat exchange means in sequence to effect heating of said high-temperature hydrides tank, desorption of hydrogen therefrom and absorption in said low-temperature hydride tank, followed by desorption of hydrogen from the low-temperature hydride tank, cooling of said space to be cooled and absorption of hydrogen in said high-temperature hydride tank;
said high-temperature hydride tank and said low-temperature hydride tank respectively containing therein a high-temperature metal hydride and a low-temperature metal hydride in the form of low-temperature porous metal hydride compacts, said hydrides being so selected that the desorption pressure of said high-temperature metal hydride is higher than the absorption pressure of said low-temperature hydride at temperatures prevailing in said tanks during desorption from said high-temperature hydride tank, and the desorption pressure of said low-temperature metal hydride is higher than the absorption pressure of said high-temperature metal hydride at temperatures prevailing in said tanks during desorption from said low-pressure hydride tank.

4,436,540

LOW PRESSURE SEPARATION FOR LIGHT HYDROCARBON RECOVERY

Edward J. Dowd, deceased, late of Summit, N.J. (by Dorothy N. Dowd, legal representative), and Joseph F. Carpency, Morristown, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 15, 1982, Ser. No. 434,584
Int. Cl.³ F25J 3/02
U.S. Cl. 62—30 14 Claims



10. A process for separating a feed gaseous mixture containing light olefinic constituents and comprising C_{5+}'s down to methane and hydrogen, into fractions, which comprises in combination the steps of:
(a) compressing the feed gas to a compressor discharge pressure in the range of 50 to 100 psia prior to passing it to a recovery operation;
(b) cooling the compressed feed gas in a first refrigeration zone wherein it is passed in countercurrent contact with a C_4 stream taken from a depropanizer, to condense a C_4–C_{5+} concentrate and passing the same to a debutanizer in which it is fractionated with removal of a liquid C_{5+} fraction;
(c) cooling the residual gas from said first zone in a second refrigeration zone wherein it is passed in countercurrent contact with a C_3 stream taken from a deethanizer, to condense a C_3–C_4 concentrate, pumping the same to a higher pressure and passing the same to the depropanizer in which it is fractionated in the presence of distillate from the debutanizer;
(d) cooling the residual gas from said second zone in a third refrigeration zone wherein it is passed in countercurrent contact with a C_2 stream taken from a demethanizer, to condense a C_2–C_3 concentrate, pumping the same to a higher pressure and passing the same to the deethanizer in which it is fractionated in the presence of distillate from the depropanizer;
(e) cooling the residual gas from said third zone in a fourth refrigeration zone wherein it is passed in countercurrent contact with a predominantly methane stream taken from the demethanizer, to condense a C_1–C_2 concentrate and separating tail gas from said fourth zone; and

(f) pumping the condensed portion from said fourth zone to a higher pressure, passing it into the demethanizer and fractionating the same in the presence of distillate from the deethanizer to obtain a purified C_2 bottoms fraction and a predominantly methane vapor fraction; to obtain a saving in energy as compared with carrying out said process employing a compressor discharge pressure above said range.

4,436,541

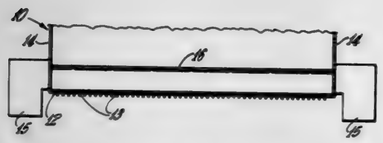
METHOD FOR PRODUCTION OF MINERAL FIBERS

Michael T. Pellegrin; Terry J. Hanna, both of Newark, and Thomas K. Thompson, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 141,872, Apr. 21, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,177

Int. Cl.³ C03B *37/085*

U.S. Cl. 65—2 **1 Claim**



1. In a method of making glass fibers from a body of molten glass confined in a bushing, the steps of:

(a) flowing molten glass from the body through an orifice plate having a plurality of orifices;

(b) attenuating a fiber at each of said orifices;

(c) interposing a flow resistance in the path of flow of said molten glass to said plate, the ratio of resistance of flow of the molten glass through the resistance to the resistance of flow of molten glass through said plate being from about 0.5 to about 1.0; and

(d) heating the molten glass between said resistance and said plate by current supplied to both the resistance and the orifice plate;

the performance of steps (c) and (d) reducing the pressure of the molten glass at the plate by a factor of from 30 to 50% of the head pressure of the molten glass body above the plate and decreasing the bead fall time from an orifice at which fiber attenuation has been interrupted.

4,436,542

PROCESS FOR THE PRODUCTION OF AN OPTICAL GLASS ARTICLE

Shiro Kurosaki, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 11, 1981, Ser. No. 301,896

Claims priority, application Japan, Sep. 16, 1980, 55-127116; Nov. 27, 1980, 55-167820

Int. Cl.³ C03B *19/06*

U.S. Cl. 65—18.1 **22 Claims**

1. A process for the production of an optical glass article, which comprises:

preparing an aqueous solution containing silicic acid or ammonium silicate,

dissolving in the aqueous solution a water-soluble compound selected from the group consisting of thallium nitrate, cesium nitrate and rubidium nitrate,

neutralizing the resulting aqueous solution,

reacting the components of the aqueous solution at a temperature of from the freezing point to the boiling point of the aqueous solution in a time sufficient to polymerize silica and form an aggregated porous gelled body,

immersing the gelled body in a leaching liquor selected from the group consisting of water, an aqueous solution of an acid, an aqueous solution of an alkali metal salt, a ketone and an alcohol,

leaching a portion of the water-soluble compound in the form of ions from the gelled body to provide a concentration gradient of the water-soluble compound in the gelled body such that the concentration of the water-soluble compound decreases radially outwardly from the central part of the gelled body,

drying the gelled body in a predetermined atmosphere,

decomposing the water-soluble compound,

heating and firing the gelled body at a temperature of 650° to 900° C., and

sintering the gelled body at a temperature of 900° to 1450° C. to collapse micropores in the gelled body and form a transparent glass.

4,436,543

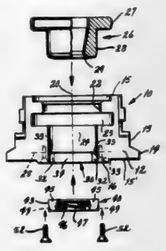
NECK RING MOLD APPARATUS FOR GLASS BOTTLE MANUFACTURE

Harold B. Kasten, 5312 Shannon, Godfrey, Ill. 62035

Filed Jun. 3, 1982, Ser. No. 384,772

Int. Cl.³ C03B *9/325, 9/48*

U.S. Cl. 65—172 **6 Claims**



1. For molding the necks of glass bottles to a desired external configuration,

neck ring mold apparatus comprising:

A. a pair of neck ring mold halves having vertical parting plane surfaces extending to bottom surfaces, the said mold halves when mounted with their parting plane surfaces together forming an annulus about a lower well of circular cross-section and having bottom portions, measured from the lowermost end of said well, whose thickness substantially equals the depth of such desired external configuration, the bottom surface of each mold half having formed therein a recess extending therefrom up to the lowermost level of said well, said recess having a pair of side walls spaced from each other at a distance substantially equal to the diameter of said well at its lowermost level, said recess further having a third wall joining said pair of side walls which third wall is parallel to the parting plane at a spacing therefrom greater than the radius of said well at its said lowermost level; and assembled therewith

B. a pair of replaceable mold inserts each insert being formed of sintered metal, one secured in each said recess and filling same from the lowermost level of said well to the mold half bottom surfaces, each insert extending from said third wall of the recess to the parting plane and presenting, substantially symmetrically thereto, half-round cavity surfaces whose radius is smaller than that of said well, which cavity surfaces are configured complementary to such desired external configuration for the neck of such glass bottles.

4,436,544

ALUMINUM BRONZE GLASSMAKING MOLDS

Thomas W. McCausland, Brockway, Pa., assignor to Brockway, Inc. (NY), Brockway, Pa.

Filed Nov. 16, 1982, Ser. No. 442,006

Int. Cl.³ C03B *11/00*

U.S. Cl. 65—374.12 **24 Claims**

1. A glassmaking mold part adapted for use in a glassware forming machine, which comprises a mold member shaped from an aluminum bronze alloy composition essentially consisting of (i) less than about 0.5% by weight manganese, (ii) from about 3.5 to about 4.5% by weight of nickel, (iii) from about 3.5 to about 4.5% by weight of iron, (iv) from about 10.5 to about 11.5% by weight aluminum, with (v) the balance copper, and (vi) said composition being substantially devoid of both zinc and lead.

4,436,545

PROCESS HAVING THE TWO-FOLD RESULT OF THE DISPOSAL OF WASTE PICKLE LIQUOR AND THE PRODUCTION OF FERTILIZER

Donald W. Lyons, Jr., Fort Scott, Kans., and Everette L. Wyatt, Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Jul. 30, 1982, Ser. No. 403,424

Int. Cl.³ C05C *9/00*

U.S. Cl. 71—25 **11 Claims**

1. A process for the disposal of waste pickle liquor from a ferrous metal treating operation and the production of a useful fertilizer comprising mixing urea in waste sulfuric acid pickle liquor at a temperature sufficient to avoid substantial formation of iron precipitate whereby a liquid fertilizer having an iron content of at least about 3% by weight is produced comprising a stable urea-iron sulfate combination which does not salt out at a temperature of 20° C.

4,436,546

FERTILIZER MATERIAL FROM APATITE

Fredrik P. Glasser, Bucksburn, Scotland, and Richard P. Gunawardane, Kandy, Sri Lanka, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 261,162, filed as PCT GB80/00139, Sep. 8, 1980, published as WO81/00711, Mar. 19, 1981, § 102(e) date Apr. 30, 1981, Pat. No. 4,363,650. This application Jul. 30, 1982, Ser. No. 406,713

Claims priority, application United Kingdom, Sep. 7, 1979, 7931090

The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.

Int. Cl.³ C05B *13/00*

U.S. Cl. 71—36 **6 Claims**



1. A method of making a fertilizer material from hard mineral apatite rich in chlorine and/or fluorine, by roasting apatite at from about 880° C. to about 950° C. as a final temperature with a carbonate and/or aluminosilicate of an alkali metal in an amount such that the molar ratio of apatite (as P_2O_5):alkali metal:siliceous material (as SiO_2) is 1:at least 3:(0.75–1.0) whereby there is ensured the presence of sufficient siliceous material to keep the free-lime content of the fertilizer material below 2 weight % and to inhibit formation of tetracalcium phosphate.

4,436,547

PLANT TECHNIQUE

Michael J. Sampson, Chichester, England, assignor to Staart Enterprises Ltd., London, England

PCT No. PCT/GB79/00050, § 371 Date Nov. 28, 1979, § 102(e) Date Oct. 27, 1979, PCT Pub. No. WO79/00838, PCT Pub. Date Oct. 18, 1979

PCT Filed Mar. 22, 1979, Ser. No. 85,918

Int. Cl.³ A01N *43/48, 43/40, 33/02*

U.S. Cl. 71—76 **8 Claims**

1. A method of applying an agricultural chemical comprising the steps of

(A) applying an effective amount of an agricutural chemical to a locus to regulate the growth of plants, said agricultural chemical being selected from the group consisting of quaternary ammonium compounds of the formula $R—N(CH_3)_3—Y$ in which Y is a non-phytotoxic anion and R is an aliphatic radical of from 1 to 8 carbon atoms containing a non-ionizing nucleophilic group or atom; and

(B) applying an effective amount of additive to modify the metabolism of plants to the same locus as said agricultural chemical not more than 15 days earlier than or more than 15 days later than the application of said agricultural chemical, said additive being vitamins or coenzymes selected from the group consisting of thiamine, riboflavin, pyridoxine, pyridoxamine, pyridoxal, nicotinamide, folic acid, or the precursors of said vitamins or coenzymes.

4,436,548

PLANT GROWTH REGULATING α-AZOLYLGLYCOLS

Bernd Zeeh, Ludwigshafen; Norbert Götz, Worms; Eberhard Ammermann, Ludwigshafen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

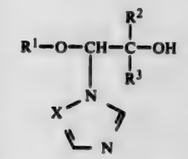
Filed Nov. 23, 1981, Ser. No. 324,276

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047726

Int. Cl.³ A01N *43/50, 43/64*; C07D *249/08, 233/60*

U.S. Cl. 71—76 **1 Claim**

1. A process for reducing plant height and/or lateral plant branching which comprises: applying to the plants to be acted upon or to their seeds or to their habitat an effective amount of a composition comprising a liquid or solid carrier and a compound I of the formula



I

where R^1 is alkyl of 1 to 4 carbon atoms, R^2 is alkyl of 1 to 6 carbon atoms or unsubstituted or halogen substituted phenyl or biphenyl, R^3 is hydrogen, alkyl of 1 to 6 carbon atoms or alkenyl or alkynyl of 2 to 6 carbon atoms or unsubstituted or halogen substituted benzyl and X is CH or N, and their plant-tolerated salts.

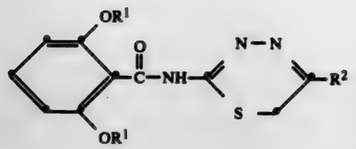
4,436,549

THIADIAZINE HERBICIDES

Thomas D. Thibault, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 28, 1982, Ser. No. 437,380
Int. Cl.³ A01N 43/88; C07D 285/16
U.S. Cl. 71—90 15 Claims

1. A compound of the formula



wherein:
each R^1 is independently methyl or ethyl;
R^2 is C_1–C_{10} alkyl, C_3–C_8 cycloalkyl or C_1–C_4 alkyl substituted C_3–C_8 cycloalkyl; and the agronomically-acceptable salts thereof.

4,436,550

PROCESS FOR RECOVERY OF ALUMINUM FROM CARBONACEOUS WASTE PRODUCTS

Laszlo Kapolyi, Budapest, Hungary, assignor to Tatabanyai Szenbányák, Tatabánya, Hungary

Continuation of Ser. No. 15,970, Feb. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 819,811, Jul. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 755,405, Dec. 29, 1976, abandoned. This application Jan. 20, 1982, Ser. No. 340,996
Int. Cl.³ C22B 21/02
U.S. Cl. 75—10 R 4 Claims

1. A process for producing energy and products useful in the manufacture of metals, cement and artificial stone which comprises the steps of:
(a). combusting a carbonaceous waste material containing silica and alumina; and having a heat of combustion of from about 2,000 kcal/kg to about 3,500 kcal/kg to form thermal energy and a slag containing silica and alumina;
(b). adjusting the composition of said slag by adding a mineral additive including a calcium containing material to said slag to obtain upon sintering calcium silicate and calcium aluminate;
(c). additionally adding an amount of under 1% of ferrosilicon alloy to the adjusted slag to promote disintegration upon sintering and cooling;
(d). sintering and cooling the adjusted slag of step (c) to obtain a disintegrated material;
(e). separating said disintegrated material and recovering a separated material and a first residue remaining useful for forming artificial stone;
(f). treating said separated material with an aqueous solution to extract aluminum values and leaving a second residue useful for forming cement;
(g). treating said aluminum values to obtain alumina;
(h). treating said alumina to obtain aluminum.

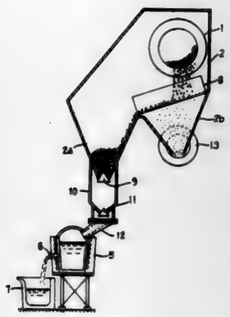
4,436,551

PROCESS FOR MAKING STEEL FROM DIRECT-REDUCED IRON

Takashi Mori, Niihama, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Oct. 15, 1982, Ser. No. 434,455
Claims priority, application Japan, Oct. 26, 1981, 56-171103; Jan. 26, 1982, 57-11680
Int. Cl.³ C21C 5/28, 5/52
U.S. Cl. 75—12 17 Claims

1. In a process for manufacturing steel in which an iron oxide-containing starting material is heated and reduced with a solid, carbon-containing, reducing agent in a reducing furnace to form pellets of direct-reduced metallic iron mixed with char, and then said direct-reduced metallic iron is smelted in a separate smelting furnace to form said steel, the improvement which comprises: discharging said pellets of direct-reduced metallic iron mixed with char from the outlet of said reducing furnace into a hood which provides a substantially air-tight enclosure around said reducing furnace outlet, then feeding said pellets mixed with an amount of char sufficient to form pig



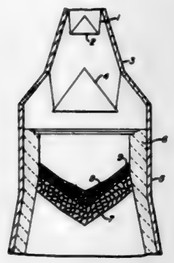
iron when said char is melted with said pellets from said hood into a heating furnace while said pellets remain at substantially the same high temperature that they had when they were dischaged from said reducing furnace and while said pellets are protected from substantial oxidation caused by contact with the ambient air, then melting said pellets mixed with char in said heating furnace to form molten pig iron, then discharging said molten pig iron from said heating furnace into a ladle, and then discharging said molten pig iron from said ladle into said smelting furnace.

4,436,552

METHOD OF FURNACE OPERATION WITH HIGH PELLET BURDENS

Melvin C. Chang, Charlotte, N.C., and John L. Howell, North Huntingdon, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1982, Ser. No. 406,422
Int. Cl.³ C21B 5/00
U.S. Cl. 75—41 24 Claims



1. In the method of producing metal in a shaft furnace containing one or more substantially horizontal layers of coke and one or more separate substantially horizontal layers of ore above and/or below the coke layers, said layers being positioned across the furnace cross section, and wherein greater than about 80 percent of the ore therein is present in the form of pellets, the improvement comprising separating fine ore material from said pellets, and then adding the separated fine ore material on a controlled basis to said furnace adjacent to the walls of said furnace to reduce the gas flow adjacent said walls and thereby protect the furnace lining, and wherein subsequent to separating said fine ore material from said pellets and prior to adding said fine ore material to said furnace, the ultrafine fraction of said ore material which would present material handling problems when wet or be blown out of the furnace by the hot furnace gases is either (1) separated from said fine material which is added to said furnace, or (2) micropelletized prior to addition to said furnace in order to provide a material having suitable properties for flowing into said furnace.

4,436,553

PROCESS TO PRODUCE LOW HYDROGEN STEEL

Rockne J. Andreini, Bellevue, Wash.; Stewart K. Mehlman, Tarrytown, N.Y.; Ronald J. Selines, Yorktown Heights, N.Y., and Balkishan Agrawal, Ossining, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 22, 1982, Ser. No. 341,440
Int. Cl.³ C21C 7/00
U.S. Cl. 75—52 10 Claims

1. A process for the production of steel having a hydrogen content of less than about 2 ppm, comprising:
charging a steel melt into a refining vessel equipped with at least one submerged tuyere, making alloying and slag-forming additions to the melt, decarburizing the melt by injecting a gas mixture comprising oxygen and a dilution gas into the melt through said tuyere(s); following decarburization, injecting sparging gas into the melt through said tuyere(s), said tuyere(s) being gas cooled during at least a portion of the production process, characterized by the steps comprising, in combination:
(1) providing a substantially dry refining vessel into which the melt is charged,
(2) providing substantially dry cooling gas to the tuyere(s),
(3) substantially completing all of the slag-forming additions to the melt prior to the start of decarburization,
(4) fluxing the slag forming additions prior to the start of decarburization,
(5) substantially completing the addition of all those elements to the melt which are reducable by silicon prior to the start of decarburization,
(6) decarburizing the melt to essentially its aim carbon content by injecting into the melt through said tuyere(s), a gas mixture of oxygen and a dilution gas for a time sufficient to remove at least 0.2 weight percent carbon from the melt and maintaining an off-gas flow rate during said decarburization sufficient to substantially prevent air from infiltrating into said vessel, and
(7) maintaining the off-gas flow rate during any reduction and finishing steps at a rate sufficient to substantially prevent air from infiltrating into said vessel by injecting sparging gas into the melt through said tuyere(s) in an amount at least equal to 100 cubic feet per ton of melt.

4,436,554

HIGH STRENGTH AND HIGH TOUGHNESS WELDING MATERIAL

Takashi Omae; Kisaburoo Tanaka; Masahiro Aoki; Fumitoshi Hirayama, and Susumu Izaki, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,886
Claims priority, application Japan, Nov. 18, 1981, 56-183722
Int. Cl.³ C22C 38/44
U.S. Cl. 75—128 T 1 Claim

1. A high strength and high toughness steel welding material which has been modified by subjecting a welding portion welded with said welding material to quenching and annealing said welding material consisting essentially of: C: 0.05–0.15%, Si: 0.25–0.70%, Mn: 0.60–1.80%, Cu: an effective amount up to 0.20%, Ni: 4.5–11.0%, Cr: 0.20–1.20%, Mo: 0.20–0.60%, Ti: 0.03–0.12%, and the balance being substantially iron and wherein the Cr+Mo is from 0.40% to $0.030\times(Ni\%)^2$ by weight, said welding material having a yield strength ranging from 75–100 Kgf/mm² and having a low temperature durability of over 28 kg/mm² at −90° C.

4,436,555

MAGNESIUM PHOSPHATE GLASS CEMENTS WITH CERAMIC-TYPE PROPERTIES

Toshifumi Sugama, Mastic Beach, and Lawrence E. Kukacka, Port Jefferson, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 23, 1982, Ser. No. 422,510
Int. Cl.³ C04B 9/04
U.S. Cl. 106—85 7 Claims

1. A method of making a fast-setting magnesium glass cementitious material comprising the steps of:
heating a first magnesium oxide powder to a temperature of about 900° C., said first magnesium oxide powder having a surface area in the range of 18–20 square meters per gram;
heating a second magnesium oxide powder to a temperature greater than 1300° C., said second magnesium oxide powder having a surface area in the range of 1–3 square meters per gram;
mixing said first and second magnesium oxide powders with a aggregate; and
mixing an aqueous ammonium polyphosphate solution with the mixture of said aggregate and said first and second magnesium oxide powders in forming said fast-setting magnesium glass cementitious material.

4,436,556

PROCESS FOR CONSOLIDATING SOIL AND FROST PROTECTION LAYERS PRODUCED THEREBY

Friedrich Kadelka, Bad Segeberg, Fed. Rep. of Germany, assignor to Chemische Fabrik Grunau GmbH, Illertissen, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,678
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028670
Int. Cl.³ C04B 7/35
U.S. Cl. 106—90 25 Claims

1. In a process for the consolidation of soil in which moisture containing soil, rubbish or a mixture of soil and rubbish is mixed with cement and then compressed to form the consolidated soil the improvement comprising adding as the sole additive a fluidizing agent to the composition to be consolidated, said fluidizing agent being the amount of fluidizing agent based on the dry material being 2.5 to 5%, based on the cement content of the composition.

4,436,557

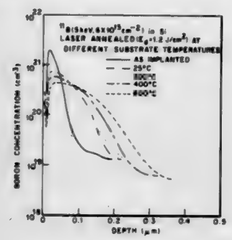
MODIFIED LASER-ANNEALING PROCESS FOR IMPROVING THE QUALITY OF ELECTRICAL P-N JUNCTIONS AND DEVICES

Richard F. Wood, Oak Ridge, and Rosa T. Young, Farragut, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 349,959
Int. Cl.³ H01L 21/263, 21/24
U.S. Cl. 148—1.5 11 Claims

1. In a process for producing a light-responsive electrical-junction device, said process including the steps of providing a body of crystalline semiconductor material having a doped surface layer, irradiating said layer with at least one laser pulse to effect melting of the same, permitting recrystallization of the material so melted, and providing the resulting body with electrical contacts, the method of increasing the open-circuit-voltage parameter for said device, comprising:
heating said body to a selected temperature and conducting said irradiating operation while said body is so heated to

effect an increase in said parameter, said temperature being sufficient to effect a reduction in the rate of said



recrystallization but insufficient to effect substantial migration of impurities within said body.

4,436,558

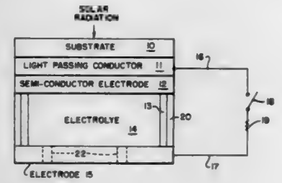
ELECTROCHEMICAL PHOTOVOLTAIC CELL HAVING TERNARY ALLOY FILM

Michael A. Russak, Farmingdale, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 216,706, Dec. 15, 1980, abandoned. This application Feb. 23, 1982, Ser. No. 351,376

Int. Cl.³ H01L *21/00*

U.S. Cl. 148—1.5 **2 Claims**



1. A method for fabricating a thin film compound semiconductor electrode of $CdSe_{1-x}Te_x$, where $0 \leqq x \leqq 1$, for an electrochemical photovoltaic cell comprising the steps:

evacuating a chamber;

exposing a light passing conducting substrate to three heated sources respectively including the elements Cd, Se, and Te; wherein the substrate is maintained at a temperature of about 90° C.;

simultaneously depositing the elements on the substrate at predetermined rates; and

heat treating the electrode.

4,436,559

PROCESS FOR MANUFACTURING BORIDE DISPERSION COPPER ALLOYS

Hironori Fujita, and Tohru Arai, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jun. 11, 1982, Ser. No. 387,453

Claims priority, application Japan, Jun. 12, 1981, 56-91096

Int. Cl.³ C23F *7/00*

U.S. Cl. 148—6 **16 Claims**

1. A process for manufacturing a boride dispersed copper alloy, which comprises:

preparing a metallic material having a surface portion comprising a copper alloy containing at least one metal selected from the group consisting of beryllium, gallium, manganese, nickel, palladium, silicon and vanadium, and copper or an alloy thereof; and

diffusing boron into said metallic material to form in said surface portion thereof fine particles of a boride of at least one metal selected from the group consisting of beryllium, gallium, manganese, nickel, palladium, silicon and vanadium.

11. A process according to claim 1, wherein

nickel and copper are melted to prepare said metallic material having the surface portion of a copper-nickel alloy, and said metallic material is immersed in a molten salt bath containing boron to form fine nickel boride particles uniformly dispersed in said surface portion.

4,436,560

PROCESS FOR MANUFACTURING BORIDE DISPERSION COPPER ALLOYS

Hironori Fujita; Tohru Arai, and Jiro Mizuno, Osami Kasuya; Koichi Ono, Tashid Suzuki, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Kabushiki Kaisha Tokai Rika Denki Seisakusho, all of Japan

Filed Jun. 11, 1982, Ser. No. 387,455

Claims priority, application Japan, Jan. 25, 1982, 57-9731

Int. Cl.³ C23F *7/00*

U.S. Cl. 148—6 **15 Claims**

1. A process for manufacturing a boride dispersed copper alloy, which comprises:

preparing a metallic material having a surface portion comprising an alloy or fine particles of at least one element selected from the group consisting of aluminum (Al), arsenic (As), cadmium (Cd), cobalt (Co), chromium (Cr), iron (Fe), magnesium (Mg), molybdenum (Mo), niobium (Nb), platinum (Pt), tantalum (Ta), tungsten (W) and zirconium (Zr), and copper or an alloy thereof; and

diffusing boron into said metallic material to form in said surface portion thereof fine particles of a boride of at least one element selected from the group consisting of Al, As, Cd, Co, Cr, Fe, Mg, Mo, Nb, Pt, Ta, W and Zr.

11. A process according to claim 1, wherein chromium and copper are melted to prepare said metallic material having the surface portion of a copper-chromium alloy, and said metallic material is immersed in a molten salt bath containing boron to form fine CrB_2 particles uniformly dispersed in said surface portion.

4,436,561

PRESS-FORMABLE HIGH STRENGTH DUAL PHASE STRUCTURE COLD ROLLED STEEL SHEET AND PROCESS FOR PRODUCING THE SAME

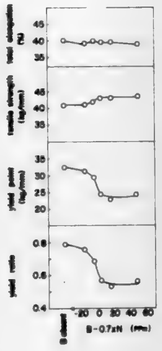
Nobuyuki Takahashi; Yoshikuni Furuno, both of Kitakyushu, and Masaaki Fukunaga, Onga, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Jul. 6, 1981, Ser. No. 281,206

Claims priority, application Japan, Jul. 5, 1980, 55-91998

Int. Cl.³ C21D *8/04*

U.S. Cl. 148—12 F **5 Claims**



1. A process for producing a press-formable, high-strength, dual phase structure cold rolled steel sheet having a tensile strength of 40–50 kg/mm² which comprises hot rolling, at a finishing temperature higher than the Ar_3 transformation point, a steel slab consisting of C: 0.02–0.20%, Si: less than 0.1%, Mn: 1.2–2.0%, acid-soluble Al: 0.005–0.100%, B: more than 0.0003% and less than 0.0050% in terms of $B\% - 0.7 \times N\%$ in solid solution on the condition that B/C is more than 0.03, N: less than 0.0060%, the balance being iron and incidental impurities; cooling the hot strip at a rate of 10° to 150° C./sec, coiling the strip at a temperature lower than 730° C., pickling and cold rolling the coil, soaking the cold rolled strip at an annealing temperature between the Ac_1 transformation point and 800° C., and cooling the strip at a rate of more than 3° C./sec.

4,436,562

BASIC BONDED FLUXES FOR SUBMERGED ARC WELDING HAVING AN EXCELLENT REMOVABILITY OF SLAG AT A NARROW GROOVE

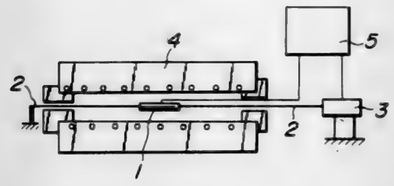
Masaaki Tokuhisa, and Yukio Hirai, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 30, 1981, Ser. No. 335,888

Claims priority, application Japan, Jun. 5, 1981, 56-85614

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—24 **2 Claims**



1. In basic bonded fluxes for submerged arc welding at a narrow groove consisting of a mixture of a slag forming composition, a gas forming composition and metal powders, the improvement comprising the slag forming composition consisting mainly of 5–20% by weight of BaO, not more than 10% by weight of CaO, 20 to 50% by weight of MgO, 6–25% by weight of SiO_2, 3–15% by weight of Al_2 Oz and 7–18% by weight of CaF2, a value of basicity shown by a ratio of a basic component and an acidic component being 2.3 to 4.5, and the gas forming composition consisting of $BaCO_3$, $CaCO_3$ and $MgCO_3$, a total amount of which is 10–60% by weight, whereby a removability of slag at a narrow groove weld is improved.

4,436,563

FLUX FOR OVERLAY WELDING

Osamu Tanaka, Fujisawa; Kazuhiro Takeba, Yamato; Hiroshi Saita, Fujisawa; Yukinobu Matsushita, Yokohama, and Koji Koyabu, Kamakura, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 21, 1982, Ser. No. 400,586

Claims priority, application Japan, Jul. 27, 1981, 56-118241

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—26 **3 Claims**

2. A flux as claimed in claim 1, wherein the ratio of $MgO/SiO_2 \leqq 2.0$.

4,436,564

REINFORCEMENT PRODUCT FOR USE IN CEMENT BOARDS AND A METHOD OF MANUFACTURING SAID PRODUCT AND BOARDS

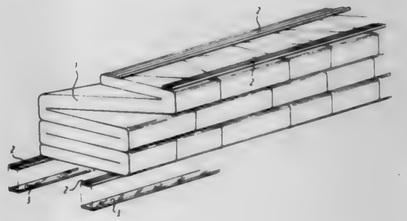
Ian D. Slack, Bradford; David G. Ellis, Leeds, and Colin Firth, Bradford, all of England, assignors to Plasticisers Limited, Yorkshire, England

Filed Aug. 3, 1981, Ser. No. 289,377

Claims priority, application United Kingdom, Aug. 2, 1980, 8025300

Int. Cl.³ B32B *3/18, 5/10, 5/12, 13/02*

U.S. Cl. 156—42 **14 Claims**



1. A reinforcement product for use in cement boards, comprising cross layered webs of plastic fibre with a preponderance of fibres laid in a trans-axial direction, and continuous filaments or fibrillated tapes located between the layers to impart a high degree of strength in the linear direction, the cross-laid web and the filaments or tapes being compacted together to form a reinforcement product which can be rolled up and handled for further processing on cement board forming machines, the webs of plastic being formed from a sheet or film of plastics material which has been monoaxially orientated in the linear direction, fibrillated to form a cohesive fibre mass, cut into desired lengths, carded to break up the film into a coarse fibre mass, and stripped from the carding machine to form a continuous web of fibres.

4. A method of manufacturing a reinforcement product for use in cement boards, a comprising the steps of extruding a sheet or film from a plastics material, monoaxially orientating the said sheet in the linear direction fibrillating the orientated sheet to form a cohesive fibre mass, cutting the fibrillated film into desired lengths, carding the cut lengths of fibrillated film on a carding machine, to break up the fibrillated film into a coarse fibrous mass, and stripping the fibrous mass from the carding machine to form a continuous coarse fibrous web, cross layering the web of fibres to ensure an even thickness with a preponderance of the fibres being laid in a transaxial direction, introducing continuous filaments or fibrillated tapes between the layers to impart a high degree of strength in the linear direction, and compacting the cross-laid web of fibres together with said continuous filaments or fibrillated tapes, to give cohesion between the fibres in the web and produce a web which can be rolled up and handled for further processing on cement board forming machines.

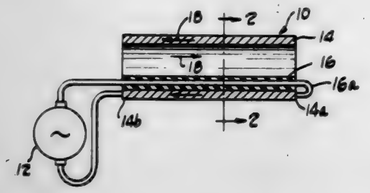
11. A method of manufacturing a cement board using a reinforcement product constructed by the method according to claim 5 wherein a cement slurry is impregnated into the reinforcement product, excess moisture is subsequently removed, and the board is then allowed to set.

4,436,565

METHOD OF MAKING A HEATING DEVICE FOR UTILIZING THE SKIN EFFECT OF ALTERNATING CURRENT

Harold B. Weitzel, Strongsville, and David G. Parman, Medina, both of Ohio, assignors to Ricwil, Incorporated, Brecksville, Ohio

Filed Oct. 22, 1981, Ser. No. 313,937
Int. Cl.³ H01R 5/02; B21F 15/02
U.S. Cl. 156—49 8 Claims



1. In a heating system utilizing the skin effect of alternating current in which a power cable comprising a primary conductor surrounded by a layer of semiconductor material, a primary insulation layer, a shield layer and an outer insulation jacket, is disposed with a heat tube and which operates with a continuous applied voltage of at least 5 KV and at a temperature of substantially 210° C., a method for joining a feed end of a length of the power cable to a terminal end of another length of the power cable, comprising the steps of:

a. removing the outer insulation jacket at the feed and terminal ends of said lengths of power cable to expose a predetermined length of said shield layer extending from the extreme ends of the cable to a first position spaced from said ends;

b. removing the shield layer, primary insulation layer and semiconductor layer from each cable end to expose the primary conductor for a distance extending from the extreme ends of the cables to a second position intermediate the ends of the cables and said first positions;

c. removing the shield layer from each cable end between said second position and a spaced, third position located intermediate said first and second position, leaving a portion of the shield layer exposed extending between said first and third positions;

d. mechanically joining together the exposed primary conductors of each cable end to form a conductor joint;

e. wrapping semiconductor material around the exposed conductor ends to completely cover said conductor joint, said material extending between the second positions of each cable end;

f. wrapping insulation material across said joint between the third position of the cable lengths until a partial insulation layer of predetermined thickness is formed, said partial layer being less than the final desired insulation thickness;

g. heat fusing said layer of wrapped insulation;

h. repeating steps (f) and (g) to obtain a substantially void free, final insulation thickness at least as thick as said primary insulation layer of said cables;

i. wrapping a semiconductor material from the first position of one cable end to a fourth position located intermediate the conductor joint and the third position of the other cable end;

j. wrapping insulation material over said semiconductor material and heat fusing said material to form a substantially void free insulation layer extending substantially between the first position of said one cable end to the third position of said other cable end;

k. electrically communicating the shield layer of said other cable end with said heat tube;

l. wrapping semiconductor material from the first position of the other cable end to a position located intermediate the conductor joint and the first position of the one cable end; and,

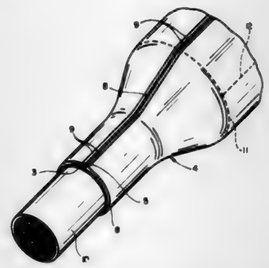
m. wrapping insulating material across said joint and heat fusing said material to form another layer of substantially void free insulation at least as thick as the outer insulation jacket of said cables, extending between the first positions of the joined cable ends.

4,436,566

RE-ENTERABLE CLOSURE

Dexter C. Tight, Jr., Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 15, 1982, Ser. No. 388,791
Claims priority, application United Kingdom, Jun. 15, 1981, 8118362
Int. Cl.³ H01B 13/06; H02G 13/06; B32B 3/02
U.S. Cl. 156—56 17 Claims



1. A recoverable polymeric article for use as a wraparound sleeve, having a first upstanding rail adjacent one edge thereof, and a second upstanding rail spaced from another edge such that the portion of material between the second rail and the other edge is a flap which can underlie the rails when the sleeve is in use; the sleeve at the base of the first rail or the flap having means which, on recovery of the sleeve, allows passage of sealant on a surface of the sleeve into a region between the first rail, the second rail and the flap.

15. A method of re-entering and re-enclosing a closed wraparound sleeve formed from an article according to claim 1, 8 or 9, which method comprises:

(a) removing the rails from the sleeves;

(b) removing a central portion of the sleeve, leaving intact end portions thereof which have between their respective rail butts sealant which has passed across the flap;

(c) enclosing the space between said end portions within a second recoverable sleeve such that the ends of the second sleeve at least overlie sealant between the butts of the rails; and

(d) recovering the second sleeve.

4,436,567

METHOD FOR JOINING WEBS OF ASEPTIC POUCHES

Roy J. Welkert, c/o 645 S. High St., Covington, Ohio 45318

Filed Mar. 22, 1982, Ser. No. 360,299
Int. Cl.³ B65H 69/02
U.S. Cl. 156—158 8 Claims

1. A method of joining together two tubular webs, each collapsed to form opposing walls, and having a sealed leading end and a sealed trailing end, comprising the steps of:

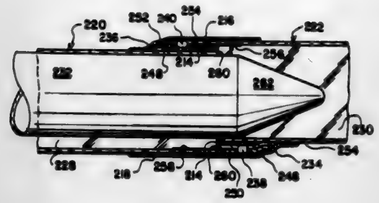
placing said leading end of one of said webs over said trailing end of the other of said webs to form overlapping ends;

applying microbicidal adhesive means between said overlapping ends, thereby joining said overlapping ends together;

forming a peel seal between said opposing walls of each of said overlapping ends above and below said adhesive means;

making a fusion-like incision through said overlapping ends within said peel seals and through said adhesive means;

sealing said incision with second microbiocidal adhesive means; and



separating portions of said peel seals of each of said webs at said incision to provide an internal passageway through the joined tubular webs.

4,436,568

IN SITU PRECIPITATED FIBROUS LAMINATE AND METHOD OF PRODUCING SAME

Ole-Bendt Rasmussen, Forchwaldstrasse 23, CH-6318 Walchwil/Zug, Switzerland

Continuation of Ser. No. 177,806, Aug. 13, 1980, abandoned, which is a division of Ser. No. 102,561, Dec. 11, 1979, Pat. No. 4,294,638, which is a continuation of Ser. No. 841,481, Oct. 12, 1977, abandoned, which is a continuation of Ser. No. 657,649, Feb. 12, 1976, abandoned. This application May 2, 1983, Ser. No. 488,004
Claims priority, application United Kingdom, Feb. 12, 1975, 5971/75
Int. Cl.³ B65H 81/00; B32B 31/00; B29C 19/00
U.S. Cl. 156—176 3 Claims



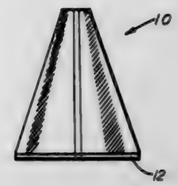
1. A method of forming a fibrous sheet which comprises the steps of extruding from a given point onto a collecting surface a film of a viscous solution comprising a polymer dissolved in a solvent or swelling agent therefor, during such extrusion advancing the collecting surface away from the extrusion point, and subjecting the extruded film of said polymer extrusion to cooling to solidify the thus-extruded film to precipitate said dissolved polymer in the form of a random reticulate sheet-like array of solid fibers having a predominate grain direction by virtue of the movement of the collecting surface relative to said extrusion point, laminating the resultant fibrous sheet-like array with at least one other fibrous sheet-like array having a grain direction intersecting with that of the first sheet, and before or after said lamination substantially removing said solvent or swelling agent.

4,436,569

METHOD FOR FORMING A PROTECTIVE COVER FOR AIRCRAFT HAVING CONICAL RADOMES

Harold H. Somerfleck, Virginia Beach, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 21, 1981, Ser. No. 303,802
Int. Cl.³ B29D 23/10
U.S. Cl. 156—217 2 Claims



1. A method of forming a protective covering for pointed radomes on aircraft, comprising:

forming a sheet of layered polyurethane, adhesive and polyethylene into a cone having an overlapping portion;

placing the conically formed sheet around a conically shaped male form with the polyethylene facing inwardly;

removing the polyethylene at the overlapping portion and bonding the polyurethane;

placing the male form with the conically formed sheet thereabout into a female mold having a shape corresponding to the desired shape for aircraft radomes;

heating the female mold;

reducing the pressure in the female mold to draw the sheet of layered material into the shape thereof;

cooling the mold while still under reduced pressure;

removing the formed protective covering from the female mold; and

removing the inwardly facing sheet of polyethylene to expose the adhesive prior to applicaion to a radome.

4,436,570

PROCESS FOR BONDING FILMS

Karl-Friedrich Neuhaus, Krefeld; Horst Müller-Albrecht, Cologne; Manfred Dollhausen, Odenthal, and Hermann Perrey, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,736
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130430
Int. Cl.³ B32B 31/00
U.S. Cl. 156—273.3 11 Claims

1. A process for bonding a film to a substrate comprising:

(a) applying a layer from 0.5 to 20 μm thick of an adhesive which may be cross-linked by high energy radiation to the film to be bonded,

(b) contacting the film of (a) with the substrate, and

(c) subjecting the adhesive to high energy radiation

wherein the adhesive is a mixture of

(i) at least one polyisocyanate and

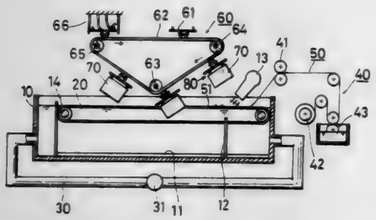
(ii) at least one compound containing both a (meth)acryloyl group and a hydroxyl group in which the equivalent ratio of hydroxyl groups to isocyanate groups is from 0.8:1 to 1.3:1.

4,436,571

PRINTING APPARATUS

Motoyasu Nakanishi, Fujishi, Japan, assignor to Kabushiki Kaisha Cubic Engineering, Shizuokaken, Japan

Filed Jul. 26, 1982, Ser. No. 401,983
Claims priority, application Japan, Aug. 18, 1981, 56-129878
Int. Cl.³ B44C *1/16*
U.S. Cl. 156—384 16 Claims



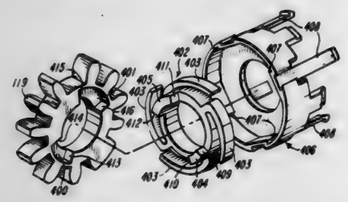
1. A printing apparatus comprising
(a) a transcription tub for containing a liquid, which is open at its upper side,
(b) a means for directing a flow of the liquid through said transcription tub at a fixed rate,
(c) a film supplying means, provided at an upstream side of said transcription tub relative to the flow direction of the liquid through said transcription tub, for supplying a long transcription film onto the surface of the liquid so that a transcription pattern on the film is kept face up, and
(d) an article supplying means, provided above said transcription tub, for immersing at least part of an article to be printed upon into the liquid while keeping the article in contact with the transcription pattern of the film, wherein said article supplying means includes means for directing the article to be printed upon from above said transcription tub downward and downstream into downward and downstream slanting contact with the film and transcription pattern thereon in said transcription tub, changing the direction of movement of the article within the liquid and transferring the transcription pattern onto the article and lifting the article slantingly upward and downstream to move the article and transcription pattern out of the transcription tub.

4,436,572

HAND-HELD LABELER

James A. Makley, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 272,795, Jun. 11, 1981, Pat. No. 4,352,710. This application Sep. 24, 1982, Ser. No. 423,374
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—384 10 Claims



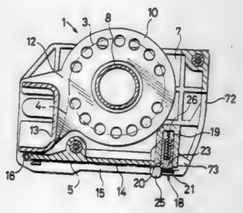
1. Hand-held apparatus for printing and applying labels releasably secured by pressure sensitive adhesive to a carrier web, comprising: a housing including a handle, an actuator disposed at the handle, a movably mounted print head, a platen cooperable with the print head, gearing drivably connecting the actuator and the print head, means for delaminating printed labels from the carrier web, means for applying labels, a feed wheel engageable with a carrier web, a ratchet wheel for driving the feed wheel, a pawl member driven by the gearing and cooperable with the ratchet wheel, means providing a lost-motion connection between the gearing and the feed wheel so that the feed wheel is driven through a relatively small angle, and wherein the pawl member includes a plurality of pawls and the ratchet wheel has a plurality of ratchet teeth equal in number to the number of pawls.

4,436,573

PORTABLE LABEL APPLYING MACHINE

Yo Sato, Tokyo, and Tadao Kashiwaba, Kitakami, both of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Dec. 23, 1982, Ser. No. 452,707
Related U.S. Application Data. This Application is a Continuation-in-part of Application Ser. No. 368,732.
Claims priority, application Japan, Dec. 28, 1981, 56-210021; Jan. 20, 1982, 57-4943[U]
Int. Cl.³ B65C *9/18, 11/00*
U.S. Cl. 156—384 22 Claims



1. A portable label applying machine, comprising:
a printing device for printing a label strip in which the label strip comprises a plurality of labels removably positioned in series, one after the other, on a web of backing paper;
a separate applying device for applying labels which have been peeled from the web of backing paper to other objects, and including an applying section to apply peeled labels to other objects;
a separate cassette detachably mountable selectively on one of the printing device and the applying device; said cassette comprising a section for receiving and supporting thereon a printed label strip which is fed thereto from the printing device and also for feeding the label strip to a peeling section; a peeling section for bending only the backing paper web of the label strip in a direction and to an extent for peeling off the labels from the backing paper web; and a self-contained guide section for receiving and guiding the bent web of backing paper after the labels have been peeled off;
the applying device also including a manually operable feeding mechanism for engaging the backing paper web after the feeding section for moving the backing paper web through manual action, for effecting peeling of the labels from the backing paper web.

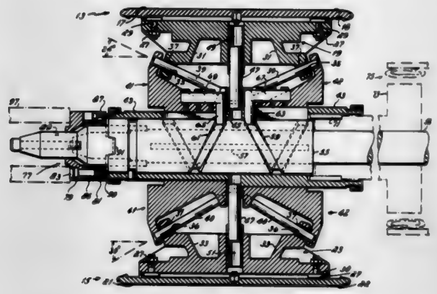
4,436,574

RADIAL MANDREL

Robert C. Long, Randolph, and Richard K. Peters, Tallmadge, both of Ohio, assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Dec. 13, 1982, Ser. No. 449,135
Int. Cl.³ B29H *17/16*
U.S. Cl. 156—415 8 Claims

1. In a radial mandrel for use in forming wound objects, said radial mandrel having a drive shaft and a plurality of alternating large segment means and small segment means supported by a pair of cone means, said pair of cone means being adapted to move axially toward and away from one another to move said large and small segment means radially inwardly and outwardly between a contracted and expanded position, the improvement comprising:
a mechanism for axially moving said pair of cone means toward and away from one another, said mechanism including a sleeve rotatable with said drive shaft in a first and second direction, said sleeve being formed with a pair of groove means in the exterior surface thereof, said pair of cone means engaging respective ones of said groove means and following therealong with the rotation of said



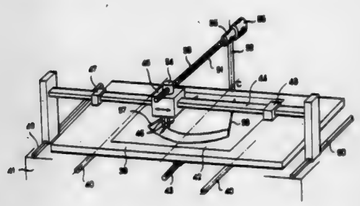
sleeve, said pair of cone means being moved axially apart while following said groove means with said sleeve and drive shaft rotating in said first direction for radially moving said large and small segment means to a retracted position, and said pair of cone means being moved axially toward one another while following said groove means with said sleeve and drive shaft rotating in said second direction for radially moving said large and small segment means to an expanded position.

4,436,575

DEVICE FOR MANUFACTURING A HEATING GLASS PLATE

Maurice Dran, Paris, and Bernard Jamet, Sully sur Loire, both of France, assignors to Saint Gobain Vitrage, Courbevoie, France

Division of Ser. No. 223,107, Jan. 7, 1981, Pat. No. 4,395,622. This application Sep. 17, 1982, Ser. No. 419,504
Claims priority, application France, Jan. 8, 1980, 80 00278
Int. Cl.³ H06B *3/00*
U.S. Cl. 156—433 4 Claims



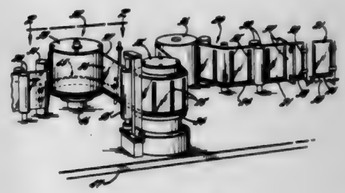
1. A device for the manufacture of glass plate having a heating network made up of fine electrical resistance wires embedded in a thermoplastic layer following curved directrices extending between two collector strips, said device comprising a supporting plate adapted to support a thermoplastic sheet, a bridge supporting a sliding carriage, resistance wire-laying members carried by said carriage, means for imparting reciprocal motion to said carriage, guides extending perpendicular to said bridge on which said bridge may slide, a rod connecting said carriage to a vertical spindle located in the median plane of the plate, and an intermittent advance mechanism for intermittently shifting the plate with respect to the carriage.

4,436,576

APPARATUS FOR FORMING BOTTOM HEAT SEALS

Frederick C. Selden, Holmes Beach, Fla., assignor to Rexham Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,760
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—543 7 Claims



1. Apparatus for sealing together the extreme bottom portions of two face-to-face upright strips of heat sealable material as the strips are advanced lengthwise along a predetermined path, said apparatus comprising a substantially cylindrical drum having a predetermined outer diameter, means supporting said drum to rotate about an upright axis, a circular sealing ring located below and rotatable with the lower end of said drum, said sealing ring being concentric with said drum and having an outer diameter smaller than the outer diameter of the drum whereby the outer surface of said sealing ring is spaced radially inwardly from the outer surface of said drum, said sealing ring defining the lowermost strip-engaging surface of said apparatus, means for heating said sealing ring, said strips being guided so that the inner of said strips contacts a first pre-selected arc around the outer surface of said drum, pressing means mounted adjacent the lower end of said drum and extending axially above and below said lower end a distance sufficient to span an axial portion of said drum and said sealing ring, said pressing means pressing against said outer strip and acting through such strip to press an upper portion of the inner strip into engagement with a second and shorter preselected arc of the outer surface of said drum between the ends of said first arc and to press the bottom portion of said inner strip into engagement with a corresponding short arc of the outer surface of said sealing ring as said strips are advanced along said path so that between the ends of the first and second arcs said upper portion is in engagement with said drum and said bottom portion is free of engagement with said sealing ring whereby said sealing ring forms a substantially wrinkle-free seal along the bottoms of said strips.

4,436,577

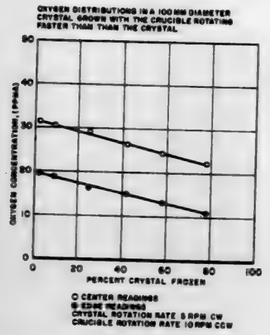
METHOD OF REGULATING CONCENTRATION AND DISTRIBUTION OF OXYGEN IN CZOCHRALSKI GROWN SILICON

Roger A. Frederick, St. Louis County, and Jerry W. Moody, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 220,924, Dec. 24, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,643
Int. Cl.³ C30B *15/00*
U.S. Cl. 156—617 SP 8 Claims

1. In the Czochralaki method for producing silicon rods wherein a single crystal silicon rod is grown by pulling from a silicon melt contained in a crucible and said rod and said crucible are rotated in opposite directions, the improvement to provide both axial and radial uniform distribution of oxygen throughout said rod comprising:

A. rotating said rod about its axis at a rate greater than the rotation rate of said crucible as said rod is grown, and



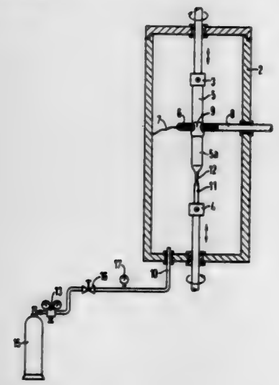
B. increasing the rotation rate of said crucible as the length of said rod increases.

4,436,578

METHOD OF SETTING A STABLE MELTING ZONE IN A SEMICONDUCTOR CRYSTALLINE ROD DURING CRUCIBLE-FREE ZONE MELTING THEREOF

Wolfgang Keller, Munich, and Gerhard Schrötter, Neufahrn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 12,386, Feb. 15, 1979, abandoned. This application Feb. 3, 1981, Ser. No. 231,028
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808401
Int. Cl.³ C30B *13/20*
U.S. Cl. 156—620 1 Claim



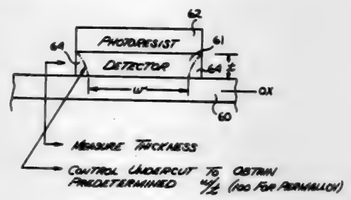
1. Method of setting a stable melting zone in a semiconductor crystalline rod during crucible-free zone melting thereof in a receptacle, by means of a single-winding induction heating coil having an inner diameter smaller than the diameter of a portion of the rod being fed to the melting zone which comprises evacuating the receptacle to a pressure of 10^{-5} mm Hg, subsequently performing the crucible-free zone melting in an argon atmosphere having a degree of purity of 99.999% in the receptacle at a constantly maintained overpressure in vicinity of at least 1.5 ata and maximally 6 ata, and setting the outer melting-zone height at a value of between 15 and 23 mm for a diameter of the recrystallized rod portion within a range of 30 to 50 mm, at a value of between 18 and 26 mm for a diameter of the recrystallized rod portion within a range of 50 to 75 mm and at a limiting value of 32 mm for a rod diameter greater than 75 mm.

4,436,579

METHOD OF FORMING MULTIPLEXED MAGNETIC BUBBLE DETECTORS

Donald K. Rose, and Peter J. Silverman, both of Palo Alto, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 229,345, Jan. 29, 1981. This application Jul. 25, 1983, Ser. No. 516,980
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 4 Claims



3. During the fabrication of a magnetic bubble detector which includes a magnetoresistive detection elements and a propagation element insulated from said detection element, a process for optimizing the output from said detection element comprising the steps of:

determining the thickness of the layer from which said detection element is to be formed;

forming a masking member over said layer to define said detection element;

etching said detection element from said layer, including controlling the undercutting of said detection element below said masking member so as to obtain a predetermined width of said detector element, said width being selected such that the width to thickness ratio of said detection element is approximately equal to a predetermined number;

whereby the output of said detection element is optimized.

4,436,580

METHOD OF PREPARING A MERCURY CADIUM TELLURIDE SUBSTRATE FOR PASSIVATION AND PROCESSING

Phillip R. Boyd, Upper Marlboro, Md.; Gary K. Green, Fredericksburg, and Barbara E. Sumner, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 12, 1983, Ser. No. 522,775
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—636 6 Claims

1. A method of preparing a mercury cadmium telluride substrate for passivation and processing, said method comprising the steps of:

providing an $Hg_{1-x}Cd_xTe$ substrate;

etching said substrate with a bromine methanol etch until the surface of said substrate is free of visible oxides and residual impurities;

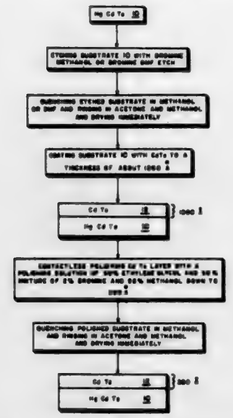
quenching the etched substrate until all traces of bromine is removed and rinsing in acetone and methanol to remove soluble residuals and drying immediately;

coating said $Hg_{1-x}Cd_xTe$ substrate with CdTe in a coating system evacuated down to about $2\text{–}5\times10^{-7}$ Torr wherein said CdTe is deposited on said substrate at about 10–12 Å per second to a thickness of about 1000 Å;

polishing the processed CdTe layer of said substrate by a contactless polish means having a polishing solution comprised of 50% ethylene glycol and 50% methanol and bromine mixture of 2% bromine and 98% methanol,

wherein said CdTe layer is polished down to generally less than 200 Å; and

quenching the polished substrate in methanol until all traces of bromine is removed and rinsing in acetone and methanol to remove soluble residuals and drying the substrate immediately whereby the quality of the $Hg_{1-x}Cd_xTe$ layers is improved by the CdTe processing steps to yield a surface exhibiting improved quality and smaller variations in composition or x-valve.

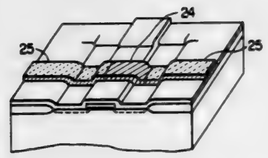


4,436,581

UNIFORM ETCHING OF SILICON (DOPED AND UNDOPED) UTILIZING IONS

Sadayuki Okudaira; Hiroji Saida, both of Kokubunji; Yoshio Sakai, Hachioji; Shigeru Nishimatsu, Kokubunji, and Keizo Suzuki, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,147
Claims priority, application Japan, Apr. 22, 1981, 56-59852
Int. Cl.³ H01L *21/308*
U.S. Cl. 156—643 11 Claims



1. In a dry etching method for simultaneously etching a plurality of silicon regions different in impurity concentration from each other, by bringing said silicon regions into contact with a plasma, the improvement comprising a step of performing dry etching, in a magneto-microwave etching apparatus, for said silicon regions substantially only by ions contained in said plasma, whereby each of said plurality of silicon regions different in impurity concentration from each other is etched at substantially the same etching rate to provide etching to substantially the same depth.

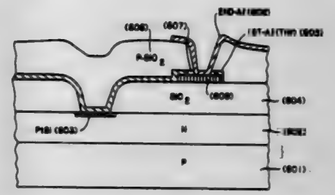
10. In a dry etching method for simultaneously etching a plurality of silicon regions different in impurity concentration from each other, by bringing said silicon regions into contact with a plasma, the improvement comprising providing a plasma, for said dry etching of said plurality of silicon regions, with a sufficiently high density, generated in a sufficiently low-pressure gas, such that the dry etching is carried out substantially only by ions contained in said plasma, whereby each of said plurality of silicon regions different in impurity concentration from each other is etched at substantially the same etching rate to provide etching to substantially the same depth.

4,436,582

MULTILEVEL METALLIZATION PROCESS FOR INTEGRATED CIRCUITS

Arjun N. Saxena, 4217 Pomona Ave., Palo Alto, Calif. 94306

Filed Oct. 28, 1980, Ser. No. 201,109
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—656 6 Claims



1. A process for fabricating electrical connections on an integrated circuit structure between a lower electrically conducting layer and a next upper electrically conducting layer with the material of said lower and next upper layers being selected from the group including metals and alloys, the process comprising:

forming electrically conductive first material on the integrated circuit structure in at least one location where the lower and the next upper layer are to be electrically connected, the first material being inert to etchants for the lower and the next upper layer, the area of contact between the lower and next upper layers being less than the area of the first material;

depositing the lower layer over first portions of the integrated circuit structure and over the first material;

depositing a dielectrical material over all of the lower layer and the first material;

etching the dielectric material over at least part of the first material using a process to which the first material is not as susceptible as the dielectric materials, and

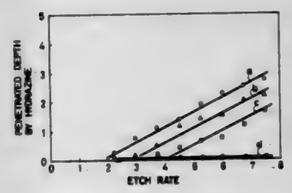
forming the next upper layer over second portions of the integrated circuit structure and in contact with the lower layer exposed by the step of etching dielectric material.

4,436,583

SELECTIVE ETCHING METHOD OF POLYIMIDE TYPE RESIN FILM

Atsushi Saiki, Koganei; Takao Iwayanagi, Nerima; Saburo Nonogaki, Meguro; Takashi Nishida, Taitou, and Seiki Harada, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,576
Claims priority, application Japan, Dec. 21, 1981, 56-205326
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*
U.S. Cl. 156—659.1 8 Claims



1. A selective etching method of a polyimide type resin film,

comprising forming a film made of negative type photoresist material using an unsaturated ketone polymer as a base resin on a polyimide type resin film, exposing a predetermined portion of said film, developing said film to obtain an etching mask having a predetermined pattern and etching said resin film by use of a mixed solution of 20 to 40 vol% of hydrazine hydrate and the balance of polyamine as the etching solution.

4,436,584

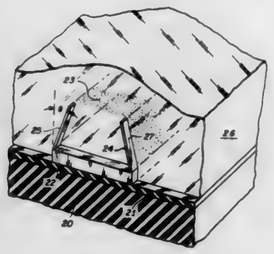
ANISOTROPIC PLASMA ETCHING OF SEMICONDUCTORS

Stephen E. Bernacki, Northboro, and Bernard B. Kosicki, Acton, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,581

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 **10 Claims**



1. A method of patterning the surface of a material, to be etched within selective regions, said regions defining sidewalls substantially normal to said surface, comprising the following steps:

providing a substrate with a planar surface,

depositing an overlying process layer with apertures corresponding with said regions, said layer having substantially vertical edges,

etching said material within a plasma environment contained within a discharge apparatus, said plasma resulting for imposition of an electrical field across a gaseous halocarbon compound betwen two electrodes, said plasma determined by an electrical power density and a total pressure, said gaseous compound chemically reacting with said plasma to form a polymer film on said processing layer and said material, said polymer film formed only on said edges and on said sidewalls, thereby lessening the lateral etch rate relative to the vertical etch rate of said surface being etched, so that said etching is substantially ideally anisotropic,

said etching step being primarily due to directional positive ion bombardment and chemical reaction with said material to be etched, etching being sufficiently selective to remove a desired thickness below said material surface while retaining a sufficient thickness of said processing layer to prevent substantial attack of the surface below portions of said processing layer which are not apertured.

4,436,585

METHODS FOR MAKING CONNECTION INSULATORS

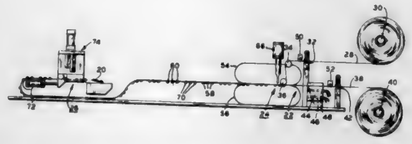
Eldon E. Moodie, and Richard D. Burns, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 871,681, Jan. 23, 1978, abandoned. This application Mar. 9, 1982, Ser. No. 356,591

Int. Cl.³ B65D *73/02*; B31F *1/20*

U.S. Cl. 156—73.1 **15 Claims**

1. A method of fabricating an electrical connection insulator, for a dynamoelectric machine, having a base portion established by a piece of a first sheet of electrical insulating material and a retaining portion established by a piece of a second sheet of electrical insulating material deformed in a predetermined pattern for establishing a plurality of electrical insulating compartments, said method comprising: moving a first sheet of electrical insulating material to a securing station at a first predetermined average rate of supply in a longitudinal direction; moving a second sheet of electrical insulating material to a forming station at a second predetermined average rate of supply greater than the first predetermined average rate of supply of the first sheet of insulating material and from the forming station to the securing station in a longitudinal direction; deforming the second sheet of insulating material in a predetermined pattern of partial compartments at the forming station by means of arbors to form compartment portions connected by webs extending in a direction transverse relative to the longitudinal direction of movement of the second sheet and wherein the deforming of the second sheet occurs while both the first and second sheets are undergoing movement; moving the first sheet of insulating material into a position adjacent the second sheet of insulating material at the securing



station; ultrasonically welding the first sheet of insulating material and the second sheet of insulating material and thereby securing together the webs of the first sheet of insulating material and the second sheet of insulating material to thereby establish electrical insulating compartments bounded by a base portion established by the first sheet of insulating material and by a retaining portion established by the compartment portions of the second sheet of the insulating material and also thereby trapping the arbors between the first and second sheets of material in the compartment portions; withdrawing the arbors from the compartment portions by moving the arbors laterally and transversely relative to the longitudinal direction of movement of the secured together first and second sheets of material; advancing and positioning the first sheet of insulating material and second sheet of insulating material at a cutting station; and severing the first sheet of insulating material and the second sheet of insulating material to establish an electrical connection insulator having a plurality of electrical insulating compartments.

4,436,586

METHOD OF PRODUCING KRAFT PULP USING AN ACID PREHYDROLYSIS AND PRE-EXTRACTION

Carl L. Elmore, Glen Falls, N.Y., assignor to Kamyr, Inc., Glen Falls, N.Y.

Filed Jan. 22, 1982, Ser. No. 341,627

Int. Cl.³ D21C *1/04, 1/06, 3/02*

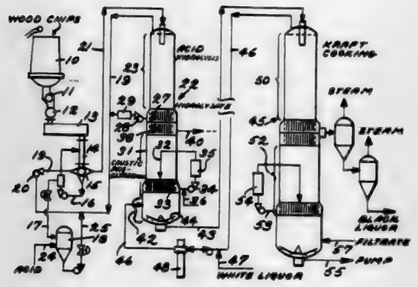
U.S. Cl. 162—19 **20 Claims**

1. A method of producing carbohydrate material and kraft pulp from a liquid slurry of comminuted cellulosic fiber material comprising the steps of continuously:

(a) subjecting the liquid slurry of comminuted cellulosic fiber material to mild acid prehydrolysis, by subjecting said material to an acid concentration of, or equivalent to, about 0.2–0.5 percent H_2SO_4, and a temperature of about 120° C. or less;

(b) subjecting the slurry of prehydrolized comminuted cellulosic fiber material to mild caustic pre-extraction, by subjecting said material to a caustic concentration of, or equivalent to, about 0.5–4.0 percent NaOH, and at a temperature of about 60°–90° C.;

(c) removing hydrolysate, having carbohydrate material, released during the practice of steps (a) and (b) from the comminuted cellulosic material while continuously practicing steps (a) and (b); and



(d) effecting kraft cooking of the prehydrolized, pre-extracted comminuted cellulosic fiber material to produce kraft pulp.

4,436,587

METHOD FOR PRODUCING MULTILAYER PAPER

Ingmar Andersson, Hammarö, Sweden, assignor to AB Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Feb. 23, 1982, Ser. No. 351,470

Int. Cl.³ D21F *11/04*

U.S. Cl. 162—123 **5 Claims**

1. In a method for forming paper by supplying paper stock to a converging throat between two foraminous forming fabrics and dewatering and forming said stock by running said forming fabrics along a curved plain surface of a fabric supporting member with said stock therebetween, the steps of discharging into said throat at least two laterally coextensive, sheet-like jets of paper stock in superimposed, spaced apart relation with a gap therebetween, maintaining in the gap between said jets at the discharge location a wedge-shaped body of gaseous fluid at a pressure such that the adjacent faces of the jets gradually approach one another and meet to form a stratified jet as they travel towards the narrow end of said throat, and setting the discharge velocity of the jet closest to the curved plain surface to be higher than that of an adjacent discharged jet by an amount in the range up to 10% but at least 15 to 20 m/min higher.

4,436,588

PROCESS FOR DEVOLATILIZING DEVOLATILIZABLE FINE-GRAINED MATERIAL BY MEANS OF HOT, FINE-GRAINED HEAT-CARRYING MATERIAL

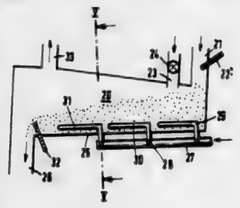
Roland Rammler, Königstein, and Alfons Bussmann, Niddersu, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 206,512, Nov. 13, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,686

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946102

Int. Cl.³ C10B *49/20, 53/06*

U.S. Cl. 201—12 **3 Claims**



1. A process for devolatilizing a hydrocarbon-containing fine-grained material selected from the group consisting of tar sand, oil shale, oil-containing diatomaceous earth and coal which comprises:

(A) feeding said hydrocarbon-containing fine-grained material having a grain size not in excess of 8 mm, to an agitating chamber having a horizontal or sloped bottom terminating in a discharge chute, said material being fed through a plurality of first feed conduits;

(B) introducing heat-carrying fine-grained solids having a temperature of 500° to 1000° C. and a particle size not in excess of 8 mm, to said chamber by a plurality of second feed conduits, said first and second feed conduits being arranged to form superimposed layers of said material and said solids so as to contact and to mix said solids and hydrocarbon-containing fine-grained material, thereby heating the material to temperatures of about 400° to 900° C. and devolatilizing the material;

(C) withdrawing hydrocarbon gases and vapors from said chamber;

(D) introducing a portion of said gases as sole agitating gas into the mixture of heat-carrying solids and hydrocarbon-containing material through a plurality of nozzles at different valocities, the velocity of the agitating gas introduced in a first zone adjacent to the first and second feed conduits being higher than the velocity of the gas in a succeeding second zone in the direction toward said discharge chute, the velocity of agitating gas in a third zone next preceding said discharge chute being higher than in the second zone, the velocities of the agitating gas leaving the nozzles being in the range between 10 and 60 meters per second;

(E) moving the mixture of solids in an agitated state, agitated by said agitating gas, towards said discharge chute such that the height of said solids in the agitating chamber is from 0.1 to 1.0 meter; and

(F) feeding the mixture from said discharge chute into a dwell zone, with gases and vapors being withdrawn from said dwell zone.

4,436,589

METHOD OF PRETREATING COAL FOR COKING PLANT

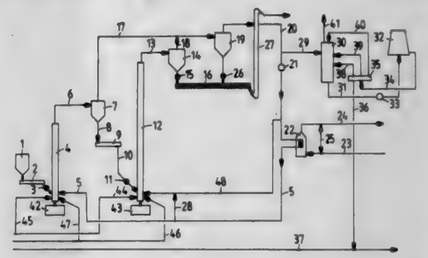
Vladan Petrovic, and Heinz Rotthaus, both of Essen, Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,834

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121285

Int. Cl.³ C10B *39/02, 57/10*

U.S. Cl. 201—41 **4 Claims**



1. A method of pretreating coal for a coking plant with coal preheating and coke dry cooling, the method comprising the steps of

heating and drying coal in two stages in two throughflow dryers successively connected with one another and supplied with steam, so that in a first one of the throughflow driers the steam is supplied with a temperature of substan-

tially 600° C. and the coal is heated to a temperature substantially between 70°–90° C. and to a water content of substantially 2 weight %, whereas in a second one of the throughflow driers the steam is supplied with a temperature of substantially between 400°–500° C. and the coal is heated to a temperature of substantially 200° C. and dried to a residual water content of substantially 0–0.1 weight %;

removing dust from the steam after passing through the throughflow driers; and

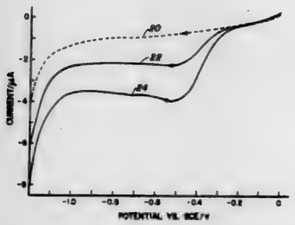
heating the steam after dust removal in the heat exchange relationship with a circulating gas of a coke dry cooling operation.

4,436,590

DETECTION OF NITRATE ESTERS USING SILVER ELECTRODE

Melvin H. Miles, and Dwight A. Fiae, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1982, Ser. No. 432,485
Int. Cl.³ G01N *27/48*
U.S. Cl. 204—1 T **6 Claims**



1. A method of detecting nitrate esters in a sample solution using a voltammetric instrument with a solid working electrode comprising the steps of:

forming a test solution by mixing a sample solution with a supporting electrolyte solution;

placing said test solution into a cell having a solid working electrode selected from the group consisting of silver, gold and copper, a counter electrode and a reference electrode;

deoxygenating said test solution;

applying a linearly varying potential over the range of −0.3 V to −1.0 V (vs. SCE) to said cell; and

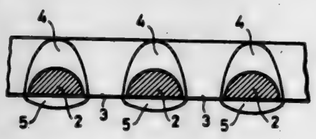
recording a voltammagram with a recorder as the potential is applied whereby said nitrate esters are detected as a wave in a voltammetric scan.

4,436,591

PROCESS OF ELECTROFORMING SCREEN MATERIAL

Johan A. de Hek, Arnhem, Netherlands, assignor to Veco Beheer B.V., Netherlands

Filed Sep. 30, 1982, Ser. No. 429,447
Claims priority, application Netherlands, Nov. 13, 1981, 8105150
Int. Cl.³ C25D *1/08, 7/00*
U.S. Cl. 204—11 **14 Claims**



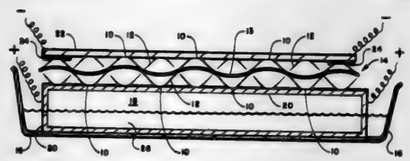
1. Process of electrolytically producing screen material by depositing a metal upon a basic screen material disposed within an electrolytic bath that includes at least one brightener, characterized in that the metal is deposited on the basic screen material by using a pulsed current whereby metal is deposited substantially perpendicular to the basic screen material and apertures through the screen material are substantially as large as those apertures through the basic screen material.

4,436,592

METHOD OF SELECTIVELY ELECTROPLATING THE NODES OF DIMPLED TITANIUM MATERIAL

Brian Norris, San Diego, and Robert M. Castro, La Mesa, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Apr. 25, 1983, Ser. No. 488,351
Int. Cl.³ C25D *5/02*
U.S. Cl. 204—15 **12 Claims**



1. A process for electroplating the nodes of dimpled sheet material comprising the steps of:

(a) providing a flat block of electrical conductive material having at least one substantially flat surface;

(b) positioning on the flat surface of said block; a porous absorbent fabric material;

(c) wetting the porous fabric material with a electrolyte solution;

(d) placing one node surface of a cleaned dimpled sheet of material on the wetted porous fabric material;

(e) placing a sheet of conductive material on the other surface of the dimpled sheet for holding said sheet against said wetted porous fabric material;

(f) attaching electrodes to said block of electrical conductive material and to said sheet of conductive metal; and

(g) applying appropriate plating voltage to said electrodes for a predetermined period of time.

4,436,593

SELF-ALIGNED POLE TIPS

John R. Osborne, Saratoga, and Peter G. Bischoff, Cupertino, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Jul. 13, 1981, Ser. No. 282,540
Int. Cl.³ G11B *5/42*
U.S. Cl. 204—15 **29 Claims**

1. A method of precisely aligning the pole tips of a thin film magnetic head comprising:

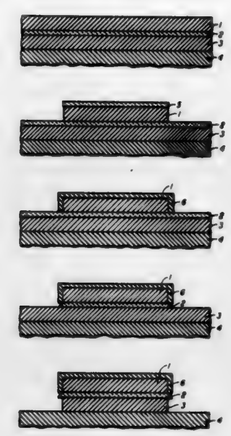
a. applying to a support, two metallic layers separated by an insulative layer, these all being superposed on one another, said metallic layers to become the pole tips of the magnetic head; a "first" one of said metallic layers being applied to said support; the insulative layer being then applied over said "first" metallic layer, and a "second" metallic layer being then applied on said insulative layer;

b. applying a photo-resist to the surface of said "second", or "top" metallic layer in imagewise configuration to establish the shape of the top pole;

c. etching the top metallic layer to the insulative layer in areas not protected by the photo-resist thus forming the top pole;

d. removing the photo-resist and encapsulating the top pole with a protective metal;

e. etching the insulative layer using the top pole as a mask; and



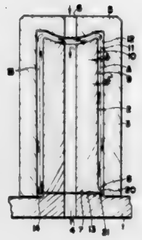
f. etching the "first", or "bottom" metallic layer using the top pole and insulative layer as a mask to form the bottom pole.

4,436,594

METHOD OF TREATING THE SURFACE OF A METAL CONTAINER

Yoshiaki Nishida, Kitakyushu; Shunji Yano, Sagamihara, and Tadahiro Masuyama, Ibaragi, all of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,539
Int. Cl.³ C25D *5/36, 5/44, 7/04, 13/20*
U.S. Cl. 204—33 **3 Claims**



1. A method of treating a surface of a seamless container made of a member selected from te group consisting of steel and aluminum, which comprises:

causing an organic solvent to flow along and on said surface to degrease said surface,

blowing compressed air on said degreased surface to remove said organic solvent from said degreased surface, and

subjecting the resultant surface to (1) electrolysis in an aqueous electrolytic fluid or (2) electrophoretic coating in an aqueous electrophoretic fluid.

4,436,595

ELECTROPLATING BATH AND METHOD

Walter T. Matson, Los Angeles, Calif., assignor to Metal Surfaces, Inc., Bell Gardens, Calif.

Continuation-in-part of Ser. No. 270,844, Jun. 5, 1981. This application Mar. 17, 1982, Ser. No. 358,862
Int. Cl.³ C25D *3/62, 5/10*
U.S. Cl. 204—40 **29 Claims**

1. An aqueous electroplating bath for depositing a gold alloy capable of being operated at current densities of up to 600 amps per square foot and into which metal impurities are introduced comprising a salt of an alloying metal selected from the group consisting of nickel, cobalt and mixtures thereof; the reaction product of an alkali metal gold cyanide with a mixture of glycolic acid and an alkali metal salt of glycolic acid which are present in amounts sufficient to complex the alkali metal gold cyanide and in a ratio sufficient to generate a pH in the bath of from about 4 to about 5 and wherein the alloying metal is present in a predetermined ratio to the gold, said bath further comprising nitrilotriacetic acid in an amount sufficient to prevent codeposition of the introduced metal impurities with the gold alloy.

23. A process for electroplating an alloy of gold and nickel onto a substrate from an aqueous gold alloy electroplating bath which comprises ionic nickel in a predetermined concentration, the reaction product of an alkali metal gold cyanide and a mixture of glycolic acid and an alkali metal salt of glycolic acid, wherein the glycolic acid and the alkali metal salt of glycolic acid are present in sufficient quantity to complex the alkali metal gold cyanide and in a ratio sufficient to provide a pH of from about 4 to about 5 comprising the steps of:

a. plating the substrate with nickel in a nickel electroplating bath;

b. electroplating the nickel plated substrate with the alloy of gold and nickel in the aqueous gold alloy electroplating bath; and

c. introducing nitrilotriacetic acid to the gold alloy electroplating bath in a concentration sufficient to complex all ionic nickel introduced to said aqueous gold plating bath from said nickel plating bath to maintain free ionic nickel in said gold alloy electroplating bath at said predetermined concentration.

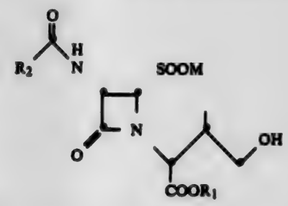
4,436,596

N-SUBSTITUTED-2-(R)-(SULFINIC ACID)-3-(S)-(ACYLAMIDO)-4-OXO-AZETIDINES AND PROCESS

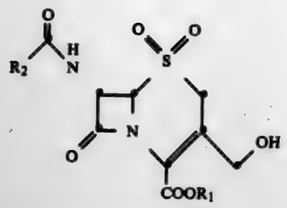
David A. Hall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 16, 1982, Ser. No. 442,075
Int. Cl.³ C25C *3/00*; C07D *205/08, 403/12, 405/12*
U.S. Cl. 204—59 R **31 Claims**

1. A process for preparing a compound of the formula



which comprises electrolytically reducing at a potential at or above the reduction potential required for the cleavage of the sulfone to C_2 bond of a cephalosporin sulfone compound of the formula



in a solvent chosen from the group consisting of a polar organic solvent, water, and a mixture of the two, all of which are stable under the conditions of the electrolysis, and

(a) when the solvent used is a polar organic solvent or a mixture of water and a polar organic solvent, in the presence of a proton source comprised of a carboxylic acid having a pKa between about zero to about five in an amount equal to at least one molar equivalent per molar equivalent of cephalosporin sulfone; or

(b) when the solvent used is water, maintaining the pH of the aqueous solution between about three to about nine;

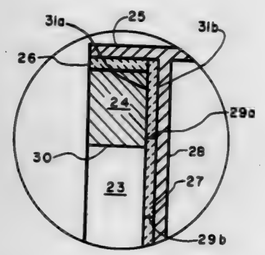
at a temperature above about the freezing point of the solvent to about 40° C.; wherein the electrolytic reduction is carried out in the presence of a catholyte selected from the group consisting of an alkali metal salt, ammonium and substituted ammonium salts.

4,436,597

METHOD AND APPARATUS FOR PRODUCING ALUMINUM IN AN ELECTROLYSIS CELL WITH QUARRY TILE LINING

Louis A. Hartley, II, New London, N.C., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,896
Int. Cl.³ C25C *3/06, 3/08*
U.S. Cl. 204—67 **7 Claims**



1. In a process for the electrolytic production of aluminum, in a cell having a side wall including a layer of carbon electrically insulated from a jacket of metal, the improvement comprising interposing an upwardly extending layer of tile between the carbon layer and the metal jacket.

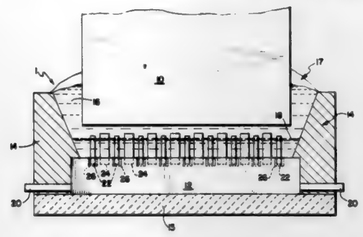
4,436,598

ALUMINA REDUCTION CELL

Alton T. Tabereaux, Sheffield, and John T. Willett, Florence, both of Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed Sep. 28, 1983, Ser. No. 536,710
Int. Cl.³ C25C *3/06*
U.S. Cl. 204—67 **9 Claims**

1. In an alumina reduction cell having an anode, a carbonaceous cathode and a plurity of refractory hard metal (RHM) shapes mounted in and extending vertically upwardly from said cathode, through a molten aluminum pad and into an alumina-cryolite bath, the improvement comprising inert refractory anode stops mounted in said cathode and extending vertically upwardly from said cathode, through said molten



aluminum pad and into said aluminum-cryolite bath for a distance greater than said RHM shapes.

4,436,599

METHOD FOR MAKING A CATHODE, AND METHOD FOR LOWERING HYDROGEN OVERVOLTAGE IN A CHLORALKALI CELL

Thomas C. Bissot, Newark, and Stephen Li, Wilmington, both of Del., assignors to E. I. Du Pont De Nemours & Company, Wilmington, Del. Corporation, New York, N.Y.

Filed Apr. 13, 1983, Ser. No. 484,557
Int. Cl.³ C25B *1/34, 11/04*
U.S. Cl. 204—98 **18 Claims**

13. A process for making an iron-activated cathode from the cathode of a chloralkali cell which comprises an anode compartment, an anode situated within said anode compartment, a cathode compartment, a cathode situated within said cathode compartment, and a cation-exchange membrane between said anode compartment and said cathode compartment, said anode compartment containing aqueous brine solution, said cathode compartment containing aqueous caustic solution, said process comprising

(a) introducing into said cathode compartment an aqueous solution containing ferrite ions, and

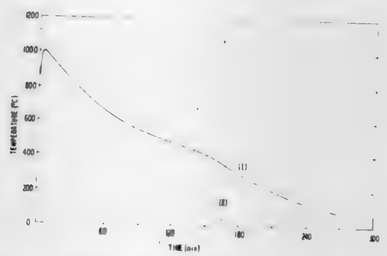
(b) passing an electrical current between said anode and said cathode until a deposit comprising iron forms on the surface of said cathode.

4,436,600

METHOD FOR TREATMENT OF COPPER ANODES TO BE ELECTROREFINED

Tatsuo Imamura, Tokyo, and Mitsuo Katoh, Ibaraki, both of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,769
Claims priority, application Japan, Mar. 25, 1982, 57-46218
Int. Cl.³ C25R *1/12*
U.S. Cl. 204—140 **7 Claims**



1. A method for preventing passivation of cast copper anodes during electrorefining, comprising the steps of:

providing copper anodes to be electrorefined;

heating the anodes to a temperature within the range of 600° C. to 1,050° C.; and

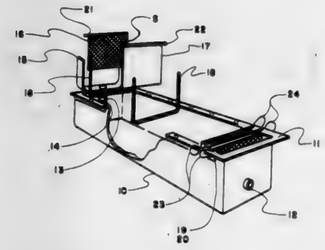
cooling the anodes at a cooling rate within a range from 20° C./hour to 400° C./hour.

4,436,601

METAL REMOVAL PROCESS

Kenneth J. Branchick, Mentor; Irving Naikin, University Hts., both of Ohio, and Mary R. Suchanski, Rochester, N.Y., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jul. 24, 1981, Ser. No. 286,565
Int. Cl.³ C02F *1/46*
U.S. Cl. 204—149 **11 Claims**



1. An electrolytic process for removing a significant portion of at least one metal contaminant from waste water comprising electrolyzing said waste water between a plurality of electrically energized anodes and cathodes arranged in an alternating sequence without either membrane or diaphragm separators therebetween, each of said anodes having openings therein permitting passage of such waste water therethrough and each of said cathodes being in the form of metallized organic polymer foam reticulates.

4,436,602

BLOCKING SHIELD AND METHOD FOR CONTOURING THE THICKNESS OF SPUTTER COATED LAYERS

David J. Harra, Santa Cruz; Frederick T. Turner, Sunnyvale, and Martin A. Hutchinson, Santa Clara, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 325,588, Nov. 27, 1981, Pat. No. 4,416,759.
This application Aug. 19, 1983, Ser. No. 524,708
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R **10 Claims**

1. A method of sputter depositing an arbitrarily contoured film of a single material onto a substrate in a multi-station sputter system, comprising the steps of

sputter depositing said material onto said substrate from a cathode source in a first sputter station;

indexing said substrate to another sputter station, said substrate being shielded from deposition from completion of sputtering at said first sputter station to commencement of sputtering at said other sputter station;

sputter depositing said material onto said substrate from a cathode source in said other sputter station;

the contour of said material sputtered on said substrate at said first sputter station being different from the contour of said material sputtered on said substrate at said other sputter station; and

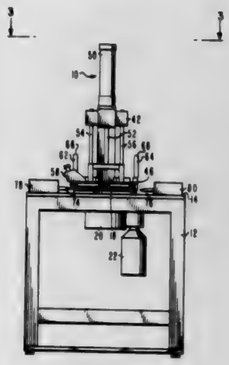
said difference in contour of said sputtered material being obtained by a blocking shield placed in fixed position in one of said sputter stations in between said cathode source and said substrate.

4,436,603

APPARATUS FOR SEPARATING A REPLICA FROM A MATRIX

John J. Prusak, and Bhupendra P. Patel, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,531
Int. Cl.³ C25D *17/00*
U.S. Cl. 204—194 **6 Claims**



1. An apparatus for separating a replica of a first diameter from a surface of a matrix of a larger second diameter wherein the replica is secured to the matrix by a circumferential seal means of a predetermined diameter positioned inwardly and adjacent to the first diameter, said apparatus comprising in combination:

(a) a lower turntable rotatably mounted on a support means, said lower turntable having an outer diameter at least as large as said second diameter and having a flat central portion of a diameter of about said predetermined diameter of the seal means with the outer circumferential portion of the lower turntable being bevelled from the edge of the flat portion of the outer diameter of the lower turntable at a predetermined angle sufficient so that a matrix clamped on the flat portion can be flexed to the surface of the bevel without being permanently distorted;

(b) means for rotating said lower turntable;

(c) an upper turntable assembly comprised of an upper turntable having a flat surface and a diameter less than said first diameter; holding means for receiving and holding said upper turntable and means associated with said holding means for permitting rotation of said turntable independent of said holding means;

(d) means for raising and lowering the upper turntable means vertically in alignment with said lower turntable and for applying upward and downward force;

(e) pressure applying means for forcing the outer diameter of a matrix clamped between the upper and lower turntables into contact with the bevelled edge of the lower turntable;

(f) lower clamp means mounted on said support means in an opposing relationship to the lower turntable, said lower clamp means having the leading portions thereof bevelled to about said predetermined angle;

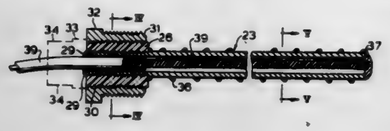
(g) means for advancing and retracting said lower clamp means toward and away from the lower turntable with the bevelled leading portion of the lower clamp means being aligned so as to engage in locking contact the bevelled edge of the lower turntable; and

(h) movable upper clamp means for gripping a portion of a replica extending behind the outer diameter of the upper turntable.

4,436,604
DESCALER FOR SYSTEMS EMPLOYING WATER AS A HEAT TRANSFER AGENT

Anthony J. Walters, 3305 Hazel La., Hazel Crest, Ill. 60429, and Stanford C. Nelson, Park Ridge, Ill., assignors to Anthony J. Walters, Hazel Crest, Ill.

Filed Aug. 2, 1982, Ser. No. 403,929
Int. Cl.³ C23F 13/00
U.S. Cl. 204—196 3 Claims

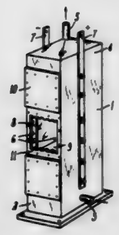


1. An electrolytic scale inhibiting device for cooling systems employing water as a heat transfer agent comprising:
- a closed heat transfer circuit along which cooling water flows and including at least one inlet pipe,
- an internally threaded fitting extending into said inlet pipe and permanently secured thereto,
- an electrolytic probe in the form of a hollow copper tube removably secured to said fitting and sealed thereto and extending axially along said inlet pipe,
- said probe having a spiral copper wire brazed to its exterior surface and extending therealong to the inner end of said probe,
- a copper end closure for the end of said probe,
- a ground wire secured to said end closure and extending along said probe through the outer wall end thereof,
- said ground wire being insulated in the region of said fitting and extending outside of said probe and having a free end outside of said heat transfer circuit connected to ground,
- sealing and insulating means mounting said probe in said fitting, comprising an insulating bushing threaded on the outer end of said probe,
- the mounting for said probe in said fitting also including an internally and externally threaded retainer threaded within said fitting and having said bushing threaded therein, said retainer having a head that can be gripped by a wrench and said sealing and insulating bushing being threaded within said retainer and cut-off flush with the outer end of said bushing when assembled to said retainer, to provide a permanent water tight insulation and sealing support between said retainer and probe.

4,436,605
BIPOLAR ELECTRODE ELECTROLYSIS APPARATUS

Radu Holca, Boulogne, France, assignor to Degremont, Rueil Malmaison, France

Filed Apr. 26, 1982, Ser. No. 372,238
Int. Cl.³ C25D 17/00; C25B 15/00, 9/02, 11/10
U.S. Cl. 204—225 13 Claims

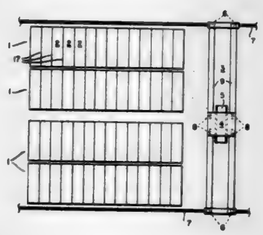


1. A bipolar electrode electrolysis apparatus, particularly for the electrolysis of saline solutions, said apparatus comprising:
- a frame formed of an electrically insulating material, said frame comprising a parallelepidedal enclosure defining therein a plurality of compartments, each said compartment having an open side through one wall of said frame;
- monopolar terminal electrodes mounted in said frame for connection to current leads;
- a plurality of bipolar electrodes; and
- means for supporting said bipolar electrodes within each said compartment and for allowing removal and insertion of said bipolar electrodes through said open side.

4,436,606
ELECTROLYSIS APPARATUS

Jean F. Viellefont, Herenthout; Carolus M. Hesa, Olen, and Hubert J. Tobback, Lichtaart, all of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium

PCT No. PCT/BE82/00002, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02907, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 17, 1982, Ser. No. 432,925
Claims priority, application Luxembourg, Feb. 19, 1981, 83152
Int. Cl.³ C25D 17/08
U.S. Cl. 204—225 13 Claims



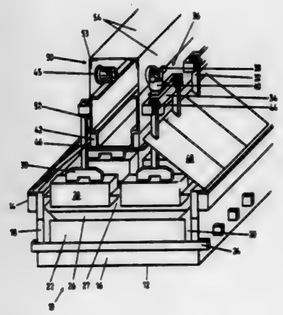
1. An electrolysis apparatus comprising
- a plurality of electrolytic cells (2) positioned side by side, each cell being adapted to contain a vertically suspended group of electrodes consisting of anodes (10) alternating with cathodes (11), these electrodes being provided at both their sides with a suspension lug (12, 16),
- support and connection means (18), positioned on the walls (17) separating the adjacent cells, for supporting the suspension lugs of the electrodes and for connecting the cells electrically, these means comprising per wall two rows (19, 20) of supports (21, 22) extending on both sides of a median element (23) of electrical connection, each row comprising supports made of an electroconductive material (21) alternating with supports made of an insulating material (22), and
- handling means (5) for introducing a group of electrodes in a cell and for withdrawing it therefrom,

characterized in that
- the supports (21, 22) dominate the median element (23) of electrical connection,
- the lugs (12, 16) of the electrodes suspended in the cells extend beyond their supports (21, 22), and
- the handling means (5) are adapted to lift the electrodes by the under-side of the extremities of their lugs (12, 16)

4,436,607
ANODE SUPERSTRUCTURE OF A FUSED SALT ELECTROLYTIC CELL AND POT ROOM FITTED OUT WITH SAME

Werner K. Fischer, Venthone, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 1, 1982, Ser. No. 394,115
Claims priority, application Switzerland, Jul. 14, 1981, 4598/81
Int. Cl.³ C25C 3/10, 3/22
U.S. Cl. 204—246 11 Claims

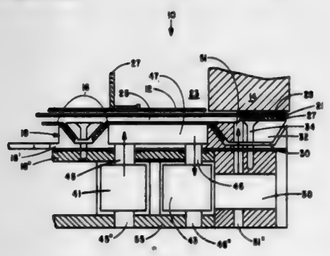


1. Anode superstructure of a hooded fused salt electrolytic cell for producing aluminum which comprises anodes in said cell, spaced apart anode conductor sections communicating with said anodes and feeding electric current to said anodes, and an electrically insulated footbridge positioned between said anode conductor sections over the length of the cell accessible at least from one end of said cell wherein a housing which is open at least one end is provided over the footbridge.

4,436,608
NARROW GAP GAS ELECTRODE ELECTROLYTIC CELL

William R. Bennett, North Olmsted, and Thomas M. Clere, Willowick, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 26, 1982, Ser. No. 411,895
Int. Cl.³ C25B 9/02, 11/03
U.S. Cl. 204—265 5 Claims

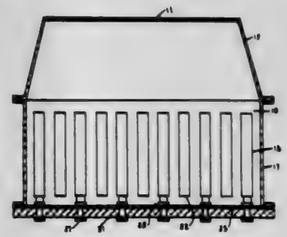


1. In a gas-diffusion electrode type electrolytic cell having anode and cathode compartments defined by a cell separator and having a gas-diffusion electrode positioned in at least one of the compartments spaced from the separator, electrolyte within the compartment being in contact with one surface of the gas-diffusion electrode and a reactant-containing gas being in contact with the other surface of said gas-diffusion electrode, the improvement comprising an electrode frame, said frame having a channel being formed circumferentially upon the electrode frame, at least the edge portions of said gas-diffusion electrode being received in said channel, said frame including at least one retainer received in said channel and at least one fastener for securing said retainer to said electrode frame thereby retaining the gas-diffusion electrode upon the electrode frame, said frame also including integral passages for maintaining the gas adjacent to one surface of said gas-diffusion electrode, and separate integral passages for maintaining electrolyte adjacent to the other surface of said gas-diffusion electrode.

4,436,609
ELECTROLYTIC CELL HAVING AN ELASTOMERIC SHEET COVERING THE CELL BASE

Mathew G. Sobieniak, Lewiston, N.Y., assignor to J. A. Webb, Inc., Buffalo, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,131
Int. Cl.³ C25B 1/16, 1/26, 9/00
U.S. Cl. 204—267 6 Claims



1. In an electrolytic cell comprising a cell compartment, a conductive metal base within said compartment, a flexible heat-resistant elastomeric base sheet within the bottom portion of said compartment covering and in contact with said metal base, a plurality of anode members mounted within said compartment in electrical contact with said base member, the bottom portion of said anode members passing through said elastomeric sheet and forming a liquid-tight seal separating said base member from said cell compartment, a plurality of cathode members positioned within said compartment to facilitate the passage of electrical current through said compartment, the improvement which comprises the use of a composite, thermoplastic elastomeric base sheet fabricated of a mixture of from about 25 to about 75 percent by weight of thermoplastic polyolefin resin and from about 25 to about 75 percent by weight of rubber selected from the group of polyolefin rubber, butyl rubber, neoprene, natural rubber and mixtures thereof.

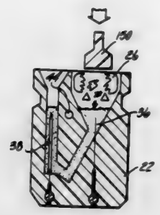
4,436,610
APPARATUS FOR MEASURING ELECTROCHEMICAL ACTIVITY

Steven E. Enzer, Brooklyn, and Robert J. Sarrine, Ann Arbor, both of Mich., assignors to Transidyne General Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 216,458, Dec. 15, 1980, Pat. No. 4,397,725. This application Dec. 13, 1982, Ser. No. 449,336
Int. Cl.³ G01N 27/46
U.S. Cl. 204—400 8 Claims

1. In a device for measuring electrochemical activity of a liquid, said device having spaced indicating and reference electrodes, and means for introducing an electrolyte solution to cover the electrodes wherein said electrochemical activity is determined by the electrical properties developed between the electrodes in response to the indicating electrode being contacted with the liquid, the improvement comprising:
- a generally rectangular thin walled transparent housing having a generally U-shaped hollowed out portion therein terminating in adjacent open ended trough and throat portions in an upper surface of the housing, said electrodes having tips disposed in said hollowed out portion, a break-

able ampule containing the electrolyte solution, rigid means transverse to the legs of said hollowed out portion



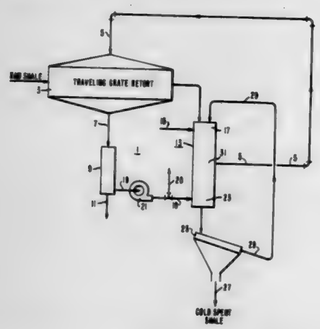
and located adjacent to the lower portion of the trough supporting said ampule a tape for holding the ampule in the trough.

4,436,611

PROCESS FOR HEATING RECYCLE GAS IN OIL SHALE RETORTING

Louis H. Jaquay, Pittsburgh, and Mark Venetti, Bethel Park, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 1, 1983, Ser. No. 510,291
Int. Cl.³ C10G *1/02*; C10B *49/02, 53/06*
U.S. Cl. 208—11 R **10 Claims**



1. A process for heating recycle gas for the indirect retorting of oil from fresh oil shale after the oil has been removed from the recycle gas, utilizing the residual carbon in hot oil depleted shale, said process comprising the steps of:

charging hot, oil depleted shale into the top of a vertical shaft furnace for descending passage therethrough;

supplying sufficient oxygen containing gas to said vertical shaft furnace for the combustion of the residual carbon in said hot, oil depleted shale in the upper portion of said vertical shaft furnace to generate hot spent shale, combustion gases and heat energy which is absorbed by the hot spent shale;

recovering the heat energy from said hot, spent shale in the lower portion of said shaft furnace for heating said recycle gas and for cooling said spent shale; and

returning at least a portion of the cooled spent shale from the bottom of said vertical shaft furnace to the top thereof for heat absorption during the combustion of the carbon content of the oil depleted shale in order to moderate the temperature of combustion.

4,436,612

CATALYTIC REFORMING PROCESS

Soni O. Oyekan, Piscataway, N.J., and George A. Swan, Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 82,805, Oct. 9, 1979. This application Apr. 6, 1983, Ser. No. 482,515
Int. Cl.³ C10G *35/06*
U.S. Cl. 208—65 **15 Claims**

1. In a process for improving the octane quality of a naphtha in a reforming unit comprised of a plurality of serially connected reactors, inclusive of one or more lead reactors and a tail reactor, each of which contains a platinum-rhenium catalyst, the naphtha flowing in sequence from one reactor of the series to another and contacting the catalyst at reforming conditions in the presence of hydrogen,

the improvement comprising,

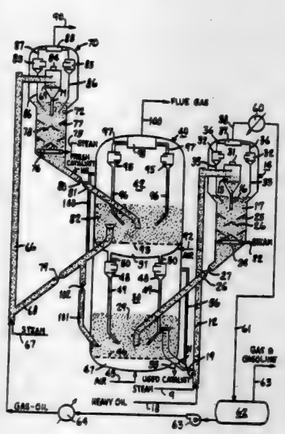
providing the tail reactor with a catalyst having a weight ratio of rhenium:platinum of at least about 1.5:1, while providing the lead reactors with a catalyst having a weight ratio of rhenium:platinum of up to about 1.2:1.

4,436,613

TWO STAGE CATALYTIC CRACKING PROCESS

Scott M. Sayles; Leonce F. Castagnos, Jr., both of Nederland; Charles H. Schrader, Groves, all of Tex.; Edward W. Dillingham, Ontario, Calif., and Richard P. Scott, deceased, late of Groves, Tex. (by Candice Chord Scott, executrix), assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 3, 1982, Ser. No. 446,812
Int. Cl.³ C10G *51/02*; B01J *8/26, 8/28*
U.S. Cl. 208—74 **15 Claims**



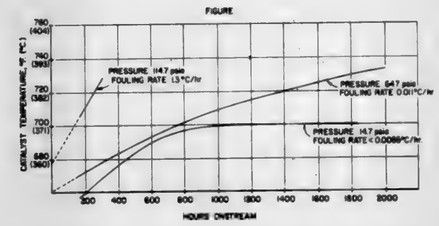
1. In a process for the fluid catalytic cracking of heavy hydrocarbon feedstocks containing catalyst poisons wherein spent catalyst from said catalytic cracking reaction is stripped of volatile hydrocarbons prior to regeneration and stripped catalyst is regenerated by burning coke therefrom with an oxygen-containing gas, the improvement which comprises contacting said heavy hydrocarbon feedstock in a first fluidized catalytic cracking reaction zone with a zeolite type cracking catalyst having a substantial but relatively low catalytic cracking activity as compared with fresh catalyst, passing stripped catalyst from said first reaction zone to a first dense phase fluidized bed catalyst regeneration zone of a catalyst regeneration system comprising multiple catalyst regeneration zones, recovering a gas oil fraction from products of reaction of said first reaction zone, and contacting said gas oil fraction in a second fluidized catalytic cracking zone with a zeolite type cracking catalyst of relatively high catalytic activity as compared with the catalyst in said first reaction zone, passing stripped catalyst from said second cracking zone to a second dense phase fluidized bed catalyst regeneration zone, supplying sufficient oxygen-containing regeneration gas to said regeneration zones to provide an excess of oxygen over that required for complete combustion of coke to carbon dioxide, discharging flue gases substantially free from carbon monoxide from said regeneration zones, adding fresh catalyst to said catalyst regenerated in said second regeneration zone, withdrawing used catalyst from said second regeneration zone and introducing said used catalyst into said first regeneration zone as the source of catalyst therefor, and discharging used catalyst from said first regeneration zone.

4,436,614

PROCESS FOR DEWAXING AND DESULFURIZING OILS

Hazel C. Olbrich, Rodeo; Dennis J. O'Rear, Petaluma, and John A. Zakarian, Richmond, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 8, 1982, Ser. No. 433,620
Int. Cl.³ C10G *45/02, 65/12*
U.S. Cl. 208—89 **7 Claims**



1. A process for treating hydrocarbon containing feeds in a single reaction vessel, comprising:

(a) contacting in a desulfurizing reaction zone a hydrocarbonaceous feed boiling from about 35° C. to 650° C. with a desulfurizing catalyst under desulfurizing conditions which comprise a hydrocarbon partial pressure above about 30 psia;

(b) mixing the effluent of said desulfurizing reaction zone with a diluent to form an effluent and diluent gas mixture; and

(c) contacting said desulfurizing zone effluent and diluent gas mixture with a nonhydrogenating dewaxing catalyst, which comprises an intermediate pore size molecular sieve, under dewaxing conditions, which comprise a hydrocarbon partial pressure in said mixture of less than about 30 psia.

4,436,615

PROCESS FOR REMOVING SOLIDS FROM COAL TAR

Norman S. Boodman, Penn Hills Township, Allegheny County; Elvin L. Farr, Greensburg; Robert J. Osterholm, Murrysville, all of Pa., and Neulan B. Green, III, Birmingham, Ala., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 9, 1983, Ser. No. 493,118
Int. Cl.³ C10C *1/00*; C10G *31/00, 31/09, 31/10*
U.S. Cl. 208—177 **28 Claims**

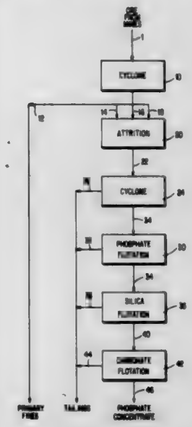
1. A process for removing solids from coal tar for the preparation of a coal tar pitch containing liquid comprising (1) centrifuging said coal tar at a suitable viscosity to separate large particle size solids and liquid fraction from a first liquid fraction containing pitch and small particle size solids, and (2) filtering said large particle size solids and liquid fraction while maintaining said fraction at a suitable viscosity to thereby produce a second pitch containing liquid fraction which is substantially free of solids, and a densified readily handleable large particle size solid material.

4,436,616

PROCESS FOR THE BENEFICIATION OF PHOSPHATE ORES

Philippe Dufour, Les Hauts-Boulesux, 30740 Saint-Laurent Le Minier; Jean-Jacques Predali, 2, rue de Blanquefort, 78310 Elancourt, both of France; Guy Ranchin, deceased, late of Versailles, France; by Marc Ranchin, legal heir, and by Genevieve Ranchin, legal heir, both of 16 rue Albert Joly, Versailles, France

Continuation-in-part of Ser. No. 204,520, Nov. 6, 1980, abandoned. This application Mar. 30, 1982, Ser. No. 363,652
Int. Cl.³ B03D *1/06*
U.S. Cl. 209—3 **28 Claims**



1. A process for the beneficiation of phosphate ore containing a magnesia-rich carbonate-containing gangue and a silica-containing gangue comprising:

(a) washing and classifying the phosphate ore to form a first fraction comprising primary fines and removing the primary fines from the phosphate ore;

(b) subjecting the phosphate ore to controlled attrition during a period of not less than 5 minutes to remove at least a portion of the magnesia-rich carbonate-containing gangue from the phosphate ore particles;

(c) separating the particles resulting from (b) into a fine and a coarse fraction; and

(d) subjecting the coarse fraction obtained in (c) to a plurality of froth flotations to remove the remaining magnesia-rich carbonate-containing gangue and the silica-containing gangue and to recover a concentrated phosphate product, said froth flotations including a phosphate flotation, a silica flotation and an anionic carbonate flotation.

4,436,617

FROTH FLOTATION ORE BENEFICIATION PROCESS UTILIZING ENHANCED GASIFICATION AND FLOW TECHNIQUES

Wiley I. Moore, Glenolden, and Ronald L. Tassoni, Milmont Park, both of Pa., assignors to Cocal, Inc., Holmes, Pa.

Filed Jul. 22, 1982, Ser. No. 401,009
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—3 **32 Claims**

15. A method of beneficiating ores, comprising the steps of:

classifying said ore to a predetermined size range;

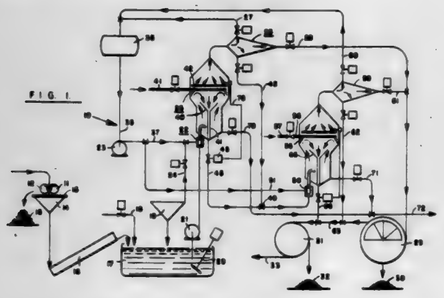
mixing said classified ore with a frothing agent to form a slurry;

flowing said slurry through a mixing chamber;

injecting gas under pressure into said slurry in said mixing chamber to form a gasified slurry;

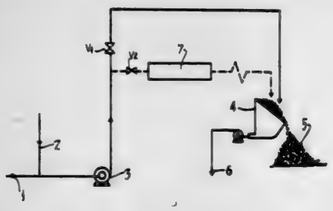
establishing in a closed vessel a fluid medium at a predetermined operating level;

expelling said gasified slurry into said fluid medium below said level for percolating through the medium and causing a first ore fraction to froth on the surface of the medium;
collecting in an underflow siphon located below the surface of the medium a second ore fraction tending to sink in the fluid medium;
withdrawing said froth from said vessel;



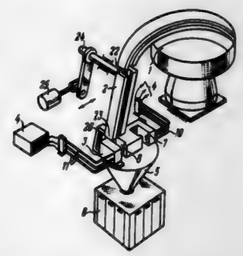
separating said froth into a gaseous component and a non-gaseous component:
compressing said gaseous component and reinjecting it into said slurry in said mixing chamber;
separating said non-gaseous component into ore solids and a liquid; and
exhausting said second ore fraction from said vessel through said underflow siphon.

4,436,618
RECOVERY OF COAL FROM COAL HANDLING OPERATIONS
Geoffrey R. Rigby, Charlestown, and Thomas G. Callcott, Mayfield, both of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia
Continuation-in-part of Ser. No. 127,107, Mar. 4, 1980, abandoned. This application Jan. 19, 1982, Ser. No. 340,779
Claims priority, application Australia, Mar. 5, 1979, PD7887
Int. Cl.³ B03D *3/06*
U.S. Cl. 209—5 **13 Claims**



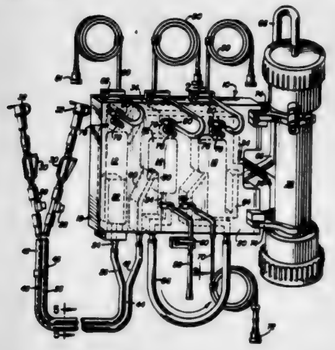
8. A system for recovering coal in the form of pellets from a particulate coal bearing slurry comprising (a) a pipeline for carrying the slurry; (b) a centrifugal turbulent flow slurry pump having a pumping chamber connected to said pipeline for pumping said slurry; (c) feed means for introducing an appropriate hydrophobic liquid to the pumping chamber of said pump simultaneously with the introduction of said slurry into said pumping chamber in a metered quantity sufficient to achieve substantially intimate contact between the hydrophobic liquid and the coal particles in said slurry, said pump means and said feed means co-operating to pass said slurry and said hydrophobic liquid through said pump in a single pass and to subject the coal particles to extreme turbulence within the pumping chamber to rapidly coat the coal particles with the hydrophobic liquid and to repeatedly bring the coal particles into contact with other coal particles in the pumping chamber to agglomerate and pelletize the coal particles in the pumping chamber; and (d) separating means for separating the pelletized coal particles from said slurry upon discharge from said pump whereby the time taken for the recovery of the coal from said slurry is substantially reduced.

4,436,619
METHOD OF SORTING SEMICONDUCTOR DEVICES AND APPARATUS FOR PERFORMING THIS METHOD
Lev N. Petrov, Leninsky prospekt, 153, kv. 35; Viktor A. Adoniev, ulitsa Starykh bolshevikov, 98, kv. 51, and Valery I. Kononov, Leninsky prospekt, 151, kv. 18, all of Voronezh, U.S.S.R.
Filed Aug. 11, 1981, Ser. No. 291,956
Claims priority, application U.S.S.R., Jun. 6, 1978, 2639123; Aug. 28, 1980, 2980518
Int. Cl.³ B07C *5/344*
U.S. Cl. 209—573 **3 Claims**



1. An apparatus for sorting semiconductor devices, comprising:
means for loading semiconductor devices having an outlet portion with a receiving end and a delivery end;
a contact mechanism adjoining said loading means, underlying said outlet portion, and having two slots for receiving semiconductor devices from said delivery end of said outlet portion, each of said slots having a outlet;
means for oscillating said outlet portion so that the delivery end is moved between a first limit position aligned with one of said slots and a second limit position aligned with a second of said slots;
abutment means carried by said delivery end of said outlet portion of said loading means for alternatingly closing said outlets of said slots during movement of said outlet portion of said loading means;
said contact mechanism having contact elements associated with each of said slots;
means for moving said contact elements into and out of engagement with leads of semiconductor devices loaded into said slots;
means for measuring the electric parameters of semiconductor devices electrically connected to said contact elements of said contact mechanism;
receptacles for receiving semiconductor devices; and
conveying means underlying said contact mechanism for receiving semiconductor devices from said slots and for sorting out semiconductor devices into respective ones of said receptacles.

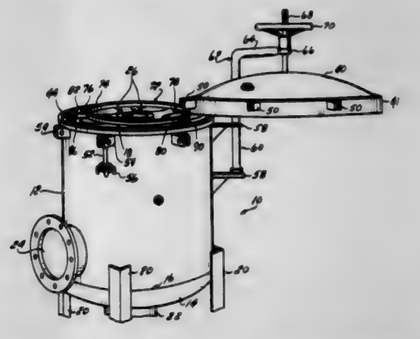
4,436,620
INTEGRAL HYDRAULIC CIRCUIT FOR HEMODIALYSIS APPARATUS
Marc Bellotti, Winnetka; Richard P. Goldhaber, Libertyville; Earl G. Phillips, Barrington, and Theodore H. Toch, Streamwood, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Continuation of Ser. No. 794,755, May 19, 1977, abandoned. This application Jul. 13, 1979, Ser. No. 57,387
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—90 **16 Claims**



1. In a hydraulic circuit member for use with a membrane diffusion device, which comprises a unitary member defining a plurality of blood-receiving chambers, and conduit means communicating between said blood-receiving chambers, for directing, receiving, and processing blood passing through said membrane diffusion device, in which at least one of said blood receiving chambers defines a transversely-enlarged upper chamber portion connected by a step wall which abruptly narrows the bottom end of said enlarged chamber area to a lower chamber portion of lesser transverse dimension, and points of communication of said conduit means with said chamber, including an inlet spaced from the bottom of said chamber and communicating directly with said enlarged upper chamber portion in an upwardly-pointing direction through said step wall, and an outlet positioned adjacent the end of said lower portion remote from said enlarged, upper portion of said chamber, said chamber defining vent means for gases at its upper end and constituting an improved bubble trap for blood when blood is introduced through said inlet and withdrawn through said outlet.

4,436,621
PRESSURE VESSEL HAVING A PLURALITY OF FILTERING ELEMENTS
Charles W. Picker, West Bloomfield, Mich., assignor to Oakland Products, Inc., Pontiac, Mich.
Filed Aug. 9, 1982, Ser. No. 406,188
Int. Cl.³ B01D *29/26, 35/16*
U.S. Cl. 210—232 **3 Claims**

1. In a filter of the type comprising:
a housing having side and bottom walls and a top wall spaced from said bottom wall, said housing having a liquid outlet, sid housing top wall having at least two spaced openings formed therein;
removable, bag-shaped filtering means for straining a liquid having an open upper end fitted into each top wall opening, each filtering means being supported by said top wall at its open end and projecting into the interior of said housing below said top wall;
a removable cover enclosing said filter housing, the interior of said cover defining a flow passage communicating with each filtering means open end; and
a liquid inlet in communication with said interior of said cover, the improvement comprising:
hold-down means pivotally carried by said housing top wall and movable between a first lowered position wherein said hold-down means overlays a portion of each filtering means to retain said filtering means within said housing top wall openings and a second raised position subsequent to the removal of said cover from said housing wherein said hold-down means is pivoted with respect to said housing top wall to a position spaced from said filtering means to effect removal of said filtering means; the hold-down means including:



a ring member pivotally mounted to said top wall such that said ring member may be pivoted with respect to said top wall from said first lowered position to said second raised position, said ring member overlaying said filtering means when in said second lowered position; and
clamping means secured to said top wall for clamping a portion of said ring member to said top wall at a point angularly spaced from the point of pivotable movement for said ring member when said ring member is in said second lowered position.

4,436,622
EDUCTOR TRUCK
Anthony V. Petretti, Whitestone, N.Y., assignor to Metro Hoist & Body Co., Inc., Whitestone, N.Y.
Division of Ser. No. 40,551, May 21, 1979, Pat. No. 4,389,314. This application Mar. 24, 1983, Ser. No. 478,356
Int. Cl.³ B01D *21/00*; C02C *1/18*
U.S. Cl. 210—232 **1 Claim**



1. An eductor truck comprising a frame, a settling tank pivotally mounted on said frame, said settling tank having an eductor unit thereon, storage unit means mounted on said frame on each side of said settling tank, means for lifting said settling tank relative to said frame and between said storage means whereby the storage means will not interfere with said

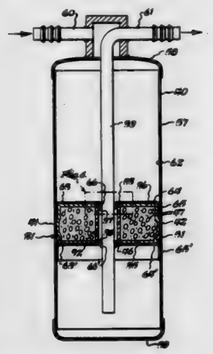
lifting operation, said lifting means comprising hydraulic means mounted beneath said settling tank and between said storage means, a walkway located above each of said storage means, a control valve mounted on said settling tank for operating said eductor unit, said control valve being operable from a point remote from its position on the settling tank, a hydraulic motor mounted adjacent the settling tank to operate the control valve, the hydraulic motor being remotely controlled, said settling tank having a rear door which is pivotally mounted to open, holding devices mounted around the door to hold the door closed and releasable latch means being provided to prevent the door from being opened after the holding devices are removed, said latch means comprising a latch arm movable from a position against the door to hold the door closed to a position away from the door to allow the door to swing open, said latch arm being hydraulically operated by a hydraulic motor from a position beneath the settling tank, said hydraulic motor being mounted on and depending from said settling tank and located between said storage means and a pivotally mounted, telescopically extendable tank supporting means mounted on said frame forward of said settling tank movable to a position beneath the settling tank when it is tilted to hold the tank up should said hydraulic motor fail.

4,436,623

ADSORBENT CARTRIDGE

John S. Cullen, Buffalo; Samuel A. Incorvia, and James A. Vogt, both of Tonawanda, all of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,756
Int. Cl.³ B01D *27/08*
U.S. Cl. 210—282 **21 Claims**



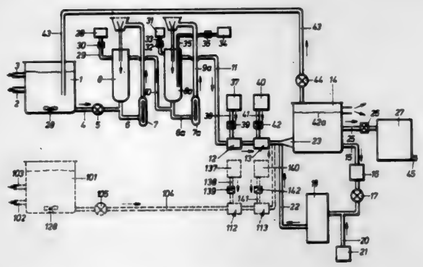
1. An adsorbent cartridge for mounting in a housing having a wall comprising a flexible porous casing including a substantially cylindrical flexible porous fabric wall and a flexible porous first end wall at one end of said substantially cylindrical wall and a flexible porous second end wall at the opposite end of said substantially cylindrical wall, a rim formed by combining the edge portions of said substantially cylindrical flexible porous fabric wall and said second end wall, adsorbent in said casing, said rim extending radially outwardly from said substantially cylindrical wall to provide a seal with said wall of said housing, and said substantially cylindrical flexible porous fabric wall being adapted to bulge outwardly into engagement with said wall of said housing to provide a seal therewith when opposing forces are applied toward each other on said first and second end walls.

4,436,624

CRT METHOD OF CONVERTING AND SEPARATING SUBSTANCES CONTAINED, DISSOLVED OR DISSOLVABLE IN A CARRIER LIQUID

Eberhard Kreuzburg, Mölln; Dietrich J. Von Der Pahle, Bonn; Rolf Monsheimer; Ernst Pfleiderer, both of Darmstadt, and Tilman Taeger, Griesheim, all of Fed. Rep. of Germany, assignors to Universal Gesellschaft für Umwelttechnik mbH, Mölln and Röhm GmbH, Darmstadt, both of, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 246,933
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011844
Int. Cl.³ C02F *1/24*
U.S. Cl. 210—632 **4 Claims**



1. A method of recovering a high molecular weight material from water containing a dissolved proteinaceous substance, said method comprising the steps of:

(a) circulating the water containing said substance through a first jet immersion reactor in which the water containing the substance is forced through a small cross-section passage into a vessel containing the water and the substance, and of larger cross section, the circulation being effected with a two-phase pump having a suction side connected to said vessel and a discharge side connected to said passage, thereby breaking down molecules of said substance;

(b) passing water from said vessel containing said substance in a dissolved and broken-down state into a second two-phase pump and circulating it through a second jet immersion reactor having a respective passage communicating with the discharge side of said second pump and opening into a vessel of larger cross section containing liquid and communicating with the suction side of said second pump, thereby causing the frothing of the broken-down substance in said liquid;

(c) adding enzymes to at least one of said reactors for promoting the breakdown of said substance therein;

(d) adding a flocculating agent to at least said second reactor for promoting the separation of broken-down substances from said liquid; and

(e) separating the broken-down substance from the liquid of said second reaction by flotation.

4,436,625

METHOD FOR PURIFICATION OF CRESIDINE SULFONIC ACID BY SOLVENT EXTRACTION

Henry M. Grotta, Delaware, and Perry J. Gaughan, Columbus, both of Ohio, assignors to Buffalo Color Corp., West Paterson, N.J.

Filed Nov. 9, 1981, Ser. No. 319,607
Int. Cl.³ B01D *11/04*
U.S. Cl. 210—634 **16 Claims**

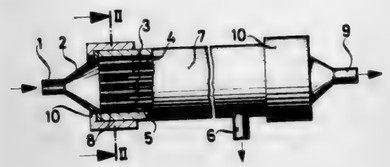
1. A method for removing residual cresidine from impure p-cresidine sulfonic acid which impure p-cresidine sulfonic acid contains from above about 2 parts per billion to about 1500 parts per million of cresidine, said method comprising contacting an aqueous solution of the impure p-cresidine sulfonic acid with sufficient liquid hydrocarbon of from five to eighteen carbon atoms for a sufficient time to extract the cresidine from the p-cresidine sulfonic acid to a concentration of less than two parts per billion of cresidine in the p-cresidine sulfonic acid.

4,436,626

CAPILLARY DIAPHRAGMS FOR USE IN DIAFILTRATION

Roland Schnabel, Hofheim, Fed. Rep. of Germany, assignor to JENAer Glaswerk Schott & Gen., Fed. Rep. of Germany

Continuation of Ser. No. 970,795, Dec. 18, 1978, abandoned. This application May 14, 1982, Ser. No. 378,187
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757673
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—652 **3 Claims**



1. A method of treating blood comprising providing a device having a housing with an inlet, a first outlet and a second outlet, a plurality of capillary diaphragms of porous glass material having means for preventing coagulation of blood, said means for preventing coagulation comprising a chemical surface modification of the glass material with molecules comprising a radical selected from a group consisting of silanol, silanes and hydrosilicons in combination with a functional group being selected from a group consisting of $-CH_3$, $-CN$, $-OH$, $-SO_3H$, $-NH_2$, $-N^{(+)}R_3$, $-NO_2$, $-COOR$,



$-COOH$, $-SH$, $-NO$ and $-NC$, and means for sealing the diaphragms in the housing so that a portion of the blood entering through the inlet and not passing through the diaphragms leaves the housing through the first outlet while a portion passing through the diaphragms exits the housing through the second outlet, introducing blood at the inlet and removing portions from each of the first and second outlets so that the blood is treated without any coagulation occurring.

4,436,627

MAGNETIC REMOVAL OF IMPURITIES FROM MOLTEN SALT BATHS

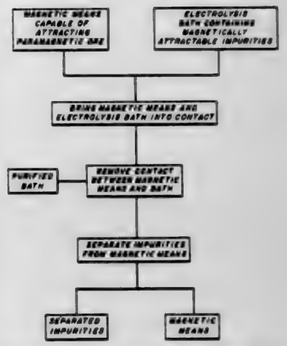
Matthew J. McMonigle, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed May 10, 1982, Ser. No. 376,588
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—695 **2 Claims**

1. A process for removing ferromagnetic impurities from a molten salt bath used for electrolytic reduction of metal salt which comprises:

(a) encasing in a magnetically transparent quartz material, electromagnetic means capable of attracting said ferromagnetic impurities;

(b) contacting said molten salt bath with said encased electromagnetic means to cause said impurites to be attracted to said electromagnetic means; and



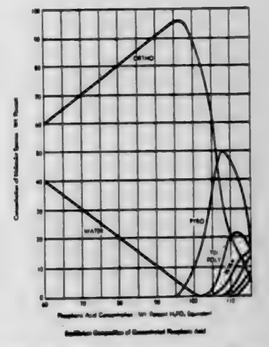
(c) withdrawing from contact with said molten salt bath said encased electromagnetic means having said impurities clinging thereto by magnetic attraction.

4,436,628

POLYPHOSPHORIC ACID AS A SCALE AND CORROSION INHIBITOR

Paul H. Ralston, Bethel Park, and Sandra L. Whitney, North Fayette Township, Oakdale County, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 408,335, Aug. 16, 1982, abandoned. This application Sep. 20, 1982, Ser. No. 419,868
Int. Cl.³ C02F *5/08*
U.S. Cl. 210—697 **2 Claims**



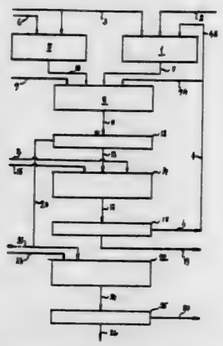
1. A process for the inhibition of scale and corrosion formation in an aqueous system containing calcium, carbonate, and bicarbonate ions, comprising adding to the system about 0.1 to 100 ppm, by weight, based on the total aqueous content of said system, of about 110 to 115% neutralized polyphosphoric acid prepared by adding 110 to 115% polyphosphoric acid to an alkaline medium selected from the group consisting of sodium hydroxide and potassium hydroxide.

4,436,629

METHOD FOR RECOVERING USEFUL PRODUCTS FROM WASTE PRODUCTS OBTAINED WHEN MANUFACTURING ALUMINIUM FLUORIDE

Leunart H. A. Berglund, Helsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Dec. 21, 1981, Ser. No. 333,024
Claims priority, application Sweden, Jan. 16, 1981, 8100218
Int. Cl.³ C02F 1/60
U.S. Cl. 210—712 **9 Claims**



1. A method for recovering useable products from waste products produced in the manufacture of aluminum fluoride from aluminum hydroxide and fluorosilicic acid, which comprises the steps of

(a) preparing a first solution by dissolving silica precipitate produced in the manufacture of aluminum fluoride in a strongly basic hydroxide;

(b) preparing a second solution by dissolving aluminum hydroxide with a strongly basic hydroxide;

(c) combining solutions (a) and (b) with waste mother liquor from the manufacture of aluminum fluoride, the proportions of solution (a), solution (b) and waste mother liquor being such that the pH value of the mixture lies between about 10 and 14, whereupon the silica content of the waste products is precipitated as a silicoaluminate;

and

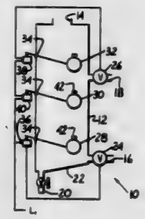
(d) separating the precipitated silicoaluminate and recovering a clarified residue solution.

4,436,630

APPARATUS AND METHOD FOR SEPARATING A MIXTURE OF TWO LIQUIDS

Edward M. Anderson, 2620 E. Medicine Lake Blvd., Minneapolis, Minn. 55441

Filed May 3, 1982, Ser. No. 374,344
Int. Cl.³ C02F 1/40; B01D 12/00, 21/24
U.S. Cl. 210—744 **10 Claims**



1. Apparatus for physically separating a mixture of two liquids, a first of the liquids being less dense than a second and more dense liquid, said apparatus comprising

(a) an upright liquid container;

(b) a liquid inlet into the container for introduction of the mixture into the container;

(c) a lower liquid outlet adjacent the bottom of the container for passing the more dense liquid from the container;

(d) a low float in the container and at an elevational level above the level of the lower outlet;

(e) means in said lower outlet and operatively connected to said low float for controlling flow through said outlet;

(f) an upper liquid outlet from the container, said upper outlet being at an elevational level above the elevational level of the low float;

(g) a second float in the container and at an elevational level between the low float and the upper liquid outlet, said low and second floats being of similar specific gravities which are more dense than the first liquid but less dense than the second liquid; and

(h) means in said upper outlet operatively connected only to said second float for controlling flow only through said upper outlet and being independent of flow control in the lower outlet, said second float and upper outlet flow control means being connected in parallel with said low float and lower outlet flow control means.

4,436,631

MULTIPLE PARTICLE WASHING SYSTEM AND METHOD OF USE

Henry A. Graham, Jr., Annandale; Johnna B. Hawk, Rocky Hill, and Rosemary K. Chachowski, Manville, all of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Continuation-in-part of Ser. No. 290,267, Aug. 5, 1981. This application Sep. 29, 1982, Ser. No. 427,022
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.³ B01D 21/26
U.S. Cl. 210—772 **5 Claims**



1. A method for washing and collecting particles having a particular density or sedimentation rate from a population of particles and contained in a first fluid for use with a system comprising 1) an outer centrifuge tube having an open top end and a closed bottom end for containing a wash solution and 2) an inner tube, insertable into said outer tube, said inner tube forming a chamber for receiving fluids and having an upper portion with a first diameter and a lower portion with a second diameter smaller than said first diameter but sufficiently large so that substantially all fluids placed in said chamber will freely flow therethrough solely on the basis of normal gravitational forces, said chamber being funnel shaped between said first and second diameters whereby a smoothly decreasing wall diameter is formed from said first to said second diameters, said method comprising the steps of:

placing in said outer tube a wash solution having a density at the minimum substantially equal to that of the first fluid and intermediate the density of at least two different particles contained in the first fluid;

inserting said inner tube into said outer tube containing the wash solution whereby the wash solution level rises to be a level within the inner tube;

layering said first fluid containing the particles to be washed and collected in said inner tube chamber on top of said wash solution thereby forming an interface in said inner tube and a centrifuge combination;

centrifuging said centrifuge tube combination for moving at least one of the different particles through said wash solution to a level where the density of said second fluid is substantially the same as that of the particles; and

if said particles have moved out of said inner tube, removing said inner tube, the first fluid and the second fluid as required whereby the desired particles are obtained; or

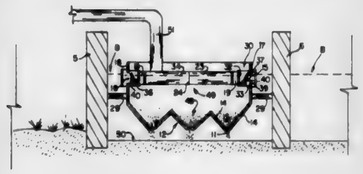
if said desired particles are contained within said inner tube, removing said inner tube with said first and second fluids contained therein and dispensing said first and second fluids whereby the desired particles are obtained.

4,436,632

CLARIFIER SKIMMER

Harold J. Beard, P.O. Box 3838, Baton Rouge, La. 70821

Continuation-in-part of Ser. No. 370,802, Apr. 22, 1982, Pat. No. 4,383,922, which is a continuation-in-part of Ser. No. 316,112, Oct. 29, 1981, Pat. No. 4,362,625. This application May 16, 1983, Ser. No. 494,641
Int. Cl.³ B01D 21/00
U.S. Cl. 210—776 **2 Claims**



1. A process for clarifying a waste water stream comprising:

(a) circuitously flowing said waste water stream in an oxidation ditch having an elongated clarifier positioned therein with its front section heading into the flow of said waste water stream and positioned to decrease the cross-sectional area of said waste water stream in said oxidation ditch where said clarifier is located,

(b) diverting a portion of said waste water stream into said clarifier,

(c) causing said portion to flow at a rate and distance sufficient to generate said portion into a clarified phase and a sludge phase,

(d) causing a surface section of said portion to strike a baffle means extending between the sides of said clarifier wherein said clarifier has ports in its sidewalls to allow surface fluids to flow out of said clarifier, said baffle means being positioned to divert said surface section toward said ports,

(e) removing said sludge phase from said clarifier, and

(f) removing said clarified phase from said clarifier.

4,436,633

FILTRATION THICKENING METHOD AND APPARATUS

Eli I. Robinsky, 66 Lytton Blvd., Toronto, Ontario M4R 1L3, and David H. Laing, 16A Heary St., Toronto, Ontario M5T 1X1, both of Canada

Filed Aug. 14, 1981, Ser. No. 292,737
Int. Cl.³ B01D 29/16, 29/32, 29/38
U.S. Cl. 210—791 **21 Claims**

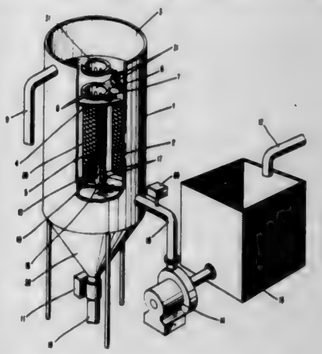
14. A process for filtering a liquid-solids suspension comprising:

passing a liquid portion of the suspension through a filter cloth by means of a pressure differential between the front side and rear side of the filter cloth such that the liquid portion of the suspension flows through said filter cloth to become filtrate and a solids portion of the suspension collects on said filter cloth as filter cake, said cloth having liquid impermeable zones;

maintaining said filter cloth in a predetermined position during said passing step;

intermittently backwashing the liquid portion in a reverse direction through said filter cloth;

allowing said filter cloth to be displaced away from said predetermined position during said backwashing step;



collecting the solids portion from said front side of the filter cloth on an accumulator grating thereby clearing the solids portion deposited on the front side of the filter cloth,

and

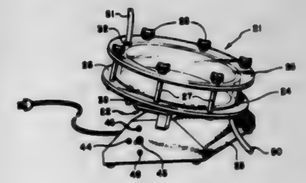
subsequently passing a liquid portion of the suspension again through the filter cloth with said liquid portion flowing through the portion of said grating which overlies said liquid impermeable zones without dislodging filter cake on said grating.

4,436,634

METHOD AND APPARATUS FOR SEPARATING CELLS BY SEDIMENTATION VELOCITY

John R. Wells, Los Angeles County, Calif., assignor to Wescor, Inc., Logan, Utah

Filed Apr. 1, 1981, Ser. No. 249,816
Int. Cl.³ B01D 21/24
U.S. Cl. 210—800 **16 Claims**



1. Apparatus for separating cells of differing sedimentation velocities, comprising a closed separation vessel having an open and unobstructed interior and adapted to be mounted for tilting from and back to horizontal position; a relatively very small lower port located at the lowermost level of the interior of said vessel when said vessel is in its tilted position; a similar upper port located at the uppermost level of the interior of said vessel when said vessel is in its tilted position, the opening of at least the lower port into the interior of the vessel being offset from the interior of the vessel; and flow distributing means having flow distributing structure located between the lower

port and the interior of the vessel and offset from the interior of the vessel for fanning out and decreasing the velocity of the incoming flow and thereby reducing the tendency of incoming liquid to disturb isodense layers of liquid contained in the vessel.

16. A method for separating cells of differing sedimentation velocities, comprising the steps of tilting from horizontal position a separation vessel constructed in accordance with claim 1; introducing a density gradient liquid through the lower port and distributing its flow by means of a baffle or expansion chamber or both before and as it enters the interior of the vessel; filling the vessel with said gradient liquid until flow out of the upper port begins; loading the vessel with a cell suspension containing cells which are to be separated according to differences in sedimentation velocity, said loading being by way of the flow distributing means so said cell suspension will be distributed before and as it enters the interior of the vessel; moving the vessel back to horizontal position so that the isodense layers of the gradient liquid decrease in thickness with respect to their thickness when the vessel is in the tilted position; leaving the vessel in the horizontal position for a sufficient period of time to allow the cells in the cell suspension to separate on the gradient according to their respective sedimentation velocities; again tilting the separation vessel so as to increase the thickness of the isodense layers; and collecting the isodense layers of gradient liquid as various fractions, by removing the gradient liquid through the lower port.

4,436,635

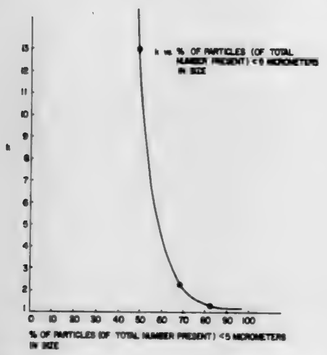
PROCESS FOR FILTRATION OF OIL AND GAS WELL TREATMENT FLUIDS

Howard Abrams, Plainview, and Barrington T. Allen, Bayville, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 305,070, Sep. 24, 1981, abandoned. This application Aug. 6, 1982, Ser. No. 405,938

Int. Cl.³ B01D *27/06*

U.S. Cl. 210—806 **20 Claims**



1. A filtering process for obtaining a clear filtrate effluent from a turbid oil or gas well treatment fluid contaminated with up to about 2,000 parts per million of solid particulates comprised of drilling and formation debris having particle sizes in the range of from about 0.1 to about 30 micrometers comprising passing said treatment fluid through a surface filter having an absolute pore rating of about 40 micrometers or less at a flow density of from about 0.05 to about 0.5 gallons per minute per square foot of filter surface such that (1) initially at least a portion of said particulates is collected on the upstream surface of said surface filter and begins forming a filter cake with enhanced capability for removing particulates smaller than the absolute pore rating of said surface filter and (2) thereafter said treatment fluid is filtered through a filter composite of (i) said surface filter and (ii) said filter cake, whereby a clear filtrate effluent substantially free of solid particulates having particle sizes in the range of from about 0.1 to about 30 micrometers or higher is obtained and the useful life of said surface filter is extended.

4,436,636

INVERT EMULSION WELL SERVICING FLUIDS

William M. Carnicom, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,652

Int. Cl.³ C09K *7/06*

U.S. Cl. 252—8.5 P **4 Claims**

1. An invert emulsion well servicing fluid consisting essentially of:

a liquid hydrocarbon oleaginous phase, an aqueous phase, the volume ratio of said oleaginous phase to said aqueous phase being from about 99/1 to about 1/1, an invert emulsifying agent, from about 1 to about 20 ppb of said fluid of a finely divided, solid, particulate, linear, high density polyethylene having an average particle diameter of from about 15 to about 40 microns, said particles being generally spherically shaped, said polyethylene having a density of at least about 0.94 g/cc, and from about 0.5 to about 4 ppb of said fluid of an organophilic clay.

4,436,637

FABRIC SOFTENING HEAVY DUTY LIQUID DETERGENT CONTAINING A MIXTURE OF WATER INSOLUBLE SOAP AND CLAY

Pallassana N. Ramachandran, Robbinsville, and Kenneth S. Peterson, Keasbey, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,271

Int. Cl.³ C11D *3/12*; D06M *13/24*

U.S. Cl. 252—8.7 **8 Claims**

1. A fabric softening heavy duty liquid detergent which comprises 5 to 20% of synthetic organic detergent selected from the group consisting of anionic, nonionic and amphoteric detergents, and mixtures thereof, 5 to 35% of builder salt, and mixtures thereof, 8 to 20% of a swelling bentonite, 0.5 to 10% of water insoluble metal soap, and 40 to 70% of water.

4,436,638

ADDITIVE COMPOSITION FOR RELEASE OF STUCK DRILL PIPE

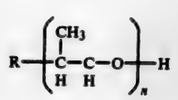
Thad O. Walker, Humble, and Patricia C. Matthews, Houston, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 254,424, Apr. 15, 1981. This application Jul. 29, 1981, Ser. No. 288,110

Int. Cl.³ E21B *23/00*

U.S. Cl. 252—8.55 R **8 Claims**

1. An improved method of releasing a stuck drill string in the borehole of an underground formation during drilling operations employing a drilling fluid which comprises contacting said stuck drill string with an additive composition effective to reduce the annular pressure exerted by the drilling fluid against the stuck drill string and to release said stuck drill string, said additive composition being comprised of from 5 to 18 weight percent of a propoxylated C_{18}–C_{32} alcohols mud dehydrating agent represented by the formula:



wherein R represents from 18 to 32 carbon alkoxy groups and n is an integer of from 18 to 35; 8 to 20 weight percent of an oil-soluble C_8–C_{22} fatty acid ester of a polyol or polyol anhydride emulsifier-wetting agent; and, a liquid hydrocarbon diluent, said weight percent being based on the total weight of said composition.

4,436,639

AMMONIUM SALTS OF POLYMALEIC ACIDS AND USE AS CORROSION INHIBITORS IN WATER-IN-OIL EMULSIONS

Knut Oppenlaender, Ludwigshafen; Karl Stork, Lampertheim, and Klaus Barthold, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

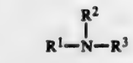
Filed May 10, 1982, Ser. No. 376,284

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119376

Int. Cl.³ C09K *7/02*; C23F *11/14*

U.S. Cl. 252—8.55 E **5 Claims**

1. A polymaleic acid salt obtained by reacting a polymaleic acid having a molecular weight of 200 to 1500 with an amine having the formula



in which R^1 and R^2 are the same or different and are H or C_9–C_{20} alkyl or C_9–C_{20} alkenyl radical and R^3 is a C_9–C_{20} alkyl or C_9–C_{20} alkenyl radical.

4. A water-in-oil emulsion containing from 100 ppm to 10,000 ppm of a salt of claim 1.

4,436,640

GLYCOLATE DITHIOPHOSPHORIC ACIDS, METAL SALTS THEREOF AND OIL COMPOSITIONS CONTAINING THE SALTS

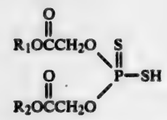
Elaine S. Yamaguchi, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 27, 1982, Ser. No. 382,459

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 E **10 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are the same or different alkyl groups containing 1 to 12 carbon atoms or an alkali or alkaline earth metal or transition metal salt thereof.

4,436,641

REFRIGERATION LIQUID WITH BLUE LEAK INDICATOR AND PROCESS OF USING SAME

Dale E. Stelz, Goddard, Kans.; Frank I. Carroll, Durham, and Wilson M. Whaley, Cary, both of N.C., assignors to Racon Incorporated, Wichita, Kans.

Continuation-in-part of Ser. No. 265,697, May 21, 1981, Pat. No. 4,369,120. This application Nov. 29, 1982, Ser. No. 444,884

Int. Cl.³ C09K *5/04*

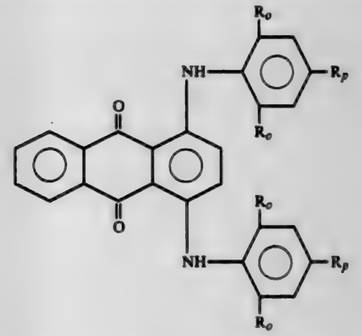
U.S. Cl. 252—68 **9 Claims**

7. A blue, leak-indicating refrigeration liquid which comprises

(a) at least one oil-soluble halocarbon selected from the group consisting of octafluoropropane, octafluorocyclobutane, chloroheptafluorocyclobutane and haloalkanes containing from one to two carbon atoms, from one to six fluorine atoms and from zero to three halogen atoms selected from the group consisting of chlorine and bromine and boiling at a temperature below about 30° C. at atmospheric pressure,

(b) a refrigeration oil composed essentially of a refined mineral oil having a pour point of between about 0° and −50° C., and

(c) a blue anthraquinone dye corresponding to the formula



wherein each R_p is methyl, one R_o of each anilino group is ethyl, and the other R_o of each anilino group is either methyl or ethyl, and wherein the proportion of halocarbon to refrigeration oil is between about 10:1 and about 4:6 and wherein the concentration of dye in the liquid is between about 0.01 and 0.5%.

4,436,642

NONIONIC SURFACTANTS FOR AUTOMATIC DISHWASHER DETERGENTS

Robert J. Scott, New City, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 17, 1982, Ser. No. 349,597

Int. Cl.³ C11D *1/70, 3/075, 3/395*

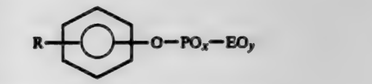
U.S. Cl. 252—95 **4 Claims**

1. An automatic dishwasher detergent comprising:

(a) from about 10 weight percent to about 90 weight percent of a detergency builder;

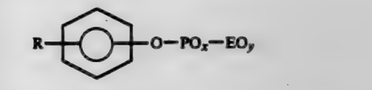
(b) from about 0.5 weight percent to about 10 weight percent of an active chlorine containing compound; and

(c) from about 1 weight percent to about 15 weight percent of a nonionic surfactant of the formula



wherein R is a nonyl group, x is 12 and y is 4.

4. A method of washing dishes comprising contacting dishes in an automatic dishwasher with a detergent comprising a nonionic surfactant of the formula:



wherein R is a nonyl group; PO is an oxypropylene group; x is 12; EO is an oxyethylene group; and y is 4, said detergent containing an active chlorine-containing compound and exhibiting low-foaming, superior wetting and scouring, and chlorine compatibility.

4,436,643

REGENERATION OF AQUEOUS DEGREASING AND CLEANING SOLUTIONS

Helga Bürger, Erkrath, and Christian Rossmann, Langenfeld, both of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,288
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137341
Int. Cl.³ C11D 3/08; C23G 1/36
U.S. Cl. 252—135 11 Claims

1. A process for regenerating an alkaline or neutral silicate-free and phosphate-free aqueous degreasing and cleaning solution contaminated by emulsified mineral oil, natural oil, or a mixture thereof, comprising the steps of

(a) adding to said contaminated solution from about 1 to about 5 g/l of either (1) at least one alkali metal phosphate, (2) at least one alkali metal silicate, or (3) a mixture of at least one alkali metal phosphate and at least one alkali metal silicate, and

(b) adding to said contaminated solution either (1) from about 0.3 to about 2 g/l of calcium ions, (2) from about 0.2 to about 1.2 g/l of magnesium ions, or (3) a quantity of a mixture of calcium ions and magnesium ions chemically equivalent to from about 0.3 to about 2 g/l of calcium ions.

4,436,644

ADJUNCTS FOR USE IN THE MANUFACTURE OF DETERGENT POWDERS

Richard S. Johnson, and John K. Potter, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 200,791, Oct. 27, 1980, Pat. No. 4,328,114. This application Jan. 11, 1982, Ser. No. 338,703
Claims priority, application United Kingdom, Oct. 31, 1979, 7937630
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.
Int. Cl.³ C11D 11/00
U.S. Cl. 252—174.13 10 Claims

1. An adjunct for the use in the manufacture of a detergent powder comprising a liquid nonionic surfactant absorbed on granulated, substantially fully hydrated sodium tripolyphosphate or sodium dihydrogen orthophosphate wherein the amount of nonionic surfactant absorbed on the sodium tripolyphosphate or sodium dihydrogen orthophosphate is at least 0.85 cc/g.

4,436,645

FLUORIDE CONTAINING COMPOSITIONS FOR REMOVAL OF POLLUTANTS FROM WASTE WATERS AND METHODS OF UTILIZING SAME

Anthony V. Ceaser, Cemetary Rd., Great Meadows, N.J. 07838

Filed Sep. 27, 1982, Ser. No. 424,902
Int. Cl.³ C02F 1/52, 1/62
U.S. Cl. 252—179 10 Claims

1. A composition adapted to the removal of heavy metal, water soluble, water immiscible and water immiscible organic pollutants from waste waters comprising

(a) ion exchange absorbent gels, consisting of at least one member selected from the group consisting of calcined clays, amorphous silicas, aluminas, natural and artificial zeolites, perlites or vermiculite,

(b) cementitious materials selected from the group consisting of Portland cements, aluminous cements, puzzalan cements, gypsum plasters, alkaline earth metal oxides and alkaline earth metals hydrated oxides,

(c) water soluble fluoride containing salts, and

(d) alkali metal ortho phosphates, provided that where no alkali metal ortho phosphate is present an additional component is selected from group (a) or group (b), further provided that where no alkali metal ortho phosphate or group (a) components are present, three components are selected from group (b).

4,436,646

GREEN-EMITTING PHOSPHOR FOR CATHODE-RAY TUBE

Takeshi Takahara, Yokosuka; Takeo Sato; Takeo Itou, both of Fukaya, and Masaaki Tamatani, Fujisawa, all of Japan, assignors to Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 22, 1982, Ser. No. 421,269
Claims priority, application Japan, Oct. 6, 1981, 56-158218
Int. Cl.³ C09K 11/463
U.S. Cl. 252—301.4 S 1 Claim

1. A green-emitting phosphor for a cathode-ray tube, consisting of calcium sulfide activated by cerium and lithium, the cerium concentration being within the range of 0.06 to 0.5 mol % and the lithium concentration being in the range 0.05 to 0.4 mol % said phosphor exhibiting a higher luminous efficiency than calcium sulfide phosphor activated by cerium and sodium when excited at a current density of 4 $\mu A/cm^2$.

4,436,647

SELF-EMULSIFIABLE ANTIFOAMS

Ewald Pirson, Burghausen; Jakob Schmidlkofer, Mehring-Öd, and Ernst Innertsberger, Burghhausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 114,874, Jan. 24, 1980, abandoned. This application Apr. 21, 1982, Ser. No. 370,445
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1979, 2903423
Int. Cl.³ B01D 17/00
U.S. Cl. 252—358 3 Claims

1. A self-emulsifiable antifoam composition which is essentially anhydrous consisting essentially of an organopolysiloxane in which at least 80 mole percent of the siloxane units are dihydrocarbon siloxane units, a filler in an amount of from about 0.1 to about 30 percent by weight based on the weight of the organopolysiloxane, a water-soluble cellulose derivative in an amount of from about 2 to 30 percent by weight based on the weight of the composition and from about 5 to about 25 percent by weight based on the weight of the composition of at least one compound of the general formula

$$RCOO(CH_2)_2SO_3M,$$

where R is an aliphatic hydrocarbon radical having at least 7 carbon atoms, in which at least 10 percent of the number of R radicals must have at least 11 carbon atoms, and M is selected from the group consisting of an ammonium group and an alkali metal ion.

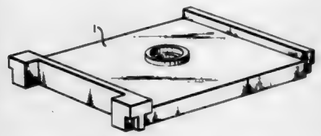
4,436,648

ELECTRICALLY CONDUCTING THERMOPLASTIC MATERIAL, ITS MANUFACTURE, AND RESULTING ARTICLE

Sarwan K. Khanna, Carmel, and Satya P. Khanna, Indianapolis, both of Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 22, 1980, Ser. No. 219,260
Int. Cl.³ H01B 1/06
U.S. Cl. 252—511 5 Claims

1. Electret microphone comprising a molded thermoplastic component of which at least a portion is electrically conducting, the material of said at least a portion consisting essentially of an acrylonitrile butadiene styrene copolymer resin and carbon particles, carbon being contained in said material in a percentage by weight which is here designated as x and which is in the range of 5–20 weight percent of said material, and said material having electrical sheet resistance which, in the absence of surface metallization, is less than or equal to a value of $60{,}000/x^3$ ohm per square.



4,436,649

GREASE COMPOSITION WITH IMPROVED LOW SHEAR STABILITY

Jeffrey E. Stemke, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 30, 1982, Ser. No. 393,904
Int. Cl.³ C10M 5/20
U.S. Cl. 252—51.5 A 6 Claims

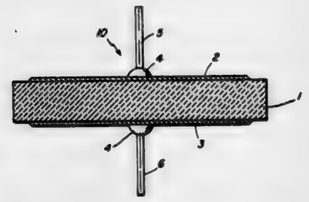
1. A grease composition comprising a major amount of a lubricating oil base vehicle, a polyurea gellant in an amount sufficient to thicken the base vehicle to a grease consistency, and from 0.1 to 20 weight percent of a polyhydroxylated compound.

4,436,650

LOW VOLTAGE CERAMIC VARISTOR

Leslie J. Bowen, Waltham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 14, 1982, Ser. No. 398,038
Int. Cl.³ H01B 1/06
U.S. Cl. 252—518 6 Claims



1. A varistor comprising a sintered body of a bulk type, said sintered body consisting

essentially of zinc oxide as a main component of the sintered body, said zinc oxide having an average grain size greater than about 50 microns;

an additive for imparting to the sintered body a voltage-dependent property, said additive comprising the oxide of elements selected from the group consisting of Bi, Co, Mn, Sb, Cr, Ti, Pb, Ba, Ni, Sn, and combinations thereof, and being approximately 3 mole percent of the sintered body composition;

a zinc oxide grain growth promoting agent, said agent having a cation having an ionic radius less than the ionic radius of Zn^{+2} and the cation of said agent having an ionic valence of three, said cation of said zinc oxide grain growth promoting agent being aluminum, said zinc oxide grain growth promoting agent being from about 0.001 to about 1.0 mole percent of said sintered body;

and

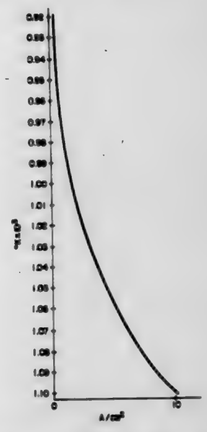
a grain boundary barrier layer stabilizer for imparting to the sintered body a stable grain boundary barrier layer, said stabilizer having a cation having an ionic radius greater than the ionic radius of Zn^{+2} and the cation of said stabilizer having an ionic valence of one, said cation of said stabilizer being selected from the group consisting of sodium, potassium, rubidium, cesium, and combinations thereof, said stabilizer being from about 0.001 to about 10 mole percent of said sintered body.

4,436,651

THERMIONIC CATHODE AND PROCESS FOR PREPARING THE SAME

David M. Corneille, c/o Cathodyne Corporation, 490 Windsor Park Dr., Centerville, Ohio 45459, assignor to David M. Corneille, Springboro, Ohio

Filed Apr. 20, 1981, Ser. No. 255,588
Int. Cl.³ H01B 1/06
U.S. Cl. 252—521 16 Claims



1. A thermionic cathode employing, in a matrix metal, an alkaline earth metal hydroxy oxy carbonate as an emission material, wherein said alkaline earth metal is selected from the group consisting of barium, strontium, calcium and mixtures thereof, said matrix metal is selected from the group consisting of rhenium, nickel, molybdenum, platinum, paladium, ruthenium, iron, tantalum, and alloys thereof, and the weight ratio of said emission material to said matrix metal as in the range of approximately 1/10 to 10/1.

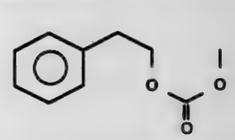
4,436,652

PHENYLETHYLMETHYLCARBONATE MIXTURES CONTAINING SAME AND ORGANOLEPTIC USES THEREOF

Richard M. Boden, Monmouth Beach; Theodore J. Tyszkiewicz, Sayreville, and Hugh Watkins, Lincroft, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 329,221, Dec. 10, 1981. This application Sep. 23, 1982, Ser. No. 422,489
Int. Cl.³ A61K 7/46; C11B 9/00
U.S. Cl. 252—522 R 3 Claims

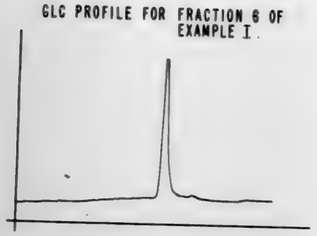
1. A mixture consisting essentially of phenylethyl methylcarbonate having the structure:

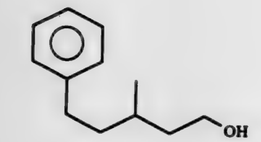


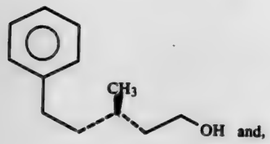
and at least one substance selected from the group consisting of:

(i) 3-Methyl-1-phenyl-pentanol-5 or stereoisomers thereof having a structure selected from the group consisting of:

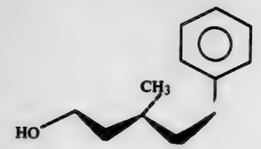
GLC PROFILE FOR FRACTION 6 OF EXAMPLE I





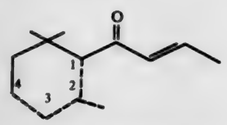


and,

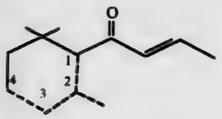


the weight ratio of phenylethyl methylcarbonate:3-methyl-1-phenyl-pentanol-5 being from about 0.1:1 up to about 1:0.1; and

(ii) at least one cyclohexyl butenone derivative defined according to the structure:



wherein one or two of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond with the proviso that when two of the dashed lines are carbon-carbon double bonds, said carbon-carbon double bonds are conjugated, the weight ratio of phenylethyl methylcarbonate:cyclohexyl butenone derivative having the generic structure:



being from about $1:1\times10^{-7}$ up to about 1:1.

2. A process for augmenting or enhancing the aroma of consumable materials selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to a perfume composition or cologne an aroma augmenting or enhancing quantity of the composition of matter of claim 1.

4,436,653

STABLE LIQUID DETERGENT COMPOSITIONS

Ronald L. Jacobson, Wyoming, and Dean C. Hanley, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 251,650, Apr. 6, 1981, abandoned. This application Mar. 18, 1982, Ser. No. 359,557

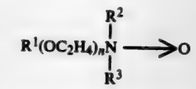
Int. Cl.³ C11D 1/44

U.S. Cl. 252—547 **15 Claims**

1. A stable liquid detergent composition comprising:

(a) from about 3% to about 20% of an ethoxylated alcohol or ethoxylated alkyl phenol nonionic surfactant of the formula $R(OC_2H_4)_nOH$, wherein R is selected from the group consisting of aliphatic hydrocarbon radicals containing from about 8 to about 15 carbon atoms and alkyl phenyl radicals in which the alkyl group contains from about 8 to about 12 carbon atoms, n is from about 3 to about 9, and said nonionic surfactant has an HLB value of from about 10 to about 13;

(b) from about 2% to about 15% of an amine oxide surfactant having the formula



wherein R^1 is an alkyl, hydroxyalkyl, alkoxyhydroxypropyl, alkoxyhydroxyethyl, alkyl amido or alkyl carboxylate radical in which the alkyl and alkoxy portions contain from about 8 to about 18 carbon atoms, R^2 and R^3 are selected from the group consisting of methyl, ethyl, propyl, isopropyl, 2-hydroxyethyl, 2-hydroxypropyl, 3-hydroxypropyl, or said groups joined together to form a cyclic structure in which the nitrogen is part of a heterocyclic ring, and n is from 0 to about 10;

(c) from about 1% to about 10% of an alcohol polyethoxylate sulfate surfactant having the formula $R^4O(C_2H_4O)_m$-SO_3M, wherein R^4 is an alkyl or hydroxyalkyl radical containing from about 10 to about 18 carbon atoms, m is from about 2 to about 10 and M is a compatible cation;

(d) from about 10% to about 20% of a water-soluble nitrilotriacelate or citrate detergency builder capable of sequestering calcium and magnesium ions in water solution; provided that components (a), (b), (c) and (d) together represent less than about 40% by weight of the composition;

(e) from 0% to about 25% of a hydrotrope;

(f) up to about 89% water; said liquid detergent composition being in isotropic form and having a pH of from about 8 to about 13 in a 0.2% water solution at 20° C.

4,436,654

FIRE-RETARDANT INSULATING OILS

Etsuo Ohe; Katsuo Sugawara, both of Hitachi; Ititaro Tani, Kitaibaraki, and Hideo Tsukioka, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,125

Claims priority, application Japan, May 8, 1981, 56-68168

Int. Cl.³ H01B 3/24

U.S. Cl. 252—574 **14 Claims**

1. An insulating oil characterized in that a phosphoric triester containing at least one aromatic ring is mixed with a benzenetricarboxylic acid trialkyl ester or with a polyol ester obtained from trimethylolpropane and a saturated fatty acid, said triester being mixed in an amount of 30 to 80% by weight based on the total weight of said triester and either said benzenetricarboxylic acid trialkyl ester or said polyol ester.

4,436,655

PROCESS FOR THE CONTINUOUS PURIFICATION OF CONTAMINATED FLUIDS AND FOR CONDITIONING THE RESULTING CONCENTRATES

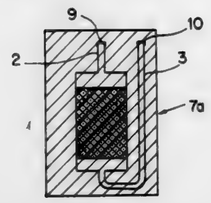
Ermanno Masotto, and Sergio Gagliardi, both of Rome, Italy, assignors to Comitatonazionale Per Lienergia Nucleare, Rome, Italy

Continuation of Ser. No. 86,669, Oct. 19, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,419

Claims priority, application Italy, Oct. 27, 1978, 51669 A/78

Int. Cl.³ G21F 9/12

U.S. Cl. 252—628 **8 Claims**



1. In a process for continuously treating contaminants contained in a fluid, for the purpose of their final disposal, comprising providing at least one expendable collecting receptacle which has an inlet port and an outlet port and which is totally encapsulated with a solid inert mass except for the ports, purifying the fluid by at least one operation which includes treating the fluid to remove contaminants therefrom and retaining the contaminants in said collecting receptacle, the fluid having been passed into said collecting receptacle through said ports, and subsequently encapsulating the ports in a solid inert mass, the improvement of (a) placing the collecting receptacle in an open top container of substantially greater size than the collecting receptacle, and totally encapsulating the collecting receptacle except for the ports with said solid inert mass which is added to the container before purifying the fluid, so as to completely surround the collecting receptacle up to a level above the top of the collecting receptacle and below the ports and the top of the container, said mass functioning as a biological shield, or as a coating resistant to chemical attack and mechanical stress, or as a biological shield and as a coating resistant to chemical attack and mechanical stress, and (b) rendering insoluble the contaminants within said collecting receptacle by passing into said receptacle in a continuous way through said inlet port with excess passing out through said outlet port, after purifying the fluid and before encapsulating the ports, at least one substance which solidifies to a solid matrix therefore rendering the contaminants insoluble within said collecting receptacle.

4,436,656

NOVEL ANTITUMOR GLYCOPROTEIN SUBSTANCE AND ITS PREPARATION

Takuma Sasaki, Tokyo; Kazuya Nakamichi; Yakudo Tachibana, both of Sohka, and Kiyoshi Minami, Koshigaya, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Aug. 2, 1983, Ser. No. 519,724

Claims priority, application Japan, Aug. 9, 1982, 57-137209

Int. Cl.³ A23J 1/04; C07G 7/00

U.S. Cl. 260—112 R **4 Claims**

1. A glycoprotein substance possessing an antitumor activity which is recovered from the liquid portion coming from cooking of raw scallop shellfish with a hot aqueous solvent or with the vapor of such solvent and which has the following characteristics:

(1) Appearance: White, powdery solid;

(2) Solubility: Soluble in water, but insoluble in organic solvents such as methanol, ethanol and acetone;

(3) Acidic or basic nature: Amphoteric electrolyte having an isoelectric point of pH 5.2;

(4) Infrared absorption spectrum (pelleted in KBr): With characteristic absorption peaks at 3500~3300, 1660 and 1550 cm^{-1};

(5) Ultraviolet absorption spectrum in an aqueous solution: With a characteristic absorption peak λ_{max}^{H2O} at 279 nm;

(6) Color reactions: Positive in biuret reaction, xanthoproteic reaction, phenolic reagent reaction according to Lowry-Folin method, anthrone-sulfuric acid reaction and phenol-sulfuric acid reaction, but negative in cysteine-sulfuric acid reaction;

(7) Average molecular weight: About 5000 as measured by gel-electrophoresis.

3. A process for the preparation of a glycoprotein substance having an average molecular weight of about 5000 and an isoelectric point of pH 5.2 from scallop shellfish which comprises recovering the liquid portion which comes from cooking of raw scallop shellfish with a hot aqueous solvent or with vapor of such solvent and which is to be discarded as waste, concentrating the liquid portion to a smaller volume or to dryness to yield a concentrate or dry powder, dissolving the concentrate or dry powder in water to form an aqueous solution thereof, subjecting the aqueous solution to a series of treatments comprising ion-exchange chromatography with a basic anion exchanger, isoelectric focusing and molecular weight-fractionating treatments comprising gel-filtration and electrophoresis, in any desired sequence, whereby to isolate a glycoprotein substance which is adsorbable on the basic ion exchanger and which has an average molecular weight of about 5000 and an isoelectric point of pH 5.2.

4,436,657

ANTITUMOR GLYCOPROTEIN SUBSTANCE AND PREPARATION THEREOF

Takuma Sasaki, Tokyo; Kazuya Nakamichi; Yakudo Tachibana, both of Sohka, and Kiyoshi Minami, Koshigaya, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Aug. 2, 1983, Ser. No. 519,725

Claims priority, application Japan, Aug. 9, 1982, 57-137210

Int. Cl.³ A23J 1/04; C07G 7/00

U.S. Cl. 260—112 R **6 Claims**

1. A glycoprotein substance possessing an antitumor activity which is recovered from the liquid portion which comes from cooking of raw scallop with a hot aqueous solvent or with the vapor of such solvent and which has the following characteristics:-

(1) Appearance: White, powdery solid.

(2) Solubility: Soluble easily in water, but insoluble in organic solvents such as methanol, ethanol and acetone.

(3) Acidic or basic nature: Amphoteric electrolyte having an isoelectric point of pH 5.5.

(4) Infrared absorption spectrum (pelleted in KBr): With characteristic absorption peaks at 3500~3300, 1660 and 1550 cm^{-1}.

(5) Ultraviolet absorption spectrum in an aqueous solution: With a characteristic absorption peak λ_{max} H_2O at 255 nm.

(6) Color reactions: Positive in biuret reaction, xanthoproteic reaction, phenolic reagent reaction according to Lowry-Folin method, anthrone-sulfuric acid reaction, phenol-sulfuric acid reaction and cysteine-sulfuric acid reaction.

(7) Average molecular weight: About 470,000 as measured by gel-electrophoresis.

4. A process for the preparation of a water-soluble, antitumor glycoprotein substance having an average molecular weight of about 470,000 and an isoelectric point of pH 5.5 from scallop which comprises recovering the liquid portion which comes from cooking of raw scallop with a hot aqueous solvent

or with vapor of such solvent and which is to be discarded as waste, concentrating the liquid portion thus recovered to a smaller volume or to dryness to yield a concentrate or dry powder, dissolving the concentrate or dry powder in water or an aqueous solvent to form an aqueous solution thereof and subjecting the aqueous solution to a series of treatments comprising ion exchange chromatography with a basic anion exchanger and molecular weight-fractionating treatments comprising gel-filtration and electrophoresis, in any desired sequence, whereby isolating a fraction consisting essentially of a glycoprotein substance which is adsorbable on a basic anion exchanger and which has an average molecular weight of about 470,000 and an isoelectric point of pH 5.5.

4,436,658

PROCESS OF EXTRACTION OF LACTOFERRINE AND IMMUNOGLOBULINS OF MILK

Andre Peyrousset, Ger, and Francois Spring, Pau, both of France, assignors to Societe Nationale Elf Aquitaine, France

Filed May 12, 1982, Ser. No. 377,316
Claims priority, application France, May 15, 1981, 81 09740
Int. Cl.³ A23J *1/20*
U.S. Cl. 260—122 **7 Claims**

1. In a process of extraction of iron-fixing milk proteins, from an aqueous medium substantially free from caseins by adsorption on a solid support followed by elution of the adsorbed proteins by means of an acid solution, the improvement which comprises effecting the adsorption in a weakly basic medium at a pH of 7.7 to 8.8 on pulverulent silica having a particle size from 5 um to 5 mm, a specific surface of about 5 to 150 m^2/g and a pore diameter of from 25 to 250 nm.

4,436,659

METALIZED DYES, THEIR MANUFACTURE AND USE

Arthur Bühler, Rheinfelden, and Hans U. Schlitz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 146,973, May 5, 1980, Pat. No. 4,318,849, which is a division of Ser. No. 904,358, May 9, 1978, Pat. No. 4,215,042, which is a continuation of Ser. No. 589,963, Jun. 24, 1975, abandoned. This application Nov. 9, 1981, Ser. No. 319,533
Claims priority, application Switzerland, Jul. 16, 1974, 9764/74; May 27, 1975, 6750/75
Int. Cl.³ B66C *23/60*
U.S. Cl. 260—146 R **6 Claims**

1. A copper, nickel, chromium or cobalt complex of an azo dye of the formula

$$U\text{—}R_2\text{—}Z(Ar\text{—}N{=}N\text{—})_mD(Y)\text{—}N{=}N\text{—}E\text{—}Y'$$

wherein

D is benzene or naphthalene,

Y is hydroxy, methoxy or carboxy,

Y' is hydroxy or amino,

E is 6-hydroxypyridone or 6-(amino, alkoxy, aryloxy, alkylmercapto or arylmercapto)-2,4-diamino-5-(cyano or carbamido)pyridine

Z is $—SO_2—$, $—SO_2N(R_1)—$ or $—CON(R_1)—$ wherein R_1 is hydrogen or C_1-C_4-alkyl,

R_2 is C_1-C_4-alkylene or arylene,

Ar is arylene,

m is 0 or 1 and

U is a sulfonic acid group or a carboxy group, and wherein D and E contain no ionogenic substituents in addition to U except that together D and E may further contain one sulfo group.

4,436,660

PROCESS FOR THE PRODUCTION OF 5-CYANO-AND 5-CARBOXAMIDO-5H-DIBENZ[B,F]AZEPINES

Ernst Aufderhaar, Kaiseraugst; Klemenz Sprecher, Basel, and Janos Zergenyi, Seltisberg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 198,887, Oct. 20, 1980, abandoned. This application May 14, 1982, Ser. No. 378,464
Claims priority, application Switzerland, Oct. 30, 1979, 9705/79
Int. Cl.³ C07D *223/26*
U.S. Cl. 260—239 D **4 Claims**

1. A process for producing 5-cyano-5H-dibenz[b,f]azepine comprising reacting 5H-dibenz[b,f]azepine with cyanogen chloride or cyanogen bromide in the presence of at least catalytically effective amounts of N,N-dimethylacetamide, N,N-diethylacetamide, N,N-di-npropylacetamide, N,N-dimethylpropionamide or N,N-diethylpropionamide, hexamethylphosphoric acid triamide, N-methyl-pyrrolidone-(2), sulfolane, benzyltriethylammonium chloride or dibenzyl-diethylammonium chloride as strong polar substances within the temperature range of 20°–100° C.

2. A process for producing 5H-dibenz[b,f]azepine-5-carboxamide comprising reacting 5H-dibenz[b,f]azepine with cyanogen chloride or cyanogen bromide in the presence of at least catalytically effective amount of N,N-dimethylacetamide, N,N-diethylacetamide, N,N-di-n-propylacetamide, N,N-dimethylpropionamide or N,N-diethylpropionamide, hexamethylphosphoric acid triamide, N-methyl-pyrrolidone-(2), sulfolane benzyltriethylammonium chloride or dibenzyl-diethylammoniumchloride as strong polar substances within the temperature range of 20°–100° C., hydrolysing the 5-cyano-5H-dibenz[b,f]azepine obtained by treating with formic or acetic acid or trichloro- or trifluoroacetic acid in admixture with sulfuric acid and finally treating the mixture with water at a temperature range of −5° to +80° C.

3. A process for producing 5H-dibenz[b,f]azepine-5-carboxamide comprising reacting 5H-dibenz[b,f]azepine with cyanogen chloride or cyanogen bromide in the presence of at least catalytically effective amounts of N,N-dimethylacetamide, N,N-diethylacetamide, N,N-di-n-propylacetamide, N,N-dimethylpropionamide or N,N-diethylpropionamide, hexamethylphosphonic acid triamide, N-methyl-pyrrolidone-(2), sulfolane, benzyltriethylammonium chloride or di-benzyl-diethylammonium chloride as strong polar substances within the temperature range of 20°–100° C., hydrolysing the 5-cyano-5H-dibenz[b,f]azepine obtained by reacting with 30% H_2O_2 and sodium hydrogen carbonate and finally treating the mixture with water at a temperature range of −5° to +80° C.

4. A process for producing 5H-dibenz[b,f]azepine-5-carboxamide comprising reacting 5H-dibenz[b,f]azepine with cyanogen chloride or cyanogen bromide in the presence of at least catalytically effective amounts of N,N-dimethylacetamide, N,N-diethylacetamide, N,N-di-n-propylacetamide, N,N-dimethylpropionamide or N,N-diethylpropionamide, hexamethylphosphoric acid triamide, N-methyl-pyrrolidone-(2), sulfolane, benzyltriethylammonium chloride or dibenzyl-diethylammonium chloride as strong polar substances within the temperature range of 20°–100° C., hydrolyzing the 5-cyano-5H-dibenz[b,f]azepine obtained by reacting with the complex $BF_3.2CH_3COOH$ in acetic acid and chlorobenzene and then decomposing the crystalline addition compound of 5H-dibenz[b,f]azepine 5-carboxamide with BF_3 obtained by treatment with water in a temperature range of −5° to +80° C.

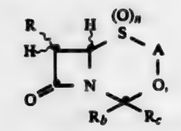
4,436,661

3-SUBSTITUTED BICYCLIC AZETIDINONE DERIVATIVES

Hans R. Pfaendler, Liestal, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

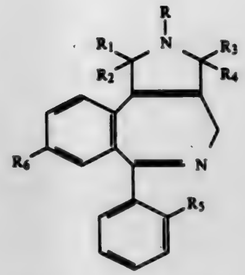
Continuation-in-part of Ser. No. 171,521, Jul. 23, 1980, abandoned. This application Dec. 4, 1981, Ser. No. 327,380
Claims priority, application Switzerland, Aug. 1, 1979, 7077/79; Jul. 1, 1980, 5083/80
Int. Cl.³ C07D *515/04, 205/08, 513/04, 401/04*
U.S. Cl. 260—245.3 **20 Claims**

1. Compounds of the formula

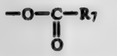


(I)

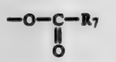
wherein R denotes hydrogen or R_a which denotes lower alkyl, hydroxy-lower alkyl, hydroxy-lower alkyl protected against oxidation by a conventional hydroxy protecting group, lower alkoxy-lower alkyl, lower alkanoyloxy-lower alkyl, hydroxysulfonyloxy-lower alkyl wherein hydroxysulfonyl is present in the form of an alkali metal salt or an ammonium salt, halo-lower alkyl, lower alkylthio-lower alkyl, lower alkoxycarbonyl-lower alkyl, cyano-lower alkyl, sulfo-lower alkyl wherein sulfo is present in the form of an alkali metal salt or an ammonium salt, amino-lower alkyl, lower alkenyl, lower alkoxycarbonyl, benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, diphenylmethoxycarbonyl, phenoxycarbonyl, phenoxycarbonyl substituted by halogen, lower alkoxy or by nitro, aminocarbonyl, lower alkylaminocarbonyl, di-lower alkylaminocarbonyl, cycloalkyl having 3 to 7 carbon atoms, cycloalkyl-lower alkyl having 4 to 7 carbon atoms, cycloalkenyl having 3 to 7 carbon atoms and one or two carbon-carbon double bonds, cyclohexylvinyl, cyclohexylallyl, cyclohexenylmethyl, 1,4-cyclohexadienylmethyl, phenyl, phenyl-lower alkyl, phenyl or phenyl-lower alkyl wherein phenyl is substituted by lower alkyl, lower alkoxy, halogen, nitro or amino, phenyl-lower alkyl substituted in α-position by hydroxy, hydroxysulfonyloxy, carboxy, sulfo or amino, pyridyl, thienyl, furyl pyridyl-lower alkyl, thienyl-lower alkyl, furyl-lower alkyl, or pyridyl-lower alkyl, thienyl-lower alkyl, or furyl-lower alkyl substituted in α-position by hydroxy, hydroxysulfonyloxy, carboxy, sulfo, or by amino, phenyl-lower alkenyl, or furylallyl, R_b and R_c each denote hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, or, if taken together, lower alkylene, A denotes ethylene, 1,2-propylene, or 1,2-butylene, and n represents zero or two, the sterreoisomers thereof, and mixtures of these stereoisomers.



wherein R_1 and R_3 are selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkoxy or



and R_2 and R_4 are hydrogen or R_1 and R_2 and/or R_3 and R_4 taken together are oxo groups with the proviso that at least one oxo group is present; R is selected from the group consisting of hydrogen, lower alkyl, C_2 to C_7 carboxylic acids and the lower alkyl esters, amides and mono or di lower alkyl amides thereof, hydroxy C_2 to C_7 alkyl and amino C_2 to C_7 alkyl or mono- or di-lower alkyl amino C_2 to C_7 alkyl; R_5 is halogen or hydrogen and R_6 is halogen with the proviso that when R_1 or R_3 is hydroxy, lower alkoxy or



then R is lower alkyl or hydrogen; R_7 is C_1 to C_6 alkyl, phenyl, or hydrogen the N-oxides and the pharmaceutically acceptable salts thereof.

4,436,662

PYRROLO[3,4-D][2]BENZAZEPINONES

Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 393,142, Jun. 28, 1982, abandoned, which is a continuation-in-part of Ser. No. 379,400, May 18, 1982. This application Mar. 31, 1983, Ser. No. 481,021
Int. Cl.³ C07D *487/02*
U.S. Cl. 260—245.7 **17 Claims**

1. A compound of the formula

4,436,663

PROCESS FOR SEPARATING PORPHYRINS

Kenji Maruhashi, Yokohama; Ichiro Kojima, Yokosuka; Yutaka Oguchi; Noboru Endoh, both of Tokyo, and Tetsuo Satoh, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Japan

Filed Aug. 2, 1982, Ser. No. 404,054
Claims priority, application Japan, Aug. 4, 1981, 56-121389
Int. Cl.³ C07D *487/22*
U.S. Cl. 260—245.91 **7 Claims**

1. A process for separatig porphyrins, which comprises

(1) adjusting the pH of the liquid phase of a culture broth containing at least two porphyrins to about 2.5 to about 4 and collecting the resulting solid containing the porphyrins,

(2) either (a) preparing an acidic aqueous solution of said solid and adjusting the pH of its liquid phase left after removal of insoluble matter to about 6 to about 8 to form an aqueous solution containing the porphyrins, or (b) preparing an acid-containing lower alcohol solution of said solid, adjusting the pH of its liquid phase left after removal of insoluble matter, adding water in an amount at least twice the amount of the solution to precipitate lower alkyl esters of the porphyrins, collecting the precipitates and dissolving them in an organic solvent to form an organic solvent solution of the porphyrin esters,

(3) contacting the solution obtained in (a) or (b) in step (2) with a copolymer having a surface area of at least about 700 m^2/g and derived from

(i) divinylbenzene,

(ii) styrene or its functional derivative,

(iii) an alkenyl ester of a benzenepolycarboxylic acid represented by the following formula



wherein R represents an alkenyl group having 3 to 10 carbon atoms, and n is 2 or 3, thereby permitting adsorption of the porphyrins or their esters to the copolymer, and

(4) thereafter, eluting the copolymer to obtain fractions of the individual porphyrins or their esters.

4,436,664

NITROGEN-CONTAINING POLYETHER MACROCYCLES WITH A SIDEARM CONTAINING NEUTRAL ELECTRON DONOR GROUPS

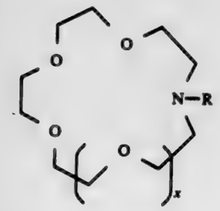
George W. Gokel, Greenbelt, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 203,165, Nov. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 198,981, Oct. 21, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,530

Int. Cl.³ C07D *273/01*

U.S. Cl. 260—330.6 12 Claims

1. An ether composition of the formula:



where

x is 0, 1 or 2 and

R is

2-(alkoxy)$_q$alkyl-,

2-alkoxy phenyl-,

2-alkoxy phenylmethyl-,

2-alkoxy phenylethyl-,

amino alkyl-, or

2-amino phenyl-,

wherein q is 1 to 4, the alkoxy and alkyl groups contain 1 to 3 carbon atoms, the said amino is NH_2—, monoalkylamino- or dialkylamino-, wherein the alkyl on the amino contains 1 to 2 carbon atoms and wherein the said 2-alkoxy phenyl rings may optionally be substituted by up to two alkyl and/or alkoxy groups, each of 1 to 3 carbon atoms.

4,436,665

TWO SOLVENT PROCESS FOR PREPARATION OF ESTERS OF 3,5-DIBROMO-4-HYDROXYBENZONITRILE

Richard E. Sheads, Durham, N.C., and David A. Segal, Hatfield, Pa., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1982, Ser. No. 426,733

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—404 13 Claims

1. A method of preparing esters of 3,5-dibromo-4-hydroxybenzonitrile from 4-cyanophenol which comprises:

(a) reacting said 4-cyanophenol with a reactant(s) selected from the group consisting of bromine; bromine and chlorine; and preformed bromine chloride in water or 3% aqueous hydrogen bromide;

(b) azeotropically distilling the resulting solvent medium with an aromatic hydrocarbon; and

(c) reacting the 3,5-dibromo-4-hydroxybenzonitrile intermediate in said aromatic hydrocarbon with an acid halide selected from the group consisting of an aliphatic, cycloaliphatic and aromatic acid halide.

4,436,666

BIOCIDAL ENOL DERIVATIVES OF 2-ARYL-1,3-CYCLOALKANEDIONE COMPOUNDS

Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

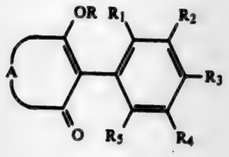
Filed Sep. 22, 1978, Ser. No. 945,005

The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.

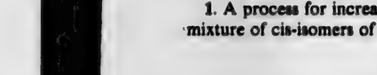
Int. Cl.³ C07C *154/00, 69/96*

U.S. Cl. 260—455 B 21 Claims

1. A compound of the formula:



wherein: R is



wherein:

R′ may not include more than thirty aliphatic carbons and is selected from: an unsubstituted or substituted alkyl, alkenyl, alkynyl, bicycloalkyl, bicycloalkenyl, cycloalkyl, cycloalkenyl, phenyl, phenylalkyl, naphthyl, or naphthylalkyl group wherein the permissible substituents are one or more alkyl, cyano, nitro, alkoxy, aryloxy, halogen, haloalkyl, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl alkoxyalkyl, aryloxyalkyl, alkylthioalkyl, arylthioalkyl, arylsulfinylalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, arylsulfonylalkyl, or dialkylamino groups in any combination;

R″ is a divalent moiety which may not include more than thirty aliphatic carbon atoms and is selected from an unsubstituted or substituted alkylene, alkenylene, alkynylene, bicycloalkylene, bicycloalkenylene, cycloalkylene, cycloalkenylene, phenylene, phenylalkylene, naphthylene, or naphthylalkylene group wherein the permissible substituents are one or more alkyl, cyano, nitro, alkoxy, aryloxy, halogen, haloalkyl, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl alkoxyalkyl, aryloxyalkyl, alkylthioalkyl, arylthioalkyl, alkylsulfinylalkyl, arylsulfinylalkyl, alkylsulfonylalkyl, arylsulfonylalkyl or dialkylamino groups, in any combination;

R_1 may not individually include more than ten aliphatic carbon atoms and is an alkyl, haloalkyl, halogen or polyhaloalkyl group;

R_2, R_3, R_4 and R_5 may not individually include more than ten aliphatic carbon atoms and are individually hydrogen, nitro, polyhaloalkyl, halogen, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoyl amido, amino or haloalkyl groups;

A is an alkylene or alkenylene chain containing two or three carbon atoms which may be substituted by one or more substituents which may be the same or different selected from:

(a) substituents which may not include more than ten aliphatic carbon atoms selected from: an alkyl, alkenyl, cycloalkyl or cycloalkenyl groups, which groups may be further substituted with one or more cyano, halogen, nitro, alkoxy, aryloxy, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl, acylamido, or dialkylamino substituents in any combination; and a phenyl group which may be substituted by one or more alkyl, alkenyl, cycloalkyl, cycloalkenyl, cyano, halogen, nitro, alkoxy, aryloxy, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl, acylamido or dialkylamino substituents in any combination;

(b) a divalent alkylene or alkenylene group having from 2 to 20 carbon atoms completing a 3,4,5,6 or 7 membered carbon ring with the proviso that when A is a hydrocarbon chain containing two carbon atoms, said hydrocarbon chain may not form together with said divalent alkylene group a six membered fused polycyclic ring structure wherein said six membered ring has more than two double bonds.

4,436,667

PROCESS FOR PREPARING CYCLOPROPANE CARBOXYLIC ACID ESTER DERIVATIVES

Michael J. Bull, Kent, England, assignor to Shell Internationale Research Maatschappij B. V., The Hague, Netherlands

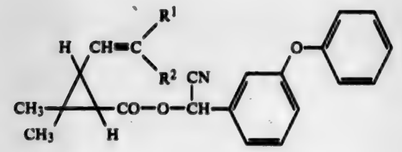
Filed Apr. 10, 1981, Ser. No. 252,892

Claims priority, application United Kingdom, Apr. 23, 1980, 8013309

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—465 D 11 Claims

1. A process for increasing the IR cis S isomer content in a mixture of cis-isomers of a compound of formula:



wherein R^1 and R^2 are independently chlorine, bromine or methyl, comprising the steps of:

dissolving as a solute a cis-isomer mixture of compound (I) which contains substantial quantities of 1R cis R-isomer and 1S cis S-isomer in an organic amine base having from 5 to 7 carbon atoms selected from a group consisting of secondary amines having two branched alkyl groups and tertiary amines;

evaporating the amine from said solute, whereby during evaporation the dissolved 1R cis R and 1S cis S-isomer content of said solute is progressively epimerized to 1R cis S and 1S cis R-isomers, respectively, which progressively crystallize from said solution as the amine content thereof diminishes by evaporation; and

continuing evaporation until substantially all of said amine is removed from said solute, whereby said solute is recovered as a 1:1 crystalline mixture of 1R cis S and 1S cis R isomers.

4,436,668

PREPARATION OF CARBONATES

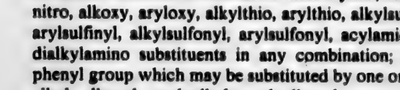
Wolfgang Harder, Weinheim; Franz Merger, Frankenthal, and Friedrich Towae, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,763

Int. Cl.³ C07C *68/00*

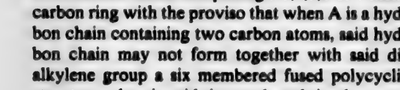
U.S. Cl. 260—463 12 Claims

1. In a process for the preparation of a carbonate of the formula



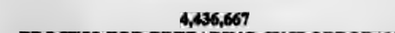
I

where R^1 and R^2 are identical or different and each is an aralkyl group of 7 to 12 carbon atoms, an alkenyl group of 2 to 12 carbon atoms, a cycloalkyl group of 5 to 8 carbon atoms or an alkyl group of 1 to 18 carbon atoms, by reacting a carbamic acid ester with an alcohol, the improvement which comprises: reacting a carbamic acid ester of the formula



II

where R^2 has the above meanings, with an alcohol of the formula



III

where R^1 has the above meanings, at a temperature above 140° C., the ammonia formed being stripped from the reaction mixture during the reaction by passing an inert gas therethrough.

4,436,669

PREPARATION OF AROMATIC/ALIPHATIC NITRILES

Roland Jacques, Ales; Michel Reppelin, Collonges-au-Mont-d'Or, and Laurent Seigneurin, Salindres, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed May 14, 1982, Ser. No. 378,191

Claims priority, application France, May 15, 1981, 81 09694

Int. Cl.³ C07C *120/10*

U.S. Cl. 260—465 B 18 Claims

1. A process for the preparation of an aromatic or aliphatic nitrile having the formula:

Ar—A—CN (I)

wherein Ar is a benzene radical and A is a direct chemical bond or a hydrocarbon radical having from 1 to 6 carbon atoms, comprising heating to a temperature ranging from about 450° C. to about 550° C. a formamide or formanilide having the formula:

Ar—A—NHCHO (II)

or an amide having the formula:

Ar—A—$CONH_2$ (III)

in the presence of a fluorinated silliceous catalyst, said catalyst having been prepared by (i) impregnating a particulate silica containing from about 0.05 to about 2% by weight of fluorine, expressed as F^- bonded to the silica, with a dilute aqueous solution of hydrofluoric acid, said hydrofluoric acid solution having a concentration in HF of less than about 5% by weight, and the ratio by weight of the hydrofluoric acid contained in said aqueous solution thereof to the silica being less than about 5%, followed by (ii) drying the catalyst thus impregnated.

4,436,670
PROCESS FOR PRODUCING HYDROXYBENZONITRILES
Ryuzo Ueno, Nishinomiya; Kazuyuki Sakota, Kobe; Keiji Kawata, Sakai, and Yoshiyuki Naito, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Veno Seiyaku Oyoken-kyuso, Osaka, Japan
Filed Sep. 1, 1982, Ser. No. 413,796
Claims priority, application Japan, Sep. 7, 1981, 56-139631
Int. Cl.³ C07C 120/00, 121/75
U.S. Cl. 260—465 B 9 Claims

1. A process for producing a hydroxybenzonitrile, which comprises reacting a hydroxybenzoic acid ester with ammonia in the vapor phase in the presence of a boron phosphate supported catalyst.

4,436,671
PROCESS FOR PRODUCING UNSATURATED ALIPHATIC DINITRILES
Itsuo Furuoya, Saita, and Yuzuru Kitazawa, Hirakata, both of Japan, assignors to Takeda Chemical Industries, Limited, Osaka, Japan
Filed Feb. 2, 1982, Ser. No. 344,936
Claims priority, application Japan, Feb. 12, 1981, 56-19941
Int. Cl.³ C07C 120/14
U.S. Cl. 260—465.3 7 Claims

1. In a process for producing fumaronitrile and maleonitrile which comprises reacting at least one straight chain hydrocarbon having 4 carbon atoms with ammonia and oxygen in the presence of an ammoxidation catalyst composition, the improvement wherein the ammoxidation catalyst consists essentially of the following active components:
(A) at least one oxide of vanadium and tungsten, and
(B)
(1) at least one oxide of antimony, phosphorus and boron, and/or
(2) at least one oxide of chromium, nickel, aluminum and silicon.

4,436,672
OIL RECOVERY METHOD UTILIZING GLYCERYL ETHER SULFONATES
Carter G. Naylor, Austin, Tex., assignor to Texaco, Inc., White Plains, N.Y.
Filed Aug. 16, 1982, Ser. No. 408,364
Int. Cl.³ C07C 143/42, 143/11
U.S. Cl. 260—512 R 7 Claims

1. A composition of matter of the formula:

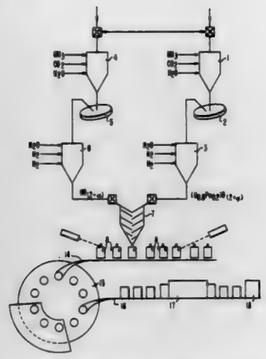
$$RO(AO)_n(CH_2CHO)_m H$$
$$\quad\quad\quad

4,436,677

NUCLEAR FUEL FABRICATION PROCESS

Kenneth C. Radford, Churchill, and Don E. Harrison, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 2, 1982, Ser. No. 403,969
Int. Cl.³ G21C 21/00
U.S. Cl. 264—0.5 17 Claims



1. A method of making a pellet from a powder comprising:
(A) placing said powder in a heat-shrinkable self-supporting bottle;
(B) sealing said self-supporting bottle;
(C) isostatically pressing said self-supporting bottle at a temperature which causes it to shrink at about the same rate that the powder within it is compressed; and
(D) decomposing said self-supporting bottle and sintering said powder.

4,436,678

METHOD FOR HOT REPAIRING THE INSIDE OF A FURNACE

Yasuo Nishikawa, and Hirokuni Takahashi, both of Okayama, Japan, assignors to Kyusyu Refractories Co., Ltd., Okayama, Japan

Filed Jun. 23, 1981, Ser. No. 276,636
Int. Cl.³ F27D 1/16
U.S. Cl. 264—30 5 Claims

1. A method for hot repairing the inside of a high temperature furnace comprising the steps of forming a hot repair material in the state of a slurry by adding 10–15 weight % of water to a monolithic refractory material composed mainly of a refractory material and a binder, or a refractory in admixture with carbon containing granulated particles and additionally a binder; directing and compacting said repair material into portions necessitating repairs in the high temperature furnace; allowing the water in said repair material to boil; and hardening said monolithic refractory material by said boiling operation; said monolithic refractory material having a particle size composition of coarse particles of 1–10 mm in the range of 10–70 weight %, ultrafine particles below 0.063 mm in the range of 10–50 weight % and particles of 1–0.063 mm for the residual part.

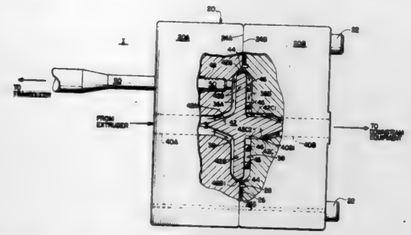
4,436,679

METHOD AND APPARATUS FOR GENERATING FOAMED THERMOPLASTIC MATERIALS

Thomas W. Winstead, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Nov. 9, 1981, Ser. No. 319,403
Int. Cl.³ B29D 27/00
U.S. Cl. 264—40.3 49 Claims

1. The method of entraining gas as a blowing agent in a thermoplastic melt to provide foamed thermoplastic extrudate, comprising:
providing an extruded flowing mass of thermoplastic melt;
constraining the flow of said melt into a tubular configuration over a finite distance;
impinging an annular sheet-like flow of gas under pressure on said tubular configuration of melt substantially transversely of the direction of flow thereof to entrain said gas in said melt;



subsequently returning said melt with entrained gas to a flowing mass configuration;
controlling the flow rate and temperature of said flowing mass with entrained gas to optimum values for subsequent extrusion; and
extruding said flowing mass with entrained gas to produce said foamed thermoplastic extrudate

---

4,436,680

PROCESS FOR PRODUCING GRANULAR, FIRE-RESISTANT MATERIAL

Axel Eschner, Wiesbaden; Rudolf Ganz, Mainz-Gonsenheim; Günter Tkotz, Wiesbaden; Hermann Stein, Bad Dürkheim, and Klaus Kreuels, Eltville, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,247
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105579
Int. Cl.³ C04B 21/06
U.S. Cl. 264—60 25 Claims

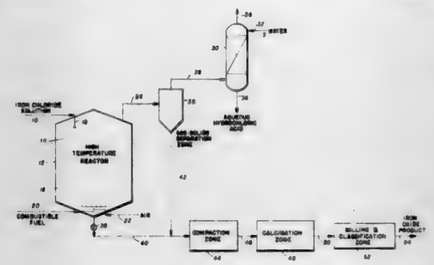
1. A process for producing a granular, fire-resistant material, which comprises:
mixing 100 parts by weight of ceramic fibers, 2 to 15 parts by weight of at least one member selected from the group consisting of clay, Al_2O_3, SiO_2, aluminum hydroxide, magnesium oxide, titanium dioxide and chromium oxide, 1 to 8 parts by weight, as P_2O_5, of a phosphate bonding agent, and about 2 to about 25 parts by weight of water, to form a substantially uniformly dispersed mixture,
compacting said mixture by a volume coefficient of at least 3,
subjecting said compacted mixture to at least one heat-treatment selected from the group consisting of drying at 110° to 180° C., heat-treating at 250° to 600° C., and firing at 800° to 1550° C., and
granulating the thus heated product.

4,436,681

PROCESS FOR PRODUCING IRON OXIDE WEIGHTING MATERIAL FROM IRON CHLORIDE SOLUTIONS

Virgil J. Barczak, 2500 NW. 109th St., Oklahoma City, Okla. 73120; Haywood A. Perkins, 2905 Crown Colony Ct., Mobile, Ala. 36609, and O. L. Daigle, 2716 NW. 59th St., Oklahoma City, Okla. 73112

Filed May 17, 1982, Ser. No. 378,784
Int. Cl.³ B28B 11/00
U.S. Cl. 264—67 4 Claims



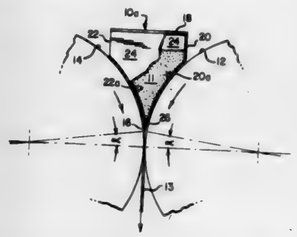
1. A process for preparing a weighting material adapted for use in a drilling fluid which comprises:
A. compacting a particulate iron oxide byproduct formed during the regeneration of aqueous hydrochloric acid from an iron chloride solution to reduce the porosity thereof and to increase the pour density thereof to at least 85 pounds per cubic foot and the tap density thereof to at least 100 pounds per cubic foot,
B. calcining said compacted iron oxide byproduct at temperatures in the range of from about 900° C. to about 1300° C. for a period of time sufficient to sinter said compacted iron oxide byproduct and reduce the surface area of said byproduct to less than about 10 square meters per gram and thereafter
C. grinding said calcined byproduct to a predetermined particle size.

4,436,682

ROLL COMPACTING OF POLYMER POWDERS INTO FULLY DENSE PRODUCTS

Walter V. Knopp, Wyckoff, N.J., assignor to Revere Copper and Brass, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 216,646, Dec. 15, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,432
Int. Cl.³ B28B 1/08
U.S. Cl. 264—70 6 Claims



1. A process for producing a polymer film comprising:
(a) storing a supply of a polymer powder;
(b) feeding a free falling stream of the powder between a pair of spaced rollers;
(c) metering the stream of powder fed between the rollers;
(d) heating the powder;
(e) rotating the rollers;
(f) compressing the powder between the rollers to compact and to coalesce the powder into a film;
(g) drawing the film from between the rollers;
(h) maintaining the circumferential speed of the rollers essentially equal to the linear speed of the film drawn from between the rollers; and
(i) applying tension to the film drawn from between the rollers to produce a flat film.

4,436,683

METHOD FOR FABRICATING AN INFORMATION SIGNAL RECORDED MEDIUM OF THE ELECTROSTATIC CAPACITY TYPE

Yoshiki Nishihara, Yokohama, and Kazumichi Miyamoto, Ichikawa, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 29, 1982, Ser. No. 437,679
Claims priority, application Japan, Nov. 2, 1981, 56-174513
Int. Cl.³ B29D 17/00
U.S. Cl. 264—107 6 Claims

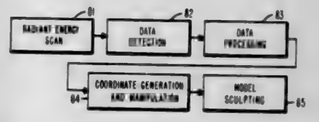
1. A method for fabricating an information signal recorded medium of the electrostatic capacity type which comprises providing a conductive resin composition comprising a vinyl chloride resin, about 1.5 to 10 parts by weight of a stabilizer for the copolymer resin, about 0.1 to 1.5 parts by weight of a silicone oil and about 15 to about 70 parts by weight of a carbon black conductive material, each based on 100 parts by weight of the vinyl chloride resin, kneading the conductive resin composition at a temperature sufficient for melting the copolymer resin, and press molding the kneaded composition in such a way that intended information signals are recorded in geometrical patterns to give a recorded medium, the conductive resin composition being applied with about 0.4 to 25 parts by weight of water per 100 parts by weight of the resin prior to or during the kneading, the kneading being continued until the applied water is substantially removed.

4,436,684

METHOD OF FORMING IMPLANTABLE PROSTHESES FOR RECONSTRUCTIVE SURGERY

David N. White, Palo Alto, Calif., assignor to Contour Med Partners, Ltd., Mountain View, Calif.

Filed Jun. 3, 1982, Ser. No. 384,646
Int. Cl.³ B23Q 15/14
U.S. Cl. 264—138 31 Claims



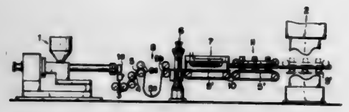
1. A method of fabricating a three dimensional corporeal model of a structure internal to a body, comprising:
subjecting the body to radiant energy to produce radiant energy responses internal to said body, the radiant energy selected to produce radiant energy responses that are characteristic of a selected physical property of substances detectable exterior of the body;
detecting produced radiant energy responses to obtain representations of substances at locations internal to the body defining structures internal to said body three-dimensionally;
generating from the representations of the substances a set of three dimensional coordinates defining a three dimensional representation of a selected structure internal to the body; and
directing a sculpting tool into a workpiece in accordance with the generated set of three dimensional coordinates to form a corporeal model corresponding to the three dimensional representation of the selected structure.

4,436,685

CONTINUOUS PRESS FORMING METHOD FOR SHEET RESIN

Koji Emura; Taneo Suzuki, and Hidemichi Kazama, all of Fuji, Japan, assignors to Yamakawa Industrial Company, Limited, Shizuoka, Japan

Filed May 20, 1982, Ser. No. 380,434
Claims priority, application Japan, Dec. 1, 1981, 56-193454
Int. Cl.³ B29C 17/14
U.S. Cl. 264—148 11 Claims



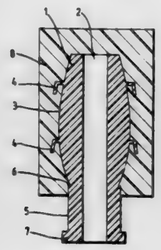
1. A continuous method for press forming a sheet resin, which comprises the steps of:
(a) continuously extruding molten resin from a supply source for the molten resin,
(b) subjecting the extruded molten resin to a sheet forming to obtain a softened sheet resin strip synchronously with the extrusion of the molten resin from the supply source,
(c) subjecting the softened resin to a primary thermal control step whereby the temperature of the resin sheet is regulated so that it possesses the necessary surface stiffness and thermoplasticity to be subsequently cut into pieces of a fixed length,
(d) cutting the thus temperature regulated sheet resin strip into sheet resin pieces of a fixed length,
(e) subjecting the sheet resin pieces to a secondary thermal control so that they possess the necessary thermoplasticity and surface stiffness so it can be subsequently press formed,
(f) intermittently injecting said sheet resin pieces of a fixed length into a press forming machine, and
(g) clamping said sheet resin pieces by use of the press forming machine synchronously with the injection of the sheet resin pieces into the press forming machine, whereby all the steps can be subjected to one consecutive operation.

4,436,686

METHOD OF MANUFACTURING LEVEL VIALS

Michael Drori, Mobile Post - Upper Galil, Kibbutz Hagoshrim, Israel

Filed Sep. 16, 1982, Ser. No. 419,036
Claims priority, application Israel, Sep. 25, 1981, 63934
Int. Cl.³ B29D 23/02
U.S. Cl. 264—163 5 Claims



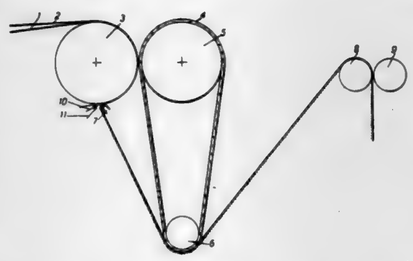
1. A method of manufacturing level vials comprising the steps of:
a. molding a core of an opaque thermoplastic material around a pin member in a conventional double-injection molding machine, the resulting core having a barrel-like shape and at least two spaced external integral thin annular ribs,
b. transferring said core into a second suitable mold in the same machine and molding a vial body around it of transparent thermoplastic material,
c. removing said vial body from said machine after cooling and withdrawing said pin member from the core and then said core from the vial body, whereby said ribs are severed from the core and remain in said body, to form bubble indicia, the softening temperature of said transparent plastic being lower than that of the opaque plastic.

4,436,687

APPARATUS AND PROCESS FOR THE PRODUCTION OF PILE SURFACE ARTICLES

Donald J. Bye, Runcorn; Harold P. Stanistreet, Pontypool, both of England, and Werner Lindenstruth, Oestringen, Fed. Rep. of Germany, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 417,597, Nov. 20, 1973, abandoned.
This application Sep. 8, 1975, Ser. No. 611,243
Claims priority, application United Kingdom, Dec. 4, 1972, 55831/72
Int. Cl.³ B29C 17/02
U.S. Cl. 264—164 5 Claims



1. A process for the production of a pile surfaced product comprising feeding a thermoplastic material against a substantially smooth surfaced roll heated to a temperature above the softening point of the thermoplastic material and a paper backing against the thermoplastic so that the thermoplastic material adheres to the surface and bonds to the backing, withdrawing the laminate of the backing and the thermoplastic material from the roll so that fibrils are drawn out from thermoplastic material between the surface of the roll and the backing in a fibril forming area, the laminate being withdrawn over a rod or bar having a radius of curvature of between 1½ and 5 millimeters and being positioned transverse to the direction of movement of the laminate at a distance from the surface of the roll greater than the combined thickness of the thermoplastic material and the backing, cooling the fibrils by directing a coolant into the fibril forming area and disjoining the fibrils from the heated surface.

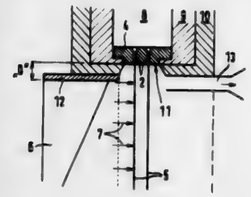
4,436,688

PROCESS FOR MELT-SPINNING OF SYNTHETIC POLYMERS

Gunter Koschinek, Dietzenbach; Dietmar Wandel, Hanau; Bernd Kretschmann, Kahl, and Rolf Zinsser, Hosenstamm, all of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,780
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036683
Int. Cl.³ D01D 5/08
U.S. Cl. 264—176 F 6 Claims

1. In a process for melt-spinning of synthetic polymers selected from the group consisting of polyamide 6, polyamide 66, polyester and their copolymers into filaments wherein the polymer is melt-spun through orifices, said orifices being located in a spinneret, said spinneret being of a substantially planar bottom surface, thereby forming said filaments, said filaments being allowed to emerge from said spinneret and drop into a blowing duct, said blowing duct having an uppermost blow point, said filaments being subjected to a current of air flowing in a direction normal to the filaments and cooled in a cooling zone, said cooling zone being located below said uppermost blow point, said filaments being moistened and prepared and then withdrawn at a speed of between 600 and 6000 meters/min., said uppermost blow point and said surface



of said spinneret having a distance "D" therebetween and defining a quiescent zone, said distance "D" being selected so that said distance is within a range, said range having an upper limit and a lower limit, the improvement in which said upper limit is defined by a relation "B," wherein $B=48.2(\log v)-109$ (mm), and said lower limit is defined by a relation A_1, A_2 or A_3 wherein
$A_1=34.4(\log v)-71$ (mm) and applies to a spinneret load of less than 0.5 g/min/cm²
$A_2=-32(\log v-3.356)^2+34$ (mm) and applies to a spinneret load of 0.5—1.8 g/min/cm²
$A_3=-44(\log v-3.221)^2+32$ (mm) and applies to a spinneret load greater than 1.8 g/min/cm²,
wherein "v" is the spinning withdrawal speed in meters/min.

4,436,689

PROCESS FOR THE PRODUCTION OF POLYMER FILAMENTS HAVING HIGH TENSILE STRENGTH

Paul Smith, Wilmington, Del.; Pieter J. Lemstra, Brunssum, Netherlands; Robert Kirschbaum, Sittard, Netherlands, and Jacques P. L. Pijpers, Limbricht, Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Oct. 18, 1982, Ser. No. 434,829
Claims priority, application Netherlands, Oct. 17, 1981, 8104728
Int. Cl.³ D01F 6/00
U.S. Cl. 264—204 15 Claims

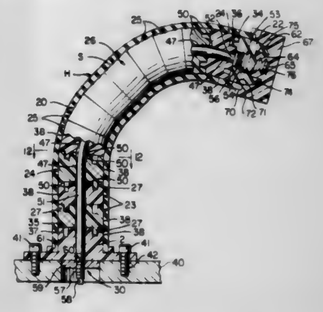
1. An improved process for the preparation of polyethylene filaments having a high tensile strength and modulus by spinning a solution of linear high-molecular weight polyethylene and thereafter stretching the filament thus formed, the improvement essentially comprising:
spinning a solution of an ethylene polymer or copolymer at a temperature above the gel point of said solution, said solution containing at least 80 percent by weight solvent, and wherein said ethylene polymer or copolymer
contains at least 5 percent by weight of at least one alkene having 3 to 8 carbon atoms;
has a weight-average molecular weight Mw greater than 4×10^5 k/kmole; and
has a weight/number average molecular weight ratio Mw/Mn lower than 5;
cooling the spun polymer solution to a temperature below its gel point to form a gel filament; and
stretching said gel filament under conditions such that a polymer filament having a tensile strength of at least 1.5 GPa at room temperature is formed.

4,436,690

CURVED MANDREL FOR CURING POLYMERIC HOSE AND METHOD

Richard F. Davis, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 86,984, Oct. 22, 1979, Pat. No. 4,298,330.
This application Oct. 28, 1981, Ser. No. 315,698
Int. Cl.³ B29H 5/18
U.S. Cl. 264—313 4 Claims



1. In a method of making a curved mandrel for supporting an uncured polymeric hose during curing to define a corresponding curved configuration in the cured hose; the improvement comprising the steps of; forming a plurality of substantially cylindrical members each having opposed end faces with a first type of said members each having said opposed end faces thereof disposed in substantially parallel relation and with a second type of said members each having said opposed end faces disposed in substantially non-parallel relation; disposing said plurality of members in end-to-end relation so as to be adapted to be relatively rotated to define the configuration of said mandrel including predetermined curve means therein; interlocking said members with interlocking means which interlock the members in only one position to define said configuration and curve means; and holding said members with readily attachable and detachable holding means enabling holding said members axially against each other after interlocking thereof; said members with said interlocking means and holding means being adapted to, provide a substantially straight mandrel for easy installation of an uncured straight hose therearound, define said configuration and curve means in said mandrel and uncured hose by relatively rotating said members, and provide looseness and axial spacing between members to enable easy withdrawal of the cured curved hose from around said members.

4,436,691

METHOD AND APPARATUS FOR THE FORMATION OF A SPHEROMAK PLASMA

Stephen C. Jardin, Princeton; Masaaki Yamada, Lawrenceville; Harold P. Furth, and Mitcheo Okabayashi, both of Princeton, all of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 24, 1981, Ser. No. 246,976
Int. Cl.³ G21B 1/00
U.S. Cl. 376—137 14 Claims

1. In a method for producing and confining a plasma which includes the steps of:
evacuating a vacuum vessel and filling said vessel with a neutral species;
producing a first poloidal magnetic field within said vacuum vessel;
producing a second poloidal magnetic field in said vacuum vessel by pulsing a current in a first direction through a poloidal field generating coil, the poloidal field generating

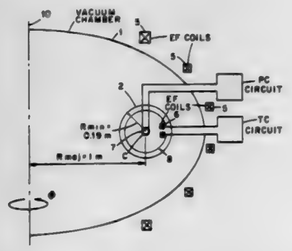
coil located in a toroidal shaped flux core which is enclosed within a housing, such that said first and said second poloidal magnetic fields are superimposed to form a composite poloidal field in said vacuum vessel having regions of stronger and weaker strength;

producing a toroidal magnetic field in said vacuum vessel by passing a current through a toroidal field generating coil which is located in said flux core, thereby initiating a plasma discharge and causing toroidal flux to appear outside of said flux core;

expanding the plasma in the direction of said region of weaker poloidal magnetic field strength;

producing an equilibrium magnetic field by passing a current through at least one external equilibrium field coil which is positioned outside of said flux core housing so as to set up an equilibrium magnetic field;

an improved method of detaching said plasma from said flux core, comprising:



producing, as part of the step of producing said second poloidal field, a composite magnetic field having field lines tangential to an outer surface of said flux core including the step of passing a current through an interior equilibrium field coil located inside of said flux core housing, so as to contribute to said equilibrium magnetic field; and

reversing simultaneously the directions of currents in the poloidal field and the toroidal field generating coils such that a resultant normal component V_n of the velocity of said plasma away from said flux core is approximately zero, said normal velocity component V_n being characterized by the equation $V_n = E_p B_t - E_t B_p$, where E_t and B_p are electric and magnetic fields, respectively, set up by said poloidal field generating coil and where B_t and E_p are magnetic and electric fields, respectively, set up by said toroidal field generating coil, to pinch off at least most of said expanded plasma so as to cause poloidal magnetic field line reconnection within the pinched-off portion, thereby producing a detached plasma.

4,436,692

PLUG FOR REACTOR PRESSURE VESSEL NOZZLE

Donald D. Stenabaugh, Danbury, Conn., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Feb. 10, 1982, Ser. No. 347,509
Int. Cl.³ G21C *19/04*
U.S. Cl. 376—204 **13 Claims**

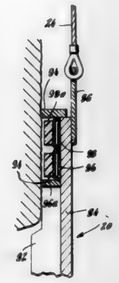
1. The method of plugging an underwater nozzle opening in a vertical sidewall of a cylindrical nuclear reactor vessel containing a core shroud radially displaced from said sidewall to form an annular space, said annular space containing jet pumps therein spaced from said sidewall, which comprises:

providing a substantially disk shaped plug having a diameter sufficient to cover said nozzle opening and curved to match the curve of said sidewall, means on one surface of said plug for sealing against said sidewall around said nozzle opening, and cylinder/piston means carried by the other side of said plug;

lowering said plug as it hangs vertically from a first cable into said annular space above said jet pumps and laterally displaced from vertical alignment with said nozzle;

pushing said cable toward said sidewall until said plug is vertically aligned with the space between said sidewall and said jet pumps;

lowering said plug on said first cable into the space between said sidewall and said jet pumps;



laterally shifting said plug into vertical alignment with said nozzle while shifting the weight of said plug to a second cable;

lowering said plug on said second cable into alignment with said nozzle opening; and

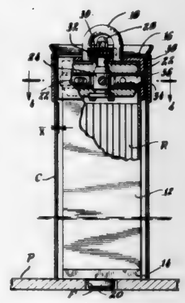
actuating said cylinder/piston means to force said plug away from said core shroud and into sealing engagement over said nozzle opening.

4,436,693

NON-IMPACTING LOOSE ROD STORAGE CANISTER

Louis J. Zezza, Ossining, N.Y., and Iqbal Husain, Brookfield, Conn., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed Sep. 18, 1981, Ser. No. 303,410
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—272 **6 Claims**



1. In combination with a nuclear fuel rod elongated storage cell having an open upper end, side walls, and a bottom wall formed with a central hole, a fuel rod canister contained within said cell comprising

(a) an elongated body having an open upper end and a closed lower end,

(b) a support pin extending downwardly from the closed lower end of the body and fitted within the central hole in the bottom wall of the cell to restrain the lower end of the body against lateral movement,

(c) a cap on the open upper end of the body, and

(d) means for securing the cap to the body,

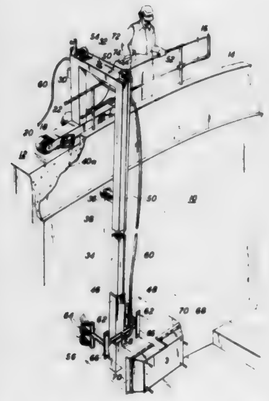
(e) the cap being closely spaced from and contained against substantial lateral movement by the side walls of the cell.

4,436,694

NUCLEAR REACTOR CAVITY DECONTAMINATION MACHINE

Michael Vassalotti, New Milford, Conn., and Alvaro Obligado, Waccabuc, N.Y., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed Aug. 31, 1981, Ser. No. 297,554
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—310 **10 Claims**



1. Apparatus for decontaminating the inside walls of a nuclear reactor cavity in a refueling floor, having a raised curb around its periphery which comprises:

a chassis having wheels in rolling contact with said floor;

first and second curb wheels mounted on said chassis in horizontal rolling contact with said curb;

a support member extending upwardly and laterally from said chassis;

an elongated mast depending from said support member and into the reactor cavity;

at least one reaction wheel carried by said mast for horizontal rolling engagement with the cavity wall;

a carriage vertically positionable along said elongated mast; and

means carried by said carriage for spraying decontaminating fluid on said cavity wall.

4,436,695

LARGER CONTAINED NUCLEAR EXPLOSION BREEDER REACTOR SYSTEMS

Edward F. Marwick, 5149 Dobson St., Skokie, Ill. 60077

Continuation-in-part of Ser. No. 40,849, May 21, 1979, Pat. No. 4,344,913, which is a continuation-in-part of Ser. No. 953,166, Oct. 20, 1978, Pat. No. 4,216,058, which is a continuation-in-part of Ser. No. 810,894, Jun. 28, 1977, Pat. No. 4,121,971. This application Apr. 7, 1980, Ser. No. 137,849
Int. Cl.³ G21C *1/02*
U.S. Cl. 376—317 **39 Claims**

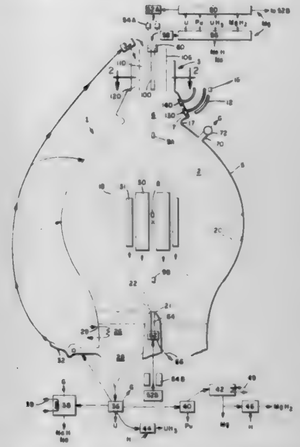
14. Apparatus for producing useful energy, said apparatus comprising:

a large chamber;

means for introducing nuclear explosive means for descent into said chamber;

means for causing an explosion of said nuclear explosive means at a predetermined point in said chamber;

means for introducing a plurality of substantially contiguous free-falling liquid masses for descent into said chamber such that at the instant of nuclear explosion said nuclear



explosive means is substantially surrounded by said plurality of masses; and

means for introducing spray into said chamber.

4,436,696

PROCESS FOR PROVIDING A UNIFORM CARBON DISTRIBUTION IN FERROUS COMPACTS AT HIGH TEMPERATURES

Daniel M. Buck; Alan T. Sibley, both of Allentown, and John J. Kaiser, Catasauqua, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 20, 1981, Ser. No. 265,512
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—57 **8 Claims**

1. A process for high temperature sintering which provides a substantially uniform carbon distribution in a ferrous powder metallurgy compact, which process comprises:

(a) heating the ferrous powder metallurgy compact in the heating zone of a sintering furnace to a temperature of at least 2,200° F.,

(b) introducing into the heating zone an atmosphere comprising about 2 to less than 10 volume percent hydrogen, about 0.5 to 2.0 volume percent carbon monoxide, about 0.5 to 1.0 volume percent methane, the level of either the carbon monoxide or the methane being at least slightly greater than 0.5 volume percent when the other is about 0.5 volume percent and the hydrogen is about 2 volume percent, and the balance nitrogen, and

(c) removing the sintered compact.

4,436,697

SOLDERING ALLOY

Ronald Friedrich, Kamp-Lintfort, and Manfred Müller, Essen, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

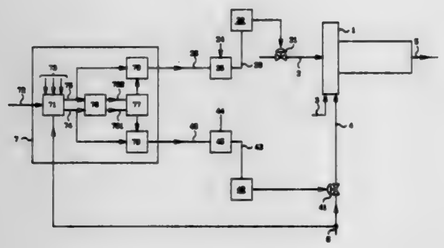
Filed Sep. 23, 1982, Ser. No. 422,193
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145944
Int. Cl.³ C22C *19/07, 30/00*
U.S. Cl. 420—440 **4 Claims**

1. Soldering alloy comprising 25 to 35% iron, 15 to 25% chromium, 3 to 6% silicon, 1 to 4% molybdenum, and the remainder essentially cobalt.

4,436,698
FEED FORWARD CARBON BLACK REACTOR CONTROL

Gales D. Stacy, and Merle R. Likins, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 195,710, Oct. 9, 1980, Pat. No. 4,355,016. This application Jul. 23, 1982, Ser. No. 401,279
Int. Cl.³ G05D 7/00; C09C 1/48; B01J 4/00
U.S. Cl. 422—62 1 Claim

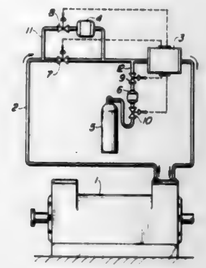


1. An apparatus for producing carbon black comprising
a. a carbon black reactor having
aa. an essentially cylindrically shaped housing,
bb. means for introducing hydrocarbon feed at or near the axis of the housing and in essentially the axial direction,
cc. means for introducing a fuel into said reactor,
dd. means for introducing a free oxygen-containing gas into said reactor,
ee. means for introducing hot combustion gases obtained by the combustion of said fuel and free oxygen-containing gas in essentially tangential direction into said housing,
ff. means for withdrawal of carbon black containing smoke from said housing,
b. a humidity signal generator for determining the content of water in the free oxygen-containing gas entering the carbon black reactor,
c. an automatic double control unit operatively connected to said humidity signal generator and receiving said humidity signal, said unit being capable of converting said humidity signal into a feed control signal and into an oxygen control signal, each of said control signals being automatically computed by said unit in such a way that a manipulation of the feed flow or respectively the flow of free oxygen-containing gas responsive to the respective control signal keeps one carbon black property or respectively carbon black process property essentially constant, said unit being further equipped with select means capable of selecting that one of said control signals for a respective manipulation which causes the larger conversion of the feed to carbon black, said double control unit being operatively connected to both a manipulator in the means for introducing hydrocarbon feed and a manipulator in the means for introducng free oxygen-containing gas such as to allow the manipulation of either the hydrocarbon feed or the flow of free oxygen-containing gas into the carbon black reactor responsive to the respective control signal.

4,436,699
MONITORING SYSTEM FOR CHECKING ELECTRIC ROTARY MACHINE FOR LOCAL OVERHEATING

Kiyoshi Narato, Ibaraki; Keizou Ohtsuka, Hitachi; Tooru Inada, Hitachi, and Takashi Watanabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,356
Claims priority, application Japan, Sep. 6, 1980, 55-122946
Int. Cl.³ G01N 15/00, 27/00, 33/44
U.S. Cl. 422—68 2 Claims

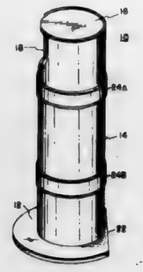


1. A monitoring system for checking for local overheating of an electric rotary machine of the gas-cooled type, with the machine including parts covered with organic insulating material tending to undergo pyrolysis when exposed to elevated temperatures, the system comprising:
a sensing means for sensing a concentration of minuscule particles in a coolant gas for the electric rotary machine, the electric rotary machine being determined as having a local overheating when a predetermined level is exceeded by the concentration of the minuscule particles as sensed by said sensing means;
test gas supply means for supplying liquified carbon dioxide connected to said sensing means, said test gas supply means being operative to feed the liquified carbon dioxide into said sensing means thereby causing the sensing means to perform a sensing operation, to thereby determine whether or not the sensing means is functioning normally;
a passage means for feeding coolant gas from the electric rotary machine into said sensing means, said passage means comprising a first passage for directly feeding the coolant gas from the electric rotary machine into the sensing means, and a second passage for feeding the coolant gas from the electric rotary machine into the sensing means through a filter means for removing minuscule particles from the coolant gas to provide the sensing means with a gas free from minuscule particles;
a liquid atomizing device communicating with said second passage at a position downstream of said filter means for injecting the liquified carbon dioxide as atomized particles into the gas free from the minuscule particles; and
switch means for switching a direction of flow of the coolant gas between the first passage and the second passage, said switch means being adapted to allow the coolant gas to flow through the first passage when the coolant gas flowing through the electric rotary machine is sensed by the sensing means to determine a concentration thereof, and to allow the coolant gas to flow through the second passage when the gas free from the minuscule particles is provided by the filter means and the liquified carbon dioxide is injected as atomized particles by the liquid atomizing device into the filtered gas to provide a test gas so that the test gas is fed into the sensing means to determine whether or not the sensing means is functioning normally.

4,436,700
AUTOCLAVABLE PIPETTE JAR AND METHOD OF USING IT

Eric D. Erickson, Lincoln, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 177,013, Aug. 11, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,895
Int. Cl.³ A61L 2/00, 2/26; B65D 25/00
U.S. Cl. 422—102 6 Claims



1. A two-position autoclavable container comprising:
walls of autoclavable material forming a compartment for holding pipettes;
said walls of autoclavable material being shaped to form a base, a side wall and a top of said container with the base, side wall and top at least partly defining and enclosing said compartment;
said base having a flat bottom surface, whereby said container may be supported thereon in a first stable position;
said side wall being tubular and extending upwardly from said base;
constraint means for preventing said container from rolling when it rests in a second stable position where it is not supported by the flat bottom surface, whereby said container may be supported in the second stable position and wherein said constraint means includes a straight resting edge which extends as a side of said base, with the base being otherwise generally disc shaped;
said base, side wall and top having a continuous portion, whereby said pipette jar may hold a liquid when resting in either said first or said second stable position; and
said side wall having an opening immediately adjacent to said top and located on the opposite side of said compartment from said straight resting edge, whereby said opening is near the top of said compartment and pipettes can be inserted through said opening with said container resting in a selected one of said first or said second stable positions to permit said container to be placed in an autoclave in either of said two positions while holding a liquid.

4,436,701
ADSORPTION REACTOR AND METHOD FOR REMOVING SO_2 FROM WASTE GASES

Ekkehard Richter, Essen, and Martin Reinke, Dortmund, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,270
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138665
Int. Cl.³ F01N 3/10
U.S. Cl. 422—173 8 Claims

1. An adsorption reactor for removing SO_2 and the like from waste gases, comprising
a single bed of a grained adsorption medium moving in a substantially downward direction and arranged so that waste gases pass through said bed in a gas flow direction transversely of the adsorption medium movement direction; and
a temperature separating permeable member formed by heat exchanger tubes inserted in said single bed of a grained adsorption medium and subdividing said single bed into at least a first adsorption layer located upstream of said heat exchanger pipes in said gas flow direction so that waste gases pass said first adsorption layer at a higher temperature, and a second adsorption layer located transversely adjacent to said first adsorption layer and downstream of said heat exchanger pipes in said gas flow direction so that the waste gases pass second adsorption layer at a lower temperature.

5. A method of adsorption for removing SO_2 and the like from waste gases, comprising the steps of
passing waste gases through a single bed of a grained adsorption medium moving from above downwardly, in a gas passage direction transversely of the adsorption medium movement direction; and

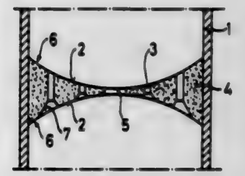


arranging a temperature separating permeable member formed by a heat exchanger in the bed of the grained adsorption medium and subdividing said single bed into at least a first adsorption layer located upstream of the heat exchanger pipes in said gas flow direction so that waste gases pass said first adsorption layer at a higher temperature, and a second adsorption layer located transversely adjacent to said first adsorption layer and downstream of said heat exchanger pipes on said gas flow direction so that the waste gases pass second adsorption layer at a lower temperature.

4,436,702
REACTOR FOR HYDROGENATING COAL SLURRY

Rudi Schulz, Fussgoenheim; Hubert Puestel, Mutterstadt; Georg Weber, Ludwigshafen, and Heribert Kuerten, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,244
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103081
Int. Cl.³ B01J 8/04
U.S. Cl. 422—195 5 Claims



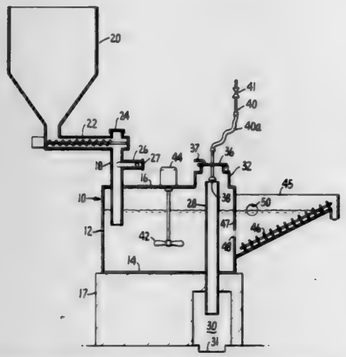
1. A multi-stage reactor for hydrogenating coal slurry under pressures of up to 700 bar, preferably of up to 350 bar, comprising a closed pressure vessel having inlets for gas and coal slurry through the reactor bottom, an outlet for sludge, gases and vapors in the reactor top, and at least 4 dividing trays in

the pressure vessel, by means of which trays the individual reaction stages are separated from one another, wherein each dividing tray has a progressively reducing cross-section comprising two opposed shells of conical, elliptical or hemispherical shape, with passage orifices, spaced over its entire lower face, so as to prevent coal slurry caking onto the tray in the direction of flow of the gas and coal slurry reactants, said passage of orifices having inlets on the face of the lower shell which are reduced in cross-section with upward distance, the space between said shells being filled with a ceramic mass, and said shells having a multiplicity of small holes therein.

4,436,703
LIME SLAKER

Stanley C. Lane, Seattle, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Dec. 7, 1981, Ser. No. 328,272
Int. Cl.³ B01F 3/12
U.S. Cl. 422—225 8 Claims



1. In a lime slaker comprising a vessel, means for maintaining a desired level of liquor in the vessel, and a vent pipe for allowing excess hot vapor in the vessel to escape, the improvement wherein the vent pipe is a substantially vertical pipe extending from a point within the vessel above the desired level of liquor and through the bottom of the vessel to a space below the vessel, with the outlet of the vent pipe being below the vessel, and a shower head for spraying water into the vent pipe is disposed at the inlet end of the vent pipe, the shower head being connected to means for supplying water to the shower head, whereby the water sprayed into the vent pipe flows into the space below the vessel and drains therefrom.

4,436,704
METHOD OF RECOVERING URANIUM OXIDE FROM ALKALINE SODIUM URANYL CARBONATE SOLUTIONS

Otmar Krennrich, Oberursel; Gottfried Brendel, and Hartmut Pietsch, both of Bad Homburg, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,865
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128855
Int. Cl.³ C01G 43/025
U.S. Cl. 423—11 6 Claims

1. A method of recovering uranium dioxide from an alkaline sodium uranyl carbonate solution which comprises the steps of:

heating said solution to a temperature above its boiling point at atmospheric pressure and bringing said solution to a superatmospheric pressure;

reacting said solution at said temperature and under superatmospheric pressure with particulate metallic iron forming a reducing agent, thereby precipitating uranium dioxide; and

recovering the precipitated uranium dioxide from the solution.

4,436,705
EXTRACTING CHROMIUM (III) FROM AQUEOUS SOLUTIONS WITH 2-ETHYLHEXYL ACID PHOSPHATE

Dale E. Lyman, Bumpass, Va., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 518,994
Int. Cl.³ C01G 37/00
U.S. Cl. 423—54 10 Claims

1. A process for the extraction of chromium (III) from an aqueous chromium (III)-bearing solution comprising:

(a) contacting said solution with an organic extraction solvent comprising a mixture of mono-2-ethylhexyl phosphoric acid and di-2-ethylhexyl phosphoric acid as extractant whereby chromium (III) is extracted from the aqueous solution into the organic phase; and

(b) subsequently separating the resultant chromium (III) loaded organic phase from the aqueous phase.

4,436,706
PROCESS FOR THE RECOVERY OF PENTAVALENT VANADIUM COMPOUNDS FROM ACID CATALYST EXTRACTS

Lambertus J. G. Nacken, and Albertus H. Baas, both of Arnhem, Netherlands, assignors to Shell Internationale Research Maatschappij B. V., The Hague, Netherlands

Filed Aug. 6, 1982, Ser. No. 406,116
Claims priority, application Netherlands, Aug. 26, 1981, 8103964
Int. Cl.³ C01G 31/02
U.S. Cl. 423—65 15 Claims

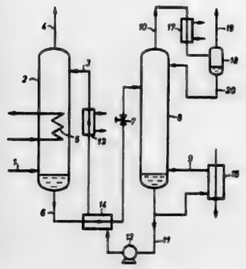
1. A process for the preparation of pentavalent vanadium compounds by reprocessing acid extracts of vanadium-containing catalysts spent in the hydrotreatment of crude or residual oils, characterized in that extracts containing trivalent and tetravalent vanadium are oxidized at a pH between 0.5 and 2.6 with an oxygen-containing gas to form concentrates of tetravalent vanadium, after which oxidation is carried out at a pH between 2.6 and 4.0 with an oxygen-containing gas to form concentrates of pentavalent vanadium.

4,436,707
METHOD FOR THE REMOVAL OF ACIDIC GASES SUCH AS CARBON DIOXIDE FROM GASEOUS MIXTURES

Heinz Karwat, Pullach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 322,417, Nov. 18, 1981, abandoned.
This application Jun. 30, 1983, Ser. No. 510,155
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1980, 3043831
Int. Cl.³ B01D 53/34
U.S. Cl. 423—226 6 Claims

1. A method for the removal of acidic gases comprising H_2S or CO_2 from gaseous mixtures which comprises washing said gaseous mixtures with a wash stream comprising methanol containing ammonia in an amount greater than 0.5 weight percent sufficient to prevent the formation of a solid precipitate of ammonia therein, and so as to remove at least a portion of said acidic gases from said gaseous mixture and to produce a laden methanol stream containing said acidic gases therein, regenerating said laden methanol stream by removing a sufficient portion of said acidic gases therefrom, so as to regenerate said wash stream containing greater than about 0.65 weight



percent CO_2 therefrom, and recycling said regenerated wash stream.

4,436,708
PRODUCTION OF SYNTHETIC ZEOLITES

Robert N. Sanders, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 7, 1982, Ser. No. 415,428
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.³ C01B 33/28
U.S. Cl. 423—329 16 Claims

1. A method of producing a crystalline synthetic faujasite of the zeolite "Y" type, comprising the steps of separately preparing a sodium silicate solution and a sodium aluminate solution, providing an activated system comprising a sodium silicate solution mixed with agitation for a period of at least about one-half hour with a seed amount of finely ground synthetic faujasite of the zeolite "Y" type at a temperature up to about 0° C., mixing the sodium aluminate solution with the activated system over a period of up to about five hours to provide a mixture having the following molar ratio:

$$(4.4\text{–}8.5)Na_2O.Al_2O_3.(10.1\text{–}16.0)SiO_2.(145\text{–}200)\text{-}H_2O,$$

allowing the mixture to stand for up to about 24 hours at a temperature from about 0° C. to ambient, heating the mixture to a temperature of about 90° C.–105° C. and reacting at said temperature until the desired crystalline synthetic faujasite of the zeolite "Y" type is formed, and recovering said zeolite "Y".

4,436,709
LASER PRODUCTION OF CARBON-13 BASED ON CF_2HCL

Michel Gauthier, Aylmer; Peter A. Hackett, and Clive Willis, both of Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

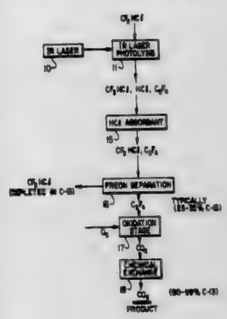
Filed Feb. 22, 1982, Ser. No. 350,741
Claims priority, application Canada, May 26, 1981, 378279
Int. Cl.³ B01D 59/00
U.S. Cl. 423—437 3 Claims

1. A method of producing carbon-13 by multiphoton decomposition of CF_2HCl, said material containing carbon-12 and carbon-13 isotopic species, comprising:

(a) irradiating gaseous CF_2HCl in a reaction chamber at a pressure in the range 10–100 Torr with an infra-red laser beam at a frequency in the range 1040–1080 wavenumbers to selectively decompose the CF_2HCl to give C_2F_4 enriched to a first level of carbon-13, CF_2HCl, and HCl,

(b) passing these products through an absorber to remove the HCl and a separation stage to remove the CF_2HCl depleted in carbon-13,

(c) oxidizing the C_2F_4 to form CO_2, and

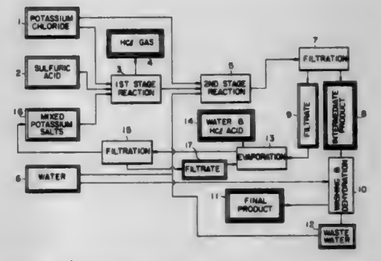


(d) passing the CO_2 through a second exchange stage to separate the $^{13}CO_2$ and the $^{12}CO_2$ and give a CO_2 product containing approximately 90–99% carbon-13.

4,436,710
METHOD OF MANUFACTURING POTASSIUM SULFATE

Naomi Miyazaki, Tokyo, and Akira Fujimura, Yono, both of Japan, assignors to Onoda Chemical Industry Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 405,726
Claims priority, application Japan, Mar. 19, 1982, 57-44168
Int. Cl.³ C01B 7/01; C01D 5/02
U.S. Cl. 423—552 4 Claims



1. A method of manufacturing potassium sulfate which comprises:

the first dry step consisting of heating raw materials prepared by mixing concentrated sulfuric acid and recycled mixed cake from the third step, said cake consisting essentially of K_2SO_4, $KHSO_4$ and KCl, with at most addition of only a minor portion of non-recycled KCl, wherein the SO_4 contained in the mixed raw materials has a molar ratio to K contained therein ranging from 1.0:1.3 to 1.0:1.4, at a temperature of from 290° to 350° C. to form mixed salts of $KHSO_4$ and K_2SO_4 in a molten slurry state, the amount of H_2SO_4, K_2SO_4, $KHSO_4$ and KCl being sufficient to produce said mixed salts which have the composition $K_nH_{2-n}SO_4$ wherein n=1.3–1.4; and recovering the major portion of the total chloride values added in the overall process as hydrogen chloride gas which is evolved;

the second wet step consisting of dissolving said (i) mixed salts and (ii) additional non-recycled KCl, into water, the amount of said additional non-recycled KCl being 1.0 to 1.5 times the chemically equivalent amount which is sufficient to change the $KHSO_4$ in said mixed salts into potas-

sium sulfate, and the amount of said water being such that the aqueous solution of hydrochloric acid produced by the reaction of said second step has a concentration ranging from 6 to 9%; heating the solution to a reaction temperature of from 60° to 90° C. to form additional K_2SO_4 and to precipitate potassium sulfate crystals; cooling the reacted solution to a temperature of from 50° to 20° C. to precipitate additional potassium sulfate crystals; and filtering said solution to remove crystals of potassium sulfate which are recovered as the final product and to obtain a filtrate; and

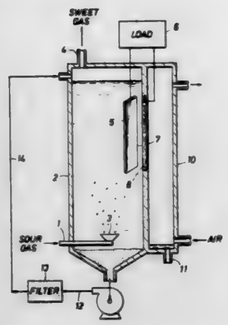
the third circulating step consisting of evaporating said filtrate to obtain a mixed cake of K_2SO_4, $KHSO_4$ and KCl; and recycling said mixed cake to the first step to be used as part of said raw materials.

4,436,711

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE SOLUTION AND REGENERATING THE SOLUTION IN A FUEL CELL

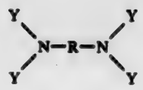
Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,467
Int. Cl.³ C01B *17/04;* B01D *53/34*
U.S. Cl. 423—573 G 6 Claims



1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing reactant comprising a oxidizing polyvalent metal chelate of an acid having the formula



wherein

from two to four of the groups Y are selected from acetic and propionic acid groups;

from zero to two of the groups Y are selected from 2-hydroxyethyl, 2-hydroxy propyl, and



wherein X is selected from acetic acid and propionic acid groups; and

R is ethylene, propylene or isopropylene or alternatively cyclohexane or benzene where the two hydrogen atoms replaced by nitrogen atoms are in the 1,2 position, and mixtures thereof; and producing a sweet gas stream and an aqueous reaction solution containing crystalline sulfur, hydrogen ions and the reduced polyvalent metal chelate or chelates of said acid, said contacting zone comprising an anode section of an electrochemical cell, said electrochemical cell also comprising a separate cathode section containing a cathode connected through an external load to the anode, the anode section and cathode section being separated by a hydrogen ion permeable barrier;

(b) oxidizing reduced polyvalent metal chelate or chelates of said acid in the aqueous reaction solution, while concomitantly supplying oxygen to the cathode section and allowing hydrogen ions to migrate to the cathode section and producing direct current through the load, and water at the cathode;

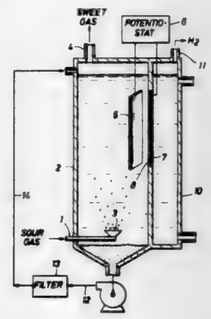
(c) removing sulfur from the aqueous reaction solution, and water from cathode section.

4,436,712

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE OF NITRILOTRIACETIC ACID AND ELECTROLYTICALLY REGENERATING THE SOLUTION

Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 429,958
Int. Cl.³ C01B *17/04;* B01D *53/34*
U.S. Cl. 423—573 G 6 Claims



1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur, hydrogen ions, and reduced polyvalent metal chelate or chelates of nitrilotriacetic acid; said contacting zone comprising an anode section of an electrochemical cell, said cell also comprising a separate cathode section containing a cathode connected through an external electrical connection to the anode, the anode section and the cathode section being separated by a hydrogen ion permeable barrier;

(b) oxidizing the reduced polyvalent metal chelate or chelates of nitrilotriacetic acid in the aqueous reaction solution at the anode by supplying direct current to said cell, concomitantly allowing hydrogen ions to migrate to the cathode and producing hydrogen at the cathode;

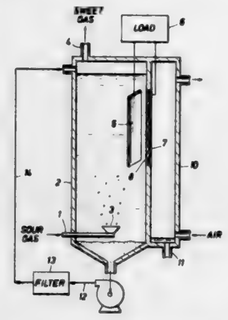
(c) removing sulfur from the aqueous reaction solution, and hydrogen from the cathode section.

4,436,713

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE OF NITRILOTRIACETIC ACID AND REGENERATING THE SOLUTION IN A FUEL CELL

Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,466
Int. Cl.³ C01B *17/04;* B01D *53/34*
U.S. Cl. 423—573 G 6 Claims



1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur, hydrogen ions and reduced polyvalent metal chelate or chelates of nitrilotriacetic acid; said contacting zone comprising an anode section of an electrochemical cell, said electrochemical cell also comprising a separate cathode section containing a cathode connected through an external load to the anode, the anode section and cathode section being separated by a hydrogen ion permeable barrier;

(b) oxidizing reduced polyvalent metal chelate or chelates of nitrilotriacetic acid at the anode in the aqueous reaction solution while concomitantly supplying oxygen to the cathode section and allowing hydrogen ions to migrate to the cathode section, and producing direct current through the load and water at the cathode;

(c) removing sulfur from the aqueous reaction solution, and water from the cathode section.

4,436,714

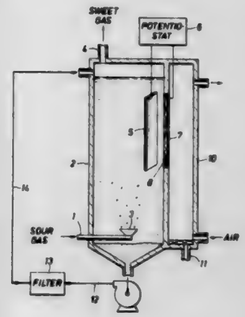
METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES UTILIZING A POLYVALENT METAL CHELATE OF NITRILOTRIACETIC ACID AND ELECTROLYTICALLY REGENERATING THE SOLUTION

Donald C. Olson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 430,532
Int. Cl.³ C01B *17/04;* B01D *53/34*
U.S. Cl. 423—573 G 6 Claims

1. A process for the removal of H_2S from a sour gaseous stream comprising

(a) contacting the sour gaseous gream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur, hydrogen ions, and reduced polyvalent metal chelate or chelates of nitrilotriacetic acid; said contacting zone comprising an anode section of an electrochemical cell, said cell also comprising a separate cathode section containing a cathode connected through an external electrical connection to the anode, the anode section and the cathode section being separated by a hydrogen permeable barrier;



(b) oxidizing the reduced polyvalent metal chelate or chelates of nitrilotriacetic acid in the aqueous reaction solution at the anode by supplying direct current to said cell and allowing hydrogen ions to migrate to the cathode, concomitantly supplying oxygen to the cathode and forming water at the cathode;

(c) removing sulfur from the aqueous reaction solution, and water from the cathode section.

4,436,715

STORAGE AND RETRIEVAL OF SINGLET OXYGEN

A. Paul Schaap, Detroit; George E. Busch, Milan, and Robert L. Nolen, Jr., Ann Arbor, all of Mich., assignors to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Sep. 14, 1981, Ser. No. 302,033
Int. Cl.³ C01B *13/00*
U.S. Cl. 423—579 16 Claims

1. A solid phase generator for releasing singlet oxygen in gas phase which comprises an endoperoxide molecular dispersion on a solid phase substrate of material selected from the group consisting of polymers, ceramics, silica glasses and metals, said endoperoxide having fused rings with a first of said rings being aromatic and a second of said rings being in aliphatic ring adjacently fused to said first ring with an oxygen-oxygen group bridging across non-adjacent carbons of said second ring, said dispersion on said substrate having a plurality of passages for diffusion of gas phase singlet oxygen from an interior portion of said dispersion to the surface thereof.

4,436,716

PROCESS FOR THE PRODUCTION OF SULPHUR WITH INCREASED ENERGY RECOVERY FROM A GAS CONTAINING H_2S, SO_2, H_2 AND/OR CO

Georges Kvasnikoff, Monein, and Robert Voirin, Mourenx, both of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Nov. 12, 1981, Ser. No. 320,846
Claims priority, application France, Nov. 17, 1980, 80 24324
Int. Cl.³ C01B *17/04*
U.S. Cl. 423—574 R 26 Claims

1. In a process for the production of sulfur, with increased energy recovery, from a gas containing H_2S and SO_2, and at least one compound selected from H_2 and CO, wherein the gas passes through a CLAUS catalyst in a primary catalytic stage operating at a temperature between 200° C. and 460° C. to form sulphur by reaction of SO_2 with H_2S, and the reaction

mixture from the primary stage is cooled by indirect heat exchange with water to condense sulfur contained in the mixture and produce steam, the improvement which comprises:

passing the gas containing H_2 and CO through a CLAUS reaction catayst in the primary catalytic stage wherein at least the final one eighth of the catalyst volume comprises a composite catalyst which comprises a refractory oxide CLAUS reaction catalyst having fixed thereon from 0.3 to 20 percent by weight, of the composite catalyst. of at least one transition metal compound of metals selected from the group consisting of Groups I, II, V, VI and VIII of the PERIODIC CLASSIFICATION OF ELEMENTS at a temperature above 300° C., to achieve H_2 and CO oxidation.

4,436,717

^{18}F-4-FLUOROANTIPYRINE

Chyng-Yann Shiue, Wading River, and Alfred P. Wolf, Setauket, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 29, 1981, Ser. No. 268,422
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **3 Claims**

1. A method for preparing the novel radioactive compound ^{18}F-4-fluoroantipyrine which comprises treating antipyrine in glacial acetic acid with radioactive fluorine in a carrier of molecular fluorine, at room temperature, and purifying said compound by means of gel chromatography with ethyl acetate as eluent.

4,436,718

IODINATING REAGENT

Paul K. Smith, Roscoe, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed Oct. 13, 1981, Ser. No. 311,077
Int. Cl.³ A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **13 Claims**

1. An oxidant useful in achieving transformations in a biological specimen comprising a water insoluble bead having covalently attached to its surface molecules containing a chloramine group, with the size and shape of said bead being compatible with easy physical separation of the oxidant from a solution of said biological specimen.

4,436,719

MICROENCAPSULATED INSECTICIDAL PERSISTENCY THROUGH THE USE OF GELATIN

Harold L. Lindaberry, Ambler, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 241,091, Mar. 6, 1981, abandoned. This application Jun. 24, 1982, Ser. No. 391,650
Int. Cl.³ A61K *9/50*
U.S. Cl. 424—37 **1 Claim**

1. A method for improving the persistent adherence of microcapsules of insecticide to foliage of a crop to protect said foliage from insect attack comprising:

providing an insecticide, said insecticide being microencapsulated in microcapsules comprising polyamide-polyurea subunits;

suspending said microencapsulated insecticide in an aqueous spray medium;

admixing with said aqueous medium from about 0.05% to about 1.0% by volume of said medium of type B gelatin, having an average molecular weight of from about 15,000 to about 30,000 and a viscosity of from 10 to about 30 poises; and

applying said admixture to said foliage by spraying means at a rate of from about 0.25 to about 2.0 lbs. of microencapsulated insecticide per acre of plants to improve said protection from insect attack for an improved period of time, said type B gelatin decreasing the permeactivity of the encapsulated insecticide through the capsule walls, which are coated, at least in part, and, in this way, the rate of release of the insecticide to the environment decreased, and the persistency of the insecticide concomitantly increased.

4,436,720

GRANULATED TREATMENT-AND-PROPHYLACTIC DENTAL PREPARATION POSSESSING ANTICARIOUS EFFECT

Gennady N. Pakhomov, Leninsky prospekt 123/1, kv. 529, Moscow; Anita Y. Luste, ulitsa Lachplesha 27, kv. 22; Galina I. Kadnikova, ulitsa Ya. Rudzutaka 60, kv. 10, both of Riga, and Anatoly G. Kolesnik, ulitsa Shosseinaya 58 korpus 2, kv. 59, Moscow, all of U.S.S.R.

Filed Mar. 4, 1983, Ser. No. 472,166
Int. Cl.³ A61K *7/16, 7/18, 7/26, 9/46*
U.S. Cl. 424—44 **3 Claims**

1. A granulated treatment-and-prophylactic dental preparation comprising an abrasive substance, tartaric acid, sodium bicarbonate, a foaming agent, a flavouring agent, a binder and an anticarious substance comprising a product obtained by treatment of a bone tissue with dilute mineral acid to complete dissolution of mineral components and water-soluble proteins contained in the bone tissue, separation of the resulting solution, dilution thereof with water with the addition of a stabilizing agent-citric acid or salts thereof, followed by neutralization of the solution and drying, and containing the following components, percent by weight:

calcium—2–6,
sodium—19–23,
potassium—0.04–0.18,
mineral acid anion—6–10.6,
orthophosphoric acid anion—1.5–5.0,
water-soluble proteins—1.0–5.0,
magnesium—0.05–0.2,
mixture of trace elements including fluorine, tin, manganese, zinc, iron—0.01–0.02
complex citrate compounds as calculated for citric acid anion—the balance,

and having the following proportions of the starting components, percent by weight:

tartaric acid—11–15,
foaming agent—1.8–2.27,
sodium bicarbonate—42–46,
binder—0.11–0.13,
flavouring agent—0.8–1.2,
anti-caries substance—1–6,
abrasive substance—the blance.

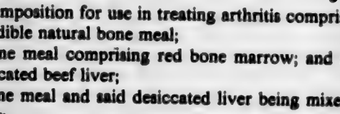
4,436,721

ORAL COMPOSITION HAVING MOLE RATIO OF TETRA (METHYLENE PHOSPHONATE) TO ALKALI METAL FLUORIDE OF AT LEAST 1.4:1

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 8, 1983, Ser. No. 502,078
Int. Cl.³ A61K *7/16, 7/18, 7/22*
U.S. Cl. 424—52 **8 Claims**

1. An oral composition comprising an oral vehicle, at least about 0.275% by weight of a diamine tetra (methylene phosphonate) having the formula:



wherein n is a number from 1 to 10 and X is selected from the group consisting of hydrogen and an orally acceptable cation, at least one X group being an orally acceptable cation, and alkali metal fluoride, in amount which provides about 0.01–1% by weight of fluoride ion, the mole ratio of the tetra (methylene phosphonate) portion, $(CH_2\text{-}PO_3^{-2})4$, of said diamine tetra (methylene phosphonate) to fluoride ion being at least about 1.4:1.

4,436,722

HAIR RINSE COMPOSITION

Kinjiro Matsunaga, Miyashiro; Takeo Okumura, Sakura; Sachio Naito, Tokyo, and Rikio Tsushima, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,490
Claims priority, application Japan, Nov. 17, 1980, 55-161599
Int. Cl.³ A61K *7/08*
U.S. Cl. 424—70 **7 Claims**

1. A hair rinse composition comprising 0.01 to 10 wt.% at least one cationic surface active agent and 0.01 to 10 wt.% a decomposition derivative of a keratin material selected from the group consisting of (1) alkali salts of decomposition products obtained by oxidation of keratin material, (2) alkali salts of derivatives at a thiol group of decomposition products obtained by reduction of keratin material, and a mixture thereof, these components having been dispersed or dissolved in a solvent.

4,436,723

ARTHRITIS COMPOSITION OF MATTER, AND METHODS OF PREPARING AND UTILIZING SAME

Juanita Nepon, 21640 Twelve Mile Rd., St. Clair Shores, Mich. 48081

Filed Sep. 24, 1980, Ser. No. 190,457
Int. Cl.³ A61K *35/12, 35/28, 35/407*
U.S. Cl. 424—95 **3 Claims**

1. A composition for use in treating arthritis comprising:

dried edible natural bone meal;

said bone meal comprising red bone marrow; and natural desiccated beef liver;

said bone meal and said desiccated liver being mixed with water;

the relative proportion of edible bone meal to liver being approximately eight parts bone meal to five parts liver.

4,436,724

METHOD OF PRODUCING γ-GLOBULIN FOR INTRAVENOUS INJECTION AND THERAPEUTIC AGENT PRODUCED THEREBY

Haruo Ohnishi, Chiba; Hiroshi Kousuame, Kanagawa; Yasuo Suzuki, Saitama, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,233
Claims priority, application Japan, May 29, 1981, 56-82903
Int. Cl.³ C07G *7/00*
U.S. Cl. 424—101 **35 Claims**

1. A method of producing γ-globulin for intravenous injection, which comprises treating γ-globulin with an enzyme, selected from pepsin and uropepsin, in a pH range of 6.0 to 7.5.

35. A therapeutic agent for intravenous injection comprising γ-globulin treated with an enzyme, said enzyme being selected from pepsin and uropepsin, in a pH range of 6.0 to 7.5.

4,436,725

PHYSIOLOGICALLY ACTIVE NOVEL SUBSTANCE MUTASTEIN AND PROCESS FOR ITS PRODUCTION

Akira Endo, Tokyo, Japan, assignor to Godo Shusei Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 352,069
Claims priority, application Japan, Mar. 6, 1981, 56-31985
Int. Cl.³ A61K *35/00, 7/16;* C12D *1/02*
U.S. Cl. 424—116 **8 Claims**

1. A physiologically active substance identified as Mutastein having the following physiochemical properties:

(1) a molecular weight of at least 200,000, and said Mutastein, when being subjected to gel-filtration over Sephadex G-100 or Sephallose 6B, is eluted in the void volume;

(2) the ultraviolet spectrum of FIG. 1;

(3) the infrared spectrum of FIG. 2;

(4) said Mutastein having a proteinaceous nature and containing about 10% of a saccharide;

(5) said Mutastein being soluble in water and a saline solution, but being salted out from a saturated solution containing about 30% of ammonium sulfate; said Mutastein being insoluble in acetone, ethanol, ethylacetate and benzene;

(6) said Mutastein being dissolvable in a buffer solution having a pH of at least 7, but precipitating from solution at a pH of from 3 to 3.5;

(7) said Mutastein being stable when heat-treated at pH 9 at 100° C. for 10 minutes;

(8) an elemental analysis of: C: about 44%, H: about 7% and N: about 12%,

(9) color reactions yielding an orange color to the Phenol-sulfuric acid color reaction and blue to the Folin's color reaction.

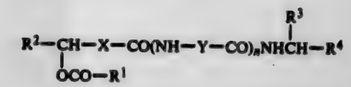
4,436,726

N-ACYLPEPTIDE COMPOUND, PROCESSES FOR THE PREPARATION THEREOF AND THE PHARMACEUTICAL COMPOSITIONS

Kazuyoshi Umehara, Ashiya; Hirokazu Tanaka, Takarazuka; Itsuo Uchida, Kyoto; Masanobu Kohsaka, Sakai, and Hiroshi Imanaka, Mishima, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 9, 1981, Ser. No. 329,075
Claims priority, application United Kingdom, Dec. 15, 1980, 8040130
Int. Cl.³ C07C *103/52;* A61K *37/02;* C07C *67/02*
U.S. Cl. 424—177 **6 Claims**

1. A compound of the formula:



wherein

R^1 and R^2 are each alkyl or alkenyl;

R^3 is hydrogen, lower alkyl, hydroxy(lower)alkyl, heterocyclic(lower)alkyl or ar(lower)alkyl, wherein the aryl moiety may have hydroxy or protected hydroxy;

R^4 is carboxy, esterified carboxy, carboxy(lower)alkyl or esterified carboxy(lower)alkyl;

X is bond or lower alkylene;

Y is lower alkylene or lower alkylidene; and

n is an integer of 0 or 1; or its pharmaceutically acceptable salt.

4,436,727

REFINED DETOXIFIED ENDOTOXIN PRODUCT

Edgar E. Ribi, Hamilton, Mont., assignor to Ribi ImmunoChem Research, Inc., Hamilton, Mont.

Filed May 26, 1982, Ser. No. 382,404
Int. Cl.³ A61K 37/00; A01N 65/00; C07G 7/00
U.S. Cl. 424—177 16 Claims

1. A method of producing refined detoxified endotoxin having no detectable 2-keto-3-deoxyoctanoate, between about 350 and 475 nmoles/mg of phosphorus, and between about 1700 and 2000 nmoles/mg of fatty acids which comprises:

(a) hydrolyzing an endotoxin extract derived from Enterobacteriaciae with an acid capable of hydrolyzing the same;

(b) lyophilizing the hydrolyzed product to obtain crude lipid A;

(c) treating crude lipid A with a first solvent capable of dissolving fatty acids contained therein to remove said fatty acids from a resulting insoluble product

(d) dissolving the resulting insoluble product in a second solvent capable of dissolving the same; and

(e) passing the resulting solution through a chromatographic column of a type which will allow elution of the desired product to obtain the refined detoxified endotoxin.

4,436,728

REFINED DETOXIFIED ENDOTOXIN PRODUCT

Edgar E. Ribi, Hamilton; Steven M. Schwartzman, Stevensville, and John L. Cantrell, Hamilton, all of Mont., assignors to Ribi ImmunoChem Research, Inc., Hamilton, Mont.

Filed May 26, 1982, Ser. No. 382,405
Int. Cl.³ A61K 37/00; A01N 65/00; C07G 7/00
U.S. Cl. 424—177 11 Claims

1. A therapeutic composition for imparting immunotherapy comprising an effective amount of each of

(a) refined detoxified endotoxin having no detectable 2-keto-3-deoxyoctanoate and having between 350 and 475 nmoles/mg of phosphorus and between about 1700 and 2000 nmoles/mg of fatty acids prepared by the method which comprises:

(i) hydrolyzing an endotoxin extract derived from Enterobacteriaciae with an acid capable of hydrolyzing the same;

(ii) lyophilizing the hydrolyzed product to obtain crude lipid A;

(iii) treating crude lipid A with a first solvent capable of dissolving fatty acids contained therein to remove said fatty acids from a resulting insoluble product

(iv) dissolving the resulting insoluble product in a second solvent capable of dissolving the same; and

(v) passing the resulting solution through a chromatographic column of a type which will allow elution of the desired product to obtain the refined detoxified endotoxin;

(b) cell wall skeleton;

(c) trehalose dimycolate; and a pharmaceutically acceptable carrier.

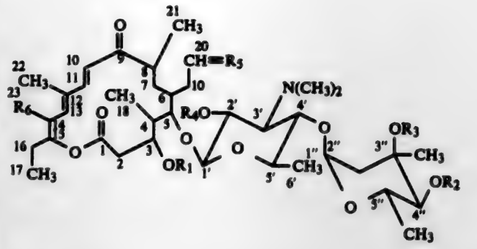
4,436,729

23-DEMYCINOSYLTYLOSIN COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Ashit K. Ganguly, Upper Montclair; Yi-Tsung Liu, Parsippany, and Alan K. Mallams, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 30, 1982, Ser. No. 393,901
Int. Cl.³ A61K 31/71; C07H 17/08
U.S. Cl. 424—180 47 Claims

1. A compound of the formula



wherein

R_1 is hydrogen or an acyl group selected from alkanoyl of 2 to 5 carbon atoms, palmityl, stearyl, lauryl, oleyl, chloroacetyl, benzoyl, adamantanecarbonyl, cyclopropanecarbonyl, cyclohexanecarbonyl, β-cyclohexylpropionyl, phenylacetyl, phenoxyacetyl, mandelyl, 2-thienylacetyl, alkyl-, aryl- and aralkylsulfonyl, substituted aryl- and aralkylsulfonyl, wherein the substituents on the aryl portions are halogen, nitro and alkoxy groups, succinyl, maleyl, fumaryl, malonyl and phthalyl;

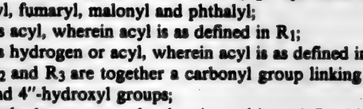
R_2 is acyl, wherein acyl is as defined in R_1;

R_3 is hydrogen or acyl, wherein acyl is as defined in R_1; or R_2 and R_3 are together a carbonyl group linking the 3''- and 4''-hydroxyl groups;

R_4 is hydrogen or acyl, wherein acyl is as defined in R_1;

R_5 is selected from the group consisting of

N-NH-aralkyl,

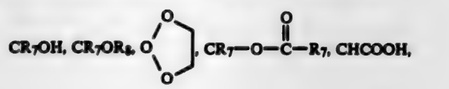


wherein

n is 0–2, and

Q is selected from the group consisting of

CH_2, CHR_7, CHR_8, CR_7R_8, NR_6, O, S, SO_2, CHOH, $CHOR_7$,



CR_7OH, CR_7OR_8, , $CR_7-O-\overset{O}{\overset{\|}{C}}-R_7$, CHCOOH,

$CHCOOR_7$, $CHCONH_2$ and $CHCNR_7R_8$,

wherein R_7 and R_8 are independently selected from the group consisting of (C_1–C_6) alkyl, (C_7–C_{10}) aralkyl and (C_6–C_{10}) aryl including X-substituted aryl and aralkyl, wherein X is halogen, trifluoromethyl, (C_1–C_6) alkoxy, or (C_1–C_6) alkylcarbonyl; R_6 is methyl, hydroxymethyl, fluoromethyl, chloromethyl, bromomethyl, iodomethyl, di (C_1–C_6) alkylamino, acyloxymethyl, CHO or a group of the formula $CH=R_5$ wherein R_5 is as hereinbefore defined; and

the pharmaceutically acceptable salts thereof.

20. A method of eliciting an antibacterial response in a mammal having a gram positive bacterial infection which comprises administering to the mammal a therapeutically effective quantity of a compound according to claim 1.

4,436,730

IONIC OPTHALMIC CELLULOSE POLYMER SOLUTIONS

Edward J. Ellis, Georgetown, and Joseph C. Salamone, Marblehead, both of Mass., assignors to Polymer Technology Corporation, Wilmington, Mass.

Continuation of Ser. No. 51,961, Jun. 25, 1979, Pat. No. 4,321,261, which is a continuation-in-part of Ser. No. 38,703, May 14, 1979, abandoned, which is a continuation of Ser. No. 867,136, Jan. 5, 1978, Pat. No. 4,168,112. This application Nov. 9, 1981, Ser. No. 319,111
The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.
Int. Cl.³ A61K 31/73
U.S. Cl. 424—180 3 Claims

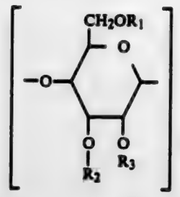
1. A lens solution for treating contact lens surfaces to form a protective coating thereof,

said lens solution consisting essentially of a cationic cellulose polymer in solution with said polymer being present in an amount of from 0.001 to 10% by weight of said solution,

said solution being useful to form protective coatings on lens surfaces formed of oppositely charged material by producing a thin coating of a hydrogel when contacted with said contact lens surface,

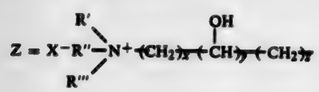
said lens solution having a pH in the range of from 6 to 8,

said polymer having the following formula:



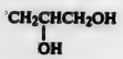
where R_1, R_2 and R_3 are selected from the group consisting essentially of H, derivatives of C_1–C_{20} carboxylic acid, C_1–C_{20} alkyl groups, C_1 to C_3 monohydric and dihydric alkanols, hydroxyethyl groups, hydroxypropyl groups, ethylene oxide groups, propylene oxide groups, phenyl groups, "Z" groups and combinations thereof, Z being selected from cationic groups, said cationic groups being selected from groups as follows:

A. groups containing nitrogen



where:

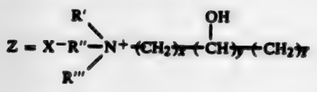
R', R'' and R''' can be H, CH_3, C_2H_5, CH_2CH_2OH, or



x=0–5, y=0–4, and z=0–5

X^-=Cl^-, Br^-, I^-, HSO_4^-, $CH_3SO_4^-$, $H_2PO_4^-$, NO_3^-

B. Groups containing phosphorous



where:

R', R'' and R''' can be H, CH_3, C_2H_5, CH_2CH_2OH, or

x=0–5, y=0–4 and z=0–5

X^-=Cl^-, Br^-, I^-, HSO_4^-, $CH_3SO_4^-$, $H_2PO_4^-$, NO_3^-.

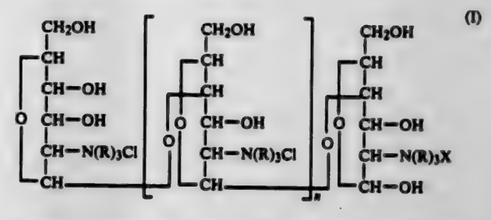
4,436,731

SEMI-SYNTHETIC CHITIN DERIVATIVE, THE PROCESS FOR ITS PREPARATION, AND THERAPEUTIC COMPOSITIONS WHICH CONTAIN IT AS ACTIVE PRINCIPLE

Javier E. Maltz, Buenos Aires, Argentina, assignor to Etablissement Texcontor, Vaduz, Liechtenstein

Filed Mar. 31, 1982, Ser. No. 363,825
Claims priority, application Italy, Apr. 6, 1981, 20953 A/81
Int. Cl.³ A61K 31/73; C08B 37/08
U.S. Cl. 424—180.0 5 Claims

1. A polysaccharide of formula:



(I)

in which R is alkyl of 1–6 carbon atoms, n is a whole number between 1000 and 2000, X=Cl, $CH_3OSO_3^-$, SO_4^{--}.

5. A therapeutic composition comprising a hypocholesterolemically effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier.

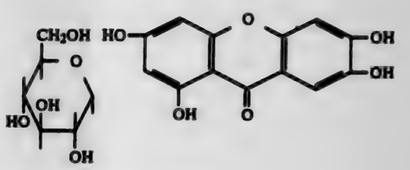
4,436,732

MEDICATED COMPOUND FOR TREATING DISEASES INFECTED BY VIRUS OF THE HERPES GROUP

Serafima A. Vichkanova, ulitsa Moskovskaya, 1, kv. 192, Ljubertsy, Moskovskaya oblast; Ljudmila D. Shipulina, 28, kv. 240, poselok Razvilka, Moskovskaya oblast; Vladimir I. Glyzin, ulitsa Shipilovskaya, 29, korpus 2 kv. 255, Moscow; Alexandr I. Beskovsky, ulitsa Institutskaya, 4, kv. 6, p/o "Vilar", Moskovskaya oblast; Mikhail G. Pimenov, Vtoraya Kvesisskaya, 24, korpus 2, kv. 8, Moscow, and Klim I. Borysov, ploschad Lenina, 5a, kv. 33, Chimkent, all of U.S.S.R.

Filed Oct. 26, 1981, Ser. No. 315,016
Int. Cl.³ A61k 31/70; C13K 11/00
U.S. Cl. 424—180 3 Claims

1. A method of treating a herpes viral infection which comprises administering to a patient suffering from said infection a pharmaceutical composition containing as an active ingredient 2-C-β-D-glucopyranosyl-1,3,6,7-tetraoxyxanthone of the formula:



in an antiviral effective amount.

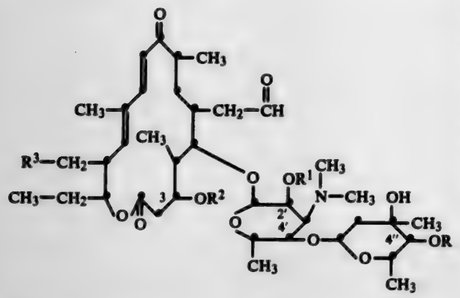
4,436,733

4"- AND 3-ESTER DERIVATIVES OF DMT AND DMOT

Herbert A. Kirst, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 3, 1982, Ser. No. 354,262
Int. Cl.³ A61K *31/71*; C07H *17/08*
U.S. Cl. 424—180 **53 Claims**

1. A compound of the formula



wherein

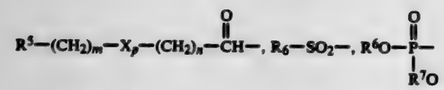
R is hydrogen, C_1–C_5-alkanoyl, C_1–C_5-alkanoyl having from one to three halo substituents, benzoyl, phenylacetyl, or phenoxyacetyl or benzoyl, phenylacetyl or phenoxyacetyl having on the phenyl ring from one to five halo or methyl or from one to two methoxyl, nitro, or hydroxyl groups;

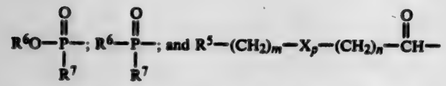
R^1 is hydrogen, C_1–C_5-alkanoyl, C_1–C_5-alkanoyl having from one to three halo substituents, benzoyl, phenylacetyl, or phenylpropionyl or benzoyl, phenylacetyl, or phenylpropionyl having on the phenyl ring from one to five halo or methyl or from one to two methoxyl, nitro, or hydroxyl groups;

R^2 is hydrogen, C_1–C_5-alkanoyl, C_1–C_6-alkanoyl having from one to three halo substituents, benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl, or phenylthioacetyl or benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl or phenylthioacetyl having on the phenyl ring from one to five halo or methyl or from one to two methoxy, nitro, or hydroxyl groups;

R^3 is hydrogen or R^4O—; and

R^4 is hydrogen or an acyl group selected from:





substituted by one or two halo, ethyl, methoxy, amino, N-protected amino, methylamino, dimethylamino, nitro, acetoxy, acetamido, azido, carbomethoxy, carboxamido, cyano, or hydroxyl groups, provided that, when the substituent is other than halo or alkyl, there can be no more than one substituent on any connecting —CH_2— group;

p is 0 or 1; m and n are integers from 0 to 4;

R^5 is hydrogen, halo, C_1–C_4-alkyl, C_3–C_8-cycloalkyl, phenyl, C_5–C_8-cycloalkenyl, naphthyl, indenyl, tetralinyl, decalinyl, adamantyl,1-ethyl-1,4-dihydro-4-oxo[1,3]dioxolo[4,5-g]cinnolin-3-yl(cinnoxacinyl), a monocyclic heterocyclic ring system comprising 3 to 8 atoms or a bicyclic heterocyclic ring system comprising 6 to 11 atoms, provided that at least 1 atom of the ring system is carbon and at least 1 atom of the ring system is a heteroatom selected from O, N, and S;

X is O, S, —NH—, —$N(CH_3)$—, —C≡C—, —CH=CH—, —$C(CH_3)$=CH—, —CH=$C(CH_3)$— or —$C(CH_3)$=$C(CH_3)$—; and

R^6 and R^7 are C_1–C_5-alkyl or optionally substituted phenyl or benzyl;

and further provided that one of R or R^2 must be other than hydrogen and that, when R^1 is hydrogen, R^3 is hydrogen or —OH and R^2 is acetyl, R cannot be hydrogen, acetyl, n-butyryl or isovaleryl and, when R and R^1 are hydrogen and R^3 is hydrogen or OH, R^2 cannot be propionyl; and the acid addition salts thereof.

52. A method for controlling susceptible Mycoplasma infections which comprises administering to an infected or susceptible warm-blooded animal an effective amount of a compound of claim 1 or a pharmaceutically-acceptable acid addition salt thereof and a suitable pharmaceutical vehicle.

4,436,734

CONTROL OF SWINE DYSENTERY

Earl E. Ose, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 17, 1983, Ser. No. 458,381
Int. Cl.³ A61K *31/71*
U.S. Cl. 424—181 **9 Claims**

1. A method for the treatment or prevention of swine dysentery which comprises administering to swine suffering from or exposed to swine dysentery an effective amount of avilamycin.

4,436,735

KETALS OF 3'''-DEHYDROCARDENOLIDE TRIDIGITOXOSIDES

Wolfgang Schaumann, Heidelberg; Fritz Kaiser, Lampertheim; Wolfgang Voigtländer, Weinheim; Edgar Hoyer, Mannheim, and Peter Neubert, Weinheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Nov. 5, 1982, Ser. No. 439,653
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146899
Int. Cl.³ A61K *31/585*; C07J *19/00*
U.S. Cl. 424—182 **20 Claims**

1. A ketal of 3'''-dehydrocardenolide tridigitoxosides of the general formula:

4,436,736

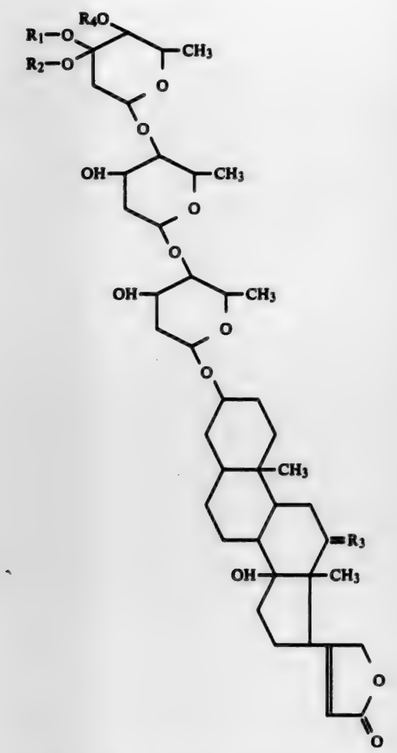
METHODS FOR CONTROLLING PESTS WITH SUBSTITUTED PHENYL THIO(THIONO)PHOSPHATES AND THE THIO(THIONO)PHOSPHATES

Leonard E. Hodakowski, and Charles A. Wilson, II, both of Raleigh, N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1982, Ser. No. 363,251
Int. Cl.³ A01N *57/14*; C07F *9/165*
U.S. Cl. 424—211 **33 Claims**

1. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound of the formula:

(I)



in which R_1 and R_2 are identical alkyl radicals containing up to 3 carbon atoms or together represent a cyclic ketal containing 2 to 6 carbon atoms, R_3 represents two hydrogen atoms, the group

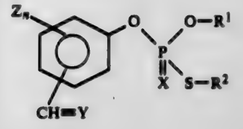


or the radical



wherein R_1 and R_2 have the above-given meaning, and R_4 is a hydrogen atom or a lower acyl or alkyl radical with up to 3 carbon atoms.

20. A method of treating a cardiac insufficiency in a patient which comprise administering to such patient a cardioactive effective amount of a compound according to claim 1.



in which

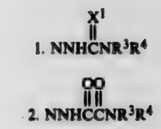
X is oxygen

R^1 and R^2 are individually lower alkyl groups;

Z is hydrogen, alkyl, alkoxy, halo, nitro, cyano, aryl, aryloxy, alkylthio, amino, alkylamino, dialkylamino, a C_3 to C_8 cycloalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkylaminoalkyl, dialkylaminoalkyl, trihaloalkyl, or divalent alkylene group of 3 to 5 carbon atoms;

n is 1, 2 or 3;

Y is



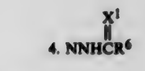
wherein:

R^3 and R^4 are individually hydrogen, lower alkyl, lower alkenyl, or aryl;

3. NOR^5

wherein:

R^5 is substituted or unsubstituted lower alkyl, aryl, or arylalkyl;



wherein:

R^6 is lower alkyl, alkoxy, aryloxy, substituted alkyl, cycloalkoxy, furanyl, or phenylureido;



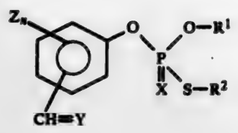
wherein:

R^9 is lower alkyl;

wherein:

X^1 is oxygen or sulfur.

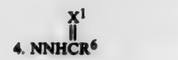
12. Compounds of the formula:



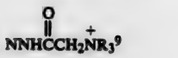
wherein:
X is oxygen or sulfur;
R^1 and R^2 are individually lower alkyl groups;
Z is hydrogen, alkyl, alkoxy, halo, nitro, cyano, aryl, aryloxy, alkylthio, amino, alkylamino, dialkylamino, a C_3 to C_8 cycloalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkylaminoalkyl, or divalent alkylene group of 3 to 5 carbon atoms;
n is 1, 2 or 3;
Y is



wherein:
R^3 and R^4 are individually hydrogen, lower alkyl, lower alkenyl, or aryl;
3. NOR^5
wherein:
R^5 is substituted or unsubstituted lower alkyl, aryl, or arylalkyl;



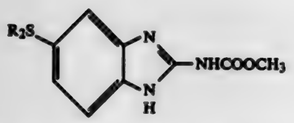
wherein:
R^6 is lower alkyl, alkoxy, aryloxy, substituted alkyl, cycloalkoxy, furanyl, or phenylureido;



wherein:
R^9 is lower alkyl;
wherein
X^1 is oxygen or sulfur.

4,436,737
ANTHELMINTIC COMPOSITIONS
Joseph C. Boray, Neutral Bay, Australia, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Mar. 17, 1982, Ser. No. 358,986
Claims priority, application Switzerland, Mar. 18, 1981, 1841/81
Int. Cl.³ A61K *31/66, 31/415*
U.S. Cl. 424—225 **6 Claims**

1. An anthelmintic composition comprising an anthelmintically effective amount of a combination of (a) O-(4-bromo-2-chlorophenyl) O-ethyl S-propyl phosphorothioate and (b) at least one member selected from the group consisting of
(i) a compound of the formula:



wherein R_2 is propyl or phenyl; and
(ii) the acid addition salts thereof, wherein the weight ratio of (a) to (b) is from about 2:1 to about 4:1, in combination with a non-toxic carrier therefor.

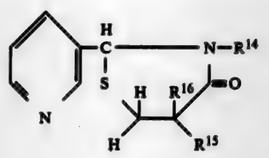
4,436,738
STABILIZED ESTRADIOL CREAM COMPOSITION
Robert J. Bequette; Linda G. Hobbs, and Joseph A. Scott, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.
Filed Mar. 15, 1982, Ser. No. 358,068
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—238 **4 Claims**

1. A cream composition for topical estrogen therapy which comprises 17β-estradiol of a concentration of about 1% or less on a weight basis relative to the whole composition and the remainder being a pharmaceutically acceptable carrier wherein said carrier contains as stabilizers from about 0.01 to about 10% by weight of at least one member selected from
(a) one or more phenolic-type antioxidants selected from the group consisting of t-butylhydroquinone, di-t-amylhydroquinone, di-t-butylhydroquinone, butylhydroxytoluene, butylhydroxyanisole, pyrocatechol, pyrogallol, propyl gallate, and nordihydroguaiaretic acid;
(b) one or more metal chelating agents selected from the group consisting of the sodium edetates (EDTA), and edatic acid; and
(c) one or more suspending agents selected from the group consisting of carbomer, carboxymethylcellulose, hydroxypropyl methylcellulose and methylcellulose.

4,436,739
SUBSTITUTED 1-THIA-3-AZA-4-ONES
Eriks V. Krumkalns, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 188,189, Sep. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 110,868, Jan. 9, 1980, abandoned, which is a continuation-in-part of Ser. No. 951,708, Oct. 16, 1978, abandoned. This application Dec. 4, 1981, Ser. No. 327,311
Int. Cl.³ A01N *43/40, 43/86*; C07D *401/04*
U.S. Cl. 424—246 **5 Claims**

1. A method of protecting plants from phytopathogenic fungi which comprises contacting the fungi with a fungicidally-effective and non-herbicidal amount of a compound of the formula

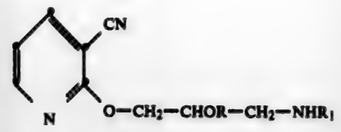
(V)



wherein
R^{14} is C_3–C_6 alkyl, C_5–C_6 cycloalkyl, halobenzyl, halophenyl, trifluoromethylphenyl, tolyl, or methoxyphenyl;
R^{15} is hydrogen or methyl; and
R^{16} is hydrogen or methyl;
or an acid addition salt thereof.

4,436,740
3-CYCLOALKYLAMINO-2-OR-PROPOXYCYANOPYRIDINES
John J. Baldwin, Gwynedd Valley, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Jul. 26, 1982, Ser. No. 401,454
Int. Cl.³ C07D *213/57*; A61K *31/44*
U.S. Cl. 424—263 **8 Claims**

1. Compounds having the formula:



and pharmaceutically acceptable salts thereof wherein:
R is H and
R_1 is C_5–C_8 cycloalkyl or substituted C_5–C_8 cycloalkyl wherein the substituent is mono- or diloweralkyl.
8. A method of treating hypertension in humans by administering to humans in need of such treatment, an effective amount of a compound of claim 1.

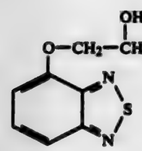
4,436,741
METHOD FOR ADMINISTERING SCOPOLAMINE TRANSDERMALLY
John Urquhart; Santosh K. Chandrasekaran, both of Palo Alto, and Jane E. Shaw, Atherton, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Continuation of Ser. No. 253,961, Apr. 13, 1981, abandoned, which is a continuation of Ser. No. 777,130, Mar. 14, 1977, Pat. No. 4,262,003, which is a division of Ser. No. 721,602, Sep. 7, 1976, Pat. No. 4,031,894, which is a continuation-in-part of Ser. No. 638,947, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 547,504, Feb. 6, 1976, abandoned. This application Mar. 14, 1983, Ser. No. 474,754
The portion of the term of this patent subsequent to Apr. 14, 1996, has been disclaimed.
Int. Cl.³ A61K *31/445*
U.S. Cl. 424—267 **11 Claims**

1. A method for administering scopolamine transdermally for a prolonged time period comprising administering scopolamine base to a predetermined area of unbroken skin in a skin saturating initial dose of about 10 to about 200 $\mu g/cm^2$ of skin and thereafter at a substantially constant rate in the range of about 0.3 to about 15 $\mu g/hr$ which rate is sufficient to maintain the urinary excretion of scopolamine in the range of from 0.05 to about 1.5 $\mu g/hr$ for said prolonged period of time.

4,436,742
4-HYDROXY-2,1,3-BENZTHIADIAZOLE COMPOUNDS AND β-ADRENERGIC METHOD OF USE THEREFOR
Erich Fauland, Mannheim-Gartenstadt; Wolfgang Kampe, Heddesheim; Kurt Stach, Mannheim-Waldhof, and Wolfgang Bartsch, Viernheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany
Continuation of Ser. No. 535,902, Dec. 23, 1974, abandoned. This application Nov. 20, 1980, Ser. No. 208,741
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1974, 2404858
Int. Cl.³ D61K *31/41*; C07D *285/06*
U.S. Cl. 424—269 **10 Claims**

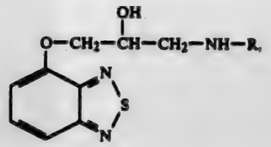
1. 4-Hydroxy-2,1,3-benzthiadiazole amine compound of the formula:

(I)



wherein
R is branched alkyl of 3 or 4 carbon atoms and the pharmacologically compatible salts thereof.
7. Method for treating cardiac or circulatory insufficiencies in mammals susceptible to treatments by beta-adrenergic agents which comprises the step of administering to the mammal a 4-hydroxy-2,1,3-benzthiadiazole amine compound of the formula

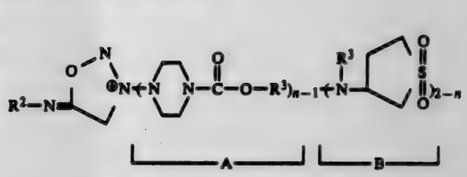
(I)



wherein
R is branched alkyl of 3 or 4 carbon atoms,
or a pharmacologically compatible salt thereof, in a therapeutically effective amount.

4,436,743
3-[N-(LOWER ALKYL)-N-(TETRAHYDRO-3-THIENYL 5,5-DIOXIDE)]SYDNONIMINES
Karl Schönafinger, Uehlfeld; Rudi Beyerle, Frankfurt am Main; Helmut Bohn; Melitta Just, both of Schönock; Piero A. Martorana, Bad Homburg, and Rolf-Eberhard Nitz, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Fed. Rep. of Germany
Filed Feb. 19, 1982, Ser. No. 350,366
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107933
Int. Cl.³ C07D *271/04*; A61K *31/41*
U.S. Cl. 424—269 **24 Claims**

1. A pharmacologically-active compound which, in free-base state, is of the formula



wherein
R^2 is —H or —CO—R^4;
R^3 is methyl, ethyl, propyl or isopropyl;
R^4 is aliphatic hydrocarbyl with from 1 to 4 carbon atoms and optionally substituted by alkoxy with from 1 to 3 carbon atoms, cycloaliphatic hydrocarbyl with from 5 to 7 ring crbon atoms, tricycloaliphatic hydrocarbyl with from 7 to 16 ring carbon atoms, alkoxy with from 1 to 6 carbon atoms, phenoxy, napthhoxy, alkoxycarbonyl with from 2 to 7 carbon atoms, phenyl, naphthyl or such phenyl or naphthyl optionally substitutent with from 1 to 3 substitutents each of which is a member selected from the group consisting of halo, alkyl with from 1 to 3 carbon atoms, alkoxy with from 1 to 3 carbon atoms and nitro, and at most 2 of which are nitro; and
n is 1.

4,436,744

FUNGICIDAL COMPOSITIONS COMPRISING N-AMINO-2-OXO-3-OXAZOLIDINE DERIVATIVES AND FOLPET OR CAPTAN

Jost Harr, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

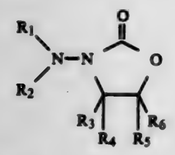
Division of Ser. No. 178,276, Aug. 15, 1980, Pat. No. 4,347,253. This application Jun. 21, 1982, Ser. No. 390,334

Claims priority, application United Kingdom, Apr. 25, 1980, 8013721; Apr. 25, 1980, 8013720; Apr. 25, 1980, 8013719

Int. Cl.³ A01N *43/36, 43/76, 47/10, 59/20*

U.S. Cl. 424—272 **12 Claims**

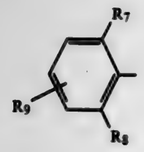
1. A fungicidal composition comprising a component (a) of formula I



I

wherein

R_1 is



wherein

R_7 and R_8, independently, are C_{1-4}alkyl, halogen or C_{1-4}alkoxy, and

R_9 is hydrogen, C_{1-4}alkyl or halogen,

R_2 is CO-R_{10},

wherein

R_{10} is C_{1-4}alkoxy-C_{1-4}alkyl, C_{1-4}alkylthio-C_{1-4}alkyl, 2-furyl, 2-tetrahydrofuryl, halogenated 2-furyl, halogenated 2-tetrahydrofuryl, 1-imidazolylmethyl, 1-pyrrazolylmethyl, 2-tetrahydrofuryloxymethyl, 2-tetrahydropyranyloxymethyl, or C_{1-4}halogenalkyl, and

R_3, R_4, R_5 and R_6 are independently hydrogen or C_{1-4}alkyl, and

a component (b) selected from the group consisting of captan and folpet; the weight ratio of component (a) to component (b) being in the range of 1:1 to 1:10.

4,436,745

METHOD OF INHIBITING ALDOSE REDUCTASE ACTIVITY

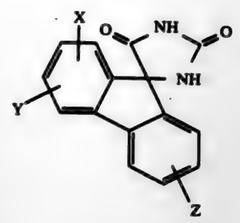
Billie M. York, Jr., Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Apr. 15, 1982, Ser. No. 368,630

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **18 Claims**

1. A method for treating diabetic complications in mammals comprising administering an effective amount of spiro-(fluoren-9,4'-imidazolidine)-2',5'-dione or pharmaceutically acceptable salt thereof having the formula



where

x=H, F, Cl, Br, I, SCH_3, $S(O)CH_3$, $S(O_2)CH_3$, OCH_3 and CH_3,

y=H, F, Cl, Br, I, SCH_3, $S(O)CH_3$, $S(O_2)CH_3$, OCH_3 and CH_3, and

z=H, F, Cl, Br, I, OCH_3 and CH_3.

4,436,746

THROMBOXANE SYNTHETASE INHIBITORY N-SUBSTITUTED-2-(1-IMIDAZOLYL)INDOLES

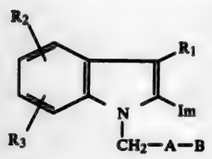
Harris B. Renfroe, West Nyack, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,644

Int. Cl.³ A61K *31/415*; C07D *403/04*

U.S. Cl. 424—273 R **9 Claims**

1. A compound of the formula



(I)

wherein

R_1 represents hydrogen or lower alkyl;

Im represents 1-imidazolyl unsubstituted or substituted by lower alkyl, carboxy, lower alkoxycarbonyl or carbamoyl;

R_2 and R_3 independently represent hydrogen, lower alkyl, halogen, trifluoromethyl, hydroxy, lower alkoxy, lower alkyl-(thio, sulfinyl or sulfonyl); or

R_2 and R_3 together when attached to adjacent carbons represent lower alkylenedioxy;

A represents straight chain or branched alkylene of 1 to 12 carbon atoms, alkenylene of 2 to 12 carbon atoms, alkynylene of 2 to 12 carbon atoms, lower alkylenephenylene lower alkylene, lower alkylenephenylene, phenylene lower alkylene, phenylene, a direct bond, lower alkylene-(thio or oxy)-lower alkylene, lower alkylene-(thio or oxy)-phenylene;

B represents carboxy, lower alkoxycarbonyl, carbamoyl, mono- or di- lower alkylcarbamoyl, cyano or hydroxymethyl; the N-oxide thereof; or a pharmaceutically acceptable salt thereof.

9. A method of treating diseases responsive to thromboxane synthetase inhibition in mammals comprising the administration to a mammal in need thereof of a therapeutically effective amount of a compound of claim 1 in combination with one or more pharmaceutically acceptable carriers.

4,436,747

NARGENICIN C_1

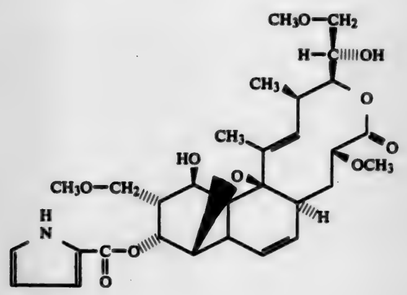
Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,793

Int. Cl.³ A61K *31/40*; C07D *405/14*

U.S. Cl. 424—274 **3 Claims**

1. Nargenicin C_1, the compound of the formula



4,436,748

BENZO[b]THIOPHENES

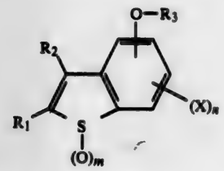
Helen H. Ong, Whippany, N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 198,736, Oct. 20, 1980, abandoned. This application Apr. 22, 1981, Ser. No. 256,470

Int. Cl.³ A61K *31/38*; C07D *333/64*

U.S. Cl. 424—275 **110 Claims**

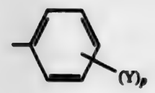
1. A compound of the formula



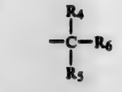
wherein R_1 is lower alkanoyl, formyl or a group of the formula



wherein R_{19} and R_{20} are each independently hydrogen or lower alkyl; R_1 and R_2 are hydrogen, lower alkyl, lower cycloalkyl, or a group of the formula

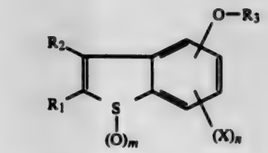


wherein Y is hydrogen, halogen, lower alkyl, lower alkoxy or hydroxy and p is 1 or 2, with the proviso that R_1 and R_2 are not simultaneously hydrogen; R_3 is Z wherein Z is a group of the formula

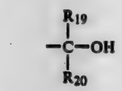


wherein R_4 and R_5 are hydrogen or lower alkyl; R_6 is carboxy, hydroxymethyl, lower alkoxycarbonyl, or hydroxyaminocarbonyl; X is halogen; n is 2 and m is 0, 1 or 2; and the O-R_3 substituent is attached to the 5-position of the benzo[b]thiophene nucleus, or a pharmaceutically acceptable basic addition salt thereof when R_6 is carboxy.

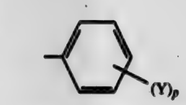
81. A method of reducing blood pressure in mammals comprising administering to a mammal requiring blood pressure reduction a blood pressure reducing effective amount of a compound of the formula



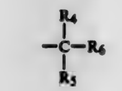
wherein R_1 is lower alkanoyl, formyl or a group of the formula



wherein R_{19} and R_{20} are each independently hydrogen or lower alkyl; wherein R_1 and R_2 are hydrogen, lower alkyl, lower cycloalkyl or a group of the formula



wherein Y is hydrogen, halogen, lower alkyl, alkoxy or hydroxy and p is 1 or 2 with the proviso that R_1 and R_2 are not simultaneously hydrogen; R_3 is Z wherein Z is lower alkyl or a group of the formula



wherein R_4 and R_5 are hydrogen or lower alkyl; R_6 is carboxy, hydroxymethyl, lower alkoxycarbonyl, or hydroxyaminocarbonyl; X halogen or lower alkyl, n is 1 or 2 and m is 0, 1 or 2, or a pharmaceutically acceptable basic addition salt thereof when R_6 is carboxy.

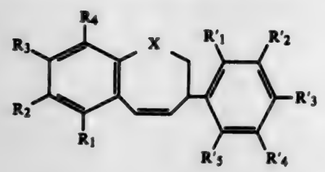
4,436,749

COMPOUNDS OF THE BENZOXEPINE SERIES AND SULPHUR- AND NITROGEN-CONTAINING ANALOGUES; THEIR PROCESSES FOR THE PREPARATION OF THESE PRODUCTS AND THE USE THEREOF IN THE PHARMACEUTICAL FIELD

Philippe Hatinguais; Jean-Francois Patoiseau, and Gilbert Marcelon, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

Filed May 10, 1982, Ser. No. 376,645
Claims priority, application France, May 11, 1981, 81 09327; May 4, 1982, 82 07693
Int. Cl.³ C07D *313/08, 337/08, 223/16;* A61K *31/335, 31/55, 31/38*
U.S. Cl. 424—278 5 Claims

1. A compound corresponding to formula I:



(I)

wherein

X represents oxygen;

R_1 to R_4, and R'_1 to R'_5 independently represent the following:

a hydrogen atom,

a C_1 to C_5 alkoxy or a C_2 to C_5 acyloxy radical,

a hydroxy radical,

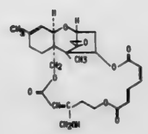
a hydroxy C_1 to C_5 alkoxy, mono- or di- C_1 to C_5 alkyl amino C_1 to C_5 alkoxy radical.

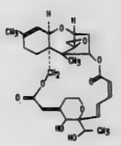
4,436,750

12'-HYDROXYVERRUCARIN J AND ISO-SATRATOXIN H

Tim A. Smitka; Richard H. Bunge; James C. French, all of Ann Arbor, and Russell J. Bloom, Dearborn, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 4, 1982, Ser. No. 432,467
Int. Cl.³ C07D *493/22;* A61K *31/365*
U.S. Cl. 424—279 3 Claims





1. The compound iso-satratoxin H, which is characterized by:

A. An ultraviolet absorption spectrum in methanol with the following properties:

λmax	a_1^1	ε
226 nm	362	19,100
265 inflection	(219)	11,600

B. An infrared absorption spectrum in CCl_4 having principal absorptions at: 3560, 3440, 2975, 2930, 2855, 1730, 1660, 1595, 1195, 1165, 1145, 1090, 1080, and 970 reciprocal centimeters;

C. A proton nuclear magnetic resonance spectrum having principal signals at: (s=singlet, t=triplet, q=quartet, m=multiplet, dd=double doublet, dt=double triplet); 0.83 s; 1.35 d (J=7); 1.43 s (cyclohexane); 1.61s (H_2O); 1.72 s; 1.92 m; 2.18 dt (J=5,15); 2.45 dd (J=8,15); 2.78 m; 2.83 d (J=4); 3.14 d (J=4); 3.39 s; 3.59 d (J=5); 3.9 m; 4.22 s; 4.54 d (J=13); 5.06 s; 5.39 d (J=17); 5.43 d (J=5); 5.80 d (J=3); 5.9 m; 5.93 d (J=12); 6.52 dd (J=10,12); 7.26 dd (J=10,17); 7.27 s (chloroform) parts per million downfield from tetramethylsilane;

D. Carbon-13 Nuclear Resonance Spectrum in $CDCl_3$ (FIG. 10); Principal signals at:

166.67	79.13		61.5	
166.35	78.69		48.97	
154.91	78.42	} $CDCl_3$	48.05	
142.35	77.02		43.36	
140.40	75.62		34.46	
134.15	75.35		27.61	
133.56	74.65		25.45	
120.98	74.16		23.30	
118.88	68.23		20.33	
118.23	65.48		15.80	
93.10*	64.02		7.54	Parts per million downfield from tetramethylsilane

*Instrument noise

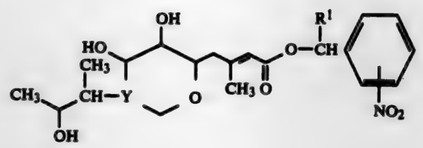
4,436,751

NITROBENZYL MONATES ANTIBACTERIAL COMPOUNDS

Peter J. O'Hanlon, Redhill, and Graham Walker, Guildford, both of England, assignors to Beecham Group Limited, England

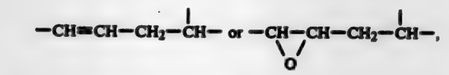
Filed Dec. 11, 1981, Ser. No. 330,012
Claims priority, application United Kingdom, Dec. 31, 1980, 8041559; Aug. 18, 1981, 8125168; Oct. 9, 1981, 8130541
Int. Cl.³ A61K *31/35;* C07D *309/10*
U.S. Cl. 424—283 7 Claims

1. A compound of formula (II):



(II)

Y is



R^1 is hydrogen or C_{1-4} alkyl,

and the depicted nitro group is in the meta- or para- position on the benzene ring.

5. A method for treating mycoplasmal infections in humans and animals which comprises administering an effective, non-toxic amount of a compound according to claim 1 to a human or animal having a micoplasmal infection.

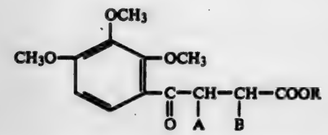
4,436,752

TREATMENT OF GASTRIC AND GASTRO-DUODENAL DISORDERS WITH DERIVATIVES OF PHENYL ALIPHATIC CARBOXYLIC ACIDS

Yani Christidis, and Robert Fournex, both of Paris, France, assignors to Roussel Uclaf, Paris, France

Filed Apr. 14, 1982, Ser. No. 368,209
Claims priority, application France, Apr. 17, 1981, 81 07802
Int. Cl.³ A61K *31/19*
U.S. Cl. 424—317 4 Claims

1. A method of treating a patient suffering from hyperchlorhydria, gastric or gastro-duodenal ulcers, gastritis, hiatal hernia, or gastric or gastro-duodenal ailments accompanied by gastric hyperacidity, comprising administering to said patient an anti-ulcer and anti-gastric secretory effective amount of a compound of the formula (I)



(I)

in which A and B together represent a double bond or else A represents a hydrogen atom and B represents a hydroxy radical, and in which R represents a hydrogen atom or an alkyl radical containing from 1 to 5 carbon atoms, in their racemic or optically active forms, and pharmaceutically acceptable salts of said compound wherein R represents a hydrogen atom.

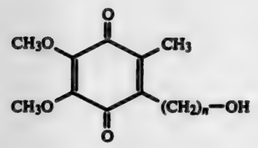
4,436,753

METHOD FOR THERAPY OF ISCHEMIC DISEASE

Isuke Imada, Izumi; Akinobu Nagaoka, Kawanishi, and Minoru Hirata, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 17, 1980, Ser. No. 217,538
Claims priority, application Japan, Dec. 30, 1979, 54-171125
Int. Cl.³ A61K *31/12*
U.S. Cl. 424—331 8 Claims

1. A method of improving cellular metabolism in the treatment of ischemic diseases comprising cerebral infarction, cerebral hemorrhage, cerebral hemorrhagic infarction, cerebral embolus, cardiac failure, nephrosclerosis, proteinuria due to vascular lesion and renovascular hypertension, which comprises administering to a mammal suffering from the disease a compound of the formula:



wherein n is an integer of from 4 to 22, in an amount of about 0.006 mg to 12 mg per kilogram of body weight of the mammal per day.

4,436,754

DISINFECTING AND STERILIZING COMPOSITION

Paul T. Jacobs, Arlington, Tex., assignor to Surgikos, Inc., Arlington, Tex.

Continuation-in-part of Ser. No. 178,218, Aug. 14, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 343,678
Int. Cl.³ A01N *35/00*
U.S. Cl. 424—333 10 Claims

1. A phenol-free sporicidal composition having low odor and irritation potential comprising an aqueous solution containing 0.1% to 4% by weight of a 2 to 6 carbon atom saturated dialdehyde and containing as an odor reducing agent 5% to 25% by weight of a diol or monosubstituted diol of the formula $RO(CH_2CH_2O)_n—CH_2CH_2OH$, where R is H or CH_3— and n is an integer from 1 to about 22.

4,436,755

SEPARATION OF FRUIT JUICE WITH FIBERS OF AN OLEFIN POLYMER

Luciano Perdomini; Elia Tonon, both of Verona, and Lanfranco Paronetto, Negrar, all of, assignors to Montedison S.p.A. and Chimici Perdomini S.p.A., both of Milan, Italy

Continuation of Ser. No. 121,024, Feb. 13, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,174
Claims priority, application Italy, Feb. 14, 1979, 20188 A/79
Int. Cl.³ C12G *1/00;* A23L *2/02*
U.S. Cl. 426—15 8 Claims

1. A method for separating fruit juice from fruit material containing solids comprising mixing the fruit material containing solids with fibrous materials which are wettable or have been treated to render them wettable and which consist of fibers of an olefin polymer having a surface area of at least 1 m^2/g, a mean length of 0.5–5 mm, and a mean diameter of 1 to 500 microns, and separating juice from the mixture of fibrous material and fruit material containing solids.

4,436,756

METHOD FOR EXTRACTING MYCOTOXINS FROM VEGETABLE FLOURS

Marco Canella, and Giancarlo Sodini, both of Rome, Italy, assignors to E.N.I. Ente Nazionale Indrocarburi, Rome, Italy

Continuation of Ser. No. 68,141, Aug. 20, 1979, abandoned, which is a continuation of Ser. No. 862,774, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 705,014, Jul. 14, 1976, abandoned. This application Mar. 16, 1983, Ser. No. 475,915
Claims priority, application Italy, Jul. 15, 1975, 25422 A/75
The portion of the term of this patent subsequent to Feb. 7, 1995, has been disclaimed.
Int. Cl.³ A23L *1/20*
U.S. Cl. 426—430 10 Claims

1. A method for the extraction of mycotoxins from mycotoxin contaminated vegetable flours comprising the step of treating said flours or the products obtained with an organic solvent which contains at least a polar group, admixed with an aqueous solution of an electrolyte having an acidic nature.

4,436,757

CRYOGENIC PROCESS FOR DECORTICATION AND HULLING OF SUNFLOWER SEEDS

Donald A. Lange, Brooklyn Park; Marc C. Hanson, St. Louis Park, and Kenneth J. Kriva, Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Sep. 7, 1982, Ser. No. 415,203
Int. Cl.³ A23L *1/212, 1/36*
U.S. Cl. 426—438 15 Claims

1. A process for decorticating and hulling sunflower seeds, comprising the steps of:

A. contacting unshelled sunflower seeds with a cryogenic liquid gas for a time sufficient to allow penetration of the liquid gas into the seeds to form infused seeds, and immediately thereafter,

B. contacting the cryogenically infused seeds with a liquid or aqueous heating medium at least about 100° F. warmer than the boiling temperature of the gas to vaporize the gas and thermally stress the seed hulls whereby a fraction of the seeds are decorticated and hulled, thereby forming a mixture of hulled meats, hull fragments, partially decorticated seeds and nondecorticated seeds, and then

C. separating the hulled meats from the mixture.

4,436,758

DOUGH CONDITIONING COMPOSITION

Jerome B. Thompson, Box 231 - Rte. 3, Cumberland, Md. 21502

Filed Aug. 5, 1980, Ser. No. 175,142
Int. Cl.³ A21D *10/00*
U.S. Cl. 426—549 **12 Claims**

1. A stable dough conditioning composition for addition in a concentrated form to yeast-leavened dough to eliminate the need for the addition of ammonium salts to said dough, said composition consisting essentially of the following active ingredients:

a solid organic acid: 60–98%

A bromate salt compatible with said acid: 0.4–4%.

4,436,759

PRODUCTION OF SHAPED FOOD PRODUCTS

David M. Trilling, Wellesley, Mass., and Yechiel Smadar, Ramat Hasharon, Israel, assignors to Caribou Fisheries, Inc., Boston, Mass.

Filed Mar. 26, 1982, Ser. No. 362,301
Int. Cl.³ A23L *1/04*
U.S. Cl. 426—573 **26 Claims**

1. A process for the production of shaped food products from comminuted, granulated or chopped foodstuffs comprising (1) preparing a slurry of one or more foodstuffs with a binder, a gelling agent and a bivalent ion releasing material; said slurry being prepared by first mixing together the binder, the gelling agent and the bivalent ion releasing material to form a dry blend, the dry blend of these materials is then added and mixed with the foodstuffs to form the slurry, the resultant slurry is then allowed to stand for a period of time sufficient to allow the release of ions from the bivalent ion releasing material so as to form a gel; said binder being selected from the group consisting of a cellulose ether, a gum and mixtures thereof and being present in an amount of from about 0.10% to about 6.0% by weight based on the weight of the foodstuff; said gelling agent being an alkali metal alginate and being present in an amount of from about 0.1% to about 1.0% based on the weight of the foodstuffs; said bivalent ion releasing material being present in an amount of from about 0.001% to about 0.004%; (2) preparing a shaped food product by shaping the slurry by means of a shaping and forming device; and (3) processing the shaped food product into a final product.

4,436,760

LOW-CALORIE SPREAD BASED ON A LOW-MELTING BUTTERFAT FRACTION

Laurentius A. M. Verhagen, and Leendert G. Warnaar, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,413
Claims priority, application Netherlands, Apr. 2, 1981, 8101638
Int. Cl.³ A23D *3/02*
U.S. Cl. 426—603 **3 Claims**

1. A process for producing a low-calorie water-in-oil emulsion spread based on butterfat, comprising the steps of:

(a) melting butterfat by heating said butterfat up to a temperature not exceeding 45° C.;

(b) cooling the molten butterfat to a temperature ranging from 20° C. to 30° C. in the absence of a solvent to fractionate said butterfat thereby yielding a higher melting stearin fraction and a lower melting olein fraction;

(c) separating from said stearin fraction an olein fraction which has the solid fat content noted below:

N_{10}=24–40,

N_{20}=3–8 and

N_{30}=0–3;

(d) emulsifying an aqueous phase with a pH in the range of about 4.0 to about 7.0 and constituting from about 20% to about 70% of the total spread, in a fatty phase essentially consisting of said separated olein and constituting about 30% to about 80% of the total spread to obtain a water-in-oil emulsion; and

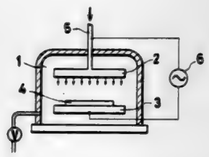
(e) simultaneously cooling and working said emulsion under conditions leading to a spread having a hardness of at least 80 g/cm² at 20° C., and at most 1300 g/cm² at 10° C. and of at most 1800 g/cm² at 5° C.

4,436,761

METHOD FOR TREATMENT OF METAL SUBSTRATE FOR GROWTH OF HYDROGEN-CONTAINING SEMICONDUCTOR FILM

Yutaka Hayashi; Mitsuyuki Yamanaka, and Hideyuki Karasawa, all of Ibaraki, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,813
Claims priority, application Japan, Jul. 30, 1981, 56-119874
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **5 Claims**



1. A method for the treatment of a cleaned metal substrate for the growth of a hydrogen-containing semiconductor film on said metal substrate which comprises exposing the surface of said cleaned metal substrate on which said semiconductor film is to be deposited to plasma consisting essentially of hydrogen in advance of the deposition thereon of said semiconductor film to cause hydrogen to be adsorbed on the surface of the substrate, thereby improving the electric contact characteristic between the metal substrate and the semiconductor film deposited thereon.

2. The method according to claim 1, wherein subsequently to the exposure of the surface of the metal substrate to hydrogen plasma, the semiconductor film is deposited in situ on the treated surface of the metal substrate.

4,436,762

LOW PRESSURE PLASMA DISCHARGE FORMATION OF REFRACTORY COATINGS

Walter P. Lapatovich, Watertown; Joseph M. Proud, Wellesley Hills, and Leslie A. Riseberg, Sudbury, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 26, 1982, Ser. No. 402,176
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—39 **10 Claims**

1. A coating process for coating a surface inside a vessel comprising

providing a vessel having contents comprising an inert gas, and reactants, said reactants consisting essentially of SiO_2 and a halide of a metal selected from the group consisting of B, Al, Ga, In, Tl, and combinations thereof; and

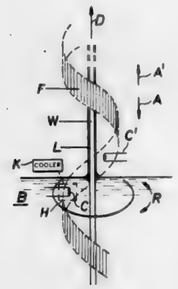
generating a plasma within said vessel containing said inert gas, and said reactants, to form a refractory metal oxide protective coating on a surface inside the vessel.

4,436,763

METHOD OF PLATING A WIRE WITH METAL

Paul Metz, Luxembourg, Luxembourg, assignor to Arbed S/A, Luxembourg

Filed Jan. 19, 1983, Ser. No. 459,197
Claims priority, application Luxembourg, Jan. 26, 1982, 83897
Int. Cl.³ B05D *3/14*
U.S. Cl. 427—47 **6 Claims**



1. A method of plating a strand with a metal, the method comprising the steps of:

melting the metal and forming a bath of the molten metal;

displacing the strand longitudinally through the molten-metal bath so the strand leaves the bath at a surface thereof, whereby the molten metal of the bath sticks to the strand and forms a molten metallic layer thereon;

forming around the strand generally at the surface a helicoidal magnetic field generally centered on the strand and positioned to exert on the metallic layer a magnetic force generally parallel to the strand and on the bath a rotary force generally centered on the strand; and

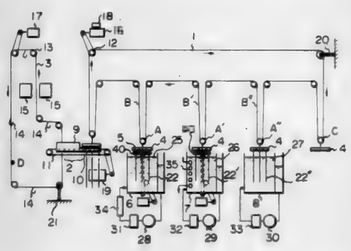
polarizing the field in accordance with desired layer thickness.

4,436,764

METHOD AND APPARATUS FOR SURFACE-HARDENING TREATMENT OF SYNTHETIC RESIN SHAPED ARTICLES

Atushi Nakazima; Mitisuke Edamatsu, and Kenji Kushi, all of Otake, Japan, assignors to Mitzubishi Rayon Company, Ltd., Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,588
Claims priority, application Japan, Jul. 28, 1981, 56-118756
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **10 Claims**



1. A method for the surface-hardening treatment of a synthetic resin shaped article wherein a synthetic resin shaped article is dipped in a surface-hardening solution; the synthetic resin shaped article is gradually pulled up therefrom thereby being coated with the surface-hardening solution; and the coated shaped article is irradiated with ultraviolet rays to cure the coating, CHARACTERIZED IN THAT (a) the synthetic resin shaped article is dipped in succession in a washing pretreatment tank, a drying tank having warm water or an organic solvent and a hardening solution tank while the synthetic resin shaped article is conveyed by a first conveyor, and then, the synthetic resin shaped article is transferred from the first conveyor through an intermediate conveyor to a second conveyor whereby the synthetic resin shaped article is conveyed to an ultraviolet ray-curing step; (b) the synthetic resin shaped article is introduced to and withdrawn from the respective steps in the state where the synthetic resin shaped article is hung on a hanger, and one or a plurality of hangers are attached to each of a plurality of portions of the first conveyor so that the synthetic resin shaped articles are simultaneously subjected to the dipping treatment in the respective tanks, whereas the hangers are conveyed one by one from the intermediate conveyor to the second conveyor where the synthetic resin shaped articles are separately hung; (c) in each of the washing pretreatment tank, the drying tank comprising warm water or an organic solvent and the hardening solution tank, the liquid is overflowed therefrom and circulated via a filter to each tank; and (d) the surface-hardening treatment is carried out under such conditions that the surface-hardening solution in the hardening solution tank and the atmosphere above the hardening solution tank are maintained at room temperature and the dew point of said atmosphere is maintained at a level lower by at least 3° C. than the temperature of the surface-hardening solution.

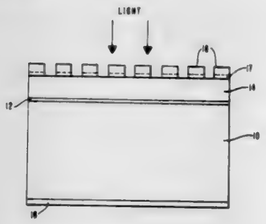
7. An apparatus for the surface-hardening treatment of a synthetic resin shaped article by dipping a synthetic resin shaped article in a surface-hardening solution, gradually pulling up the synthetic resin shaped article to coat the surface of the synthetic resin shaped article with the surface-hardening solution, and irradiating the coated shaped article with ultraviolet rays to cure the coating, said apparatus comprising (a) a conveyor system including a first conveyor for conveying the synthetic resin shaped article in succession through a washing pretreatment tanks, a drying tank and a hardening solution tank to effect dipping in the respective tanks, a second conveyor for conveying the synthetic resin shaped article to an ultraviolet ray-curing device, and an intermediate conveyor for transferring secondary hangers each having the synthetic resin shaped article hung thereon from the first conveyor to the second conveyor; one or more of said secondary hangers each having the synthetic resin shaped article hung thereon being detachably attached to each of a plurality of primary hangers attached to the first conveyor; and said secondary hangers being conveyed separately and one by one from the first conveyor through the intermediate conveyor to the second conveyor whereby the secondary hangers are conveyed one by one to the ultraviolet ray-curing device; (b) pumps for circulating the liquids through pipe lines from the washing pretreatment tank, drying tank and hardening solution tank to the respective tanks, and filters arranged downstream of said pumps in the respective circulating pipe lines; (c) a device surrounding the respective conveyors, and the washing pretreatment tank, the drying tank, the hardening solution tank and the ultraviolet ray-curing device to define a substantially closed treating chamber; and (d) a device including an air feeder for feeding air into the treating chamber, a filter for removing dusts from the air in the treating chamber and a heat exchanger for adjusting the temperature and humidity of the air in the treating chamber.

4,436,765

METHOD FOR FORMING INDIUM OXIDE/N-SILICON HETEROJUNCTION SOLAR CELLS

Tom Feng, Morris Plains, and Amal K. Ghosh, New Providence, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 258,935, Apr. 30, 1981, Pat. No. 4,366,335, which is a continuation-in-part of Ser. No. 222,367, Jan. 5, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 422,668
Int. Cl.³ H01L 31/18
U.S. Cl. 427—74 17 Claims



1. A method for forming a high efficiency indium oxide/n-silicon heterojunction solar cell comprising:

providing an n-type silicon substrate having at least one major surface area coated with a thin layer of silicon oxide, SiO_2, said oxide layer being less than about 30 Angstroms thick;

contacting said substrate with an atomized liquid solution of anhydrous indium trichloride ($InCl_3$), water, and an organic ester, and/or an alcohol having a boiling point less than about 250° C. while heating and maintaining said substrate at a temperature ranging from about 350° C. to about 450° C. to deposit a layer of semiconductor indium oxide on said oxidized silicon, said indium oxide forming a heterojunction to the oxidized silicon substrate; and

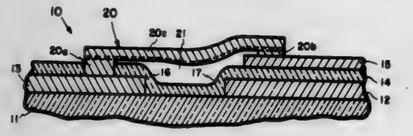
ceasing said heating and rapidly cooling said substrate upon completion of the deposition of said indium oxide to produce a heterojunction solar cell having an Air Mass One solar efficiency in excess of about 10%.

4,436,766

PLATED BRIDGE STEP-OVER CONNECTION FOR MONOLITHIC DEVICES AND METHOD FOR MAKING THEREOF

Ralph E. Williams, Richardson, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1981, Ser. No. 263,821
Int. Cl.³ H01L 21/88
U.S. Cl. 427—96 3 Claims



1. A method of forming a step-over connection in a monolithic device having a substrate, a plurality of laterally spaced metalizations supported by said substrate, and a dielectric layer over at least one of said metalizations, comprising the steps of:

providing a first resist layer having a finite thickness over said metalizations and said dielectric layer;

forming first and second openings in said first resist layer layer exposing at least one selected surface area of said dielectric layer and a selected first area of said metalizations;

etching said dielectric layer in said selected surface area thereof to expose a selected second area of said metalizations;

plating metal onto said first and second areas of said metalizations to form first and second pillars having a height about equal to said thickness of said first resist layer;

forming a thin sputtered metal layer over said first resist layer and said pillars;

providing a second resist layer over said sputtered metal layer;

forming a connector bridge pattern opening in said second resist layer, said connector bridge pattern opening exposing said first and second pillars and a connecting area of said sputtered metal layer therebetween;

plating metal onto said pillars and exposed sputtered metal layer to form a metal bridge connector spanning the space between said metalizations; and

removing said first and second resist layers and said sputtered metal layer external to said bridge pattern opening.

4,436,767

SLURRY SEAL METHOD USING ACRYLAMIDE AND RUBBER MODIFIED ASPHALTIC EMULSION

Anthony V. Grossi; Louis T. Hahn; Alfred Marzocchi, all of Newark, and Charles E. Bolen, Heath, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 27, 1982, Ser. No. 453,067
Int. Cl.³ B05D 5/10
U.S. Cl. 427—138 11 Claims

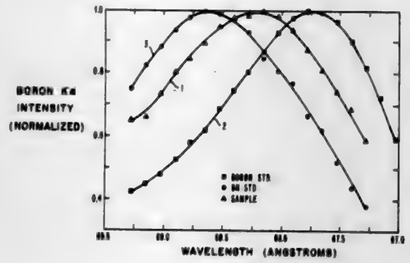
1. In a pavement surface-treating method comprising applying a slurry seal composition to pavement, said composition comprising aggregate and a slow setting asphalt emulsion, the improvement wherein said emulsion further comprises, in admixture therewith, an effective breaktime decreasing amount of an emulsion containing the prereacted reaction product of an acrylamide asphalt having a viscosity of less than about 120,000 cps (at 140° F.), a vinyl aromatic monomer and a rubbery polymer.

4,436,768

REFRACTORY STRUCTURE AND PROCESS FOR THE PREPARATION THEREOF

John L. Freeouf, Peekskill; William J. Haag, Poughkeepsie, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 148,610, May 12, 1980, abandoned. This application Aug. 25, 1982, Ser. No. 411,218
Int. Cl.³ B05D 3/02, 5/00
U.S. Cl. 427—227 21 Claims



1. A process of forming a refractory compound structure wherein said compound is a combination of a metallic element wherein said metallic element is solid at normal room temperature and has a vapor pressure of at least one order of magnitude lower than that of said nonmetallic element in the temperature

range at which decomposition of the refractory compound occurs, and wherein the structure has an adherent dense elemental layer of said refractory compound over the surface of the structure which comprises:

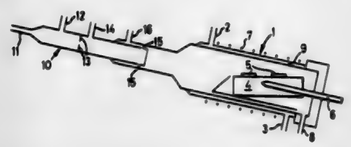
evacuating a chamber containing a refractory compound structure to a pressure less than about 10^{-3} torr; and heating said refractory compound structure in said chamber at a decomposition temperature of about 1500° C. to about 1800° C. for a time sufficient to form an elemental layer of said metallic component of said refractory compound on said structure.

4,436,769

METAL ORGANIC VAPOR DEPOSITION PROCEDURE FOR PREPARING GROUP III—V COMPOUNDS ON A HEATED SUBSTRATE

Rodney H. Moss, Felixstowe, and Marc M. Faktor, Bushey Heath, both of England, assignors to British Telecommunications, London, England

Filed Nov. 18, 1981, Ser. No. 322,438
Claims priority, application United Kingdom, Nov. 18, 1980, 8036902; Feb. 17, 1981, 8104953
Int. Cl.³ C23C 11/00, 13/00
U.S. Cl. 427—252 10 Claims



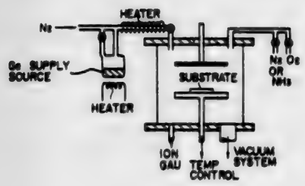
1. In a method of forming a group III-group V compound on a heated substrate by causing vapor streams carrying respectively a group III alkyl derivative and a group V hydride to mix and impinge on the substrate, whereby the group III alkyl derivative and the group V hydride react to form the group III-group V compound, the improvement which comprises: modifying the group III alkyl derivative by the donation thereto of electron density to form a weaker Lewis acid; mixing the resulting modified group III alkyl derivative with the group V hydride; and impinging the mixture on the substrate.

4,436,770

OXYNITRIDE FILM AND ITS MANUFACTURING METHOD

Jun-ichi Nishizawa, and Ikuo Shiota, both of Sendai, Japan, assignors to Budda Hajia Handotai Kenkyu Shinkokai, Sendai, Japan

Division of Ser. No. 215,442, Dec. 11, 1980, Pat. No. 4,331,737, which is a continuation of Ser. No. 23,766, Mar. 26, 1979, abandoned. This application Feb. 24, 1982, Ser. No. 351,619
Claims priority, application Japan, Apr. 1, 1978, 53-38580; Jul. 14, 1978, 53-86573
Int. Cl.³ B05D 5/00; C23C 11/00, 15/00
U.S. Cl. 427—255.3 9 Claims



1. A method of manufacturing a film substantially formed of oxynitride of one substance selected from the group consisting of gallium, aluminum and their mixture, the oxynitride having an oxygen-to-nitrogen ratio of at least 0.15, comprising the steps of:

adding a controlled amount of water to a predetermined amount of halide of said one substance;

subjecting the water-added halide to ammonia treatment to form a supply source;

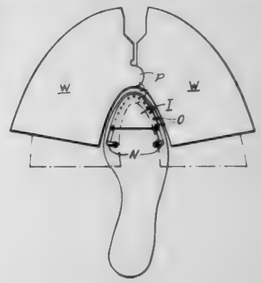
transporting said supply source onto a heated substrate by a carrier gas and forming said film on said substrate by reaction of thermal decomposition of said supply source thereon.

4,436,771

METHOD OF LASTING SHOES

Robert C. Simmonds, Jr., Boxford, and Andrew J. Gilbride, Swampscott, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Mar. 2, 1983, Ser. No. 469,503
Int. Cl.³ A43D 29/00
U.S. Cl. 427—284 6 Claims



1. Method of lasting shoes, using adhesive, from the toe to at least over the ball region thereof, wherein the toe and forepart region of the shoe is inwiped by means of a pair of wiper plates mounted for inwiping movement about a common pivot located at or adjacent the toe end of the shoe, and wherein the adhesive is applied partly by means of an imprinter plate which is pressed against the shoe bottom and partly by nozzles movable along opposite sides of the shoe, characterized in that the region to which adhesive is applied by means of the imprinter plate extends from the toe end of the shoe and lies within, but is substantially smaller than, the region inwiped by said pair of wiper plates.

4,436,772

ANTICORROSIVE COATING PROCESS

Masaaki Yamabe, Machida; Hiromichi Higaki, Yokohama; Toshio Shinohara, Yokohama; Hiroyuki Tanabe, Yokohama, and Shunsuke Nakayama, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka and Asahi Glass Company, Ltd., Tokyo, both of, Japan

Filed Jan. 24, 1983, Ser. No. 460,380
Claims priority, application Japan, Feb. 5, 1982, 57-16361
Int. Cl.³ B05D 3/02
U.S. Cl. 427—379 6 Claims

1. An anticorrosive coating process which comprises:

(i) a step of applying on a substrate a zinc-rich paint or an epoxy resin primer coating, followed by air-drying,

(ii) a step of applying thereon an intermediate synthetic resin coating, followed by air-drying, and

(iii) a step of applying thereon a top coating comprising (a) a fluorine-containing copolymer composed of from 40 to 60 molar % of a fluoroolefin, from 5 to 45 molar % of cyclohexylvinyl ether, from 5 to 45 molar % of an alkylvi-

nyl ether, from 3 to 15 molar % of a hydroxyalkylvinyl ether and from 0 to 30 molar % of other comonomer and (b) a polyisocyanate, followed by air-drying.

4,436,773

ANTICORROSIVE COATING PROCESS

Masaaki Yamabe, Machida; Hiromichi Higaki, Yokohama; Toshio Shinohara, Yokohama; Hiroyuki Tanabe, Yokohama, and Shunsuke Nakayama, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka and Asahi Glass Company Ltd., Tokyo, both of, Japan

Filed Jan. 24, 1983, Ser. No. 460,383

Claims priority, application Japan, Feb. 5, 1982, 57-16359; Feb. 5, 1982, 57-16360

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—380 12 Claims

1. An anticorrosive coating process which comprises:

(i) a step of forming a primer coating layer by applying on a substrate an oil-type anticorrosive coating or an alkyd resin-type anticorrosive coating as a primer coating, followed by air-drying,

(ii) a step of forming a binder coating layer by applying on the primer coating layer a phenol-modified alkyd resin-type coating containing a flaky pigment, followed by air-drying, and

(iii) a step of forming a top coating layer by applying on the binder layer a top coating comprising (a) a fluorine-containing copolymer composed of from 40 to 60 molar % of a fluoroolefin, from 5 to 45 molar % of cyclohexylvinyl ether, from 5 to 45 molar % of an alkylvinyl ether, from 3 to 15 molar % of a hydroxyalkylvinyl ether and from 0 to 30 molar % of other comonomer and (b) a polyisocyanate, followed by air-drying.

4,436,774

RUBBER/POLYMERIC MATERIAL COMPOSITES

Ian Biggs, Sutton Coldfield, and Ronald S. Goy, Staffordshire, both of England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 941,249, Sep. 11, 1978, abandoned. This application Jun. 21, 1982, Ser. No. 390,709

Claims priority, application United Kingdom, May 12, 1978, 19167/78

Int. Cl.³ B05D *3/02;* B29H *5/02, 5/10*

U.S. Cl. 427—40 48 Claims

1. A method of making a composite by bonding a rubber to a polymeric material comprising the steps of (i) applying to a vulcanisable rubber composition a treatment agent which will halogenate and/or oxidise the rubber surface, (ii) vulcanising the rubber composition by means of a fluidised bed (iii) contacting the vulcanised treated rubber composition with a polymeric material and (iv) causing or allowing the polymeric material to solidify in contact with the rubber composition to form the composite.

4,436,775

HARD METAL BODY AND METHOD OF MAKING SAME

Donald E. Graham, St. Clair Shores, Mich., assignor to General Electric Company, Detroit, Mich.

Division of Ser. No. 276,918, Jun. 24, 1981, Pat. No. 4,343,865. This application May 25, 1982, Ser. No. 381,773

Int. Cl.³ C23C *11/02;* B22F *7/02*

U.S. Cl. 427—419.7 4 Claims

1. A method of producing a multi-layered wear resistant article with improved bonding strength between the layers comprising the steps of:

providing a substrate formed from a cemented sintered metal carbide material;

depositing a bonding layer on said substrate, said bonding layer being formed of boron; and

coating said bonding layer with a wear resistant material formed from titanium boride.

4,436,776

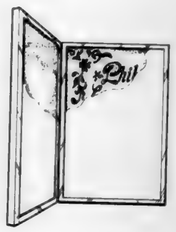
PROCESS FOR CUSTOMIZING GLASS GREETING CARDS AND GLASS GREETING CARD PRODUCT

William Wojcik, 3909 Northaven Dr., Charlotte, N.C. 28206

Filed May 4, 1983, Ser. No. 491,356

Int. Cl.³ A47G *1/12;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 428—14 6 Claims



6. A customized glass greeting card comprising:

(a) first and second sheets of glass having a design thereon formed by areas of transparent and etched, translucent surfaces;

(b) first and second frames hinged together on one side thereof for holding said first and second sheets of glass, respectively, so as to resemble a folded card;

whereby the clear, etched glass transmits light and appears dark relative to the translucent areas of the glass which reflect light and appear relatively light and so resemble a printed card whether the hinged frames are open or closed together and further whereby only the design on the top sheet of glass is visible when the hinged frames are closed together.

4,436,777

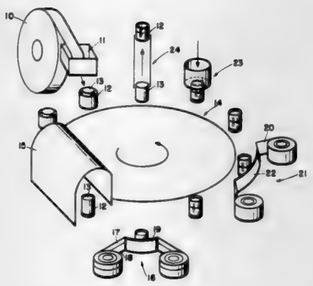
METHOD FOR MAKING DECORATED BATTERY CASINGS

Kenneth M. Karpiloff, New Rochelle, N.Y., assignor to Duracell Inc., Bethel, Conn.

Filed Dec. 8, 1981, Ser. No. 328,566

Int. Cl.³ B32B *1/08;* H01M *2/02*

U.S. Cl. 428—36 13 Claims



1. A method for making a battery casing from a decorated heat shrinkable enclosure member characterized in that said method comprises the steps of placing said enclosure member on a support member and shrinking said heat shrinkable enclosure member thereon, decorating said enclosure member while on said support member, removing said decorated heat shrunk enclosure member from said support member and fixedly enclosing a battery therewithin.

10. A decorated battery casing made in accordance with the method of claims 1, 2, 3, 4, 5, 6, 8 or 9.

4,436,778

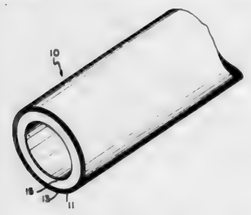
MULTILAYER TUBULAR BODY WITH UNCENTERED BARRIER LAYER

Jeffrey N. Dugal, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 308,292, Oct. 5, 1981, abandoned. This application Apr. 22, 1983, Ser. No. 485,760

Int. Cl.³ B29F *1/10;* B32B *9/04*

U.S. Cl. 428—36 13 Claims



1. A nonflexible thick-walled tubular article with a wall thickness in excess of 0.1 inch having a heat-degradable polyvinylidene barrier layer with a marked decrease in relative volume of entrapped inclusions per given length, said article capable of being biaxially oriented into a container possessing low gas permeability comprising at least three cojoined polymeric layers with at least one intermediate polymeric layer being a polyvinylidene chloride barrier layer, said article being formed by simultaneously coextruding and bonding the polymeric layers together as a series of melted streams with the intermediate polyvinylidene chloride barrier layer being located proximate the exterior surface thereof, the outer polymeric layer being less thick than the article portion within the polyvinylidene chloride barrier layer, and quenching said series of melted streams from the outer exterior surface of said series proximate said polyvinylidene chloride barrier layer, said polyvinylidene chloride barrier layer being located within the outer about one percent to 33 percent of the total thickness and having a thickness of from about 1 percent to about 20 percent of the total thickness of the cojoined, multilayered tubular article.

8. A method of substantially reducing gaseous inclusions in coextruding a solid nonflexible tubular body having at least three polymeric layers including inner and outer layers of thermoplastic material selected from a group comprising polyolefins, polystyrenes, and polyesters, and an intermediate polyvinylidene chloride barrier layer therein, said body having a wall thickness of about 0.1 inch to about 0.5 inch and being capable of being axially oriented into a container possessing low gas permeability, which comprises forming a series of melted streams of the polymeric materials, enveloping the series of melted streams to form separate and defined cojoined tubular layers one upon the other, and introducing the polyvinylidene chloride barrier layer intermediately within said series and proximate the exterior surface of said tubular layers, said polyvinylidene chloride barrier layer being within the outer 1 percent to 33 percent of the total thickness of the cojoined tubular layers and having a thickness of from about 1 percent to about 20 percent of total thickness of the cojoined tubular layers, and thereafter quenching said series of cojoined tubular layers from their outer exterior surface proximate said barrier layer to form a cojoined multilayered solid thick-walled body.

4,436,779

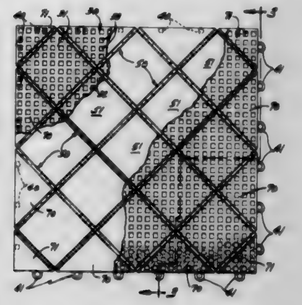
MODULAR SURFACE SUCH AS FOR USE IN SPORTS

K. Anthony Menconi, 6835 County Line La., Burr Ridge, Ill. 60521, and Joseph F. Gribauskas, Jr., 21 W. 246 Audubon Rd., Lombard, Ill. 60148

Filed Jul. 2, 1982, Ser. No. 394,528

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—169 13 Claims



1. A module for a modular surface comprising a tile having an upper surface and a plurality of support means underlying the surface for engaging an undersurface, the tile being flexible to accommodate imperfections in the undersurface while keeping the support means in contact therewith, continuous floating expansion joints dividing the surface into square pads supported by said support means and oriented with diagonals generally parallel to the tile edges whereby the number and effectiveness of the expansion joints is greatest along the tile diagonal to maintain said support means in contact with the undersurface under conditions of changing temperature.

4,436,780

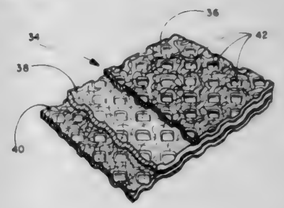
NONWOVEN WIPER LAMINATE

Harry W. Hotchkiss; Patrick J. Nothels, both of Cobb County, and Stephen M. Englebert, Cherokee County, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 2, 1982, Ser. No. 414,214

Int. Cl.³ B32B *27/14*

U.S. Cl. 428—198 9 Claims



1. Wiper comprising a laminate including a relatively high basis weight web having a basis weight in the range of from about 17 to 170 g/m^2 comprising meltblown thermoplastic microfibers having an average diameter in the range of up to about 10 microns and treated with a surfactant and, on both sides of said meltblown web, a relatively low basis weight web having a basis weight in the range of from about 7 to 34 g/m^2 comprising generally continuous thermoplastic filaments having an average diameter in excess of about 10 microns wherein the proportion of the microfiber web to the combined outer webs is at least about 2 to 1 by weight.

4,436,781

CENTRIFUGALLY CAST POLE COMPRISED OF A REINFORCED RESIN FOR SUPPORTING A LIGHT OR THE LIKE UPON AN END THEREOF

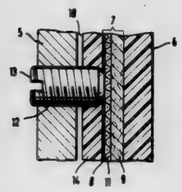
Bruno Rother, Neumarkt, and Hartmut Trommes, Postbauer-Heng, both of Fed. Rep. of Germany, assignors to G.A. Pfleiderer GmbH & Co., KG, Neumarkt, Fed. Rep. of Germany

Division of Ser. No. 229,410, Jan. 29, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,230

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032574

Int. Cl.³ B29C *5/04;* B32B *31/00;* E04C *3/30;* E04H *12/00*

U.S. Cl. 428—365 7 Claims



1. A reinforced synthetic resin tapered pole comprising an elongated tapered pole formed by centrifugally casting a synthetic resin reinforcement means embedded within said pole without protruding to the outer surface of said pole, said reinforcement means comprising an outer mat which is penetrable by said synthetic resin and which has a specific gravity slightly lower than the specific gravity of said synthetic resin such that during said centrifugal casting, the synthetic resin passes radially outwardly through said mat to form an outer radial layer of synthetic resin as said mat floats on said outer radial layer of synthetic resin due to the lower specific gravity of said synthetic resin, said reinforcement means further comprising fibrous material penetrable by said synthetic resin and disposed on the radial inner side of said mat, said reinforcement means maintaining said fibrous material within the walls of said pole and preventing said fibrous material from penetrating the outer surface of said pole, a wire cloth embedded within said pole between said mat and said fibrous material, said wire cloth extending along a portion of the longitudinal length of said pole, and an attachment member attached to said pole by attachment elements, said attachment elements penetrating said outer layer of synthetic resin to said wire cloth which provides a solid resistance to further penetration by said attachment elements, whereby a firm attachment of said attachment member to said pole is thereby achieved.

4,436,782

OLIGOMER PELLETS OF ETHYLENE TEREPHTHALATE

Chungfah H. Ho, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 209,324, Nov. 24, 1980, Pat. No. 4,340,550. This application May 3, 1982, Ser. No. 374,155

Int. Cl.³ B32B *5/16, 9/00;* C08G *63/02*

U.S. Cl. 428—402 1 Claim

1. Free-flowing pellets of ethylene terephthalate oligomer of from about 0.08 to 0.15 intrinsic viscosity, said pellets being in the form of slightly flattened beads having a thickness of about 0.3 to 2.0 mm and a circular diameter of 0.8 to 4.0 mm, said



pellets having a bulk density of from about 37 to 50 pounds per cubic foot.

4,436,783

THERMOSENSITIVE RECORDING MATERIAL

Fumio Okumura, Kunitachi; Masahiro Higuchi, Tokyo; Shun Kamei, Kitamoto, and Masahiro Miyauchi, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Apr. 6, 1982, Ser. No. 366,086

Claims priority, application Japan, Apr. 11, 1981, 56-54848

Int. Cl.³ B41M *5/18*

U.S. Cl. 428—411 14 Claims

1. In a thermosensitive recording material containing essentially a bisphenol compound as color developer and a dye precursor which, upon being heated, forms color by reacting with said bisphenol compound, the improvement whereby the color generating characteristics of the thermosensitive recording material are ameliorated which comprises employing as the color developer a fused mixture of said bisphenol compound and one or more monohydroxy phenolic compounds.

4,436,784

PROCESS FOR PREPARING PLASTICIZED POLYVINYL CHLORIDE SUBSTRATES COMPRISING A MOISTURE-CURED POLYURETHANE COATING AND THE PRODUCTS RESULTING THEREFROM

Wendell A. Ehrhart, Hallam, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Feb. 25, 1982, Ser. No. 352,355

Int. Cl.³ B32B *27/40*

U.S. Cl. 428—423.1 8 Claims

5. A plasticized polyvinyl chloride substrate comprising a moisture-cured polyurethane coating, said coated substrate being obtained by

preparing a prepolymer composition comprising a moisture-curable polyurethane prepolymer and a plasticizer,

applying said prepolymer composition to a plasticized polyvinyl chloride substrate, and

heating and moisture-curing the coated substrate, whereby a substantial portion of the plasticizer in said coating migrates into said substrate.

4,436,785

SILVER-FILLED GLASS

Raymond L. Dietz, Poway; Michael Featherby, San Diego, and Peter K. Margetts, El Cajon, all of Calif., assignors to Johnson Matthey Inc., Malvern, Pa.

Division of Ser. No. 355,719, Mar. 8, 1982, Pat. No. 4,401,767, which is a continuation-in-part of Ser. No. 287,892, Aug. 3, 1981, abandoned. This application May 16, 1983, Ser. No. 494,873

Int. Cl.³ B32B *17/06;* B22F *7/02;* C03C *3/10*

U.S. Cl. 428—427 6 Claims

1. An electronic assembly comprising:

a ceramic substrate;

a semiconductive device attached to said substrate by a bond;

said bond being a silver-filled glass consisting essentially of: 25 to 95% of silver powder; and



75 to 5% of a high-lead borosilicate substantially soduim-free glass having a softening temperature in the range of 325° to 425° C., and a coefficient of thermal expansion no higher than about 13 ppm/°C.

4,436,786

MAGNETIC RECORDING MEDIUM

Takehisa Ohkawa, Usuda, and Kunihchi Yoda, Saku, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 364,056

Claims priority, application Japan, Apr. 1, 1981, 56-47313

Int. Cl.³ G11B *5/70*

U.S. Cl. 428—447 10 Claims

1. A magnetic recording medium comprising a base material and a magnetic coating layer thereon, said magnetic coating layer containing a binder, a highly viscous silicone oil having a viscosity of at least 100,000 centistokes and a higher fatty acid having a melting point of at least 44° C., said silicone oil in an amount of about 0.2% to about 2.0% by weight of said binder and said higher fatty acid in an amount of about 0.5% to about 4.0% by weight of said binder.

4,436,787

DURABLE PRIMER COMPOSITION

Ryuzo Mikami, and Katsuyoshi Nakasuji, both of Ichihara, Japan, assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 3, 1983, Ser. No. 463,379

Claims priority, application Japan, Feb. 19, 1982, 57-25551

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—447 11 Claims

1. A primer composition comprising

(A) 100 parts by weight of a silicone-modified epoxy resin which has both epoxy groups and silicone-bonded alkoxy radicals, said silicone-modified epoxy resins being the condensation reaction product between

(a) an alkoxy silicon compound being expressed by the average unit formula

$$R_aSiO_{\frac{4-a-b}{2}}(X_b)$$

wherein R represents a monovalent radical selected from the group consisting of hydrocarbon radicals and substituted hydrocarbon radicals having at lease one hydrogen atom substituted by a halogen atom, cyano, mercapto, hydroxyl, methacryloxy, acryloxy, glycidoxy, and 3,4-epoxycyclohexyl, X represents an alkoxy radical or an alkoxyalkoxy radical, a has a value from 0 to 2 inclusive, b has a value from 1 to 4 inclusive and the sum of a+b has a value from 1 to 4 inclusive,

(b) an epoxy resin having both epoxy groups and hydroxyl radicals in the molecules,

where (a) and (b) are present in amounts sufficient to satisfy the following relationship

$$\frac{\text{equivalent number of alkoxy radicals in } (a)}{\text{equivalent number of hydroxyl radicals in } (b)} \geq 1$$

(B) 10 to 100 parts by weight of an aminoxy organosilicon compound having per molecule at least one silicon-bonded aminoxy radical which is expressed by the formula

$$R_2'NO\,Si{=}$$

wherein R' represent hydrogen atom, a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical, or two radials represented by R' can be bonded together, and (C) 0.1 to 100 parts by weight of an organotitanate.

5. An article comprising a substrate having a surface coated with a dried film derived from the primer composition of claim 1.

7. An article in accord with claim 5 further comprising a cured room temperature vulcanizable silicone rubber bonded to the dried film where said cured rubber is cured while in contact with said dried film.

4,436,788

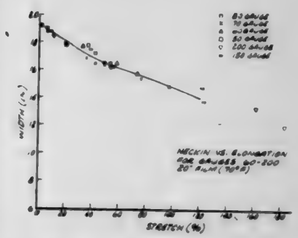
COMPOSITE STRETCH WRAP FILM

Barry A. Cooper, Wayzata, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Division of Ser. No. 119,192, Feb. 2, 1980. This application Dec. 1, 1982, Ser. No. 446,055

Int. Cl.³ B32B *27/06;* C08L *23/16*

U.S. Cl. 428—483 12 Claims



1. A composite film comprising:

a first layer comprising at least about 90% by weight of high molecular weight copolymer of ethylene and vinyl acetate containing between about 4 and about 25% by weight of repeating units derived from vinyl acetate and having a melt index of between about 0.1 and about 4.0 and a tackifier selected from the group consisting of a low molecular weight polyisobutene, polyterpenes, amorphous polypropylene and microcrystalline wax; and

a second layer lamellarly adhered to said first layer and comprising at least about 90% by weight of a linear low density polyethylene having a specific gravity of between about 0.917 and about 0.945.

4,436,789

POLYOXAZOLINE-MODIFIED, PAPER COATING

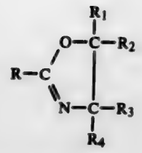
Roy A. Davis, and Norman L. Madison, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 28, 1980, Ser. No. 182,250

Int. Cl.³ C08L *79/02*

U.S. Cl. 428—537 8 Claims

1. An improved fluid, paper coating composition having at least 40 weight percent solids in an aqueous dispersion which contains an opacifying amount of pigment, a binding amount of a binder and an alkaline pH modifying substance in an amount sufficient to produce a pH of at least about 7, wherein the improvement comprises at least about 0.005 percent based on the binder of a 2-oxazoline polymer having a molecular weight of from about 1,000 to about 150,000 as determined by gel permeation chromatography prepared from 2-oxazoline monomers of the formula



wherein R is alkyl, aralkyl, phenyl or inertly substituted phenyl and R_1-R_4 are each independently hydrogen, alkyl, aralkyl, phenyl or inertly substituted phenyl.

8. A paper coated by the process of claim 7.

4,436,790

GOLD-COLORED COIN MATERIAL

Bruno Prinz, Oberursel; Manfred B. Rockel, Friedrichsdorf; Günther Rudolph, Nueberg; Ulrich Heubner, Werdohl, and Hügo Zoebe, Altena, all of Fed. Rep. of Germany, assignors to Vereinigte Deutsch Metallwerke AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,692

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116125

Int. Cl.³ C22C *9/01, 9/02*

U.S. Cl. 428—675 **6 Claims**

1. A coin made of a copper base alloy consisting essentially of 1 to 7 percent tin and 1 to 7 percent aluminum and containing aluminum and tin in a total not in excess of 10 percent, balanced copper and inevitable impurities due to the manufacture.

4,436,791

CAST COLD ROLLING ROLL

Jacques Bocquet, Sedan, and Jean C. Werquin, Ronchin, both of France, assignors to Union Siderurgique du Nord et de l'Est de la France, Paris, France

Filed Oct. 29, 1981, Ser. No. 316,487

Claims priority, application France, Oct. 31, 1980, 80 23316

Int. Cl.³ C21D *9/38;* B21B *27/02*

U.S. Cl. 428—682 **6 Claims**

1. A cast bimetallic composite roll for cold rolling, comprising in combination a heart metal constituted by a nodular or lamellar cast iron and a case metal constituted by a steel having a chromium content of 8 to 16% and a carbon content of 0.65 to 0.95%, the ratio between the chromium and carbon being between 11 and 16 and the structure of the case metal being martensitic with a residual austenite content of less than 10% and a hardness exceeding 700 HV.

4,436,792

CONTAINER DEVICE FOR PLANAR BATTERY

Naoki Tomino, Tokyo; Osamu Ikeda, Kawasaki; Yoshio Matsuzawa, Tokyo, and Hideya Inoue, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 9, 1982, Ser. No. 440,423

Claims priority, application Japan, Nov. 12, 1981, 56-167658[U]; Nov. 27, 1981, 56-175316[U]; Nov. 27, 1981, 56-175317[U]; Dec. 4, 1981, 56-180654[U]

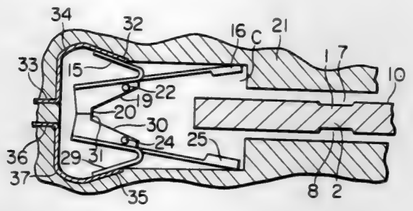
Int. Cl.³ H01M *2/10*

U.S. Cl. 429—1 **14 Claims**

1. A device capable of containing at least one planar battery having a positive electrode and a negative electrode and capable of supplying a power to a circuit when said battery has been completely contained, said device including:

(a) a plurality of terminals for contacting said positive electrode and said negative electrode, respectively, of said battery when completely contained;

(b) means for holding each of said plurality of terminals, said holding means holding at least one of said terminals movably between a first position and a second position, and wherein said movable terminal, when in said first position, contacts neither of said positive electrode and said negative electrode and, when in said second position, can contact one of said electrodes; and



(c) means for moving said movable terminal to said second position in response to the containment of said battery.

4,436,793

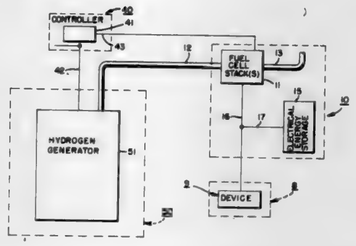
CONTROL SYSTEM FOR HYDROGEN GENERATORS

Otto J. Adlhart, Tenafly, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed Sep. 29, 1982, Ser. No. 426,324

Int. Cl.³ H01M *8/06*

U.S. Cl. 429—17 **27 Claims**



1. A system for controlling the generation of hydrogen upon demand comprising:

(a) a hydrogen generator means of the type which relies at least partially on the process of anodic corrosion to generate hydrogen having an anode, a cathode and an aqueous electrolyte therebetween and a circuit means for enabling electrical circuit to pass between the anode and cathode in addition to the electrolyte,

(b) a hydrogen consuming device for receiving and utilizing hydrogen produced by the hydrogen generator means, and

(c) a controller means for regulating the passage of current through the circuit means in response to demand for hydrogen by the consuming device

whereby hydrogen is automatically generated and provided to the consuming device only as required by the consuming device.

4,436,794

MOLTEN CARBONATE FUEL CELL

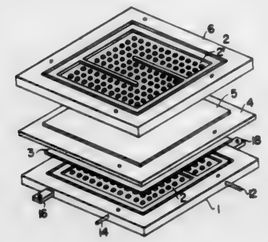
Masato Takeuchi, Katsuta; Hideo Okada, Hitachi; Hiroshi Tobita, Kitaibaraki; Sigeru Okabe, Hitachi; Shinpei Matsuda, Ibaraki; Munehiko Tonami; Kohki Tamura, and Fumito Nakajima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1982, Ser. No. 362,056

Claims priority, application Japan, Mar. 31, 1981, 56-46453

Int. Cl.³ H01M *4/90, 8/14*

U.S. Cl. 429—40 **15 Claims**



1. In a molten carbonate fuel cell comprising an anode, a cathode and an alkali metal-carbonate electrolyte placed between both the electrodes and operated by supplying a fuel into a fuel chamber placed in the anode side and an oxidant into an oxidant chamber placed in the cathode side, the improvement wherein at least one of said electrodes contains nickel oxide and/or cobalt oxide, together with at least one rare earth element oxide.

4,436,795

ALKALINE ELECTRIC STORAGE CELLS

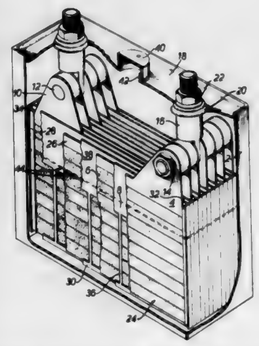
Michael J. Cooper, Redditch, and James Parker, Alvechurch, all of England, assignors to Chloride Group Public Limited Company, London, England

Filed Jul. 14, 1982, Ser. No. 398,433

Claims priority, application United Kingdom, Jul. 17, 1981, 8122088

Int. Cl.³ H01M *10/52*

U.S. Cl. 429—53 **14 Claims**



1. An electric storage cell of alkaline type, said cell comprising:

(a) a container;

(b) a plurality of alternate positive and negative electrodes disposed in said container, said positive and negative electrodes being conceptually divisible into upper and lower portions;

(c) first separator means which separate the lower portions of adjacent electrodes and which leave a substantially unobstructed electrical path between said adjacent electrodes;

(d) second separator means which separate the upper portions of adjacent electrodes, said second separator means comprising gas permeable absorbent material capable of conducting electrolyte by capillary action; and

(e) a free electrolyte contained in said container and having a normal level which is above the bottoms of said second separator means and below the tops of said negative electrodes,

whereby the lower portions of adjacent positive and negative electrodes are below the normal electrolyte level and operate electrochemically in the conventional manner and the upper portions of adjacent positive and negative electrodes are above the normal electrolyte level but kept moist with electrolyte by said second separator means and thus also operate electro-chemically in the conventional manner.

4,436,796

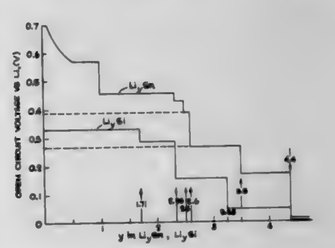
ALL-SOLID ELECTRODES WITH MIXED CONDUCTOR MATRIX

Robert A. Huggins, Stanford, Calif., and Bernard A. Boukamp, Achterste Kamp, Netherlands, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 30, 1981, Ser. No. 288,563

Int. Cl.³ H01M *4/40*

U.S. Cl. 429—112 **26 Claims**



1. An electrochemical cell comprising:

a positive electrode, a negative electrode, and an electrolyte, said positive or negative electrode having an all-solid, composite microinstructural morphology and including therein both a reactant phase and a mixed-conducting matrix phase.

4,436,797

X-RAY MASK

Michael J. Brady, Brewster; Bernard S. Meyerson, Yorktown Heights, both of N.Y., and John M. Warlaumont, Ridgewood, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,018

Int. Cl.³ F24F *13/00;* B05B *5/00;* C23C *15/00;* B32B *9/00*

U.S. Cl. 430—5 **20 Claims**

1. An X-ray mask comprising an X-ray absorbing pattern supported by a foil of hydrogenated amorphous carbon having an optical bandgap of at least one electron volt.

11. An X-ray mask comprising a substantially X-ray absorbing patterned layer supported by a substantially X-ray trans-

parent foil, said foil comprising hydrogenated amorphous carbon and having an optical bandgap of at least one electron volt, and further comprising a frame supporting said X-ray transparent foil, said frame comprising silicon.

4,436,798

METHOD OF TREATING A DYE IMAGE

Christopher D. Shennan, Brentwood, and Michael W. Fry, Ilford, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

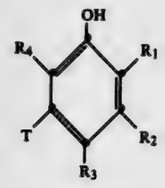
Filed Jun. 28, 1982, Ser. No. 392,442

Claims priority, application United Kingdom, Aug. 13, 1981, 8124741

Int. Cl.³ G03C *3/00, 5/24*

U.S. Cl. 430—17 **15 Claims**

1. A method of treating a dye image in photographic material which dye image has been formed by the colour coupling reaction of a primary aromatic amine colour developing agent with a phenolic colour coupler of the formula



(I)

where T is —OH, —NH_2 or —NHR_5 where R_5 is alkyl or aryl, one of R_1 and R_3 is the coupling position and if it is the coupling position the substituent group is hydrogen or halogen, a nitrogen-linked heterocycle or —SR_6 where R_6 is optionally substituted alkyl having 1 to 20 carbon atoms or optionally substituted aryl or an optionally substituted heterocycle, the other of R_1 and R_3 and R_2 and R_4 are each hydrogen or halogen or optionally substituted organic groups, or one of R_1 and R_2 together or R_2 and R_3 together may represent the atoms necessary to complete an optionally substituted benzannelated ring, which treatment method comprises treating the dye image with an aqueous solution which comprises a salt of a metal selected from the group consisting of manganese, iron, nickel, cobalt, copper, zinc, cadmium, lead, aluminium, vanadium, chromium or titanium transition (b-sub group) metal, or a metal of the third or fourth main group of the periodic table of the elements, the concentration of the metal ion in the aqueous solution being at least 10^{-4}M.

15. The photographic dye image obtained by the method according to claim 1.

4,436,799

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

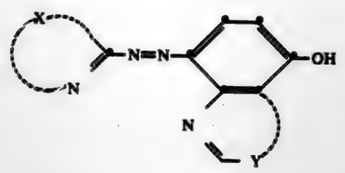
Steven Evans, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 458,499, Jan. 17, 1983, which is a continuation-in-part of Ser. No. 380,843, May 21, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,631

Int. Cl.³ G03C *1/40*; C09B *45/00*

U.S. Cl. 430—17 **12 Claims**

7. A photographic element comprising a support having thereon a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

(a) X represents the atoms necessary to complete a 5- or 6-membered heterocyclic ring, and

(b) Y represents the atoms necessary to complete a 5- or 6-membered fused ring.

4,436,800

MULTILAYER ELECTROPHOTOGRAPHIC ELEMENT CONTAINING A TRISAZO CHARGE CARRIER GENERATING SUBSTANCE AND A HYDRAZONE CHARGE CARRIER TRANSFER SUBSTANCE

Masafumi Ohta, Susono, and Kiyoshi Sakai, Numazu, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

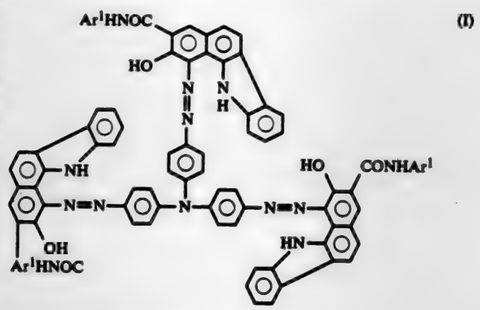
Filed May 19, 1982, Ser. No. 379,686

Claims priority, application Japan, May 28, 1981, 56-80152; May 28, 1981, 56-80153; May 28, 1981, 56-80154; May 28, 1981, 56-80155; May 28, 1981, 56-80162; May 28, 1981, 56-80163; May 28, 1981, 56-80164; May 28, 1981, 56-80165; May 29, 1981, 56-82235; May 29, 1981, 56-82236; May 29, 1981, 56-82237; May 29, 1981, 56-82238; Jun. 10, 1981, 56-88103; Jun. 10, 1981, 56-88104; Jun. 10, 1981, 56-88105; Jun. 10, 1981, 56-88106; Jun. 10, 1981, 56-88112; Jun. 10, 1981, 56-88113; Jun. 12, 1981, 56-90612; Jun. 12, 1981, 56-90613; Jun. 12, 1981, 56-90614; Jan. 6, 1982, 57-475; Jan. 18, 1982, 57-5683; Jan. 18, 1982, 57-5684; Jan. 18, 1982, 57-5688

Int. Cl.³ G03G *5/06*

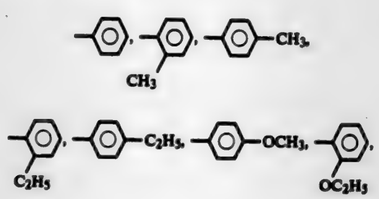
U.S. Cl. 430—59 **16 Claims**

1. An electrophotographic element comprising an electrically conductive substrate, a charge carrier generating layer and a charge transfer layer superimposed on said substrate, wherein said charge carrier generating layer contains a trisazo compound having the general formula (I):

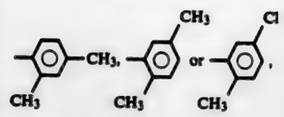


(I)

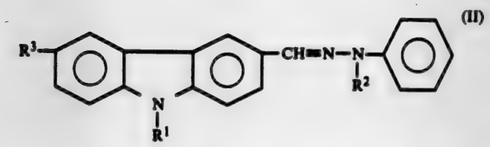
wherein, Ar^1 represents



-continued

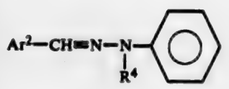


and said charge transfer layer contains a hydrazone compound having the general formula (II), (III), (IV) or (V):



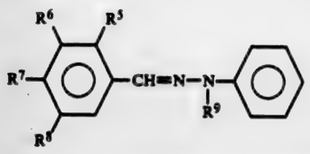
(II)

wherein, R^1 represents a methyl group, an ethyl group, a 2-hydroxyethyl group or a 2-chloroethyl group, R^2 represents a methyl group, an ethyl group, a benzyl group or a phenyl group, and R^3 represents hydrogen, chlorine, bromine, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a dialkylamino group or a nitro group,



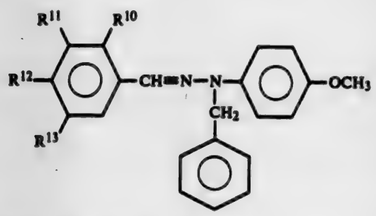
(III)

wherein Ar^2 represents a naphthalene ring, a substituted naphthalene ring, an anthracene ring, a substituted anthracene ring, a styryl group, a substituted styryl group, a pyridine ring, a furan ring or a thiophene ring, and R^4 represents an alkyl group or a benzyl group,



(IV)

wherein, R^5, R^6, R^7 and R^8 each represents hydrogen, an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 3 carbon atoms, a dialkylamino group or a dibenzylamino group, and R^9 represents an alkyl group or a benzyl group,



(V)

wherein, R^{10}, R^{11}, R^{12}, and R^{13} each represents hydrogen, an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 3 carbon atoms, a substituted or non-substituted dialkylamino group, a dibenzylamino group or a halogen atom, and a binder.

4,436,801

ELECTROPHOTOGRAPHIC RECORDING ELEMENT HAVING AN ANILINE SULPHONEPHTHELEIN CHARGE GENERATOR

Franco Knirsch, Banchette, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 20, 1982, Ser. No. 451,387

Claims priority, application Italy, Dec. 21, 1981, 68649 A/81

Int. Cl.³ G03G *5/06, 5/14*

U.S. Cl. 430—73 **11 Claims**

1. An electrophotographic recording element comprising an electrically conducting support, and a film of photoconductor material containing an electric charge generator compound, said charge generator compound comprising a sulphonephthalein derivative in which at least one phenyl ring comprises a substituted amino group in which at least one substituent is an aromatic or heterocyclic ring.

4,436,802

REVERSAL ELECTROPHOTOGRAPHY DEVELOPING METHOD

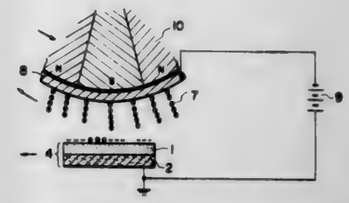
Shuichi Ohtsuka, and Yasuo Aotsuka, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,273

Claims priority, application Japan, Dec. 7, 1981, 56-196627

Int. Cl.³ G03G *13/09*

U.S. Cl. 430—100 **3 Claims**



1. In electrophotography in which an electrophotosensitive material is electrostatically charged to its "saturation charging potential"; is exposed to an image to be reproduced to form an electrostatic latent image; and finally is subjected to a magnetic brush, reversal development with a one-component magnetic toner at a bias potential of the same polarity as the potential appearing on the electrostatically charged material, an improved developing method characterized in that it uses a one-component magnetic toner having a resistivity of 10^7 or more ohm.centimeter within the range of electric charge induction of inter-toner particles and a coercive force of 150 or more oersteds.

4,436,803

METHOD OF DEVELOPING ELECTROSTATIC IMAGE WITH MAGNETIC BRUSH EAR PROMOTER

Toshimitsu Ikeda, Himeji; Nobuyasu Honda, Tsuri, and Tetsuya Nakano, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1982, Ser. No. 360,938

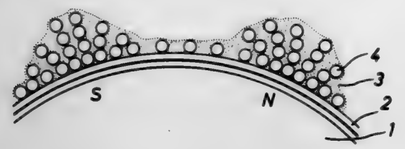
Claims priority, application Japan, Mar. 23, 1981, 56-40424

Int. Cl.³ G03G *9/14, 13/09*

U.S. Cl. 430—122 **9 Claims**

1. A method of developing an electrostatic image by bringing an electrostatic image-carrying surface of a substrate into sliding contact with a magnetic brush of a developer formed on a developer-feeding sleeve having a magnet arranged in the interior thereof, wherein the magnetic brush is formed from (A) an earing-promoting component comprising particles of a dispersion of a powder of a magnetic material in a resin, which have a relatively large diameter of 70 to 300 microns, the magnetic material being present in an amount of 30 to 80% by

weight based on the total weight of the resin and the magnetic material and (B) a developer component comprising particles of a dispersion of a powder of a magnetic material in a binder medium, which have a relatively small diameter of 5 to 50 microns, the magnetic material being present in the developer



component in an amount of 40 to 75% by weight based on the total weight of the resin and the magnetic material, and the ratio of the earing-promoting component to the developer component being within the range of 80:20 to 10:90, and wherein the electrostatic image is developed only by the developer component.

4,436,804

LIGHT-SENSITIVE POLYMERIC DIAZONIUM CONDENSATES AND REPRODUCTION COMPOSITIONS AND MATERIALS THEREWITH

John E. Walls, Annandale, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 245,837, Mar. 20, 1981, abandoned. This application Mar. 18, 1982, Ser. No. 359,335

Int. Cl.³ G03C 1/54; C07C 113/04

U.S. Cl. 430—157 **27 Claims**

1. A light sensitive, substantially linear polymeric diazonium reaction compound comprising repeating units of the condensation product of each of the general types E^+X^- and Q, in which E^+X^- is a radical of the compound of the general formula:



wherein:

—K— is selected from the group consisting of



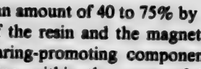
—S—, —O—, and $—CH_2—$, or is absent;

R' is selected from the group consisting of phenyl and C_1 to C_4 alkyl substituted phenyl;

P and P_1 are selected from the group consisting of C_1 to C_4 alkyl, methoxy, ethoxy, butoxy, or H;

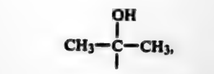
P_1 may be the same as P or different; and

X^- is an anion; and is a radical of an oligomer having the structure:



wherein:

R is selected from the group consisting of



—CH_2Cl and —CH_2Br;

n is an integer from 0 to 3;

M is an aromatic radical selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones;

m is 1 to 6; Y is selected from the group consisting of $—CH_2—$ or $—CH_2—O—CH_2—$bridge; and

T is the same as R when $Y=—CH_2—$ and H— when $Y=—CH_2—O—CH_2—$;

wherein said diazonium compound is prepared by a two-step process consisting essentially of forming a precondensed oligomer component Q and reacting said component Q with radical E^+X^- such that the ratio of M to E^+X^- is at least 2:1; whereby said diazonium compound is capable of being substantially insolubilized when it is coated on a suitable substrate and exposed to a suitable light source at an energy level of 4 mJ/cm^2.

19. A photosensitive composition comprising a light sensitive component wherein said light sensitive component consists essentially of a light sensitive, substantially linear polymeric diazonium reaction compound having repeating units of the condensation product of each of the general types E^+X^- and Q, in which E^+X^- is a radical of the compound of the general formula:



wherein:

—K— is selected from the group consisting of

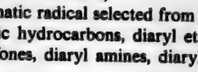
—S—, —O—, and $—CH_2—$, or is absent;

R' is selected from the group consisting of phenyl and C_1 to C_4 alkyl substituted phenyl;

P and P_1 are selected from the group consisting of C_1 to C_4 alkyl, methoxy, ethoxy, butoxy, or H;

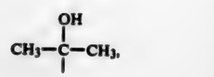
P_1 may be the same as P or different; and

X^- is an anion; and Q is a radical of an oligomer having the structure:



wherein:

R is selected from the group consisting of





—CH_2Cl and —CH_2Br;

n is an integer from 0 to 3;

M is an aromatic radical selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones;

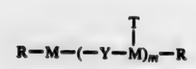
m is 1 to 6;

Y is selected from the group consisting of $—CH_2—$ or $—CH_2—O—CH_2—$bridge; and

T is the same as R when $Y=—CH_2—$ and H— when $Y=—CH_2—O—CH_2—$;

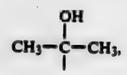
wherein said diazonium compound is prepared by a two-step process consisting essentially of forming a precondensed oligomer component Q and reacting said component Q with radical E^+X^- such that the ratio of M to E^+X^- is at least 2:1; whereby said diazonium compound is capable of being substantially insolubilized when it is coated on a suitable substrate and exposed to a suitable light source at an energy level of 4 mJ/cm^2.

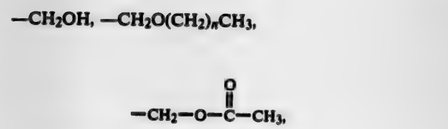
24. A process for the preparation of a light sensitive, substantially linear polymeric diazonium reaction compound consisting essentially of forming a condensed oligomer component Q having the structure



wherein:

R is selected from the group consisting of





—CH_2Cl and —CH_2Br;

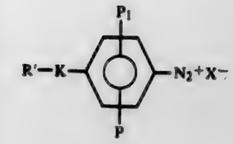
n is an integer from 0 to 3;

M is an aromatic radical selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones;

m is 1 to 6;

Y is selected from the group consisting of $—CH_2—$ or $—CH_2—O—CH_2—$bridge; and

T is the same as R when $Y=—CH_2—$ and H— when $Y=—CH_2—O—CH_2—$; and then reacting said component Q with a component E^+X^- having the structure



wherein:

—K— is selected from the group consisting of



—S—, —O—, and $—CH_2—$, or is absent;

R' is selected from the group consisting of phenyl and C_1 to C_4 alkyl substituted phenyl;

P and P_1 are selected from the group consisting of C_1 to C_4 alkyl, methoxy, ethoxy, butoxy, or H;

P_1 may be the same as P or different; and

X^- is an anion;

such that the ratio of M to E^+X^- is at least 2:1, thereby forming a reaction compound having repeating Q and E^+X^- groups which reaction compound is capable of being substantially insolubilized when it is coated on a suitable substrate and exposed to a suitable light source at an energy level of 4 mJ/cm^2.

4,436,805

SILVER COMPLEX DIFFUSION TRANSFER PROCESS USING TWO TONING AGENTS

Shigeru Iguchi, and Seigo Ebato, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 423,723

Claims priority, application Japan, Oct. 26, 1981, 56-171138

Int. Cl.³ G03C 5/54, 1/10, 1/40

U.S. Cl. 430—248 **8 Claims**

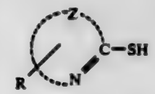
1. A silver complex diffusion transfer process which comprises the steps of:

(1) exposing a silver halide emulsion layer,

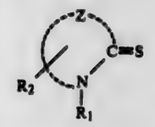
(2) developing the emulsion layer with an alkaline solution in the presence of a silver halide developing agent and a silver halide solvent to form a diffusible silver complex, and then

(3) transferring the diffusible silver complex onto an image receiving layer to form a silver image,

wherein said alkaline solution contains an alkali-soluble iodide and a nitrogen-containing heterocyclic compound represented by the following general formula (I) or (II):



(I)



(II)

in which R represents an alkyl group of at least 4 carbon atoms, an aryl group or a group containing both the alkyl and aryl groups, R_1 and R_2 represent a hydrogen atom or a substituent and at least one of R_1 and R_2 represents an alkyl group of at least 4 carbon atoms, an aryl group or a group containing both the alkyl and aryl

groups, and Z represents a 5- or 6-membered heterocyclic ring

the iodine and the heterocyclic compound present in an amount such that the molar ratio of the iodide in terms of iodine to the heterocyclic compound is in the range of from 1:5 to 5:1.

4,436,806

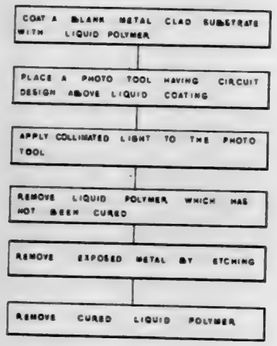
METHOD AND APPARATUS FOR MAKING PRINTED CIRCUIT BOARDS

Francis J. Rendulic, Sudbury; Robert K. Trasavage, Whitinsville, both of Mass., and Paul A. Boduch, Lakewood, Colo., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 225,810, Jan. 16, 1981, abandoned. This application Feb. 22, 1982, Ser. No. 350,777

Int. Cl.³ G03C 5/00

U.S. Cl. 430—311 **38 Claims**



1. A process for making a resist pattern on circuit boards comprising:

(a) providing a circuit board substrate;

(b) coating at least a portion of said substrate with a liquid polymer composition curable to a solid by means of non-coherent collimated light radiation;

(c) projecting a pattern of substantially collimated non-coherent light radiation patterned by patterning means out of contact with said liquid polymer coating;

(d) exposing said coating of liquid polymer composition to said projected pattern of substantially collimated non-coherent light radiation and curing the polymer composition to a solid polymer in said pattern of substantially collimated non-coherent light and maintaining said liquid polymer a substantially uncured liquid polymer outside of said pattern of substantially collimated non-coherent light; and

(e) removing said substantially uncured liquid polymer leaving said solid polymer in said pattern on said circuit board substrate.

4,436,807

DEVELOPER COMPOSITION WITH SODIUM, LITHIUM AND/OR POTASSIUM SALTS FOR DEVELOPING NEGATIVE WORKING IMAGED PHOTOGRAPHIC MATERIAL

John E. Walls, Wiesbaden Biebrich, Fed. Rep. of Germany, assignor to American Hoechst Corporation, Somerville, N.J.

Filed Jul. 15, 1982, Ser. No. 398,509

Int. Cl.³ G03C 5/24, 5/34; G03F 7/00

U.S. Cl. 430—331 **8 Claims**

1. A developing composition capable of removing the unexposed non-image areas of an imagewise exposed negative working photographic element which comprises an aqueous solution having a pH of from about 8 to 12 of

(a) a sodium, potassium or lithium salt of octyl, decyl or dodecyl monosulfate which is present in an amount of from about 0.05% to about 10%, and

(b) a sodium, lithium, potassium or ammonium metasilicate salt which is present in an amount of from about 0.001% to about 5.0%, and

(c) a lithium, potassium, sodium or ammonium borate salt which is present in an amount of from about 0.1% to about 15%, and

(d) one or more compounds selected from the group consisting of oxalic, malonic, succinic, glutaric and adipic acids or a lithium, potassium, sodium or ammonium salt thereof which is present in an amount of from about 0.01% to about 5%, and

(e) di- and/or tri-sodium or -potassium phosphate which is present in an amount of from about 0.5% to about 12%, and

wherein both sodium and potassium compounds must be present in said composition and the ratio of sodium to potassium ranges from about 1:1 to about 1.4:2, and wherein said percentages are by weight of the solid parts of said composition.

4,436,808

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Tsumoru Hirano, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

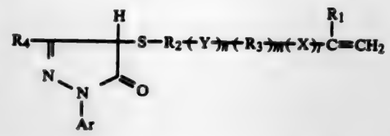
Filed Feb. 25, 1983, Ser. No. 469,660

Claims priority, application Japan, Feb. 25, 1982, 57-29683

Int. Cl.³ G03C 7/16, 5/24

U.S. Cl. 430—381 **19 Claims**

19. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a magenta color image forming polymer coupler latex which is capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent and which is a homopolymer or copolymer having a repeating unit derived from a monomer coupler represented by the following general formula (I):



wherein R_1 represents hydrogen, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; R_2 and R_3, which may be the same or different, each represents an unsubstituted or substituted alkylene group which may be a straight chain or a branched chain, an unsubstituted or substituted arylene group or an unsubstituted or substituted aralkylene group; X represents —CONH— or —COO—; Y represents —O—, —S—, —SO—, —SO_2—, —CONH— or —COO—; Ar represents an unsubstituted or substituted phenyl group; R_4 represents an unsubstituted or substituted anilino group, an unsubstituted or substituted acylamino group or an unsubstituted or substituted ureido group; l represents 0 or 1; m represents 0 or 1; and n represents 0 or 1; wherein said developing is conducted using an alkaline aqueous solution containing an aromatic primary amine developing agent.

4,436,809

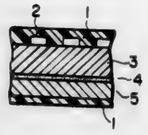
METHOD FOR LIGHT-SHIELDING A ROLL PHOTOGRAPHIC FILM

Mutsuo Akao, and Tadashi Kawata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 141,533, Apr. 18, 1979, abandoned. This application Nov. 6, 1981, Ser. No. 318,894

Int. Cl.³ G03C 3/02; B32B 7/02

U.S. Cl. 430—501 **16 Claims**



1. In a method for light-shielding a roll photographic film comprising overlaying a backing paper on the roll photographic film and winding together said roll photographic film and backing paper, with the backing paper being located exterior to the roll film, the improvement which comprises the backing paper comprising a support; a print layer and at least one aluminum layer provided on the support, said backing paper being 50μ to 150μ in total thickness.

4,436,810

COLOR-PHOTOGRAPHIC RECORDING MATERIAL CONTAINING NON-DIFFUSING ELECTRON DONOR PRECURSOR COMPOUNDS

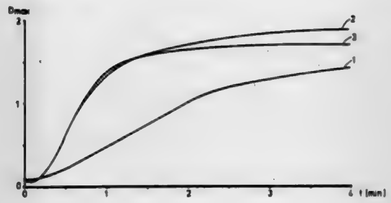
Karl Küffner, Unterhaching; Paul Marx, Leverkusen, and Wolfgang Lässig, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 490,128

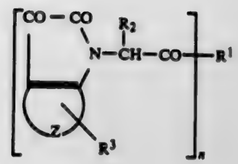
Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217877

Int. Cl.³ G03C 1/10, 1/40, 5/24, 7/26

U.S. Cl. 430—551 **3 Claims**



1. A color-photographic recording material comprising at least one photosensitive silver halide emulsion layer and a non-diffusing color-providing compound associated with this layer, which material contains, in at least one photosensitive silver halide emulsion layer or in a non-photosensitive binder layer, a non-diffusing electron donor precursor compound (ED precursor compound), from which a non-diffusing ED compound is formed under alkaline development conditions, wherein the improvement comprises the ED precursor compound corresponds to the following formula I:



I

wherein

Z represents a radical which completes a condensed aromatic ring system;

R^1 represents an n-valent aliphatic or aromatic radical;

R^2 represents H, alkyl or aryl,

R^3 represents one or more radicals to control the diffusion properties and the activation pH;

and

n represents 1 or 2.

4,436,811

PHOTOGRAPHIC MATERIAL

Mario Fryberg, Praroman-le-Mouret, and Viktor Weiss, Fribourg, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

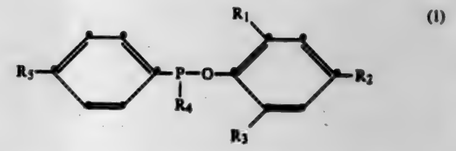
Filed Jun. 22, 1982, Ser. No. 391,091

Claims priority, application Switzerland, Jul. 10, 1981, 4545/81

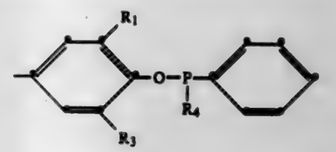
Int. Cl.³ G03C 1/08, 1/10

U.S. Cl. 430—564 **11 Claims**

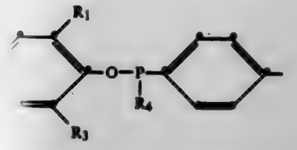
1. A photographic recording material which contains at least one development accelerator in at least one silver halide emulsion layer or in a colloid layer adjacent to this layer, wherein the development accelerator is of the formula



in which R_1, R_2 and R_3 independently of one another are hydrogen, alkyl having 1 to 16 carbon atoms each or substituted or unsubstituted alkoxy having 1 to 18 carbon atoms each and R_2 additionally represents a radical of the formula

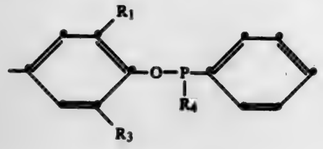


in which R_1 and R_3 have the abovementioned meaning, R_4 is unsubstituted or substituted phenoxy or unsubstituted or substituted amino and R_5 is a radical of the formula



in whic nd R_4 have the abovementioned meanings

and R_2' has the same meanings as R_1 and R_3 or R_5 represents hydrogen when R_2 is a radical of the formula



4,436,812

PROCESS OF CALIBRATING A BLOOD SUGAR ANALYZING APPARATUS

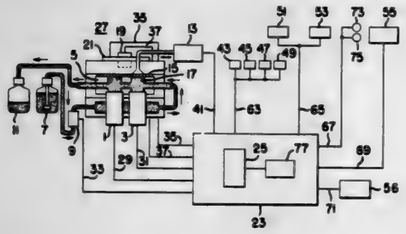
Koichi Endoh, Tokyo; Nobuhiko Tsuji; Keijiroh Nakamura, both of Yokosuka; Toshiyoshi Hamada, and Keiichi Ishida, both of Tokyo, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 21, 1981, Ser. No. 313,665

Claims priority, application Japan, Oct. 29, 1980, 55-150753; Oct. 29, 1980, 55-150754; Oct. 29, 1980, 55-150755; Nov. 21, 1980, 55-163333; Dec. 9, 1980, 55-172664

Int. Cl.³ G01N *33/66, 35/00*

U.S. Cl. 435—14 **8 Claims**



1. A process of calibrating a blood sugar analyzing apparatus and measuring the blood sugar concentration in a blood specimen, wherein, the blood sugar concentration in the blood specimen is measured with a fixed enzyme membrane sensor and corrected by calibration means, said blood sugar analyzing apparatus providing a linear relationship between measured and actual blood sugar concentrations in a first range of blood sugar concentrations which are lower than a predetermined blood sugar concentration, and producing a deviation from said linear relationship in a second range of blood sugar concentrations higher than said predetermined blood sugar concentration, said process comprising the steps of:

measuring at least one standard solution having a known blood sugar concentration in said first range and storing the result of said measurement in storage means in said blood sugar analyzing apparatus,

calculating a first correction coefficient in dependence on the stored measured value and the known blood sugar concentration from the reference blood sugar concentration in said first range, and storing said first correction coefficient in storage means,

measuring at least one standard solution having a known concentration in said second range and storing the result of said measurement in storage means in said blood sugar analyzing apparatus,

calculating a second correction coefficent in dependence on the stored measured value and the known blood sugar concentration in said second range and storing said second correction coefficient in storage means, and

measuring a blood specimen and calculating the result of the measurement by using said first correction coefficient when said result of the measurement is less than said predetermined blood sugar concentration and by using said second correction coefficient when the result of the measurement exceeds said predetermined blood sugar concentration to thereby obtain a more accurate value of the blood sugar concentration in the blood specimen over the entire range of blood sugar concentration values than by using only one correction coefficient over the entire range of blood sugar concentration values.

4,436,813

IMMOBILIZED MICROBIAL CELL COMPOSITION FOR MAKING L-ASPARTIC ACID

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Purification Engineering, Inc., Columbia, Md.

Filed Mar. 16, 1982, Ser. No. 358,784

Int. Cl.³ C12P *13/20*; C12N *11/12, 11/08, 11/04*

U.S. Cl. 435—109 **11 Claims**

4. A composition comprising immobilized *E. coli* cells having L-aspartase activity, the cells being immobilized by means of an insoluble, crosslinked polymer obtained by curing a curable polyazetidine prepolymer, said prepolymer being cured at a temperature below the temperature at which the L-aspartase activity of the microbial cells is significantly reduced, the cell/crosslinked polymer composition constituting a coating on a solid inert carrier.

4,436,814

METHOD FOR THE RECOVERY OF ENZYMES AFTER THE TREATMENT OF STARCH-CONTAINING RAW MATERIALS USED FOR THE PRODUCTION OF FERMENTATION ALCOHOL

Hans Müller, Erlenbach; Hans-Peter Knöpfel; Felix Müller, both of Stäfa, all of Switzerland, and Rolf H. Kretz, Singen, Fed. Rep. of Germany, assignors to PEC Process Engineering Company, Männedorf, Switzerland

Filed Nov. 30, 1981, Ser. No. 325,819

Claims priority, application Switzerland, Dec. 2, 1980, 8893/80

Int. Cl.³ C12P *19/20, 19/14, 7/14*; C12N *9/28*

U.S. Cl. 435—162 **4 Claims**

1. In the method of treating starch-containing raw materials for the production of fermentation alcohol, by, in order, the steps of enzymatically degrading said starch-containing raw materials, separating solids from said raw materials, thereby, providing a liquid phase and a first solids phase in the form of a filter cake, subjecting said liquid phase to a fermentation for the production of ethanol, suspending said solids phase in water, separating solids from said solids phase suspended in water, thereby providing an enzyme-containing wash water phase and a second solids phase, and collecting said second solids phase for further working-up, the improvement comprising leading said enzyme-containing wash water back into said step of enzymatically degrading.

4,436,815

METHOD FOR STABILIZING AND SELECTING RECOMBINANT DNA CONTAINING HOST CELLS

Charles L. Hershberger, New Palestine, and Paul R. Rosteck, Jr., Beech Grove, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 27, 1981, Ser. No. 325,511

Int. Cl.³ C12N *15/00, 1/20, 1/00*; C12P *21/00, 21/02*; C07H *21/04*

U.S. Cl. 435—172 **27 Claims**

1. In the method for stabilizing and selecting host cells containing recombinant DNA in which host cells are transformed with a recombinant DNA cloning vector which contains both the ~2.5 kb BglII cI represor-containing restriction fragment of bacteriophage λ and a gene which expresses a functional polypeptide, and in which the transformed host cells are lysogenized with a lysogenic organism containing a marker which is lethal or conditionally lethal in the host cells but which is repressed in the transformed host cell by the repressor gene contained in the recombinant DNA cloning vector, an improvement wherein the improvement comprises:

transforming the host cells with a recombinant DNA cloning vector comprising

(a) the PstI-HincII cI repressor-containing restriction fragment of bacteriophage λ; and

(b) a gene which expresses a functional polypeptide;

subject to the limitation that the host cells are *E. coli*, the lysogenic organism is bacteriophage λ and the recombinant DNA cloning vector contains a replicon and a promoter which are not sensitive to the repressor, and subject to the further limitation, that when the transformed host cells are lysogenized with a lysogenic organism containing a gene which is conditionally lethal, the resulting host cells are cultured under restrictive conditions.

4,436,816

CELL GROWTH PROMOTING MATERIAL

Stephen K. Dinka, Washington Crossing, Pa., assignor to Pitman-Moore, Inc., Washington Crossing, N.J.

Filed Jan. 22, 1982, Ser. No. 342,026

Int. Cl.³ C12N *5/00, 1/38*; A61K *35/14*

U.S. Cl. 435—240 **7 Claims**

1. A process for preparing growth promoting material, whose effectiveness can be demonstrated by in vitro cell culture experiments, which comprises:

(a) slowly contacting serum or plasma with sufficient chilled perchloric acid to reach a 0.1 to 0.25 final molar concentration of said perchloric acid in said serum or plasma,

(b) at a temperature of −1° C. to 15° C.,

(c) under intensive mixing which is continued until a homogeneous suspension is obtained,

(d) separating the resultant precipitate, which contains the growth-promoting substances, from the supernatant,

(e) eluting said growth-promoting substances from said precipitate by first resuspending said precipitate in an aqueous alkaline or salt solution, and thereafter,

(f) adjusting the pH to solubilize the growth-promoting substances from the insoluble proteins,

(g) separating the supernatant, which contains the growth-promoting substances, from the insoluble, undesired precipitate,

(h) exchanging the solvent in the supernatant for a physiological solution, and

(i) sterilizing the resultant growth-promoting material.

4,436,817

METHOD AND APPARATUS FOR AEROBIC DECOMPOSITION OR DRYING OF ORGANIC WASTE MATERIAL

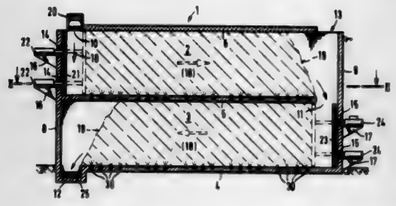
Herbert Nemetz, Bleichstrasse 10, 6369 Schoeneck Hess 1, Fed. Rep. of Germany

Division of Ser. No. 181,953, Aug. 27, 1980, Pat. No. 4,384,877. This application Sep. 16, 1982, Ser. No. 419,010

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1979, 2937390; Nov. 30, 1979, 2948176

Int. Cl.³ C12M *1/04*

U.S. Cl. 435—313 **22 Claims**



1. A composting bin apparatus for aerobic decomposition and drying of organic waste materials comprising: at least one elongated composting passageway chamber comprising in sequence an intake zone, shaping zone, reaction zone, and discharge or transfer zone; said intake zone comprising an opening at the top of the chamber; means for intermittently feeding substantially equal portions or charges of material into the intake zone through said opening; said shaping zone adjoining the intake zone and comprising an ante-chamber closed on the sides for shaping a portion of material received from the intake zone; clearing element means mounted at the intake zone end of the chamber, said clearing element constructed and arranged for reciprocating extension and retraction for pushing and sliding a portion or charge of material received at the intake zone into the shaping zone and for stepwise pushing and compacting successive portions against each other and through the reaction zone; means for extending and retracting said clearing element over a stroke the dimension of said intake zone; said reaction zone comprising an elongate passageway adjoining the shaping zone; means for aerating the material in separate sections spaced along the reaction zone; said discharge or transfer zone adjoining the reaction zone and comprising opening means at the bottom of the chamber for intermittently discharging or transferring portions from the chamber as the portions pass through the reaction zone.

4,436,818

APPARATUS FOR CARRYING OUT AN ANAEROBIC FERMENTATION OF ORGANIC SOLID MATTER FOR THE PURPOSE OF EXTRACTING A COMBUSTIBLE GAS

Peter Widmer, Ruchweid 202, 8911 Oberlunkhofen, Switzerland

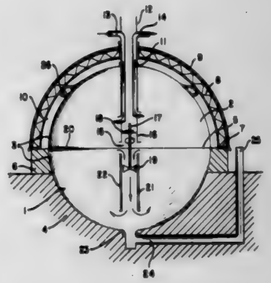
PCT No. PCT/CH81/00077, § 371 Date Mar. 10, 1982, § 102(e) Date Mar. 10, 1982, PCT Pub. No. WO82/00299, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 10, 1981, Ser. No. 359,671

Claims priority, application Switzerland, Jul. 11, 1980, 5316/80

Int. Cl.³ C12M *1/02*

U.S. Cl. 435—316 **5 Claims**



1. Apparatus for anaerobic fermentation of organic slurry for the purpose of obtaining a combustible gas therefrom, characterized by:

A. means defining a fermentation chamber having a top edge extending therearound that lies in a substantially horizontal plane and having a bottom surface which converges downwardly from said top edge to a central portion of said bottom surface;

B. rigid supporting structure projecting above said plane;

C. A cover of supple gas tight material extending across the fermentation chamber beneath said supporting structure to define a foldingly contractable and inflatably expandable gas chamber that is above said plane and in open communication with said fermentation chamber, said cover

(1) having an edge portion that is sealed to said top edge of the fermentation chamber all around the same and

(2) having a central portion which is fixedly supportingly

connected to said supporting structure at a level substantially above said plane;

D. weighting means attached to said cover at locations spaced from said central portion thereof and from said edge portion thereof, for gravity loading the cover so that it tends to contract and maintain gas in said gas chamber under pressure;

E. an upright stack duct supported near an upper end thereof by said supporting structure and extending downwardly through said central portion of the cover, in sealed relation thereto, to near said central portion of the bottom surface, said stack duct

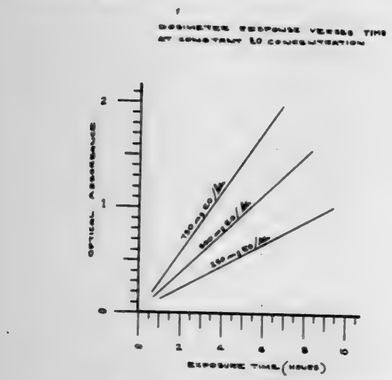
(1) having apertures therein at substantially the level of said plane and

(2) comprising means for charging slurry into said fermentation chamber and for withdrawing gas from said gas chamber;

F. a screw pump in said stack duct, below said apertures therein, for pumping slurry between said apertures and the bottom end of the stack duct and thereby agitating slurry in the fermentation chamber; and

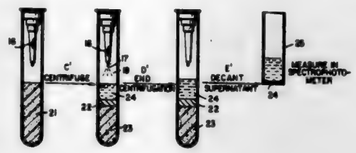
G. means cooperating with the portion of said stack duct that is below said plane to provide a fluid chamber through which heated fluid is circulated for heating the contents of said fermentation chamber.

4,436,819
ETHYLENE OXIDE PROCESS DOSIMETER
Charles R. Manning, Los Altos, Calif., assignor to Assay Tec Associates, Inc., Los Altos, Calif.
Filed Mar. 3, 1982, Ser. No. 354,496
Int. Cl.³ G01N *21/78*
U.S. Cl. 436—1 13 Claims



1. A device for colorimetrically quantifying exposure to ethylene oxide which comprises a polymer substrate which exhibits Case II-transport for ethylene oxide through the body of which is dispersed a concentration of a color-forming compound which undergoes a color-change upon reaction with ethylene oxide, said concentration being chosen to provide a variable degree of color-change in said device which, at a uniform temperature, is a previously determined function of the device's quantity of exposure to ethylene oxide.

4,436,820
METHOD AND APPARATUS FOR GLYCOSYLATED HEMOGLOBIN SEPARATING AND MEASURING FRACTIONS
Paul C. Reiter, 20 Celia St., Port Jefferson Station, N.Y. 11776
Filed Feb. 1, 1982, Ser. No. 344,404
Int. Cl.³ G01N *33/72*
U.S. Cl. 436—67 37 Claims



16. A method for separating glycosylated hemoglobin from a sample of whole blood fluid comprising:

a. providing a quantity of a cation exchange resin to a container;

b. providing a quantity of a blood cell lysing composition to said container;

c. providing a quantity of blood sample to said container;

d. agitating said container for a period of time;

e. providing said container with a quantity of a viscous polymeric material during agitation; and

f. providing a settling period for said container; whereby during agitation the blood cells of said sample are lysed by the blood cell lysing composition, glycosylated hemoglobin is released from said lysed blood cells and goes into suspension in the blood sample fluid, the remaining hemoglobin from said lysed blood cells binds with the cation exchange resin suspended in the blood sample fluid and settles to the bottom of said container with the other blood cell fragments during the settling period, and the glycosylated hemoglobin remains separately in suspension in the blood sample fluid, said viscous polymeric material providing a permanent barrier between settled solids and the glycosylated hemoglobin in the blood sample fluid.

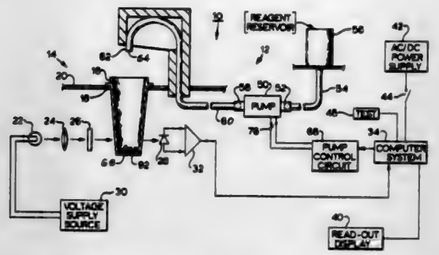
4,436,821
SIMULATED HUMAN PLATELETS FROM RED BLOOD CELLS
Wayne L. Ryan, Omaha, Nebr., assignor to Streck Laboratories, Inc., Omaha, Nebr.
Filed Apr. 12, 1982, Ser. No. 367,597
Int. Cl.³ G01N *33/48*; C09K *3/00*
U.S. Cl. 436—10 16 Claims

1. A lysable, blood platelet reference control comprising a suspension of a mixture of permanently shrunken animal red blood cells in a suspension medium non-deleterious to said cells, said cells having been partially fixed with a fixing agent to reduce cell membrane elasticity prior to being shrunken, and said mixture of permanently shrunken lysable cells in said suspension medium simulating in number, size and volume distribution the platelets present in human whole blood.

4,436,822
REAGENT MIXING SYSTEM AND METHOD
Ali H. Eselfan, San Francisco, Calif., assignor to Sherwood Medical Company, St. Louis, Mo.
Filed Sep. 22, 1981, Ser. No. 304,453
Int. Cl.³ G01N *31/00, 1/14, 21/24*
U.S. Cl. 436—164 16 Claims

1. A method of introducing and mixing a predetermined amount of a liquid reagent with a predetermined amount of a sample in a process of analyzing a characteristic of the sample comprising the steps of successively introducing through nozzle means a plurality of discrete jets of a liquid reagent into a container holding a sample while the nozzle means is spaced

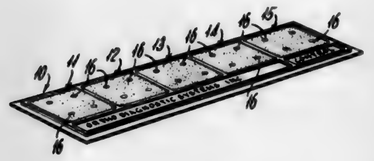
from the container and with sufficient force to effect turbulent mixing of the reagent and specimen with each jet, predeterminately time spacing the jets so that the turbulent mixing caused by one jet is reduced in magnitude before the next jet is introduced, the plurality of the jets providing said predetermined amount of the liquid reagent, and after the last jet has been introduced into the container detecting a characteristic of the container contents.



4,436,823
SILICA GELS INCORPORATING INSOLUBILIZED REAGENTS
Alfred Blümcke; Peter Fischer, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Fed. Rep. of Germany
Division of Ser. No. 54,518, Jul. 3, 1979, Pat. No. 4,301,027.
This application May 26, 1981, Ser. No. 267,162
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 2829091
The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.
Int. Cl.³ C09K *3/00*; G01N *31/22, 21/06*
U.S. Cl. 436—169 12 Claims

1. A composition consisting essentially of a dried silica gel containing in insolubilized form a normally soluble reagent which retains it reactivity, said reagent being uniformly absorbed in and throughout said silica gel, said reagent being insoluble to solvents in which it is normally soluble.

4,436,824
LEUKOCYTE MIGRATION THROUGH ANTIGEN CONTAINING AGAROSES FOR IMMUNOCOMPETENCE TESTING
David C. Bishop, Sergeantsville, N.J., assignor to Ortho Diagnostic Systems, Inc., Raritan, N.J.
Filed Jun. 9, 1981, Ser. No. 271,864
Int. Cl.³ G01N *33/48, 33/50, 33/54*
U.S. Cl. 436—514 8 Claims



1. A method for determining the level of cellular immunocompetence in a patient which comprises the steps of:

(a) obtaining a sample of leukocytes from said patient;

(b) placing a leukocyte sample, with substantially no prior incubation with antigen, in at least one well of each of a plurality of antigen-containing agarose sheets and one control agarose sheet;

(c) incubating the sheets;

(d) determining the amount of leukocyte migration from each well; and

(e) determining the level of cellular immunocompetence of the patient based upon the amount of leukocyte migration in step (d),

wherein each of the plurality of antigen-containing agarose test sheets contains an effective diagnostic concentration of an individual recall antigen and the control agarose sheet contains no antigen.

4,436,825
PROCESS AND REAGENTS FOR ANTIBODY DETECTION INVOLVING ERYTHROCYTE AGGLUTINATION
Parviz Lalezari, Scarsdale, N.Y., assignor to Montefiore Hospital and Medical Center, Inc., Bronx, N.Y.
Continuation of Ser. No. 144,447, Apr. 28, 1980, abandoned.
This application May 21, 1982, Ser. No. 380,939
Int. Cl.³ G01N *33/54*
U.S. Cl. 436—520 40 Claims

1. A process for the detection of antibodies in a test sample comprising:

(a) preparing an essentially isotonic and low ionic strength suspension comprising said sample, a sensitization effective amount of ethylenediamine tetra-acetate, and erythrocytes in net negatively-charged form;

(b) maintaining said suspension for at least 30 seconds;

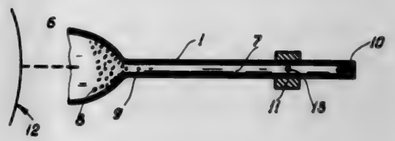
(c) combining said suspension with an amount of a solution of polymer effective for agglutination of said erythrocytes;

(d) separating the resultant agglutinates of polymer and erythrocytes from supernatant of said suspension;

(d) dispersing said agglutinates without bound antibody in a hypertonic salt solution having an essentially neutral pH; and

(f) monitoring the resuspended agglutinates for the presence or absence of antibody.

4,436,826
TAGGED IMMUNOASSAY
Chia-Gee Wang, Millwood, N.Y., assignor to Wang Associates, Millwood, N.Y.
Filed Oct. 21, 1981, Ser. No. 313,711
Int. Cl.³ G01N *33/54, 33/56*
U.S. Cl. 436—525 46 Claims



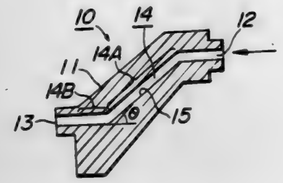
1. An immunoassay method for measurement of the content of a target antigen or antibody in a fluid or tissue specimen, which comprises reacting the target with reagent antibody or antigen which forms a complex with the target and is tagged with tagging elements or compounds which are unassociated chemically with said reagent and are protected against reaction with the target and the biological and chemical environment of the assay, and detecting the formed, tagged complexes.

4,436,827

DETECTING PARTICLE AGGLUTINATION WITH VESSEL HAVING INCLINED, STEPPED BOTTOM SURFACE

Akira Tamagawa, Hino, Japan, assignor to Olympus Optical Co. Ltd., Japan

Filed Jul. 26, 1982, Ser. No. 401,565
Claims priority, application Japan, Jul. 30, 1981, 56-118504
Int. Cl.³ G01N *33/54, 33/80, 21/05, 31/02*
U.S. Cl. 436—534 **12 Claims**



1. A method for detecting a particle agglutination reaction with the aid of a flow cell type reaction vessel comprising:

supplying a test liquid containing particles into a reaction vessel which comprises a tubular body having an inlet, an outlet arranged below said inlet and a passage communicating between said inlet and said outlet, said tubular body being inclined to define an inclined bottom surface by an inner wall of said passage, said bottom surface having a plurality of steps formed therein for forming a stable base layer of particles descending thereon;

keeping the test liquid stationary in the reaction vessel for a predetermined time; and

detecting a particle agglutination pattern formed by agglutinated particles settled on the inclined bottom surface.

4,436,828

REACTIVE ASYMMETRICAL DICARBOXYLIC ACID ESTERS AND REAGENTS FOR THE INVESTIGATION OF CARDIAC GLYCOSIDES

Hans-Georg Batz, Tutzing; Hans-Ralf Linke, Wielenbach; Klaus Steilner, Bernried, and Günter Weimann, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Division of Ser. No. 883,981, Mar. 6, 1978, Pat. No. 4,282,151, which is a division of Ser. No. 715,020, Aug. 16, 1976, Pat. No. 4,133,949. This application Oct. 27, 1980, Ser. No. 200,838
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2537129
Int. Cl.³ A61K *43/00*; G01N *33/56*; C07G *7/00*
U.S. Cl. 436—545 **9 Claims**

1. Process for the preparation of reagents for the investigation of cardiac glycosides (Digitalis glycosides) in aqueous or physiological solution, comprising reacting dicarboxylic acid ester compounds of the formula



wherein

R_1 is alkyl of up to 3 carbon atoms, or is a digoxin or digitoxin residue

R_2 and R_3 are individually selected from alkoxy of up to 3 carbon atoms or together represent an oxygen atom,

X is cyanomethoxy, succinimido-N-oxy, N-methyl-pyridiniumoxy, 2,4-dinitrophenoxy, 2,4,5-trichlorophenoxy, pentachlorophenoxy, phenylthio, p-nitrophenoxy, p-nitrophenylthio, piperidyl-N-oxy, and

n is 2, 3, 4, or 5

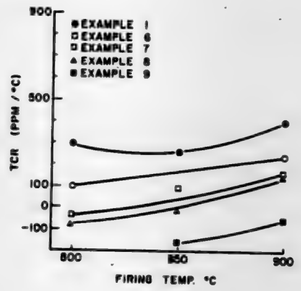
with a protein, or an iodizable amino acid selected from the group consisting of tyramine, histidine, tyrosine or tyrosine ethyl ester, or a peptide containing tyrosine.

4,436,829

GLASS FRITS CONTAINING WO_3 OR MOO_3 IN RUO_2-BASED RESISTORS

Robert G. Howell, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,574
Int. Cl.³ C03C *3/08, 3/10, 3/30*
U.S. Cl. 501—22 **2 Claims**



1. Glass frit compositions for use in thick film, RuO_2-based resistor inks suitable for application to alumina substrates exhibiting coefficients of thermal expansion approximating that of the alumina substrate material and temperature coefficient of resistance values of less than 100 ppm which consist essentially, expressed in terms of mole percent on the oxide basis, of about 32–39% PbO, 44–47% B_2O_3, 14–17% SiO_2, and an effective amount of WO_3 or MoO_3 up to 5%.

4,436,830

COATING FOR METAL-CUTTING TOOLS

Anatoly A. Andreev, Danilevskogo, ulitsa 31, kv. 47; Igor V. Gavrilko, Traktorostroitelei, ulitsa 65, kv. 71, both of Kharkov; Alexei G. Gavrilov, Vostochnaya, ulitsa 11, kv. 6, Domodedovo Moskovskaya oblast; Anatoly S. Vereschaka, Kastanaevskaya, ulitsa 42, korpus 1, kv. 57; Viktor P. Zhed, Uchebny pereulok, 2, kv. 57, both of Moscow; Valentin G. Padalka, Danilevskogo, ulitsa 10, kv. 122, Kharkov, and Andrei K. Sinelschikov, Pervomaiskaya, ulitsa 20, kv. 32, Moscow, all of U.S.S.R.

PCT No. PCT/SU81/00025, § 371 Date Oct. 28, 1982, § 102(e) Date Oct. 28, 1982, PCT Pub. No. WO82/03036, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 2, 1981, Ser. No. 438,961
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—96 **1 Claim**

1. A coating for a metal-cutting tool consisting of titanium nitride, characterized in that it additionally contains either chromium nitride in an amount of from 10 to 30% by weight, or aluminium nitride in an amount of from 3 to 18% by weight, molybdenum nitride in an amount of from 2 to 8% by weight, chromium nitride in an amount of from 2 to 10% by weight and silicon nitride in an amount of from 0.5 to 10% by weight, all being taken in combination and uniformly distributed within the volume of the coating.

4,436,831

CALCINED MEMBER FOR ARC-EXTINGUISHING CHAMBERS

Shizutaka Nishizako, Tajimi; Isao Ishii, Amagasaki, and Yoshiaki Sakamoto, Suita, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1982, Ser. No. 398,695
Claims priority, application Japan, Jul. 15, 1981, 56-110381
Int. Cl.³ C04B *35/04, 35/18*
U.S. Cl. 501—119 **10 Claims**



1. A calcined member for arc-extinguishing chambers, which consists of an inorganic composite insulation material obtained by molding and heat-treating a starting material under pressurized condition, said starting material consisting essentially of 10 to 50% by weight of a mica powder as a base material, 10 to 50% by weight of a magnesium oxide as a charging material, and 25 to 60% by weight of a binder of boric acid, boric anhydride and zinc oxide, the boric acid being present in an amount of 20 to 60 parts by weight based on 100 total parts by weight of binder.

4,436,832

PROCESS FOR THE PREPARATION OF BRIDGED CLAYS, CLAYS PREPARED BY SAID PROCESS, AND USES FOR SAID CLAYS

Pierre Jacobs, 6, Populieren Straat, 1686 Golk; Georges Poncelet, 15, rue de Wavre, 5998 Beauvechain, and Alain Schutz, 4, rue Godincourt, 6778 Musson, all of Belgium

Filed Aug. 26, 1982, Ser. No. 411,769
Claims priority, application France, Aug. 27, 1981, 81 16387
Int. Cl.³ B01J *29/02, 37/06*
U.S. Cl. 502—84 **46 Claims**

1. A process for the preparation of bridged clays, comprising subjecting a mixture of an aqueous solution of at least one metal hydroxide and an aqueous clay suspension to dialysis.

3. A process according to claim 1, wherein said hydroxide is selected from the group formed by the hydroxides of the elements of groups IIB, IIIB, IVB, VB, VIB, VIIB, VIIIB, IA, IIA, IIIA, IVA, VA and VIA of the periodic table of the elements.

4,436,833

PREPARATION OF METHANOL SYNTHESIS CATALYST COMPRISING ZINC, COPPER AND ALUMINUM

Franz J. Broecker, Ludwigshafen; Karl-Heinz Gruendler, Limburgerhof; Laszlo Marosi, Ludwigshafen; Matthias Schwarzmann, Limburgerhof; Bruno Triebskorn, and Guenter Zirker, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 253,662, Apr. 14, 1981, abandoned, which is a division of Ser. No. 82,526, Oct. 9, 1979, abandoned. This application Mar. 25, 1983, Ser. No. 478,995
Int. Cl.³ B01J *27/20, 23/80*; L01B *31/24*; L07C *29/16*
U.S. Cl. 502—176 **8 Claims**

1. A process for the preparation of a catalyst, for methanol synthesis, from a mixed crystalline material of the formula

$Cu_{2.2}Zn_{2.8}(OH)_6(CO_3)_2$

which contains aluminum hydroxide as a structural promoter, wherein the improvement comprises co-precipitating copper, zinc and aluminum nitrates or acetates with sodium bicarbonate.

3. The process of claim 1, wherein said catalyst is comminuted.

5. The process of claim 1, wherein said mixed crystalline material of the formula

$Cu_{2.2}Zn_{2.8}(OH)_6(CO_3)_2$

has an X-ray diffraction diagram characterized by at least the following d values of the diffraction lines: 6.75; 3.70; 3.21; 2.90; 2.75; 2.64; 2.15; 1.94; and 1.61.

4,436,834

IRON-THALLIUM CATALYSTS FOR USE IN CO HYDROGENATION AND PROCESS OF PREPARING THE CATALYSTS

Franklin J. Wright, Watchung, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 298,991, Sep. 3, 1981, abandoned, which is a continuation-in-part of Ser. No. 275,451, Jun. 19, 1981, abandoned, which is a continuation of Ser. No. 186,909, Sep. 15, 1980, abandoned. This application Sep. 15, 1982, Ser. No. 418,380
Int. Cl.³ B01J *23/80, 23/82*
U.S. Cl. 502—201 **16 Claims**

1. A catalyst composition consisting essentially of a mixture of an iron compound and a thaillum compound, being supported or unsupported, said compound of iron and thallium being selected from the group consisting of an oxide, hydroxide, carbonate, sulfate, carbide, halide, nitrate, or mixtures thereof, wherein the weight ratio of iron-thallium, taken as the free metals, is from about 100:1 to 1:100, and wherein said iron compound contains iron value substantially in the trivalent state, and wherein said thallium compound is substantially deposited on the surface of said iron compound.

4,436,835

PROCESS FOR PREPARATION OF CATALYSTS

Shigeru Horie, Gouzu; Yasuo Yamamoto, Niigata, and Takeo Ikarashi, Niitsu, all of Japan, assignors to Mitsubishi Gas Chemical Company Inc., Tokyo, Japan

Filed Mar. 22, 1983, Ser. No. 477,755
Claims priority, application Japan, Mar. 24, 1982, 57-46497
Int. Cl.³ B01J *27/14*
U.S. Cl. 502—208 **7 Claims**

1. A process for the preparation of a catalyst for the synthesis of methyl formate by dehydrogenating methanol in the gaseous phase, said process being characterized in that (A) at least one phosphate selected from the group consisting of copper phosphates, zinc phosphates and aluminum phosphates, and (B) at least one chloride selected from the group consisting of copper chlorides, zinc chloride, aluminum chloride, alkali metal chlorides and alkaline earth metal chlorides and/or (C) at least one compound selected from the group consisting of alkali metal compounds (exclusive of halides) and alkaline earth metal compounds (exclusive of halides) are added to copper oxide, zinc oxide and aluminum oxide.

4,436,836

CATALYST FOR THE HYDRODEALKYLATION OF ALKYLAROMATIC COMPOUNDS

Francis P. Daly, Haddonfield, N.J., and Frederick C. Wilhelm, West Chester, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 6, 1982, Ser. No. 395,192
Int. Cl.³ B01J *21/04, 23/04, 23/26*
U.S. Cl. 502—317 **7 Claims**

1. A catalyst comprising a gamma-alumina support impreg-

nated with about 8 to 12 wt% chromia and about 0.3 to 0.6 wt% sodium oxide, the catalyst having a surface area from 175 to 275 m^2/g and a pore volume from 0.5 to 1.2 cc/g.

4,436,837

PREPARATION OF ALKANOLS FROM SYNTHESIS GAS

Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 29, 1982, Ser. No. 428,491
Int. Cl.³ C07C 27/06
U.S. Cl. 518—700 18 Claims

1. A process for making alkanols which comprises reacting a mixture of CO and H_2 at a pressure of about 500 psig or greater and at a temperature of at least 150° C. in the presence of a catalyst system comprising a ruthenium-containing compound, a samarium-containing compound and a quaternary phosphonium salt, in the presence of an inert, oxygenated solvent.

4,436,838

PROCESS FOR PREPARING ALKANOLS AND ESTERS FROM SYNTHESIS GAS

Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,334
Int. Cl.³ C07C 27/06, 29/15
U.S. Cl. 518—700 24 Claims

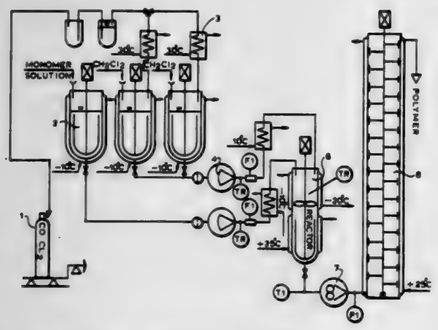
1. A process for making alkanols and esters which comprises reacting a mixture of CO and H_2 at a pressure of about 500 psig or greater and at a temperature of at least 150° C. in the presence of a catalyst system comprising one or more ruthenium-containing compounds, a second metal catalyst selected from groups IVB, VB or VIB, consisting of a zirconium, titanium, vanadium or chromium-containing compound, and a quaternary phosphonium salt, in the presence of an inert, oxygenated solvent.

4,436,839

PROCESS FOR PREPARING POLYCARBONATE-POLYETHER-BLOCKCOPOLYMERS

Joachim Behnke, Amorbach, and Walter Löffelmann, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Aug. 11, 1980, Ser. No. 177,463
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1979, 2932737
Int. Cl.³ C08G 18/44, 63/68; C08J 9/28
U.S. Cl. 521—64 20 Claims



1. A method for production of polycarbonate-polyether-copolymers comprising

providing a cooled initial reaction medium in a cooled reaction chamber;

adding to the reaction medium one or more cooled solutions of bisphenol A and polyalkyleneglycol; and

adding to the reaction medium a cooled solution of phosgene in excess of less than about 10 weight-% of the stoichiometrically required weight amount relative to bisphenol A and polyalkyleneglycol in such way that the phosgene contacts substantially the reaction partners from the one or more cooled solutions after they have spread in the reaction medium,

said step of adding being performed in such manner that the one or more cooled solutions are added through a tube ending above the liquid level of the reaction mixture, and the cooled solution of phosgene is added through a tube ending above the liquid level of the reaction medium so that the solutions added contact only within the stirred reaction mixture the reaction partner;

and isolating the copolymer from the reaction mixture.

4,436,840

PROCESS FOR PRODUCING PRE-FOAMED PARTICLES OF POLYOLEFIN RESIN

Hiroyuki Akiyama, Hiratsuka; Sumio Shimada, Kazuma; Kuninori Hirosawa, Isehara, and Hideki Kuwabara, Hatano, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,874
Claims priority, application Japan, Sep. 28, 1981, 56-153230
Int. Cl.³ C08J 9/22; B29D 27/00
U.S. Cl. 521—58 2 Claims

1. In a process for producing pre-foamed particles of a polyolefin resin which comprises impregnating a volatile blowing agent into particles of a polyolefin resin while dispersing the resin particles and the blowing agent in a liquid dispersing medium which does not dissolve the resin particles under heat in a closed vessel, opening one end of the vessel and releasing the resin particles and the dispersing medium simultaneously into an atmosphere kept at a lower pressure than the inside pressure of the vessel; the improvement wherein the pressure of the inside of the vessel after opening its one end is maintained at a substantially constant pressure which is at least 0.7 times the vapor pressure of the blowing agent before opening the end of the vessel.

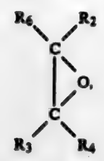
4,436,841

SINGLE-PHASE, STORAGE-STABLE POLYOL COMPOSITIONS CONTAINING SALTS AND THE USE THEREOF IN THE PRODUCTION OF POLYURETHANES

Werner Rasshofer, Cologne; Wolfgang Reichmann, Hilden; Adolf Richartz, Cologne, and Manfred Dietrich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 24, 1983, Ser. No. 497,640
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219822
Int. Cl.³ C09K 3/00; C08G 18/14, 18/65
U.S. Cl. 521—106 15 Claims

1. A single-phase, storage-stable, emulsifier-free polyol mixture comprising 100 parts of a relatively high molecular weight polyoxyalkylene polyol of OH number from 20 to 120, which has at least 5% and less than 80%, by weight, of terminal oxyethylene blocks; from 1 to 100 parts of a low molecular weight diol mixture which is a reaction product of ethylene glycol, butane diol-1,4, or a mixture of ethylene glycol and butane diol-1,4 with from 0.05 to 0.50 mols/mol of ethylene glycol, butane diol-1,4 of a mixture of these compounds of alkyl oxiranes corresponding to the formula:



wherein

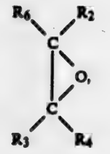
R_1 represents CH_3, CH_2Cl or C_2H_5;

R_2 represents H or CH_3; and

R_3 and R_4 represent H, CH_3 or C_2H_5;

and from 0.01 to 5 parts of solubilizing additives comprising one or more salts, the cations of which are from Groups I, II and III of the Periodic Table, ammonium or mono- to tetra-alkyl ammonium ions, and the anions of which are produced by removing at least one proton from an acid having a pK_a value of at least 10^{-7}.

12. A process for the production of polyurethanes comprising reacting isocyanates with a single-phase; storage-stable, emulsifier-free polyol mixture comprising 100 parts of a relatively high molecular weight polyoxyalkylene polyol of OH number from 20 to 120, which has at least 5% and less than 80%, by weight, of terminal oxyethylene blocks; from 1 to 100 parts of a low molecular weight diol mixture which is a reaction product of ethylene glycol, butane diol-1,4 or a mixture of ethylene glycol and butane diol-1,4, with from 0.05 to 0.50 mols/mol of ethylene glycol, butane diol-1,4 or a mixture of these compounds of alkyl oxiranes corresponding to the formula:



wherein

R_1 represents CH_3, CH_2Cl or C_2H_5;

R_2 represents H or CH_3; and

R_3 and R_4 represent H, CH_3 or C_2H_5;

and from 0.01 to 5 parts of solubilizing additives comprising one or more salts, the cations of which are from Groups I, II and III of the Periodic Table, ammonia or mono- to tetra-alkyl ammonium ions, and the anions of which are produced by removing at least one proton from an acid having a K_a value of at least 10^{-7}.

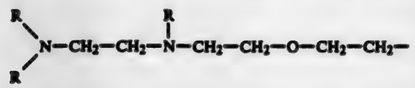
4,436,842

ALKYL POLYAMINE ETHERS AS CATALYSTS FOR ISOCYANATE REACTIONS

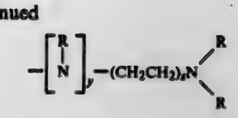
Howard L. Harwell, Zionsville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 3, 1982, Ser. No. 414,759
Int. Cl.³ C08G 18/14
U.S. Cl. 521—115 4 Claims

1. A process for catalyzing a reaction between an organic isocyanate and a composition that contains active hydrogen as measured and determined by the Zerewitinoff method which comprises carrying out the reaction in the presence of a catalytic quantity of a polyamine represented by the formula:



-continued



wherein

R is methyl, ethyl,

y is 0 or 1 when x is 1,

z is 0 when Y is 0, and

z is 1 when Y is 1.

4,436,843

HIGH-RESILIENCE POLYURETHANE FOAMS HAVING IMPROVED RESISTANCE TO SHRINKAGE

Richard L. Rowton, and Michael Cuscurida, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,590
Int. Cl.³ C08G 18/14
U.S. Cl. 521—167 4 Claims

1. A high-resilience polyurethane foam having improved resistance to shrinkage, obtained by reacting in the presence of a blowing agent and a catalyst of polyurethane formation, an organic polyisocyanate and a polyol component comprising 10 to 50 weight percent of a polymer polyol and 50 to 90 weight percent of a polyol which is an ethylene oxide-capped propoxylated ethylenediamine adduct having a molecular weight in the range from about 4,000 to 10,000, a hydroxyl number in the range from 25 to 45 and an ethylene oxide content of up to 15%, where the resultant foam possesses improved openness in the absence of subsequent crushing.

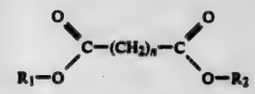
4,436,844

PROCESS FOR THE MANUFACTURE OF A FOUNDRY CORE OR MOULD

Arnold Schroeder, Deventer, and Lodewijk Roskott, Gorssel, both of Netherlands, assignors to Aksona Incorporated, Asheville, N.C.

Filed Dec. 20, 1982, Ser. No. 451,638
Claims priority, application Netherlands, Dec. 21, 1981, 8105743
Int. Cl.³ C08K 3/36
U.S. Cl. 523—144 5 Claims

1. An improved process for the manufacture of a foundry core or mould, comprising forming into the foundry core or mould a composition comprising a granular filler, a synthetic resin which cures under the action of an acid and and a desensitized ketone peroxide composition and treating said formed composition with sulphur dioxide, wherein the improvement comprises using as the desensitizing agent a dialkyl ester of an aliphatic dicarboxylic acid of the general formula



wherein n=1-7 and R_1 and R_2=a branched or non-branched alkyl group having 3 to 5 carbon atoms.

4,436,845

TRAFFIC MARKING PAINT

Masao Kitano, Osaka, Japan, assignor to Toa Paint Co., Ltd., Osaka, Japan

Filed Oct. 25, 1982, Ser. No. 436,387
Claims priority, application Japan, Oct. 29, 1981, 56-174020
Int. Cl.³ C09D 5/00, 3/48; E01F 9/04, 9/08
U.S. Cl. 523—172 1 Claim

1. A traffic marking paint comprising 10 to 40% by weight of a non-aqueous dispersion of a resin having a glass transition

temperature of 20° to 70° C. and having a molecular weight of 10,000 to 20,000, 40 to 60% by weight of a filler, and a pigment, said paint having a solids content of 70 to 90% by weight, said non-aqueous dispersion having a solids content of 50 to 70% by weight and being prepared by polymerizing an ethylenically unsaturated monomer selected from the group consisting of methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, butyl acrylate, butyl methacrylate, 2-hydroxyethyl acrylate, acrylonitrile and styrene in a dispersion medium in the presence of a dispersant selected from the group consisting of an acrylic resin, an alkyd resin, an acrylic modified alkyd resin, chlorinated rubber and polybutadiene, the ratio of said ethylenically unsaturated monomer to said dispersant being from about 70/30 to about 80/20 by weight.

4,436,846

COMPOSITION AND METHOD FOR IMPROVING THE PROPERTIES OF LIQUID MEDIA

Karl W. Krantz, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 91,989, Nov. 7, 1979, Pat. No. 4,341,684, which is a division of Ser. No. 584,417, Jun. 6, 1975, Pat. No. 4,190,069. This application May 14, 1982, Ser. No. 378,200
The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.
Int. Cl.³ C08K *5/01, 5/04;* F17D *1/16, 1/17*
U.S. Cl. 523—175 **18 Claims**

1. A process for transmitting a hydrocarbon fluid through a pipeline at a reduced fluid flow friction loss, which comprises:

A. intermixing with said fluid a composition which is an oil-in-oil emulsion comprising:

(i) a continuous phase of a liquid which is different from but normally miscible with said hydrocarbon fluid, and, dispersed therein,

(ii) a stable discontinuous phase predominantly comprising fine particles of a high molecular weight polymer selected from polyhydrocarbon or polydiorganosiloxane having a molecular weight of at least 500,000 which is ultimately miscible with said hydrocarbon fluid,

the amount of said composition being selected to provide from 10 ppm to 1500 ppm of high molecular weight polymer based on said hydrocarbon fluid; and

B. transmitting the resulting mixture through a pipeline at a velocity sufficient to establish turbulent flow conditions.

4,436,847

RUBBER COMPOSITIONS

Melvin P. Wagner, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 382,542, May 27, 1982. This application Sep. 30, 1982, Ser. No. 430,108
Int. Cl.³ C08K *3/34, 3/30*
U.S. Cl. 523—203 **16 Claims**

1. In a rubber composition comprising a curable rubber, from 10 to 90 parts, per 100 parts of rubber, of finely divided reinforcing siliceous pigment and a coupling amount of a silane coupling agent, the improvement wherein a silane coupling composition of the silane coupling agent in combination with an alkoxysilane is admixed with said siliceous pigment, said alkoxysilane having the graphic formula:

$$R''—Si—(OR')_3,$$

wherein R′ is selected from C_1–C_{10} alkyl or alkoxyalkyl containing from 2 to 10 carbon atoms, and R″ is a C_1–C_{10} alkyl, and the silane coupling agent is chosen from the group consisting of:

(a) organic silane compounds containing an internal active olefinic linkage,

(b) bis(alkoxysilylalkyl)polysulfides,

(c) haloalkylsilanes, and

(d) silane compounds containing a vinyl functional group in the organofunctional portion of the compound, the weight ratio of the silane coupling agent to alkoxysilane being between 0.15:1 and 15:1.

4,436,848

AQUEOUS CO-EMULSIONS OF EPOXY RESIN AND MINERAL OIL

Richard M. Haines, Warsaw; Robert Wong, Granville, and Elisabeth J. Berger, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 12, 1983, Ser. No. 484,131
Int. Cl.³ B32B *17/08, 17/10;* C08L *1/28, 63/02*
U.S. Cl. 523—426 **9 Claims**

1. An aqueous emulsion consisting essentially of: (a) about 30 to about 75 weight percent, based on the total weight of the emulsion, of (i) an emulsified liquid epoxy resin or (ii) an emulsified liquid solution containing a total weight of epoxy resin from about 30 to about 75 percent of the total weight of the emulsion and an organic solvent therefor; (b) about 1 to about 5 weight percent, based on the weight of the epoxy resin, of mineral oil; (c) about 5 to about 12 weight percent, based on the weight of the epoxy resin, of predominantly non-ionic surfactant for emulsifying the epoxy resin or solution thereof and the mineral oil; (d) about 0.5 to about 5 weight percent, based on the weight of the epoxy resin, of an anti-static agent and (e) water.

4,436,849

AQUEOUS RESIN COMPOSITION

Tetsuo Aihara; Yasuharu Nakayama; Koichi Umeyama; Kozo Sawada, and Masaaki Shinohara, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Hyogo, Japan

Filed Sep. 30, 1982, Ser. No. 431,080
Claims priority, application Japan, Oct. 26, 1981, 56-171115; Dec. 18, 1981, 56-203430
Int. Cl.³ C08L *67/08;* C09D *3/68*
U.S. Cl. 523—501 **49 Claims**

1. An aqueous resin composition comprising a neutralization product of an isocyanurate group-containing maleinized alkyd resin having an acid value of 5 to 65 in an aqueous medium, said maleinized alkyd resin being prepared by maleinizing an alkyd resin having an acid value of not more than 10 and a hydroxyl value of not more than 10 which is the product of condensation reaction of

(A) 20 to 60% by weight of at least one of drying or semi-drying oils and fatty acids,

(B) 10 to 45% by weight of at least one tris(hydroxyalkyl-)isocyanurate,

(C) 0 to 45% by weight of at least one polyhydric alcohol other than the component (B),

(D) 10 to 45% by weight of at least one polybasic acid, and

(E) 0 to 15% by weight of at least one monobasic acid.

23. An aqueous emulsion resin composition obtained by emulsion polymerization of a radical polymerizable unsaturated monomer in an aqueous medium in the presence of a neutralization product of an isocyanurate group-containing maleinized alkyd resin having an acid value of 6 to 65, said maleinized alkyd resin being prepared by maleinizing an alkyd resin having an acid value of not more than 10 and a hydroxyl value of not more than 10 which is the product of condensation reaction of

(A) 20 to 60% by weight of at least one of drying or semidrying oils and fatty acids,

(B) 10 to 45% by weight of at least one tris(hydroxyalkyl-)isocyanurate,

(C) 0 to 45% by weight of at least one polyhydric alcohol other than the component (B),

(D) 10 to 45% by weight of at least one polybasic acid, and

(E) 0 to 15% by weight of at least one monobasic acid.

4,436,850

STABILIZING SBR LATEX IN CEMENT FORMULATIONS WITH LOW MOLECULAR WEIGHT POLYMERS

Patricia E. Burdick, Budd Lake, and Ronald J. Rapp, Florham Park, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 19, 1981, Ser. No. 312,480
Int. Cl.³ C08K *3/00*
U.S. Cl. 524—8 **16 Claims**

1. A composition comprising:

cement; latex containing an elastomer, water; and 0.1 to 10 times the weight of the elastomer of a low molecular weight polymer, selected from the group consisting of a polyethylene having a number average molecular weight of from 6,000 to 20,000 and an oxidized polyethylene having an acid number from 7 to 40.

4,436,851

SILICONE RESIN COATING COMPOSITION CONTAINING AN ULTRAVIOLET LIGHT ABSORBING AGENT

Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 964,910, Nov. 30, 1978, abandoned. This application Apr. 1, 1982, Ser. No. 364,302
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ C08J *3/00;* C08L *1/28, 5/00, 83/04*
U.S. Cl. 524—43 **17 Claims**

1. An aqueous coating composition comprising a dispersion of colloidal silica in an aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, the composition further containing from about 0.1 to about 1.0 weight percent of a thickening agent selected from the group consisting of hydroxypropyl guar gum and hydroxypropyl cellulose and a small amount effective to prevent discoloration of the substrate to which said coating composition is applied of an ultraviolet light absorbing agent which is soluble in the composition, said composition having a pH of 7.1 to about 7.8.

4,436,852

PROCESS FOR THE COLORATION OF LINEAR POLYESTERS IN THE MELT WITH PERYLENETETRACARBOXYLIC ACID BIS-METHYLIMIDE

Fridolin Bäbler, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 338,710, Jan. 11, 1982, abandoned, which is a continuation of Ser. No. 156,243, Jun. 4, 1980, abandoned. This application Nov. 2, 1982, Ser. No. 438,445
Claims priority, application Switzerland, Jun. 15, 1979, 5624/79
Int. Cl.³ C08L *67/02*
U.S. Cl. 524—88 **6 Claims**

1. A process for colouring linear polyester in the melt in navy blue and dark blue shades, which process comprises using, as colourant, a mixture consisting of 0.2 to 1% by weight of finely dispersed, undissolved perylenetetracarboxylic acid bis-methylimide, based on the amount of polyester, and a blue polymer-soluble colourant.

4,436,853

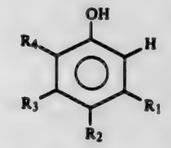
PHENOL-MELAMINE RESINS FOR IMPROVING RUBBER TO METAL ADHESION

William W. Schloman, Jr., Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 20, 1982, Ser. No. 409,790
Int. Cl.³ C08L *7/00, 9/00, 9/02, 9/06*
U.S. Cl. 524—91 **13 Claims**

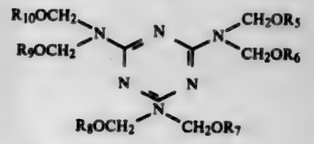
1. A rubber compound, including an adhesion promoter for rubber to metal adhesion, comprising:

the adhesion promoter consisting of the reaction product of a phenol and a substituted melamine, said phenol having the formula



where R_1, R_2, R_3 and R_4 may be the same or different and are selected from the group consisting of hydrogen and C_1 to C_{10} acyclic and cyclic alkyl radicals; and

a substituted melamine having the formula



R_5, R_6, R_7, R_8, R_9 and R_{10} are selected from the group consisting of C_1 to C_5 alkyl radicals; wherein said reaction product is added to a rubber compounding recipe in an amount between 1 and 8 parts per 100 parts by weight rubber; and

wherein the rubber is a sulfur curable elastomer.

4,436,854

SELF-EXTINGUISHING THERMOPLASTIC MOLDING MATERIAL

Franz Brandstetter, Neustadt; Volker Muench, Ludwigshafen; Herbert Naarmann, Wattenheim, and Edmund Priebe, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,015
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105946
Int. Cl.³ C08K *5/52, 5/53;* C08L *71/04*
U.S. Cl. 524—139 **2 Claims**

1. A self-extinguishing thermoplastic material comprising

(A) from 70 to 10 parts by weight of an impact-resistant styrene polymer containing a soft component based on a grafted polybutadiene or a grafted copolymer of butadiene and styrene,

(B) from 30 to 90 parts by weight of a polyphenylene ether and

(C) from 1 to 20 parts by weight of a phosphorus-containing compound as flameproofing additive,

wherein the soft component of the impact-resistant styrene polymer (A) consists essentially of a mixture of from 98 to 10 percent by weight of particles having a mean particle size of from 0.3 to 1.2 μm and from 2 to 90 percent by weight of particles having a mean particle size of from 4 to 10 μm and wherein said mixture is obtained by blending impact-resistant styrene polymers whose soft components have different particle sizes.

4,436,855

TWO-COMPONENT URETHANE COATING SYSTEM

William A. Higgins, Gates Mills, and John S. Perz, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 376,821, May 12, 1982, abandoned. This application Jun. 29, 1983, Ser. No. 508,992
Int. Cl.³ C08K 5/52
U.S. Cl. 524—145 79 Claims

1. A composition comprising:
(A) an organic polyfunctional isocyanate;
(B) a non-Newtonian colloidal disperse system comprising (1) solid metal-containing colloidal particles predisposed in (2) a disperse medium of at least one inert organic liquid and (3) as an essential third component at least one member selected from the class consisting of organic compounds which are substantially soluble in said disperse medium, the molecules of said organic compound being characterized by polar substituents and hydrophobic portions; and
(C) an acidic ester of a phosphoric acid, the organic portions of said acidic ester being selected from the group consisting of hydrocarbyloxy and hydroxy-substituted hydrocarbyloxy compounds.

4,436,856

AQUEOUS ORGANOPOLYSILOXANE EMULSIERS AND A PROCESS FOR TREATING ORGANIC FIBERS THEREWITH

Karl Huhn, and Heinrich Marwitz, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,457
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1981, 3104582
Int. Cl.³ C08L 83/04
U.S. Cl. 524—211 10 Claims

1. An aqueous emulsion for impregnating organic fibers comprising (1) an organopolysiloxane having diorganosiloxane units in which both organic radicals are monovalent hydrocarbon radicals, and at least two monovalent SiC-bonded organic radicals having a basic nitrogen atom per molecule, in which the SiC-bonded organic radicals having a basic nitrogen atom are present in monoorganosiloxane units; (2) an organopolysiloxane with at least 3 Si-bonded hydrogen atoms per molecule; (3) a catalyst for the condensation of Si-bonded condensable groups; (4) an emulsifier selected from the group consisting of an organosiloxane-oxyalkylene block copolymer in which the oxyalkylene block is bonded to the organosiloxane block through an SiOC bond, a nonionic emulsifier, an anionic emulsifier and mixtures thereof; and (5) a diorganopolysiloxane having an Si-bonded hydroxyl group in each of its terminal units and whose organic radicals are free of nitrogen.

4,436,857

COATING RUBBER WITH A COMPOSITION WHICH RESISTS REMOVAL BY WATER

Tiong H. Kuan, Stow, and John G. Sommer, Hudson, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 213,433, Dec. 5, 1980, abandoned, which is a continuation of Ser. No. 93,771, Nov. 13, 1979, abandoned, which is a division of Ser. No. 21,380, Mar. 19, 1979, Pat. No. 4,217,395, which is a continuation-in-part of Ser. No. 931,597, Aug. 7, 1978, abandoned. This application Aug. 6, 1981, Ser. No. 290,637
Int. Cl.³ C08K 5/05
U.S. Cl. 524—260 5 Claims

1. A composition of matter comprising a compounded aqueous polymeric latex containing a carboxylated copolymer having a glass transition temperature of not less than about −30° C., and in which said copolymer consists essentially of a carboxylated copolymer of (1) at least 45% by weight of a monomer selected from the group consisting of styrene, vinyl toluene, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, methylmethacrylate and ethylmethacrylate and mixtures thereof, (2) a copolymerizable monomer selected from the group consisting of acrylic acid, meethacrylic acid, ethacrylic acid, maleic acid, fumaric acid, itaconic acid, citraconic acid, sorbic acid and crotonic acid and mixtures thereof in an amount of up to 10% by weight and (3) the balance in an amount sufficient to provide some flexibility to and for vulcanization of the copolymer, a copolymerizable monomer selected from the group consisting of butadiene-1,3, isoprene, 2,3-dimethyl-butadiene-1,3 and piperylene and mixtures thereof, said latex being compounded with from about 150 to 1000 parts by weight of inorganic, nonblack rubber compounding pigments per 100 parts by weight of said copolymer in said latex, from about 1 to 30 parts by weight of rubber stabilizers and wetting agents per 100 parts by weight of said copolymer in said latex and a heat sensitizer for said copolymer in said latex in an amount of from about 0.75 to 15 parts by weight per 100 parts by weight of said copolymer in said latex, said heat sensitizer being selected fom the group consisting of the zinc ammine system, polyvinylmethylether, polypropylene glycol, 2-nitro-2-methyl-1-propanol and polyoxypropylene oxyethylene glycol and mixtures thereof, the total solids content of said latex being from about 10 to 75% by weight and said composition characterized in being able to provide a hot, sticky rubber compound with an adherent water resistant coating or film so that the rubber can be water cooled and dried and assembled or stacked without sticking.

4,436,858

PLASTICIZED POLYDICYCLOPENTADIENE AND A METHOD FOR MAKING THE SAME

Daniel W. Klosiewicz, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 14, 1982, Ser. No. 378,449
Int. Cl.³ C08K 5/12
U.S. Cl. 524—296 6 Claims

1. A method for making a crosslinked polymer of polymerized units of DCPD comprising: first, combining a plurality of reactant streams, one of which contains the activator of a methathesis-catalyst system, and a second, which contains a catalyst of said methathesis-catalyst system, and at least one of which contains dicyclopentadiene, and at least one of which contains an ester plasticizer having a solubility parameter of from 7.8 to about 10.2 to form a reaction mixture and then immediately injecting the reaction mixture into a mold where polymerization occurs.

4,436,859

POLYNORBORNENES CURED WITH ISOCYANATES AND OPTIONALLY WITH POLYOLS

Claude Stein, Gouvieux, and Andre Marbach, Verneuil, both of France, assignors to Societe Chimique des Charbonnages S.A., Paris, France

Filed Aug. 7, 1981, Ser. No. 291,150
Claims priority, application France, Aug. 8, 1980, 80 17514
Int. Cl.³ C08K 5/12, 5/01, 5/11; C08F 8/30
U.S. Cl. 524—297 19 Claims

1. In a process for preparing a ring-opened polynorbornene composition which is castable at ambient temperature, comprising the step of admixing, at ambient temperature, a finely divided ring-opened polynorbornene prepared by ring-opening catalytic polymerization, with an effective fluidifying amount of an ester or hydrocarbon plasticizer and an effective amount for curing of a curing agent, thereby forming a castable fluid mixture,
the improvement wherein said curing agent is an isocyanate cross-linking agent; whereby the resultant mixture is castable and curable at ambient temperature and the resultant cured elastomeric product has an improved compression

modulus and residual set while retaining its desired rebound elasticity values.

4,436,860

REINFORCED THERMOPLASTIC COMPOSITION

Leonard R. Hepp, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 316,948, Oct. 30, 1981, abandoned. This application May 24, 1983, Ser. No. 497,503
Int. Cl.³ C08K 3/40
U.S. Cl. 524—394 6 Claims

1. A reinforced thermoplastic composition which has a high deflection temperature under load at 264 psi and which molds into opaque, crystalline specimens in thin, thick and large/flat parts exhibiting improved control in warpage, said composition comprising:
(A) a stable blended resinous combination comprising:
(i) from about 60 to about 90 parts by weight of a poly(ethylene terephthalate) resin and
(ii) from about 40 to about 10 parts by weight of a poly(1,4-butylene terephthalate) resin or a copolyester thereof with a minor amount of an aliphatic or aromatic dicarboxylic acid or an aliphatic polyol;
(B) from about 5 to about 60 parts by weight per 100 parts by weight of said composition of reinforcing filamentous glass;
(C) an internal nucleating amount of sodium stearate, alone, or in further combination with
(D) an effective, property improving amount of an oxirane compound.

4,436,861

POLYVINYL CHLORIDE CONTAINING ALKYL ACRYLATE AND ALKYL METHACRYLATE SEQUENTIALLY POLYMERIZED THEREON

Minoru Ushioda, Amagasaki; Kenji Ueno; Hiroyasu Furukawa, both of Takasago, and Masahiro Kobayashi, Amagasaki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1982, Ser. No. 358,889
Claims priority, application Japan, Mar. 19, 1981, 56-41259
Int. Cl.³ C08L 27/22; C08F 259/04
U.S. Cl. 524—425 7 Claims

1. A particulate modified vinyl chloride polymer prepared by a process which comprises: (1) impregnating porous particles of a vinyl chloride polymer with an alkyl acrylate having a C_4 to C_{18} alkyl group, (2) polymerizing said alkyl acrylate, (3) adding an alkyl methacrylate having a C_1 to C_4 alkyl group to the polymerization system in the course of said polymerization of said alkyl acrylate, and (4) continuing said polymerization, the total amount of said alkyl acrylate and said alkyl methacrylate being from 2 to 20 parts by weight per 100 parts by weight of said porous particles, and the weight ratio of said alkylacrylate to said alkyl methacrylate being from 90/10 to 60/40.

4,436,862

THERMALLY STABLE THICKENER

Marvin T. Tetenbaum, Wexford, Pa., and Burton C. Crowley, Toms River, N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,156
Int. Cl.³ C08K 3/34
U.S. Cl. 524—445 30 Claims

1. A thermally stable thickener comprised of:
(a) a stabilizing agent which is at least one smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of clay, 100% active clay basis; and
(b) a water dispersible polyurethane which, when mixed into an aqueous composition alone, results in a thickened aqueous composition that exhibits a decrease in room temperature Stormer viscosity after one month at 140° F., said stabilizing agent and said water dispersible polyurethane being in a dry weight ratio in the range of from 1:9 to 9:1.

4,436,863

USE OF ETHYLENE-VINYL ACETATE COPOLYMERS AND OXIDIZED HIGH DENSITY POLYETHYLENE HOMOPOLYMERS AS PROCESSING AIDS FOR TALC FILLED POLYPROPYLENE COMPOUNDS

Paul J. Albee, Jr., Bensalem, Pa., and Patricia E. Burdick, Budd Lake, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 1, 1981, Ser. No. 259,406
Int. Cl.³ C08K 3/34, 5/10
U.S. Cl. 524—451 14 Claims

1. A composition comprising:
polypropylene;
from 1 percent to 50 percent based on the weight of the polypropylene of talc;
from 0.1 percent to 10 percent based on the weight of the polypropylene of an ethylene-vinyl acetate copolymer having from 2 to 45 percent by weight of the vinyl acetate moiety and a Brookfield viscosity at 140° C. of from 300 centipoises to 700 centipoises.

4,436,864

AQUEOUS EMULSIONS OF ACRYLAMIDE AND RUBBER MODIFIED ASPHALTS

Anthony V. Grossi, Newark; Leon A. Hagelee, Minerva Park; Louis T. Hahn, and Alfred Marzocchi, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 329,902, Dec. 11, 1981, Pat. No. 4,394,481. This application Dec. 27, 1982, Ser. No. 453,031
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.³ C08L 91/00
U.S. Cl. 524—458 15 Claims

1. In an asphalt emulsion comprising water, an asphaltic material and effective emulsifying amounts of an emulsifier, the improvement wherein said asphaltic material is the prereacted reaction product produced by reacting an acrylamide, asphalt having a viscosity of less than about 120,000 cps (at 140° F.), a vinyl aromatic monomer and a rubbery polymer.

4,436,865

POLY(ARYLENE SULFIDE) COMPOSITION SUITABLE FOR MOLDING

William H. Beever, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1982, Ser. No. 445,307
Int. Cl.³ C08K 3/02, 3/40, 3/36
U.S. Cl. 524—504 8 Claims

1. A composition suitable for molding comprising:
(a) from about 25 to about 50 weight percent poly(arylene sulfide),
(b) from about 10 to about 30 weight percent reinforcing agent,
(c) from about 30 to about 60 weight percent filler,
(d) from about 0.5 to about 2 weight percent of processing aid,
(e) from zero to about 3 weight percent colorant, and
(f) from about 0.5 to about 2 weight percent of an oil-soluble organonitrogen compound grafted hydrogenated conjugated diene/monovinylarene copolymer having (1) a polymerized monovinylarene content of about 20 to 70 weight percent with the proviso that when said copolymer contains a random block, the block polymonovinylarene content is in the range of about 15 to 35 weight percent, (2) a number average molecular weight suitable for oil solubility, (3) the extent of hydrogenation of said copolymer such that about at least 95 weight percent of olefinic double bonds having been saturated and (4) less

than about 5 weight percent of aromatic double bonds having been saturated, said copolymer characterized as having been prepared by the process which comprises metalating a hydrogenated conjugated diene hydrocarbon/monovinylarene hydrocarbon copolymer, and reacting the resulting metalated hydrogenated copolymer with effective amounts of at least one nitrogen-containing organic compound represented by the general formulae $X\text{-}Q\text{-}(NR^3_2)_n$ or $Y[Q\text{-}(NR^3_2)_n]_m$ wherein each R^3 is the same or different alkyl, cycloalkyl, aryl, or combination radical, Q is a hydrocarbon radical having a valence of n+1 and is a saturated aliphatic, saturated cycloaliphatic, aromatic or combination radical, X is a functional group capable of reaction on a one-to-one basis with one equivalent of polymer metal, Y is or contains a functional group capable of reacting on a one-to-one basis with one equivalent of polymer metal, n is at least one, and m is 2 or 3, thereby preparing said grafted copolymer.

4,436,866

AQUEOUS, ADHESIVE COATING COMPOSITION WITH A NON-SELFCROSSLINKABLE ELASTOMER FOR USE WITH FILAMENTARY MATERIALS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 238,725, Feb. 27, 1981, Pat. No. 4,405,746. This application Nov. 25, 1981, Ser. No. 324,750
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.³ C08L *61/12*
U.S. Cl. 524—510 **20 Claims**

1. An aqueous adhesive coating composition for treating filamentary materials to reinforce elastomeric matrix materials, comprising:

(1) at least three elastomeric materials, where the total gel content of the coating composition attributable to the elastomeric materials is less than about 70 weight percent based on the aqueous coating composition, wherein the three elastomeric materials are:

A. A vinyl-pyridine-containing elastomeric latex selected from the group consisting of an elastomeric copolymer latex produced from a vinyl pyridine-containing monomer and 1,3-diene hydrocarbon monomer and an elastomeric terpolymer latex produced from vinyl pyridine-containing monomer, 1,3-diene hydrocarbon monomer and a vinyl-containing monomer,

B. non-self-crosslinkable elastomeric homopolymer or interpolymer latex, wherein the elastomer has been formed by the reaction of 1,3-diene hydrocarbon monomers, and where the elastomeric latex has a gel content of less than 40% and an average particle size of less than around 2000 angstroms.

C. carboxylated butadiene polymer having an amount of bound styrene not exceeding 75 weight percent, of the copolymer and having an amount of carboxylation in the range of about 1 to about 10 weight percent, of the copolymer where the amount of the copolymer present is in the range of 3 to about 10 weight percent of the coating on a dry solids basis, and

(2) phenolic aldehyde condensate polymer,

(3) and water.

4,436,867

CREPING ADHESIVES CONTAINING POLY 2-ETHYL-2-OXAZOLINE

William S. Pomplun, Winnebago County, and Herbert E. Grube, Outagamie County, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 17, 1982, Ser. No. 389,193
Int. Cl.³ C08L *29/04, 39/06*; B31F *1/12*
U.S. Cl. 524—503 **5 Claims**

1. A creping adhesive for use in a throughdrying process for the manufacture of creped wadding, said creping adhesive consisting essentially of an aqueous admixture of from about 5 to about 60 dry weight percent poly 2-ethyl-2-oxazoline and a thermoplastic polymer having sufficient strength to form an adhesive film, said thermoplastic polymer being selected from the group consisting of polyvinyl alcohol, ethylene/vinyl acetate copolymer, and polyvinyl pyrrolidone.

4,436,868

INSULATION COMPOSITION

Kendall R. Harris, Houston, Tex., assignor to B & B Insulation, Inc., Houston, Tex.

Filed Dec. 27, 1982, Ser. No. 453,783
Int. Cl.³ C08K *3/22, 3/08*
U.S. Cl. 524—783 **4 Claims**

1. A composition comprising:
25–40% by weight silicone gel;
30–60% by weight powdered lead; and
5–35% by weight lead oxide.

4,436,869

PRODUCTION OF CLOSED-CELL POLYURETHANE MOLDINGS HAVING A DENSIFIED SURFACE ZONE

Otmar Zipp, Osnabruecke; Heinz Bollmann, Alfhausen; Herbert Stutz, Karlsruhe, and Wolfgang Scholz, Lemfoerde, all of Fed. Rep. of Germany, assignors to Elastogran GmbH, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,406
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113690
Int. Cl.³ C08G *18/14*
U.S. Cl. 525—51 **7 Claims**

1. A process for the production of polyurethane moldings which have a densified surface zone and substantially closed cells by reacting organic polyisocyanates, polyols and water, wherein

(a) 100 parts by weight of an NCO-containing prepolymer, having an NCO content from 3 to 6% by weight, said polymer being prepared by reacting organic diisocyanates and substantially linear polyester-polyols or polytetramethylene ether glycol and

(b) 0.5 to 1.6 parts by weight of water are mixed thoroughly in the presence of

(c) one or more catalysts

(d) one or more surfactants, cell regulators, flameproofing agents, stabilizers, dyes, pigments, and fillers as assistants and/or additives,

the resulting reaction mixture is introduced into a mold of which the inner wall has a surface temperature of from 50° C. to 70° C., the mold is closed and the mixture is allowed to harden whilst undergoing densification.

4,436,870

PRODUCTION OF MOLDING MATERIALS CONTAINING POLYPHENYLENE ETHERS

Klaus Hinselmann, Mutterstadt; Herbert Naarmann, Wattenheim; Adolf Echte, Ludwigshafen; Eduard Heil, Limburgerhof; Albert Nikles, Ludwigshafen; Rudi W. Reffert, Beindersheim, and Juergen Hambrecht, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,689
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131440
Int. Cl.³ C08L *71/04*
U.S. Cl. 525—53 **4 Claims**

1. A process for the production of a molding material containing a high molecular weight polyphenylene ether from a solution of polyphenylene ether in an organic solvent, together with a homopolymer or copolymer of styrene, by freeing such solution from the solvent, said process comprising: heating a polyphenylene ether solution in a first stage to from 190° to 250° C. to concentrate the solution to a solids content of from 15 to 60% by weight, and thereafter, in a second stage, adding the styrene homopolymer or copolymer to the concentrated solution, whereupon the resulting solution of the polymer mixture is freed of the solvent by multi-stage evaporation under reduced pressure.

4,436,871

IMIDE-SAN POLYMER-BLENDS

William H. Staas, Churchville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 10, 1982, Ser. No. 376,479
Int. Cl.³ C08L *25/12, 25/14, 35/06, 51/00*
U.S. Cl. 525—64 **12 Claims**

1. Composition comprising a soluble or partly soluble blend of (A) about 1 to 99 parts by weight polyglutarimide and (B) about 99 to 1 part by weight of (1) a single stage polymer consisting essentially of a styrene-acrylonitrile copolymer, or (2) a mixture of (1) with a multiple stage polymer having a final stage consisting essentially of a styrene-acrylonitrile copolymer.

4,436,872

HIGH IMPACT MOLDING COMPOSITIONS

Paul W. Flood, Lake Hopatcong; Charles D. Mason, Chatham Township, and Stephen R. Schulze, West Caldwell, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 209,182, Nov. 21, 1980, Pat. No. 4,335,223, which is a continuation-in-part of Ser. No. 46,536, Jun. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 914,705, Jun. 12, 1978, abandoned. This application Mar. 29, 1982, Ser. No. 363,365
Int. Cl.³ C08L *77/00, 77/02*
U.S. Cl. 525—179 **18 Claims**

1. A melt-blended polyamide composition comprising:

from 60 to 98 percent by weight of the composition of a polyamide selected from the group consisting of polyhexamethyleneadipamide, polyepsiloncaprolactam, and a mixture of polyhexamethyleneadipamide and polyepsiloncaprolactam,

an acid copolymer of an α-olefin having 2 to 5 carbons, with 1 to 20 mol percent of an unsaturated carboxylic acid having 3 to 8 carbons;

an ester copolymer of an α-olefin having 2 to 5 carbons, with 1 to 20 mol percent of an alkyl ester of an unsaturated carboxylic acid having 3 to 8 carbons and the alkyl group having 1 to 4 carbon atoms, the weight proportions between the acid copolymer and ester copolymer being from 1 part of acid copolymer to 10 parts of ester copolymer up to 30 parts acid copolymer to 1 part ester copolymer;

from about 0.05 to 1.0 percent by weight based on the weight of the composition of a metal compound having the cation of a metal selected from Group IA, IB, IIA, IIB, IIIA, IVA, VA, VIB, VIIB, and VIIIB of the Periodic Table of the Elements, and the anion of the metal compound is selected from the group consisting of hydrides, formates, acetates, alcoholates, glycolates, and halides and wherein the notched Izod impact resistance of the composition is higher than for a like composition not containing the metal compound the composition being blended under conditions wherein the metal compound remains substantially unreacted with the copolymer acid.

4,436,873

CONJUGATED DIENE BLOCK POLYMER AND PROCESS FOR PREPARING THE SAME

Hiroshi Furukawa, Kobe; Yuichi Saito, Nishinomiya; Akio Imai; Keisaku Yamamoto, both of Ichihara; Hiroyoshi Takao, Chiba, and Nobuyuki Yoshida, Ichihara, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 324,545, Nov. 24, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,583
Claims priority, application Japan, Nov. 27, 1980, 55-167836
Int. Cl.³ C08F *297/02*
U.S. Cl. 525—314 **4 Claims**

1. A linear block polymer of a conjugated diene, having a Mooney viscosity of 20 to 120 at 121° C. and consisting essentially of blocks (A) and (B) defined by the following conditions (1) to (4);

(1) the block (A) of which the content of 1,2- and/or 3,4-bonding is from 20 to 60% by mole,

(2) the block (B) of which the content of 1,2- and/or 3,4-bonding is from 50 to 90% by mole,

(3) the difference in the 1,2- and/or 3,4-bonding content between the block (A) and the block (B) is from 20 to 50% by mole, and

(4) the average content of 1,2- and/or 3,4-bonding in the block polymer consisting essentially of the blocks (A) and (B) is from 50 to 85% by mole.

4,436,874

ACRYLIC COPOLYMERS AND THEIR USE IN SOLID PHASE PEPTIDE SYNTHESIS

Christian Aspisi, Boulgon; Bernard Calas, Saint-Gely du Fesc; Jacques Daunis, Montpellier; Michel Follet, Aramon; Robert Jacquier, and Joseph Parello, both of Montpellier, all of France, assignors to Societe d'Expansion Scientifique "EXPANSIA", Paris, France

Filed Nov. 10, 1982, Ser. No. 440,440
Claims priority, application United Kingdom, Nov. 19, 1981, 8134851
Int. Cl.³ B01J *31/08*; C08F *220/58, 220/60*
U.S. Cl. 525—327.1 **6 Claims**

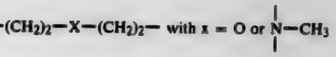
1. New amino-functionalized acrylic copolymers derived by functionalization by ethylene diamine on R_3 substituent of the copolymers containing:

from 30% to 90%, by weight, of a monomer (matrix) corresponding to an N-acryloylpolymethylenimine of formula

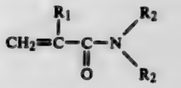


with R_1 = H or $-CH_3$

$Z = -(CH_2)_{n1}-$ with n_1 = 4, 5 or 6 or



or a N-acryloyldialkylamide, of formula:

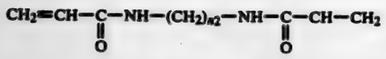


with

R_1 having the same meaning as above

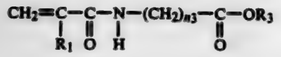
R_2 = $-CH_3$ or $-C_2H_5$

from 2% to 50%, by weight, of a monomer (linker) corresponding to an N,N'-diacryloyldiaminoalcane of formula



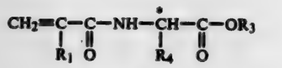
with n_2 = 1 or 2

and from 2% to 65%, by weight, of a monomer (functionalization agent) corresponding to an acryloylaminoacid or ester, racemic of formula:



with R_1 = H or $-CH_3$
R_3 = H or $-CH_3$
n_3 = 1, 2, 3 or 5

or an asymetric N-acryloylaminoacide (or ester) (L series) of the formula:



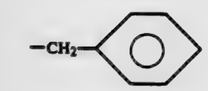
with R_1 = H or $-CH_3$

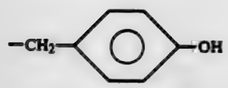
R_3 having the same meaning as above

R_4 = $-CH_3$

$-CH(CH_3)_2$

$-CH_2(CH_3)_2$

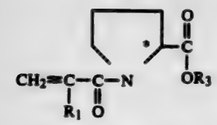




$-CH_2-CH_2-S-CH_3$

$-(CH_2)_4-NH_2$

or the N-acryloyl (L) proline, or its methyl ester of the formula:



with R_1 = H or $-CH_3$

R_3 having the same meaning as above.

4,436,875

CURABLE POLYMERIC COMPOSITIONS

Eugene R. Janiga, Gladwin, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 25, 1979, Ser. No. 88,273
Int. Cl.³ C08F 8/00
U.S. Cl. 525—385 11 Claims

1. A curable polymeric composition comprising a catalytic reactive polymeric component bearing at least one catalytic, anionic group of a strongly acidic group having a pK_a of less than about 3 and a plurality of a pendant carboxyl containing coreactive group selected from the group consisting of —COOH, —COOR wherein R is a hydrocarbyl or inertly substituted hydrocarbyl or —COX wherein X is —Cl or —Br, said composition having dispersed therein a coreactive component which contains a number of latent coreactive groups sufficiently inert to the carboxyl containing coreactive group such that the composition is stable at ambient temperatures, which latent groups are converted to groups coreactive with the carboxyl containing coreactive groups in the presence of an amount of catalytic, anionic groups and at elevated temperatures sufficient to cure the composition.

4,436,876

BLOCK COPOLYMERS OF POLYPHENYLENE OXIDES AND STERICALLY-HINDERED AROMATIC POLYCARBONATES

George R. Loucks, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 250,511, Apr. 2, 1981, Pat. No. 4,377,662.
This application Jul. 21, 1982, Ser. No. 400,497
Int. Cl.³ C08L 71/04, 69/00
U.S. Cl. 525—394 6 Claims

1. A process of forming a block copolymer of polyphenylene oxide and a sterically-hindered aromatic polycarbonate comprising the following process sequence:

(1) Forming an agitated two-phase mixture comprising,

(i) an organic phase containing a polyphenylene oxide, a sterically hindered aromatic dihydroxy compound, an inert organic solvent, a tertiary amine, and, optionally, a non sterically hindered aromatic dihydroxy compound,

(ii) an aqueous phase containing a solution of an alkali metal hydroxide having a pH value of at least 10,

(2) Adding and reacting a carbonyl halide with both the polyphenylene oxide and the sterically hindered aromatic dihydroxy compound plus any, optional non-sterically hindered aromatic dihydroxy compound to form a block copolymer, the quantity of said carbonyl halide being sufficiently large to react with all the aromatic dihydroxy compounds, and

(3) Recovering the polyphenylene oxide and sterically hindered aromatic polycarbonate block copolymer.

4,436,877

THERMOPLASTIC POLYESTER COMPOSITION

Takuzo Kasuga, Tokyo; Katsuhiko Takahashi, Fuji, and Tuneyasu Nakashima, Kawasaki, all of Japan, assignors to Polyplastics Co., Ltd., Japan

Filed Nov. 8, 1982, Ser. No. 440,132
Int. Cl.³ C08G 63/76
U.S. Cl. 525—437 18 Claims

1. A thermoplastic polyester composition comprising:

(a) a thermoplastic polyester resin which contains a moiety derived from an aromatic dibasic acid as a predominant acidic moiety, and

(b) a hydantoin compound in an amount sufficient to substantially retard evolution of aromatic dibasic acid vapor during melt processing of the composition.

11. A method of preventing mold deposits during a molding operation of a thermoplastic polyester resin containing an aromatic dibasic acid as a predominant acid moiety comprising the addition of 0.01–10 parts by weight of a hydantoin compound per 100 parts by weight of the polyester resin.

4,436,878

WATER-DISPERSIBLE BINDERS FOR CATIONIC ELECTROPAINTS, AND A PROCESS FOR THEIR PREPARATION

Wolfgang Batzill, Münster; Horst Diefenbach, Nottuln; Michael Geist, Münster, and Eberhard Schupp, Schwetzingen, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,739
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210306
Int. Cl.³ C08L 63/00
U.S. Cl. 525—438 36 Claims

1. A water-dispersible binder which is intended for cationic electropaints and is based on reaction products which are formed from modified epoxy resins with primary and/or secondary amines and which can, if desired, also contain crosslinking agents, pigments, flow-control agents and other customary auxiliaries, which contains as reaction products those which have been prepared by reacting

(A) Low molecular weight epoxy resins which contain aromatic groups and have an epoxide equivalent weight of less than 375 with

(B) aliphatic and/or alicyclic polyfunctional alcohols or carboxylic acids having a molecular weight of less than 350 by addition to the epoxy group in such a way that the reaction products contain 10–45% of aromatic groups, calculated as phenylene group, and reacting the reaction products of A and B with

(C) if desired up to 60% by weight, relative to total binder, of polyfunctional alcohols, carboxylic acids and/or SH compounds having a molecular weight of 300–5,000, the molar ratios of (A), (B) and, if desired, (C) being chosen in such a way that the resulting intermediate product has terminal epoxy groups,

(D) by reacting the intermediate product by the addition of a phenolic hydroxyl group of a monophenol and/or diphenol to the epoxy groups, the monophenol or diphenol having as a substituent on the aromatic ring(s) at least one grouping of the formula



(I)

in which R^1 and R^2 are identical to or different from one another and represent hydrogen or a methyl group, with the proviso that primary and/or secondary amines have been added, before or after the reaction of the phenolic hydroxyl groups with the epoxy groups, to at least some of the groupings of the formula (I).

4,436,879

COPOLYESTER-CARBONATE BLENDS

Kenneth F. Miller, Mt. Vernon, and Edward Belfoure, New Harmony, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1982, Ser. No. 452,908
Int. Cl.³ C08L 69/00
U.S. Cl. 525—439 27 Claims

1. Thermoplastic compositions comprised of, in physical admixture:

(i) from about 1 to about 85 weight percent of at least one randomly branched aromatic polycarbonate resin derived from (a) at least one dihydric phenol, (b) a carbonate precursor, and (c) a minor amount of at least one branching agent selected from polyfunctional organic compounds containing at least three functional groups; and

(ii) from about 15 to about 99 weight percent of at least one copolyester-carbonate resin.

4,436,880

HEAT-CURABLE EPOXIDE RESIN COMPOSITIONS

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 1, 1983, Ser. No. 462,820
Claims priority, application United Kingdom, Feb. 11, 1982, 8204053
Int. Cl.³ C08G 59/72, 59/68
U.S. Cl. 525—504 10 Claims

1. A heat-curable composition, substantially free from any unsaturated polymerisable material, comprising

(a) an epoxide resin containing more than one 2,3-epoxypropyl group per average molecule,

(b) a latent hardener for epoxide resins that is a boron trifluoride-amine complex, and

(c) an organic oxidant selected from quinones, peroxides, and iodosoaromatic compounds.

4,436,881

POLYURETHANE BINDER COMPOSITIONS

Robert A. Laitar, Woodridge, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Filed Jun. 29, 1983, Ser. No. 508,781
Int. Cl.³ C08G 18/06, 18/08, 18/28
U.S. Cl. 525—504 33 Claims

1. In a binder composition comprising a polyhydroxy component, an isocyanate component having a functionality of two or more and sufficient catalyst to catalyze substantially completely the reaction between the polyhydroxy component and the isocyanate component wherein the improvement comprises including in the composition an additive selected from the group consisting of dichloroarylphosphines, chlorodiarylphosphines, arylphosphonic dichlorides, diarylphosphinyl chlorides, and mixtures thereof, said additive being present in an amount equal to from about 0.02% to about 3% by weight of the isocyanate component.

4,436,882

POLYMERIZATION PROCESS UTILIZING A CATALYST PREPARED BY AGING OF A CHROMIUM-CONTAINING GEL AT HIGH PH

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 340,938, Jan. 20, 1982, Pat. No. 4,405,501.
This application Sep. 27, 1982, Ser. No. 423,593
Int. Cl.³ C08F 4/02, 4/24
U.S. Cl. 526—106 28 Claims

1. A polymerizatiion process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst prepared by a process comprising:

forming a co-gelled silica-chromium hydrogel;

aging said hydrogel for a time of at least one hour at a pH within the range of 7 to 9;

thereafter treating said hydrogel with a volatile liquid organic compound to remove water and thus convert said hydrogel to a xerogel; and

activating the thus formed xerogel; and

recovering a polymer.

18. A polymerization process comprising:

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst prepared by a process comprising:

forming a silica, titania, chromium tergel hydrogel, said chromium coming from a coordination chromium compound having a nitrogen-containing group;

aging said hydrogel for at least one hour;

thereafter treating said hydrogel with a volatile liquid organic compound to remove water and thus convert said hydrogel to a xerogel; and

activating the thus formed xerogel; and
recovering a polymer.

4,436,883

POLYMERIZATION USING A SUPPORT FORMED BY HEATING SILICA GEL IN INERT ATMOSPHERE

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 340,937, Jan. 20, 1982, Pat. No. 4,392,990. This application Sep. 27, 1982, Ser. No. 423,600
Int. Cl.³ C08F 4/02, 4/24
U.S. Cl. 526—106 **25 Claims**

1. A polymerization process comprising:
contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst produced by a process comprising:
(a) forming a silica hydrogel;
(b) aging said hydrogel for a time of at least one hour;
(c) treating the thus aged hydrogel with a volatile liquid saturated aliphatic alcohol having a solubility in water of less than 6 grams per 100 grams of water to convert said hydrogel to a xerogel;
(d) subjecting the thus formed xerogel to a heat treatment in an inert atmosphere at an elevated temperature;
(e) activating the thus heat treated xerogel, said xerogel also containing chromium, in an oxygen-containing ambient for a time sufficient to activate same; and recovering a polymer.

4,436,884

PROCESS FOR POLYMERIZING CONJUGATE DIOLEFINS, AND MEANS SUITABLE FOR THIS PURPOSE

Antonio Carbonaro, Milan, and Luciano Ripani, S. Donato Milanese, both of Italy, assignors to Enoxy Chimica, S.p.A., Sassari, Italy

Filed Apr. 14, 1983, Ser. No. 484,955
Claims priority, application Italy, Apr. 15, 1982, 20747 A/82
Int. Cl.³ C08F 4/52
U.S. Cl. 526—111 **14 Claims**

1. A catalytic system for polymerising conjugate diolefins, prepared from:
(a) at least one of the elements pertaining to Group III B of the periodic system;
(b) at least one aluminium compound of formula AlR_2R' where R is alkyl, cycloalkyl or alkylaryl, and R' is R or H;
(c) at least one organic halogen derivative or a halide of an element able to exist in at least two valency states, the halide corresponding to a state higher than the minimum;
(d) at least one compound containing one or more salifiable hydroxyl groups such as water, carboxylic alcohols or carboxylic acids.

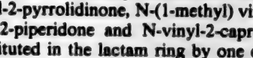
4,436,885

PREPARATION OF ISOCYANATE-FUNCTIONAL POLYMERS CONTAINING A TERMINAL MONOSULFIDE GROUP

Darryl W. Brixius, Grosse Ile, Mich., and John A. Simms, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 195,081, Oct. 8, 1980, Pat. No. 4,351,755, which is a continuation-in-part of Ser. No. 53,301, Jun. 29, 1979, abandoned, which is a division of Ser. No. 819,121, Jul. 26, 1977, abandoned. This application Dec. 7, 1981, Ser. No. 328,114
Int. Cl.³ C08F 2/06, 2/38
U.S. Cl. 526—214 **28 Claims**

1. The process of preparing a polymer of a number average molecular weight of 500–10,000 which comprises reacting
at least one isocyanatoalkyl acrylate or methacrylate alone or with
at least one comonomer of the group consisting of alkyl acrylates and methacrylates; styrene; ethylene, vinyl acetate; and vinyl chloride
in an organic solvent and in the substantial absence of water and Lewis-type bases and
in the presence of
(1) a mercaptan chain-transfer agent of the formula R-S-H wherein R is of at least 4 carbons and is alkyl, aryl or



R_3 being alkyl or aryl and n being an integer from 0 to 8, and
(2) an organic polymerization initiator,
the mole ratio chain-transfer agent/initiator being from 1/10 to 10/1 and the temperature being sufficient to decompose the initiator but insufficient to favor the production of a thiourethane.

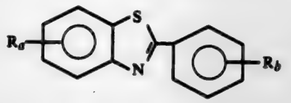
4,436,886

2-PHENYLBANZOTHIAZOLE POLYMERS

Tsu-Txu Tsai, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 356,577, Mar. 9, 1982, abandoned. This application Feb. 2, 1983, Ser. No. 463,192
Int. Cl.³ C08F 26/06, 28/06
U.S. Cl. 526—257 **10 Claims**

1. A 2-phenylbenzothiazole resin formed by the thermal, self-polymerization of a 2-phenylbenzothiazole monomer having at least one terminal acetylene group of the formula



wherein R_a and R_b are —H or —C≡CH, wherein at least one of R_a or R_b is —C≡CH.

4,436,887

N-VINYL LACTAM BASED BIOMEDICAL DEVICES

Richard C. Chromecek, Macedon; Gary D. Friends, Ontario; Lawrence Y. Wissman, and Raymond A. Yourd, III, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,355
Int. Cl.³ C08F 226/06, 226/08; G03B 21/46
U.S. Cl. 526—263 **27 Claims**

1. As a new article of manufacture, a contact lens formed from a hydrophilic polymer formed by polymerizing (a) (1) one or more N-vinyl lactams and/or heterocyclic N-vinyl monomers, said N-vinyl lactams being selected from the group consisting of N-vinyl-2-pyrrolidinone, N-(1-methyl) vinyl pyrrolidinone, N-vinyl-2-piperidone and N-vinyl-2-caprolactam which may be substituted in the lactam ring by one or more lower alkyl groups, said heterocyclic N-vinyl monomers being selected from the group consisting of N-vinyl imidazole, N-vinyl succinimide, N-vinyl diglycolylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone and N-vinyl-5-methyl-3-morpholinone, and (2) from zero to 50 weight percent of the total monomer present is at least one hydrophobic monomer or hydrophilic monomer other than N-vinyl lactam and/or heterocyclic N-vinyl monomer, said hydrophobic monomer(s) being selected from the group consisting of acrylates, methacrylates, itaconates, fumarates, maleates and crotonates wherein the esterified group has from 1 to 30 carbon atoms, said hydrophilic monomer(s) being selected from the group consisting of hydroxyesters, free acids, amides and amines of acrylates,

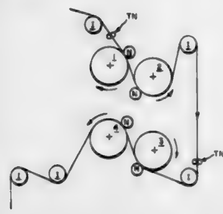
methacrylates and itaconates, and (b) a resonance free di(alkene tertiary amine) cyclic compound crosslinking agent alone or in admixture with a crosslinking agent of another chemical structure in which case said cyclic compound is at least 50 mole percent of said mixture, said cyclic compound having the formula $CH_2{:}CG(CH_2)_xN{\sim}J{\sim}N(CH_2)_xCH{:}CH_2$ wherein x is 0 or 1, G is hydrogen or methyl and J is the balance of structure forming cyclic dialkene urea, said agent being present in an amount from 0.01 to 10 weight percent of the total monomer of (A) (1) and (A) (2) present to form a crosslinked 3-dimensional polymeric network, said polymer having an oxygen permeability of at least 24×10^{-11} $cm^2cm/(sec.cm^2mmHg)$ and a tear initiation strength of at least 3 g/mm of thickness.

4,436,888

METHOD FOR MAKING BALANCED LOW SHRINK TENSION POLYOLEFIN FILM

Kerry J. Copple, Webster, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 5, 1982, Ser. No. 432,836
Int. Cl.³ C08F 110/02; B29C 17/02
U.S. Cl. 526—348.1 **7 Claims**



1. A method for making a biaxially oriented polyolefin film with substantially balanced shrinkage of at least 7 percent at 110° C. and a substantially balanced shrink force of not more than 2.2 MPa as measured at 110° C., said method comprising the sequential steps of:
(a) heating a biaxially oriented polyolefin heat-shrinkable film to a temperature of from 124°–138° C.,
(b) stretching the heated film resulting from step (a) in the longitudinal direction by a factor from 1.05 to 1.20,
(c) cooling the stretched film resulting from step (b) to a temperature of not greater than 55° C. while maintaining the degree of stretch created in step (b),
(d) heating the cooled film resulting from step (c) to a temperature of from 124°–138° C.,
(e) relaxing the heated film resulting from step (d) in the longitudinal direction by a factor of from 0.83 to 0.95, and
(f) cooling the relaxed film resulting from step (e) to a temperature of not greater than 55° C. while maintaining the degree of relaxation created in step (e).
7. The product produced by the process of claim 1.

4,436,889

PREPARATION OF CARBOXYLIC ACIDS BY CARBONYLATION OF ALCOHOLS

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 5, 1981, Ser. No. 260,810
Claims priority, application France, May 6, 1980, 80 10540
Int. Cl.³ C07C 51/12, 53/08, 53/134, 57/30, 57/32
U.S. Cl. 562—519 **21 Claims**

1. A process for the preparation of a carboxylic acid having the structural formula R^1COOH, wherein R^1 is a linear, branched or cyclic chain alkyl radical of from 1 to 6 carbon atoms or a phenyl-C_nH_{2n}-radical wherein $1 \leq n \leq 6$, comprising carbonylating an alcohol having the formula R^1—OH with carbon monoxide in liquid phase, in the presence of a catalytically effective amount of nickel and an alkyl or acyl halide promoter therefor, at a temperature of at least 120° C. and under and total pressure of less than 200 bars, said carbonylation being carried out in the presence of at least one vanadium compound in which the vanadium is in an oxidation state of 4 or 5, and in an initial carboxylic acid reaction medium having the formula R^2—COOH, wherein R^2 is defined as was R^1 above, and further wherein R^1 and R^2 may be the same or different.

4,436,890

AROMATIC UREA-BASED CURING AGENT SYSTEM FOR EPOXY RESIN COATING COMPOSITIONS

Marvin L. Kaufman, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,787
Int. Cl.³ C08G 59/44, 59/68
U.S. Cl. 528—93 **25 Claims**

1. A stable, heat curable coating composition consisting essentially of:
(a) a polyepoxide having a plurality of 1,2-epoxy groups and an epoxy equivalency greater than 1.0;
(b) an aromatic urea containing the moiety



wherein Ar is substituted or unsubstituted, mononuclear or polynuclear aromatic, said aromatic urea being present in amounts sufficient to provide an effective amount of a coreactive amine curing agent for said polyepoxide upon reaction of said aromatic urea with a portion of said polyepoxide when said composition is maintained under curing conditions which include a temperature of at least about 70° C., and
(c) a condensation-type catalyst present in an amount effective to promote the reaction of said aromatic urea with a portion of said polyepoxide at a temperature of at least about 70° C.;
said composition being substantially free of coreactive amounts of amine and polycarboxylic acid anhydride curing agents at temperatures below about 70° C.

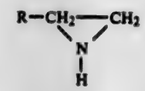
4,436,891

MODIFIED POLYOXYALKYLENEPOLYAMINE CURING AGENTS FOR EPOXY RESINS

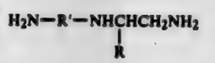
Arihiko Umeda, and Yoshiyuki Iwase, both of Tokyo, Japan, assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,059
Claims priority, application Japan, Sep. 14, 1981, 56-144023
Int. Cl.³ C08G 59/50
U.S. Cl. 528—111 **10 Claims**

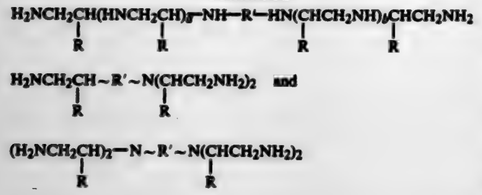
1. A curing agent for vicinal epoxy resins having an average of at least 1.8 reactive 1,2-epoxy groups per molecule comprising the reaction product of an alkyleneimine of the formula:



wherein R is hydrogen or C_1–C_5 alkyl with a polyoxyalkylenepolyamine, wherein the curing agent is defined by the formulas:



-continued



wherein R′ is polyoxyalkylene, a+b ranges from 1 to 20 and R is hydrogen or C_1–C_5 alkyl.

4,436,892

IMIDAZOLIDES

Helmut Zondler, Bottmingen; Friedrich Lohse, Oberwil, and Roland Moser, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

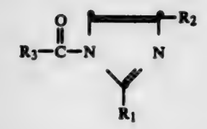
Filed Dec. 6, 1982, Ser. No. 447,344

Claims priority, application Switzerland, Dec. 15, 1981, 7992/81

Int. Cl.³ C08G 59/54, 59/44

U.S. Cl. 528—117 10 Claims

1. An imidazolide of the formula I



(I)

wherein

R_1 is hydrogen, C_1–C_{12}-alkyl or phenyl, and R_2 is hydrogen, or

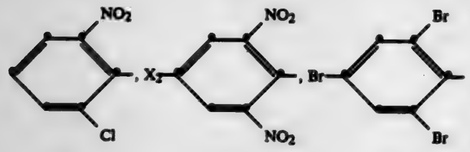
R_1 is ethyl, and R_2 is methyl, or

R_1 is hydrogen, and R_2 is phenyl or methyl, and

R_3 is a group of any one of the formulae II–VI



(II) (III)



(IV) (V) (VI)

wherein X_1 is hydrogen, chlorine or NO_2, and X_2 is hydrogen or NO_2.

8. A curable mixture containing an imidazolide of the formula I according to claim 1, which mixture contains also a polyepoxide compound having on average more than one epoxide group in the molecule.

4,436,893

COPOLYESTER OF POLYETHYLENE TEREPHTHALATE AND SULFONYL DIPHENOL

Michael S. Cholod, Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 25, 1982, Ser. No. 436,228

Int. Cl.³ C08G 63/18, 63/68

U.S. Cl. 528—173 18 Claims

1. A copolyester of polyethylene terephthalate capable of being molded into clear articles comprising from about 2 to about 20 mole percent sulfonyl diphenol, isomers and mixtures thereof, and from about 98 to about 80 mole percent ethylene terephthalate prepolymer.

4,436,894

NOVEL WHOLLY AROMATIC COPOLYESTER, PROCESS FOR PRODUCTION THEREOF, AND FILM MELT-SHAPED THEREFROM

Takanori Urasaki, Hino; Yasuji Hirabayashi, Hachioji; Tugusi Yoshida, and Hiroo Inata, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 27, 1981, Ser. No. 286,855

Claims priority, application Japan, Jul. 31, 1980, 55-104361; Oct. 23, 1980, 55-147548; Oct. 24, 1980, 55-148143

Int. Cl.³ C08G 63/18, 63/60

U.S. Cl. 528—176 23 Claims

1. A wholly aromatic copolyester composed mainly of isophthalic acid units and hydroquinone units, the total proportion of said isophthalic acid units and hydroquinone units being at least about 80 mole% based on the entire units, said wholly aromatic copolyester having a terminal carboxyl group concentration, measured by dissolving the wholly aromatic copolyester in a mixed solvent of phenol and tetrachloroethane in a weight ratio of 4:6 and titrating the resulting solution with a benzyl alcohol solution of sodium hydroxide using bromocresol green as an indicator, of not more than about 90 eq/10^6 g and a reduced viscosity, determined at 35° C. in a mixed solvent of phenol and tetrachloroethane in a weight ratio of 4:6 in a concentration of 1.2 g/dl of at least about 0.6 and being substantially linear and melt-shapable and substantially free from a halogen atom bonded to the molecular chain.

4,436,895

POLYESTER CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Robert B. Barbee, and Burns Davis, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1983, Ser. No. 484,401

Int. Cl.³ C08G 63/44, 63/68

U.S. Cl. 528—288 11 Claims

1. A container formed from a polyester resin comprising the reaction product of

(A) a diol containing up to about 8 carbon atoms, and

(B) a diacid component comprising

(i) terephthalic acid and

(ii) a second diacid selected from iminodiacetic acid, oxydiacetic acid, thiodiacetic acid, and mixtures thereof, wherein said second diacid is present in a concentration of about 1 to 50 mole percent, based upon the total amount of diacid, and wherein said polyester resin has an inherent viscosity of about 0.5 to 1.5.

4,436,896

POLYESTER COPOLYMER

Ichiro Okamoto, and Yuzo Toga, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 14, 1982, Ser. No. 418,120

Claims priority, application Japan, Sep. 29, 1981, 56-154275; Sep. 29, 1981, 56-154276; Oct. 8, 1981, 56-161509; Oct. 8, 1981, 56-161510

Int. Cl.³ C08G 63/66

U.S. Cl. 156—332 4 Claims

1. A polyester copolymer obtained by copolymerizing

(A) terephthalic acid or a mixture of not less than 50 mol % of terephthalic acid and at least one kind of dicarboxylic acid selected from aromatic dicarboxylic acids excluding terephthalic acid and aliphatic dicarboxylic acids, said terephthalic acid and dicarboxylic acid optionally forming an ester-forming derivative thereof,

(B) a low-molecular weight diol composed of 1 to 50 mol % of 2-methyl-1,3-propanediol and 99 to 50 mol % of 1,6-hexanediol, and

(C) at least one kind of high-molecular weight diol (in such an amount that the high-molecular weight diol component in the copolymer is 0 to 60 wt %) selected from polyalkylene ether glycol and polycaprolactone glycol.

4. A method of bonding an article to another article by using the polyester copolymer as defined in any of claims 1, 2 and 3, as an adhesive.

4,436,897

PREPARATION OF POLYCAPROLACTAM WITH AQUEOUS EXTRACT CONTAINING CAPROLACTAM AND CAPROLACTAM OLIGOMERS

Hugo Strehler, Frankenthal; Werner Hoersuf, Ludwigshafen, and Friedrich Urbanek, Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 24, 1982, Ser. No. 410,881

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134717

Int. Cl.³ C08G 69/16

U.S. Cl. 528—323 2 Claims

1. A process for the preparation of fiber-forming polycaprolactam comprising polymerizing a composition comprising ε-caprolactam and an aqueous extract containing caprolactam and caprolactam oligomers, which extract has been obtained by extracting polycaprolactam with water, wherein such aqueous extract contains from 0.1 to 5.0% by weight of oligomers of caprolactam, based on teh monomeric caprolactam contained in the aqueous extract.

4,436,898

PREPARATION OF SPINNABLE POLYAMIDE FROM DINITRILE, DIAMINE, H_2O WITH P CONTAINING CATALYST

Hansdieter Hofmann, Karben; Hans-Jochen Rothe, Maintal; Georg Skupin, Bruchkobel, and Konrad Wolff, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Borsigalle, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 370,271, Apr. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 264,982, May 18, 1981, abandoned. This application May 10, 1982, Ser. No. 375,971

Int. Cl.³ C08G 69/00

U.S. Cl. 528—336 28 Claims

1. A method for the production of a spinnable polyamide comprising contacting a dinitrile, an aliphatic diamine, excess water and a catalytic amount of an oxygen containing phosphorous compound in a reaction vessel.

4,436,899

LAYERED ORGANOPHOSPHORUS INORGANIC POLYMERS

Peter M. DiGiacomo, Mission Viejo, and Martin B. Dines, Santa Ana, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 948,971, Sep. 26, 1978, Pat. No. 4,232,146. This application Jul. 24, 1979, Ser. No. 60,076

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.³ C08G 79/04, 79/14

U.S. Cl. 528—395 4 Claims

1. A process for the production of phosphorus-containing organo substituted inorganic polymers which comprises reacting in a liquid medium at least one organophosphorous or organophosphoric acid compound of the formula:

$$[(HO)_2OP]_nR \text{ or } [(HO)_2OPO]_nR$$

wherein n is 1 or 2 and R is an organo group covalently coupled to phosphorus and wherein when n is 2, R contains at least two carbon atoms and is directly or indirectly coupled to the phosphorus atoms through different carbon atoms whereby the two phosphorus atoms are separated by at least two carbon atoms, with at least one tetravalent metal ion to precipitate, from the liquid medium, a solid inorganic polymer in which the molar ratio of phosphorus to tetravalent metal is about 2 to 1 and in which the organo group is covalently bonded to phosphorus and phosphorus is linked to the tetravalent metal through oxygen.

4,436,900

PROCESS FOR DEACTIVATING POLYMERIZATION CATALYST

Kazuhiko Matsuzaki; Toshiyuki Iwaisako, and Junzo Masamoto, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 28, 1983, Ser. No. 479,385

Claims priority, application Japan, Mar. 29, 1982, 57-48990

Int. Cl.³ C08G 2/28

U.S. Cl. 528—490 13 Claims

1. A process for deactivating a cationic polymerization catalyst for the production of an oxymethylene copolymer from trioxane and a cyclic ether and/or a cyclic formal in the presence of the cationic polymerization catalyst which comprises contacting a deactivating agent in the state of gas phase with the copolymer produced at a temperature not causing degradation of the copolymer produced.

4,436,901

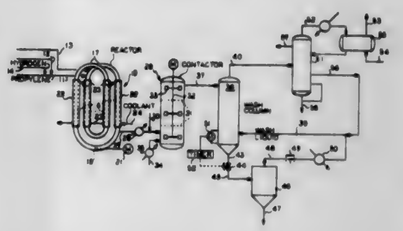
HYDROCARBON WASH LIQUID FOR CATALYST SEPARATION

Fred T. Sherk, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 22, 1982, Ser. No. 350,851

Int. Cl.³ C08F 6/10, 6/06

U.S. Cl. 528—496 8 Claims



1. In a continuous propylene mass polymerization wherein

liquid propylene is contacted in a polymerization zone with a suitable catalyst in the presence of propane under conditions so as to form solid polymer, effluent from said polymerization zone comprising propylene and propane is contacted in a wash column with a wash liquid to separate catalyst residues therefrom, used wash liquid from the wash column is subjected to fractionation to recover propylene therefrom, washed polymer is recovered from the wash column and passed to a flashing zone wherein liquid is flashed from the solid polymer, the improvement comprising passing overhead vapors comprising propylene and propane from the flash zone to a condensing zone wherein said vapors are condensed to a liquid having substantially the same hydrocarbon composition as the overhead vapors from the flash zone and passing at least a portion of the liquid obtained from the condensing zone to the wash zone where said liquid serves as at least a portion of the wash liquid supply and a fractionation sidestream comprising propylene and propane is also employed as wash liquid.

4,436,902

REMOVAL OF CONTAMINANTS IN LIQUID PURIFICATION

William E. Wood, and Franklin T. Barber, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 12, 1982, Ser. No. 348,379
Int. Cl.³ C08F 6/08
U.S. Cl. 528—501 **12 Claims**

1. A process for purifying a liquid to be purified which contains contaminants, comprising:

(a) passing a feedstream comprising the liquid to be purified and a contaminant to a first fractionating column,

(b) separating in said first fractionating column said feedstream into a first overhead fraction, a side draw fraction, and a first bottom fraction,

(c) removing from said first fractionating column, said first overhead fraction comprising a contaminant having a volatility greater than that of the liquid to be purified,

(d) feeding to a second fractionating column, said first bottom fraction of the first fractionating column, said first bottom fraction comprising a contaminant having a volatility less than or equal to the volatility of the liquid to be purified and comprising a portion of the liquid to be purified,

(e) separating in said second fractionating column said first bottom fraction of the first fractionating column into a second overhead fraction and a second bottom fraction

(f) removing from the process, said second bottom fraction of the second fractionating column comprising substantially a contaminant,

(g) removing from said second fractionating column, said second overhead fraction comprising the liquid to be purified in a vapor phase,

(h) feeding said second overhead stream into the first fractionating column to provide a portion of the heat required in said first fractionating column,

(i) removing from the first fractionating column, at a point above where said second overhead stream is fed into the first fractionating column, said side stream fraction of the first fractionating column comprising the liquid purified of contaminant,

(j) cooling said side draw fraction which has been removed from the first fractionating column,

(k) passing a portion of the cooled side draw fraction to the second fractionating column as a reflux-type stream,

(l) recovering a portion of the cooled side draw fraction as purified liquid product.

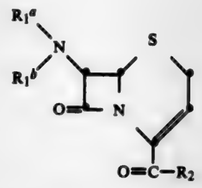
4,436,903

PROCESS FOR THE PRODUCTION OF 7 β-SUBSTITUTED-3-UNSUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Gottfried Sedelmeier, Ehrenkirchen-Norsingen, Fed. Rep. of Germany, and Riccardo Scartazzini, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

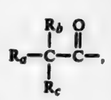
Filed Dec. 11, 1981, Ser. No. 329,916
Claims priority, application Switzerland, Dec. 22, 1980, 9468/80
Int. Cl.³ C07D 501/04
U.S. Cl. 544—016 **19 Claims**

1. A process for the production of a 7β-amino-3-cephem-4-carboxylic acid compound of the formula



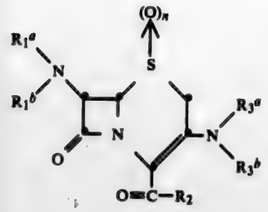
(I)

wherein R_1^a is hydrogen, an acyl group of the formula:



(IA)

wherein (1) R_a is phenyl, hydroxyphenyl, lower alkylsulfonylaminophenyl, aminomethylphenyl, 2- or 3-thienyl, aminomethylthienyl, furyl, aminomethylfuryl, cyclohexadienyl, aminomethyl-1,4-cyclohexadienyl, cyclohexenyl, aminomethyl-1-cyclohexenyl, aminothiazolyl, lower alkylaminothiazolyl, aminothiadiazolyl, or lower alkylaminothiadiazolyl, in which the hydroxy and amino groups are in the free form or are protected by conventional hydroxy- and amino protecting groups, R_b is hydrogen, and R_c is hydrogen, amino or amino protected by a conventional amino protecting group, hydroxy, hydroxy protected by a conventional hydroxy protecting group, carboxy, lower alkoxycarbonyl, or sulfo, or wherein (2) R_a is 3-amino-3-carboxypropyl or 3-amino-3-carboxypropyl in which amino and carboxy are protected by conventional amino and carboxy protecting groups, cyano, 1-tetrazolyl, phenoxy, or 4-pyridylthio, and R_b and R_c are hydrogen, or wherein (3) R_a is phenyl, thienyl, 2-furyl, 2-amino-4-thiazolyl, 2-lower alkylamino-4-thiazolyl, 5-amino-1,2,4-thiadiazolyl or 5-lower alkylamino-1,2,4-thiadiazolyl wherein amino can be protected by a conventional amino protecting group, and R_b and R_c together are syn-lower alkoximino, or is an amino protective group R_1^A selected from the group consisting of trityl, 1-lower alkoxycarbonyl-1-propen-2-yl, 2-nitrophenylthio, pentachlorophenylthio, tritylthio, tri-lower alkylsilyl, halo-lower alkoxy-lower alkylsilyl and tri-lower alkylsilyl, R_1^b is hydrogen, or R_1^a and R_1^b together ar a bivalent amino protecting group selected from the group consisting of succinyl, phthaloyl and 4,4-dimethyl-2-phenyl-1-oxo-3-aza-1,4-butylene, and R_2 is hydroxy, or a group which, together with the carbonyl grouping —C(=O)— forms a conventionally protected carboxy group, which comprises reacting a compound of the formula



(II)

wherein n is 0 or 1, R_1^a, R_1^b and R_2 are as defined for formula I, and the group of the formula —$N(R_3^a)$ (R_3^b) is a secondary amino group wherein one of the groups R_3^a and R_3^b represents hydrogen and the other lower alkyl, lower alkyl substituted by lower alkoxy, lower alkylthio, cycloalkyl, phenyl or thienyl, cycloalkyl, or cycloalkyl substituted by lower alkoxy or lower alkylthio, or —$N(R_3^a)$ (R_3^b) represents a tertiary amino group wherein R_3^a and R_3^b are the same or different and represent lower alkyl, lower alkyl substituted by lower alkoxy, lower alkylthio, cycloalkyl, phenyl or thienyl, cycloalkyl or cycloalkyl substituted by lower alkoxy or lower alkylthio or R_3^a and R_3^b can be linked with a carbon-carbon bond or with an oxygen or sulfur atom, —NH—, or a lower alkylated nitrogen atom under acid conditions with a complex borohydride.

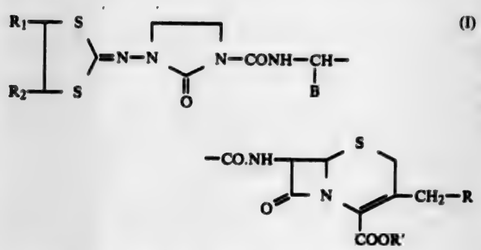
4,436,904

CEPHALOSPORINS

Shigeo Shimizu; Hiroyuki Takano, both of Yufutsu; Shoji Yoshimura, Iruma, and Kinji Takada, Tokyo, all of Japan, assignors to Kanto Ishi Pharmaceutical Co., Ltd., Tokyo, Japan

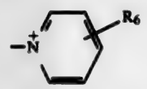
Filed Jan. 6, 1982, Ser. No. 337,380
Claims priority, application Japan, Feb. 14, 1981, 56-20347; Feb. 14, 1981, 56-20348
Int. Cl.³ C07D 501/56
U.S. Cl. 544—27 **11 Claims**

1. A novel cephalosporin represented by the following formula:

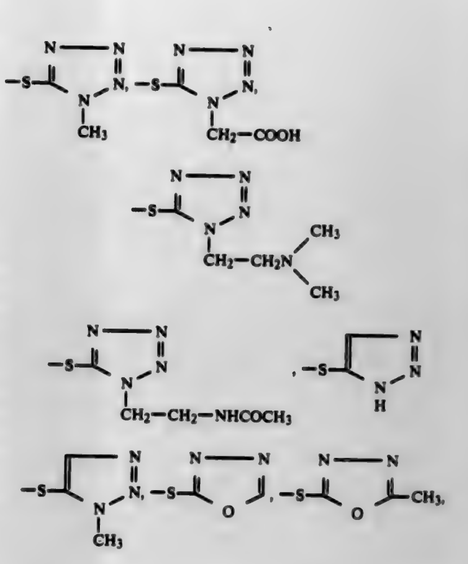


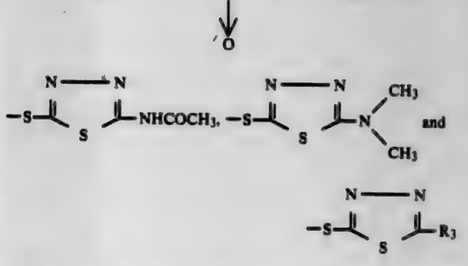
(I)

wherein R is hydrogen, acyloxy of formula R_4COO—, in which R_4 is alkyl of 1 to 4 carbon atoms; carbamoyloxy, a pyridinium radical of formula

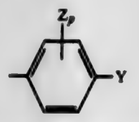


in which R_6 is hydrogen, alkyl having 1 to 4 carbon atoms, carboxy, lower alkoxy, carbamoyl, halogen or sulfamoyl or a group —S—Het in which Het is

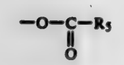




in which R_3 is hydrogen or alkyl having 1 to 4 carbon atoms, R′ is hydrogen, alkali metal, an organic amine or an ester moiety, R_1 and R_2 are the same or different and are hydrogen or lower alkyl and B stands for a 1,4-cyclohexadienyl group, a group



in which Y is hydrogen, —OH or



in which R_5 is alkyl having 1 to 5 carbon atoms, or alkoxy having 1 to 4 carbon atoms, Z is hydrogen or halogen and p is an integer of 1 or 2, a furan group or a thiophene group.

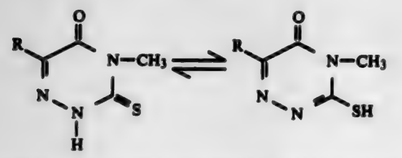
4,436,905

PREPARATION OF 4-METHYL-5-OXO-3-THIOXO-TETRAHYDRO-1,2,4,-(2H,4H)-TRIAZINES

Gerhard Bonse, Wuppertal-Elberfeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,679
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134230
Int. Cl.³ C07D 253/06
U.S. Cl. 544—182 19 Claims

1. A process for the production of a 4-methyl-5-oxo-3-thioxo-tetrahydro-1,2,4-(2H, 4H)-triazine of the two tautomeric forms



wherein R is an optionally substituted aliphatic radical having up to 12 carbons atoms, an optionally substituted cycloalkyl radical having 3 to 10 carbon atoms, an optionally substituted phenyl or naphthyl radical or an optionally substituted heterocyclic radical,

comprising in a first step reacting an acyl cyanide of the formula

R—CO—CN

with a carboxylic acid anhydride of the formula

R^1—CO—O—CO—R^1

in which R^1 is an optionally substituted aliphatic radical having up to 8 carbon atoms or an optionally substituted phenyl radical,

in the presence of a strong acid at a temperature between about −50° and 150° C., and in a second step contacting the reaction mixture thus obtained directly with 4-methylthiosemicarbazide.

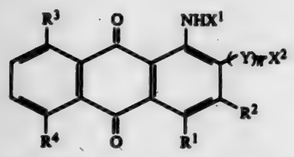
4,436,906

ANTHRAQUINONE DYES FOR CELLULOSE-CONTAINING FIBERS AND PROCESS FOR PRODUCING THE SAME

Toshio Niwa, and Toshio Hihara, both of Kanagawa, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

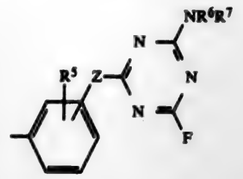
Filed May 20, 1982, Ser. No. 380,320
Claims priority, application Japan, May 20, 1981, 56-75974; Jul. 20, 1981, 56-113258; Jul. 24, 1981, 56-116015; Jul. 27, 1981, 56-117472
Int. Cl.³ C07D 251/42
U.S. Cl. 544—187 2 Claims

1. An anthraquinone dye for cellulose-containing fibers having the formula (I):



(I)

wherein R^1 is $—NH_2$ or a hydroxyl group; R^2 is a hydrogen atom, a chlorine atom, a bromine atom, a cyano group or $—SO_2R$ (wherein R is a lower alkyl group or a phenyl group); R^3 and R^4 are each a hydrogen atom, $—NH_2$, a hydroxyl group, a nitro group, a chlorine atom or a bromine atom; Y is either —O— or —S—; one of X^1 and X^2 is a hydrogen atom and the other is



(wherein Z is either —O— or —S—; R^5 is a lower alkyl group, a lower alkoxy group or a hydrogen atom; R^6 and R^7 are each a hydrogen atom or an alkyl group, an alkenyl group, a cyclohexyl group, an aryl group or an aralkyl group which may be substituted by a cyano group, a hydroxyl group, a lower alkoxy group or a dialkylamino group, or NR^6R^7 represents a 5- or 6-membered nitrogen-containing heterocyclic ring formed by the bonding of R^6 and R^7 such that when R^6 and R^7 are taken together to form a heterocyclic ring, the nitrogen of the heterocyclic ring to which R^6 or R^7 are bonded is the nitrogen N of NR^6R^7; the sum of the carbon atoms of R^6 and R^7 is not more than 18); and n is 0 or 1, but n is 0 when X^2 is a hydrogen atom.

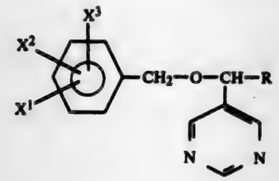
4,436,907

BENZYL-PYRIMIDINYLALKYL-ETHERS AS PLANT GROWTH REGULATORS AND FUNGICIDES, AND CORRESPONDING PYRIMIDINYL-CARBINOLS

Graham Holmwood, Wuppertal; Klaus Lürssen, Berg.-Gladbach, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 344,261
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105374
Int. Cl.³ C07D 239/26
U.S. Cl. 544—335 8 Claims

1. A benzyl-pyrimidinylalkyl-ether of the formula



in which

R is alkyl having 1 to 8 carbon atoms; cycloalkyl which has 3 to 7 carbon atoms and which is optionally substituted by alkyl having 1 to 4 carbon atoms; or phenyl which is optionally substituted by halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms and/or halogenoalkyl having 1 to 2 carbon atoms and 1 to 5 halogen atoms,

X^1 is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, halogenoalkyl having 1 to 4 carbon atoms and 1 to 5 halogen atoms, halogenoalkoxy having 1 to 4 carbon atoms and 1 to 5 halogen atoms, halogenoalkylthio having 1 to 4 carbon atoms and 1 to 5 halogen atoms, phenyl which is optionally substituted by halogen and/or by alkyl having 1 to 4 carbon atoms, phenoxy which is optionally substituted by halogen and/or by alkyl having 1 to 4 carbon atoms, phenylalkyl which has 1 to 4 carbon atoms in the alkyl part and which is optionally substituted in the phenyl part by halogen and/or by alkyl having 1 to 4 carbon atoms, or phenylalkoxy which has 1 to 4 carbon atoms in the alkoxy part and which is optionally substituted in the phenyl part by halogen and/or by alkyl having 1 to 4 carbon atoms, and

X^2 and X^3 each independently is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms or halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 4 carbon atoms and 1 to 5 halogen atoms,

or an acid addition salt or metal salt complex thereof.

4,436,908

HETEROSULFONAMIDES

Ljerka Jozic, Hanover, Fed. Rep. of Germany, assignor to Johann A. Wuelfing, Fed. Rep. of Germany

Continuation of Ser. No. 148,139, May 9, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,469
Claims priority, application United Kingdom, May 16, 1979, 7917035
Int. Cl.³ C07D 211/24, 207/09
U.S. Cl. 546—206 5 Claims

1. A compound of the formula (I) having anti-arrythmic activity of low acute toxicity:

$R_2N—(CH_2)_n—NH—SO_2R^1$ (I)

characterized in that NR_2 represents a piperidyl, pyrrolidyl, or N-methylpiperazyl group any of which may be substituted by one or two methyl groups; R^1 is a 1-naphthyl group optionally substituted by one or more moieties selected from fluorine, chlorine, bromine, methoxyl, ethoxyl, acetoxyl, nitro, cyano, amino optionally substituted by one or two C_{1-6} alkyl groups, methyl, ethyl, carboxyl, methoxycarbonyl, ethoxycarbonyl, acetamino or acetamido or carboxamido; and n is 2 or 3 or an acid addition salt with a pharmaceutically acceptable organic or inorganic acid, a pharmaceutically acceptable quaternary ammonium salt, a pharmaceutically acceptable internal salt or a salt of a pharmaceutically acceptable metal or optionally substituted ammonium.

4,436,909

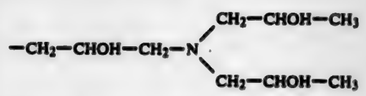
CATIONIC SURFACE-ACTIVE AGENTS

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Mitry-Mory, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 891,485, Mar. 29, 1978, Pat. No. 4,220,602, which is a division of Ser. No. 742,671, Nov. 17, 1976, Pat. No. 4,096,332, which is a division of Ser. No. 547,465, Feb. 6, 1975, Pat. No. 4,009,255, which is a division of Ser. No. 187,151, Oct. 6, 1971, Pat. No. 3,879,464, which is a continuation-in-part of Ser. No. 655,336, Jul. 24, 1967, abandoned. This application Jan. 11, 1980, Ser. No. 111,326
Claims priority, application Luxembourg, Jul. 26, 1966, 51645; May 12, 1967, 53667
Int. Cl.³ C07D 295/08; C07C 91/10
U.S. Cl. 546—248 15 Claims

1. A cationic surface-active agent having the formula

$R'O\text{-}\!+\!C_2H_3(CH_3)O\!+\!_m\text{-}\!+\!C_2H_3(CH_2OH)O\!+\!_n$



wherein R' is octadecyl, m has a statistical average value of 5.25 and n has a statistical average value of 1.

4,436,910

PROCESS FOR THE PRODUCTION OF AQUEOUS SOLUTIONS OF SODIUM SALTS OF α-AMINO CARBOXYLIC ACIDS

Axel Kleemann, Hanau; Bernd Lehmann, Freigericht, and Jürgen Martens, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,477
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105008
Int. Cl.³ C07D 211/60, 207/16
U.S. Cl. 546—245 9 Claims

1. A process for the production of an aqueous solution of the sodium salt of an α-aminocarboxylic acid practically free from foreign salts comprising saponifying under alkaline conditions the corresponding hydantoin at a temperature between 110° and 180° C. employing based on the hydantoin 1 equivalent of sodium hydroxide and 2 equivalents of calcium oxide or hydroxide per hydantoin group, after the end of the saponification separating off the precipitated calcium carbonate and concentrating the remaining aqueous sodium salt solution to drive off the ammonia contained therein with the proviso that there is additionally employed 1 equivalent of sodium hydroxide for any carboxyl or carbamido group present in the hydantoin, the materials employed consisting essentially of the hydantoin, sodium hydroxide, calcium oxide or hydroxide and water.

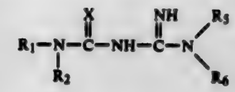
4,436,911

HETEROCYCLIC AMIDINOUREAS

William L. Studt, Harleysville; Harry K. Zimmerman, Quakertown, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed May 12, 1981, Ser. No. 262,811
Int. Cl.³ C07D 213/77; A61K 31/44
U.S. Cl. 546—291 12 Claims

1. A compound of the formula



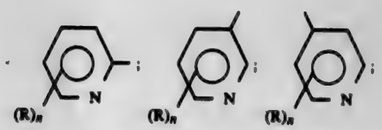
wherein:

X is O or S;

R_2 is hydrogen or lower alkyl;

R_5 and R_6 are hydrogen, lower alkyl, phenyl, substituted phenyl, phenyl loweralkyl, substituted phenyl loweralkyl, cycloloweralkyl, lower alkoxy, or lower alkenyl;

R_1 is one of the following pyridyl groups;



wherein n is 0 or 1; and (R) is a ring substituent selected from the group consisting of lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, phenyl, phenyl loweralkyl, loweralkyl phenyl loweralkyl, nitro, sulfonyl, carbamoyl, halo, cyano, carboxyl, amino, lower alkanoyl, amino lower alkyl, lower alkyl amido, hydroxy, halo lower alkyl, lower alkanoyloxy, and lower alkanoylamino;

and wherein substituted phenyl means a phenyl group in which one or more of the hydrogens has been replaced by the same or different substituents including halo, or lower alkyl;

or a non-toxic pharmaceutically acceptable salt thereof.

4,436,912

7-[2-(2-AMINOOXAZOL-4-yl)-2-(OXIMINO)ACETAMIDO CEPHALOSPORIN ANTIBIOTICS AND INTERMEDIATES THEREFOR

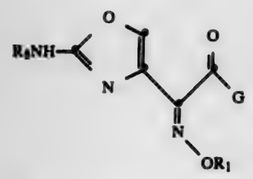
William J. Wheeler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 300,140, Sep. 8, 1981. This application Sep. 13, 1982, Ser. No. 417,242

Int. Cl.³ C07D *263/30*

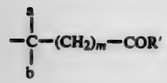
U.S. Cl. 548—233 **25 Claims**

1. A compound of the formula



wherein:

R_1 is hydrogen, C_1 to C_4 alkyl, a carboxy-substituted alkyl or carboxy-substituted cycloalkyl group represented by the formula



wherein m is 0 to 3; a and b when taken separately are independently hydrogen or C_1 to C_3 alkyl, or when taken together with the carbon to which they are attached form a C_3 to C_7 carboxylic ring; R′ is hydroxy, amino, C_1 to C_4 alkoxy, or —OR″ where R″ is a carboxy-protecting group; or R_1 is a secondary amido group of the formula



wherein R‴ is C_1 to C_4 alkyl, phenyl or C_1 to C_3 alkyl substituted by phenyl; R_8 is hydrogen or an amino protecting group; G is chloro, bromo, hydroxy, C_1 to C_4 alkoxy, phenoxy, or a group of the formula

—O—J

wherein J is the residue of a group forming an activated ester; or a group of the formula

$-O^{\ominus}M^{\oplus}$

wherein $M^{\oplus}$ is a monovalent cation.

4,436,913

1H- AND 2H- INDAZOLE DERIVATIVES

Istvan Moinar; Kurt Thiele; Felix Geissmann, and Ulrich Jahn, all of Zofingen, Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

PCT No. PCT/EP80/00094, § 371 Date Apr. 28, 1982, § 102(e) Date Apr. 28, 1982, PCT Pub. No. WO82/00824, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 5, 1980, Ser. No. 375,116

Int. Cl.³ C07D *403/12*

U.S. Cl. 548—316 **17 Claims**

1. 1H- and 2H-indazole derivative selected from the group consisting of 4-(2-imidazolin-2-ylamino)-2-benzyl-indazole, 6-(2-imidazolin-2-ylamino)-2-methyl-indazole dihydrochloride, 4-(2-imidazolin-2-ylamino)-1-benzyl-indazole, 5-(2-imidazolin-2-ylamino)-1-benzylindazole, 5-(2-imidazolin-2-ylamino)-1-(4-chlorobenzyl)-indazole, 5-(2-imidazolin-2-ylamino)-2-benzyl-indazole, 7-(2-imidazolin-2-ylamino)-1-benzyl-indazole, 7-(2-imidazolin-2-ylamino)-2-benzyl-indazole, 5-chloro-1-(2-imidazolin-2-ylamino)phenyl)-indazole, 5-chloro-1-(3,5-dichloro-4-(2-imidazolin-2-ylamino)phenyl)-indazole hydrochloride, 5-chloro-1-(3,5-dichloro-2-(2-imidazolin-2-ylamino)phenyl)-indazole, 5-chloro-1-(3-(2-imidazolin-2-ylamino)benzyl)-indazole or a pharmaceutically acceptable salt thereof.

4,436,914

BENZODIOXANE-IMIDAZOLINE COMPOUNDS AS ANTIHYPERTENSIVES

Arthur F. Kluge; Arthur M. Strosberg; Roger L. Whiting, and George A. Christie, all of 3401 Hillview Ave., Palo Alto, Calif. 94304

Filed Aug. 3, 1981, Ser. No. 289,679

Int. Cl.³ C07D *405/04, 405/06*

U.S. Cl. 548—348 **3 Claims**

1. The compound 4-phenyl-2-(1,4-benzodioxan-2-ylmethyl-)imidazoline or a pharmaceutically acceptable acid addition salt thereof.

4,436,915

PYRANO-INDOLES

Francois Picart, Dijon, France, assignor to Societe de Recherches Industrielles, Paris, France

Filed Jun. 23, 1981, Ser. No. 276,643

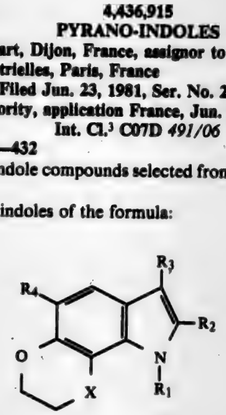
Claims priority, application France, Jun. 26, 1980, 80 14246

Int. Cl.³ C07D *491/06*

U.S. Cl. 548—432 **9 Claims**

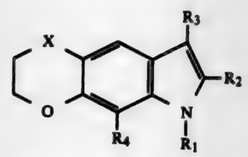
9. Pyranoindole compounds selected from the group consisting of;

(i) pyrano indoles of the formula:



I_o

(ii) pyrano indoles of the formula: and



I'_o

(iii) pharmaceutically acceptable acid addition salts thereof in which:

x represents CH_2, CHOH, or CO;

R_1 represents an atom of hydrogen, or a C_{1-4} alkyl group;

R_2 represents an atom of hydrogen, or a COY_2 group (where Y_2 is OH or C_{1-4} alkoxy);

R_3 represents an atom of hydrogen, or an atom of halogen; and

R_4 represents an atom of hydrogen, an atom of halogen, an OH group C_{1-4} alkyl, or C_{1-4} alkoxy.

4,436,916

PROCESS FOR THE PREPARATION OF INDOLES

Fujio Matsuda, Kamakura; Takazo Kato, Ashigarakami; Tadatoshi Honda, Fujisawa; Kazuhiro Terada, Yokohama, and Yasuo Kogure, Yokosuka, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

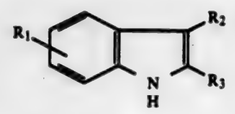
Filed May 18, 1981, Ser. No. 264,627

Claims priority, application Japan, Jun. 3, 1980, 55-73741

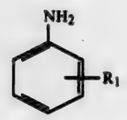
Int. Cl.³ C07D *209/08, 209/12*

U.S. Cl. 548—508 **10 Claims**

1. A process for the preparation of indoles of formula I



wherein R_1 is a hydrogen atom, chlorine atom, bromine atom, methyl group, or methoxy group, and each of R_2 and R_3 is a hydrogen atom, methyl group or ethyl group, at least one of R_2 and R_3 is a hydrogen, which comprises the step of reacting a member selected from the group consisting of anilines of formula (II)



wherein R_1 has the same meaning as in the formula I, with a 1,2-glycol selected from the group consisting of ethylene glycol, propylene glycol and 1,2-butanediol in the presence of a catalytic amount of a sulfide or selenide of cadmium and/or zinc in the vapor phase at a temperature of from 200° C. to 600° C., or in the liquid phase or mixed vapor-liquid phase at a temperature of from 200° C. to 500° C.

4,436,917

PROCESS FOR THE PREPARATION OF INDOLES

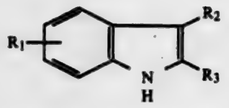
Fujio Matsuda, Kamakura, and Takazo Kato, Ashigarakami, both of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,310

Int. Cl.³ C07D *209/08, 209/12*

U.S. Cl. 548—508 **18 Claims**

1. A process for the preparation of indoles of the formula



wherein R_1 is a hydrogen atom, chlorine atom, bromine atom, methyl group, or methoxy group and R_2 and R_3 are a hydrogen atom, methyl group or ethyl group, at least one of R_2 and R_3 being hydrogen which comprises the step of reacting a compound selected from the group consisting of aniline, o-toluidine, m-toluidine, p-toluidine, o-chloroaniline, m-chloroaniline, p-chloroaniline, o-bromoaniline, m-bromoaniline, p-bromoaniline, o-anisidine, m-anisidine or p-anisidine with a member selected from the group consisting of ethylene glycol, propylene glycol, and 1,2-butanediol, in the vapor phase at a temperature of 200° to 600° C., or in the liquid phase or a mixed vapor-liquid phase a temperature of 200° to 500° C. in the presence of a catalytic amount of:

(a) at least one member selected from the group consisting of CdO, Al_2O_3—B_2O_3, SiO_2—CdO, SiO_2—MgO, TiO_2—SnO_2, CdO—Bi_2O_3, SiO_2—Y_2O_3, Bi_2O_3—BeO, SiO_2—La_2O_3, SiO_2—Ce_2O_3 and SiO_2—ZnO—AgO;

(b) a sulfide or selenide of at least one element selected from the group consisting of Pd, Pt, and Mo;

(c) a chloride, nitrate, sulfate or phosphate of at least one element selected from the group consisting of Tl, Mn, Y, Al, Zn, Cd and In;

(d) at least one element selected from the group consisting of Ir, Os and Ru; or

(e) Metallic Ag supported on an α-Al_2O_3 or SiO_2—ZnO carrier.

17. A process for the preparation of an indole which comprises the step of reacting aniline, p-toluidine, p-chloroaniline or o-anisidine with ethylene glycol, propylene glycol or 1,2-butanediol in the vapor phase at a temperature of 200° to 600° C. in the presence of a catalytic amount of:

(a) at least one member selected from the group consisting of CdO, Al_2O_3—B_2O_3, SiO_2—CdO, SiO_2—MgO, TiO_2—SnO_2, CdO—Bi_2O_3, SiO—Y_2O_3, Bi_2O—BeO, SiO_2—La_2O_3, SiO—$_2$—Ce_2O_3 and SiO2—ZnO—AgO;

(b) a sulfide or selenide of at least one element selected from the group consisting of Pd, Pt and Mo;

(c) a chloride, nitrate, sulfate or phosphate of at least one element selected from the group consisting of Tl, Mn, Y, Al, Zn, Cd and In;

(d) at least one element selected from the group consisting of Ir, Os and Ru; or

(e) metallic Ag supported on an α-Al_2O_3 or SiO_2—ZnO carrier, thereby forming an indole.

4,436,918

METHOD FOR PRODUCTION OF PEPTIDE, AND ITS INTERMEDIATE

Satoshi Horii, Sakai; Hiroshi Fukase, Osaka, and Eiji Higashide, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

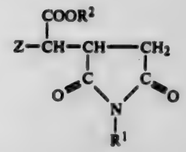
Filed Jan. 18, 1982, Ser. No. 340,337

Claims priority, application Japan, Jan. 26, 1981, 56-10544

Int. Cl.³ C07D *207/40*

U.S. Cl. 548—546 **1 Claim**

1. A compound of the formula:



wherein Z is amino or amino protected by benzyloxycarbonyl, p-methoxybenzyloxycarbonyl, p-nitrobenzyloxycarbonyl, p-chlorobenzyloxycarbony, p-bromobenzyloxycarbonyl, tert-butoxycarbonyl or 2,2,2-trichloroethoxy-carbonyl; R^1 is hydrogen or 2,4-dimethoxybenzyl; and R^2 is hydrogen, methyl, ethyl, tert-butyl, 2,2,2-trichloroethyl, benzyl, p-methoxybenzyl, p-nitrobenzyl, trityl, benzhydryl, bis(p-methoxyphenyl)-methyl or phenacyl.

4,436,919

BORANE COMPLEXES

Christian Aspisi, Boulbon; Marc Bonato, Aramon, and Robert Jacquier, Montpellier, all of France, assignors to Societe d'Expansion Scientifique "EXPANSIA", Paris, France

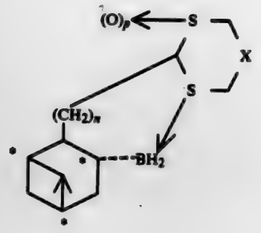
Filed Mar. 17, 1982, Ser. No. 358,847

Claims priority, application United Kingdom, Mar. 25, 1981, 8109392

Int. Cl.³ C07F *5/02*

U.S. Cl. 549—4 **1 Claim**

1. Chiral organoboranes of the formula



in which X represents a methylene group or a sulphur atom, n and p are 0 or 1.

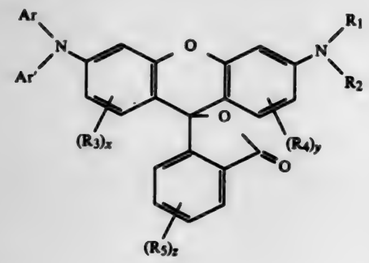
4,436,920

IMAGE RECORDING MEMBERS

Kozo Sato; Ken Iwakura, both of Kanagawa, and Akira Igarashi, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 212,010, Dec. 1, 1980, Pat. No. 4,390,616.
This application Mar. 11, 1982, Ser. No. 357,105
Claims priority, application Japan, Nov. 30, 1979, 54-155117
Int. Cl.³ C07D *493/10*
U.S. Cl. 549—227 6 Claims

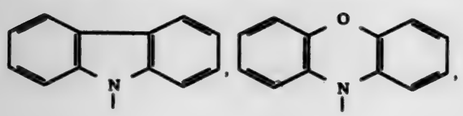
1. A diarylaminofluoran dye precursor represented by the formula (I)



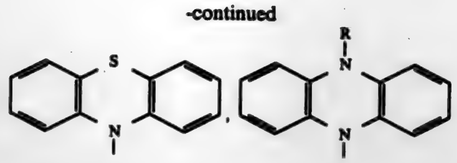
(I)

wherein

Ar and Ar' each are selected from the group consisting of a phenyl group, an alkyl-substituted phenyl group, an alkoxy-substituted phenyl group, a halogen-substituted phenyl group, a naphthyl group, an aralkyl-substituted naphthyl group, a halogen-substituted naphthyl group, and an alkoxy-substituted naphthyl group, or wherein Ar and Ar' are heterocyclic rings selected from the group consisting of a furyl group, a pyrrolyl group, a thienyl group, an indolyl group, a carbazolyl group, a phenoxazinyl group, a phenothiazinyl group, and a phenazinyl group, or wherein Ar and Ar' together form a heterocyclic ring selected from the group consisting of

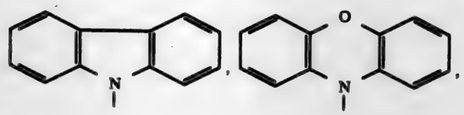


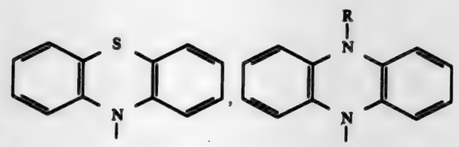
-continued



wherein R is an alkyl group,

R_1 and R_2 each represent hydrogen, an alkyl group, a cycloalkyl group, an aralkyl group, an aryl group or a heterocyclic ring selected from the group consisting of a furyl group, a pyrrolyl group, a thienyl group, an indolyl group, a carbazolyl group, a phenoxazinyl group, a phenothiazinyl group, and a phenazinyl group, or R_1 and R_2 together form a heterocyclic ring selected from the group consisting of





wherein R is an alkyl group,

R_3, R_4 and R_5 each represent an alkyl group, an alkoxy group, a halogen atom, a nitro group, an amino group, an alkylamino group, a dialkylamino group, or an acylamino group,

x and y are each 0 or an integer of from 1 to 3, and

z is 0 or an integer of from 1 to 4.

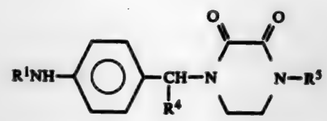
4,436,921

1-(4-AMINOBENZYL)-2,3-DIOXOPIPERAZINE DERIVATIVES, ACID ADDITION SALTS THEREOF AND PROCESS FOR PRODUCING SAME

Takako Hori, Toyama; Chosaku Yoshida, Takaoka; Yasuo Kiba, Toyama; Ryuko Takeno, Toyama; Joji Nakano, Toyama; Jun Nitta, Namekawa; Sumiko Kishimoto, Toyama; Shohachi Murakami, Toyama; Hisatsugu Tsuda, Toyama, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,457
Claims priority, application Japan, Jul. 24, 1979, 54-93234
Int. Cl.³ C07D *401/00*; A61K *31/495*
U.S. Cl. 544—238 4 Claims

1. A compound represented by the following formula,



wherein

R^1 represents a 6-membered nitrogen heterocyclic group selected from the group consisting of piperidinyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-pyrimidinyl, 4-pyrimidinyl, 5-pyrimidinyl, 3-pyridazinyl, 4-pyridazinyl and pyrazinyl, and is optionally substituted by fluorine, chlorine, bromine, iodine, hydroxyl, carboxyl, C_{1-4} alkoxycarbonyl, phenyl-C_{1-4} alkoxycarbonyl, phenoxycarbonyl, C_{1-4} alkyl, di-C_{1-4} alkoxy-C_{1-4} alkyl, C_{2-4} alkenyl, phenyl-C_{1-4} alkyl, C_{5-6} cycloalkyl, cyano, mercapto, C_{1-4} alkylthio, nitro, oxo, imino, thioxo, C_{1-4} alkanoylamino, C_{1-4} alkoxy, phenyl-C_{1-4} alkyloxy, C_{1-8} acyl, amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, anilino, phenyl-C_{1-4} alkylamino, phenyl-C_{1-4} alkoxycarbamoyl, pyridylamino, pyrimidinylamino or 5- or 6-membered heterocyclic group containing O, S or N selected from the group consisting of piperidinyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-pyrimidinyl, 4-pyrimidinyl, 5-pyrimidinyl, 3-pyridazinyl, 4-pyridazinyl, pyrazinyl, 2-pyrrolidinyl, 3-pyrrolidinyl, 3-pyrazolyl, 4-pyrazolyl, 5-pyrazolyl, 4-triazolyl, 5-triazolyl, 5-tetrazolyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-thiazolyl, 4-thiazolyl, 5-thiazolyl, 3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl, 3-isoxazolyl, 4-isoxazolyl, 5-isoxazolyl, 2-imidazolyl, 4-imidazolyl, 5-imidazolyl, 2-indolyl, 3-indolyl, 5-indolyl, 2-benzimidazolyl and 5-benzimidazolyl;

R^4 represents hydrogen or C_{1-4} alkyl; and

R^5 represents hydrogen, C_{1-6} alkyl, phenyl-C_{1-4} alkyl, 2-pyrazinyl or phenyl, which may be unsubstituted or substituted by fluorine, chlorine, bromine, iodine, C_{1-4} alkyl, C_{1-4} alkoxycarbonyl, C_{5-6} cycloalkyl, C_{1-4} alkanoylamino, C_{1-4} alkoxy, C_{1-8} acyl, amino, nitro, di-C_{1-4} alkylamino, pyridylamino, piperidinyl,2-pyridyl, pyrazinyl or 2-furyl which may be substituted by methyl, methoxycarbonyl, acetylamino, amino, or nitro; or

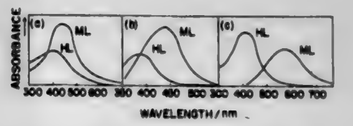
a pharmaceutically acceptable acid addition salt thereof.

4,436,923

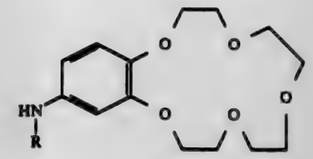
TRIFLUOROMETHYL-SUBSTITUTED CHROMOGENIC CROWN ETHERS AND METHODS OF USING SAME

Gilbert E. Pacey, and Benard P. Bubnis, both of Oxford, Ohio, assignors to The President and Trustees of the Miami University, Oxford, Ohio

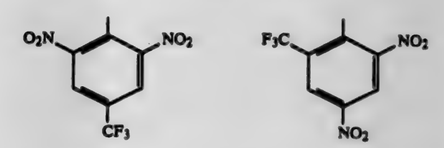
Filed Jun. 7, 1982, Ser. No. 386,066
Int. Cl.³ C07D *323/00*
U.S. Cl. 549—352 4 Claims



1. Chromogenic crown ethers of the formula



where R is taken from the group consisting of



4. A process for synthesis of trifluoromethyl-substituted, 15-crown-5 chromogenic ethers, comprising the following steps in sequence:

(a) forming a reaction mixture in an organic solvent of

(i) 4'-aminobenzo-15-crown-5,

(ii) a compound selected from the group consisting of 1-chloro-2,6-dinitro-4-trifluoromethylbenzene, and 1-chloro-2,4-dinitro-6-trifluoromethylbenzene, and

(iii) a base, and

(b) isolating a trifluoromethyl-substituted crown ether from said reaction mixture.

4,436,922

METHOD FOR MANUFACTURE OF HIGH-PURITY PHTHALIC ANHYDRIDE

Yuichi Kita, Akashi; Kentaro Sakamoto, Hyogo, and Takahisa Sato, Himeji, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 1, 1982, Ser. No. 394,477
Claims priority, application Japan, Jul. 6, 1981, 56-104404; Jul. 15, 1981, 56-109300; Nov. 7, 1981, 56-177808
Int. Cl.³ C07D *307/89*
U.S. Cl. 549—251 12 Claims

1. A method for the manufacture of high-purity phthalic anhydride, which comprises exposing crude phthalic anhydride obtained by vapor-phase catalytic oxidation of ortho-xylene to contact with, per Kg of crude phthalic anhydride, a gas containing molecular oxygen at a rate of at least 0.0001 mole/hour of oxygen, at an elevated temperature in the presence of 10–10,000 ppm by weight, as alkali metal atom, of an alkali metal salt of at least one carboxylic acid selected from the group consisting of maleic acid, succinic acid and benzoic acid, and subsequently subjecting the resultant reaction mixture to distillation.

6. A method for the manufacture of high-purity phthalic anhydride, which comprises exposing crude phthalic anhydride obtained by vapor-phase catalytic oxidation of ortho-xylene, par Kg thereof, to contact with a gas containing at least 0.0001 mole/hour of molecular oxygen at an elevated temperature in the presence of 10–10,000 ppm by weight, as alkali metal atom of an alkali metal salt of at least one carboxylic acid selected from the group consisting of maleic acid, succinic acid and benzoic acid together with a manganese-containing alloy composition, of at least 0.05% by weight and a surface area of at least $5\times10^3 m^2$ and subsequently subjecting the resultant reaction mixture to distillation.

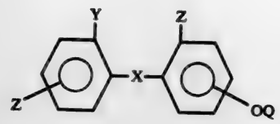
4,436,924

ULTRAVIOLET LIGHT ABSORBING AGENTS AND COMPOSITIONS AND ARTICLES CONTAINING SAME

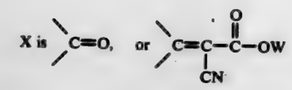
Bruce A. Ashby, and Siegfried H. Schroeter, both of Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 225,429, Jan. 15, 1981, Pat. No. 4,374,674.
This application Sep. 23, 1982, Ser. No. 421,797
The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.
Int. Cl.³ C09K *3/00*; C07F *7/18, 7/09*
U.S. Cl. 556—416 3 Claims

1. An ultraviolet light absorbing agent, comprising a compound having the formula:



wherein



Y is OH;
Z is H, OH, OQ or OW;
Q is $-CH_2(CH_2)_nSi(R_2)_x(OR_1)_y$; and
W is $-C_mH_{2m+1}$;
where x=0, 1 or 2, y=1, 2 or 3, x+y=3, R_1=alkyl or alkanoyl having 1 to 6 carbon atoms, R_2=alkyl having 1 to 6 carbon atoms, n=0, 1 or 2 and m=1 to 18.

4,436,925

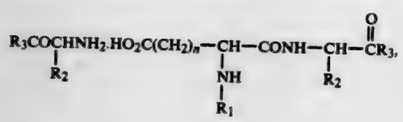
ADDITION COMPOUND OF DIPEPTIDE DERIVATIVE AND AMINO ACID DERIVATIVE

Yoshikazu Isowa; Muneki Ohmori, both of Tokyo; Kaoru Mori; Tetsuya Ichikawa, both of Sagamihara; Yuji Nonaka, Shin-Nanyo; Keiichi Kihara, Shin-Nanyo; Kiyotaka Oyama, Shin-Nanyo; Heijiro Satoh, Shin-Nanyo, and Shigeaki Nishimura, Shin-Nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-Nanyo and Sajami Chemical Research Center, Tokyo, both of, Japan

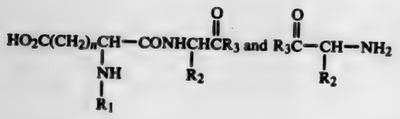
Continuation of Ser. No. 119,654, Feb. 8, 1980, abandoned, which is a division of Ser. No. 20,058, Mar. 13, 1979, abandoned, which is a division of Ser. No. 870,108, Jan. 17, 1978, abandoned.
This application Jun. 3, 1980, Ser. No. 270,025
Claims priority, application Japan, Jan. 27, 1977, 52-7279; May 19, 1977, 52-57036
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ C07C *101/00*
U.S. Cl. 560—19 **9 Claims**

1. A process for resolving a racemate of a phenylalanine lower alkyl ester, comprising:

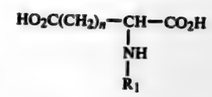
(a) preparing an addition compound of the formula:



wherein the



fragments of said addition compound are the LL form and D form respectively, and wherein R_1 is a benzyloxycarbonyl group or a p-methoxybenzyloxycarbonyl group, R_2 is benzyl, R_3 is lower alkoxy and n is 1 or 2 by reacting an N-substituted-L-monoamino-dicarboxylic acid of the formula:



wherein R_1 and n are as defined above with a DL-phenylalanine lower alkyl ester of the formula:



wherein R_2 and R_3 are as defined above in the presence of protease in an aqueous medium at a pH at which said protease exerts its enzymatic activity;

(b) separating said addition compound from the aqueous medium;

(c) reacting said acid addition compound with an aqueous acid solution, thereby decomposing said acid addition compounds; and

(d) recovering said phenylalanine lower alkyl ester in its D-form.

4,436,926

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER A CATALYST CONTAINING A RARE EARTH OXIDE

John R. Sanderson; Terry L. Renken, and Lewis W. Watts, Jr., all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,662
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **10 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement consists essentially of conducting the reaction in the presence of a rare earth oxide catalyst.

4,436,927

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER THALLIUM BORATE

John R. Sanderson, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,665
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **6 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement comprises conducting the reaction in the presence of thallium borate.

4,436,928

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER CATALYST SYSTEMS CONTAINING OXIDES AND BORATES

John R. Sanderson; Terry L. Renken, and Lewis W. Watts, Jr., all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,666
Int. Cl.³ C07C *67/05, 67/055*
U.S. Cl. 560—246 **14 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride wherein the improvement comprises conducting the reaction in the presence of a catalyst system comprising at least one transition metal oxide compound and at least one borate compound selected from the group consisting of alkali metal borates, alkali earth metal borates and transition metal borates.

4,436,929

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER ALKALI EARTH METAL BORATES

John R. Sanderson, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,667
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **11 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement comprises conducting the reaction in the presence of one or more alkali earth metal borate catalysts.

4,436,930

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER ALKALI METAL BORATES

John R. Sanderson, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,668
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **11 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement consists essentially of conducting the reaction in the presence of one or more alkali metal borate catalysts.

4,436,931

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER CERTAIN OXIDE CATALYSTS

John R. Sanderson; Lewis W. Watts, Jr., and Terry L. Renken, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,685
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **10 Claims**

1. An improved process for the production of alkane hydroxy acetates and dacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride wherein the improvement consists essentially of conducting the reaction in the presence of an oxide catalyst selected from the group of oxide catalysts consisting of niobium oxide, iron oxide and bismuth oxide.

4,436,932

ALKANE ACETATES PRODUCED BY OXIDATIVE ESTERIFICATION OF OLEFINS OVER AMMONIUM BORATE IN THE PRESENCE OF A CARBOXYLATE ION SOURCE

John R. Sanderson, Austin; Steven H. Vanderpool, New Braunfels, and Lewis W. Watts, Jr., Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,686
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **10 Claims**

1. An improved process for the production of alkane hydroxy acetates and diacetates by reacting an olefin or a mixture of olefins with oxygen and a carboxylate ion source selected from the group consisting of acetic acid and acetic anhydride, wherein the improvement comprises conducting the reaction in the presence of ammonium borate.

4,436,933

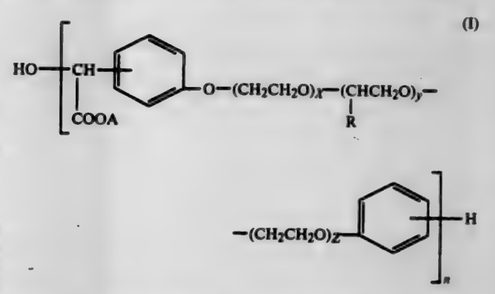
POLYMERIC ETHYLENE OXIDE/PROPYLENE OXIDE OR ETHYLENE OXIDE/BUTYLENE OXIDE ETHER CARBOXYLIC ACIDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Helmut Diery, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,411
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136025
Int. Cl.³ C07C *59/00*
U.S. Cl. 562—470 **3 Claims**

1. A polymeric ethylene oxide/propylene oxide or ethylene oxide/butylene oxide ether carboxylic acid of the formula

(I)



wherein R denotes methyl or ethyl, preferably methyl, A denotes hydrogen or a metal cation, preferably $Na^{(+)}$ or $K^{(+)}$, X and Z together denote a number from 2 to 360, preferably from 2 to 140, y denoted a number from 15 to 70, preferably from 25 to 70 and n denotes a number from 1 to 10.

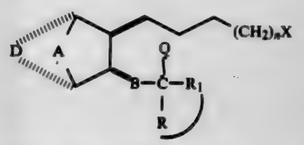
4,436,934

BICYCLIC PROSTAGLANDIN ANALOGS AND METHOD OF SYNTHESIS

Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 231,596, Feb. 5, 1981. This application Dec. 28, 1981, Ser. No. 334,750
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—502 **9 Claims**

1. Prostaglandin analogs of the formula:



wherein n equals a whole integer of from 0 to 7, X is a carboxylic acid group, or X is an alcohol group, or C_1–C_8 ester, or C_1–C_8 ether, or C_1–C_8 amide, A is selected from the group of methylene, ethylene, oxy, imino, alkyl, phenyl and C_1–C_8 aryl substituted imino; D is selected from the group of methylene, ethylene, vinylene, B is selected from the group of ethylene, cis and trans vinylene, and ethynylene; R and R_1 are hydrogen, C_1–C_8 alkyl and C_1–C_8 aryl or $(CH_2)_z$ with Z being 2 to 5, and Q is hydroxy, methoxy, acetoxy or hydrogen, or Q and R_1 are oxa.

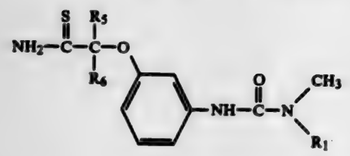
4,436,935

THIOCARBAMOYLALKOXYPHENYLUREAS

Dagmar Berrer, Riehen, Switzerland; Georg Plasiotas, Lörrach, Fed. Rep. of Germany, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 7, 1981, Ser. No. 291,008
Claims priority, application Switzerland, Aug. 19, 1980, 6254/80
Int. Cl.³ C07C *161/00*; E05B *65/00*
U.S. Cl. 564—49 5 Claims

1. A thiocarbamoylalkoxyphenylurea of the formula



wherein

R_1 is methyl or methoxy,

R_5 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or C_2–C_5 alkoxyalkyl, and

R_6 is hydrogen or C_1–C_4 alkyl.

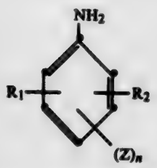
4,436,936

ALKYLATION AND ARALKYLATION OF AROMATIC AMINES

Frederick H. Howell, Atherton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 10, 1982, Ser. No. 387,082
Claims priority, application United Kingdom, Jun. 19, 1981, 8119010
Int. Cl.³ C07C *85/24*
U.S. Cl. 564—409 13 Claims

1. A process for producing a compound having the formula I

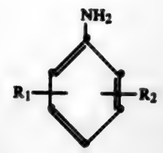


(I)

as well as salts or metal salt complexes thereof with organic or inorganic acids, in which formula I n is 1, 2 or 3, R_1 is H, halogen, CF_3, CCl_3, C_1–C_5 straight or branch chain alkyl or phenyl, R_2 is H, halogen, or C_1–C_5 straight or branch chain alkyl, and Z is linked at a position ortho or para to the NH_2 group and is a residue of formula



wherein R_3 is H or C_1–C_4 straight chain alkyl, R_4 is C_1–C_4 straight chain alkyl or phenyl and R_5 is C_1–C_8 straight or branch chain alkyl or phenyl, or R_3 and R_4 and/or R_4 and R_5, together with the carbon atom to which they are bonded, may be a cyclohexylene ring, which comprises reacting 1.0 mole of an aromatic amine having the formula II



(II)

wherein R_1 and R_2 have their previous significance, with up to three moles of an alkylating agent (III) capable of introducing a residue Z into the benzene ring of an amine of formula II at a position ortho or para to the NH_2 group, the reaction being effected at elevated temperature in the presence of an acid catalyst in an aqueous acid medium containing at least 30% by weight of water, based on the acid used, and optionally converting the compound of formula I into a salt, or metal salt complex, with an organic or inorganic salt.

4,436,937

PROCESS FOR THE RING ALKYLATION OF AN ANILINE

Frank Baardman; Robert van Helden, and Margaretha J. de Nie-Sarink, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 25, 1982, Ser. No. 436,215
Claims priority, application United Kingdom, Nov. 11, 1981, 8133996
Int. Cl.³ C07C *85/24*
U.S. Cl. 564—409 8 Claims

1. A process for the alkylation of an aniline which comprises treating the aniline with an alkylating agent in the liquid phase, at a temperature in the range of from −30° C. to 40° C., in the presence of at least 1.02 mole of an aluminum halide per mole of the aniline.

4,436,938

MANUFACTURE OF AMINES

Alan J. Tompsett, Stockton-on-Tees, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 31, 1982, Ser. No. 413,443
Claims priority, application United Kingdom, Sep. 18, 1981, 8128322
Int. Cl.³ C07C *85/06, 85/02*
U.S. Cl. 564—474 9 Claims

1. A process for the manufacture of methylamines which comprises reacting a feed comprising methanol, dimethylether or mixtures thereof and ammonia over a catalyst comprising binderless zeolite A in the alkaline earth form.

4,436,939

PROCESS FOR PRODUCING 1-(P-PRENYLPHENYL)ETHANOL

Takehiro Amano, Urawa; Kensei Yoshikawa, Kitamoto; Tatsuhiko Sano; Yutaka Ohuchi, both of Ohmiya; Michihiro Ishiguro, Kurashiki; Manzo Shiono, Kurashiki; Yoshiji Fujita, Kurashiki, and Takashi Nishida, Kurashiki, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo and Kuraray Co., Ltd., Okayama, both of, Japan

Filed Aug. 25, 1982, Ser. No. 411,481
Claims priority, application Japan, Aug. 26, 1981, 56-134778
Int. Cl.³ C07C *33/28*
U.S. Cl. 568—813 9 Claims

1. A process for producing 1-(p-prenylphenyl)ethanol, which comprises reacting p-chloroprenylbenzene with magnesium at a temperature between 100° C. and 150° C. to form a Grignard reagent, and then reacting said Grignard reagent with acetaldehyde at a temperature between −40° C. and 20° C.

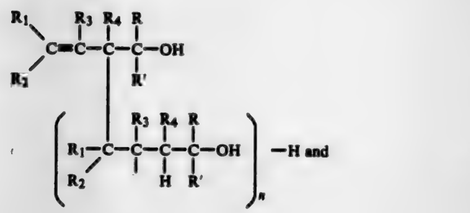
4,436,940

PHOTOCHEMICAL METHOD FOR PREPARING LOW MOLECULAR WEIGHT OLEFIN POLYMERS AND COPOLYMERS OF 3-BUTENE-1-OL

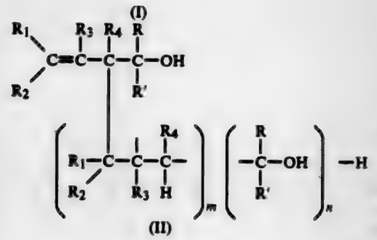
Ellis K. Fields, River Forest, and William C. Clarke, Evanston, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 21, 1981, Ser. No. 256,060
Int. Cl.³ B01J *19/12*
U.S. Cl. 568—857 18 Claims

1. A composition structurally represented as containing repeating units as follows:



—H and



(II)

wherein m and n are fractional and whole numbers from 1 to 10, R_1, R_2, R_3 and R_4 are individually selected from the group consisting of hydrogen and alkyl groups of 1 to 9 carbon atoms, wherein the sum of carbon atoms of R_1, R_2, R_3 and R_4 does not exceed 9, R and R′ are alkyl groups of from 1 to 11 carbon atoms wherein the sum of carbon atoms of R′ and R does not exceed 12 wherein R_1 and R_3 can be joined to form an alicyclic olefin.

4,436,941

PROCESS FOR THE ISOMERIZATION OF ALKYLBENZOTRIFLUORIDES

Albrecht Marhold, Leverkusen, and Erich Klauke, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,331
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151364
Int. Cl.³ C07C *17/24*
U.S. Cl. 570—144 20 Claims

1. A process for isomerizing an alkylbenzotrifluoride which comprises contacting said alkylbenzotrifluoride with hydrogen fluoride.

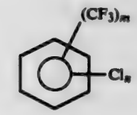
4,436,942

PROCESS FOR THE CATALYZED FLUORINATION OF HALOALKYL AROMATIC COMPOUNDS

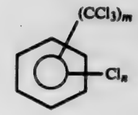
Charles G. Rader, Grand Island, and Stephen Robota, North Tonawanda, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 846,047, Oct. 27, 1977, abandoned. This application Apr. 30, 1979, Ser. No. 34,803
Int. Cl.³ C07C *9/08*
U.S. Cl. 570—148 19 Claims

1. A process for the preparation of a benzotrifluoride compound of the formula



which comprises contacting a benzotrichloride compound of the formula



wherein

n is 0 to 5, and

m is 1 to 3

in the vapor phase, with hydrogen fluoride in the presence of a catalyst consisting essentially of a granular, porous high surface area catalyst prepared by treating γ-alumina with hydrogen fluoride.

4,436,943

PROCESS FOR THE PREPARATION OF 2,2-DICYCLOHEXENYLPROPANE

Gebhard Rauleder, Haan, and Helmut Waldmann, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,464
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211304
Int. Cl.³ C07C *1/20*
U.S. Cl. 585—357 9 Claims

1. A process for the preparation of 2,2-dicyclohexenylpropane which comprises heating 4,4′-dioxydicyclohexylpropane in the presence of a strong acid, under a pressure of 1 to 50 m.bar and at a temperature in the range of from 120° to 220° C. and distilling off 2,2-dicyclohexenylpropane together with water formed from the reaction mixture and separating water from the top product of the distillation.

4,436,944

PREPARATION OF O-XYLENE AND ETHYLBENZENE

Hans-Martin Weitz, Bad Durkheim; Rolf Fischer, Heidelberg, and Hans H. Pohl, Deidesheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 5, 1982, Ser. No. 337,285
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101043
Int. Cl.³ C07C *1/20*
U.S. Cl. 585—406 5 Claims

1. A process for the preparation of a mixture of o-xylene and ethylbenzene in a one-stage reaction, said mixture containing ethylbenzene as its principal product, which process comprises:

heating 2,7-octadien-1-ol, 1,7-octadien-3-ol or mixtures con-

taining these octadienols, or carboxylates of 2,7-octadien-1-ol or of 1,7-octadien-3-ol, or mixtures containing these carboxylates at a temperature of from 200° to 550° C. over an aluminum oxide or titanium doxide catalyst to convert these starting materials to said mixture of o-xylene and ethylbenzene, ethylbenzene being the principal product of the mixture.

4,436,945

METHOD OF HYDRO-DEALKYLATION

Masahiko Koya, and Yohei Fukuoka, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1982, Ser. No. 360,145
Claims priority, application Japan, Apr. 1, 1981, 56-49193
Int. Cl.³ C07C *4/12*
U.S. Cl. 585—488 **4 Claims**

1. A method for hydro-dealkylation of an alkyl aromatic hydrocarbon which comprises treating the alkyl aromatic hydrocarbon in the presence of hydrogen using a catalyst mainly composed of a zeolite 15 to 50 equivalent % of exchangeable cations of which are exchanged with hydrogen ions.

4,436,946

PREPARATION OF PROPYLENE AND BUTYLENE DIMERS USING PALLADIUM CYANIDE AS CATALYST

Edgar J. Smutny, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 19, 1982, Ser. No. 442,999
Int. Cl.³ C07C *3/10, 3/12, 3/18*
U.S. Cl. 585—510 **11 Claims**

1. A process for the selective dimerization of propylene and/or n-butylenes which comprises steps for (a) contacting under mechanical agitation an olefin reactant selected from the group consisting of propylene, 1-butene, 2-butene, and mixtures thereof with a heterogeneous palladium cyanide catalyst at a temperature in the range from about 50° C. to 150° C., the quantity of said palladium cyanide being between about 0.01 and 10 percent by weight calculated on the weight of olefin reactant, to produce a reaction product solution containing olefin reactant dimers, and (b) recovering said dimers from said product solution.

4,436,947

OLEFIN OLIGOMERIZATION USING BORON TRIFLUORIDE AND A THREE-COMPONENT COCATALYST

Neal E. Morganson, McCandless Township, Allegheny County, and Adam V. Vayda, Oakmont, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 11, 1981, Ser. No. 301,446
Int. Cl.³ C07C *3/18*
U.S. Cl. 585—525 **8 Claims**

1. A process for producing a mixture of olefin oligomers which comprises contacting an olefin having from about six to about 20 carbon atoms or a mixture thereof with a catalyst comprising boron trifluoride and a cocatalyst comprising between about 50 and about 98 weight percent of an aliphatic alcohol having from one to about ten carbon atoms, between about one and about 25 percent of an aliphatic ketone having from three to about ten carbon atoms and about one to about 25 percent of a polyol selected from ethylene glycol, propylene glycol, butane diol and glycerine.

4,436,948

CATALYST COMPOSITIONS

Rex L. Bobsein, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 7, 1982, Ser. No. 415,202
Int. Cl.³ C07C *2/02;* B01J *27/06*
U.S. Cl. 585—532 **11 Claims**

1. A catalyst composition suitable for use inthe oligomerization of olefins comprising at least two metal containing components wherein:

the first component contains one or more Group IIIA metal halides and the second component contains one or more metal halides selected from Group IVB metals and the catalyst contains metal components in about equal amounts based on their atomic weights.

6. A process of oligomerizing olefins comprising subjecting them to oligomerization conditions in the presence of a catalyst containing:

(1) a Group IIA metal halide, and

(2) at least one other metal halide selected from Group IVB metals, wherein the catalyst contains metal components in about equal amounts based on their atomic weights.

4,436,949

OLEFIN CONVERSION PROCESS

John W. Myers, and Daniel J. Strope, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 21, 1982, Ser. No. 420,970
Int. Cl.³ C07C *5/24, 5/30*
U.S. Cl. 585—664 **19 Claims**

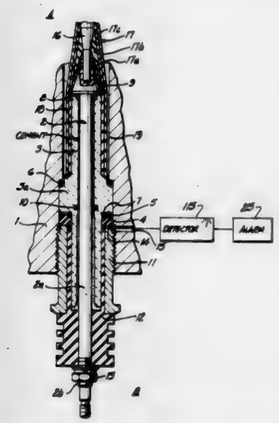
1. A process for the conversion of at least one olefin which comprises adding to said olefin at least 0.10 mole percent of water and thereafter contacting the resulting wet olefin with an acidic alumina catalyst.

4,436,950

SYSTEM FOR SEALING PASSAGES IN THE WALLS OF GLANDLESS CIRCULATING PUMPS OR THE LIKE

Karl Gaffal, Heusheim, and Christian Klepp, Frankenthal, both of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,329
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1981, 3103299
Int. Cl.³ H01B *17/30*
U.S. Cl. 174—11 BH **18 Claims**



1. A system for sealing a passage which is provided in a wall separating a higher-pressure area from a lower-pressure area and serves to allow for the transmission of electrical energy from a source in one of said areas to a consumer in the other of said areas, comprising an annular non-magnetic seat provided in the passage and having a predetermined inner diameter; an elongated conductor adapted to be introduced into said passage from the lower pressure area, said conductor extending through said passage and having in said higher-pressure area a portion with an outer diameter exceeding said predetermined inner diameter and being urged toward said seat owing to the pressure differential between said areas; cable means connected with said conductor in said higher-pressure area; a rigid pressure- and temperature-resistant insulating sleeve surrounding said conductor in said passage and bearing against said seat; a tubular insulating device surrounding said portion of said conductor and a portion of said sleeve in said higher-pressure area; a flexible insulating sheath sealingly surrounding said device; and a sealing element interposed between said conductor and said sleeve in the region of said portion of said conductor.

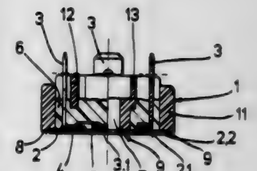
4,436,951

SEMICONDUCTOR POWER MODULE

Rolf Rief, Mannheim, and Peter Wetzel, Weinheim-Lützelsachsen, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,335
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028178
Int. Cl.³ H05K *5/00*
U.S. Cl. 174—52 PE **10 Claims**

1. Semiconductor power module, comprising a substantially prismatic plastic housing with a lower surface having a recess with a shoulder-like step formed in the periphery thereof, a ceramic plate being inserted into said step and having an outer flat surface extending beyond said lower surface of said housing and an inner flat surface facing the interior of said housing, metallizations, semiconductor components and solder jumpers disposed on said inner surface of said ceramic plate, external contact elements being disposed on said inner surface of said ceramic plate and being freely accessible from on top of said housing, said housing including a frame having an open top and bottom, a central fastening part having a lower surface and having a hole formed therethrough for fastening the module to a heat sink, and radially-directed spokes extended between said frame and said central fastening part, said ceramic plate being



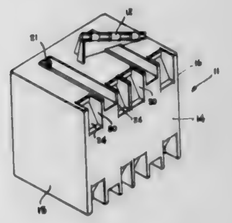
braced against said lower surface of said central fastening part and having a breakthrough formed therein in alignment with said through hole, said spokes being disposed at a distance from said ceramic plate defining a space therebetween, and each of said external contact elements being separated from each other by at least one spoke, and hardened insulating casting compound filling substantially half of the interior of said housing.

4,436,952

CABLE CLAMPING DEVICE INTEGRALLY FORMED WITH PLASTIC MOLDED ELECTRICAL BOX

Alan C. Lockwood, 4526 Darlow Ave., Rosemead, Calif. 91770

Filed Dec. 28, 1981, Ser. No. 335,247
Int. Cl.³ H02G *3/08*
U.S. Cl. 174—65 R **8 Claims**



1. In a molded electrical box having a plurality of walls with broad outside surfaces a clamping device integrally formed with said box for clamping a member to said box, said member passing from the outside of the box to the interior thereof through an aperture formed in a wall of said box, said clamping device comprising

a single resilient finger member hinged at one end thereof to one of the walls of said box and extending away from said wall at an acute angle relative to the broad outside surface of said wall, said finger member being free of the box at the sides and the other end thereof, said finger member being positioned in said aperture,

tab means formed on said free other end of the finger member for use in prying said finger member away from said clamped member to permit the removal or repositioning thereof, said tab means being in the form of a strip having at least one flat surface, the flat surface of said tab means being positioned directly opposite an-inside wall of said box,

means for establishing a limiting position to the bending of said finger member comprising a projection formed on a

surface of said finger member facing towards the interior of said box, and

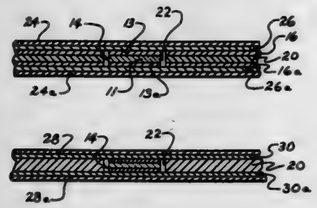
strip means extending from an inner wall of said box against which the projection abuts with the finger member in said limiting position,

the member passing from the outside to the inside of the box being clamped in said aperture between the finger member and the wall portions forming said aperture.

4,436,953
BUS BAR ASSEMBLY WITH DISCRETE CAPACITOR ELEMENTS

Michael M. Gottlieb, Kraainem, Belgium, assignor to Rogers Corporation, Rogers, Conn.

Filed Mar. 31, 1981, Ser. No. 249,392
Int. Cl.³ H01B 7/00
U.S. Cl. 174—72 B 9 Claims



1. A bus bar assembly including:

centrally disposed electrically insulating spacer means having at least one opening therein;

capacitor means in said opening in said spacer means, said capacitor means including a layer of dielectric material having a pair of opposed first and second planar surfaces with first and second respective electrically conductive layers on each of said planar surfaces;

first and second bus bar means positioned on opposite sides of said capacitor means;

first and second means for connecting said first and second bus bar means respectively to the conductive layers on each of said first and second planar surfaces of said capacitor means; and

said first and second connecting means being comprised of an assembly of a conductor on a flexible substrate, with the conductor thereof in electrical contact with said first and second conductive layers, respectively, of said capacitor means, and said assemblies retaining said capacitor means in the bus bar assembly.

6. A high capacitance bus bar assembly including:

centrally disposed electrically insulating spacer means having first and second opposed planar surfaces and at lease one opening therein;

capacitor means in said opening in said spacer means, said capacitor means having a layer of dielectric material with first and second opposed planar surfaces with electrically conductive layers thereon;

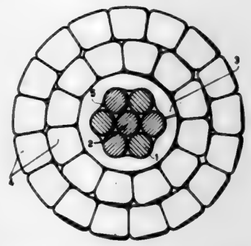
first and second bus bar means, said first bus bar means being on said first surface of said spacer means and said second bus bar means being on said second surface of said spacer means; and

each of said bus bar means being comprised of an assembly of a flexible nonconductive substrate and a conductor on the substrate, the conductor of said first bus bar means bridging said opening in said spacer means on said first surface of said spacer means and being in electrical contact with the electrically conductive layer on said first planar surface of said capacitor means, and the conductor of said second bus bar means bridging said opening in said spacer means on said second surface of said spacer means and being in electrical contact with the electrically conductive layer of said second planar surface of said capacitor means.

4,436,954
STEEL-CORED ALUMINUM CABLE

Gyula Kaderjak, Bathory I.u.26/a, 3532 Miskolc, III; Albert Veres, Selyemret u.2.II.1, 3527 Miskolc; Istvan Barkoczy, Kommün u.2., 3530 Miskolc, and Janos Lonecsak, Barathegyalja u.54., 3532 Miskolc, III, all of Hungary

Continuation of Ser. No. 135,514, Mar. 31, 1980, abandoned, which is a continuation of Ser. No. 934,588, Aug. 17, 1978, abandoned. This application Aug. 3, 1981, Ser. No. 289,191
Claims priority, application Hungary, Aug. 19, 1977, DE 939
Int. Cl.³ H01B 5/10
U.S. Cl. 174—128 R 10 Claims

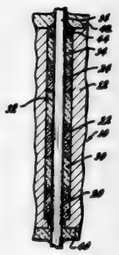


1. A steel-cored aluminum cable for electric power conduction, comprising a steel core including a plurality of steel wires, an aluminium coating disposed all around the wires and formed from an aluminium sheet having an inner surface pressed into direct contact therewith and a substantially cylindrical outer surface and a plurality of aluminium staples disposed around the aluminium coating ans upset into direct contact with the cylindrical outer surface of the aluminium coating along the entire innermost circumferential surface of the aluminium staples to impart a trapezoidal cross-section to each of the staples.

4,436,955
TERMINAL ASSEMBLY

James C. Kyle, 2547 Fisher Rd., Roseburg, Oreg. 97470

Filed May 15, 1981, Ser. No. 264,066
Int. Cl.³ H01B 17/26; C03C 27/02, 3/22
U.S. Cl. 174—152 GM 23 Claims



9. In combination,

a ferrule,

a terminal pin disposed in spaced relationship to the ferrule,

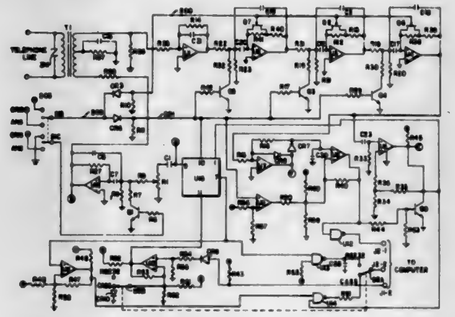
first layers made from a first ceramic insulating material and disposed in spaced relationship to one another in the space between the terminal pin and the ferrule and fused to adjacent ones of the terminal pin and the ferrule, the first ceramic insulating material having properties of withstanding considerable pressures without any deterioration in the fused relationship with the terminal pin and the ferrule, and

second layers made from a second ceramic insulating material and disposed in spaced relationship in the space between the terminal pin and the ferrule and between the first layers and fused to adjacent ones of the terminal pin and the ferrule and the first layers, the second ceramic insulating material having properties of withstanding elevated temperatures without any deterioration in the fused relationship with the terminal pin and the ferrule.

4,436,956
SWITCHABLE BANDPASS FILTER

Paul T. Schreiber, Fort Worth, Tex., assignor to Tandy Corporation, Forth Worth, Tex.

Filed Dec. 29, 1981, Ser. No. 335,553
Int. Cl.³ H03H 11/12
U.S. Cl. 179—2 C 10 Claims



1. An electronic bandpass filter for use in a device which requires bandpass filtering with at least two distinct center frequencies and which generates a control signal to select said center frequency, said filter having an input for receiving signals from said device and comprising,

at least one filter section having an active signal gain element and at least two passive frequency selecting elements

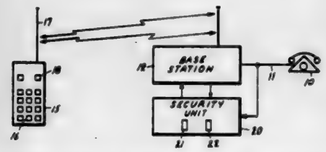
means responsive to said control signal for selectively connecting said frequency selecting elements to said active element to select the center frequency of said filter, and

gain means connected in series with said input and said filter section and having a signal gain relative to the signal gain of said filter section so that substantially the entire signal gain of said filter results from said gain means.

4,436,957
TELEPHONE SECURITY SYSTEM FOR CORDLESS TELEPHONY

Frank J. Mazza, Edison, and John DeFilippis, South Amboy, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,528
Int. Cl.³ H04M 1/66; H04Q 7/04
U.S. Cl. 179—2 EA 17 Claims



1. In a cordless telephone system of the type having a base unit coupled to a telephone line and for transmitting to and receiving signals from a remote unit associated with said base unit, said remote unit also capable of transmitting to and receiving signals from said base unit, said base unit capable of causing said telephone line to go "off-hook" when requested by said remote unit to cause dial tone to be transmitted to said remote unit, the combination therewith of apparatus for preventing the transmission of dial tone from said base unit to said remote unit until authorized, said apparatus comprising:

means for storing a predetermined signal code in said base unit;

means located in said base unit for receiving signals transmitted by said remote unit when it is desired to transmit a dial tone to said remote unit from said base unit, said signals including signals indicative of said predetermined code, and said means for receiving said signals including a first timing circuit operative to provide a timing interval of a given duration when a transition pulse is detected indicative of a dial signal, whereby if additional pulses are not received during said interval said telephone is inhibited from receiving said dial tone;

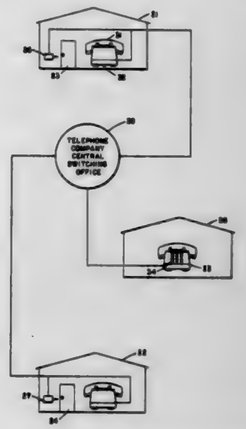
means associated with said base unit for comparing said signals received from said remote unit with said stored signals indicative of said predetermined signal code in order to detect a favorable comparison therebetween; and

means for activating said telephone line to transmit said dial tone from said base unit to said remote unit when a favorable comparison is made.

4,436,958
SYSTEM USING THE TELEPHONE NETWORK TO CONTROL LOCKS AT A NUMBER OF REMOTE LOCATIONS

Robert C. Hansen, Orland Park, and Paul G. Novorolsky, Carol Stream, both of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,992
Int. Cl.³ H04M 11/00
U.S. Cl. 179—2 A 16 Claims



1. A system for selectively operating a device in response to a sequence of telephone call multifrequency dial pulses, which comprises:

means responsive to each multifrequency dial pulse for generating a transfer signal;

a sequence circuit responsive to second and third telephone call multifrequency dial pulses and a termination of each accompanying transfer signal for producing output signals;

a first timing circuit operated by a first of said sequence telephone multifrequency call dial pulses for producing an enabling signal that enables said sequence circuit to respond to said second and third telephone call dial pulses within a first predetermined time; and

a second timing circuit responsive to operation of said se-

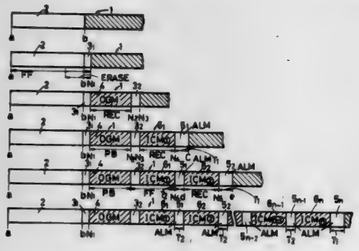
quence circuit for operating the device for a second predetermined period of time whereafter the second timing circuit reverts to an initial setting.

4,436,959

AUTOMATIC TELEPHONE ANSWERING DEVICE

Takashi Nakatsuyama, Kawasaki, and Yoshitomo Nakano, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,189
Claims priority, application Japan, Jun. 9, 1980, 55-77483
Int. Cl.³ A04M *11/10*
U.S. Cl. 179—6.09 **19 Claims**



1. A method of automatically answering phone calls on a phone line and recording messages from calling parties in sequence on a single magnetic tape with a magnetic tape device having a stop mode, a rewind mode, a forward mode, and a fast-forward mode comprising the steps of:

providing a magnetic tape having recorded thereon an outgoing message and a control signal indicating the end of said outgoing message;

automatically coupling the device to the phone line upon detection of a ringing signal on the phone line;

setting the device into its forward mode and playing said prerecorded outgoing message;

detecting the length of advance of said magnetic tape, with values representing the length of advance at the beginning and end of the outgoing message and at the end of any previously recorded incoming message being stored, wherein said stored value representing the length of advance at the end of said outgoing message is determined by using said control signal;

comparing the length of advance of said magnetic tape with said stored values and when said length corresponding to the end of the outgoing message is reached and if no previous incoming messages have been recorded, recording in said track any incoming message from the calling party, but if there have been previously recorded any such incoming messages, setting said device into its fast-forward mode until the length of advance corresponding to the end of the last such previously-recorded incoming message is detected, and then setting said device into its forward mode and recording the incoming message from the calling party;

upon termination of the incoming message, storing the value representing the length of advance at the end thereof, and setting the device into its rewind mode;

detecting said length of advance as said tape is rewound, and comparing said detected length of advance with said stored values; and

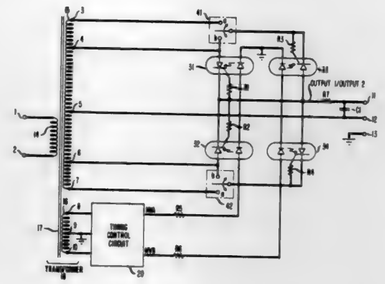
when said detected length of advance corresponds to the stored value representing the beginning of said outgoing message, setting said device into its stop mode, thereby conditioning the device to greet any subsequent calling parties by playing back said recorded outgoing message.

4,436,960

TELEPHONE RINGING SIGNAL GENERATOR

William R. Harmon, Jr., Burlington, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 11, 1982, Ser. No. 338,224
Int. Cl.³ H04M *5/12*
U.S. Cl. 179—51 AA **8 Claims**



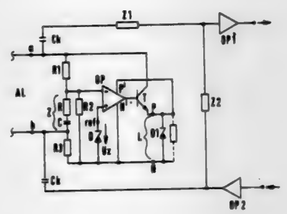
1. Apparatus for generating a telephone ringing signal comprising a source of an alternating current input signal, control means responsive to the input signal for generating first and second control signals, each control signal having an active level and an inactive level, first means responsive to the first control signal for supplying a current to the subscriber's line during at least a time interval in which the first control signal subsists at an active level, second means responsive to the second control signal for supplying a current to the subscriber's line during at least a time interval in which the second control signal subsists at an active level, the current from the first means being in an opposite direction to the current from the second means, the first control signal having a frequency equal to the frequency of the second control signal, the frequency of the first or second control signal being substantially equal to the frequency of the ringing signal, and the frequency of the ringing signal being substantially less than the frequency of the alternating current input signal.

4,436,961

COMMUNICATIONS SYSTEM CONNECTING CIRCUIT FOR CONTROLLING DERIVATION OF OPERATING POWER FROM SUBSCRIBER LINE CURRENT

Thomas Heilig, Spiegelberg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 22, 1981, Ser. No. 285,867
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027783
Int. Cl.³ H04B *1/58;* H04M *1/76, 19/00*
U.S. Cl. 179—77 **4 Claims**



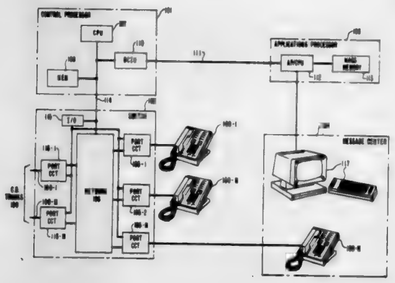
1. A circuit arrangement for connecting a communications set, defining a subscriber loop containing a load to be supplied with operating power, to a subscriber line of a subscription communication network in which each subscriber line includes two wires between which the communications set is conductively connected, said circuit arrangement comprising: an operational amplifier having a noninverting input, an inverting input and an output; a setting transistor connected to have its conductive state controlled by the signal at said amplifier output and connected for influencing the current flowing between the two wires of the associated line and through the subscriber loop; a voltage divider connected between the two wires of the subscriber line and having a center tap connected to the inverting input of said amplifier for applying to said amplifier inverting input a voltage proportional to the voltage between the two wires of the associated line ; a measuring resistor connected to conduct the current flowing through the subscriber loop and connected between one wire of the line and the noninverting input of said amplifier; a source of a reference voltage connected between said measuring resistor and said noninverting input of said amplifier; and a second resistor connected between said inverting input of said amplifier and the end of said reference voltage source remote from said amplifier noninverting input; and wherein the load to be supplied with operating power is connected in series between said transistor and one wire of the associated line.

4,436,962

CALL COVERAGE ARRANGEMENT

Richard A. Davis, Boulder; Susan K. Harris, Northglenn, and Bernard R. Jones, Arvada, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1982, Ser. No. 363,422
Int. Cl.³ H04M *3/50;* H04Q *3/64*
U.S. Cl. 179—18 B **38 Claims**



1. A method of providing call coverage service for a principal station in a telephone system having a storage memory and serving a plurality of stations, comprising the steps of

storing call coverage criteria in memory specifying conditions under which calls directed to the principal station will be redirected to coverage,

storing in memory identifications of a plurality of call covering stations for the principal station and an order of preference of the call covering stations, and

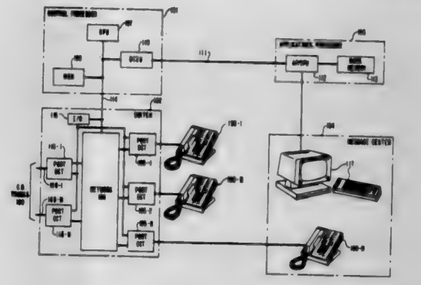
in response to a call intended for the principal station from a calling station and satisfying the coverage criteria, redirecting the call to coverage from the principal station sequentially to each of the covering stations in the order of preference until the call is answered or abandoned.

4,436,963

IMPLIED PRINCIPAL ADDRESSING IN A CALL COVERAGE ARRANGEMENT

Jeanie L. Cottrell, Arvada; Richard A. Davis, Boulder; Susan K. Harris, Northglenn; Bernard R. Jones, Arvada, and John Y. Payseur, Thornton, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1982, Ser. No. 363,423
Int. Cl.³ H04M *3/50*
U.S. Cl. 179—18 B **18 Claims**



1. In a telephone system having a storage memory and serving a plurality of telephone stations, a method of providing call handling operations at a call covering station, comprising the steps of

redirecting calls intended for ones of a prescribed group of principal stations to the call covering station under prescribed circumstances,

automatically identifying an intended principal station responsive to a signal from the covering station on a said call redirected to the covering station, and

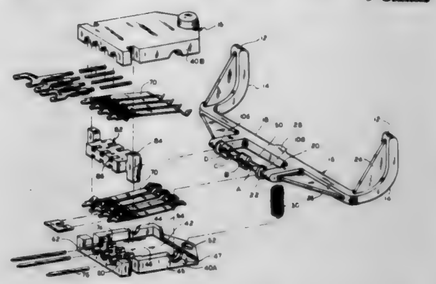
executing a call processing operation specified by the signal with respect to the principal station identified in the immediately preceding step.

4,436,964

HOOKSWITCH MECHANISM FOR TELEPHONE INSTRUMENT

Steve W. Haskins, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 302,179
Int. Cl.³ H01H *21/06, 21/24, 21/82;* H04M *1/08*
U.S. Cl. 179—164 **9 Claims**



1. An electrical hookswitch mechanism, for use in a telephone instrument for actuating a plurality of contact spring sets on each operation of the mechanism, comprising: an actuating lever for said mechanism, a plurality of sets of leaf springs, each spring comprising an elongated body portion with a contact at one end thereof stepped from the body portion, each set of springs including a spring in a first parallel alignment and a spring in a second parallel alignment, a rotatable camshaft positioned between the first and second align-

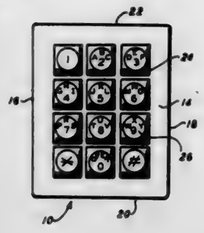
ments, a plurality of cams on said camshaft with each cam positioned between springs of a set along the body portion thereof, first and second oppositely directed lobes on each cam, each said lobe having a spring engaging surface adapted to engage a respective one of the springs of the set between which the cam is positioned, an enclosing housing surrounding said springs and cams, with lateral extensions of said camshaft extending out of said housing at each end to enable coupling of the camshaft to said actuating lever for causing rotation of said camshaft and consequent actuation of spring contacts in response to movement of said actuating lever, and shaft means for pivoting said lever spaced from and generally parallel to the axis of the camshaft and coupled thereto for rotation of said camshaft responsive to pivotal movement of the lever.

4,436,965

SEALING MEANS FOR TELEPHONE COVER DEVICE

Milton Morse, Fort Lee, N.J., assignor to APM Corporation, Englewood, N.J.

Continuation-in-part of Ser. No. 236,757, Feb. 23, 1981, and a continuation-in-part of Ser. No. 61,647, May 7, 1981, and a continuation-in-part of Ser. No. 286,063, Jul. 23, 1981. This application Sep. 4, 1981, Ser. No. 299,509
Int. Cl.³ H02M 1/23
U.S. Cl. 179—184 8 Claims



1. A protective cover for the push-button array of a push-button telephone set, comprising:

a flexible elastomeric sheet having a grid of upwardly-directed pockets, each of said pockets being defined by substantially vertical side-walls rising above the main plane of said sheet and an upper top portion extending across the tops of said vertical walls, the adjacent vertical walls of adjacent pockets being spaced from each other; said pockets thereby extending above the said plane of said sheet and being open at the lower end for receiving each of the buttons of said array and thereby overlying the corresponding array of push-buttons on said telephone; said top portion of each said pocket being provided with an upwardly protruding portion, the lateral periphery of which is inward of said vertical walls; said pockets being elastically depressible independently of one another toward their open ends, to permit individual displacement of the underlying telephone set push-buttons received in said pockets; said sheet including a skirt portion extending laterally beyond said grid and said sheet being continuous between its lateral edges, whereby said entire push-button array is overlaid by said cover and thereby protected from spillage of liquids or other environmental hazards; and

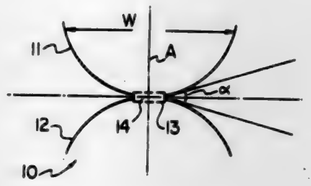
a gasket for effectively sealing said protective cover to said telephone set, said gasket being adapted to extend completely around the periphery of the elastomeric sheet, said gasket being flexible and adherent to the elastomeric sheet and the telephone set; and said gasket having covers on opposite sides thereof which are removable for attachment of the gasket, by the application of pressure, to the elastomeric sheet and the telephone set, respectively.

4,436,966

CONFERENCE MICROPHONE UNIT

Radamis Botros, Nepean, Canada, assignor to Daromse, Inc., Harvard, Ill.

Filed Mar. 15, 1982, Ser. No. 358,293
Int. Cl.³ H04R 19/04, 1/32
U.S. Cl. 179—121 D 9 Claims



1. A microphone unit comprising a bidirectional acousto-electric transducer of the cosine-response type disposed in proximity to, and between, two dish-like back-to-back sound collectors each having an aperture therein exposing one of two active, opposite surfaces of said acousto-electric transducer, whereby said microphone unit exhibits substantially rotational symmetry around a central axis of bidirectionality.

4,436,967

TELEPHONE LOCK

Eric S. Cohen, c/o Cose Technology Corp., 15 E. 40th St., New York, N.Y. 10019

Filed Mar. 11, 1982, Ser. No. 357,306
Int. Cl.³ H04M 1/66
U.S. Cl. 179—189 R 9 Claims



1. A lock for a telephone of the type having apertured caps threadedly mounted at opposite end regions of a handset, each cap forming an annular generally U-shaped, externally-open groove between the end face of the respective cap and the handset, said lock comprising:

(a) a locking cup mountable over one of the caps, said locking cup having a shield portion for overlying the apertures in said one cap, and an annular generally cylindrical skirt portion depending from the shield portion and covering the groove formed by said one cap to thereby prevent across to the groove;

(b) means for preventing sound from passing through the apertures of said one cap when the locking cup is mounted thereon; and

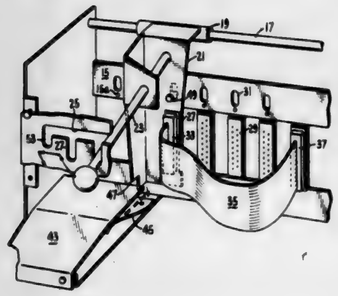
(c) means on the locking cup for locking the same on said one cap, said locking means including a stationary locking element fixedly mounted on the skirt portion and extending into and within the groove a predetermined location along the periphery of the groove, and a manually-operated movable locking element mounted on the locking cup for displacement between a retracted position in which the movable locking element is located exteriorly of the groove, and a locked position in which the movable locking element extends into and within the groove and lockingly engages said one cap at another location along the periphery of the groove which is spaced remotely from said predetermined location, to thereby prevent unauthorized use of the telephone.

4,436,968

MULTIPLE POSITION SWITCH

Joe D. Giulie, P.O. Box 51350, Palo Alto, Calif. 94303

Filed Dec. 10, 1981, Ser. No. 329,342
Int. Cl.³ H01H 9/00, 15/00, 19/00
U.S. Cl. 200—5 R 21 Claims



1. A switch for connecting a plurality of conductors to one of a plurality of ports, comprising in combination:

a. at least one first connector of the plug-in type having a plurality of contacts therein, said contacts being connected to individual wires of flexible multiple conductors,

b. a plurality of complementary second connectors of the plug-in type mounted on a frame and facing in the same direction, each having contacts complementary to the contacts of a first connector,

c. a lever arm attached to said first connector and mounted for restricted movement on said frame and having a handle thereon, whereby:

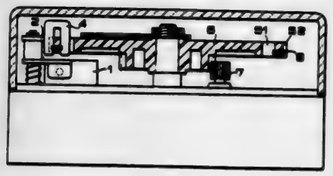
d. an operator can actuate said handle to move said first connector to a selected one of said second connectors and plug said connectors together.

4,436,969

TIMING DEVICE FOR TIME SWITCH

Yoshiaki Motoki, Hiroshima, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,127
Claims priority, application Japan, Apr. 15, 1981, 56-57393; Apr. 15, 1981, 56-57394
Int. Cl.³ H01H 7/00, 43/00; F16H 53/00
U.S. Cl. 200—38 R 7 Claims



1. A timing device for time switch comprising:

(a) a scale plate rotated at a constant rate and having plug-in portions involving slots and grooves corresponding to a time scale on the circumferential part thereof,

(b) presetting elements to be inserted to fit into said plug-in portions of said scale plate,

(c) an operating lever shifted by said presetting elements to turn a switch on,

(d) said scale plate comprising a plastic guide portion to serve to position said presetting elements and to keep the position of each presetting element inserted in the prescribed position, and

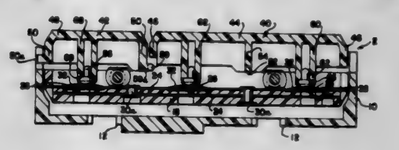
(e) a metallic body inserted in said plastic guide portion of said scale plate in such manner that the periphery of the metallic body extrudes into said slots and grooves, whereby said presetting elements resiliently engage the periphery of said metallic body.

4,436,970

SWITCH ASSEMBLIES

William F. Swisher, Carthage, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Jun. 7, 1982, Ser. No. 385,496
Int. Cl.³ H01H 9/00, 1/06
U.S. Cl. 200—61.56 16 Claims



6. A switch assembly comprising:

body means supporting first and second electrical contacts in normally open relationship,

said first electrical contact having a raised tactile area capable of being deformed for movement in response to the application of a force thereto,

an actuator member mounted adjacent said tactile area to apply a force thereto and cause said first electrical contact to contact said second contact for creating an electrical connection,

said tactile area being formed by a warped section of said first electrical contact,

said first electrical contact having a slit provided on one side of said warped section to separate said warped section from a border section adjacent an edge of said first electrical contact, said first electrical contact having at least one connecting section joining said border section at one end of said slit, and

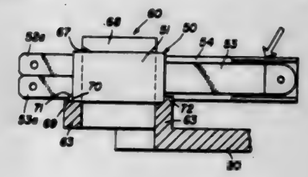
the length of said border section is physically shortened relative to said warped section to create said raised tactile area.

4,436,971

SNAP-IN SWITCH MOUNTING STRUCTURE

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Apr. 23, 1982, Ser. No. 371,513
Int. Cl.³ H02B 5/00
U.S. Cl. 200—295 13 Claims



8. Structure for mounting a leaf spring switch having a body

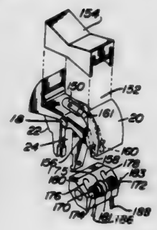
which carries at least two leaf springs, said body having a height and a width and a length, said mounting structure comprising two side abutments spaced apart a distance about equal to the width of the body, upper and lower abutments spaced apart a distance about equal to the height of the body, front and rear abutments spaced apart a distance about equal to the length of the body, and an upwardly and rearwardly directed ramp in front of said rear abutment, the leaf spring switch being mounted by placing the body on top of said front abutment and beneath said upper abutment and between said side abutments, then pushing the body rearwardly until engagement with said ramp and continuing to push said body rearwardly to cause said body to ride up said ramp and onto said lower abutment.

4,436,972

CIRCUIT PROTECTOR HAVING A LAMP WITHIN ITS HANDLE AND TERMINALS THEREFOR

William F. Scanlon, New Hope, Pa., assignor to Heinemann Electric Company, Lawrenceville, N.J.

Continuation-in-part of Ser. No. 183,959, Sep. 3, 1980, Pat. No. 4,338,586. This application Apr. 5, 1982, Ser. No. 365,155
Int. Cl.³ H01H 9/16
U.S. Cl. 200—315 2 Claims



1. In a circuit protector or the like
a handle,
a case from which said handle extends,
an electrical lamp within said handle,
a first pair of terminals secured to said handle and to said lamp,
a second pair of terminals carried by said case,
electrical leads extending from said second pair of terminals to a pair of springs,
said springs having end portions engageable by said first pair of terminals,
said springs are carried by a post integral with said case,
said end portions rest upon a boss formed on said case,
said first pair of terminals press upon said end portions to close the circuit to said lamp,
said springs are formed by a plurality of coils and said coils are mounted about said post,
an insulating spacer between said coils, and
said electrical leads have end portions stripped of insulation and wedged between adjacent coils of said springs.

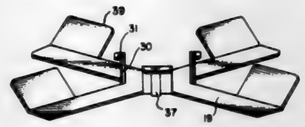
4,436,973

HIGH FREQUENCY HEATING APPLIANCE WITH AN ANTENNA AND STIRRER ASSEMBLY

Nobuo Ikeda, and Hirofumi Yoshimura, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 12, 1982, Ser. No. 367,601
Claims priority, application Japan, May 15, 1981, 56-73701
Int. Cl.³ H05B 6/74
U.S. Cl. 219—10.55 F 7 Claims

1. A high frequency heating appliance comprising:
a heating chamber having a plurality of walls and disposed in a main body of said appliance;
a high frequency oscillator, having a dipole antenna and having a stirrer fan which is made from a metallic plate and which is used for stirring high frequency waves radiated from said high frequency oscillator toward the interior of said heating chamber, said stirrer fan having a rotary shaft concentric with said dipole antenna;
wherein said stirrer fan includes a plurality of stirrer blades and further includes at least one vertical metallic segment which is arranged so as to be substantially parallel to said dipole antenna and located adjacent thereto, said at least one vertical segment of said stirrer fan further including a



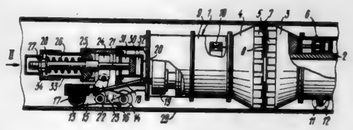
horizontal metallic subsegment which is arranged so as to be substantially parallel to a wall of said heating chamber having said dipole antenna installed thereon, and wherein the distance between said horizontal metallic subsegment and said wall of the heating chamber is selected to be shorter than ¼ of the wavelength of said high frequency waves;
and wherein said at least one vertical metallic segment is disposed in a direction which is substantially normal to the direction of the high frequency waves radiated from said dipole antenna.

4,436,974

PIPE RESISTANCE BUTT WELDING APPARATUS

Vladimir K. Lebedev; Sergei I. Kuchuk-Yatsenko; Vasily A. Sakharnov; Boris A. Galian; Grigory B. Asoyants, and Vladimir I. Tishura, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O.Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Aug. 19, 1981, Ser. No. 294,416
Int. Cl.³ B23K 11/04, 37/04
U.S. Cl. 219—66 3 Claims



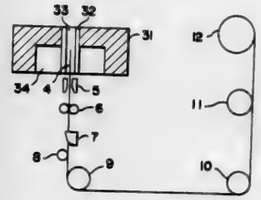
1. A pipe resistance butt welding apparatus comprising:
(a) a body having an elongated carrying member;
(b) an internal expanding clamp including current-feeding shoes and rigidly attached to said body;
(c) an internal expanding clamp including current-feeding shoes and movably mounted on said elongated carrying member for axial motion;
(d) a drive intended to enable reciprocating motion of said internal expanding clamp mounted on the elongated carrying member;
(e) a trimming mechanism for removing flash, mounted on at least one of said internal expanding clamps;
(f) centering supporting rollers mounted on the body by means of spring-loaded levers;
(g) three-arm rockers rotatably mounted on said body, spring-loaded, and having three arms;
(h) driving wheels mounted on the first arms of said three-arm rockers so as to be movable between first positions engaged with the internal surface of pipe being welded and second positions disengaged from the internal surface;
(i) a rotation drive enabling rotation of said wheels and mounted on said body;
(j) additional supporting rollers mounted on the second arms of said three-arm rockers so as to movable between positions disengaged from the internal surface and positions engaged with the internal surface, said additional supporting rollers being in the disengaged positions thereof when said driving wheels are in engaged positions and said additional supporting rollers being in the engaged positions thereof when said driving wheels are in disengaged positions; and
(k) a power cylinder mounted on said body and having a rod connected with the third arms of said three-arm rockers for controlling movement of said three-arm rockers.

4,436,975

WIRE-CUT, ELECTRIC DISCHARGE MACHINING METHOD

Yoshiyuki Nomura; Kanemasa Okuda, both of Hino, and Hisao Ishii, Mitaka, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 288,188
Claims priority, application Japan, Aug. 4, 1980, 55-106857
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 W 3 Claims



1. A wire-cut, electric discharge machining method in which a wire is inserted into a machining start hole made in a workpiece to start electric discharge machining from the machining start hole, comprising the steps of:
(a) forming a bushing of a conductive material; and
(b) increasing the conductivity of the start hole by pressing the bushing into a start hole made in the workpiece to provide the machining start hole.

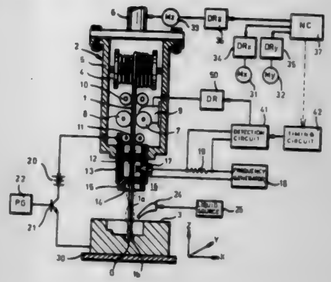
4,436,976

ELECTROEROSION MACHINING METHOD AND APPARATUS WITH AUTOMATIC VIBRATIONS-SENSING ELECTRODE WEAR COMPENSATION

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Oct. 23, 1981, Ser. No. 314,432
Claims priority, application Japan, Oct. 27, 1980, 55-149368
Int. Cl.³ B23P 1/00, 1/12
U.S. Cl. 219—69 V 22 Claims

1. A method of electroerosively machining a workpiece with a tool electrode, comprising the steps of:
supporting said tool electrode to bring its free end portion defining a machining electrode face into spaced juxtaposition with the workpiece and to define a machining gap therewith;
flooding said machining gap with a machining liquid;
causing said free end portion of the tool electrode to transversely vibrate at a given frequency;
passing an erosion machining current between said tool electrode and said workpiece to electroerosively remove material from the workpiece while permitting said machining electrode face to erosively wear; and



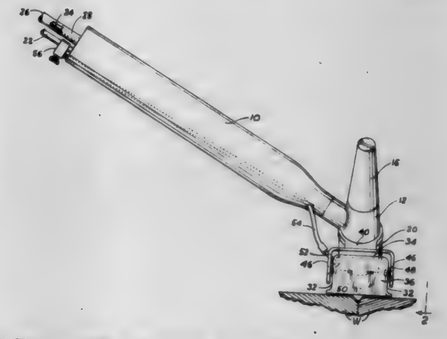
sensing the erosive wear of said tool electrode by sensing a change in the mode of said vibrations.

4,436,977

INERT GAS DISTRIBUTOR ATTACHMENT FOR ARC WELDING TORCHES

Daniel L. Cash, Rte. 2 Box 667, Corbett, Oreg. 97019, and Frank L. Stoddard, 3510 NE. Dorchester Way, Corvallis, Oreg. 97330

Filed Dec. 4, 1981, Ser. No. 327,700
Int. Cl.³ B23K 9/16
U.S. Cl. 219—75 6 Claims



1. For use with an inert gas arc welding torch, an inert gas distributor comprising:
(a) a hollow housing having an open bottom side,
(b) gas inlet means on the housing for communicating a source of inert gas with the interior of the housing for exit through said open bottom side, and
(c) support means pivotally engaging the housing for supporting the same,
(d) the support means being arranged for mounting on an inert gas arc welding torch to dispose the housing adjacent the torch electrode and trailing the direction of movement of the torch during welding for directing inert gas over a sufficient length of produced weld to allow the weld to cool to a temperature at which it is not substantially adversely effected by atmospheric oxygen and nitrogen,
(e) the pivotal engagement of the support means with the housing being arranged to allow pivotal movement of the torch relative to the housing on an axis substantially perpendicular to the direction of movement of the torch during welding for adjusting the angle of the torch while maintaining the open bottom end of the housing closely adjacent or in sliding contact with the surface of the work being welded.

4,436,978

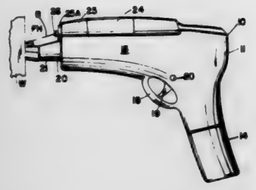
SAMPLING DEVICE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 831,778, Aug. 18, 1977, Pat. No. 4,237,364. This application Dec. 2, 1980, Ser. No. 212,313

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LC 2 Claims



1. In a tool for operating on work with intense radiation, the combination comprising:

a housing having an opening therein,

means supported within said housing for generating an intense radiant energy beam and directing said radiant energy beam through said opening at work located adjacent said opening wherein said beam is of sufficient intensity to vaporize material located in alignment with said opening,

a sampling conduit supported by said housing adjacent said opening in said housing and having an opening for receiving material vaporized by said intense radiant energy beam intersecting work adjacent said opening,

suction means connected to said conduit for generating and applying suction pressure to said conduit for drawing material vaporized adjacent said opening into said conduit,

means supported by said housing for receiving and retaining material drawn through said conduit, and

a material analyzing means connected to receive material drawn by said suction means through said conduit for analyzing said material.

4,436,979

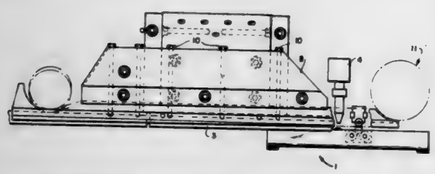
APPARATUS FOR CONTINUOUS LASER WELDING

Carl J. Nilsen, Hopatcong, N.J., assignor to SWS, Incorporated, Landing, N.J.

Filed May 6, 1982, Ser. No. 375,586

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LC 25 Claims



1. Apparatus for continuous laser welding adjacent longitudinally extending edges of generally tubular shaped members comprising Z-bar guide means for positioning and guiding said edges as the members are moved toward a welding area with a laser welding means for welding said edges, and a mandrel connected to said Z-bar guide means and extending internally and in the direction of movement of said members, said mandrel including laser beam dump means positioned adjacent said welding area for absorbing light from a laser beam produced by said laser welding means.

4,436,980

ELECTRIC ARC WELDING APPARATUS

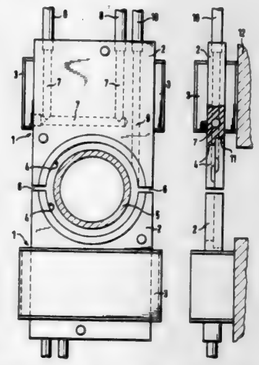
Norbert Pache, Augsburg, and Karel Mazac, Friedberg, both of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed May 12, 1981, Ser. No. 262,906

Claims priority, application Fed. Rep. of Germany, May 13, 1980, 3018199

Int. Cl.³ B23K *9/08*

U.S. Cl. 219—123 10 Claims



1. An apparatus for the electric arc welding of two annular workpieces along an endless annular weld seam path lying in a plane, said apparatus comprising at least two radially extending flat unipolar magnet cores lying in said plane of said path and having juxtaposed ends directly forming a magnetizable ring in the plane of said path and surrounding same, each of said cores carrying a respective electromagnet coil, mutually juxtaposed ends of said cores being of circular arc segments forming said ring directly, the ends of said cores having faces juxtaposed with said seam end of an area no greater than respective cross sections of said cores surrounded by said coils said circular arc segments substantially completely enclosing said path in a substantially closed ring and having respective chord lengths of at most the width of the portions of the magnet cores surrounded by said coils in said plane.

4,436,981

VERTICAL DOWN WELDING PROCESS BY GRAVITY ARC WELDING AND WELDING MACHINE THEREFOR

Noboru Sakamoto; Itaru Yamashita; Satoshi Wada; Kenichi Yano, and Suehiro Oda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP81/00123, § 371 Date Jan. 29, 1982, § 102(e) Date Jan. 29, 1982, PCT Pub. No. WO81/03453, PCT Pub. Date Dec. 10, 1981

PCT Filed Jun. 2, 1981, Ser. No. 346,074

Claims priority, application Japan, Jun. 2, 1980, 55-74092; Jun. 25, 1980, 55-88130[U]; Jun. 25, 1980, 55-88131[U]

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—124.32 2 Claims

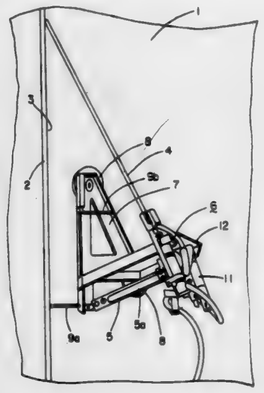
2. A downward welding machine comprising:

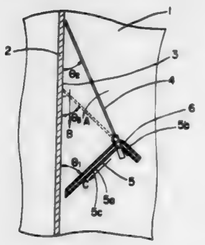
a guide rail comprising; a main rail and a sub-rail and disposed upwardly slanted with respect to a vertical weld line;

said sub-rail terminating at its lower end with the upper end of said main rail and being adapted such that the angle between a welding rod and a vertical weld line is continuously increased from an initial angle of at least 20° up to an angle in a range between 35° and 80° with a descent of a welding rod holder supporting said welding rod along said sub-rail from the upper end to the lower end thereof;

said main rail extending from the lower end of said sub-rail being straight so that said angle between 35° and 80° between said welding rod and vertical weld line is maintained while said welding rod holder is lowered along said main rail from the upper end to the lower end thereof;

said welding rod holder capable of lowering gravity along said guide rail, said welding rod being securedly set in said welding rod holder so that it cannot be rotated with respect thereto; and





a support base having a triangular or like shape, the lower end of said guide rail being supported on said support base at or in the vicinity of the intersection of two sides thereof other than the largest side, said support base having magnetic holder members attached to its back at the other two intersection points than said guide rail support point and also at least two positioning rods extending from its edge facing said vertical weld line, one end of each said positioning rod being rotatable with respect to said support base.

4,436,982

TWO ELECTRODE WELDING WITH DIFFERENT CURRENTS SUPPLIED TO THE ELECTRODES

Satoshi Kokura, Hitachiota; Masayasu Nihei, Hitachi; Hiroshi Wachi, Hitachi; Hiromi Mashida, Hitachi, and Kousaku Senda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,027

Claims priority, application Japan, Nov. 21, 1980, 55-163347

Int. Cl.³ B23K *9/09*

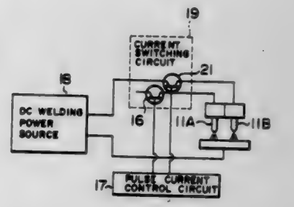
U.S. Cl. 219—130.51 15 Claims

1. A two electrode welding method wherein welding is carried out by means of arcs struck between two electrodes and a parent metal, said two electrodes being a leading electrode and a trailing electrode located in side-by-side, spaced-apart relation in a direction in which the welding surface advances and movable relative to the parent metal, said method comprising the steps of:

passing a welding current alternately to the leading and trailing electrodes;

controlling the value of a peak current supplied to the leading electrode to be a value higher than that of a peak current supplied to the trailing electrode;

controlling the value of a time distribution rate of the peak current supplied to the trailing electrode to be a value



higher than that of a time distribution rate of the peak current supplied to the leading electrode;

preheating a portion of the parent metal by the heat of the arc struck between the leading electrode and the parent metal; and

melting the preheated portion of the parent metal by the heat of the arc struck between the trailing electrode and the parent metal when the former has moved to a position above the preheated portion of the latter.

4,436,983

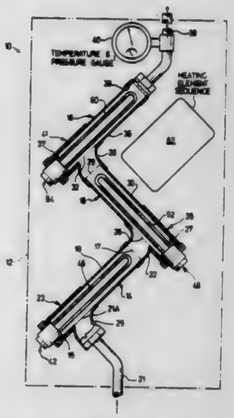
ELECTRIC WATER HEATER WITH UPWARDLY INCLINED ZIG-ZAG FLOW PATH

Leo A. Solobay, 410 Quebec Ave., Toronto, Canada M6P 2V4

Continuation of Ser. No. 242,952, Mar. 12, 1981, abandoned. This application Jan. 3, 1983, Ser. No. 455,087

Int. Cl.³ H05B *1/02, 3/82;* F24H *1/20*

U.S. Cl. 219—306 8 Claims



1. An electric water heater having an inlet, an outlet and a series of consecutive pipe sections in a zig-zag configuration through which water successively flows in passing from the inlet to the outlet, the zig-zag configuration being such that, when the heater is in use with the pipe sections one above the other, each pipe section is upwardly inclined to the horizontal at an acute angle of at least about 30 degrees such that water flows in an upwardly inclined direction through each pipe section, each pipe section having a first end, a second open end and a side wall with an opening adjacent to the first end, each

pipe section having a unitary tubular member fitted thereon adjacent said first end, said tubular member having a lateral tubular extension communicating with said side wall opening, each pipe section having an electric immersion heater therein extending longitudinally of the pipe section from the first end thereof and past which water passing through the pipe section flows, said tubular member supporting the immersion heater at said first end, the lateral tubular extension of the tubular member on the first pipe section in the series being connected to one of said inlet and outlet, the second open end of each pipe section in the series other than the last being connected to the lateral tubular extension of the tubular member on the next pipe section in the series, and the second open end of the last pipe section in the series being connected to the other of said inlet and outlet.

4,436,984

ELECTRIC ARC DISCHARGE APPARATUS

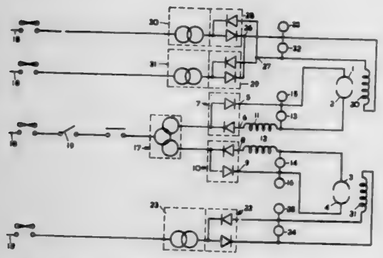
Alan L. Hare, and Allan P. George, both of Cleveland, England, assignors to Tioxide Group PLC, Cleveland, England

Filed Nov. 18, 1982, Ser. No. 442,715

Claims priority, application United Kingdom, Dec. 10, 1981, 8137291

Int. Cl.³ H05B 7/18

U.S. Cl. 219—383 **9 Claims**



1. An electric discharge apparatus which comprises a power supply comprising a multi-phase transformer, arc stabilisation means and two or more rectifier bridges each bridge providing a pair of power outputs, a first pair of electrodes with one of said first pair of electrodes electrically connected to one power output of a first selected pair of power outputs and the other of said first pair of electrodes electrically connected to the other power output of said first selected pair of power outputs and a second pair of electrodes with one of said second pair of electrodes electrically connected to one power output of a second selected pair of power outputs different from the said first selected pair of power outputs and the other of said second pair of electrodes electrically connected to the other power output of said second selected pair of outputs.

4,436,985

APPARATUS FOR HEAT TREATING SEMICONDUCTOR WAFERS

T. Jerome Weber, Mt. View, Calif., assignor to GCA Corporation, Bedford, Mass.

Filed May 3, 1982, Ser. No. 373,978

Int. Cl.³ F26B 3/30; H05B 1/00

U.S. Cl. 219—388 **2 Claims**

1. Apparatus for heat treating semiconductor wafers, said apparatus comprising:

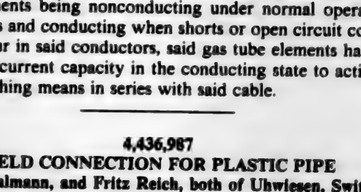
infrared source means including a linear high intensity lamp and a linear reflector focusing radiation from said lamp on a linear target zone;

a vacuum chuck for holding a wafer to be treated;

a heat sink on the opposite side of said zone from said lamp;

means for traversing said chuck through the region between said source and said sink from a first station on one side of the course to a second station on the other side of said source thereby to cause said zone to sweep the surface of a wafer held by said chuck;

air track means for transporting wafers to be treated to said chuck at said first station; and



air track means for taking treated wafers away from said chuck at said second station.

4,436,986

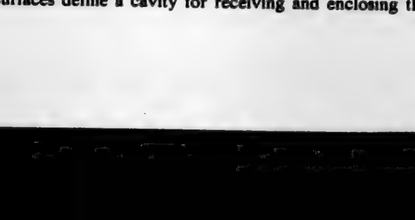
ELECTRIC BLANKET SAFETY CIRCUIT

Gordon S. Carlson, Northbrook, Ill., assignor to Sunbeam Corporation, Oak Brook, Ill.

Filed Nov. 23, 1981, Ser. No. 324,196

Int. Cl.³ H05B 1/02

U.S. Cl. 219—505 **17 Claims**



1. In an electrical circuit, the combination comprising a heating cable including a pair of spaced conductors separated throughout their lengths by a layer of positive temperature coefficient resistance material, each of said conductors having a power supply end and a sensing end, a power supply cord connected to said cable at said power supply ends of said conductors to connect said cable to an alternating current power supply, a current responsive switching means in series with one of said conductors, a sensing means connected to said sensing ends of said conductors, said sensing means including a pair of series connected impedance elements, a pair of gas tube elements connected in series between said power supply ends of said conductors, the junction of said impedance elements and the gas tube elements being connected together, said gas tube elements being nonconducting under normal operating conditions and conducting when shorts or open circuit conditions occur in said conductors, said gas tube elements having sufficient current capacity in the conducting state to activate said switching means in series with said cable.

4,436,987

WELD CONNECTION FOR PLASTIC PIPE

Alfred Thalmann, and Fritz Reich, both of Uhwiesen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Switzerland

Filed Sep. 27, 1982, Ser. No. 424,240

Claims priority, application Switzerland, Oct. 2, 1981, 6349/81

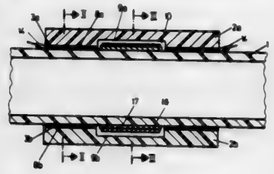
Int. Cl.³ H05B 3/58

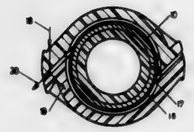
U.S. Cl. 219—535 **12 Claims**

1. An apparatus for forming a weld connection with plastic pipe, comprising

first and second molded plastic parts, each of said parts having an internal surface corresponding to a peripheral portion of the pipe being welded such that said internal surfaces define a cavity for receiving and enclosing the pipe, said parts being separated by first and second longitudinally extending clearances; and

first and second heating mats adjacent said internal surfaces of said first and second parts, respectively, each of said





mats having one end portion in one of said clearances and comprising a resistance wire coated with plastic, said mats completely covering said internal surfaces and the pipe periphery to be welded.

4,436,988

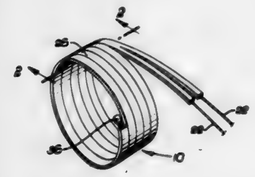
SPIRAL BIFILAR WELDING SLEEVE

James J. Blumenkranz, Hollywood, Calif., assignor to R & G Sloane Mfg. Co., Inc., Sun Valley, Calif.

Filed Mar. 1, 1982, Ser. No. 353,158

Int. Cl.³ H05B 3/44

U.S. Cl. 219—544 **13 Claims**



1. A spiral bifilar welding sleeve for positioning between two thermoplastic members to be bonded together, said sleeve comprising;

an elongated thermoplastic sheath of generally rectangular cross-section, having a pair of short sides and a pair of long sides;

a pair of electrically conductive wires embedded within said sheath in a spaced, generally parallel relationship; and

coupling means for electrically coupling said wires together at one end of said sheath, said wires at the other end being adapted for connection to an electrical current source, said sheath being wound into a plurality of turns defining a generally spiral coil with the short sides of adjacent turns being bonded together, said sheath being fusible when electrical current is passed through said wires to bond the thermoplastic members with respect to each other.

4,436,989

CASH DRAWER FOR CASH REGISTERS IN TELLERS' STATIONS, SALES COUNTERS OR THE LIKE

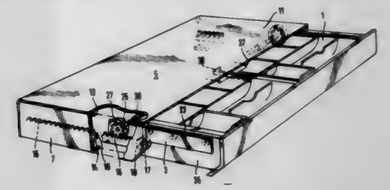
Gerhardt Schuldt, Oerlinghausen, Fed. Rep. of Germany, assignor to ADS - Anker GmbH, Bielefeld, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,431

Claims priority, application European Pat. Off., Aug. 14, 1981, 81 106 327

Int. Cl.³ G07G 1/00

U.S. Cl. 235—22 **11 Claims**



1. Cash drawer for cash registers in tellers' stations, sales counters or the like, comprising a slide-in unit and a drawer tray being movable into and out of said slide-in unit in given directions; said slide-in unit having vertical side plates at opposite sides thereof, a rib being integral with each of said side plates extended along said given directions and projecting toward each other, a rack integral with the top of each of said ribs, and a roller disposed in vicinity of the front of each of said side plates; a guide shaft being rotatably supported at the back of said drawer tray, a pinion being fastened to each end of said guide shaft and being in engagement with one of said racks of said side plates; and said drawer tray having sides and a longitudinal flange integral with each of said sides of said drawer tray being extended along said given directions and supported on said rollers when the drawer is opened and closed.

4,436,990

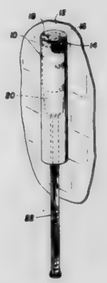
C[illegible]UNTING DEVICE

Michael R. Saccucci, 4[illegible]5 Pineda St., Cocoa, Fla. 32922

Filed Jul. 16, 1982, Ser. No. 399,883

Int. Cl.³ G06C 27/00

U.S. Cl. 235—1 R **7 Claims**



1. A device for counting the cups remaining inside a tubular cup dispensing device, said device being of the type which has an open lower end and means at said open lower end to permit one at a time dispensing of cups in a nested column of cups inside said device while preventing the entire nested column of cups from falling out of said cup dispensing device all at once, said cup dispensing device comprising a closed upper end and spring means to normally urge the column of cups therein towards said open lower end, said counting device comprising a shaft and at least one end member fixed at one end of said shaft, at least one scale means on said shaft starting from said at least one end member and extending along said shaft away from said end member, said counting device being so sized as

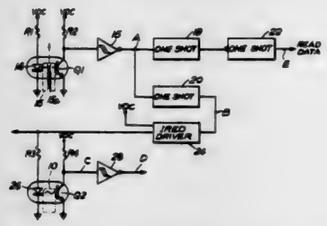
to fit into said open lower end of said cup counting device with said end member in contact with the lowermost one of said column of nested cups, said shaft having a length sufficiently long to permit use of said shaft to push via said end member against said column of cups and to compress said spring means to its fully compressed minimum length; and each of said at least one scale means being calibrated for all of a particular size and type of cup and for a particular length of cup counting device and spring means therein; whereby the lower end of said cup counting device will be positioned with respect to said scale means in the said fully compressed minimum length position of said column of cups and of said spring means to read directly in number of said particular size and type of cups in said particular cup counting device.

4,436,991

BADGE READER USING INFRARED LIGHT

Gordon H. Albert, Larchmont, and Harvey M. Feinman, Bronx, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed Mar. 10, 1982, Ser. No. 356,789
Int. Cl.³ G06K 7/10
U.S. Cl. 235—468 **8 Claims**



1. Apparatus for determing whether portions of an identification badge are relatively opaque or transparent to infrared radiation upon movement of said badge relative to said apparatus comprising:

identification means on said badge including relatively transparent portions having an infrared transmissivity of at least 2% for passing infrared radiation incident thereon, and relatively opaque portions having infrared transmissivity of not more than 0.05%;

a source of infrared radiation;

detector means for sensing infrared radiation and producing an output signal in response thereto;

alignment means for detecting the alignment of said relatively opaque or transparent portions of said badge with said source and detector means and for producing an alignment signal upon the occurrence of a predetermined alignment;

activating means for activating said source to produce a pulse of infrared radiation having a first pulse width in response to the production of an alignment signal, which radiation is sensed by said detector means when a relatively transparent portion of said badge is aligned therewith;

means for receiving output signals from said detector means and producing an indication signal in response thereto;

means for utilizing said indication signal in response to a readout signal; and

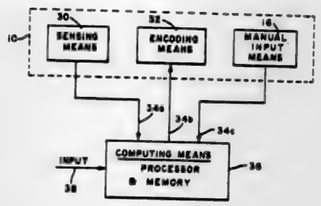
data strobe means for receiving said alignment signal and producing said readout signal in response thereto, said readout signal having a second pulse width approximately one-quarter of that of said first pulse width and being timed to occur substantially during the last quarter of said pulse of infrared radiation, whereby the indication signal is utilized during said last quarter.

4,436,992

CHECK CONTROLLED METERING DEVICE

Luther G. Simjian, 1750 S. Ocean La., Ft. Lauderdale, Fla. 33316

Continuation-in-part of Ser. No. 223,239, Jan. 8, 1981. This application Sep. 2, 1982, Ser. No. 414,414
Int. Cl.³ G06F 7/08
U.S. Cl. 235—381 **6 Claims**



1. In a check controlled metering device, such as a check controlled postage meter, the combination comprising:

an apparatus having check acceptance means for receiving a check having coded data thereon;

sensing means cooperatively associated with said check acceptance means for sensing the coded data on a check received by said acceptance means;

input means associated with said apparatus for inputing data related to rendering the metering device operable;

computing means including means for receiving and storing credit data adapted to be coupled to said sensing means and said input means for receiving said sensed coded data and said data from said input means and processing the received data and providing a meter charge code responsive to the received data and credit data stored in said computing means being in predetermined relation, and

encoding means associated with said check acceptance means for encoding a check received in said acceptance means with said meter charge code.

4,436,993

ELECTRONIC KEY

William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.

Filed Jan. 11, 1982, Ser. No. 338,366
Int. Cl.³ H04Q 3/00
U.S. Cl. 235—382 **6 Claims**



1. A key-like device having head and insert-body portions, the insert-body portion being adapted for insertion into a receptacle and rotation therein to a "locked" position and including:

two sets of generally oppositely disposed spaced grooves transversely extending over the surface of the insert-body of the key so as to be in alignment with the rotational movement of the insert-body when rotated in a receptacle,

an electrical circuit element encapsulated within the key,

a plurality of spaced electrical contacts formed by a plurality of electrical leads connected to the electrical circuit element, each of the leads extending outwardly from the key body and lying in a respective groove thereby forming a plurality of spaced electrical contacts on the key body,

each contact having a certain contact dimension in each respective groove and defining leading and trailing ends with respect to the rotational direction of key rotation, and

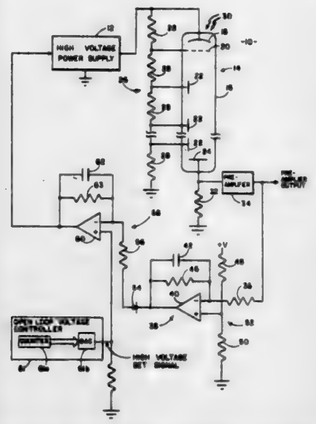
at least one switch contact in a respective groove, the switch contact having a certain contact dimension defined by leading and trailing ends which is smaller than that of the spaced electrical contacts, the leading ends of the switch contact being spaced behind the leading ends of the other contacts with respect to rotation to the "locked" position whereby switch contact is 37 made" after the other contacts are "made."

4,436,994

PHOTOMULTIPLIER DETECTOR PROTECTION DEVICE AND METHOD

James G. Van Vliet, La Habra, and James R. Brown, Huntington Beach, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 334,810
Int. Cl.³ H01J 31/50
U.S. Cl. 250—207 **10 Claims**



1. An improved photomultiplier detector protection system wherein an adjustment signal from external means adjusts the sensitivity of the photomultiplier detector, the system comprising:

a power supply for generating a variable output voltage in response to a control signal;

a photomultiplier detector responsive to incident light flux and to the power supply output voltage for generating an output related to the incident light flux and the magnitude of the power supply output voltage;

reference means for generating a reference signal proportional to a predetermined photomultiplier detector output;

comparator means responsive to the reference signal and responsive to the photomultiplier detector output for comparing the reference signal and the photomultiplier detector output to generate an output when the reference signal and the photomultiplier detector output are in a predetermined relationship;

means for receiving the adjustment signal; and

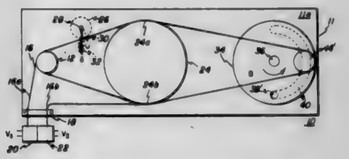
summing means responsive to the adjustment signal from the receiving means and to the comparator means output for generating the control signal by summing the adjustment signal and the comparator means output.

4,436,995

FIBER OPTICS TRANSDUCERS FOR SENSING PARAMETER MAGNITUDE

James R. Whitten, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,266
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 **11 Claims**



1. A transducer for providing an electrical signal of magnitude responsive to the magnitude of a mechanical displacement to be sensed, comprising:

a continuous optical fiber having first and second ends;

transmitter means for introducing a quantity of optical energy into the first end of said fiber;

detector means, coupled to the second end of said fiber, for converting the magnitude of optical energy received thereat to the magnitude of an electrical signal forming the transducer output;

a fixed member; and

a movable member having a spacing from said fixed member varying responsive to the magnitude of the mechanical displacement to be sensed;

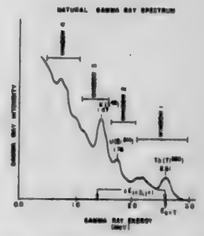
said fiber forming at least one loop with each loop formed about and enclosing both said fixed and movable members, and having a variation in the optical attenuation losses through said fiber due to microbending induced by a change in the radius-of-curvature of said at least one fiber loop responsive to a change in the mechanical displacement between said members, to cause a variation in the detector means output signal.

4,436,996

BOREHOLE COMPENSATED KUT LOG

Dan M. Arnold; Harry D. Smith, Jr., and Ward E. Schultz, all of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed May 21, 1981, Ser. No. 265,736
Int. Cl.³ G01V 5/00
U.S. Cl. 250—256 **35 Claims**



1. A method of natural gamma ray spectral logging of a well borehole to determine the relative elemental constituency of uranium, potassium and thorium in earth formations penetrated by a well borehole, substantially independently of borehole conditions, comprising the steps of:

obtaining, with a borehole measurement system standard individual gamma ray spectra of uranium, potassium and thorium bearing earth formations penetrated by well bore-

holes having standard geometrical and constituent properties;

obtaining, with a borehole measurement system, an unknown gamma ray energy spectrum in a measurement borehole having unknown borehole conditions, said unknown gamma ray spectrum being divided into gamma ray intensities measured in at least four energy bands corresponding to a first energy band containing the 2.61 MeV thorium decay peak, a second energy band containing the 1.76 MeV uranium decay peak, a third energy band containing the 1.46 MeV potassium decay peak, and one or more additional energy bands for monitoring the shape of said unknown gamma ray spectrum as a function of borehole conditions;

comparing said standard individual gamma ray spectra with said unknown gamma ray spectrum to derive by an iterative process a parameter indicative of the effect of the unknown borehole conditions on the unknown gamma ray spectrum;

compensating said standard gamma ray spectra as a function of said parameter indicative of said unknown borehole conditions to derive a set of compensated standard gamma ray spectra; and,

comparing said compensated standard gamma ray spectra with said unknown gamma ray spectrum to derive borehole compensated relative constituencies of uranium, potassium, and thorium in said unknown borehole.

4,436,997

METHOD FOR THE DETERMINATION OF CLAY AND MICA CONCENTRATIONS IN SUBSURFACE SANDSTONE FORMATIONS THROUGH RADIOACTIVE LOGGING

Linus S. Allen, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,059
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—256 **3 Claims**

1. A method for determining the clay content of a subsurface sandstone formation from a record of the natural gamma radiation of the thorium, uranium and potassium trace elements in said formations, comprising the steps of:

(a) producing a first measurement of the difference in the total and the potassium gamma-ray activities of the interval of interest,

(b) producing a second measurement of the difference in the total and the potassium gamma-ray activities in a clean sandstone interval,

(c) producing a third measurement of the difference in the total and the potassium gamma-ray activities in a mica-free shale interval, and

(d) identifying the volume fraction of clay content in the interval of interest as the ratio of the difference of said first and second measurements to the difference of said second and third measurements.

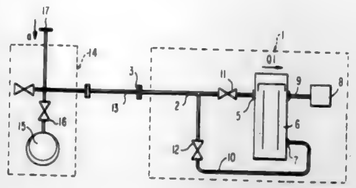
4,436,998

HELIUM LEAKAGE DETECTOR

Jacques Tallon, Annecy, France, assignor to Compagnie Industrielle des Telecommunications, Paris, France

Division of Ser. No. 233,236, Feb. 10, 1981, Pat. No. 4,365,158. This application Dec. 20, 1982, Ser. No. 451,691
Claims priority, application France, Feb. 11, 1980, 80 02923
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ B01D *59/44*
U.S. Cl. 250—288 **3 Claims**

1. In a helium leakage detector having no vane pump, and including a molecular diffusion pump (6) having an inlet (5) and outlet (7), and a measuring spectrometric cell connected in a branch circuit from said diffusion pump, wherein the improvement comprises a bypass conduit connecting said outlet (7) to an inlet connection to a structure to be tested, and restriction means connected between said inlet (5) of said diffusion pump (6) and said inlet connection to said structure to be



tested, whereby the necessity of using a vane pump is avoided, allowing a recirculating loop of gas to be maintained within the system for some period of time for measuring purposes.

4,436,999

STRUCTURAL DEFECT DETECTION

Werner Kern, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 8, 1982, Ser. No. 386,240
Int. Cl.³ G01N *1/30*
U.S. Cl. 250—302 **7 Claims**

1. A method of detecting microdefects in the surface layer of a substrate having two or more layers comprising:

(a) contacting the surface of the substrate with a composition comprising a fluorescent organic compound characterized by the capacity to fluoresce only in solution, dimethyl sulfoxide, a suitable lower alkanol, a suitable surfactant and water for a time sufficient for the composition to penetrate the microdefects;

(b) draining the excess composition from the surface of the substrate;

(c) allowing the surface to dry;

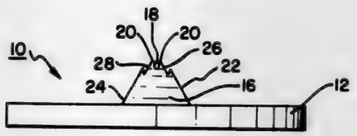
(d) irradiating the substrate while the dye in the microdefects remains in solution with actinic radiation, whereby fluorescence is activated only in the microdefects.

4,437,000

APERTURE PIECE AND METHOD FOR CALIBRATING BACKSCATTER THICKNESS MEASURING INSTRUMENTS FOR MEASURING CONCAVE WORKPIECES

Jacques Weinstock, Flushing, N.Y., assignor to UPA Technology, Inc., Syosset, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,936
Int. Cl.³ G01N *23/00*; G01D *18/00*
U.S. Cl. 250—308 **2 Claims**



1. An aperture piece for use in conjunction with backscatter type apparatus for measuring the thickness of a thin coating on a concave surface of a workpiece substrate comprising

a planar base section having a central aperture therein,

an outwardly extending and progressively tapering hollow boss in the general form of a truncated cone mounted over said central aperture, said hollow boss having a longitudinal axis and outwardly terminating in a small rectangular aperture in the extending end thereof defined by a pair of spaced parallel elongate edges and a pair of spaced parallel short edges disposed perpendicular to said elongate edges,

said rectangular aperture being of markedly smaller areal extent than said central aperture in said base section,

the external surface of the base portion of said boss being selectively shaped to include a first pair of diametrically opposed planar converging surfaces disposed parallel to the elongate defining edges of said small rectangular aperture and with the projected included angle between said first pair of surfaces being bisected by the longitudinal axis of said boss,

the external surface of the upper portion of said boss being further selectively shaped to include a second pair of diametrically opposed planar converging surfaces disposed parallel to the elongate defining edges of said small rectangular aperture and with the projected included angle between said second pair of surfaces being bisected by the longitudinal axis of said boss,

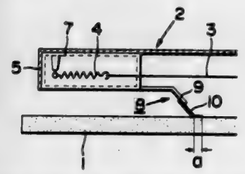
said second pair of converging surfaces having the upper defining edges thereof disposed in closely adjacent relation with said elongate defining edges of said small rectangular aperture to define a narrow perimetric sample support surface thereabout and defining a projected included angle that is less than the projected included angle between said first pair of converging planar surfaces.

4,437,001

CORONA GENERATING APPARATUS

Yoshiaki Harada, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,376
Claims priority, application Japan, May 31, 1980, 55-73869; Sep. 26, 1980, 55-134980
Int. Cl.³ H01T *19/04*
U.S. Cl. 250—324 **4 Claims**



1. In a corona generating apparatus for charging a photosensitive surface, including a corona wire spaced from the photosensitive surface and from which charge is generated and a regulating member disposed between the wire and the photosensitive surface for preventing the accumulation of charge on the surface in a region at which no image is to be formed, the corona wire and the regulating member each being disposed substantially parallel to the photosensitive surface, the improvement comprising an improved regulating member to closely and accurately define the boundary of the non-image region on the surface, comprising:

an extension of said regulating member substantially longitudinally along the corona wire, said extension including a pair of bends delineating therebetween a ramp and a contact portion extending from the bend most remote from the regulating member, said contact portion being disposed substantially parallel to and in at least close proximity to the photosensitive surface to shield the surface of charge generated by the corona wire and, by reason of its close proximity to the surface, thereby closely define the boundary of said non-image region, at least said contact portion being formed of a flexible material so as to prevent damage to the photosensitive surface in the event that said portion contacts the surface, and each of said bends being less than 90 degrees.

4,437,002

PYROELECTRIC INFRARED SENSOR

Yoshiharu Taniguchi; Shigeki Edano, and Masanori Akiyama, all of Tottori, Japan, assignors to Nihon Ceramic Co., Ltd., Tottori, Japan

Filed Apr. 15, 1981, Ser. No. 254,433
Claims priority, application Japan, Apr. 21, 1980, 55-55134[U]; Apr. 21, 1980, 55-55135[U]; May 9, 1980, 55-64031[U]
Int. Cl.³ G01J *1/42*
U.S. Cl. 250—338 **6 Claims**



1. A pyroelectric infrared sensor, comprising:

a can having a window with an optical filter attached thereto;

a pyroelectric ceramic element;

a field-effect transistor provided with electric terminals; and

a stem having a tab, wherein:

said pyroelectric ceramic element has two back electrodes on the back surface thereof and at least two front electrodes on the front surface thereof, each of said at least two front electrodes having a first region overlapping with a part of one of said back electrodes and a second region overlapping with a part of the other of said back electrodes;

each of said at least two front electrodes are arranged adjacent to each other and are electrically insulated from each other; and

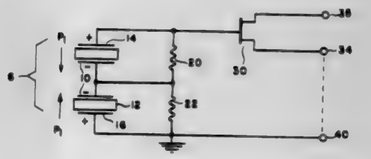
said first regions and said second regions of said at least two front electrodes have a ratio of areas of approximately 1:1.

4,437,003

DIFFERENTIAL PYROELECTRIC SENSOR WITH STATIC DISCHARGE

Alan P. Doctor, Ormond Beach, Fla., assignor to Eltec Instruments, Inc., Orlando, Fla.

Filed Jul. 29, 1981, Ser. No. 287,883
Int. Cl.³ G01J *5/10*
U.S. Cl. 250—338 **11 Claims**



1. A two terminal differential thermal sensor comprising:

a pair of pyroelectric detectors connected in a series opposed connection, said detectors having two output electrodes and a common electrode; and

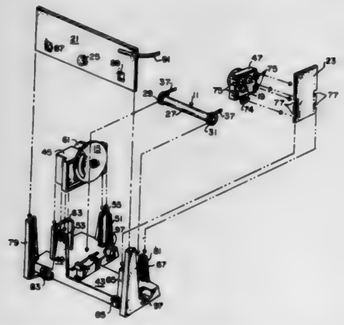
first resistor means connected between one of said output electrodes and said common electrode and second resistor means connected between the other of said output electrodes and said common electrode for bleeding static charges from said pair of detectors.

4,437,004

MODULAR GAS ANALYZER

Robert E. Passaro, and Irvin G. Burough, both of Walnut Creek, Calif., assignors to Andros Analyzers Incorporated, Oakland, Calif.

Filed Aug. 24, 1981, Ser. No. 295,485
Int. Cl.[3] G01J 1/04; G01N 21/01
U.S. Cl. 250—343 5 Claims



1. In an infrared gas analyzer including a sample cell for containing the gas mixture to be analyzed, means for directing infrared energy through said sample cell, source means for periodically interrupting the infrared energy at a predetermined frequency, detector means responsive to infrared energy of at least one preselected wavelength for producing a signal having an amplitude proportional to the infrared energy passing through said sample cell and having a frequency corresponding to the predetermined frequency, said preselected wavelength corresponding to the characteristic absorption wavelength of a preselected gas, and signal processing means for processing the signal output of said detector means to produce a signal representative of the concentration of the preselected gas in the mixture being analyzed, the analyzer being a modular construction to facilitate assembly and replacement of components, comprising

a modular sample tube,

a modular source housing means for mounting the source of infrared energy at one end of said sample tube,

a modular detector housing means for mounting the detector means at the opposite end of said tube,

a printed circuit board mounting the signal processing means, and

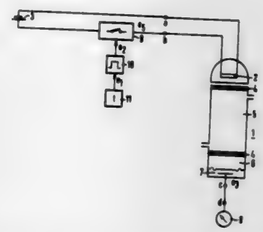
a mounting means for supporting said sample tube, source housing means, detector housing means and printed circuit board, said mounting means comprising a unitary structure including a base and a plurality of integral channel members extending transversely from the same side thereof and spaced in pairs to form three substantially parallel pairs of channels for engaging with and locating said source housing means, detector housing means and printed circuit board, respectively, in operative relationship with each other, and detent means for releasably securing said source housing means, detector housing means and printed circuit board in said channel members to enable said source housing means, said detector housing means and said printed circuit board to be readily removed individually for repair or replacement without the need to remove other modular elements.

4,437,005

NONDISPERSIVE INFRARED GAS ANALYZER

Paul-Arthur Ophoff, Wörth, and Johann Weinel, Karlsruhe, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1981, Ser. No. 322,210
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1980, 3043332
Int. Cl.[3] G01J 1/00
U.S. Cl. 250—343 5 Claims



1. A nondispersive infrared gas analyzer of the type having a plurality of gas-filled chambers arranged in the propagation path of modulated infrared radiation, and a measuring pickup for producing an electrical measurement signal, the nondispersive infrared gas analyzer further comprising:

pulsed energy supply means for producing electrical pulses having a duty cycle which is less than 1;

infrared radiation means for producing infrared radiation which is modulated in response to said duty cycle of said pulsed energy supply means, said infrared radiation means having a predetermined continuous power rating; and

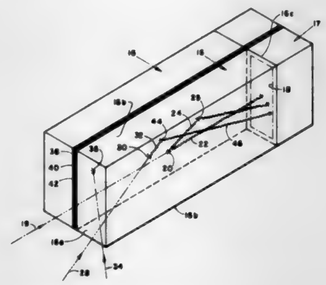
pulse control means for terminating each of said electrical pulses from said pulsed energy supply means in response to a peak value of a corresponding pulse in the electrical measurement signal.

4,437,006

METHOD AND APPARATUS FOR MEASURING RADIATION IN COMPUTER-ASSISTED TOMOGRAPHY AND RADIOGRAPHIC APPLICATIONS

Ira L. Morgan; E. C. George Sudarshan; Alvin L. Mitchell; James P. Coose; Hunter D. Ellinger, and James W. Jagger, all of Austin, Tex., assignors to Scientific Measurement Systems, Inc., Austin, Tex.

Division of Ser. No. 879,439, Feb. 21, 1978, Pat. No. 4,284,895. This application May 5, 1981, Ser. No. 260,695
Int. Cl.[3] G01T 1/20
U.S. Cl. 250—363 S 16 Claims



1. Radiographic apparatus for determining the intensity of penetrating radiation passing through an object as a plurality of

penetrating ray photons along a plurality of respective paths from a radiation source; comprising:

(a) high-speed scintillator means having a very fast decay time for detecting the plurality of penetrating ray photons passing through the object along one of the plurality of paths and converting the energy of the penetrating ray photons into a plurality of light photons within a sufficiently short time interval after detection such that substantially all light photons associated with each detected penetrating ray photon are generated within different time intervals;

(b) photomultiplier means optically coupled to said scintillator means for detecting the light photons associated with each penetrating ray photon detected and generating a signal for each plurality of light photons associated with a penetrating ray photon detected; and

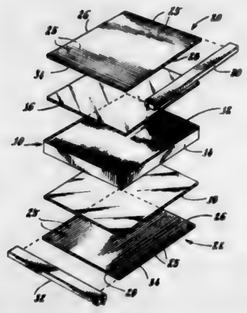
(c) counting means for counting the signals generated by said photomultiplier means and generating output signals representative of the number of penetrating ray photons detected.

4,437,007

LARGE ARRAYS OF DISCRETE IONIZING RADIATION DETECTORS MULTIPLEXED USING FLUORESCENT OPTICAL CONVERTERS

Evan E. Koslow, Westport, Conn., and Robert R. Edelman, Brookline, Mass., assignors to Koslow Technologies Corporation, Westport, Conn.

Filed Apr. 18, 1982, Ser. No. 366,472
Int. Cl.[3] G01T 1/20
U.S. Cl. 250—366 22 Claims



1. A radiation detection and conversion apparatus comprising:

an array of individual, optically isolated, radiation sensitive elements that emit optical radiation upon absorption of radiation stimuli;

an array of elongated, parallel channel means, each of said channel means being positioned to receive and trap optical radiation emitted by a plurality of said radiation sensitive elements and transporting said optical radiation therealong;

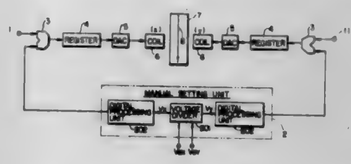
an array of electro-optical devices coupled to at least one end of said channels for converting the transported radiation into electrical signals whereby each such electrical signal indicates that at least one of said radiation sensitive elements has absorbed a radiation stimulus.

4,437,008

ELECTRON BEAM CONTROL SYSTEM

Tadahito Matsuda, Hohya; Masahide Okumura, Sagamihara; Hisatake Yokouchi, Tokyo; Susumu Ozasa, Kashiwa, and Yasuo Kato, Zama, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Hitachi, Ltd., both of, Japan

Filed Apr. 23, 1981, Ser. No. 256,682
Claims priority, application Japan, Apr. 23, 1980, 55-52888
Int. Cl.[3] H01J 3/14; G06M 3/14
U.S. Cl. 250—396 R 4 Claims



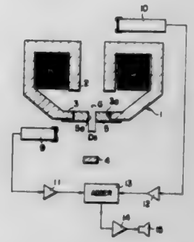
1. An electron beam control system having means for manually adjusting currents flowing through two deflection coils which respectively cause deflection of said beam in directions orthogonal to each other, said means for manually adjusting comprising means to simultaneously produce coil deflection control signals for controlling the current in said two deflection coils by the execution of a single operation, nonvolatile memory means for permitting the selective storage or readout of coil deflection control signals produced by the means to simultaneously produce coil deflection control signals and means for causing the selective application of previously stored coil deflection control signals or currently produced coil deflection control signals to the deflection coils whereby the readjustment of the position of the electron beam may be dispensed with after the control system is turned off and then turned on by the selective application of the stored control signals to the deflection coils.

4,437,009

SCANNING ELECTRON MICROSCOPE OR SIMILAR EQUIPMENT

Shigetomo Yamazaki, Hachioji, Japan, assignor to Kabushiki Kaisha Akashi Seisakusho, Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 347,863
Claims priority, application Japan, Mar. 3, 1981, 56-30266
Int. Cl.[3] H01F 7/00; G01N 23/00
U.S. Cl. 250—396 ML 6 Claims



1. A scanning electron microscope or similar equipment, comprising an electromagnetic objective lens having its lens center between the upper and lower poles thereof, an opening formed on the lower pole so that a specimen may be passed through the opening and placed in the vicinity of the lens center, and a magnetic pole piece defining an aperture having a diameter smaller than that of the opening and detachably provided in the opening so as to decrease the magnetic flux

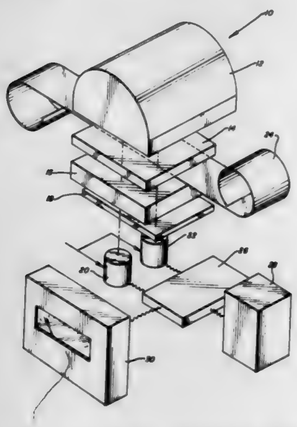
leaked through the opening when the specimen is placed below the lower pole.

4,437,010

METHOD AND APPARATUS FOR ANALYZING CONDITIONER ON A BOWLING LANE SURFACE

Carl E. Schele, Libertyville, and G. Arnold Muma, Casnovia, both of Ill., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 21, 1981, Ser. No. 333,059
Int. Cl.³ F21V 9/16; G01N 21/64
U.S. Cl. 250—459.1 **5 Claims**



1. Apparatus for analyzing and evaluating the thickness and distribution of conditioning material applied to the surface of a bowling lane, the conditioning material treated with a fluorescent additive prior to application to the bowling lane surface, the apparatus adapted for analyzing the treated conditioning material which has been transferred onto an elongated transparent strip from a transverse section of the bowling lane surface;

the apparatus comprising, in combination:

a source of ultra-violet light directed to strike one side of the elongated strip;

a first photocell on the side of the strip opposite the one side for sensing blue light emitted by the fluorescent additive;

a second photocell adapted to receive light emanating from the source; and

means for comparing the intensity of light from the strip measured by the first photocell with the intensity of the light from the source measured by the second photocell whereby readings of intensity of light from the strip can be measured independently of variations in intensity of light from the source,

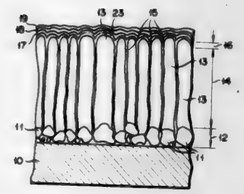
said light intensity from the strip being directly proportional to the quantity of conditioning material applied to finite portions of the transverse section of a bowling lane surface and correlated to the thickness and distribution of conditioning material transferred from the bowling lane surface.

4,437,011

RADIATION EXCITED PHOSPHOR SCREEN AND METHOD FOR MANUFACTURING THE SAME

Takashi Noji, Odawara; Norio Hapso, Ayase, and Yoshiharu Obata, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 11, 1981, Ser. No. 272,764
Claims priority, application Japan, Jun. 16, 1980, 55/80146; Feb. 17, 1981, 56/21934
Int. Cl.³ G01J 1/58
U.S. Cl. 250—486.1 **12 Claims**



1. A radiation excited input phosphor screen comprising:

a substrate having a substantially smooth surface;

a first phosphor layer vapor-deposited on said smooth surface of said substrate and including phosphor crystal particles having mean diameter of 15 μm or less; and

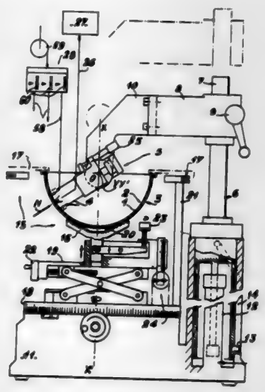
a second phosphor layer of alkali halide phosphor material vapor-deposited on said first phosphor layer and including individual columnar crystals grown substantially vertically with respect to said smooth surface of said substrate, said columnar crystals standing close together with fine spaces therebetween, said second phosphor layer having a thickness ten or more times that of said first phosphor layer.

4,437,012

DEVICE FOR BRINGING ABOUT COINCIDENCE BETWEEN THE AXIS OF A MEASURING PROBE AND A NORMAL TO THE SURFACE OF A PART TO BE CONTROLLED

Claude Cavy, Versailles, and Marie L. Rolland, Bourg la Reine, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 9, 1981, Ser. No. 328,920
Claims priority, application France, Dec. 24, 1980, 80 27514
Int. Cl.³ G12B 5/00, 9/08; G01D 11/00; G01N 23/203
U.S. Cl. 250—491.1 **7 Claims**



1. Apparatus comprising a probe for measuring local thickness of a surface layer that defines a surface of revolution on a part, said probe having a probe axis that must be normal to said surface at each location where a thickness measurement is made and having a front end that must be adjacent to said surface, said apparatus comprising:

A. supporting means for holding said part with the axis of revolution of its said surface coinciding with a reference axis;

B. a first carrier member connected with said supporting means and adjustably shiftable relative thereto in opposite directions parallel to said reference axis;

C. a second carrier member connected with said first carrier member for bodily movement therewith in said opposite directions and for rotation relative thereto about a rotation axis transverse to said reference axis;

D. a third carrier member connected with said second carrier member for bodily movement therewith and for limited swinging relative thereto about an oscillation axis substantially transverse to said reference axis and said rotation axis;

E. a connection between said probe and said third carrier member whereby

(1) the probe is disposed with its probe axis substantially intersecting and normal to said rotation axis and said oscillation axis and its front end remote from those axes,

(2) the probe is constrained to move bodily with said third carrier member, and

(3) the probe is adjustably shiftable relative to said third carrier member in directions along said probe axis; and

F. sensing means on the front end portion of the probe, at a plurality of locations spaced from the probe axis, for indicating coincidence between the probe axis and a normal to a local area of surface forwardly adjacent to the probe.

4,437,013

NEUTRON AND GAMMA RADIATION SHIELDING MATERIAL, STRUCTURE, AND PROCESS OF MAKING STRUCTURE

Hugh L. Hondorp, Princeton Junction, N.J., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jul. 6, 1981, Ser. No. 280,576
Int. Cl.³ G21C 11/00; G21F 3/02
U.S. Cl. 250—515.1 **13 Claims**

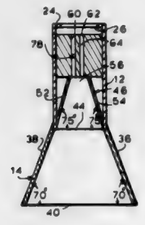
1. A material for use as a neutron and gamma radiation shield consisting of about 95 to 97 percent by weight SiO_2 and about 5 to 3 percent by weight sodium silicate.

4,437,014

SMOKE DETECTION AND DISCONNECTION APPARATUS

Lawrence J. Jones, 60 Church St., R.D. #4, Box 3, Milford, N.J. 08848

Filed Jun. 15, 1981, Ser. No. 273,584
Int. Cl.³ G01N 15/06
U.S. Cl. 250—574 **20 Claims**



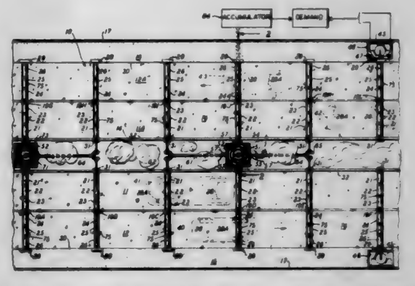
1. Smoke detection and disconnection apparatus comprising a housing having an inlet aperture and an outlet aperture for the passage of smoke and a detection chamber member having a plurality of apertures located between the inlet aperture and the outlet aperture of said housing and in fluid communication therewith, radiation emitting means located in position to transmit a beam of radiation through at least a portion of the detection chamber member in said housing, radiation detection means located in position to detect the beam of radiation transmitted through at least a portion of the detection chamber member in said housing, said radiation emitting means being located to transmit a beam of radiation through only one of the apertures of said detection chamber member to cause said aperture to be a smoke detection chamber, smoke detection means connected to said radiation emitting means and said radiation detection means for causing the operation of said radiation emitting means and for determining when the intensity of the radiation beam detected by said radiation detection means is reduced due to the presence of smoke in the smoke detection chamber in said chamber member, smoke concentrating means for concentrating smoke located between the inlet of said housing and said detection chamber member, said smoke concentrating means having an inlet aperture and an outlet located adjacent to said detection chamber member with the cross sectional area of the inlet aperture being greater than the cross sectional area of the outlet, and disconnecting means connected to said smoke detection means and adapted to be connected to monitored electrical apparatus for turning off the electricity to said monitored electrical apparatus when said smoke detection means determines that the intensity of the radiation beam detected by said radiation detection means is reduced due to the presence of smoke in the smoke detection chamber in said detection chamber member.

4,437,015

METHOD AND APPARATUS FOR AUTOMOBILE ACTUATED POWER GENERATION

Jack Rosenblum, 923 West "I" St., Ontario, Calif. 91762

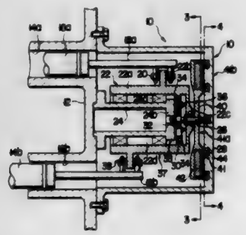
Continuation of Ser. No. 111,473, Jan. 11, 1980, abandoned. This application Mar. 26, 1982, Ser. No. 362,371
Int. Cl.³ F04B 35/00
U.S. Cl. 290—1 R **1 Claim**



1. Power transfer apparatus for generating power from passing wheeled vehicles on a roadway including at least two separate lanes for vehicles traveling in opposite directions, comprising a plurality of pairs of oppositely disposed parallel roller shafts transverse of each separate lane of said roadway, spaced rollers secured to each oppositely disposed parallel shaft to rotate therewith and adapted to be engaged by and rotated by vehicle wheels of said vehicles in contact therewith on each lane of said roadway, each of said pairs of oppositely disposed parallel shafts being spaced from each other pair of oppositely disposed parallel shafts so that wheels on both ends of said vehicle do not contact rollers on adjacent spaced pairs of shafts at the same time, a bevel gear fixed to oppositely disposed ends of each pair of said roller shafts and rotatable therewith, a spider gear located between said at least two lanes of roadway and positioned to be engaged and driven by bevel gears on one pair of said roller shafts, adjacent pairs of roller shafts positioned on opposite sides of said one pair of said roller

shafts and equally spaced therefrom, a jack shaft having a bevel gear on each end thereof, said jack shaft engaging said bevel gears of each pair of roller shafts on opposite sides of said one pair of roller shaft and said spider gear thereby driving said spider gear, a translator means, said spider gear being connected to said translator means via a translator shaft, a power accumulator means operatively linked to said translator means, and further means linking said accumulator means to a power demand.

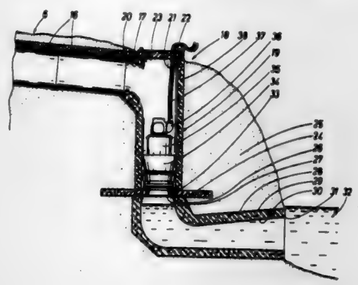
4,437,016
POWER ABSORBING DEVICE FOR LOW-TEMPERATURE REFRIGERATING MACHINE
Shunichi Nakaya, Kawasaki, and Katsumasa Araoka, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Feb. 2, 1982, Ser. No. 345,017
Claims priority, application Japan, Feb. 27, 1981, 56-28223
Int. Cl.³ H02K *51/00*
U.S. Cl. 290—1 R **4 Claims**



1. A power absorbing device for absorbing the mechanical energy of reciprocating motion of pistons of a reciprocating adiabatic expansion engine, comprising:
a cylindrical cam for converting the reciprocating motion of said pistons into rotatory motion, said cylindrical cam having a hollow space therein;
a speed-increasing gear in said hollow space for increasing the speed of said rotatory motion, said speed-increasing gear having an output shaft to rotate at an increased speed; and
an electric generator including a rotor mounted on said output shaft to rotate and an electric generating section operating jointly with said rotor to supply an external load with electric power.

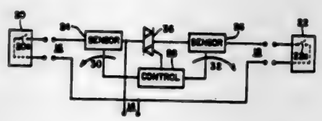
4,437,017
ARRANGEMENT FOR HYDROELECTRIC POWER PLANTS
Thomas V. Österberg, Växjö, Sweden, assignor to A-Betong AB, Växjö, Sweden
Filed Feb. 10, 1982, Ser. No. 347,491
Claims priority, application Sweden, Feb. 11, 1981, 8100934
Int. Cl.³ F03B *13/08*; E02B *9/00*
U.S. Cl. 290—52 **2 Claims**

1. Arrangement for hydroelectric power plant which comprises a flow tube through which water flows during operation, at least one inlet tube for water which leads to the flow tube, at least one discharge tube for the water which leads from the flow tube, at least one turbine runner arranged in the flow tube which is driven by the water which flows through the flow tube, a drive shaft connected with the turbine runner and an electric generator connected with the drive shaft so that when the water flows through the flow tube and causes the turbine runner to rotate, the latter via the drive shaft drives the generator which thus generates electricity, in which the arrangement exhibits accentuated sub-divisioning between the mechanical unit and portions of an installation nature, so that the turbine runner and generator are located directly adjacent to each other and together with the drive shaft form a unit so arranged that the turbine runner can be in contact with a surrounding flow of water whilst the generator has a watertight enclosure into which the drive shaft extends from the turbine in a waterproof bushing and to which at least one electric cable for transmitting the electricity produced is connected by means of a watertight connection, and so that the inlet tube, the flow tube and the discharge tube are made from prefabricated concrete components, whereby the mechanical unit, as a separate unit, is located in the flow tube in which the



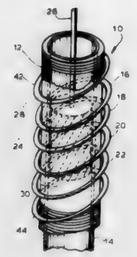
electric cables run, and whereby the flow tube is essentially vertical and provides a support for the unit, and at its upper end has an aperture through which the unit can be passed so that the unit can be assembled in the flow tube by being passed through the said aperture and lowered down onto the support, with the mechanical unit—even in the assembled state—comprising a unit which is separate from the installation portion and which can be dismantled by being hoisted upwards from the support through the said aperture.

4,437,018
AUDIO COMPONENT COUPLER
Stephen C. Manley, 8 Bartlett St., Charlestown, Mass. 02129
Filed Dec. 6, 1982, Ser. No. 446,984
Int. Cl.³ H02J *1/00*
U.S. Cl. 307—38 **5 Claims**



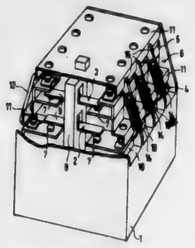
1. An audio component coupler for externally integrating separate audio-visual components for coupled operation, comprising a housing having at least a main electrical power connector for receiving power from a power source, and first and second component electrical power connectors for supplying operating power to components separately connectable externally thereto; means defining a first power transfer path interconnecting said main electrical power connector and said first component power connector, said first path including sensing means providing an indication of the transfer of power along said path; and means defining a second power transfer path interconnecting said main electrical power connector and said second component power connector, said second path including power interruption means having switching means settable by the user to either of two independently selectable states in which the flow of power in the second path is responsive to the flow of power in said first path when set to said first state and is independent of the flow of power in the first path when set to said second state.

4,437,019
LINEAR DIFFERENTIAL TRANSFORMER WITH CONSTANT AMPLITUDE AND VARIABLE PHASE OUTPUT
Jacob Chass, Rego Park, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.
Filed Feb. 7, 1983, Ser. No. 464,754
Int. Cl.³ H02J *3/00*; H01F *71/06*
U.S. Cl. 307—83 **12 Claims**



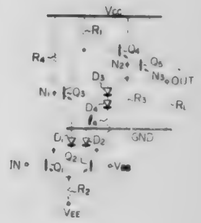
1. A differential transformer comprising:
an electrical coil extending longitudinally along an axis providing a transformer secondary winding;
first and second transformer primary windings defined by electrical coils lying generally in spaced parallel first and second planes which cut said axis at an angle other than 90°, each of said primary winding extending about said secondary winding; and,
a core of magnetic material disposed for linear movement parallel to said axis and equal in length to at least the minimal axial distance between said primary windings whereby when said primary windings are excited by AC voltages 90° out of phase with each other the phase of the secondary winding output voltage will vary with the linear displacement of said core between said primary windings and the amplitude of said output voltage will remain constant.

4,437,020
ELECTROMAGNETIC SWITCHGEAR
Gerhard Schröther, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jan. 29, 1982, Ser. No. 343,967
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105117
Int. Cl.³ H01H *33/14*
U.S. Cl. 307—135 **5 Claims**



1. An electromagnetic switchgear, useful for making and breaking at least one connection from a network to a capacitive load via a damping resistor, comprising:
a set of switches for each connection being switched, each set comprising a main switch and a leading switch disposed one above the other in stories in the switchgear and operable together, each switch comprising an input contact adapted to be connected to the network, an output contact adapted to be connected to the capacitive load, and a movable bridge contact;
a jumper electrically coupling the input contacts of each set, the jumper extending from one story to the other; and
a resistor coupling the output contacts of each set, the resistor extending from one story to the other.

4,437,021
LINE DRIVER CIRCUIT
Hideji Sumi, Yokohama, and Masayuki Kokado, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 7, 1981, Ser. No. 309,438
Int. Cl.³ H03K *3/33*, *3/01*
U.S. Cl. 307—270 **9 Claims**



1. A line driver circuit comprising:
a differential pair of transistors having a first transistor for receiving an input signal and a second transistor for receiving a reference signal, said first and second transistors being exclusively turned on and off in response to the electric potential of the input signal;
an output stage having an emitter follower including a plurality of transistors in which an output-stage transistor provides an output signal of a high potential or a low potential in response to the output potential of the differential pair; and
a discharge path means for drawing charges accumulated on the base of the output-stage transistor in the emitter follower, through one of the transistors in the differential pair, when the output-stage transistor in the emitter follower is turned from ON to OFF,
wherein said discharge path means comprises current switch means, having at least one diode between the base of said output-stage transistor and the collector of said one of the transistors in said differential pair, for cutting off said discharge path means when the voltage between the base and the emitter of said output-stage transistor is equal to or lower than the threshold voltage for turning on said output-stage transistor.

4,437,022
MONOLITHICALLY INTEGRATED PUSH-PULL DRIVER
Eddehard F. Miersch, Boeblingen; Kurt Pollmann, Altdorf; Helmut Schettler, Dettenhausen, and Rainer Zuhlke, Leonberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1981, Ser. No. 336,203
Claims priority, application European Pat. Off., Jan. 30, 1981, 81100662.6
Int. Cl.³ A03K *3/26*, *5/00*
U.S. Cl. 307—270 **6 Claims**

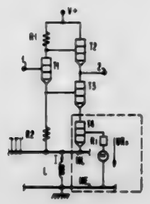
1. Integrated push-pull driver circuit having a reduced noise voltage including an output stage connected between a first and second chip voltage supply line and a third voltage supply line provided on an integration package level higher than the level of the chip comprising the driver circuit, said third volt-

age supply line carrying substantially the same potential as said second chip voltage line, said output stage comprising:

a first transistor the collector-emitter path being connected between said first voltage supply line and an output terminal;

a second transistor the collector-emitter path being connected in series with the collector-emitter path of the first transistor with the collector of the second transistor being connected to the output terminal;

means for forming from an input signal corresponding true and inverted signals and applying them to the bases of said first and second transistors, respectively;



a third transistor the collector-emitter path being connected between the emitter of the second transistor and the second voltage supply line; and

means connected between the base of the third transistor and said third voltage supply line establishing a reference potential at said base and reducing the rate of current change through the second transistor when said second transistor is turned on;

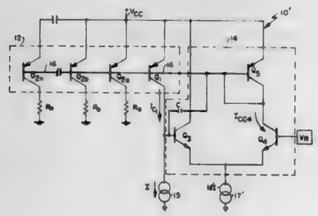
whereby a reduced noise voltage is generated on the second chip voltage supply line.

4,437,023

CURRENT MIRROR SOURCE CIRCUITRY

Harry A. Gill, Jr., Cupertino, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 28, 1981, Ser. No. 335,309
Int. Cl.³ H03K *3/01*; G05F *3/20*
U.S. Cl. 307—296 R **1 Claim**



1. A current source circuit comprising:

(a) a pair of current sources;

(b) a current mirror circuit comprising a plurality of transistors having a common base electrode, such plurality of transistors including a master transistor and at least one slave transistor, emitter electrodes thereof being electrically connected to a voltage source;

(c) differential amplifier means comprising a pair of transistors having emitter electrodes connected to a first one of the pair of current sources, a first one of the pair of transistors having a base electrode coupled to a collector electrode of the master transistor and to a second one of the pair of current sources and a collector electrode coupled to the voltage source, and a second one of the pair of transistors having a collector electrode connected to the common base electrode, for producing a current flow through the collector electrode of at least one slave transistor substantially proportional to the current flow through the collector electrode of the master transistor;

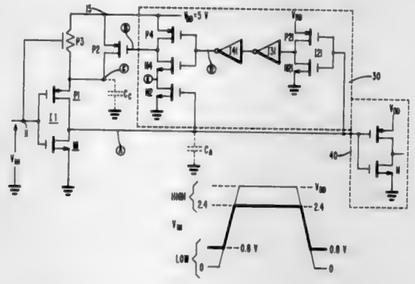
(d) wherein the differential amplifier means includes a diode connected transistor coupled between the collector electrode of the second one of the pair of transistors of the differential amplifier means and the voltage source and wherein the first one of the pair of current sources produces a mirror current MI where I is the current produced by the first one of the pair of current sources and M is at least equal to $(n(1+hfe_{min})+X+1)/hfe_{min}$ where n is the ratio of the emitter current density of the diode connected transistor to the current density of the master transistor, X is the ratio of the total collector current of the slave transistor to the collector current of the master transistor and hfe_{min} is the minimum current gain of the plurality of transistors of the current mirror circuit.

4,437,024

ACTIVELY CONTROLLED INPUT BUFFER

Ihor T. Wacyk, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,660
Int. Cl.³ H03K *19/094, 19/017, 17/26, 17/284*
U.S. Cl. 307—475 **6 Claims**



1. The combination comprising:

first and second IGFETs of complementary conductivity type, each IGFET having source and drain electrodes defining the ends of a conduction path and a control electrode;

a signal input terminal, a signal output terminal, and first and second power terminals for the application therebetween of an operating potential;

means connecting the control electrodes of said first and second IGFETs to said signal input terminal;

means connecting the drain electrodes of said first and second IGFETs to said signal output terminal;

a controllable impedance means connected between said source of said first IGFET and said first power terminal, said controllable impedance means normally providing a relatively high impedance path when said first IGFET is turned on;

means connecting said source of said second IGFET to said second power terminal; and

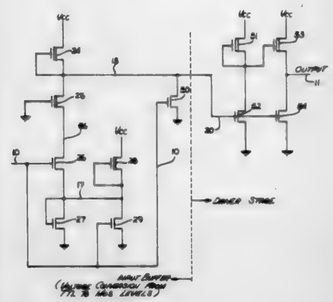
pulse generating means coupled between said signal output terminal and said controllable impedance means for momentarily placing said controllable impedance means in a relatively low impedance condition in response to said first IGFET being driven from an OFF to an ON condition.

4,437,025

MOS BUFFER FOR RECEIVING TTL LEVEL SIGNALS

Wei-Ti Liu, San Jose, and Douglas J. Lee, Santa Clara, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 29, 1981, Ser. No. 287,889
Int. Cl.³ H03K *19/094*
U.S. Cl. 307—475 **9 Claims**



1. An integrated circuit for converting a first binary signal operating between first levels, to a second binary signal operating between second levels, comprising:

a first inverter coupled to receive said first binary signal as an input signal;

a reference voltage means for providing a reference voltage for said first inverter, said reference means coupled to said first inverter;

a second inverter for providing current to said reference means when said first binary signal is at one of said first levels, and for providing a current path for said first inverter when said first binary signal is at said other of said first levels, said second inverter coupled to said reference means and coupled to receive said first binary signal; and,

level shifting means coupled to the output of said first inverter, for shifting the output signal from said first inverter when said first binary signal is at the other of said first level, said level shifting means coupled to receive said first binary signal;

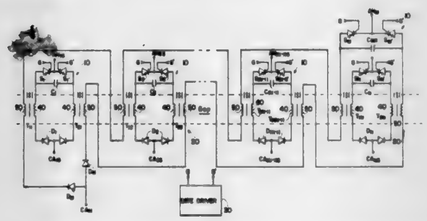
whereby said output signal from said first inverter with said level shifting, provides said second binary signal.

4,437,026

APPARATUS FOR ELECTRODE CURRENT CONTROL IN LINEAR MHD GENERATORS

Ara M. Demirjian, Arlington, Mass., and Albert Solbes, Rancho Palos Verdes, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 17, 1980, Ser. No. 217,355
Int. Cl.³ H02K *45/00*
U.S. Cl. 310—11 **13 Claims**



1. Apparatus for controlling electrode current distribution in dc circuits of the type having a plurality of pairs of opposed electrodes along a channel wherein each electrode pair produces a corresponding dc electrode current at a pre-set location across said channel, and the plurality of pairs produces a load current, said control apparatus comprising:

means for converting each electrode current into first and second periodic control signals which are 180° out of phase with respect to each other and which have equal magnitudes corresponding to the magnitude of the associated electrode current at preset locations across the channel; and

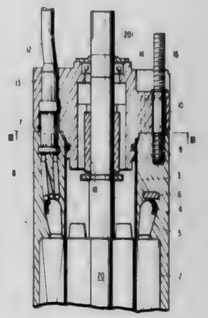
means for magnetically coupling individual ones of said first control signals and for magnetically coupling individual ones of said second control signals such that the corresponding electrode currents are equalized or rendered proportional in the same or constant ratios in accordance with the locations of the electrode currents.

4,437,027

MOLDED SUBMERSIBLE MOTOR

Sakuei Yamamoto, and Mitsuhiro Nishida, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1982, Ser. No. 337,911
Claims priority, application Japan, Jan. 17, 1981, 56-6628
Int. Cl.³ H02K *7/10*
U.S. Cl. 310—78 **2 Claims**



1. A molded submersible motor, comprising:

(a) an open ended, hollow cylindrical frame (4) formed of resinous molding material,

(b) a stator assembly including a stator core (2) and a stator coil (15) embedded in said frame,

(c) a rotor assembly (20) rotatably mounted inside of the stator assembly,

(d) a pair of end brackets (10, 11) formed of resinous molding material and individually detachably secured to opposite ends of said frame to close the openings thereof,

(e) a voltage surge absorber unit molded into said frame,

(f) a starting switch unit of said motor molded into one of said end brackets positioned at an end of the motor adapted to be coupled to an apparatus driven by said motor,

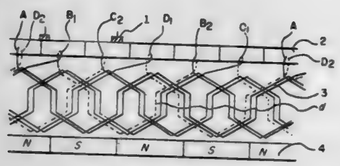
(g) a lower connector (7) molded into said frame and coupled to said stator coil (15) and said voltage surge absorber unit via lead wires (8) embedded in said frame, and

(h) an upper connector (13) molded into said one of said end brackets for coupling a power source cable (12) to said lower connector and said starting switch unit.

4,437,028
ARMATURE WINDING FOR A DC MULTI-POLE MOTOR

Kenske Ikeda, Room No. 3, Midori-so, 10-3, Chuorinkan 6-chome, Yamato-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 32,482, Apr. 23, 1979, abandoned. This application May 19, 1981, Ser. No. 265,197
Claims priority, application Japan, Apr. 25, 1978, 53-49133
Int. Cl.³ H02K 3/00
U.S. Cl. 310—198 6 Claims

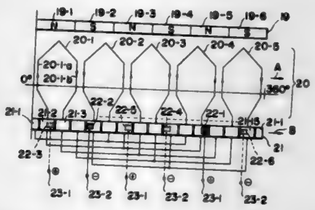


1. A DC multi-pole electrodynamic device, comprising:
an annular array of fixed field magnets forming fixed magnetic field poles of alternating magnetic polarity around the array, respectively;
magnetic material for closing magnetic circuits of said field magnets;
an armature operatively disposed adjacent to said field magnets and mounted for rotation about an axis, said armature having a commutator composed of an annular array of commutator segments and a winding composed of a plurality of armature coils;
a set of two brushes in electrical contact with respective commutator segments of said commutator to respectively provide electrical current of different electrical potential;
a first one of said coils being formed by a single conductor having a first tap at one of its ends and a second tap at the other of its ends, each tap being electrically connected to respective first and second commutator segments, said first coil comprising a plurality of complete conductor turns around said armature with each turn having successive active armature portions of alternating magnetic polarity when energized adjacent to said successive ones of said magnetic field poles;
a second one of said coils being formed by a single conductor having a third tap at one of its ends and a fourth tap at the other of its ends, each tap being electrically connected to respective third and fourth commutator segments, said second coil comprising a plurality of complete conductor turns around said armature with each turn having successive active armature portions of alternating magnetic polarity when energized adjacent to said successive ones of said magnetic field poles;
said first one of said coils being in magnetic phase with said second one of said coils;
said armature further including a conductive winding for connecting said second tap directly to said third tap so that their respective commutator segments will be at substantially the same potential when one is energized;
all of said coils substantially identical, displaced about said axis with respect to their adjacent coils and separated pairs of said coils being in magnetic phase, said separated pairs being connected by a conductive winding in a like manner of said first and second coils; and
the number of said taps being equal to one-half PZ, wherein P represents the number of said magnetic field poles and Z is the number of said armature coils.

4,437,029
DIRECT CURRENT MOTOR

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo; Manabu Shiraki, 4451-171 Shimotsurum, Yamato-shi, Kanagawa-ken, and Kazuhito Egami, 2-44-1 Chuo, Nakano-ku, Tokyo, all of Japan

Filed Oct. 16, 1981, Ser. No. 312,089
Int. Cl.³ H02K 23/26
U.S. Cl. 310—198 4 Claims

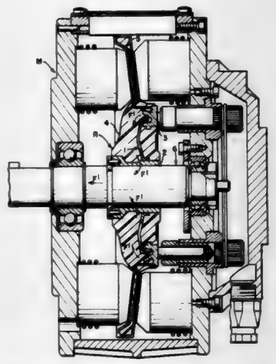


1. A direct current motor for imparting continuous rotation comprising:
a field magnet having a circular array of 2mn magnetic poles magnetized with the same magnetic intervals as those of magnetic poles N and S, where m is an integer of 1 or more and n is an integer of 3 or more;
an armature with a circular array of m(2n±1) armature coils arranged with equal pitch;
means for mounting said field magnet and armature for relative rotation in coaxial juxtaposition; and
electric power supply control means including means for supplying armature drive current to said armature coils and means for switching said armature current 2mn (2n±1) times per revolution of the armature with respect to the field magnet.

4,437,030
ROTOR WITH A COOLING DEVICE, MORE PARTICULARLY OF THE COMMUTATOR, FOR ELECTRIC MOTORS, AND THE METHOD AND MEANS FOR MAKING THIS DEVICE

Michel Coquillart, Saint.Etienne Terrenoire, France, assignor to Mavilor Systemes, Switzerland

Filed May 6, 1981, Ser. No. 260,996
Claims priority, application France, May 9, 1980, 80 11149
Int. Cl.³ H02K 9/28
U.S. Cl. 310—227 7 Claims

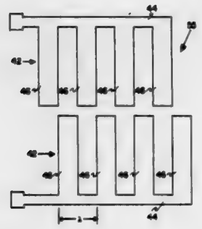


1. Rotor with commutator-cooling device for electric motors of the type comprising a molded unit having an inner bushing (2) on the driving shaft (6), a current commutator (3) and a winding (5) connected to the commutator (3), wherein cooling is effected by a thermal bridge established between said inner bushing (2) and said commutator (3) by at least one thermal conductor (1-C1-C2) embedded in the rotor, one part of which is positioned immediately adjacent to said commutator (3) but without contacting it, and the other part of which is in intimate contact with said inner bushing (2) in order to create a transfer of heat from said commutator to said inner bushing.

4,437,031
ZNO SAW DEVICE HAVING SEPARATE COMB TRANSDUCER

Robert L. Gunshor; Robert F. Pierret, both of West Lafayette, Ind., and Michael R. Melloch, Mesquite, Tex., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 30, 1982, Ser. No. 431,683
Int. Cl.³ H01L 41/04
U.S. Cl. 310—313 B 9 Claims

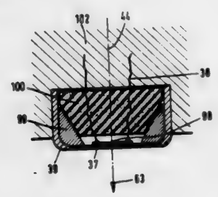


1. A separate comb transducer for use in a device having a surface acoustic wave coupled thereto, said transducer comprising first and second conductive elements each of which includes an arm and a plurality of fingers extending from said arm, said fingers being substantially parallel to and spaced from one another with the width of said fingers and the spacing therebetween each being substantially equal to one-half of the wavelength of said surface acoustic wave, and said elements being positioned with the fingers of each element substantially parallel to the fingers of the other element with the free ends of the fingers of each element adjacent to but not overlapping the fingers of the other element, and with said fingers of each said element being substantially aligned with the spaces adjacent to said fingers of the other element.

4,437,032
SENSOR FOR DISTANCE MEASUREMENT BY ULTRASOUND

Egon Gelhard, Thomas-Mann-Str, 10, D-5000 Köln 51, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,484
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137745
Int. Cl.³ H01L 41/08
U.S. Cl. 310—324 6 Claims

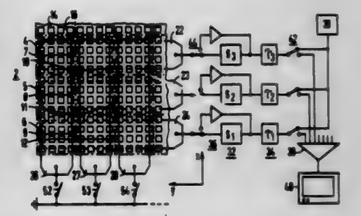


1. In a sensor for measuring distance by transmitting ultrasound signals beamed onto objects, and receiving signals reflected from said objects, including an ultrasound transmitter member for transmitting said signals, and an ultrasound receiver member for receiving the reflected signals, at least one of said members including a converter formed with a cavity and having piezo-ceramic resonator means disposed therein for converting the ultrasound signals to electrical signals, or the electrical signals to the ultrasound signals, said converter including a substantially circular membrane having an inner side, the improvement comprising, in combination,
damping means disposed on opposite circular segments of the inner side of said substantially circular membrane for preventing the transmission or reception of ultrasound signals having excessive strength.

4,437,033
ULTRASONIC TRANSDUCER MATRIX HAVING FILLER MATERIAL WITH DIFFERENT ACOUSTICAL IMPEDANCE

Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 27, 1981, Ser. No. 267,583
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 302144
Int. Cl.³ H01R 17/06
U.S. Cl. 310—334 3 Claims



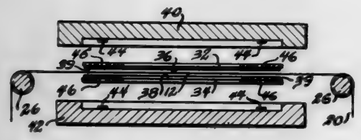
1. An ultrasonic transducer arrangement having a matrix of ultrasonic oscillators, the arrangement further comprising:
a plurality of ultrasonic oscillators, each ultrasonic oscillator consisting of a matrix of columnar transducer elements which are electrically controlled simultaneously, each transducer element having a uniform thickness throughout its height, the height of each such element being substantially greater than the thickness thereof;
filler material interposed between individual ones of the transducer oscillators, and between individual ones of the transducer elements, said filler material being limited in extent to the height of the transducer elements and having an acoustic impedance which is substantially different from the acoustic impedance of the oscillator material of the transducer elements, and for providing a structurally locking connection between adjacent ones of the transducer elements throughout their height;
a plurality of electrode conductor strips disposed on either side of said matrix of columnar transducer elements, said electrode conductor strips being arranged parallel to one another so as to form rows of electrode conductor strips on one side of said matrix, and parallel to one another on the other side of said matrix in a direction transverse to said rows of electrode conductor strips to form columns of electrode conductor strips on said other side of said matrix; and
a plurality of electronic delay stages associated with respective ones of said rows of electrode conductor strips, said columns of electrode conductor strips and said rows of electrode conductor strips being separately controllable.

4,437,034

PARALLEL-WIRE GRID ASSEMBLY WITH METHOD AND APPARATUS FOR CONSTRUCTION THEREOF

Edward F. Lewandowski, Westmont, and John Vrabec, South Holland, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 26, 1981, Ser. No. 314,920
Int. Cl.³ H01J 1/46, 17/04, 19/38, 21/10
U.S. Cl. 313—348 1 Claim



1. A winding assembly for use in constructing a plurality of parallel-wire grids wherein arrays of substantially coplanar spaced-apart parallel wires are retained between overlying first and second mating frame members by an electrically conductive adhesive, the arrays being formed by continuously winding a wire along a predetermined path, the winding assembly comprising;

a plurality of spaced-apart spindles each having opposing ends, at least one outer surface for contacting said wire, and a plurality of predeterminedly spaced index means on said one surface for receiving said wire, said index means comprising a single continuous substantially helical groove formed on the outer surfaces of said spindles;

first and second spaced-apart walls, said opposing ends of said first and said second spindles joined to said first and said second walls respectively, so as to be suspended therebetween in a predetermined spaced-apart relationship;

means for rotatably mounting said first wall to rotate said assembly, thereby winding said wire about said plurality of spindles; and

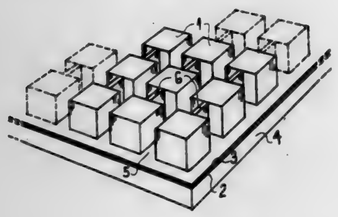
aperture means located in said second wall for introduction of one of said first and said second mating frame members to interior portions of said wire array which are enclosed by the continuous winding of said wire about said plurality of said spindles.

4,437,035

PYROELECTRIC TARGET AND IMAGE PICK UP TUBE PROVIDED WITH SUCH A TARGET

Claude Y. Raverdy, and Serge Veron, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 14, 1981, Ser. No. 311,247
Claims priority, application France, Oct. 14, 1980, 80 21943
Int. Cl.³ H01J 31/00, 31/26
U.S. Cl. 313—388 5 Claims



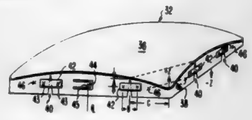
1. A pyroelectric target for an image pick up tube, made from a layer of a material endowed with the property of pyroelectricity, which presents a spontaneous electric polarization which depends on its temperature, said layer divided into a mosaic of spaced pyroelectric elements bonded at its base to a support covered with an electrode from which is taken, during reading of the target, the electric signal corresponding to each element and depending on the incident, more especially infrared, radiation received by the element, said layer further comprising pyroelectric junction arms between said pyroelectric elements, connecting together at least some thereof, said pyroelectric junction arms extending over a certain height from said base and presenting dimensions, particularly a section parallel to said base, which are small with respect to those of the pyroelectric elements themselves.

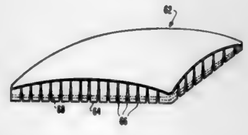
4,437,036

CATHODE-RAY TUBE HAVING A TEMPERATURE COMPENSATED MASK-FRAME ASSEMBLY

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,383
Int. Cl.³ H01J 29/80
U.S. Cl. 313—402 14 Claims





1. In a cathode-ray tube having a mask-frame assembly mounted therein in spaced relation to a screen, said mask-frame assembly including a shadow mask attached to a peripheral frame, the improvement comprising

said mask-frame assembly including a plurality of peripheral flexible portions at least one of which is bridged by a member having a different coefficient of thermal expansion than said assembly, said bridging member being attached to said assembly at opposite sides of the at least one bridged flexible portion, whereby said at least one flexible portion is caused to flex by the expansion of said bridging member when said bridging portion becomes heated during tube operation.

4,437,037

DISPLAY PANEL AND KEEP-ALIVE ARRANGEMENT THEREFOR

Edgar L. Harvey, Jamesburg, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 30, 1981, Ser. No. 335,755
Int. Cl.³ H01J 17/49, 17/46
U.S. Cl. 313—585 2 Claims

1. A display panel comprising p1 a gas-filled envelope made up of a base plate and a face plate sealed together hermetically,

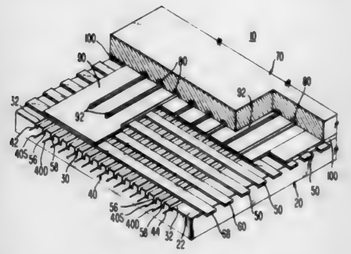
an array of rows and columns of gas-filled cells,

a plurality of first electrodes disposed parallel to each other and seated in elongated first slots in the top surface of said base plate,

a plurality of second electrodes seated in other slots in the top surface of said base plate, and

a plurality of identical strip electrodes disposed between said base plate and face plate and oriented at an angle to said first electrodes to define gas cells therewith, one of said strip electrodes being operable as an anode with respect to said second electrodes operable as glow cathodes, and the others of said strip electrodes being operable as glow cathodes with respect to said first electrodes,

said strip electrodes being disposed in an array along said base plate, and said one of said strip electrodes is the first strip electrode in the array, said other slots being shorter than said first slots and extending from the edge of the base plate only up to said first strip electrode.

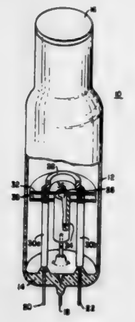


4,437,038

HOLLOW CATHODE LAMP WITH IMPROVED STABILITY ALLOY FOR THE CATHODE

Vincent F. Link, Elmira, and George K. Yamasaki, Horseheads, both of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1979, Ser. No. 43,529
Int. Cl.³ H01J 17/04
U.S. Cl. 313—633 3 Claims



1. A spectral radiation source of the hollow cathode type comprising an anode and cathode positioned within a gas filled envelope, with the operating discharge between the anode and the cathode generating spectral radiation which is characteristic of the metal cathode, the improvement wherein the metal cathode,

consists of an alloy of silver which is chemically stable and readily sputtered, and

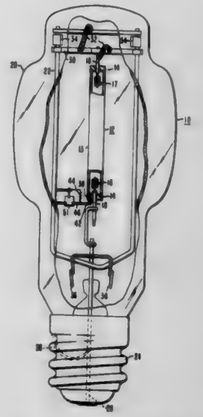
calcium in an amount of up to about 25 weight percent of the alloy.

4,437,039

STARTING ARRANGEMENT FOR HIGH-INTENSITY-DISCHARGE SODIUM LAMP

Daniel A. Larson, Cedar Grove, N.J., assignor to North American Philips Electric Corp., New York, N.Y.

Continuation-in-part of Ser. No. 948,131, Oct. 3, 1978, Pat. No. 4,191,910. This application Oct. 25, 1979, Ser. No. 88,424
Int. Cl.³ H01J 7/44, 17/34, 19/78, 29/96; H01K 1/62
U.S. Cl. 315—60 15 Claims



1. In combination with a high-intensity-discharge sodium lamp comprising an arc tube formed as an elongated hollow alumina body member of predetermined dimensions having alumina end-closure members hermetically sealed to the end portions of the hollow body member and enclosing a discharge-sustaining filling comprising sodium and inert ionizable starting gas, electrodes operatively positioned within said arc tube proximate the ends thereof, electrical lead-in means sealed to and extending through said alumina end-closure members and connecting to said electrodes to form composite electrode-lead-in structures, a light-transmitting protective outer envelope surrounding said arc tube, frame means positioned within said outer envelope for supporting said arc tube in predetermined position within said outer envelope, electrical adaptor means affixed to said outer envelope for connection to a source of power, a pair of electrical connection means connecting said electrical adaptor means to said electrical lead-in means, and one of said electrical connection means including said frame means to electrically connect one of said electrodes to said electrical adaptor means, the improvement which comprises:

(a) electrically conducting ceramic means hermetically sealed to and extending through said arc tube at least at one end thereof to form electrically conducting path means through said arc tube, a portion of said conducting ceramic means positioned interiorly of said arc tube and electrically insulated from the proximate electrical lead-in means, said conducting ceramic means comprising refractory-oxide-based ceramic matrix which is non-reactive with respect to high-temperature sodium vapor and which possesses the predetermined thermal-physical-chemical properties required to form a high-temperature seal, with alumina, and said refractory-oxide-based conducting ceramic means having embedded therein a predetermined amount of finely divided refractory metal which is inert with respect to said discharge-sustaining filling to provide said conducting ceramic means with a predetermined electrical conductivity;

(b) electrically insulating barrier means positioned intermediate said arc-tube-interior portion of said conducting ceramic means and portions of said electrical lead-in conductor means which project interiorly of said arc tube and are proximate said conducting ceramic means, and said

barrier means being dimensioned to intercept any condensed discharge-sustaining filling and prevent same from forming a conducting path between said conducting ceramic means and the proximate lead-in conductor means; and

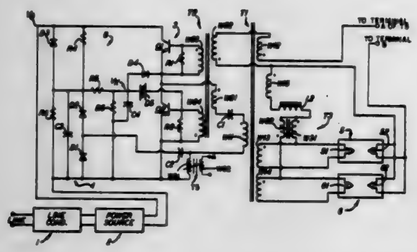
(c) during starting of said lamp said conducting ceramic means electrically connect, exteriorly of said arc tube, to the said electrode which is positioned proximate the opposite end of said arc tube from the connected conducting ceramic means, and during starting of said lamp the total electrical resistance between said arc-tube-interior portion of said conducting ceramic means and the connected opposite electrode permitting the maintenance of a glow-type discharge within said arc tube between said arc tube interior portion of said conducting ceramic means and the said composite electrode-lead-in structure which is proximate thereto to ionize the atmosphere within said arc tube.

4,437,040

METHOD OF EFFECTING STABILIZED DIMMING OF FLUORESCENT LAMPS

David L. Bay, Beverly, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,307
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—209 R **5 Claims**



1. In an electronic ballast system including an oscillator signal source and an output transformer for driving a lamp filament, a method of effecting stabilized lamp dimming whereby a lamp filament voltage is maintained substantially constant despite variations in the power level supplied to the lamp, the method comprising the steps of:

coupling a first inductance in the resonant loop of the oscillator signal source,

substantially clamping the voltage across the first inductance,

coupling a second inductance to the first inductance so that the voltage across the second inductance is in proportion to the voltage across the first inductance, and

applying the voltage across the second inductance to the lamp filament so that a dominant component of the total voltage across the filament is attributable to the voltage across the second inductance.

4,437,041

AMALGAM HEATING SYSTEM FOR SOLENOIDAL ELECTRIC FIELD LAMPS

Victor D. Roberts, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,254
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—248 **10 Claims**

1. A solenoidal electric field lamp comprising:

an evacuable, light transmissive envelope having an ionizable medium including mercury vapor, disposed therein;

means for providing a solenoidal electric field within said envelope, said means comprising a core being coupled to an external alternating current power source through a winding disposed on said core, said winding coupled to the exterior of said envelope through a pair of wire leads;

a length of conductive material disposed within said envelope; and

an amalgam patch situated on said conductive material, said length of conductive material electrically connected to said pair of wire leads so that automatically variable control of the heat supplied said amalgam patch is achieved during lamp operation, rapid heating of said amalgam occuring due to high starting voltages applied to said core, and reduced heating of said amalgam patch after lamp starting due to lower lamp operating voltages.

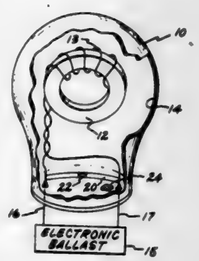
6. A solenoidal electric field lamp comprising:

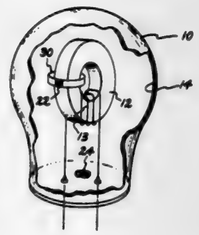
an evacuable, light-transmissive envelope having an ionizable medium including mercury vapor, disposed therein;

means for providing a solenoidal electric field within said envelope, said means comprising a core being coupled to an external alternating current source through a winding disposed on said core, said winding coupled to the exterior of said envelope through a pair of wire leads;

a length of conductive material formed in a loop linking the core, so that during lamp operation the time varying magnetic field which drives the discharge current in the lamp also causes a current to flow in said conductive loop; and

an amalgam patch situated on said conductive material, so that automatically variable control of the heat supplied said amalgam patch is achieved during lamp operation, with rapid heating of said amalgam patch disposed on said conductive loop due to the high starting voltage applied to said core by said external alternating current source and reduced heating of the amalgam patch after lamp starting due to the lower voltage provided to the core after starting because of the solenoidal electric field lamp operating characteristic.



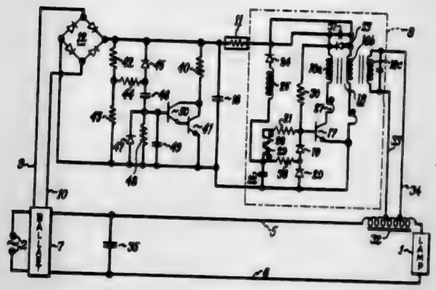


4,437,042

STARTING AND OPERATING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

Don Morais, Danville, Ill., and Daniel V. Owen, Hendersonville, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,533
Int. Cl.³ H05B *37/00, 39/00, 41/14*
U.S. Cl. 315—289 **15 Claims**



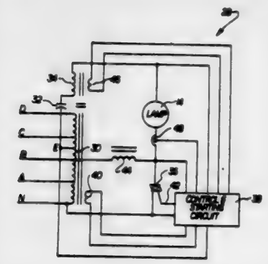
1. A starting and operating circuit for gaseous discharge lamp comprising, in combination, a source of alternating current, inductive ballast means connected at its input side to said current source, discharge lamp means connected to the output side of said ballast means, transformer means connected in series with said discharge lamp means across said ballast means, sine wave oscillator means connected at its input side through rectifying means to said current source and at its output side of said transformer means whereby said transformer means steps up and applies to said discharge lamp means sine wave voltage produced by said oscillator means for starting and restarting said discharge lamp means, said circuit being subject to overshoot of voltage from said current source to said oscillator means, and means connected to said rectifying means and said oscillator means for limiting said voltage overshoot.

4,437,043

LIGHTING CONTROL FOR HIGH INTENSITY DISCHARGE LAMP

Ira J. Pitel, Morristown, N.J., assignor to Cornell-Dubilier Electric Corporation, Newark, N.J.

Filed Nov. 22, 1982, Ser. No. 443,243
Int. Cl.³ H05B *41/392*
U.S. Cl. 315—308 **14 Claims**



1. A control circuit for regulating light output of high intensity discharge lamps comprising:

a magnetic ballast providing electrical power for at least one high intensity lamp;

a controlled impedance coupled between said ballast and said lamp;

circuit means for controlling a period of conduction for said controlled impedance;

said circuit means including means combining signals proportional to a current through said lamp, a voltage across said lamp and an output lighting level of said lamp; and

current conduction means for providing a current path when said controlled impedance is not in a period of conduction.

4,437,044

FLAT CATHODE RAY TUBE AND METHOD OF OPERATION

Werner Veith, Heidelberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 109,810, Jan. 7, 1980, abandoned. This application May 6, 1982, Ser. No. 375,405
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 2902852
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—366 **20 Claims**

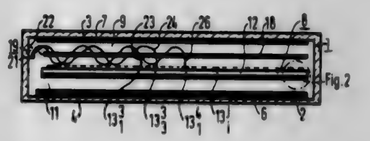


Fig. 2

1. A method for displaying optical information in a flat cathode ray tube comprising the steps of providing a flat cathode ray tube leaving an evacuated container having a front and back wall which are parallel to each other, said front wall supporting a cathodo-luminescent layer and a flatly extending acceleration anode, said back wall having a flatly extending back electrode, said container in a plane extending parallel to the front and back walls and sub-dividing the chamber into a back chamber and a front chamber being provided with a substrate having a plurality of parallel extending conductive strips forming at least one group of row conductors facing the back electrode and on a surface opposite the row conductors being provided with a plurality of parallel conductor strips extending perpendicular to the direction of the row conductors to form column conductors, said substrate being provided with apertures disposed in the row conductors, said cathode ray tube being provided with an electron source extending along one side wall of the container parallel to the row conductors, said electron source including one emission cathode as well as one attraction anode to produce a flat electron beam having a width which extends the entire length of the row conductors, extends parallel to the row conductors, and projects the beam obliquely into the back chamber, said tube including a beam guidance electrode with an equal potential extending in a plane parallel to the back wall between the row conductor and the back electrode; controlling the potentials applied on the back electrodes, the acceleration anode, the emission cathode, the attraction anode, the beam guidance electrode and the row conductors to project a flat beam from the electron source obliquely into the back chamber to travel in a sinuous path with a wavelength and with penetration of the plane of the beam guidance electrode at least once prior to penetrating a selected row conductor and to penetrate successively selected row conductors, said controlling including applying a base potential to the cathode, applying a potential more positive than the base potential to the beam guidance electrode, applying potentials more negative than the base potential to the back electrode and to at least all of the row conductors located between a selected row conductor and the cathode, and raising the potential on each selected row coneuctor to be ≧ to the base potential to move the selected row conductors along the

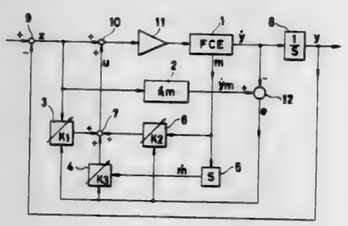
row conductive successively; changing the wavelength of the sinuous path of the flat beam in a saw tooth manner so that the flat beam strikes each row conductor of the group of conductors after travelling the same number of half wavelengths and after leaving the sinuous path at the same phase of the path, said changing of the wavelength includes modulating the potential applied to at least one of the back electrodes, beam guidance electrode, non-selected row conductors and the attraction anode in a saw tooth manner; and providing selected signal voltages to the column conductors to selectively block the passage of the electron beam through space points of the selected row conductor and enable passage at other points so that the electron beam strikes selected points of a row of points on the cathodo-luminescent layer associated with the selected row conductor.

4,437,045

METHOD AND APPARATUS FOR CONTROLLING SERVOMECHANISM BY USE OF MODEL REFERENCE SERVO-CONTROL SYSTEM

Toyokazu Mitsuoka, Niiza, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 340,966
Int. Cl.³ G05B *13/00*
U.S. Cl. 318—561 **12 Claims**



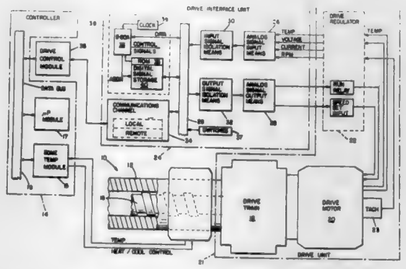
1. An apparatus for model reference adaptive servo-control, which comprises in combination:
- a final control element to be driven on the basis of an instruction input and to be controlled by feeding back the output of the final control element to the instruction input;
- a reference model provided with the performance characteristics the same as those of the final control element;
- a detector for detecting a load value and a load variation value of said final control element;
- a comparator for comparing the outputs of said final control element and said reference model thereby obtaining the difference therebetween;
- at least one adaptive control coefficient circuit having stored therein an adaptive control coefficient which is so prescribed that the difference between the outputs of the final control element and reference model is eliminated, and adapted to produce an adjusting parameter by multiplying one of the instruction input, load value and load variation value by said adaptive control coefficient;
- at least one multiplier for multiplying at least one adaptive control coefficient by at least one of the instruction input, load value and load variation value thereby to obtain an adaptive control input; and
- an adder for adding said adaptive control input to said instruction input and feeding these inputs to the final control element.

4,437,046

EXTRUSION DRIVE CONTROL SYSTEM

Louie M. Failiace, Pawcatuck, Conn., assignor to Crompton & Knowles Corporation, New York, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,937
Int. Cl.³ G05B *19/24*
U.S. Cl. 318—571 **5 Claims**



1. For use with a drive unit including an electric drive motor and regulator therefor and providing analog condition information signals indicating a plurality of operating conditions of the drive unit, said operating conditions including drive rpm, armature voltage and armature current, a drive interface unit adapted to accept said analog condition information signals having any of a plurality of said of predetermined input characteristics and to provide corresponding digital signals having characteristics invariant with respect to the particular said input characteristics,

said drive interface unit having

analog signal input means for receiving from said drive unit a set of said analog condition information signals, said analog signal input means having selectable means connectable to said drive unit to receive said set of analog condition information signals having any of a plurality of predetermined input characteristics,

analog signal output means for outputting to said drive unit analog control signals representative of a plurality of drive operating commands, said operating commands including on/off commands and speed set commands, said analog signal output means having selectable means connectable to said drive unit to output said analog control signals having any of a plurality of predetermined output characteristics,

internal data bus means for carrying digital information signals, said digital information signals having characteristics generally substantially different from said predetermined input and output characteristics,

input signal isolation means connected between said analog signal input means and said data bus, for providing, for each said operating condition, corresponding said digital signals in response to input said analog condition information signals, said digital signal characteristics being invariant with respect to input of said set of analog condition information signals having any of said plurality of predetermined input characteristics,

output signal isolation means connected between said analog signal output means and said data bus means, for providing, for each said drive operating command, corresponding said analog control signals in response to said digital signals, said analog control signals having a selected one of said predetermined output characteristics, and

command input means connected to said data bus means for inputting drive operating commands,

data storing and channeling means connected to said data bus means and having timing means and digital information signal storage,

said data storing and channeling means being responsive to said timing means successively to receive from said input signal isolation means said digital signals indicating said drive operating conditions and to store said digital signals in said digital signal storage,

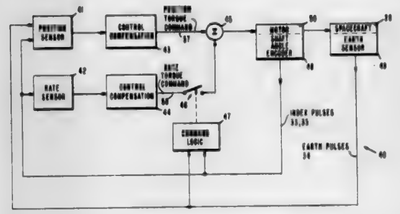
said data storing and channeling means being responsive to said input commands to control said analog signal output means to output said analog control signals indicating said input command.

4,437,047

SYSTEM FOR AUTONOMOUS EARTH-POINTING ACQUISITION OF A DUAL-SPIN SATELLITE

John W. Smay, Torrance, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jul. 13, 1981, Ser. No. 282,776
Int. Cl.³ B64C *17/06*
U.S. Cl. 318—649 **3 Claims**



1. Apparatus for providing torque command signals to a torque motor which controls the pointing direction of the despun portion of a dual-spin satellite having spun and despun portions, said despun portion having a desired pointing direction within predetermined angular limits, said apparatus comprising:
- first means for sensing the relative pointing position of said despun portion and providing first signals indicative thereof;
- second means for providing second signals indicative of said predetermined angular limits;
- third means coupled to said first and second means for generating position torque command signals;
- fourth means coupled to said first means for generating rate torque command signals;
- switching and summing means coupled to said third and fourth means and to said torque motor for providing said position torque command signals to said torque motor when said relative pointing position is within said angular limits, and for providing the sum of said position and rate torque signals to said torque motor when said relative pointing position is outside said angular limits.

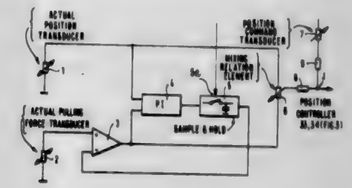
4,437,048

CONTROL SYSTEM FOR A PULLED LOAD, PARTICULARLY AGRICULTURAL TRACTOR-AND-PLOUGH CONTROL SYSTEM

Winfried Arnold, Vaihingen/Enz, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 18, 1982, Ser. No. 389,587
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1981, 3128713
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—663 **23 Claims**

1. Control system for a pulled load from a traction drive in which the position of the load with respect to ground level is subject to a command control (7), particularly for agricultural trailed apparatus pulled by a tractor, having
- a position command element (7) providing a command position signal;
- a position transducer (1) providing an actual position signal;
- a force transducer (2) measuring the pulling force and providing an actual force signal;
- a controlled mixer (6) connected to and controlled by the actual position signal and the actual force signal and providing a combined mixed signal;
- and a control means (33, 34) coupled to the pulled load and responsive to the commanded position signal and combined signal to position the pulled load with respect to ground level;
- and comprising, in accordance with the invention,



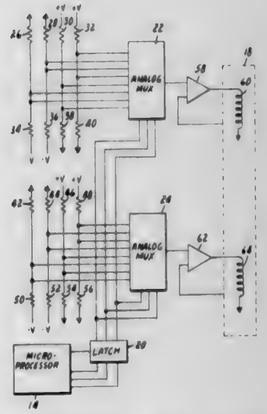
means (3, 4, 5) for normalizing one of said actual signals with respect to another one of the actual signals, said so normalized one signal and the other one of the signals being connected to the controlled mixer to eliminate reaction on the mixing ratio or mixing relationship effected by the controlled mixer upon relative change of said one actual signal with respect to the other, and hence change of the actual position of the pulled load independently of change of the setting of the positioning command element (7).

4,437,049

STEPPER MOTOR CONTROLLER

Robert N. Tullos, and Arthur Ostroff, both of Woodland Hills, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 27, 1982, Ser. No. 372,384
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 **5 Claims**



1. For a stepper motor capable of being positioned at a plurality of positions, having a plurality of steps and an associated current state for each of said plurality of positions and each of said plurality of positions being associated with one of said plurality of steps, a method of moving said stepper motor from an initial position to a final position by means of sequentially stepping said stepper motor through said plurality of steps, comprising the sequential operations of:

determining the direction of movement from said initial position to said final position;

determining the number of steps from an initial step associated with said initial position to a final step associated with said final position;

only if said direction of movement is in a first direction, then incrementing said number of steps;

applying to said stepper motor the current state associated with the next of said plurality of steps in said direction of movement;

repeating the previous operation until said number of steps have been initiated;

if said direction of movement is in said first direction, then applying to said stepper motor the current state associated with said final step; and

allowing said stepper motor to settle into said final position; whereby the magnetc hysteresis of said stepper motor is diminished by always electrically and magnetically approaching said final position from said second direction even though said direction of movement from said initial position to said final position may be in said first direction.

4,437,050

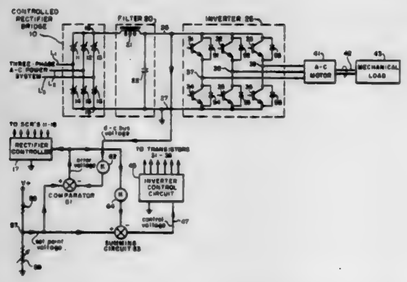
STABILIZING CIRCUIT FOR CONTROLLED INVERTER-MOTOR SYSTEM

John K. Overzet, Elmhurst, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 189,445, Sep. 22, 1980, abandoned. This application Nov. 30, 1982, Ser. No. 445,647

Int. Cl.³ H02P *7/42*

U.S. Cl. 318—798 **5 Claims**



1. A control system for controlling and stabilizing the operation of an a-c motor driven by the output a-c voltage developed by an inverter from an adjustable d-c bus voltage received over a d-c bus from a controlled d-c power supply, the d-c bus voltage being subject to undesired variations under changing conditions, said control system comprising:

means for providing a set point voltage representing a desired steady state amplitude and a desired steady state frequency for the a-c voltage produced by the inverter;

first utilizing means for utilizing the set point voltage to adjust the d-c bus voltage to establish the inverter output voltage at the desired steady state amplitude, and including a frequency insensitive feedback circuit, having a predetermined first gain factor, from the d-c bus for determining the ratio of steady state d-c bus voltage to steady state inverter frequency;

second utilizing means for utilizing the set point voltage to establish the frequency of the inverter output voltage at the desired steady state level; and

stabilizing means, including a frequency insensitive circuit having a predetermined second gain factor, responsive to a deviation in the d-c bus voltage from the desired steady state amplitude for varying the inverter frequency to change the electrical load across the d-c bus to maintain the bus voltage constant under changing conditions, the second gain factor determining the ratio of d-c bus voltage deviation to inverter frequency deviation under changing conditions, thereby permitting the employment of different ratios for steady state and changing conditions.

4,437,051

METHOD AND APPARATUS FOR CONTROLLING INDUCTION MOTOR

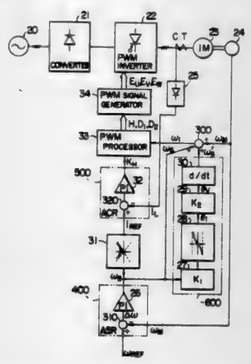
Nobuyoshi Muto; Hiroshi Nagase; Keijiro Sakai, and Yasuo Matsuda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,624

Claims priority, application Japan, Nov. 16, 1981, 56-182304

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—808 **4 Claims**



1. An induction motor control system comprising an inverter for producing AC power by pulse-width modulation, an induction motor powered by said inverter, a speed detector for measuring the rotational speed of said induction motor, a current detector for measuring the primary current of said induction motor, a speed controller which receives a speed command and output of said speed detector so as to provide a speed control signal, a current controller which receives said speed control signal and output of said current detector so as to provide a current control signal, an adder which adds output of said speed detector and said speed control signal so as to provide an inverter frequency command, and a pulse-width modulator which produces a pulse-width modulation signal in accordance with outputs of said current controller and said adder and supplies said pulse-width modulation signal to said inverter, wherein said system further comprises a computational means which receives said speed control signal and calculates the value of phase compensation, output of said means being supplied to said adder so that it is added to output of said speed detector and said speed control signal, output of said adder being supplied as said inverter frequency command to said pulse-width modulator.

4,437,052

STATIC VAR GENERATOR

Laszlo Gyugyi, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1981, Ser. No. 331,940

Int. Cl.³ H02J *3/18*

U.S. Cl. 323—210 **4 Claims**

1. A static VAR generator, comprising:

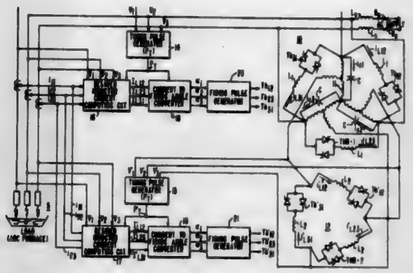
(a) a capacitive current means disposed for connection into an AC network;

(b) a first inductive current means disposed for connection into said AC network;

(c) a second inductive current means disposed for connection into said AC network;

(d) a VAR monitoring means for monitoring the reactive requirement of said AC network;

(e) a first control means connected to said first inductive current means, and said VAR monitoring means in phase with the AC network voltage for controlling connection of said first inductive current means into the AC network in response to the reactive requirements of said AC network; and



(f) a phase shifting means connected to said second inductive current means and a second control means responsive to the phase shifting means for controlling connection of said second inductive current means at a voltage phase angle leading the voltage of said first control means.

4,437,053

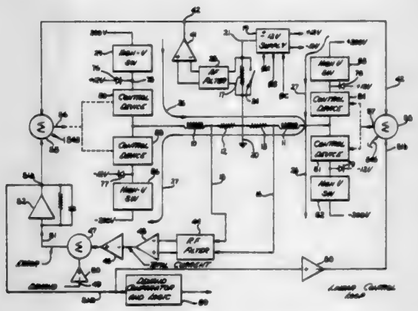
GRADIENT POWER SUPPLY

Ronald F. Bax, Columbia, Md., assignor to Diasonics (NMR) Inc., South San Francisco, Calif.

Filed May 10, 1982, Ser. No. 376,692

Int. Cl.³ G05F *1/44*

U.S. Cl. 323—268 **20 Claims**



1. A power supply for driving a coil comprising:

a source of a first potential;

a source of a second potential, said second potential being lower than said first potential;

switching means coupled to said first potential for switching said first potential;

a control device for controlling the flow of current, said device coupled in series with said switching means and said source of said second potential at one of its terminals and the other of its terminals being coupled to said coil;

control means for causing both said switching means and control device to conduct when current flow is being changed within said coil and for causing said switching means to cease conducting and said control device to conduct when the current through said coil is at a steady state, said control means being coupled to said switching means, control device and said coil;

whereby the current in said coil may be driven to a high level primarily with current from said first source of potential and then maintained at said high level with current supplied primarily from said second source of potential under control of said control devices.

4,437,054

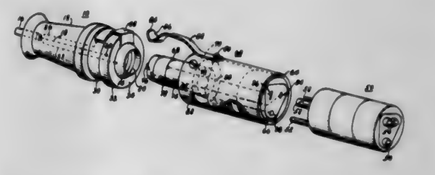
ADAPTOR TO FACILITATE TESTING OF A LAMP HOLDER

John E. Swift, Sr., Baltimore, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 18, 1982, Ser. No. 340,398

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—51 **3 Claims**



1. An adaptor to facilitate the testing of a lamp holder comprising:

A. a body made of electrically non-conductive material, said body having a probe made of electrically non-conductive material with a tip made of electrically conductive material, said tip made of electrically conductive material for insertion by straight line movement into the socket of a lamp holder to contact the hot lead thereof,

B. a band of electrically conductive material on said probe to contact the neutral lead of said lamp holder,

C. a spring clip attached to said body to contact the ground lead of said lamp holder, and

D. a three-hole receptacle attached to said body with one hole electrically connected to said tip, the second hole electrically connected to said band and the third hole electrically connected to said clip.

4,437,055

PROCESS FOR THE CAPACITIVE MEASUREMENT OF LENGTHS AND OF ANGLES

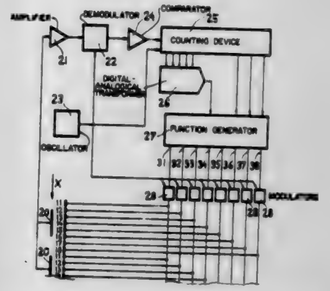
Hans U. Meyer, rue des Taneurs 3, 1110 Morges, Switzerland

Filed Nov. 20, 1981, Ser. No. 323,478

Claims priority, application Switzerland, Nov. 21, 1980, 8609/80

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **8 Claims**



1. A capacitive process for the measurement of lengths and of angles, which uses a plurality of emitting electrodes (10) arranged in series, and at least one receiving electrode (20) which faces the emitting electrodes and is of less length than said series, and which is displaceable parallel to the latter, characterized in that the emitting electrodes which face a receiving electrode form two groups each one of them con-

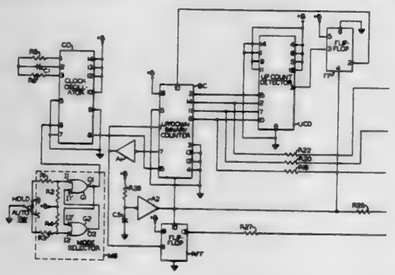
nected to an alternating voltage V_1, respectively V_2, of constant amplitude, having the same frequency and of opposite phase, separated by an emitting electrode which is connected to an alternating voltage Vx which is varied between V_1 and V_2 in a manner such that it constitutes a measurement of the displacement of the receiving electrode, the signal caught by the receiving electrode being maintained equal to zero by varying said voltage Vx, the capacities between the aforementioned emitting and receiving electrodes being, over a trajectory of at least one L, which is the shift between the center lines of two emitting electrodes, an exact linear function of the displacement.

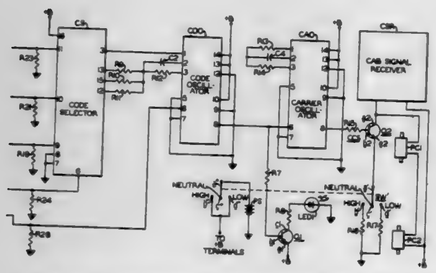
4,437,056

CAB SIGNAL TEST SET FOR AUTOMATICALLY TESTING THE PICKUP COILS AND CHECKING AN AMPLIFIER OF CAB SIGNAL EQUIPMENT

Joseph J. Pierro, Jr., Dayton, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Mar. 31, 1981, Ser. No. 249,581
Int. Cl.³ G01R *15/12*; G08B *29/00*
U.S. Cl. 324—73 AT **13 Claims**





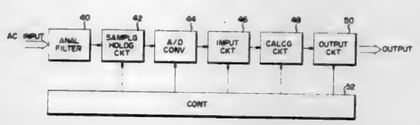
1. A cab signal test set for automatically testing the integrity of pickup coils and for checking the sensitivity of an amplifier of a cab signal receiver of cab signal equipment comprising, a mode selector means electrically connected to a clock means for starting a timing rate, said clock means electrically connected to a counting means for initiating a counting operation in accordance with the timing rate, said counting means electrically connected to a code selecting means for causing a code action, said code selecting means connected to a code oscillating means, said code oscillating means connected to a carrier oscillating means, said carrier oscillating means producing a series of modulated carrier signals and directly injecting in a sequential order a selected one of the series of modulated carrier signals into the pickup coils and receiver to simulate legitimate cab signal speed commands for verifying the functionality of the cag signal equipment.

4,437,057

FREQUENCY DETECTION SYSTEM

Sunao Suzuki, Kobe, and Koji Maeda, Takatsuki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,917
Claims priority, application Japan, Feb. 10, 1981, 56-18609
Int. Cl.³ G01R *23/02*
U.S. Cl. 324—78 R **2 Claims**



1. A frequency detection system comprising sampling means for sampling an AC input V(t) having a frequency to be detected with a predetermined constant sampling period h to form sampled values $V(t_o-2h)$, $V(T_o-h)$, $V(t_o+h)$ and $V(t_o+2h)$ where t_o designates any desired time point, and calculating means for calculating

$$y(h) = \frac{V(t_o + 2h) - V(t_o - 2h)}{V(t_o + h) - V(t_o - h)}$$

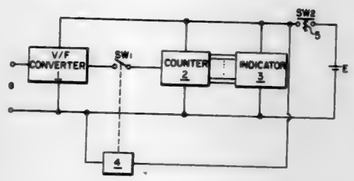
to provide a measure of said frequency of said AC input.

4,437,058

INDICATING MEANS FOR MEASURING INSTRUMENT

Dainichiro Kinoshita, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jun. 17, 1981, Ser. No. 274,368
Claims priority, application Japan, Jul. 5, 1980, 55-91988
Int. Cl.³ G01R *19/26*; G01N *27/42*
U.S. Cl. 324—120 **6 Claims**



1. An indicating means for measuring instruments producing measurement signals expressed as voltage values, said indicating means comprising a voltage-frequency converter for converting the voltage signals into frequency signals with a frequency proportional to the value of the voltage signals, frequency sensing means connected to said voltage frequency converter for sensing the frequency signals, an indicator connected to said frequency sensing means for receiving the sensed frequency and for digitally indicating the sensed frequency as a value corresponding to the measured value, a first switch connected between said voltage-frequency converter and said frequency sensing means, a power source, connected to at least one of said voltage-frequency converter, said frequency sensing means and said indicator, a second switch connected between said power source and said at least one of said voltage-frequency converter, said frequency sensing means and said indicator, for providing operating power from said power source to said at least one of said voltage-frequency converter, said sensing means and said indicator only when said second switch is closed, and a controlling means connected to said first switch, responsive to closing of said second switch, for holding said first switch in an open state for a first

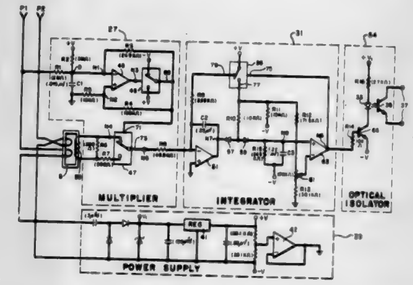
predetermined time for permitting said frequency sensing means to stabilize, and in a closed state for a second predetermined time following said first predetermined time, for enabling said frequency sensing means to sense the frequency of the frequency signals during said second predetermined time.

4,437,059

WATTMETER

Eric A. Hauptmann, Rochester, N.Y., assignor to Rochester Instrument Systems, Inc., Rochester, N.Y.

Filed Oct. 21, 1980, Ser. No. 199,379
Int. Cl.³ G01R *11/00, 21/06*
U.S. Cl. 324—142 **19 Claims**



1. A wattmeter for measuring the power passed by conductor means, comprising:

current sensing means for measuring the instantaneous current flowing in said conductor means and for generating an induced current representative of the current flowing in the conductor means;

voltage sensing means for sampling the instantaneous voltage of said conductor means with respect to a voltage reference;

multiplier means responsive to the current sensing means and voltage sensing means for generating a product signal representative of the instantaneous power passed by the conductor means;

integrator means for integrating said product signal and generating a pulsed control signal with pulses having a frequency proportional to the average power passed by said conductor means, said integrator means including,

means for integrating said product signal after each pulse of the pulsed control signal is generated and for generating a sum signal representative of the sum of the integrated product signal and a predefined power correction factor;

means for generating each pulse of said pulsed control signal for a predefined time interval when the magnitude of the sum signal is representative of a predefined value of power; and

means for defining a value of said power correction factor representative of measured power during said predefined time interval.

4,437,060

METHOD FOR DEEP LEVEL TRANSIENT SPECTROSCOPY SCANNING AND APPARATUS FOR CARRYING OUT THE METHOD

György Ferenczi; Peter Horvath; Ferenc Toth; Jozsef Kiss, and Janos Boda, all of Budapest, Hungary, assignors to Magyar Tudományos Akadémia Müszaki Fizikai Kutató Intézete, Budapest, Hungary

Filed Jun. 3, 1981, Ser. No. 269,903
Claims priority, application Hungary, Jun. 7, 1980, 1439/80
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 D **8 Claims**

1. In a method for carrying out deep level transient spectroscopy scanning on a semiconductor junction containing traps in the neighborhood thereof by measuring a predetermined sequence of transient capacitance changes of said junction, in which each measurement of said sequence comprises the steps of:

(a) applying a high frequency signal to a diode representing said junction;

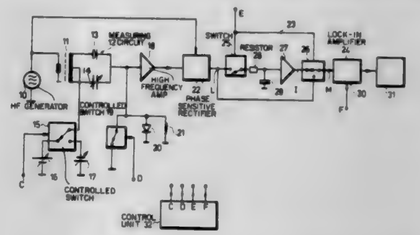
(b) applying a reverse bias voltage to said diode;

(c) applying a voltage pulse with a predetermined duration to said diode superimposed on the reversed bias voltage to provide a substantially different charge state of said traps;

(d) detecting the amplitude envelope of the capacitive signal component of said high frequency signal passed through said diode following the cessation of the pulse to form an input signal of a lock-in amplifier;

(e) repeating steps (b) to (d) periodically, in which the repetition period is substantially longer than said voltage pulse and substantially longer than the period of said high frequency signal;

(f) generating a symmetrical synchronizing pulse sequence with a repetition and duration both equal to said repetition



period in such a way that a dead period elapses between the ending moment of said voltage pulse and starting moments of said synchronizing pulse sequence to form a synchronizing signal for said lock-in amplifier;

(g) generating respective simulated signals during each of said voltage pulses and the subsequent dead periods to take values corresponding to those of said amplitude envelopes before said voltage pulses; and

(h) connecting said simulated signals to the signal input of said lock-in amplifier during the non-existence of said amplitude envelope,

whereby said lock-in amplifier is used to provide a weighted value of said amplitude envelope with said synchronizing pulse to represent the measure of the transient capacitance change in which during said scanning, the lengths of said dead periods being adjusted to form a predetermined same fraction of any corresponding repetition time period, and said measurements in said sequence being distinguishable in the temperature of said junction and/or in the lengths of the repetition periods and/or in the voltage pulses.

4,437,061

SPEED DETECTOR FOR SEWING MACHINES

Nozomu Shinozaki, Hirakata; Shigeo Neki, Osaka, and Takashi Dohi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 30, 1981, Ser. No. 288,514
Claims priority, application Japan, Jul. 31, 1980, 55-106126
Int. Cl.³ G01R *1/04*
U.S. Cl. 324—166 **12 Claims**

1. A speed detector for a sewing machine comprising a rotor rotatable with a drive shaft of the sewing machine, a stator fixed to a housing of the sewing machine, said rotor and stator being formed of a ferromagnetic material and each having a multitude of teeth which face in opposition to the teeth of the other forming a gap therebetween, a permanent magnet forming a closed loop magnetic circuit with said rotor and stator, a coil which intersects the magnetic flux of said closed loop magnetic circuit to generate a voltage which is used to gener-

ate a train of pulses at a frequency proportional to the rotational speed of said sewing machine through an amplifier and



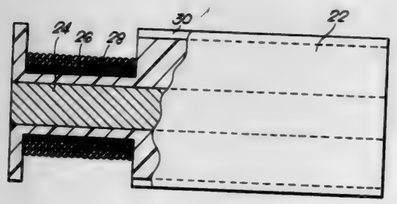
a waveshaping circuit, further comprising an integrating circuit connected to one of said amplifier and waveshaping circuit.

4,437,062

EDDY CURRENT TESTING APPARATUS INCLUDING A TWO COIL PROBE HAVING SANDWICHED WINDINGS

Bernard J. Donnelly, Kirkton, Scotland, assignor to Thorburn Technics (International) Limited, Glasgow, Scotland

Filed Dec. 3, 1980, Ser. No. 212,422
Claims priority, application United Kingdom, Dec. 7, 1979, 7942263; Sep. 15, 1980, 8029772
Int. Cl.³ G01N *27/90*; G01R *33/12*; H01F *27/28*
U.S. Cl. 324—238 9 Claims



1. An eddy current inspection probe comprising a ferrite rod, a non-conductive bobbin located on the ferrite rod and having a coil-receiving portion positioned adjacent one end of the ferrite rod and two coils wound around the rod axis in said coil-receiving portion, each coil having a first full layer of turns extending along the whole of said coil-receiving portion and a second partial layer of turns, the two said partial layers froming a common layer sandwiched between said first layers.

4,437,063

SPECIMEN HEAD FOR ELECTRON SPIN RESONANCE AND PARAMAGNETIC ELECTRON RESONANCE MEASUREMENTS

Reinhard Biehl, Karlsruhe, and Dieter Schmalbein, Marxzell-Burbac, both of Fed. Rep. of Germany, assignors to Bruker Analytische MeBtechnik GmbH, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,582
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 3029754
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—316 16 Claims

1. A specimen head for electron spin resonance and paramagnetic electron resonance measurements comprising:

an annularly cylindrical resonator having two end walls,

a waveguide, said waveguide being coupled to one of the end walls of said resonator,

means including said waveguide for exciting an H_{011} wave in said resonator.

the other end wall of said resonator being formed by a piston having an opening for introducing a specimen into the resonator,

said opening and said resonator being concentric,

means for shifting said piston,

means for altering the coupling of said waveguide to said resonator,

a bearing block,

a hollow piston rod,

said piston being attached at the end of the hollow piston rod and mounted in the bearing block,

said bearing block containing said resonator,

said piston rod being concentric relative to the axis of said resonator and longitudinally shiftable,

said waveguide being attached to said bearing block on that side of said resonator which is opposite said piston,

said waveguide extending along the outside of said bearing block parallel to said piston rod,



drive shafts, said drive shafts being arranged on the side of said piston rod opposite said waveguide in the plane containing the axes of said waveguide and said piston rod and are mounted to said bearing block,

said drive shafts being connected to the means for shifting said piston,

said means for shifting said piston engaging said piston rod and the means for altering the coupling of said waveguide,

in which said bearing block is attached to the head member by means of rods extending parallel to said waveguide and said drive shafts,

wherein the free end of said waveguide is attached to the head member,

the free ends of said drive shafts being mounted in said head member,

said head member having a hole to receive said piston rod.

4,437,064

APPARATUS FOR DETECTING A MAGNETIC ANOMALY CONTIGUOUS TO REMOTE LOCATION BY SQUID GRADIOMETER AND MAGNETOMETER SYSTEMS

William C. Overton, Jr., and William A. Steyert, Jr., both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

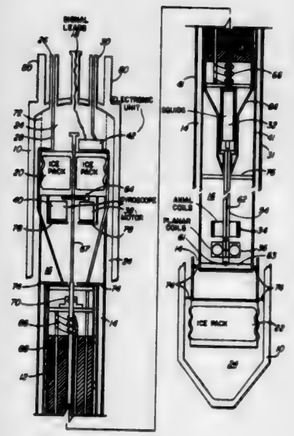
Filed May 22, 1981, Ser. No. 266,247
Int. Cl.³ G01V *3/26*; G01R *33/035*
U.S. Cl. 324—346 11 Claims

1. A SQUID magnetic detection apparatus suitable for operation at a remote location such as within a borehole, said apparatus comprising:

cryogenic housing means insertable into a borehole for containing and maintaining a cryogenic environment within:

first SQUID means secured within said cryogenic housing means, said first SQUID means having a horizontal axial position axially rotatable magnetic field sensing coil arrangement including a pair of balanced axial coils wherein each coil in said pair of balanced axial coils is wound near an individually associated end of a high thermal conductive insulating round cylinder of approximately 2.25 inches in diameter and 1.710 inches in length, said first SQUID means for generating electrical signals representative of the magnetic field sensed by said horizontal axial position axially rotatable magnetic field sensing coil arrangement;

second SQUID means secured within said cryogenic housing means, said second SQUID means having a horizontal planar position axially rotatable magnetic field sensing coil arrangement including a pair of balanced planar coils wherein each coil in said pair of balanced planar coils comprises an approximately three turn spiral coil of approximately 1 inch outside diameter, formed upon a high thermal conductive insulating form of dimensions approximately 2½ inches wide by 1.5 inches high by 0.5 inches thick, said second SQUID means for generating electrical signals representative of the magnetic field sensed by said



horizontal planar position axially rotatable magnetic field sensing coil arrangement;

rotation means secured with said cryogenic housing means and coupled to said horizongal axial position and said horizontal planar position axially rotatable magnetic field sensing coil arrangements for rotating simultaneously both said coil arrangements;

electronic means secured within said cryogenic housing means, said electronic means communicating with said rotation means for directing the rotating of said rotation means, said electronic means further communicating with said first and second SQUID means for receiving said electrical signals generated by said first and second SQUID means; and

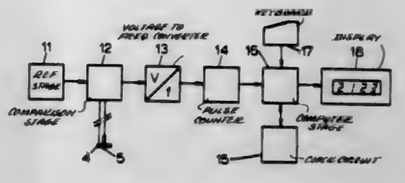
remote electrical coupling means connected through said cryogenic housing means to said electronic means for facilitating remote control of said rotation means and remote monitoring of said electrical signals generated by said first and second SQUID means.

4,437,065

ARRANGEMENT FOR MONITORING CATHODICALLY PROTECTED STRUCTURES

Gerrit Woudstra, Roden, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Sep. 1, 1981, Ser. No. 298,520
Claims priority, application Netherlands, Sep. 12, 1980, 8005149
Int. Cl.³ G01N *27/42*
U.S. Cl. 324—425 14 Claims



1. An apparatus for monitoring the potential with respect to the soil of a metallic structure buried in soil and cathodically protected by an externally applied DC voltage, comprising:

a measuring electrode for placement in the soil adjacent to the structure to be monitored, the electrode being electrically connected to the structure;

a reference electrode placed on or in the soil;

a measuring circuit coupled to the measuring and reference electrodes for measuring the potential difference between the measuring and reference electrodes, the measuring circuit including

a generator for generating a reference potential;

a comparator for comparing the measured potential difference between the measuring electrode and the reference electrode with the reference potential and providing a comparison signal indicative of the amount by which the measured potential difference exceeds the reference potential;

a pulse signal generator, for generating, in response to the comparison signal, a pulse stream signal having a pulse frequency proportional to the comparison signal and therefore proportional to the amount by which the measured potential difference exceeds the reference potential;

a counter for counting the number of pulses of the pulse stream signal during a measuring time cycle;

timer means for determining and recording the time interval of the measuring time cycle; and

means, coupled to the counter and timer means so as to receive data therefrom, for computing, after completion of the measuring cycle, the average value of the amount by which the measured potential has been higher than the reference potential during the measuring time cycle.

4,437,066

APPARATUS FOR SYNTHESIZING A SIGNAL BY PRODUCING SAMPLES OF SUCH SIGNAL AT A RATE LESS THAN THE NYQUIST SAMPLING RATE

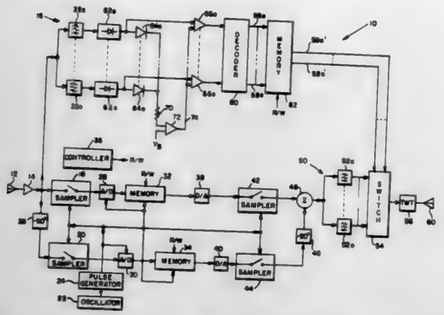
Bruce E. Gordon, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 152,015, May 21, 1980, Pat. No. 4,349,918.
This application Aug. 27, 1982, Ser. No. 412,458
Int. Cl.³ H03K *9/06*
U.S. Cl. 328—14 4 Claims

1. In combination:

(a) means for producing samples of a signal having a frequency f, such samples being produced at a predetermined sampling rate f_o, where f_o is less than 2f, such produced samples having a plurality of frequency components separated in frequency one from another by an amount having

a predetermined relationship to the sampling rate, one of such frequency components having the frequency f; and

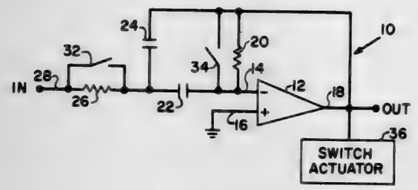


(b) means, responsive to a signal indicative of the frequency f and fed by the train of produced samples, for coupling the one of the produced plurality of frequency components having the frequency f to an output.

4,437,067
TRANSIENT ERROR REDUCTION FOR STORED CHARGED CIRCUITS

Joe A. McKenzie, Ridgecrest, Calif., and Gary D. Lowe, Prague, Okla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1980, Ser. No. 187,124
Int. Cl.³ H03B *1/00, 1/04;* H03K *5/00;* H04B *1/10*
U.S. Cl. 328—167 **5 Claims**



1. An electronic circuit for eliminating transient error in a stored charge circuit without altering a transfer function, comprising:

amplification means having an inverting input for receipt of an input signal having a sharp transient rise time, a non-inverting input referenced to ground, and an output;

an input lead coupling said inverting input of said amplification means to an outside source, and having an input resistor in series with an input capacitor, said input capacitor being coupled between said input resistor and said inverting input of said amplification means for differentiation of said input signal;

a normally open input switch coupled to said input lead in parallel with said input resistor for shunting said input resistor on command;

a first feedback lead having a feedback resistor coupling said output of said amplification means to said inverting input of said amplification means;

a normally open feedback switch coupled to said first feedback lead in parallel with said feedback resistor for shunting said feedback resistor on command;

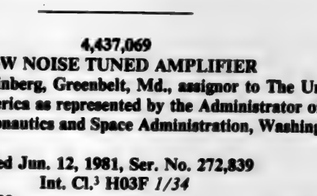
a second feedback lead having a feedback capacitor coupling said output of said amplification means to said input lead at a junction between said input resistor and said input capacitor for integration of said input signal; and

switching actuator means coupled to said output of said amplification means and having a switching command output coupled to said input switch and said feedback switch for providing a close command for a predetermined time interval to said input switch and said feedback switch to shunt said input resistor and said feedback resistor, after a pulse passes through said amplification means.

4,437,068
FSK DEMODULATOR FOR FREQUENCY-MODULATION MODEM

Jean E. Picquendar, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 19, 1981, Ser. No. 236,128
Int. Cl.³ H03D *3/00;* H04L *27/14*
U.S. Cl. 329—105 **11 Claims**



1. A FSK demodulator for a frequency-modulation modem, this modem being formed from a modulator ensuring the conversion of a succession of binary signals equal to 0 or to 1 into a periodic analog signal at two different frequencies, F_A and F_Z, and a demodulator ensuring the conversion of the analog signal at two frequencies F_A and F_Z, into a succession of 0 and 1, wherein the demodulator comprises

(a) two parallel channels over which there is simultaneously sent a sine curve analog signal to be demodulated, each channel being formed by:

(i) two parallel transverse filters which comprise an n+1 stage shift register and which form the convolution between the input signal of the sampled filter and the pulse response of the filter defined by its weighting coefficients h_k, the weighting coefficients of the two filters being functions of the product $\omega p\tau$, a given function $f_R(\omega p\tau)$ being the weighting coefficient of one of the filters, and another given function $f_I(\omega p\tau)$ being the weighting coefficient of the other filter with:

for one of the channels $\omega = W_A = 2\pi F_A$ and for the other channel $\omega = W_Z = 2\pi F_Z$; and in which

τ, is the delay with which the shifting of a sample takes place from one stage of the register to the next;

p is varying from 1 to n and $n\tau$ such that n is limited to the duration of the baud of the modem; and

with W_A and W_Z depending on the channel, the maximum of $f_R(\omega p\tau)$ equal to that of $f_I(\omega p\tau)$ and with a phase shift of $\pi/2$ between f_R and F_I; and

(ii) a device ensuring the squaring of the signal from each filter; and

(b) a differential amplifier receiving the signal from the two channels and supplying the output signal of the demodulator.

4,437,069
LOW NOISE TUNED AMPLIFIER

Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

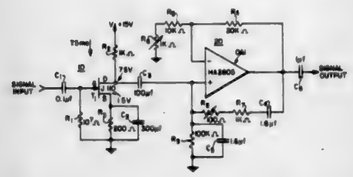
Filed Jun. 12, 1981, Ser. No. 272,839
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—109 **10 Claims**

1. A tuned, low noise amplifier comprising:

a first amplifying stage including a field effect transistor with

gate, drain and source connections and having both signal input and signal output means;

a second amplifying stage driven by said first amplifying stage from said first stage signal output means and including an operational amplifier having inverting and non-

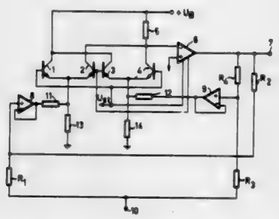


inverting inputs and a second stage signal output means, said operational amplifier being loaded in a reactive impedance bridge configuration and said second stage reflecting a negative resistance in parallel with said first stage signal output means.

4,437,070
AMPLIFIER ARRANGEMENT WHOSE OVERALL GAIN IS CONTROLLABLE BY MEANS OF A CONTROL VOLTAGE

Manfred Horl, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 22, 1981, Ser. No. 227,334
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007715
Int. Cl.³ H03F *3/45, 1/34;* H03G *3/20*
U.S. Cl. 330—254 **16 Claims**



1. An amplifier arrangement comprising a first amplifier having at least one input and an output, a second amplifier having a low-pass frequency characteristic and an input coupled to the output of the first amplfier and an output coupled by means of at least one negative feedback branch to an input of the first amplifier to provide negative feedback, and control voltage means coupled to an input of said first amplifier for varying the negative feedback and thereby the overall gain of the amplifier arrangement, said control voltage means also being coupled to the second amplifier for varying the gain of the second amplifier such that for an increase in the overall gain of the amplfier arrangement the gain of the second amplifier also increases.

4,437,071
DEVICE FOR THE RECOVERY OF A CLOCK SIGNAL FROM A BINARY SIGNAL

Daniel Rougeolle, Paris, France, assignor to Thomson-CSF, Paris, France

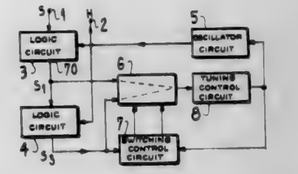
Filed Dec. 7, 1981, Ser. No. 328,260
Claims priority, application France, Dec. 9, 1980, 80 26075
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A **7 Claims**

1. A device for the recovery of a local clock signal H from a binary signal S, comprising:

an oscillator circuit having a frequency-control input and an output for delivering the clock signal H;

first logical means having a first input for receiving the binary signal S, a second input for receiving the clock signal H and having an output for delivering a logical signal S_1 representing the sign of the phase difference between the signals S and H;

second logical means having a first input for receiving the signal S_1 from said first logical means output, a second input for receiving the clock signal H and having an output for delivering a logical signal S_3 representing the sign of the frequency difference between the signals S and H;



a switching circuit having a first and a second input for receiving respectively the signals S_1 and S_3 from the outputs of said first and second logical means, a control input and an output for delivering one of the signals S_1 or S_3 according to the signal applied to the control input;

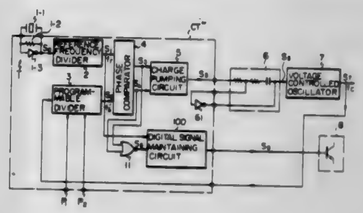
a switching control circuit having a first input for receiving the signal S_3 from said second logical means, a second input and an output connected to the control input of the switching circuit;

a tuning control circuit having an input coupled to the output of the switching circuit and an output coupled to the second input of said switching control circuit and also to the control input of the oscillator circuit for delivering a control voltage to the oscillator circuit.

4,437,072
LOCK DETECTING CIRCUIT FOR PHASE-LOCKED LOOP FREQUENCY SYNTHESIZER

Fumitaka Asami, Kunitachi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 179,898, Aug. 20, 1980, abandoned. This application Sep. 21, 1982, Ser. No. 420,633
Claims priority, application Japan, Aug. 23, 1979, 54-107392
Int. Cl.³ H03L *7/18*
U.S. Cl. 331—1 A **12 Claims**



1. A phase-locked loop circuit comprising:

a reference oscillator providing a first output signal;

a reference frequency divider, operatively connected to said reference oscillator, for dividing the frequency of the first output signal of said reference oscillator by a predetermined value and producing a second output signal having a frequency corresponding to the divided frequency of the first output signal;

a voltage controlled oscillator providing a third output signal;

a programmable frequency divider, operatively connected

to said voltage controlled oscillator, for dividing the frequency of the third output signal by a controlled variable value to produce a fourth output signal;

a phase comparator, operatively connected to said programmable frequency divider and said reference frequency divider, for receiving and monitoring the difference in phase between the fourth and second output signals and providing first and second phase output signals, respectively;

a low pass filter, operatively connected between said phase comparator and said voltage controlled oscillator, for controlling said voltage controlled oscillator in dependence upon the first and second phase output signals of said phase comparator;

lock detector means, operatively connected to said phase comparator, for generating a first lock detecting signal which is pulsed when a difference in phase is detected between said fourth and second output signals; and

digital signal maintaining circuit means, operatively connected to said lock detector means and said reference frequency divider, for converting the first lock detecting signal into a second lock detecting signal having a direct current level, maintaining the second lock detecting signal for a predetermined time after the first lock detecting signal is extinguished and providing an output signal, said digital signal maintaining circuit means comprising:

converter circuit means, operatively connected to said reference frequency divider and said lock detector means, for converting the first lock detecting signal into the second lock detecting signal in dependence upon the second output signal and outputting the second lock detecting signal; and

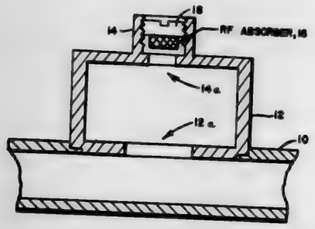
maintaining circuit means, operatively connected to said converter circuit means, for maintaining the potential of the second lock detecting signal for the predetermined time after the first lock detecting signal is extinguished and providing the output signal.

4,437,073

EQUALIZER CAVITY WITH INDEPENDENT AMPLITUDE CONTROL

Herbert L. Thal, Jr., Tredyffrin Township, Chester County, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1982, Ser. No. 347,384
Int. Cl.³ H01P *5/00*; H03H *7/03*
U.S. Cl. 333—28 R **6 Claims**



1. An equalizer cavity apparatus with independent amplitude control comprising in combination:

a rectangular waveguide for carrying an electromagnetic energy;

an equalizer cavity means mounted on the top surface of said rectangular waveguide, said equalizer cavity means being directionally coupled to said rectangular waveguide to receive a predetermined amount of said electromagnetic energy through an opening between said equalizer cavity means and said rectangular waveguide, and,

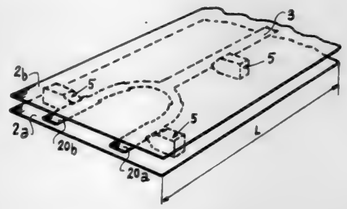
a circular waveguide means positioned on the top surface of said equalizer cavity means, said equalizer cavity means including an aperture in its top surface to allow said electromagnetic energy therein to enter said circular waveguide means, said circular waveguide means including means for absorbing RF energy and means for positioning said RF absorber means within said circular waveguide means.

4,437,074

ULTRAHIGH-FREQUENCY TRANSMISSION LINE OF THE THREE-PLATE AIR TYPE AND USES THEREOF

Georges Cohen, and Jean Heroux, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 14, 1981, Ser. No. 330,319
Claims priority, application France, Dec. 18, 1980, 80 26912
Int. Cl.³ H01P *3/08, 5/12*
U.S. Cl. 333—128 **15 Claims**



1. An ultrahigh frequency transmission line comprising:

two parallel conducting plates spaced apart from each other and connected electrically together, the space separating these two plates being filled with air;

a central conducting strip placed between said two plates and parallel thereto; and

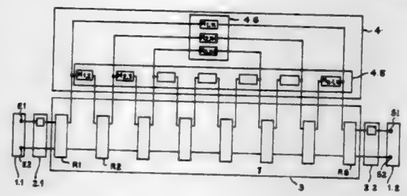
a plurality of support pieces made from a dielectric material and spread out along each side of said strip, each support piece being a parallelpipedic block mounted transversely with respect to said strip and having lower and upper faces on which said two conducting plates are respectively placed so as to bear on said faces of said block, each of said blocks comprising a longitudinal tapered extension and a notch provided at the end of said extension in which a side of said strip is positioned so as to be held in place.

4,437,075

SELF-CORRECTED ELECTRIC FILTERS

Corinne Darmouni, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 7, 1982, Ser. No. 337,751
Claims priority, application France, Jan. 23, 1981, 81 01294
Int. Cl.³ H03H *7/03, 7/075*
U.S. Cl. 333—167 **3 Claims**



1. A self-corrected electric filter with localized constant elements for filtering a wide band input signal which comprises:

filtering means constituted by a group of n resonators R1 to Rn, n being an even number, n−2 resonators of the group being ordered in cascade between the first resonator R1 and the final resonator Rn;

input impedance matching means connected to said first resonator R1 for applying said wide band input signal to said filtering means;

output impedance matching means connected to said final resonator Rn for constituting the output of said self corrected electric filter;

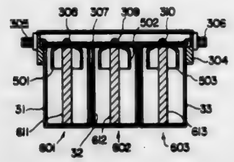
correction means comprising a first group of coupling means Mi,i+1, whereby i is a positive integer and takes all the possible values from 1 to n−1, each coupling means Mi,i+1 connecting two adjacent resonators Ri and Ri+1, said group of n resonators being self inductive except for the coupling means connecting the two central resonators which is capacitive, said correction means also comprising a second group of secondary coupling means MK,1, each secondary coupling means connecting a Kth and a 1th resonator RK and R1 of said group of n resonators, whereby K takes all possible values from 1 to (n−2)/2 individually, and 1 is equal to n−(K−1), for contributing to arithmetic symmetry of the amplitude and of the group delay time for correcting distortion of group delay time.

4,437,076

COAXIAL FILTER HAVING A PLURALITY OF RESONATORS EACH HAVING A BOTTOMED CYLINDER

Mitsuo Makimoto, Yokohama; Haruyoshi Endo, Sagamihara; Ko Kikuchi, Tokyo, and Sadahiko Yamashita, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 16, 1982, Ser. No. 348,766
Claims priority, application Japan, Feb. 17, 1981, 56-22602
Int. Cl.³ H01P *1/205, 7/05*
U.S. Cl. 333—206 **12 Claims**



1. A coaxial filter arrangement comprising:

(a) a plurality of resonators each having:

a center conductor;

a metallic cylinder having a bottom and a peripheral wall portion with a predetermined diameter, said metallic wall portion being attached to one end of said center conductor in such a manner that said peripheral wall portion surrounds said center conductor; and

an outer conductor having a closed end and an open end, said closed end being connected to the other end of said center conductor so that said outer conductor is coaxially arranged with said center conductor, the axial length of said outer conductor being shorter than that of said center conductor so that said metallic cylinder is received in the bore of said outer conductor with a maximum diameter portion of said peripheral wall portion being received entirely in said bore; and

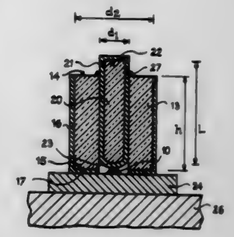
(b) a dielectric plate having coupling capacitances for coupling said plurality of resonators to form said filter, said dielectric plate being positioned apart from the open end of each of said outer conductors by a predetermined distance.

4,437,077

SEMICONDUCTOR DEVICE USABLE AT VERY HIGH FREQUENCIES AND ITS PRODUCTION PROCESS

Raymond Henry, and Michel Heitzmann, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 31, 1981, Ser. No. 288,690
Claims priority, application France, Aug. 8, 1980, 80 17533
Int. Cl.³ H01P *1/00*
U.S. Cl. 333—245 **4 Claims**



1. A semiconductor device comprising:

a diode of the type able to operate at a very high frequency, a pedestal, said diode being welded on said pedestal, and a coaxial line with presettable impedance constituted by

a cylindrical ring concentric to the diode, said ring being made from dielectric material and having an outer cylindrical surface and one of its ends metal-coated, the metal coated one end being welded on the pedestal,

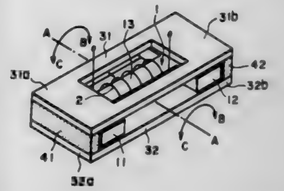
and a cylindrical mandrel having an external diameter smaller than the internal diameter of the cylindrical ring, said mandrel having a length slightly exceeding the length of said cylindrical ring, said mandrel having a convex end in contact with the diode and an opposite planar end, the external surface of said mandrel supporting at least one metal coating which is a good conductor of electricity.

4,437,078

POLARIZED ELECTROMAGNETIC DEVICE

Yoshihide Bando, Kyoto; Toshiki Tanaka, Yawata; Sueaki Honda, Uji; Yoshihiko Takahashi, Kyoto; Kenichi Tsuruyoshi, Omihachiman; Katsumi Kawashima, Shiga, and Syuichi Kishimoto, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Nagaokakyo, Japan

Filed May 14, 1981, Ser. No. 263,495
Claims priority, application Japan, Feb. 3, 1981, 56-15229; Mar. 3, 1981, 56-30764; May 16, 1981, 56-65128
Int. Cl.³ H01H *51/22*
U.S. Cl. 335—81 **10 Claims**



1. A polarized electromagnetic device, comprising:

a generally I-shaped magnetic core member carrying a coil winding on the central portion thereof;

a pair of permanent magnets which are arranged in parallel with and outwardly of the respective end portions of said core member; and

first and second armature plate members which are mutually

confronting and joined together through said pair of permanent magnets at the opposite end portions of said armature plate members, thereby presenting a spacing for accommodating said core member therebetween with gaps between said plate members and said core member;

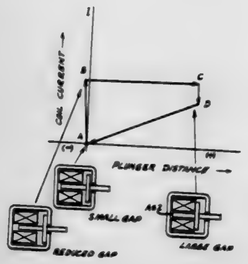
said core member and armature plate members being supported to be swingable for relative movement with respect to a center transverse axis of said center portion of the core member.

4,437,079

MAGNETIC SNAP LATCH

Jerome K. Hastings, Sussex, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 29, 1982, Ser. No. 427,336
Int. Cl.³ H01H *9/20*
U.S. Cl. 335—170 **10 Claims**



1. A magnetic snap latch comprising:

a magnetic circuit comprising a magnetic frame;

a magnetic plunger extending into said frame and having an internal end therewithin and an external end adapted to be coupled to a driven element;

said magnetic circuit also comprising means defining an air gap between said internal end of said plunger;

said magnetic circuit when said plunger is in its normal position;

and means normally maintaining said plunger in its normal position whereby said air gap is open;

a coil having terminal wires extending therefrom and means mounting said coil within said frame to surround said internal end of said plunger;

a low permeability magnetic member secured to an intermediate point of said plunger for magnetic attraction to said frame upon initial energization of said coil to restrain said plunger from being moved by the magnetic force in said air gap;

and said low permeability magnetic member reaching magnetic saturation before said magnetic frame whereby the magnetic force in said air gap causes snap action movement of said plunger in the closing direction of said air gap.

4,437,080

METHOD AND APPARATUS UTILIZING CRYSTALLINE COMPOUND SUPERCONDUCTING ELEMENTS HAVING EXTENDED STRAIN OPERATING RANGE CAPABILITIES WITHOUT CRITICAL CURRENT DEGRADATION

John W. Ekin, Boulder, Colo.; John R. Gavaler, and Aleksander I. Braginski, both of Pittsburgh, Pa., assignors to The United of America as represented by the Secretary of Commerce and the Secretary of the Air Force and The United States of America as represented by the Secretary of the Air Force, both of Washington, D.C.

Filed Feb. 14, 1983, Ser. No. 465,942
Int. Cl.³ H01F *7/22*
U.S. Cl. 335—216 **20 Claims**



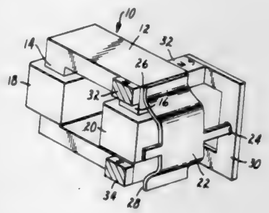
1. In an apparatus for utilizing electrical energy, a superconducting element having intrinsic elastic strains of magnitude greater than 0.4% imposed thereon, said superconducting element being formed from a crystalline compound superconductive material that is capable of withstanding said intrinsic elastic strains imposed on said superconductive material in said element without appreciably degrading the critical current of said element when said superconducting element is subjected to a magnetic field having its component normal to the current carrying direction of said element greater than 8 Tesla.

4,437,081

ROCKING ARMATURE TRANSFORMER RELAY

Gerald A. Wyatt, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 28, 1982, Ser. No. 453,834
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—229 **3 Claims**



1. An electromagnetic device, comprising:

a ferromagnetic core having first and second legs completing a closed magnetic circuit;

an armature pivotably mounted in said electromagnetic device for optionally contacting said ferromagnetic core; said armature and said ferromagnetic core defining a gap between said ferromagnetic core and said armature at the opposite side of said ferromagnetic core from the side of said ferromagnetic core at which said armature is contacting said ferromagnetic core;

a flux return bracket mounted in said electromagnetic device between said pivotably mounted position of said armature and said ferromagnetic core;

a source of latching flux cooperating with said ferromagnetic core, said flux return bracket and said armature for holding said armature in contact with said ferromagnetic core; and

a source of operating flux cooperating with said ferromagnetic core for selectively establishing a magnetic flux across said gap;

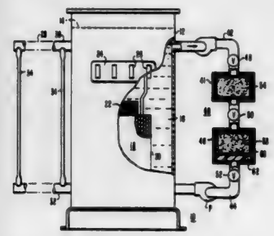
whereby said armature may be pivotably moved from contact with said ferromagnetic core one side of said armature to contact with said ferromagnetic core on the other side of said armature.

4,437,082

APPARATUS FOR CONTINUALLY UPGRADING TRANSFORMER DIELECTRIC LIQUID

Edward J. Walsh, and Robert A. Kurz, both of Hermitage, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 12, 1982, Ser. No. 397,288
Int. Cl.³ H01F *27/10*
U.S. Cl. 336—58 **9 Claims**



1. An apparatus for continually upgrading transformer dielectric fluid by degassing, demoisturizing, and filtering the fluid, comprising:

a tank,

a dielectric fluid having a low vapor pressure disposed in the tank and containing contaminants including moisture, gases, and insoluble particulates,

an electrical winding immersed within the fluid in the tank,

filter means for decontaminating the fluid including a fluid recirculating device for degassing, demoisturizing, and filtering the fluid,

the fluid recirculating device for degassing including a permeation cell having a membrane material and within a supportive container,

the fluid recirculating device for demoisturizing including granular pellets of a desiccant material for reducing moisture in the fluid to 20 ppm or less at room temperature,

whereby decontaminated fluid is returned into the tank.

4,437,083

CURRENT TRANSFORMER FOR TURBINE GENERATORS

Franklin T. Emery, Greentree Borough, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

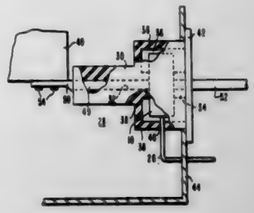
Filed Jan. 19, 1982, Ser. No. 340,666
Int. Cl.³ H01F *15/02*
U.S. Cl. 336—65 **2 Claims**

1. A current transformer mounting arrangement comprising:

an annularly shaped current transformer having a conductor extending centrally therethrough and a cable extending from an outer portion thereof;

an enclosure of generally rigid insulative material having said transformer disposed therein and comprising a first member having a bore through which said conductor extends, a first portion of said first member disposed through the inside diameter of said current transformer and a second portion of said first member extending axially from said first portion on a first, inboard, side of said current transformer, a second member disposed around the outside diameter of said current transformer, said second member and said first portion of said first member being generally coaxial, and a third member that joins said first and second members on said inboard side of said current transformer;

said enclosure having an opening through which said cable extends;



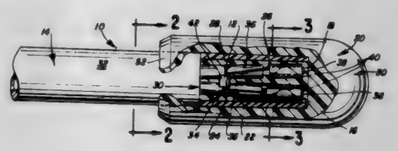
said enclosure second member being fit within an opening of a fixed wall of conductive material, and an enclosure fourth member located against the outside of said wall and joined to an outboard portion of said second member, said fourth member having an opening through which said conductor extends.

4,437,084

ENCAPSULATED, WATERPROOF TEMPERATURE SENSITIVE DEVICE AND METHOD OF MANUFACTURE

Harold K. Clayton, Jr., Glen Ellyn, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Oct. 9, 1981, Ser. No. 310,057
Int. Cl.³ H01C *7/13*
U.S. Cl. 338—22 R **6 Claims**



1. An encapsulated, waterproof temperature sensitive device comprising:

an elongated cable including two conductors, and a cable jacket surrounding said conductors, the proximal ends of said conductors extending proximally beyond the proximal end of said cable jacket;

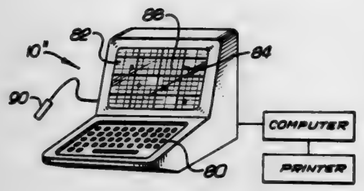
a temperature sensor with two leads, each lead being connected to the proximal end of a respective one of said conductors, said temperature sensor having an electrical property systematically related to the temperature of said sensor, whereby an electrical signal indicative of temperature may be sensed at the distal ends of said conductors;

means for electrically insulating one of said leads and respective conductor from the other of said leads and respective conductor;

tubing of insulating material extending from adjacent said jacket and surrounding said temperature sensor, said leads and the proximal ends of said conductors;

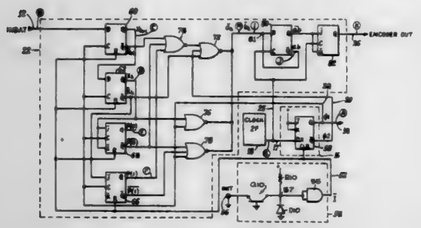
a substantially solid, molded shroud encapsulating said tubing, said temperature sensor, said leads, the proximal ends of said conductors, and the proximal end of said jacket, said shroud having at least one passageway extending from its exterior to said tubing between the ends of said tubing, said shroud being sealed to said jacket around its entire circumference and sealed to said tubing around all said passageways so as to waterproof said device.

4,437,085
ROUTE MAPPING DEVICE
Richard Salant, 2170 Century Park East, Suite 2008, Los Angeles, Calif. 90067
Filed Oct. 3, 1980, Ser. No. 193,657
Int. Cl.³ G08G 1/00; G08C 21/00
U.S. Cl. 340—286 M 12 Claims



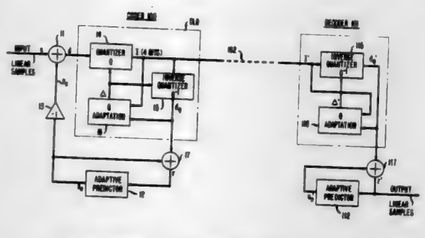
1. A delivery route mapping device for ground vehicles comprising:
a computer device;
a cathode ray tube (CRT) having a display surface;
a translucent map disposed on the display surface of the CRT, said CRT being in communication with the computer device which is programmed to direct the display of said CRT;
means for entering into said computer device a list of customers to whom deliveries are to be made;
means responsive to the entering means, for directing said computer to cause the CRT to display a plurality of lights behind said map, each said light corresponding to a location of a customer to whom deliveries are to be made; and
means for associating each said light with the name of the customer to whom said light corresponds.

4,437,086
LIMITED LOOK-AHEAD MEANS
Jerry W. Miller, Menlo Park, and Paul J. Rudnick, Oakland, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.
Continuation of Ser. No. 949,161, Oct. 5, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 131,042
Int. Cl.³ H03K 13/24
U.S. Cl. 340—347 DD 10 Claims



6. In a self-clocking method for transmitting binary data bits sequentially in successive clocked bit cells of a transmission channel wherein logical first bit states of a sequence of data bit states are normally transmitted by signal transitions relatively early in respective bit cells and logical second bit states of said sequence of data bit states are normally transmitted as signal transitions relatively late in respective bit cells and any transition relatively early in a bit cell following a transition relatively late in the next preceding bit cell is normally suppressed, said method including generating a first indicating signal when the number of first bit states in the sequence of data bit states is of a predetermined parity, detecting the onset of a sequence of second bit states following a first bit state productive of said predetermined parity that might introduce a DC component into the transmitted signal with normal transmission, and in response to said first indicating signal, the state of a current bit and the state of an adjacent bit modifying the transmission of signal transitions from the onset of such sequence to eliminate any DC component, the improvement comprising in response to said first indicating signal examining a limited number greater than two of bits next succeeding a current bit to determine at the onset of any such sequence if the sequence terminates within said limited number of next succeeding bits and would not introduce such DC component with normal transmission, and inhibiting said modifying of the transmission of signal transitions corresponding to any of the second bit states of such sequence that would not introduce such DC component with normal transmission.

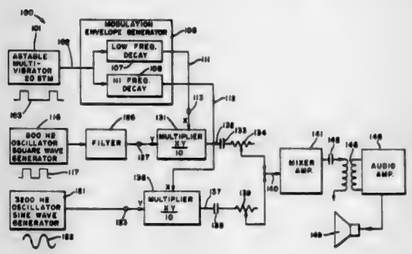
4,437,087
ADAPTIVE DIFFERENTIAL PCM CODING
David W. Petr, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 27, 1982, Ser. No. 343,355
Int. Cl.³ H03K 13/01
U.S. Cl. 340—347 DD 43 Claims



1. A coder (100) for converting a linear input signal representative of encoded speech, voiceband data or tone signals into a quantized differential PCM output signal, the input signal being coupled to the input of a difference circuit (11) along with a signal estimate of said input signal to obtain a difference signal indicative of the difference therebetween, a predictor means (12) for producing said signal estimate, an adaptive quantizing means (DLQ) for receiving said difference signal and providing at its output a quantized version of the difference signal, and means (17) for adding said quantized version of the difference signal with said signal estimate and coupling the sum to the input of said predictor means,
said adaptive quantizing means being characterized by,
means (FIG. 2) for dynamically controlling said adaptive quantizing means speed of adaptation including, means for producing a fast speed of adaptation when the input signal represents speech signals and a slow speed of adaptation when the input signal represents encoded voiceband data or tone signals.

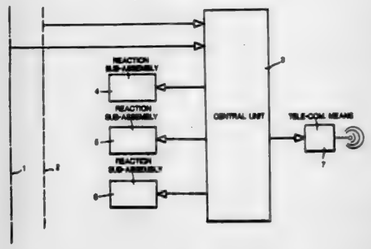
4,437,088
ELECTRICAL SIMULATION OF PERCUSSIVE BELL
Harry D. Ferguson, Owen Sound, Canada, assignor to General Signal Corporation, Stamford, Conn.
Filed Nov. 19, 1981, Ser. No. 323,520
Int. Cl.³ G08B 1/00
U.S. Cl. 340—384 E 18 Claims

1. An electronic bell which produces a signal which sounds like a standard electromechanical bell comprising in combination:
(a) a rate generator for producing an output signal at a predetermined stroke rate that determines the ringing frequency of the bell sound;
(b) a modulation envelope generator for producing a low frequency and a high frequency decaying exponential control signal in response to signals from said rate generator wherein said low frequency signal has a first time constant and said high frequency control signal has a second time constant, said first time constant being longer than said second time constant;
(c) first and second audio frequency generators of first and second frequencies, respectively;
(d) first and second modulating means coupled to said first and second audio frequency generators and said first and second decaying exponential control signals, respectively,



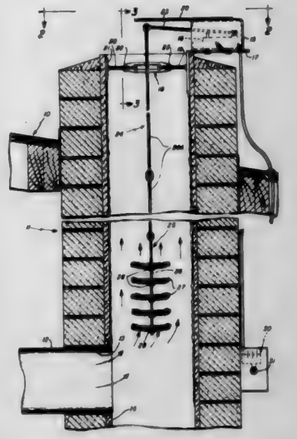
for producing first and second signals comprising modulations of said first and second audio frequencies, respectively;
(e) mixing means coupled to said first and second modulated output signals for mixing the same; and
(f) a loudspeaker and coupling means coupling said mixed audio frequencies to said loudspeaker for producing an audible sound characteristic of a vibrating bell struck at the frequency of said rate generator.

4,437,089
DUAL SENSITIVITY INTRUSION DETECTION SYSTEM
Serge Achard, Marly-Le-Roi, France, assignor to S.A. Promocab, Versailles, France
Filed Jun. 23, 1981, Ser. No. 276,498
Claims priority, application France, Jun. 24, 1980, 80 13982
Int. Cl.³ G08B 13/22, 29/00
U.S. Cl. 340—541 10 Claims



1. A system for protecting a zone against human aggression, comprising at least two circuits of sensors for detection of human presence, said sensor circuits arranged within said zone and capable of producing electric signals when they detect a human presence, response means activated by said electric signals for indicating human presence, electronic processing means arranged between the sensors for detection of human presence and the response means, to operate first response means when they receive an electrical signal from a detection sensor of a first circuit of sensors and second response means when they receive an electrical signal from a detection sensor of a second circuit of sensors, said electronic processing means comprising means to increase the sensitivity of the sensors of the second circuit of sensors at the time of reception of a signal from a sensor of the first circuit of sensors.

4,437,090
APPARATUS FOR INDICATING CREOSOTE BUILDUP IN A CHIMNEY
R. Edward Hanson, 12 Dale St., Hallowell, Me. 04347
Filed Dec. 31, 1980, Ser. No. 221,781
Int. Cl.³ G08B 21/00
U.S. Cl. 340—613 12 Claims



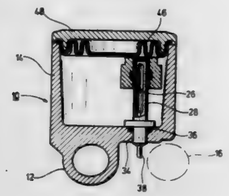
1. Apparatus for indicating creosote in the flue of a chimney, said apparatus including an accumulator through which chimney flue gases will flow with creosote becoming deposited thereon when the accumulator is within the flow and the chimney in service, said accumulator of a cross sectional size and shape such that it may be a free fit within the flue without adversely affecting the draft therethrough, a normally open switch having an operating arm operable to effect the closing of the switch when a predetermined weight is applied to said arm, means to attach said switch to the upper end of the chimney, a suspending member connected to said arm and said accumulator when the switch is attached to said chimney, said connecting means then holding said accumulator centrally of the flue and in a position lengthwise thereof where a major buildup of creosote is anticipated, the weight of the accumulator and connecting means insufficient to effect the closing of said switch until creosote has built up on the surface of said accumulator to so increase said weight as to apply said weight, and a circuit including said switch and a warning signal operable when said circuit is closed by said switch.

4,437,091
FLUID-QUANTITY ALARMING DEVICES FOR THE MASTER CYLINDER
Yoshinobu Mizusaki, Ueda, Japan, assignor to Nissin Kogyo Co., Ltd., Ueda, Japan
Filed May 22, 1981, Ser. No. 266,224
Claims priority, application Japan, Jul. 24, 1980, 55-104976
Int. Cl.³ G08B 21/00
U.S. Cl. 340—623 5 Claims

1. A fluid-quantity alarming system for a brake cylinder comprising;
a brake master cylinder body;
a reservoir connected to said cylinder body, said reservoir being substantially in an elongated rectangular parallelepiped form and being disposed on said cylinder body so that the central axis of the reservoir in an elongated direction is biased relative to the central axis of the master cylinder, said reservoir including an opening at the bottom thereof in a plane passing through the central axis of the master cylinder body for fluid communication between the master cylinder body and the reservoir, an attachment hole

located adjacent to a wall of the reservoir away from the central axis of the master cylinder and the opening, and at least one blind female screw adjacent to the attachment hole extending downwardly from the inside of the reservoir,

a switch case including a switch therein with a lead extending from the switch, a flange attached to the lower part of the switch case with a hole therein, and a screw, said switch case being disposed in the reservoir such that a lower end is sealingly situated in the attachment hole to



permit the lead attached to the switch to extend outside the reservoir, and the screw is disposed to pass through the hole of the flange and is fastened with the blind female screw, and

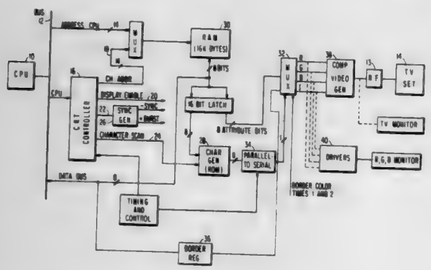
a float disposed around the switch case to be vertically moved in accordance with liquid level in the reservoir, said float having such dimensions that it is not located above the opening so that the fluid passing through the opening does not affect the float, and means to actuate the switch when the float is located beside the switch.

4,437,092

COLOR VIDEO DISPLAY SYSTEM HAVING PROGRAMMABLE BORDER COLOR

Mark E. Dean, Boynton Beach, Fla.; Lewis C. Eggebrecht, Rochester, Minn.; David A. Kummer, Boca Raton, and Jesus A. Saenz, Coral Springs, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,069
Int. Cl.³ G09G 1/28
U.S. Cl. 340—703 **3 Claims**



1. A color video display system comprising:

a color cathode-ray tube display;

central processing means for providing a signal defining a normal display area and first data representing video information to be displayed on said cathode-ray tube display in said normal display area of said cathode-ray tube display and second data representing a color of a predefined border area completely surrounding said normal display area and extending to all display edges of said cathode-ray tube display;

means operating in response to vertical and horizontal synchronizing signals of said display and said display area defining signal for generating a control signal having a first state when a scanning beam of said cathode-ray tube display is scanning said normal display area and a second state when said scanning beam is scanning said border area; and

multiplexer means operating in response to said control signal for applying said first data to said color cathode-ray tube display when said control signal is in said first state and said second data to said cathode-ray tube display when said control signal is in said second state;

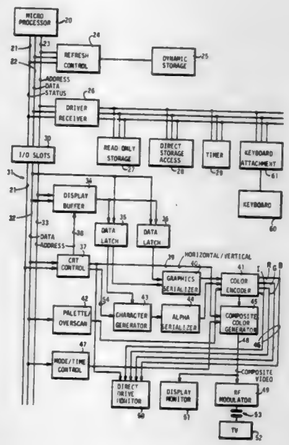
whereby a selected color may be provided in said border area and memory limited to that necessary for storing information to be displayed in said normal display area.

4,437,093

APPARATUS AND METHOD FOR SCROLLING TEXT AND GRAPHIC DATA IN SELECTED PORTIONS OF A GRAPHIC DISPLAY

David J. Bradley, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,081
Int. Cl.³ G09G 1/16
U.S. Cl. 340—726 **6 Claims**



1. A method for scrolling, within a window, graphic and graphic encoded text data prestored in rows of a display refresh buffer of a raster scan all-points-addressable video display operable in a graphics mode, comprising the steps of:

specifying in first and second machine registers opposite corners of a window, the window comprising a portion only of a video display screen, and in a third machine register the number of rows to be scrolled;

establishing a destination pointer addressing the row specified by said first machine register;

establishing a source pointer addressing a row offset from the row specified in said first machine register by the number of rows to be scrolled specified in said third machine register; and

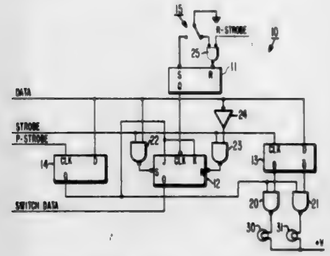
moving a row bounded by said window within said window in said display refresh buffer from the location addressed by said source pointer to the location addressed by said destination pointer, altering the source pointer and destination pointer by one row, and repeating the moving and altering steps for each row to be scrolled.

4,437,094

SYSTEM FOR CONTROLLING INDICATORS FOR SWITCHES

Joe W. Fish, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,513
Int. Cl.³ H04Q 9/00; G08B 21/00
U.S. Cl. 340—825.5 **14 Claims**



1. In a system which includes a plurality of switches and indicator means associated with each switch, in combination:

means responsive to the actuation of solely one of the switches for causing the indicator means associated therewith to change from a first to a second condition; and

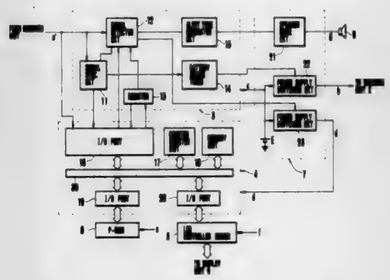
means responsive to the concurrent actuation of more than one of the switches for preventing the respective indicator means associated with said more than one switch from being changed in condition.

4,437,095

SELECTIVE CALL RECEIVER HAVING TIMED POWER SUPPLY

Masaaki Akahori; Takashi Ohyagi, both of Tokyo, and Shozo Nishimura, Zushi, all of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,321
Claims priority, application Japan, Dec. 1, 1980, 55-167966
Int. Cl.³ H04Q 9/14; H04B 1/16; G08B 5/22
U.S. Cl. 340—825.44 **2 Claims**



1. A selective call receiver with display comprising:

receiver means which receives electromagnetic waves and produces digital received signals;

display means to display received data;

display controller means for controlling said display means;

memory means which stores call numbers;

means responsive to a decoded signal to indicate the paging of the receiver;

reception controller means powered by a power supply, said reception controller means, upon receipt of the digital received signals produced by the receiver means, generating synchronizing pulse signals and comparing said digital received signals with said call number to provide said decoded signal, said reception controller further generating timing signals for connecting and disconnecting the power supply from receiver means and said display controller means;

first switching means which controls the connecting and disconnecting of the power supply to said receiver means in response to said timing signals; and

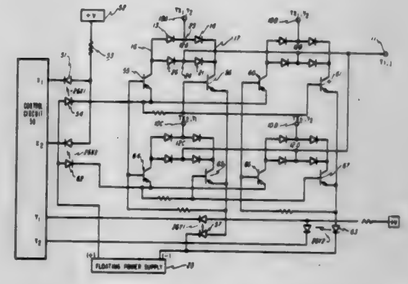
second switching means which controls the connecting and disconnecting of the power supply to the display controller means in response to said synchronizing pulse signals.

4,437,096

CONCENTRATOR CIRCUIT INCORPORATING SOLID STATE BILATERAL BRIDGE ARRANGEMENT

Barrie Brightman, and Frank Niertit, both of Casselberry, Fla., assignors to Stromberg-Carlson Corp., Tampa, Fla.

Filed Dec. 30, 1981, Ser. No. 335,593
Int. Cl.³ H03K 17/00; H04Q 3/52
U.S. Cl. 340—825.96 **6 Claims**



1. A concentrator circuit for selectively conveying signals between a plurality of first terminals and a second terminal, said concentrator circuit comprising:

A. a plurality of bilateral current gate means for selectively coupling signals between the first terminals and the second terminal, each bilateral current gate means including a plurality of diodes connected to define input and output junctions and first and second balance point junctions, a first terminal being connected to each first balance point junction, and the second terminal being connected to all of said second balance point junctions, each of said input and output junctions of each bilateral current gate means being connected to a normally-open switch means;

B. floating bias means for producing a bias current; and

C. selection means connected to said floating bias means and all of said switch means for selectively closing a pair of said switch means to enable bias current from said floating bias means to flow through one of said bilateral current gate means, thereby enabling a signal input on the first terminal associated with said bilateral current gate means to be coupled to the second terminal.

4,437,097

BUOYANT ELECTRODE

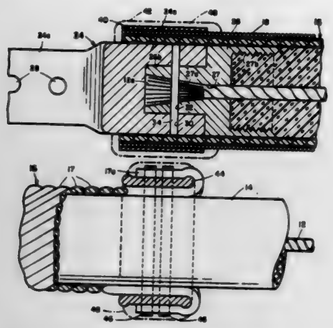
John A. Hudson, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1982, Ser. No. 342,251
Int. Cl.³ B63B 21/56; H01B 7/12
U.S. Cl. 340—852 **7 Claims**

1. A buoyant electrode of the type comprising a buoyant core, includng a central strength member surrounded by cellular plastic flotation material, a conductive layer of helically laid strands of wire formed around said core, and a forward end connection for towing said electrode and for electrically

energizing said conductive layer, said electrode being characterized by the improvement comprising:

said wire strands being formed of hard drawn aluminum; and



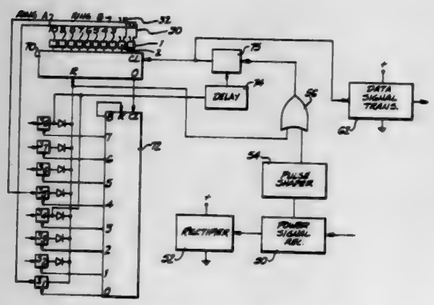
annular clamping means for fixing together the aft ends of said wire strands for combined rotational and sliding movement of said aft ends relative to said core.

4,437,098

APPARATUS FOR ELECTRONICALLY READING MECHANICAL METERS HAVING NON-SIMULTANEOUSLY CHANGING DIGITS

Shlomo Rosinek, Kiron; Issac Rinkewich, Tel-Aviv, and Boris Khurgin, Haifa, all of Israel, assignors to Matam, Ltd., Tel-Aviv, Israel

Filed Oct. 26, 1981, Ser. No. 315,148
Int. Cl.³ G08C *19/00, 19/36, 19/16*
U.S. Cl. 340—870.02 **16 Claims**



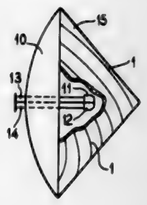
1. Apparatus for detecting the position of first and second members, each of which is movable to one of a given number of positions, said apparatus comprising, for each member, first means effective when actuated to sense the position of said member; second means effective, when actuated, to sense the position of said member, said first and second sensing means being spaced apart, along the direction of movement of said member, by a distance less than the distance between adjacent positions of said member; means for actuating each of said first sensing means, in sequence; means for actuating each of said second sensing means, in sequence, a given time after actuation of said first sensing means, said given time being greater than the time it takes for both members to move between adjacent positions; first means for storing a first number representative of the respective positions sensed by each of said first sensing means; second means for storing a second number representative of the respective positions sensed by each of said second sensing means; and means for comparing said stored numbers and for selecting one of said stored numbers.

4,437,099

POLARIZATION CONVERTER FOR ELECTROMAGNETIC WAVES

Erich Kandler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 246,122
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023561
Int. Cl.³ H01Q *15/24*
U.S. Cl. 343—756 **10 Claims**



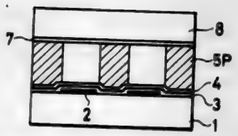
1. The method of forming a non-planar polarization grid structure comprising, forming conductive lines on a disc of planar insulation material, removing a pie-shaped portion of said disc, and joining the edges of said disc where the pie-shaped portion was removed to form a cone and the pattern of said conductive lines as viewed from the apex of the cone having the desired shape to obtain circular polarization.

4,437,100

INK-JET HEAD AND METHOD FOR PRODUCTION THEREOF

Hiroshi Sugitani, Machida; Hiroto Matsuda, Yokohama, and Masami Ikeda, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1982, Ser. No. 385,092
Claims priority, application Japan, Jun. 18, 1981, 56-94884; Jun. 24, 1981, 56-97923; Jun. 24, 1981, 56-97924; Jun. 24, 1981, 56-97925
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **16 Claims**



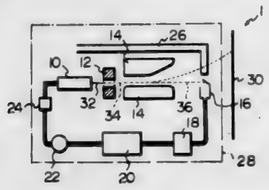
1. An ink-jet head comprising an ink flow path constituted of a hardened film of a photosensitive resin composition provided on the surface of a substrate, characterized in that a binding auxiliary layer is interposed between the substrate surface and the hardened film.

4,437,101

INK JET PRINTING APPARATUS

Yutaka Ebi; Takao Fukazawa; Toshio Kawakubo; Koichiro Jinnai; Masanori Horike; Kyuhachiro Iwasaki; Chuji Ishikawa, and Toshitaka Hirata, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,652
Claims priority, application Japan, May 11, 1981, 56-70526; May 11, 1981, 56-70527; May 11, 1981, 56-70528; May 11, 1981, 56-70529
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **32 Claims**



1. An ink jet printing apparatus comprising:

an ink ejection head for ejecting a jet of ink;

charging electrode means for electrostatically and selectively charging ink droplets separated from the ink jet;

deflection electrode means for electrostatically deflecting the charged ink jet;

a carriage for mounting thereon the ink ejection head, the charging means and the deflection means and moving reciprocatingly along a sheet of paper; and

a means for subjecting the charged ink droplets to an electric field which is asymmetrical with respect to a predetermined deflection plane in which the charged ink droplets coming out from the charging electrode means are to be deflected;

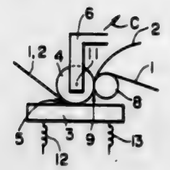
the asymmetrical electric field applying means being disposed between the charging electrode means and the deflection electrode means.

4,437,102

HEAT-SENSITIVE RECORDING APPARATUS

Toshiharu Inui, and Haruhiko Moriguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 320,037
Claims priority, application Japan, Nov. 17, 1980, 55-160798
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **3 Claims**



1. A heat sensitive recording apparatus, comprising:

a thermal head assembly for selectively causing heat generating elements to generate heat according to image data;

a back roll for maintaining pressure against said thermal head assembly to sandwich a thermally sensitive recording medium and a printing sheet therebetween;

a rotatable back roll mounting arm for mounting said back roll thereon, a position of said back roll being substantially fixed by said back roll mounting arm during a recording operation;

at least one adjustable spring urging said thermal head assembly toward said back roll with an adjustable force;

said thermal head assembly including a first surface for contacting said recording medium and a second surface opposite said first surface, said spring exerting a force against said second surface and toward said back roll; and

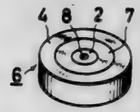
a drive roller contacting said back roll at a position downstream of a position where said recording medium and said printing sheet are sandwiched between said thermal head assembly and said back roll to drive said back roll during a recording operation.

4,437,103

INK-JET NOZZLE AND A METHOD FOR MANUFACTURING SAME

Kunio Ikeda, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jan. 18, 1982, Ser. No. 340,229
Claims priority, application Japan, Jan. 16, 1981, 56-3728
Int. Cl.³ G01D *15/18*; B21D *53/00*
U.S. Cl. 346—140 R **8 Claims**



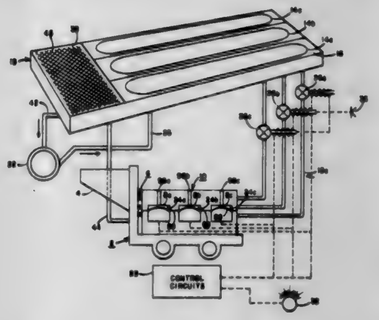
1. An ink-jet nozzle for use in an ink-jet printer, said nozzle being generally in the shape of a disc provided with a through-hole at its center as an ink passage, said nozzle comprising an inner annular portion having a first hardness and an outer annular portion contiguous to and integral with said inner annular portion and having a second hardness, said first hardness being substantially larger than said second hardness, said inner and outer annular portions being comprised of an electro-deposited material.

4,437,104

INK DISPOSAL SYSTEM FOR INK JET PRINTER

David M. Hudson, Chelmsford, Mass., assignor to Advanced Color Technology, Inc., Chelmsford, Mass.

Filed May 10, 1982, Ser. No. 376,780
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **1 Claim**



1. In an ink jet printer having a printing head and a movable carriage carrying said printing head, an ink supply and disposal system comprising

a disposable primary ink cartridge having an enclosed ink supply chamber and a closed waste-ink storage chamber separate from said ink supply chamber,

a flexible ink reservoir enclosed in said chamber,

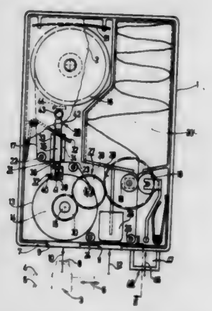
a secondary ink container on said carriage having therein an ink-receiving reservoir,
means including a flexible ink-supply conduit for transferring ink from said ink reservoir of said primary ink cartridge to said ink-receiving reservoir of said secondary ink container,
collection means on said carriage for gathering waste ink from said head,
flexible waste-ink duct means extending between said collection means and said storage chamber,
a pump having an air inlet and an air outlet,
a first conduit connected between said air outlet and said supply chamber operative to maintain said supply chamber under continuous gaseous pressure,
a second conduit connected between said air inlet and said waste ink storage chamber thereby to maintain said storage chamber under reduced pressure, and
ink-absorbing material positioned within said waste ink storage chamber.

4,437,105

CASSETTE COMPRISING A CAPPING DEVICE AND/OR A CLEANING DEVICE FOR A PRINTING HEAD OF AN INK JET PRINTER

Gustav Mrazek, and Franz Obenaus, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,738
Claims priority, application Austria, Jul. 24, 1981, 3283/81
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **9 Claims**



1. A cassette comprising a capping device for the capping and/or a cleaning device for the cleaning of the jet nozzle surface of a printing head of an ink jet printer, the capping device defining a capping position while the cleaning device defines a cleaning position, said positions being accessible through at least one window in a cassette wall, characterized in that the cassette wall (7) comprising the window (9, 11) also comprises a purging position (45) for the printing head (3) which comprises a collecting device (46) for collecting ink ejected from the printing head.

4,437,106

METHOD AND MEANS FOR REDUCING ILLUMINATION NULLS IN ELECTRO-OPTIC LINE PRINTERS

Robert A. Sprague, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 8, 1981, Ser. No. 299,697
Int. Cl.³ G01D *15/14*; G02F *1/01*
U.S. Cl. 346—160 **9 Claims**

1. In an electro-optic line printer having a recording medium; a multigate light valve for printing picture elements in spatially predetermined positions along a printing axis; coherant imaging means optically aligned between said light valve and said recording medium, said imaging means including lens means for imaging said light valve onto said recording medium; and means for advancing said recording medium in a cross line direction relative to said light valve; the improvement comprising



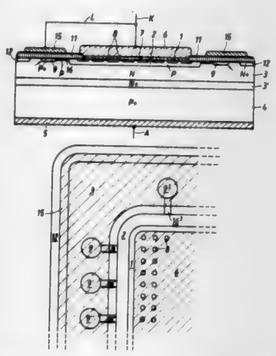
additional means within said imaging means for coupling light from illuminated picture elements into areas on said recording medium surrounding the predetermined positions for said illuminated picture elements, thereby reducing illumination nulls between said picture elements.

4,437,107

SELF-IGNITING THYRISTOR WITH A PLURALITY OF DISCRETE, FIELD CONTROLLED ZENER DIODES

Per-Erik Jonsson, Bromma, and Per Svedberg, Vällingby, both of Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Sep. 28, 1981, Ser. No. 306,255
Claims priority, application Sweden, Oct. 8, 1980, 8007036
Int. Cl.³ H01L *29/74, 29/90, 29/02, 29/40*
U.S. Cl. 357—38 **4 Claims**



1. In a self-ignitable thyristor having a zener diode integral with the thyristor, which zener diode bridges the junction of the thyristor across which the off-state voltage appears and determines the breakover voltage of the thyristor, one emitter layer of the thyristor being located at one main surface of the semiconductor body which forms the thyristor, with the zener diode arranged adjacent to the same main surface and to the emitter layer of the thryistor, the zener diode having a breakdown voltage influenced by the field geometry at a portion of the PN junction of the zener diode located adjacent to said main surface, the improvement comprising:
a plurality of zener diodes in the semiconductor body laterally separated from each other and from the base layer adjacent said one emitter layer, each of said zener diodes being connected via resistive means to said base layer of said thyristor,
an electrically conducting screen means located over said main surface of the thyristor to overlie said portion of the PN junction of each of the zener diodes for influencing the field geometry at said portion of the PN junction, thereby influencing the breakover voltage of the thyristor,
said screen means being electrically connected to the main electrode contacting said one emitter layer so as to have substantially the same potential as said main electrode, and
an electrically insulating portion located between the screen

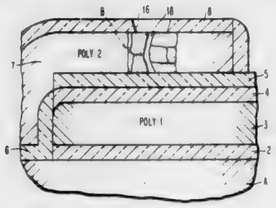
means and the main surface at least over said portions of the PN junctions.

4,437,108

DOUBLE POLYSILICON CONTACT STRUCTURE

James R. Gardiner, Wappingers Falls; Stanley R. Makarewicz, New Windsor; Martin Revitz, Poughkeepsie, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 164,647, Jun. 30, 1980. This application Dec. 20, 1982, Ser. No. 450,856
Int. Cl.³ H01L *29/04, 29/34, 23/48, 29/46*
U.S. Cl. 357—59 **1 Claim**



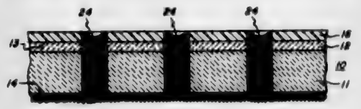
1. An improved double polysilicon contact structure for a semiconductor device including at least two overlying polysilicon conductors comprising:
A. a semiconductor substrate A,
B. a first silicon dioxide insulating layer 2 united to the substrate,
C. a first conductive polysilicon layer 3 patterned on the first insulating layer 2,
D. a first silicon dioxide dielectric layer 4 patterned on the first conductive polysilicon layer 3,
E. a second dielectric layer 5 patterned on the first dielectric layer 4 as an etch barrier to selected etchants, said second dielectric layer being selected from the group consisting of silicon nitride and aluminum oxide,
F. a second conductive polysilicon layer 7 superimposed, in part at least, on the first conductive polysilicon layer 3, said second conductive polysilicon layer enclosed by a third dielectric layer 8, and
G. an electrically conductive contact 12' connected to the second conductive polysilicon layer 7 wherein said second dielectric layer 5 is patterned on said first conductive polysilicon layer 3 to underlie the contact 12' established to the second conductive polysilicon layer 7, whereby any polysilicon voids existing in the second conductive polysilicon layer do not electrically short the second conductive polysilicon layers to the first conductive polysilicon layer.

4,437,109

SILICON-ON-SAPPHIRE BODY WITH CONDUCTIVE PATHS THERETHROUGH

Thomas R. Anthony, Schenectady; Richard J. Connery, Liverpool, both of N.Y., and David F. Hoeschele, Jr., Boyertown, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 7, 1980, Ser. No. 204,957
Int. Cl.³ H01L *29/06, 23/48*
U.S. Cl. 357—68 **10 Claims**



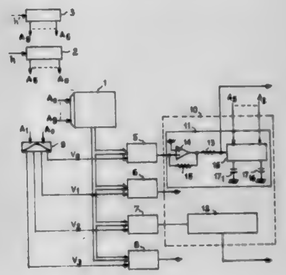
1. An article of manufacture comprising:
(a) a body of layered silicon-on-sapphire having
(i) top and bottom major opposed surfaces substantially parallel to each other, and
(ii) an outer peripheral edge area of silicon and sapphire interconnecting said major surfaces, said top major surface being silicon and said bottom major surface being sapphire; and
(b) a plurality of electrically conducting paths interconnecting said major surfaces, each of said paths comprising a hole substantially filled with an electrically conducting mass of unified particles, each hole having a generally circular entrance aperture about 4 mils or less in diameter and a generally circular exit aperture at opposite ends thereof, said entrance aperture lying in the plane of one of said major surfaces and having a first diameter, said exit aperture lying in the plane of the opposite major surface and having a second diameter substantially equal to or less than said first diameter and said hole having an aspect ratio in the range of from about 2.17:1 to about 25.59:1, each path having an axis, said axis being substantially perpendicular to the planes of said major surfaces with the centers of said entrance and said exit apertures being substantially colinear therewith, and said paths being arranged in a substantially periodic array, said array having a center line-to-center line spacing substantially equal to twice said first diameter.

4,437,110

CONVERGENCE DEVICE FOR A COLOR-CAMERA

Roger Hunaut, and Francois Dupont, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 20, 1982, Ser. No. 341,179
Claims priority, application France, Jan. 23, 1981, 81 01287
Int. Cl.³ H04N *5/26, 9/28*
U.S. Cl. 358—41 **7 Claims**

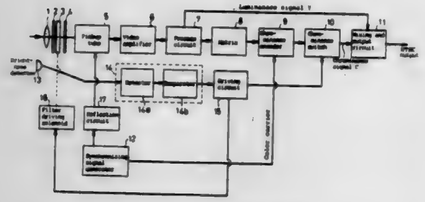


1. A convergence device for a color camera having a screen divided into L groups of M lines each and N columns thereby forming LN rectangles, and horizontal and vertical scanning means adapted to each of the three fundamental colors, said convergence device comprising
correction memory means storing 4LN words of "x" bits for associating, with each of the "LN" rectangles of the screen of the camera, a predetermined horizontal scanning correction signal and a predetermined vertical scanning correction signal adapted to each of two of the three fundamental colors,
means for applying said scanning correction signals to said horizontal and vertical scanning means,
sequencer means coupled to said means for applying for controlling the application of said correction signals to said horizontal and vertical scanning means adapted to said two fundamental colors, and
attenuation means coupled to said means for applying and said scanning means for attenuating discontinuities existing between horizontal and vertical scanning correction signals associated with adjacent lines of the same column.

4,437,111
COLOR TELEVISION CAMERA

Takayoshi Inai, Takamatsu; Teruo Saitoh, Saijo, and Hisayuki Sannomiya, Kagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 6, 1982, Ser. No. 337,364
Claims priority, application Japan, Jan. 16, 1981, 56-5264; Jan. 16, 1981, 56-5265
Int. Cl.³ H04N 3/06
U.S. Cl. 358—44
5 Claims



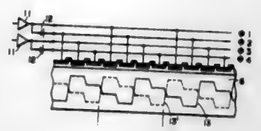
1. A color television camera comprising:
a pickup device having sensitivity in the visible light range and at least a part of the infrared range,
an automatically detachable infrared-cut filter means disposed in a light path which is leading to said pickup device,
a brightness detection means disposed nearer to an object than said infrared-cut filter so as to detect brightness change of the light coming into said light path for issuing an output signal which varies between a first state when brightness is over a predetermined level and a second state when brightness is below the predetermined level,
a driving circuit part including a detector for detecting the output signal of said brightness detection means and a comparator for comparing a detected output signal of said detector with a predetermined level, and a driving circuit part for issuing a control signal responding to the result of the comparing by the comparator,
filter driving means coupled to said driving circuit and controlled based on said control signal for driving said automatically detachable infrared-cut filter to be inserted into said light path leading to said pickup device at said first state and driving the same out of said light path at said second state, and
a video signal circuit coupled to said driving circuit and controlled based on said control signal including a switching means to be switched in a manner to constitute a color video signal producing circuit at said first state and a monochrome video signal producing circuit at said second state.

4,437,112
SOLID-STATE COLOR IMAGING APPARATUS

Nobuyoshi Tanaka; Seiji Hashimoto, and Tetsuro Kuwayama, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,096
Claims priority, application Japan, Feb. 15, 1980, 55-17968; Apr. 18, 1980, 55-51224; Apr. 21, 1980, 55-53302; Apr. 21, 1980, 55-53309
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44
24 Claims

1. A color imaging apparatus comprising:
a plurality of imaging cells which function as picture elements for forming an image signal;
a plurality of potential wells formed in each imaging cell; and

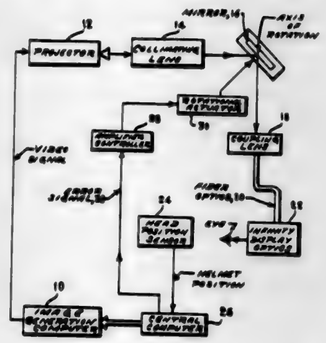


a filter having filter elements positioned corresponding to each potential well in such a manner as to provide different spectral sensitivities to each potential well.

4,437,113
ANTI-FLUTTER APPARATUS FOR HEAD MOUNTED VISUAL DISPLAY

David R. Lee, and Robert B. McCreary, both of Mesa, Ariz., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 21, 1981, Ser. No. 332,894
Int. Cl.³ H04N 5/74
U.S. Cl. 358—93
5 Claims



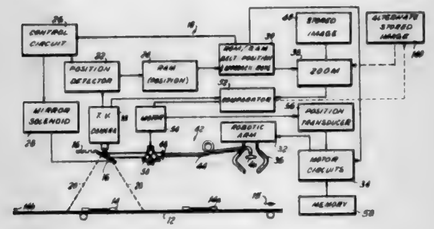
1. An anti-flutter apparatus for a head mounted visual display comprising in combination:
an image generation means for generating and projecting a visual image,
a collimating means to receive said visual image from said image generation means and to collimate said visual image,
a reflecting means to directly receive said visual image from said collimating means, said reflecting means is centered about its axis of rotation to reflect said visual image therefrom,
a light transmission means to receive said visual image from said reflecting means,
a display means which is directly connected to said light transmission means to receive said visual image from said light transmission means, said display means displaying said visual image to provide a scene,
a position sensor means to generate a first position signal, and a second position signal,
a computing means to receive said first position signal, said computing means generating an image signal in response to said position signal, said image signal being sent to said image generation means, said computing means generating an image position signal, said computing means subtracting said image position signal from said second position signal to generate an error signal,

an amplifier/controller means receiving said error signal and generating a correction signal in response thereto, and,
an actuator means operationally connected to said reflecting means, said actuator means receiving said correction signal, said actuator means rotating said reflecting means about its center of rotation in response to said correction signal.

4,437,114
ROBOTIC VISION SYSTEM

Joseph A. LaRussa, Yorktown Heights, N.Y., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,465
Int. Cl.³ H04N 7/18
U.S. Cl. 358—101
7 Claims

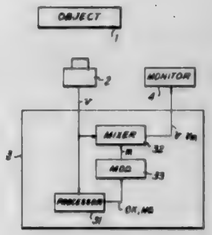


1. A robotic system for grasping a randomly oriented object, comprising:
(a) grasping means for grasping said object;
(b) motor means for placing said grasping means at a desired position and causing said grasping means to perform a gripping function;
(c) camera means for forming a first image of said object;
(d) an optional train for conveying an image from a predetermined point to said camera means, said predetermined point being fixed relative to said grasping means;
(e) image means for containing a second image of said object to be grasped;
(f) comparison means responsive to said first and second images for comparing said first image to said second image;
(g) first coupling means for coupling said image means to said comparison means;
(h) second coupling means for coupling the output of said camera means to said comparison means;
(i) image rotation means for causing rotation of said second image with respect to the image produced by said camera means, said comparison means being responsive to said first and second coupling means to stop rotation of said image rotation means when a coincidence in angular position is detected between said second image and the image produced by said camera means; and
(j) angular orientation means for generating an angular orientation signal in respone to a detection of coincidence between said second image and said image produced by said camera means to generate an orientation signal indicating the orientation of said object and providing said orientation signal to said motor means to angularly orient said grasping means with said object to be grasped.

4,437,115
OBJECT AND INSPECTION SYSTEM

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Japan

Continuation-in-part of Ser. No. 112,839, Jan. 17, 1980, abandoned. This application Jul. 8, 1982, Ser. No. 396,166
Claims priority, application Japan, Jan. 25, 1979, 54-7930
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106
4 Claims

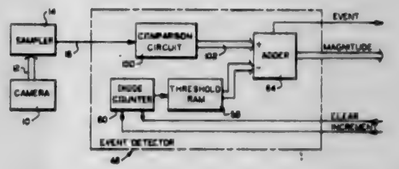


1. An object inspection system for sensing and indicating defects in an object, comprising:
an image sensing device effective to produce a video signal representing said object;
a monitor television receiver for reproducing an image from said video signal;
a processor including at least one of a differentiation circuit and a level comparator, said differentiation circuit being effective to produce an output having a characteristic related to a change in said video signal, said level comparator including means signal effective for producing a first signal when said characteristic represents a good portion of said object and a second signal when said characteristic represents a not good portion of said object;
a modulator responsive only to said second signal to produce a modulated signal; and
a signal mixer effective to mix said video signal with said modulated signal and to cause blinking in portions of said image corresponding to said not good portions of said object whereby said not good portions of said object are clearly determined by said blinking portions of said image.

4,437,116
METHOD AND APPARATUS FOR COMPARING DATA SIGNALS IN A CONTAINER INSPECTION DEVICE

John W. Juvinall, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 22, 1980, Ser. No. 218,996
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106
15 Claims



1. In an apparatus for detecting defects in an object including a camera for generating a series of video signals each having a magnitude proportional to an amount of light received from a particular point of inspection on the object, a circuit for generating a comparison signal representing a magnitude difference between two of the video signals, said circuit comprising; means responsive to the two video signals for generating a comparison signal having a magnitude representing a ratio of the one of the two video signals having the smaller magnitude

to the other one of the two video signals having the larger magnitude.

4,437,117

X-RAY TELEVISION INSTALLATION FOR MONITOR PHOTOGRAPHY

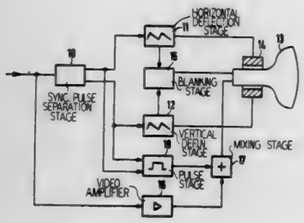
Joerg Haendle, and Heinz Horbaschek, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,188

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039708

Int. Cl.³ H04N 5/32

U.S. Cl. 358—111 **2 Claims**



1. An x-ray television installation for monitor photography, comprising an x-ray tube having a ray path along which x-ray energy is directed for producing an x-ray image, an x-ray image intensifier arranged in said ray path of said x-ray tube and having an output fluorescent screen for supplying an intensified optical image in accordance with an incident x-ray image, a video camera optically coupled with said output fluorescent screen of said x-ray image intensifier for generating a video signal in accordance with the optical image supplied thereby, a video monitor comprising a video display unit having an image display screen for displaying the video signal as a visible image, a video amplifier connecting said video camera with said video display unit so as to supply an amplified video signal to the video display unit for display thereby, a synchronizing pulse separation stage being connected with the video camera for supplying a synchronizing pulse signal synchronized with the video signal, a horizontal deflection stage and a vertical deflection stage connected between said separation stage and said video display unit for controlling the display of the video signal thereby, a blanking stage synchronized with said horizontal deflection stage and said vertical deflection stage and controlling blanking of the video display unit at horizontal and vertical retrace intervals during the display of the video signal, and a photographic camera optically coupled with the image display screen of the video display unit for photographing the display of the video signal thereon, characterized in that a pulse stage coupled with said synchronizing pulse separation stage and with said video display unit generates unblanking pulses in synchronism with the operation of the horizontal and vertical deflection stages so as to generate visible bars on said image display screen of said video display unit, the bars being at the border of the image display screen for bounding the visible image produced by said video signal, the photographic camera being so designed that the visible images produced on the video display unit are photographed adjacent one another with the bars eliminating unexposed interstices between adjacent photographed images, and characterized in that mixing means is connected with the pulse stage and the video amplifier, and supplies an output signal to the video display unit, and that the deflection stages provide sawtooth voltages having active sweep portions which are substantially longer in duration than the duration of the active sweep intervals of the video camera such that the visible bars generated on the image display screen during such active sweep portions are included on the image display screen without loss of the image contents of said video signal.

4,437,118

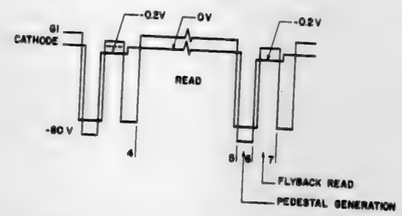
PYROELECTRIC VIDICON WITH IMPROVED SIGNAL-TO-NOISE RATIO

Barry M. Singer, New York, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 14,665, Feb. 23, 1979, abandoned, which is a continuation of Ser. No. 825,577, Aug. 18, 1977, abandoned. This application Aug. 5, 1980, Ser. No. 175,477

Int. Cl.³ H04N 5/33

U.S. Cl. 358—113 **2 Claims**



2. A method of reducing pedestal noise in a pyroelectric vidicon of the type having a cathode and a target, said cathode being operated at a reference potential during image readout such that the target potential is equal to a quiescent value after image readout, said method comprising, after pedestal generation, the steps of:

setting the cathode potential below the reference potential; and

scanning the target with an electron beam emanating from the cathode for a time sufficient to reduce the target potential to a value above the quiescent value.

4,437,119

INTER-FRAME ADAPTIVE PREDICTION SYSTEM FOR TELEVISION SIGNALS

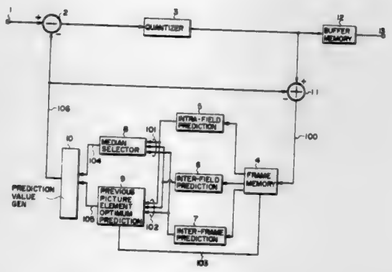
Shuichi Matsumoto, Tokyo; Yoshinori Hatori, Kawasaki; Hitomi Murakami, Yokohama, and Hideo Yamamoto, Sagamihara, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,575

Claims priority, application Japan, Jun. 19, 1981, 56-94004

Int. Cl.³ H04N 7/12

U.S. Cl. 358—136 **1 Claim**



1. An inter-frame adaptive prediction system for television signals comprising: input terminal means for receiving an input television signal; memory means having a capacity large enough to store the input television signal of at least one frame at all times; intra-field prediction means for generating a prediction value X_{1N} of the latest input picture element, through using a picture element value in the same field as the latest input picture element, read out from the memory means when a value X_1 of the latest input picture element of the television signal is received; inter-field prediction means for generating a prediction value X_{1K} of the latest input picture element, through using picture elements in the same field as the latest input picture element and an immediately preceding field, read out from the memory means when the value X_1 of the latest input picture element is received; inter-frame prediction means for generating a prediction value X_{1F} of the latest input picture element, through using picture elements in the same field as the latest input picture element, the immediately preceding field and an immediately preceding frame, read out from the memory means when the value X_1 of the latest input picture element is received; median selector means for comparing the prediction values in terms of magnitude to select a prediction value X_{1M} assuming a median; previous picture element optimum prediction means for comparing absolute values, $|X_{0N}-X_0|$, $|X_{0K}-X_0|$ and $|X_{0F}-X_0|$, of prediction errors between the prediction values X_{0N}, X_{0K} and X_{0F} obtained from the intra-field prediction means, the inter-field prediction means and the inter-frame prediction means for a picture element value X_0 immediately before the latest input picture element X_1 and the picture element value X_0 to select the prediction means providing the smallest value, and for generating a prediction value X_{1S} of the latest input picture element value X_1 available from the selected prediction means; and prediction generator means for newly generating a prediction value X_1 of the latest input picture element X_1 on the basis of a weighted mean of the prediction value X_{1M} obtained from the median selector means and the prediction value X_{1S} obtained from the optimum prediction means for the latest picture element value X_1.

4,437,120

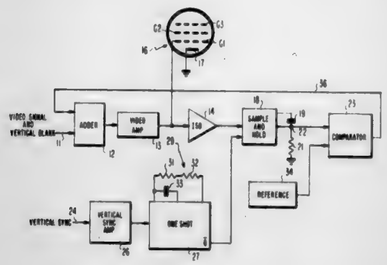
DRIVE LEVEL CONTROL SYSTEM FOR TESTING KINESCOPES

Felta C. Farmer, Jr., Gas City, and Donald P. Knight, Marion, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 5, 1982, Ser. No. 346,372

Int. Cl.³ H04N 7/02

U.S. Cl. 358—139 **6 Claims**



1. A drive level control for testing a kinescope having an element driven by a drive voltage and in which electron beams are scanned in accordance with vertical synchronizing pulses and vertical blanking pulses comprising:

first means for receiving said vertical blanking pulses and for applying said vertical blanking pulses to said element;

second means for receiving said vertical blanking pulses and converting said pulses to a voltage proportional to the level of said vertical blanking pulses;

third means responsive to said vertical synchronizing pulses for gating said second means in accordance with the initial transition of said synchronizing pulses;

fourth means for providing a reference drive level;

fifth means responsive to said reference level and to said proportional voltage for providing an error signal, said first means being responsive to said error signal for maintaining said drive voltage at a constant level.

4,437,121

VIDEO PICTURE PROCESSING APPARATUS AND METHOD

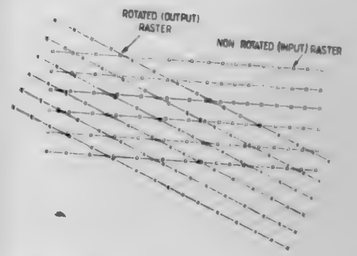
Richard J. Taylor, London; Paul R. N. Kellar, Newbury, and Neil R. Hinson, Petersfield, all of England, assignors to Micro Consultants Limited, Berkshire, England

Continuation of Ser. No. 246,970, Mar. 24, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 499,676

Claims priority, application United Kingdom, Apr. 10, 1980, 8011834

Int. Cl.³ H04N 5/22

U.S. Cl. 358—160 **23 Claims**



1. A processing system for processing input television signals to produce output television signals representing the same picture as the input signals but with an orientation change imparted to at least part of said picture, comprising:

storage means having relatively slow read rates for storing elements of said input television signals representing individual picture points;

address means for sequentially reading from said storage means successive batches of said input signal elements representing picture points included in respective two-dimensional areas of the picture, each said area of the picture having a horizontal dimension comprising a plurality of picture points and a vertical dimension comprising a plurality of lines of the input signal raster;

latch means having a relatively rapid read rate for temporarily storing each batch of selected signal elements;

processing means for reading signal elements from said latch means and for interpolating among said signal elements to synthesise at least one signal element for the output television signals from each batch of input signal elements; and

means for producing said synthesised signal elements in the appropriate order in relation to the output signal raster to produce the desired change in the television picture.

4,437,122

LOW RESOLUTION RASTER IMAGES

Brian F. Walsh, Etna, and David E. Halpert, Enfield, both of N.H., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 12, 1981, Ser. No. 303,742

Int. Cl.³ H04N 1/38, 5/14

U.S. Cl. 358—166 **27 Claims**

1. A method of enhancing the reproduction of images represented by a plurality of pixels comprising the steps of

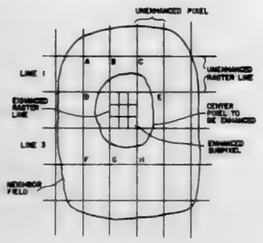
holding in a first storage consecutive lines of an image to be reproduced, the pixels of the image being represented by digital signals,

isolating a predetermined portion of the signals of each of the image lines into a second storage means,

forming a pixel pattern from the isolated digital signals including a center pixel signal surrounded by neighboring pixel signals including pixel signals from the same line of the image as the center pixel as well as pixel signals from the lines above and below the center pixel,

generating an identifier uniquely describing the isolated pixel pattern,

comparing the identifier with identifiers representing a plurality of standard pixel formats, and



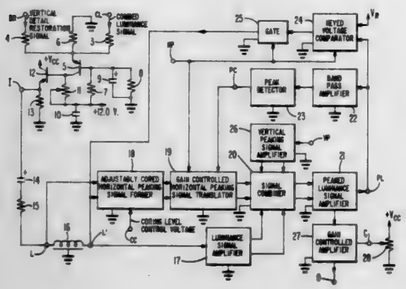
enhancing the central pixel in accordance with the particular match of the isolated pixel pattern with a standard pixel format.

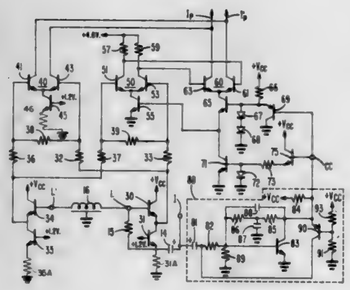
4,437,123

DYNAMICALLY CONTROLLED HORIZONTAL PEAKING SYSTEM

Wayne E. Harlan, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,531
Int. Cl.³ H04N 5/14, 5/21
U.S. Cl. 358—166 **5 Claims**





1. In a television receiver including a source of video signals which are representative of variations of the luminance of an image between black and white extremes during periodic image intervals, and which include, during intervening blanking intervals, deflection synchronizing pulses extending to peaks at a blacker-than-black level, said video signals occupying a predetermined band of frequencies; a dynamically controlled horizontal peaking system comprising:

a peaking system input terminal;

means, coupled to said source, for delivering said video signals to said peaking system input terminal;

means, responsive to said delivered video signals, for forming an adjustably cored horizontal peaking signal output, said forming means having a coring level control terminal, with the depth of coring of said horizontal peaking signal output effected by said forming means being dependent upon the level of a potential appearing at said control terminal;

signal translating means having an input terminal and an output terminal, and exhibiting a low pass characteristic having a cutoff frequency lying below the middle of said band of frequencies;

a direct current conductive coupling between said output terminal and said control terminal;

a capacitor coupled between said input terminal of said signal translating means and said peaking system input terminal;

means for developing a reference potential at a reference terminal;

a transistor having a base electrode direct current conductively coupled to said reference terminal, an emitter electrode direct current conductively coupled to said output terminal of said signal translating means, and a collector electrode direct current conductively coupled to said input terminal of said signal translating means; and

a signal combiner, responsive to said delivered video signals and to said adjustably cored horizontal peaking signal output, for developing peaked luminance representative signals;

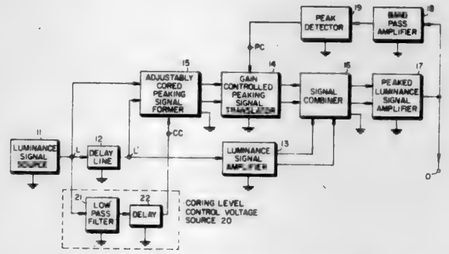
wherein said signal translating means provides a filtered version of said video signals at said output terminal with a polarity such that said synchronizing pulses extend in a conduction-enhancing direction for said transistor.

4,437,124

DYNAMIC CORING CIRCUIT

Larry A. Cochran, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,750
Int. Cl.³ H04N 5/14
U.S. Cl. 358—166 **3 Claims**



1. In an image reproduction system including a source of luminance signals representative of variations of the luminance of an image between black and white extremes; a dynamic coring circuit comprising:

means, coupled to said source, for developing a cored version of a signal representative of the high frequency content of said luminance signals, said cored version corresponding to the difference between a linearly translated version of said high frequency content representative signal and a doubly clipped version of said high frequency content representative signal; said developing means having a coring level control voltage input terminal, with the depth of coring effected by said cored version developing means dependent upon the level of a coring level control voltage applied to said input terminal; and

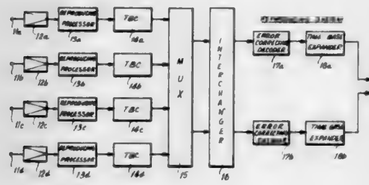
means, responsive to said luminance signals, for developing said coring level control voltage; said control voltage developing means comprising a low pass filter coupled to said source, and means for applying the output of said low pass filter to said input terminal with such a sense as to increase the depth of coring with a shift of said low pass filter output in the black direction and to decrease the depth of coring with a shift of said low pass filter output in the white direction.

4,437,125

DIGITAL SIGNAL PROCESSING METHOD AND APPARATUS

Kaichi Yamamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,450
Claims priority, application Japan, Oct. 27, 1980, 55-150421
Int. Cl.³ H04N 5/785
U.S. Cl. 358—167 **14 Claims**



1. A method of assigning a control value having one of two complementary states to a transmitted digital signal arranged in blocks of digital data and having a control signal with one of two complementary states at a predetermined location in each such block to identify the respective block as being of an odd type or an even type, comprising

detecting errors occurring in said control signal;

sampling and storing the control signal, beginning at periodic times when said blocks are expected to change over from one of said odd and even types to the other thereof, for a plurality of said blocks where the control signal therein is detected to be free of errors;

judging whether there is a majority of blocks in which a sampled and stored control signal has one or the other of said complementary states;

providing as said control value an identifying signal whose state is determined by the state of the judged majority of the blocks; and

following a subsequent such periodic time and until a majority of blocks in which a sampled and stored control signal has one or the other of said complementary states is judged, providing as said control value a supplemental identifying signal based on a previously determined identifying signal.

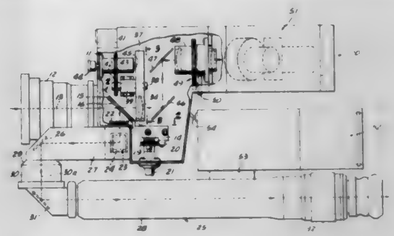
4,437,126

ELECTRONIC CINEMA CAMERA

Robert E. Gottschalk, Los Angeles, Calif., assignor to Panavision, Incorporated, Tarzana, Calif.

Filed Jul. 20, 1981, Ser. No. 285,157
Int. Cl.³ H04N 5/30
U.S. Cl. 358—224 **9 Claims**

1. A camera device for electronic cinematography comprising, in combination: a housing, an objective lens assembly supported on said housing and having an optical axis, a movable device having a mirror and a partial mirror and a transparent glass mounted thereon and positioned in substantially the same plane at an angle to said optical axis, means for moving said device in a direction at right angles to said optical axis to bring either of said mirrors or said transparent glass into alignment with said optical axis, a viewfinder eyepiece assembly pivotally mounted on said housing to turn about a horizontal axis, said assembly having elements positioned to receive light from either said mirror or said partial mirror, a fixed mirror in said housing positioned at an angle to said optical axis, a televi-



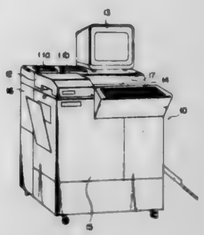
sion camera, and a movable iris device optically interposed between said fixed mirror and said television camera.

4,437,127

DOCUMENT INFORMATION FILING SYSTEM

Kenji Hirose, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 27, 1981, Ser. No. 315,656
Claims priority, application Japan, Oct. 31, 1980, 55-153274
Int. Cl.³ H04N 1/22
U.S. Cl. 358—296 **11 Claims**



1. A document information filing system comprising:

a scanner for scanning a document to produce a document information;

recording and reproducing means for recording and reproducing document information and title information corresponding to the document information in and from a recording medium;

means for providing title information concerning document information to be newly recorded in said recording medium;

a storage section for storing various management information for predetermined fields; and

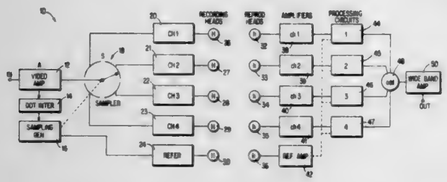
deciding means for executing an auxiliary decision as to if the title information reproduced by said recording and reproducing means corresponds to a title information in the various management information in said storage section, a first decision as to if the title information provided by said coupling means corresponds to a title information in any of the various management information in said memory section and a second decision as to if particular information of the title information reproduced by said recording and reproducing means coincides with particular information of the title information provided from said title information providing means and providing an instruction to inhibit the recording of document information when at least one of said auxiliary decision and said first decision is unsatisfied and/or said second decision is satisfied.

4,437,128

SYSTEM AND METHOD OF RECORDING AND REPRODUCING WIDE BAND CHANNEL INFORMATION BY MEANS OF SEVERAL NARROW BAND CHANNELS

Mechislao Sapkowski, Caracas, Venezuela, assignor to Manfred Fred Honeck, Novato, Calif., a part interest

Filed Dec. 2, 1980, Ser. No. 212,243
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—335 **25 Claims**



1. A method of recording and reproducing wide band channel information signals by means of several narrow band channels, comprising the steps of:

receiving said wide band channel information signals;

sampling said received wide band channel information signals so as to derive a plurality of narrow band channel signals;

recording and reproducing said plurality of narrow band channel signals to obtain a corresponding plurality of reproduced narrow band channel signals;

shaping each of said plurality of reproduced narrow band channel signals to obtain corresponding shaped output signals; and

combining said corresponding shaped output signals so as to recover and reproduce said wide band channel information signals;

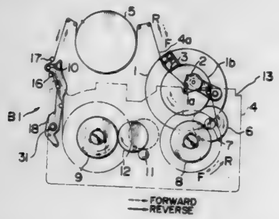
wherein said shaping step comprises limiting said plurality of reproduced narrow band channel signals to provide corresponding limiter outputs, discriminating said limiter outputs to provide discriminator outputs, and shaping and time-centering said discriminator outputs to obtain said corresponding shaped output signals.

4,437,129

MAGNETIC RECORDING AND REPRODUCING APPARATUS ENABLING TAPE TRANSPORT IN THE FORWARD AND REVERSE DIRECTIONS

Masashi Yoshida, Ibaraki; Hajime Yokota, Katsuta; Mitsuji Aman, Mito, and Tatsuya Shigemura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,400
Claims priority, application Japan, Jul. 9, 1980, 55-92780
Int. Cl.³ G11B *15/66*
U.S. Cl. 360—85 **4 Claims**



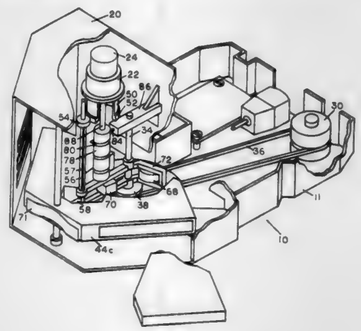
1. A magnetic recording and reproducing apparatus having an idler mechanism, for rotating a first and second reel mounts with a predetermined torque to pull out a magnetic tape extending between a first reel and a second reel into a predetermined tape path and take up a magnetic tape pinched and driven by a capstan and a pinch roller onto said first reel mount, first braking force applying means for applying a predetermined braking force to said second reel mount and a second braking force applying means for applying a predetermined braking force to said first reel mount, comprising a single electromagnet operatively coupled to said idler mechanism and said first and second braking force applying means such that when a plunger of said electromagnet is at a first position the drive of said reel mounts by said idler mechanism and the brake of said first braking force applying means are released while the brake to said first reel mount by said second braking force applying means is enabled, and when said plunger of said electromagnet is in a second position the drive of said reel mount by said idler mechanism and the brake by said first braking force applying means are enabled while the brake by said second braking force applying means is released.

4,437,130

CASSETTE ADAPTER FOR EIGHT TRACK MACHINES

John B. Hennessy, 1232 Albert Dr., Santa Rosa, Calif. 95405, and Derek Lane, 738 Dexter St., Santa Rosa, Calif. 95404

Filed Dec. 18, 1981, Ser. No. 332,082
Int. Cl.³ G11B *5/008*
U.S. Cl. 360—94 **6 Claims**



1. An adapter for an eight track stereo system comprising:

a body, including a flat transfer housing to be received in an eight track tape player, and a cassette housing;

at least two vertically aligned cassette receivers pivotally mounted in said cassette housing;

a transfer wheel in said transfer housing adapted to engage the conventional drive capstan of an eight track system;

an upright capstan in said cassette housing;

rotary motion transmitting means connecting said transfer wheel and said upright capstan;

a pick-up head carrier with at least one pick-up head thereon mounted for vertical movement in said cassette housing;

means for moving said carrier into alignment with a selected one of said cassette receivers; and

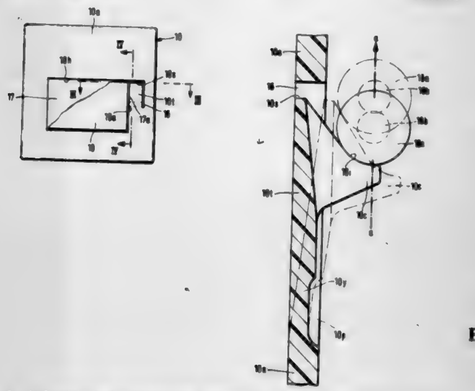
means for pivoting a selected one of said cassette receivers into operative association with said upright capstan and said pick-up head.

4,437,131

LOCKING DEVICE FOR THE TAPE CASSETTE COMPARTMENT OF A MAGNETIC TAPE APPARATUS

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 333,915
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048790
Int. Cl.³ G11B *1/00*
U.S. Cl. 360—96.6 **9 Claims**



1. A locking device for the tape cassette compartment of a magnetic tape apparatus intended for storing and reproducing information, which cassette compartment is mounted on a chassis of the tape apparatus to be pivotable outwardly by the action of a preloaded spring, on a pivot axis which is parallel and proximate to a longitudinal side wall of the cassette compartment, the cassette compartment being arranged in the aperture of a flat front wall of the apparatus which is parallel to the chassis and has an outer surface in the same plane as the outer surface of the cassette compartment in its normal position, the chassis carrying a detent slide which is provided with a detent member and guided for straightline movements perpendicular to the pivot axis of the cassette compartment and parallel to the plane of the front wall, said detent member engaging a detent shoulder of the cassette compartment to maintain the later in its normal position, being disengageable from the detent shoulder through a release movement of the detent slide in opposition to the action of a detent return spring, the improvement therein comprising:

a detent release button defined by a portion of the front wall which is separated from the surrounding front wall along a major part of its circumference, the attached minor part of its circumference forming a bending hinge, so that a distal portion of the detent release button is depressible toward the inside of the apparatus; and

means defined by the depressible portion of the detent release button and the detent slide for driving the detent slide in a release movement, in response to a depression of the detent release button.

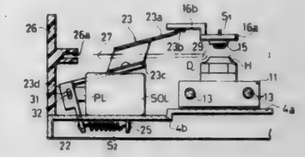
4,437,132

FLEXIBLE MAGNETIC DISK DEVICE

Motohiro Shimaoka, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,895
Claims priority, application Japan, Oct. 7, 1980, 55-142220[U]
Int. Cl.³ G11B *5/48*
U.S. Cl. 360—105 **3 Claims**

1. In a flexible magnetic disk device wherein a magnetic head and a loading pad opposing thereto are disposed on a carriage in a manner to hold therebetween a magnetic disk loaded rotatably and to be movable radially of the magnetic disk and wherein the loading pad has its operation cntrolled by a supporting arm which is turned by a solenoid a prescribed amount within a plane perpendicular to the surface of the magnetic disk;



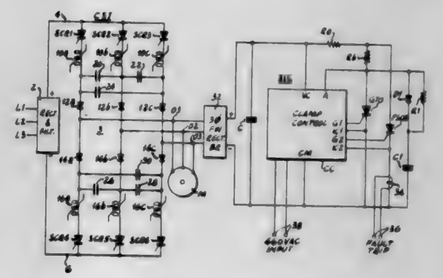
the improvement in that said solenoid is disposed with its axis being substantially parallel to the surface of said magnetic disk and that said supporting arm is juxtaposed to the disk surface along with said solenoid.

4,437,133

CURRENT SOURCE INVERTER COMMUTATION-SPIKE-VOLTAGE PROTECTION CIRCUIT INCLUDING OVER-CURRENT AND OVER-VOLTAGE PROTECTION

Barry J. Rueckert, New Berlin, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 24, 1982, Ser. No. 381,265
Int. Cl.³ H02H *7/09*
U.S. Cl. 361—33 **7 Claims**



1. In an adjustable frequency A.C. motor control system having a solid state inverter supplied by adjustable D.C. voltage for applying adjustable frequency current to the A.C. motor input terminals and said inverter having low voltage power devices for switching the current into the motor phases and means for commutating the power devices in the proper order, and said switching causing large voltage transients or voltage spikes to be produced which would be impressed on the motor and which might damage the inverter power devices, the improvement comprising:

means for dissipating excess commutation energy so as to keep the voltage spikes at a controlled level comprising:

a spike voltage clamp circuit connected to said input terminals of the motor comprising:

resistor means for dissipating the commutation energy;

a turn-on turn-off switching device for connecting said resistor means in circuit so as to perform its energy dissipating function each time it is needed and for disconnecting said resistor means therefrom when it has performed its function;

voltage storage means for storing the voltage appearing at said input terminals;

decoupling means between said input terminals and said voltage storage means for decoupling said resistor means from said input terminals whenever the voltage on said

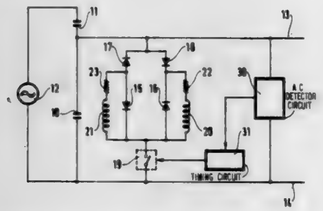
input terminals falls below the voltage on said storage means;
and clamp control means for sensing the voltage on said storage means and being responsive to a predetermined magnitude of voltage thereon for turning on said switching device to connect said resistor means in said circuit to limit said voltage and for turning off said switching device when said voltage has decreased to another predetermined value thereby to control said voltage spikes to a safe level.

4,437,134

DISCHARGE CIRCUIT FOR RAPIDLY ELIMINATING CHARGE TRAPPED IN A CAPACITOR VOLTAGE DIVIDER USED FOR MONITORING HIGH VOLTAGE AC

Jean-Pierre Dupraz, Aix-Les-Bains, France, assignor to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

Filed Nov. 5, 1981, Ser. No. 318,535
Claims priority, application France, Nov. 6, 1980, 80 23700
Int. Cl.³ H02H 7/16
U.S. Cl. 361—56 **4 Claims**



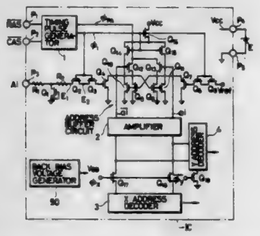
1. A discharge circuit for rapidly eliminating charge trapped in a capacitor voltage divider used for monitoring high voltage AC, said voltage divider comprising a capacitor column for dropping nearly all of the high voltage and a base capacitance connected in series therewith so that a small voltage appears thereacross, the improvement wherein said discharge circuit comprises a diode rectifier bridge comprising four diodes and connected by its AC terminals in parallel with the base capacitance, and two identical windings connected in parallel respectively with two of the diodes of the bridge, and both of said winding-shunted diodes being connected to the same one of the AC terminals of the diode bridge.

4,437,135

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Masahiro Ogata, and Osamu Sakai, both of Kodaira, Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 319,077
Claims priority, application Japan, Nov. 7, 1980, 55-155863
Int. Cl.³ H02H 9/04
U.S. Cl. 361—91 **22 Claims**



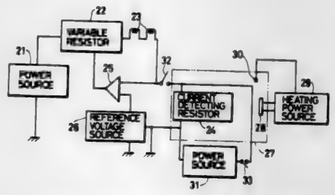
1. A semiconductor integrated circuit device comprising:
an external terminal to which an input signal is applied;
a first circuit node;
an insulated gate field effect transistor coupled to said external terminal and said first circuit node for transmitting the input signal applied to said external terminal via a drain-source path thereof to said first circuit node, a gate of said first insulated gate field effect transistor being connected to an output terminal of a pulse generator circuit generating a switch signal;
a resistance element inserted between said external terminal and said insulated gate field effect transistor; and
an input circuit coupled to the first circuit node to receive said input signal transmitted to said first input circuit node via said drainsource path of said insulated gate field effect transistor,
wherein said resistance element has a resistance value so set that when an abnormal surge voltage having a voltage level greater than a normal predetermined input signal voltage level is applied to said external terminal, said resistance element reduces a breakdown current flowing through a semiconductor junction of said insulated gate field effect transistor to a level lower than a breakdown current level that causes breakdown of a gate insulating film of said insulated gate field effect transistor.

4,437,136

ELECTROMAGNET

Etsuji Yamamoto, Hachioji; Kensuke Sekihara, Shinjuku, and Hideki Kohno, Suginami, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 389,075
Claims priority, application Japan, Jun. 24, 1981, 56-96699
Int. Cl.³ H01H 47/00
U.S. Cl. 361—146 **11 Claims**



1. An electromagnet comprising an electromagnet exciting coil, a current detecting means for detecting the current flowing through said coil, a control means for controlling the current supplied to said coil in accordance with the output from said current detecting means, and a heating means for heating said current detecting means, said electromagnet characterized in that said current detecting means is heated by said heating means when said electromagnet is not on working.

4,437,137

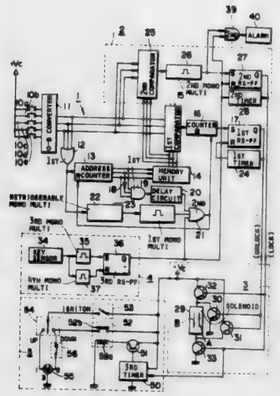
ELECTRONIC DOOR LOCKING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Haruo Mochida, Kiyokawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Sep. 30, 1982, Ser. No. 432,383
Claims priority, application Japan, Jan. 14, 1982, 57-3323
Int. Cl.³ H01H 47/00
U.S. Cl. 361—172 **5 Claims**

1. An electronic door locking system for an automotive vehicle for locking/unlocking vehicle doors, the vehicle being provided with vehicle devices, which comprises:
(a) a plurality of switches for outputting at least one predetermined door-locking octal coded digit and a sequence of predetermined door-unlocking octal coded digits;
(b) an octal-binary code converter connected to a plurality of said switches for converting the octal coded digits

inputted from said switches into the corresponding binary coded digits;
(c) an address counter connected to said octal-binary code converter for counting up a plurality of the binary-coded signals outputted from said octal-binary code converter whenever one of said switches is depressed and outputting an address-designation signal in response to the number of signals outputted from said octal-binary code converter;
(d) a memory unit connected to said address counter for outputting a previously stored binary coded signal in response to the address-designation signal outputted from said address counter;
(e) a first comparator connected to said octal-binary code converter and said memory unit for outputttting a signal when one of the binary coded door-unlocking signals outputted from said octal-binary code converter agrees with one of the binary coded door-unlocking signals outputted from said memory unit in response to the respective address-designation signal outputted from said address counter;
(f) a counter connected to said first comparator for outputting a signal when said first comparator outputs the predetermined number of binary coded signals;



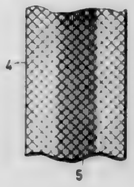
(g) a first reset-set flip-flop connected to said counter for outputting a door unlocking command signal when said first counter outputs the signal;
(h) a second comparator connected to said octal-binary code converter and said memory unit for outputting a signal when at least one binary coded door-locking signal outputted from said octal-binary code converter agrees with at least one binary coded door-locking signal outputted from said memory unit in response to the address-designation signal outputted from said address counter,
(i) a second reset-set flip-flop connected to said second comparator for outputting a door locking command signal when said second counter outputs the signal; and
(j) a door lock/unlock actuating solenoid connected to said first and second reset-set flip-flops for unlocking the vehicle doors when said first reset-set flip-flop is set and locking the vehicle doors when said second reset-set flip-flop is set; and
(k) means for actuating at least one vehicle device to its original disabled condition in response to the lock command signal generated from said second reset-set flip-flop.

4,437,138

FORCE SENSING MEANS AND METHOD OF PRODUCING SUCH SENSING MEANS

Klaus Nicol, Adelheidstrasse 13, D-6000 Frankfurt a.M.50, Fed. Rep. of Germany, assignor to Klaus Nicol, Frankfurt, Fed. Rep. of Germany

Filed Jul. 6, 1981, Ser. No. 280,515
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025362
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 **24 Claims**



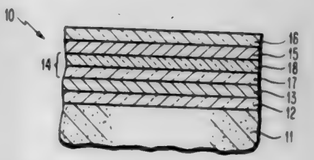
1. A force sensing means comprising a capacitor arrangement of at least two capacitor plates and one compressible dielectric between at least two of said capacitor plates, the improvement wherein the capacitor plates are a metallic cloth, the warp threads and the weft threads of which define an angle which yields to the influence of external forces, and the dielectric is a macroscopically homogeneous, foamed, elastomeric material.

4,437,139

LASER ANNEALED DIELECTRIC FOR DUAL DIELECTRIC CAPACITOR

James K. Howard, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,629
Int. Cl.³ H01G 3/075, 7/00; H01L 21/26
U.S. Cl. 361—313 **22 Claims**



18. A capacitor structure comprised of a dual dielectric between two electrodes wherein said dual dielectric comprises:
a first leakage current preventing dielectric layer adjacent a first one of said electrodes; and
a second dielectric layer between said first dielectric layer and a second one of said electrodes, said second dielectric layer being an amorphous thin film layer of a ferroelectric forming titanate or zirconate which is laser annealed to a crystalline ferroelectric.

4,437,140

PRINTED CIRCUIT DEVICE

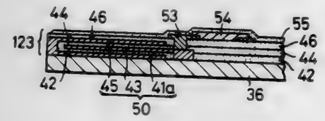
Sadahiro Ohyama, Chigasaki; Hiroshi Kato, Machida; Sadao Yaguchi; Mikito Baba, both of Yokohama, and Morikazu Okada, Atsugi, all of Japan, assignors to Mitsumi Electric Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 231,585, Feb. 3, 1981, abandoned, which is a continuation of Ser. No. 20,629, Mar. 14, 1979, abandoned. This application Oct. 12, 1982, Ser. No. 433,729

Claims priority, application Japan, Jun. 28, 1978, 53-77340; Jul. 10, 1978, 53-83785; Jul. 25, 1978, 53-90757; Aug. 14, 1978, 53-111304[U]; Nov. 22, 1978, 53-144886; Dec. 4, 1978, 53-149075; Dec. 4, 1978, 53-149074

Int. Cl.³ H05K *01/18*

U.S. Cl. 361—402 **9 Claims**



1. A printed circuit device comprising:

a ceramic base plate; and

a circuit pattern layer disposed on one surface of said base plate, said circuit pattern layer comprising a plurality of electric conductor layers and insulating layers in an alternate stacked laminar-arrangement, said

electric conductor layers and said insulating layers each having a predetermined pattern, a predtermined part of said circuit pattern being constituted by a first conductor layer, an intermediate conductor layer, a second conductor layer, a first insulating layer, and a second insulating layer,

said intermediate conductor layer being stacked adjacent said first insulating layer on one surface thereof and being stacked adjacent said second insulating layer on the other surface thereof, said first insulating layer being stacked with said first conductor layer, said second insulating layer being stacked with said second conductor layer,

said first and second insulating layers being connected and forming an insulating enclosure which is disposed around intermediate conductor layer in a cross section taken along a plane perpendicular to the surface of the base plate,

said first and second conductor layers being connected and forming a conductor enclosure disposed around said insulating enclosure in said cross section,

said intermediate conductor layer forming a conducting layer electrically connected to a power supply terminal mounted on said base plate,

said conductor enclosure forming an electric conductive layer for grounding,

said intermediate conductor layer being apropriately formed with narrow parts and wider parts in its extension,

coil parts being formed by said narrow parts, and capacitor parts being formed by said narrow parts, said wider parts, said insulating enclosure, and said conductor enclosure,

said coil parts cooperating with said capacitor parts so as to constitute the equivalent of a low-pass filter on only one surface of said base plate.

4,437,141

HIGH TERMINAL COUNT INTEGRATED CIRCUIT DEVICE PACKAGE

Jon S. Prokop, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 14, 1981, Ser. No. 301,698

Int. Cl.³ H05K *1/14*

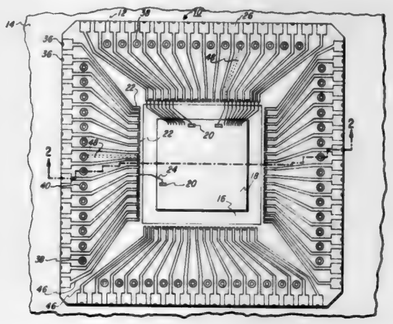
U.S. Cl. 361—403 **12 Claims**

1. A surface mounted high terminal count integrated circuit device package for solder attachment to a substrate comprising:

(a) a support member having a centrally disposed chip connect area, top and bottom surfaces and periphery forming sides and walls forming notches in the sides of said support member and a plurality of holes in said support member in preselected patterns adjacent to the notched periphery thereof;

(b) electrical metallizations on the walls of said notches and plurality of holes of the support member, said metallization of the notches forming metallized notches and said metallization of the holes forming cylindrically shaped electrical leads therethrough, said metallized notches and holes for forming solderable connections between the package and substrate;

(c) a plurality of wire bonding terminals selectively positioned on the support member adjacent said chip connect area;



(d) a plurality of trace conductors having first and second ends, said first ends electrically connected to said plurality of wire bonding terminals; and

(e) a plurality of expanded terminal pads mounted on the top and bottom surfaces of the support member, said expanded pads of the top surface electrically connected to the second ends of the trace conductors and together with the expanded pads of the bottom surface electrically connected to the notch and hole metallizations of the support member in open communication with the metallized notches and holes thereof whereby when the bottom pads are soldered to the substrate, solder rises up the open metallized notches and holes to form solder fillets therein for electrical connection of the substrate and for visual inspection thereof.

4,437,142

LIGHTING FIXTURE WITH SNAP REPLACEABLE BULB FEATURE

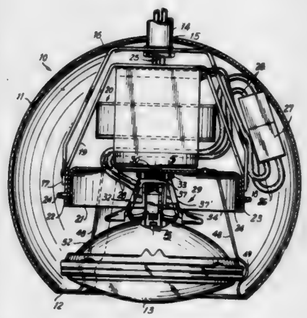
Anthony C. Donato, Westfield, and Neil Russo, Howell, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.

Filed Apr. 23, 1982, Ser. No. 371,077

Int. Cl.³ H01R *33/00*

U.S. Cl. 362—226 **8 Claims**

1. A lighting fixture for a PAR lamp or like bulb of the type which includes a shallow body having a convex rear surface including a rearwardly facing pair of generally flat metallic terminal strips, including portions arrayed in generally coplanar alignment perpendicular to the longitudinal axis of said bulb, said fixture comprising a reflector housing, a socket member mounted within said housing, said socket member including an insulating body portion having a transversely extending downwardly open cross channel, a pair of alignment wings formed from said body portion, each said wing having a undersurface portion merging with an opposite boundary of said channel, said undersurfaces being generally concave and converging upwardly and inwardly toward the geometric center of said channel, said wings together defining a funnel configuration leading into said channel, a pair of contact members recessed within said channel and adapted to be connected to a current source, said contact members each including a pair of spring finger portions, the finger portions of each pair being



disposed at opposite sides of said channel, cam means on said fingers positioned to coact with the terminals of said bulb for spreading the fingers of each pair responsive to upward movements of said terminal strips within said channel and retainer portions on said fingers positioned to enter behind said terminals strips and restrain said bulb after seating, against movement outwardly of said channel.

4,437,143

RETRACTABLE HEADLAMP ASSEMBLY FOR AUTOMOBILES

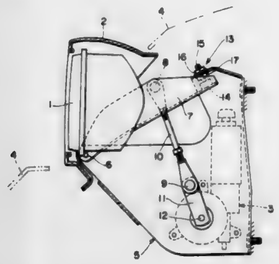
Motomu Hayashi, Okazaki; Atuo Ishikawa, Toyota, and Kazuyoshi Yukimoto, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 19, 1982, Ser. No. 369,366

Claims priority, application Japan, Apr. 22, 1981, 56-058383

Int. Cl.³ H01G *1/06*

U.S. Cl. 362—272 **3 Claims**



1. A retractable headlamp assembly for use on an automobile frame having a front hood, comprising:

a bracket adapted to be mounted on the automobile frame;

a headlamp pivotably mounted on said bracket;

a lamp link fixed to said headlamp;

a motor mounted on said bracket and having a rotatable shaft, said motor being de-energizable to stop said rotatable shaft within an angular interval between a normal stop position and an angularly displaced position which is angularly spaced through a slip angle from said normal stop position;

a link mechanism operatively connected to and extending between said lamp link and said rotatable shaft, said motor being energizable to cause said headlamp to be angularly moved through said link mechanism between a first position at which said headlamp projects out of the front hood and is turned on, and a second position at which said headlamp is retracted within said front hood and turned off; and

adjustable stop means for determining said first position in conformance with the slip angle of said angularly displaced stop position of said motor.

4,437,144

HEIGHT-ADJUSTABLE SUPPORT ARM WITH A PARALLELOGRAM LINKAGE

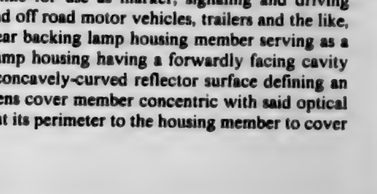
Werner Guenther, Bensheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,213

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 8121048[U]; Jul. 17, 1981, 8121076[U]

Int. Cl.³ F21V *21/28*

U.S. Cl. 362—275 **9 Claims**



1. A height-adjustable support arm comprising:

a stationary first articulated head connected to a mounting means for said support arm;

a second articulated head movable relative to said first articulated head;

a parallelogram linkage including and connecting said first and second articulated heads, said parallelogram linkage further including a tubular member forming a first leg of said parallelogram linkage and a rod slidably guided in said tubular member forming a second leg of said parallelogram linkage;

a support bar connected to said second articulated head having a free end to which a device to be supported is attached; and

a flexible sheathing completely surrounding and covering said second articulated head and said support bar, said sheathing having an exterior diameter substantially equal to the diameter of said tubular member and having one end connected to said tubular member and an opposite end connected to the supported device for permitting free movement of said second articulated head and said support bar within said sheathing.

4,437,145

SHOCK ABSORBING LAMP ASSEMBLY FOR BASELESS CARTRIDGE BULBS AND THE LIKE

Philip C. Roller, Ashville, and Chris A. Suckow, Frewsburg, both of N.Y., assignors to Truck-Lite Company, Inc., Falconer, N.Y.

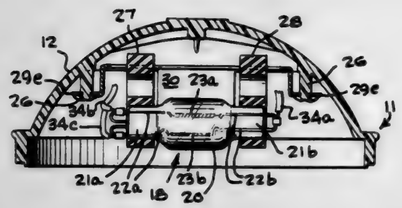
Filed Aug. 24, 1982, Ser. No. 410,957

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—306 **19 Claims**

1. A shock absorbing lamp assembly for baseless cartridge bulbs and the like for use as marker, signaling and driving lamps for on and off road motor vehicles, trailers and the like, comprising a rear backing lamp housing member serving as a reflector and lamp housing having a forwardly facing cavity bounded by a concavely-curved reflector surface defining an optical axis, a lens cover member concentric with said optical axis joined about its perimeter to the housing member to cover

said cavity, an elongated baseless cartridge lamp bulb having a longitudinal bulb axis in said cavity having a glass envelope providing a generally cylindrical central bulb portion concentric with said bulb axis housing filament wire and a pair of opposite generally flattened bulb end portions of smaller vertical dimensions than the diameter of the cylindrical central portion hermetically sealing about filament support pins so that the glass envelope of the bulb rigidly supports the internal and external portions of the filament support pins in fixed spatial relationship, a baseless cartridge-type bulb mount assembly defining forwardly extending substantially parallel arms and a rearwardly spaced interconnecting base portion embracing the flattened end portions of the bulb glass envelope and extending in a U-shaped path in top plan generally rearwardly toward said reflector surface from the bulb to support the same with said bulb axis disposed horizontally and transversely intersect-



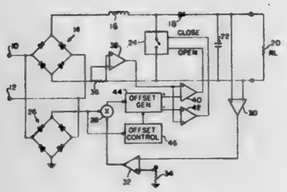
ing said optical axis, said concavely-curved reflector surface having anchor formations and means fixing said interconnecting base portion to said anchor formations, and said arms of said bulb mount assembly being forwardly projecting vertically and laterally flexible shock absorbing arms extending parallel to each other generally perpendicular to said bulb axis from said base portion formed of rubber-like material of about 60 durometer hardness, said shock mounting arms having terminal receiving apertures formed therein for receiving said flattened end portions of the baseless bulb in frictionally constrained relation therein and having integral unitary portions projecting rearwardly into reliably supported relation with said base portion positioning said arms in parallel vertical planes substantially maintaining the filament wire of said baseless bulb horizontally disposed in proper focal position with respect to said lens cover member.

4,437,146

BOOST POWER SUPPLY HAVING POWER FACTOR CORRECTION CIRCUIT

Ralph F. Carpenter, Seattle, Wash., assignor to Pacific Electro Dynamics, Inc., Redmond, Wash.

Filed Aug. 9, 1982, Ser. No. 406,164
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **17 Claims**



1. In a boost power supply having a diode-rectifying bridge, an inductor, diode and filter capacitor connector in series with said bridge, a shunting switch in parallel with the series combination of said diode and said filter capacitor, an improved power factor correction circuit comprising:

current-sensing means for generating a current-indicating signal indicative of the current flowing into said power supply circuit;

reference waveform generating means producing first and second reference waveforms, each a function of a sinusoidal voltage applied to said bridge, said first reference waveform being larger than said second reference waveform by a predetermined offset voltage; and

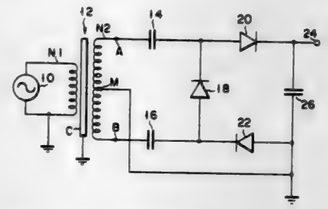
switch control means receiving said reference waveforms and the output of said current-sensing means for closing said shunting switch when the input current falls to said second reference waveform and for opening said shunting switch when said reference current rises to said first reference waveform.

4,437,147

RECTIFIER CIRCUIT

Yoshio Takamura, Yokahama, and Akira Nakajima, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 17, 1982, Ser. No. 379,042
Claims priority, application Japan, May 19, 1981, 56-75178; May 19, 1981, 56-75179; May 19, 1981, 56-75180; May 19, 1981, 56-75181; May 19, 1981, 56-75182; May 19, 1981, 56-75183
Int. Cl.³ H02M *7/10*
U.S. Cl. 363—61 **5 Claims**



1. A rectifier circuit comprising:

a transformer having a primary winding for connection to an AC signal source and a secondary winding having a grounded center tap and first and second ends;

a first capacitor having a first end connected to said first end of said secondary winding and a second end;

a first and second rectifiers, each having first and second ends, said second end of said first rectifier and said first end of said second rectifier being coupled to said second end of said first capacitor, said first and second rectifiers being connected in series in the same rectifying direction;

a second capacitor having a first end connected to said second end of said second rectifier and a second end;

a third rectifier coupling said second end of said second capacitor with said first end of said first rectifier, said third rectifier being in series circuit with said first rectifier in the same rectifying direction;

a third capacitor coupling a junction of said first and third rectifiers to said second end of said secondary winding; and

a DC power source connected to a node between said second capacitor and said third rectifier.

4,437,148

PEAK VOLTAGE CLAMPED POWER SUPPLY

Gabriel G. Suranyi, Rockaway, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,980
Int. Cl.³ H02P *13/26*
U.S. Cl. 363—89 **4 Claims**

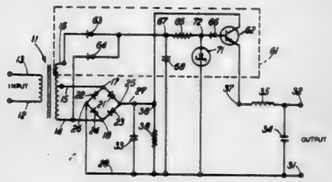
1. A circuit for efficiently stabilizing and limiting a direct current voltage at an output thereof comprising:

means for supplying a first full wave rectified voltage;

filter means for stabilizing and reducing the ripple of the first full wave rectified voltage;

a transistor having a collector terminal and an emitter terminal coupled in series with the filter means;

means, coupled to the transistor, for biasing the transistor to function in a lower power dissipating saturated mode over a greater portion of the expected operating range of the circuit when the output voltage of the circuit is less than a predetermined maximum and for biasing the transistor to function in a higher power dissipating unsaturated mode



over a lesser portion of said range when the output voltage of the circuit is substantially equal to the predetermined maximum; and

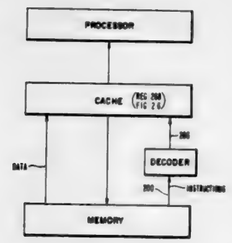
means for supplying a second full wave rectified voltage having a peak value different from the peak value of the first full wave rectified voltage; and wherein the biasing means includes a zener diode coupled to a base terminal of the transistor and, in series through a biasing impedance element, to the second full wave rectified voltage.

4,437,149

CACHE MEMORY ARCHITECTURE WITH DECODING

James H. Pomerene, Chappaqua, and Rudolph N. Rechtschaffen, Scarsdale, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,481
Int. Cl.³ G06F *9/30, 13/00*
U.S. Cl. 364—200 **11 Claims**



1. An information processing system including a central processor and a hierarchical memory system comprising:

at least one low speed, high capacity main memory having a relatively long access time and having a plurality of data pages stored therein,

at least one high speed, low capacity Cache memory means having a relatively short access time and adapted to store a predetermined plurality of subsets of the information stored in said main memory data pages, and

memory accessing control means for accessing data stored in said hierarchical memory system,

instruction decoding means located in a communication channel disposed between the main Memory and Cache memory for transferring data between said memories and operative in conjunction with the memory access controls to at least partially decode instructions being transferred from Memory to Cache, and

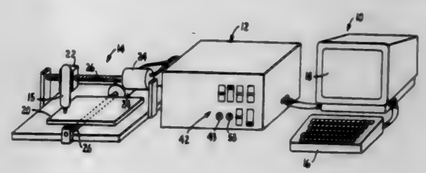
means for storing said instructions in the Cache in at least partially decoded form.

4,437,150

TOOL MANIPULATING METHOD AND APPARATUS FOR MULTIPLE JOB PROCESSING

William V. Dahlgren, Jr., 240 Dolores, Apt. 138, San Francisco, Calif. 94103; Lewis S. Silverstein, 695 Connecticut Ave., #4, San Francisco, Calif. 94107, and Edward W. Claire, 5332 Shafter Ave., Oakland, Calif. 94618

Filed Apr. 27, 1981, Ser. No. 257,559
Int. Cl.³ G05B *19/42*; B23Q *17/18*
U.S. Cl. 364—474 **21 Claims**



1. A method of manipulating a tool of the type in which a tool is positionally manipulated with respect to a workpiece and in accordance with dimensional and copy information supplied by a user, the dimensional and copy information originating from a plurality of separate and distinct jobs wherein the copy information includes a plurality of characters including the steps of

generating a plurality of position and control parameters which are based upon the user-supplied dimensional information;

generating a plurality of copy parameters which are based upon the dimensional information and the user-supplied copy information;

generating a job reference parameter for each job which is indicative of the physical location of the associated job on the workpiece;

transferring the control, position, copy and job reference parameters and the user-supplied copy information to a control means;

transforming the position, control and job reference parameters into drive signals wherein for each job the corresponding drive signals are referenced to the associated job reference parameter;

selecting master font instructions, from a master font memory within the control means, which selected master font instructions correspond to the characters in the user-supplied copy information wherein the master font memory stores a plurality of the master font instructions, each of which prescribes tool movements to produce one of a predesignated plurality of different characters;

modifying the selected master font instructions according to the copy parameters;

converting the modified master font instructions into drive signals wherein for each job, the corresponding drive signals are referenced to the associated job reference parameter;

transferring all drive signals to a tool manipulating means;

positioning the tool according to the position and job reference drive signals; and

manipulating the tool in accordance with the control and modified-copy instruction drive signals, so that each separate and distinct job is performed on the same workpiece.

9. An apparatus for manipulating a tool with respect to a workpiece in which a tool is manipulated by electronic means and in accordance with dimensional and copy information supplied by a user, the dimensional and copy information originating from a plurality of separate and distinct jobs the tool manipulating system comprising

an intelligent terminal for receiving the information from the user, and for generating control, position and copy parameters, the terminal including

means for generating a plurality of different dimensional layouts in accordance with the user-supplied informa-

tion, and for converting the generated layouts into control, position and copy parameters and for generating a job reference parameter for each job which is indicative of the physical location of the associated job on the workpiece;

a control unit, which is communicatively coupled to the intelligent terminal, the control unit receiving the control, position, job reference, and copy parameters and the copy information from the terminal, and supplying font information to the terminal, the control unit including

font memory means for supplying a plurality of master font definitions, each of which prescribes tool movements to produce one of a predesignated plurality of different characters;

processing means coupled to the font memory means for interpreting the position and control parameters, for selecting master font instructions from the master font memory which correspond to the characters within the user-supplied copy information, for modifying the selected master font definitions according to the copy parameters, and for generating drive signals in accordance with control, job reference, and position parameters and the modified master font definitions, wherein for each job the corresponding drive signals are referenced to the associated job reference parameter; and

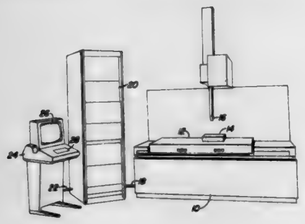
mechanical tool manipulating means responsive to the drive signals from the control unit, the mechanical tool manipulating means including the tool and means for manipulating the position of the tool in accordance with the drive signals, so that each separate and distinct job is performed on the same workpiece.

4,437,151

COORDINATE MEASURING MACHINE INSPECTION AND ADJUSTMENT METHOD

James J. Hurt, Bettendorf, and Susan K. Foss, LeClaire, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 16, 1982, Ser. No. 368,950
Int. Cl.³ G01C *25/00*
U.S. Cl. 364—571 **7 Claims**



1. A method for determining the alignment of axes of a coordinate measuring machine (CMM) having a probe movable along the axes, the method comprising the steps of:

(a) installing an artifact on the CMM, the artifact having at least two ends separated by a certain distance;

(b) moving the probe and at least one end of the artifact to a plurality of positions defined by the artifact so that the CMM generates a set of Cartesian coordinates cooresponding to said plurality of positions;

(c) generating a set of distance equations, each distance equation being for the distance between a first position and a second position where said first and second positions are defined by the artifact and wherein at least one of said first and second positions is represented by one of said set of Cartesian coordinates, each distance equation being in terms of the CMM generated coordinates, the certain distance and axis alignment error and scaling error factors to be determined;

(d) determining said error factors by solving said set of distance equations for said error factors; and

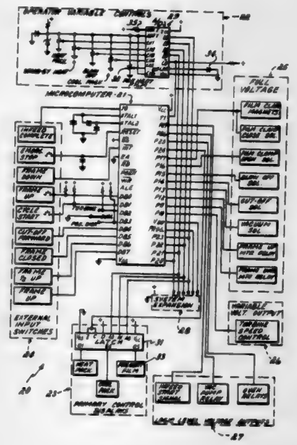
(e) adjusting the CMM according to the determined error factors.

4,437,152

CONTROL ARRANGEMENT FOR MULTIFUNCTION INDUSTRIAL MACHINE

Stephen H. Jones, LaFrance, S.C., assignor to Nordson Corporation, Amherst, Ohio

Filed May 8, 1981, Ser. No. 261,749
Int. Cl.³ G06F *15/46*; B65B *53/02*
U.S. Cl. 364—138 **4 Claims**



2. A method for controlling an industrial machine during an operational cycle and for monitoring a plurality of variable proportional control inputs comprising the steps of:

(a) recalling a maximum value for one of the control inputs;

(b) addressing the proportional control input corresponding to the recalled maximum value;

(c) determining the proportional setting of the addressed control;

(d) multiplying the determined proportion by the recalled maximum value to determine a proportional value;

(e) controlling the industrial machine in response to the said proportional value;

(f) repeating the steps (c) through (e) during at least a segment of the industrial machine operational cycle, whereby changes in said proportional setting will effect changes in machine control during at least said segment of the operating cycle.

4,437,153

APPARATUS CONTROL SYSTEM

Mituo Kamiyama, Tokyo, and Hirotoshi Namazue, Yokohama, both of Japan, assignors to Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,472
Int. Cl.³ G06F *15/46*; B60R *25/10*
U.S. Cl. 364—140 **4 Claims**

1. An apparatus control system, comprising:

an apparatus to be controlled;

a number presetter in the form of a switch board including a certain number of pushbutton switches for delivering a number code signal by depressing said pushbutton switches sequentially and selectively in a desired order;

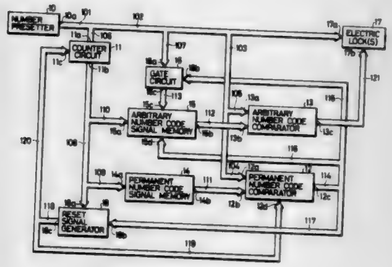
a first memory for storing a predetermined content representing a permanent code signal specifically selected beforehand for the said apparatus to be controlled;

a first comparator for comparing the permanent memory content in said first memory with a first code signal generated at and delivered by said presetter;

a second memory for storing an arbitrary number code;

a second comparator being activated by said first comparator upon a match between said first code signal and said permanent code signal and for comparing a second code signal generated by said number presetter with said arbitrary number code;

an address counter for delivering address signals to said first



and second memories upon reception of successive segments of said code signal fed from the presetter;

a first shift register for receiving output signals from the first comparator; and

a second shift register for receiving output signals from the second comparator;

said apparatus being brought into actuation or release upon reception of the presetter's output number code signal and the output signal from one of said shift registers only when there is concurrence of output signals of said first and second comparators.

4,437,154

DEVICE FOR GENERATING CONTROL SIGNALS WITH A PRIMARY CONTROL UNIT AND AN AUXILIARY CONTROL UNIT

Hermann Eisele, Schwieberdingen; Heinz Möller, Stuttgart, and Manfred Schmitt, Heppenheim-Oberhambach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,093
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031360
Int. Cl.³ G06F *15/46, 11/16, 15/16*
U.S. Cl. 364—187 **15 Claims**

1. A device for generating repeated control signals for an electrical consumer, the device having:

a primary control unit which is connected to generate a first control pulse signal;

an auxiliary control unit which is connected to generate a second control pulse signal;

wherein the auxiliary control unit and the primary control unit are connected to operate in parallel, and

wherein the second control pulse signal is phase shifted with respect to the first control pulse signal;

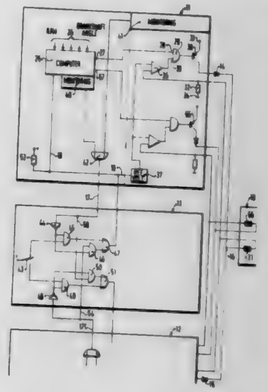
an electrical consumer which is connected to the primary and auxiliary control unit to receive continuously the first and second control pulse to regulate the electrical consumer;

a limiting unit to reduce the amplitude and/or pulse duration of the second control pulse signals of said auxiliary control unit;

an error recognition circuit connected to detect errors of the primary control unit;

a switchover device connected to the error recognition circuit, the primary control unit and the auxiliary control unit; and

upon detection of errors by the error recognition circuit, the switchover device, at switchover instant, causes the limiting unit to reduce the amplitude and/or pulse duration of



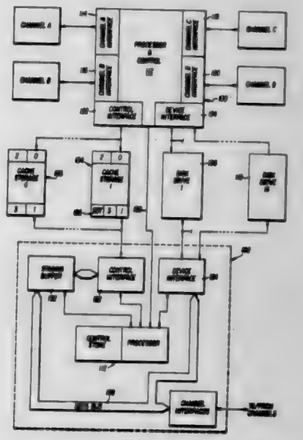
the first control pulse signals rather than the second control pulse signals, whereby the second control pulses regulate the electrical consumer.

4,437,155

CACHE/DISK SUBSYSTEM WITH DUAL AGING OF CACHE ENTRIES

Daniel D. Sawyer, Roseville, and Marvin J. Thompson, Anoka, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 207,059
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system including a host processor for issuing addressing signals specifying data to be accessed, a mass memory, a cache store for storing segments, and a segment descriptor table for storing segment descriptors, there being a segment descriptor associated with each data segment in said cache store and including age information defining, from the most recently accessed to the least recently accessed, the relative lengths of time since each associated data segment has been accessed, the system including means for transferring to said mass memory the least recently accessed segments in

said cache store in order to make room for more data segments, the improvement comprising:

means connected to said host processor, said mass memory and said cache store for transferring from said mass memory to said cache store not only a data segment containing data specified by said addressing signals but not resident in said store, but also a number of additional segments; and,

age modifying means for modifying said age information in said segment descriptors each time data segments are transferred from said mass memory to said cache store to produce modified age information, said modified age information indicating that the data segment containing the data specified by said addressing signals is the most recently accessed data segment, and indicating that said number of additional segments have an age intermediate the most recently accessed and the least recently accessed.

4,437,156

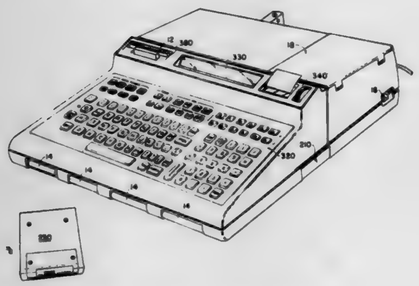
PROGRAMMABLE CALCULATOR

Chris J. Christopher; Fred W. Wenninger; Donald E. Morris; Wayne F. Covington; Jerry B. Folsom; Joseph W. Beyers, all of Loveland; John H. Nairn, and Jeffrey C. Osborne, both of Longmont, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 31,341, Apr. 19, 1979, abandoned, which is a continuation of Ser. No. 835,371, Sep. 21, 1977, abandoned, which is a division of Ser. No. 638,381, Dec. 8, 1975, Pat. No. 4,075,679. This application Jan. 21, 1981, Ser. No. 227,019

Int. Cl.³ G06F *9/06, 9/40, 3/023*

U.S. Cl. 364—200 **4 Claims**



1. An electronic calculator comprising:

keyboard input means for entering one or more lines of one or more alphanumeric statements each into the calculator;

memory means for storing alphanumeric information, including one or more programs, each program comprising a plurality of lines of one or more alphanumeric statements entered from the keyboard input means;

processing means, coupled to said keyboard input means and said memory means, for processing a said program of lines of one or more alphanumeric statements stored in said memory means;

output display means, coupled to said processing means, for visually displaying alphanumeric information, including the results of alphanumeric statements processing by said processing means, to a user; and

magnetic tape reading and recording means for transferring alphanumeric information between the memory means and an external magnetic tape;

said keyboard input means including record memory control means for initiating the recording of the contents of said memory means onto said external magnetic tape and load memory control means for initiating the loading of the previously recorded contents of said memory means back into said memory means;

said processing means including logic means responsive to actuation of said record memory control means, during processing of a program stored in said memory means, for halting processing of that program and for causing the contents of said memory means to be recorded onto said external magnetic tape, said logic means thereafter being responsive to actuation of said load memory control means for causing the previously recorded contents of said memory means then stored on the external magnetic tape to be loaded into said memory means, said logic means being operative, following loading into the memory means of the previously recorded contents of said memory means, for causing said processing means to commence processing of the program, processing of which was halted in response to actuation of the recorded memory control means, at the point in said program at which processing was halted.

4,437,157

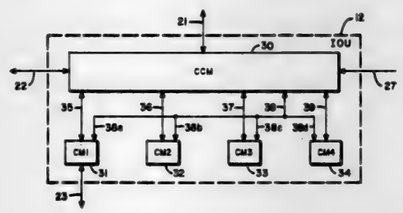
DYNAMIC SUBCHANNEL ALLOCATION

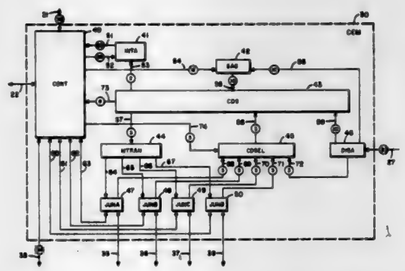
Jerome J. Witalka, Minneapolis; Duane G. Kurth, Anoka, and David J. Baber, Shoreview, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 926,483, Jul. 20, 1978. This application Apr. 20, 1981, Ser. No. 255,585

Int. Cl.³ G06F *3/00, 3/04*

U.S. Cl. 364—200 **2 Claims**





1. In a computer with means for initializing the operation of said computer and with an Input/Output unit having a plurality of Input/Output channels wherein one or more of said Input/Output channels is each capable of maintaining a plurality of independent asynchronous buffered Input/Output transfers and having a controller capable of controlling said plurality of asynchronous buffer Input/Output transfers through the use of a plurality of Input/Output subchannels wherein each of said plurality of independent asynchronous buffered Input-/Output transfers is controlled through the use of a different one of said plurality of Input/Output subchannels, the improved apparatus for allocating each of said plurality of Input-/Output subchannels to one of said plurality of Input/Output channels and for conducting buffered Input/Output transfers operative in accordance with Externally Specified Indexing (ESI), an improvement to such apparatus according that each of a plurality of Input/Output subchannels—each said Input-/Output subchannels being a designation of the hardware resource, specifically the Buffer Control Words (BCWs) contained within I/O General Register (IGR), which designated resource is dedicated to the control of communication upon an Input/Output channel with a corresponding one of a plurality of peripheral devices which share said Input/Output channel—are allocable, meaning assignable, to each of a plurality of Input/Output channels—each said Input/Output channel being a bandwidth limited physical communication path between said Input/Output apparatus and a multiplicity of peripheral devices,—said inprovement comprising:

random access memory means, called a Channel Descriptor Stack (CDS), for storing an allocation of each of said plurality of Input/Output channels to a one of said plurality on Input/Output subchannels, wherein said storing means has a one addressable location corresponding to each of said plurality of Input/Output subchannels:

loading means, called a System Support Processor (SPS), for entering said allocation of each of said plurality of Input-/Output channels to said one of said plurality of Input-/Output subchannels into said storing means; and

control means responsively coupled to said storing means for causing each of said buffered Input/Output transfers as occur upon each of said plurality of Input/Output subchannels to physically transpire upon said allocated one of said plurality of Input/Output channels;

whereby said hardware resource associated with each said Input/Output subchannels, which resource is dedicated to the control of communication upon an Input/Output channel, is allocated, meaning distributed, in accordance with said stored allocation to a one of said bandwidth limited physical I/O channel communication paths;

whereby the designation of hardware resource within an Input/Output apparatus operative in accordance with Externally Specified Indexing is allocated, meaning distributed, to ones of bandwidth limited physical I/O channel communication paths in accordance with stores within a random access memory means for storing.

4,437,158

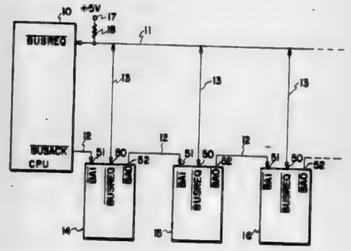
SYSTEM BUS PROTOCOL INTERFACE CIRCUIT

Peter H. Alfke, Los Altos Hills; Krishna Rallapali, San Jose, both of Calif., and David MacMillan, Boston, Mass., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 28, 1981, Ser. No. 306,453

Int. Cl.³ G06F *3/02, 9/18*

U.S. Cl. 364—200 **5 Claims**



1. In a computer system having a central control unit and a plurality of peripheral units all being coupled to a common bus, each of said peripheral units being further coupled in parallel to said central control unit by a bus request line through a respectively comprised bus request line terminal for requesting the central control unit for control of said bus and each of said peripheral units being further coupled in series to said central control unit by a bus acknowledgement line to said central control unit through a respectively comprised bus acknowledgement line input terminal for receiving from said central control unit a bus acknowledgement signal granting access to said bus in response to a bus request, and through a respectively comprised bus acknowledgement line output terminal for relaying said received signal to subsequent peripheral units only when it has not requested bus control or when it has initiated an outstanding bus control request and also has finished accessing the bus in response to said received signal, an interface circuit associated with each peripheral unit, respectively for preventing a bus request conflict between said peripheral units, said associated interface circuit respectively comprising:

logic means coupled to said bus acknowledgement line input terminal as a respectively associated peripheral unit and to said bus acknowledgement line output terminal of said respectively associated peripheral unit for generating a combinatorial logic output signal responsive to the signals on said bus acknowledgement line input and output terminals, and;

latching means coupled in series between said bus request line and said bus request line terminal of said respectively associated peripheral unit, and further connected to the output of said logic means and said bus acknowledgement line output terminal of said respectively associated peripheral unit, for latching itself into a first state in response to a bus request from said respectively associated peripheral unit and for unlatching itself from said first state when the associated peripheral unit has received said but acknowledgement signal if said associated peripheral unit has not initiated any outstanding bus control request, and when the associated peripheral unit has received said bus acknowledgement signal and also has finished accessing said bus in response to said received bus acknowledgement signal if said associated peripheral unit has initiated said outstanding bus control request,

(1) the latching into said first state by anyone of said latching means causes all other latching means to be also latched into said first state,

(2) a bus request signal is maintained over said bus request line as long as any of said latching means is latched in said first state,

(3) said central control unit discontinues said acknowledgement signal over the bus acknowledgement line only when all of said latching means have been respectively unlatched, and

(4) in response to said acknowledgement signal from the central control unit, all latching means latched in said first state are sequentially unlatched in corresponding order of the respective time of receipts of said acknowledgement signal by their respectively associated peripheral units.

4,437,159

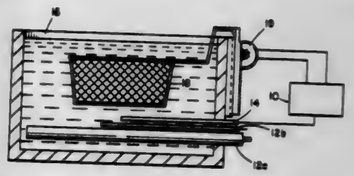
COOKING COMPUTER

Gerald F. Waugh, Shreveport, La., assignor to The Frymaster Corporation, Shreveport, La.

Filed May 15, 1981, Ser. No. 264,173

Int. Cl.³ G06F *15/46;* H05B *1/02*

U.S. Cl. 364—400 **17 Claims**



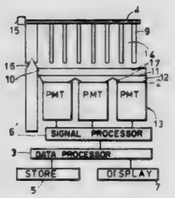
11. A deep fat fryer comprising a frypot having heating means located therein for heating shortening to a preselected cooking temperature, means independent of said heating means for sensing a temperature of said shortening in said frypot, means for storing a cooking time, a means for timing a cooking

cycle of a product within said shortening using said cooking time and periodically adjusting said cooking time by applying a time compensation factor to compensate for deviations of said sensed temperature from said preselected temperature, the magnitude of said periodic adjustments being proportional to said time compensation factor and said deviation, means for storing a signal determinative of the magnitude of said time compensation factor for a given temperature condition, and means for providing a termination signal indicative of the termination of a cooking cycle.

4,437,160
PHOTON EMISSION IMAGING APPARATUS AND METHOD

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Filed Jul. 31, 1980, Ser. No. 173,962
Int. Cl.³ G01T *1/20*
U.S. Cl. 364—414 **14 Claims**

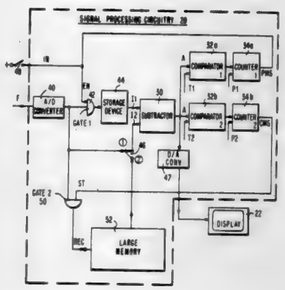


1. A system for imaging a distributed source emitting photons with scintillation means in the path of said photons to provide light indications and a plurality of photodetector means viewing said light indications in said scintillation means comprising: signal processing means connected to said photodetector means for processing photodetector signal responses to said light indications; data processing means; data storage means; connecting means interconnecting said signal processing means with said data processing means and said storage means; said storage means is for storing known source location data and a plurality of response data generated from said photodetector means when said scintillation means was engaged by emissions from sources in known locations; said data processing means including means for comparing response data from a source in an unknown location with said stored response data from sources in known locations to determine degree of matching and thereby the location of the unknown source from the stored known source location data of the matching stored response data when and if an acceptable correlation is found; calibration means for providing to said storage means said plurality of response data from sources in known locations including, (a) calibration radiation source means so disposed as to irradiate said scintillation means at a plurality of locations simultaneously, (b) a first approximate locating means for recording a first approximate location of each calibration response data on the basis of the relative position of each photodetector means and the signal thereon, (c) center locating means for analyzing a plurality of first approximate locations from a plurality of calibration radiations to determine the locations of a plurality of centers of concentrations of said first approximate locations when calibration scintillations are not uniformly distributed in said scintillation means, (d) a second approximate locating means for recording a second approximate location of each calibration response data to correspond to the location of that center which is in closest proximity to said first approximate location, and selection means for optionally discarding certain of the response data on the basis of their differences from other response data sharing a common location.

4,437,161
MEDICAL IMAGING APPARATUS

William Anderson, Glenview, Ill., assignor to Siemens Gammasonics Inc., Des Plaines, Ill.

Filed Jun. 29, 1981, Ser. No. 278,481
Int. Cl.³ G06F *15/42*; H04N *5/14*
U.S. Cl. 364—414 **14 Claims**



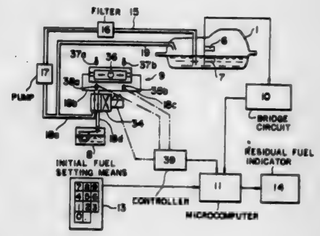
1. In a medical imaging apparatus containing
means for detecting radiation emitted from an object under examination,
means associated with said detecting means for forming an imaging signal from said radiation, said imaging signal being composed of a sequence of individual image signals each representing an individual radiation image of said object under examination and said imaging signal containing a first individual image signal and second individual image signals following said first individual image signal;
signal processing means for processing said imaging signal and for forming a display signal thereof, and
display means for receiving said display signal and for displaying a sequence of images of said object under examination,
the improvement wherein said signal processing means comprises
storage means for storing said first individual image signal, thereby forming a reference image signal;
subtracting means for subtracting said reference image signal from each of said second individual image signals, thereby forming a difference imaging signal composed of a sequence of individual difference image signals; and
monitoring means receiving said difference image signal for determining whether a portion of each of said second individual image signals is different from said reference image signal, said monitoring means issuing a change-of-image signal indicative of a change of image intensity distribution.

4,437,162
RESIDUAL LIQUID METER USING COMPUTER RESPONSIVE TO MEASUREMENTS OF LIQUID LEVEL AND FLOW

Yoshiaki Kato, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Apr. 13, 1981, Ser. No. 253,884
Claims priority, application Japan, Apr. 14, 1980, 55-49339[U]
Int. Cl.³ G01M *13/26*
U.S. Cl. 364—442 **13 Claims**

1. A residual-fuel meter for an automotive vehicle, which comprises:
(a) initial fuel setting means for presetting the initial quantity of fuel within the fuel tank;
(b) consumed-fuel measuring means for measuring the fuel consumed from the fuel tank;
(c) a microcomptuer for storing the quantity of initial fuel preset by said initial fuel setting means and the quantity of consumed fuel measured by said consumed fuel measuring means and for calculating the quantity of residual fuel by subtracting the consumed fuel quantity from the initial fuel quantity; and
(d) a residual fuel indicator for displaying the residual fuel quantity calculated by said microcomputer;
said consumed-fuel measuring means for measuring the fuel consumed including a ball oscillation flow meter comprising:
(a) a cylinder bore;

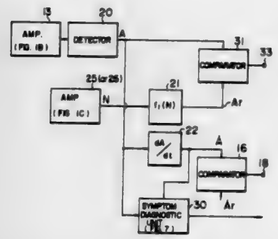


(b) a ball movably disposed within said cylinder bore, the specific gravity of said ball being almost the same as that of the fuel, said ball being moved in the same direction as that of fuel flow;
(c) a pair of position sensors including light-emitting elements and light-receiving elements for respectively deriving signals whenever said ball blocks the light emitted from said light emitting elements at either end of said bore;
(d) a two-way valve for reversing the direction of fuel flow in response to the signals derived by said position sensors; and
(e) a counter for counting the number of the signals from said position sensors to measure the quantity of flow.

4,437,163
METHOD AND APPARATUS FOR SYMPTOM DIAGNOSIS BY MONITORING VIBRATION OF SHAFT OF ROTARY MACHINE

Nobuo Kurihara, Hitachiota; Yasuo Morooka; Mitsuyo Nishikawa, both of Hitachi; Kiyoshi Miura, Ibaraki, and Yoshitoshi Nagahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 248,846
Claims priority, application Japan, Mar. 31, 1980, 55-40322
Int. Cl.³ G01P *15/00*
U.S. Cl. 364—508 **21 Claims**

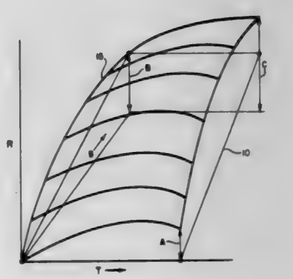


1. A method of symptom diagnosis by continuously detecting vibration of the shaft of a rotary machine and monitoring a signal indicative of the detected shaft vibration for the diagnosis of the operating condition of the rotary machine, said method comprising:
establishing a predetermined safety region in which said detected shaft vibration signal is indicative of a relatively low level permitting continuous operation of the rotary machine;
monitoring the behaviour of said detected shaft vibration signal within said safety region; and
determining the presence of a symptom of unusual operation of the rotary machine on the basis of the result of monitoring of the behaviour of said detected shaft vibration signal within said safety region.

4,437,164
RIDGE CIRCUIT COMPENSATION FOR ENVIRONMENTAL EFFECTS

Howard R. Branch, III, Northfield, Conn., assignor to Bristol Babcock Inc., Waterbury, Conn.

Filed Mar. 5, 1981, Ser. No. 240,938
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—571 **85 Claims**



1. A strain gauge transducer circuit comprising:
first and second strain gauges;
at least one resistor, said resistor and said strain gauges being connected in series between the terminals of a power supply;
means for reading the voltage drops across each resistor and strain gauge; and
a computer to which are applied signals representative of the voltage drops across each resistor and strain gauge, said computer further comprising a processing unit and a memory unit, said memory unit containing a set of bridge completion constants which in conjunction with the signals representative of said voltage drops is used by the processing unit to calculate the output of a bridge circuit that contains said strain gauges and is compensated for zero point and span error at two temperatures.

4,437,165
OVERFLOW DETECTION FOR A DECIMAL ARITHMETIC UNIT

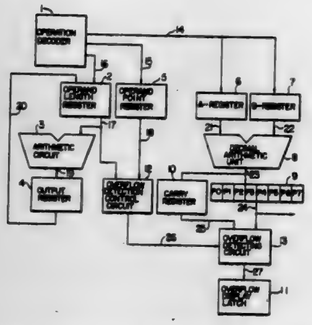
Osamu Onodera, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,167
Claims priority, application Japan, Jul. 11, 1980, 55-93950
Int. Cl.³ G06F *7/48*
U.S. Cl. 364—749 **5 Claims**

1. A data processing apparatus in which a decimal operation is effected by means of a decimal arithmetic unit having an operation width corresponding to a plurality of bytes, comprising:
(a) a first register for holding information on the length of an operand which is subjected to an arithmetic operation in said decimal arithmetic unit;
(b) a second register for holding a byte position which constitutes the least significant byte position for the arithmetic operation;
(c) control signal generating means coupled to said first and

second registers for producing a control signal in accordance with contents of said first and second registers; and

(d) overflow detecting means coupled to said decimal arithmetic unit and said control signal generating means for



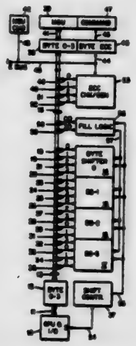
detecting presence of absence of an overflow by checking a value of a particular byte of the output of said decimal arithmetic unit which byte is designated by said control signal.

4,437,166

HIGH SPEED BYTE SHIFTER FOR A BI-DIRECTIONAL DATA BUS

Steven M. O'Brien, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,768
Int. Cl.³ G06F 7/00, 3/04
U.S. Cl. 364—900 **10 Claims**



8. A method of shifting a plurality of bytes of data on a bi-directional data bus of the type having a plurality of byte lines and input and output registers employing byte shifters of the type having a single buffer register for each byte comprising the steps of:

connecting each byte line of the data bus to a byte shifter of the type having an input port for each byte line,

enabling one of said input ports of each byte shifter,

storing the data byte being presented at the enabled input ports in the buffer register of each of the byte shifters, and

transferring the data bytes in the buffer registers of each of the byte shifters to a byte line of the data bus which is different from the byte line connected to the enabled input port.

4,437,167

MULTIPLE HALF-LINE SPACING ON A MINIATURE PAGE

Kent R. Demke, Austin, and Jerold D. Dwire, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,160
Int. Cl.³ G06F 3/14
U.S. Cl. 364—900 **5 Claims**

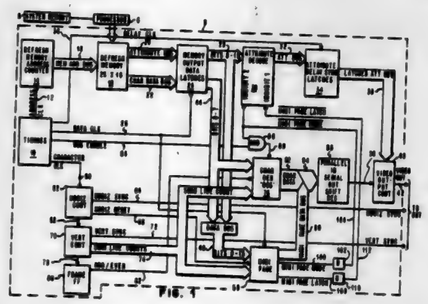


FIG. 1

1. In a processor driven word processing system including interface logic connecting a display, a display memory and a main memory, the improvement in said interface logic comprising:

means for providing for display on the display a video output data stream representative of an entire page of printed text to be produced by the system, said data stream comprising identical miniature character symbol constructs, said identical miniature character symbol constructs comprising a matrix having upper and lower halves said upper half being blank and said lower half being blank or not blank as a function of the value of a bit stored in the display memory indicative of the presence or absence of a character in said main memory; and

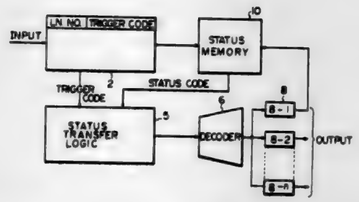
means responsive to a predetermined attribute bit in said display memory for displaying said miniature character symbol constructs with their upper and lower halves reversed for representing a half-line space between sequential lines of printed text or not.

4,437,168

COMMUNICATION CONTROL UNIT

Masahide Yamashita; Hikaru Oku, and Masato Maruyama, all of Yokosuka, Japan, assignors to Nippon Telegraph & Telephone Public Corp. of 1-6, Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 228,802
Claims priority, application Japan, Feb. 4, 1980, 55-12171
Int. Cl.³ G06F 3/00
U.S. Cl. 364—900 **14 Claims**



1. A communication control unit connected to a host computer and a plurality of terminals or between two host computers through communication lines including related lines having

interfaces and basic processors for communication control procedures and situations comprising:

(a) a status memory having a plurality of fields for each line, the fields including at least an instantaneous status of the communication lines, information of whether a transmission data link or a reception data link has been established between the host computer and the terminals or between two host computers, a count data of the repetition times of each basic process of the communication control procedures, a predetermined upper limit value of repetition times of each basic process, a transient count data of timer pulse count fields for a timer circuit's checking of predetermined upper limit values for time over check, and predetermined upper limit values for time over check;

(b) a timer circuit for updating the content of the timer pulse count fields in the status memory in every predetermined time period value, and providing trigger data when the content of any one of the timer pulse count fields reaches its own assoicated predetermined upper limit value for time over check in the status memory;

(c) a trigger data registration circuit for storing a set of information, including trigger data comprising a trigger code and a line number, the trigger data being provided from the host computer, the lines or the timer circuit according to the kind of trigger data;

(d) a status transfer logic for providing a predetermined operation code responding to the combination of the present status code in the status memory relating to the line indicated by the line number in the trigger data and the trigger code in the trigger data provided by the trigger data registration circuit;

(e) a memory having a fixed table for decoding the output of the status transfer logic and providing an operation code for each field relating to the status memory; and

(f) a plurality of basic processors operating each basic process of the communication control procedure according to the related field of the operation code provided from the memory having a fixed table and the output of the status memory and providing the outputs which are applied to the status memory, the host computer, and the related line interface, and said plurality of basic processors operating simultaneously with one another.

4,437,169

STAGE LIGHTING CONTROL SYSTEM

David R. Bertenshaw, Chertsey; Edwin P. Lockwood, Brentford, and Anthony R. Brown, London, all of England, assignors to The Rank Organisation Limited, London, England

Filed May 1, 1981, Ser. No. 259,678
Claims priority, application United Kingdom, May 1, 1980, 8014562
Int. Cl.³ G06F 3/05; H05B 37/02
U.S. Cl. 364—900 **7 Claims**

1. A stage lighting control system comprising

a main processor unit including a memory for storing information relating to the dimmer levels necessary to produce various lighting effects,

a portable controller having

a multiplicity of dimmer level control elements adjustable to define said information to be stored,

electrical contacts associated with each said control element and whose state is changed by adjustment of said control elements, said contacts being connected in a scanning circuit,

a local processor connected to the scanning circuit and having a memory programmed to cause the local processor cyclically to scan the control element contacts and detect changes of state therein,

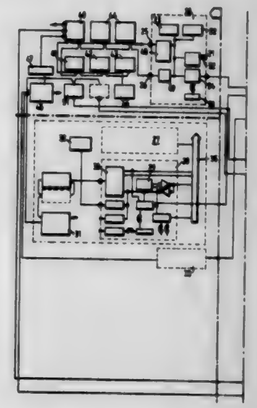
an address memory for storing address data relating to the memory in the main processor unit,

means for selecting address data from the address memory,

means for generating changed state data corresponding to the changed state of the contacts,

a multiplexer connected to said address selecting means and said changed state data generating means for producing a coded signal containing the selected address data and changed state data,

a display unit, and



mode selection means for selecting the writing of data from the portable controller to the memory of the main processor unit and the playback of information from the main processor unit to the display unit, and

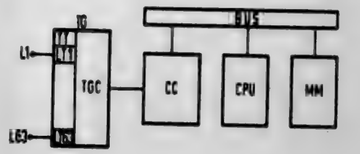
a low capacity cable link connecting the main processor unit with the portable controller for the transmission of the coded signal and display information therebetween.

4,437,170

METHOD AND CIRCUIT ARRANGEMENT FOR THE ACCEPTANCE AND TEMPORARY STORAGE OF DATA SIGNALS IN A SWITCHING SYSTEM

Gerhard Moschitz, Wolfratshausen, and Richard Schoonhoven, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,616
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3036034
Int. Cl.³ G06F 3/04
U.S. Cl. 364—900 **10 Claims**



1. A method for the acceptance and temporary storage of data signals supplied via line sections in a data switching system before processing or relaying of said data signals to other line sections, employing a data communication control to which the line sections are connected, said data communication control having a connection memory for storing starting addresses of memory areas, and a memory arrangement which allows memory areas to be made available to the line sections for data signal storage, comprising the steps of

supplying an address to the connection memory, which address is the starting address of the memory area which

is available for the acceptance and temporary storage of data signals supplied by a line section requesting data signal storage; and

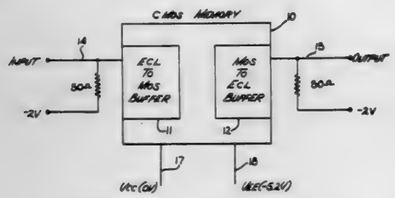
in response to the activation of a first memory area, supplying to the data communication control the starting address of the next available memory area allocated for the acceptance and storage of data signals supplied by the next requesting line section.

4,437,171

ECL COMPATIBLE CMOS MEMORY

Edwin L. Hudson, Santa Clara, and Stephen L. Smith, Sunnyvale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 7, 1982, Ser. No. 337,617
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—177 **18 Claims**



1. In a metal-oxide-semiconductor (MOS) circuit, a buffer for receiving a signal from an emitter-coupled-logic (ECL) circuit and for converting said ECL signal to an MOS compatible signal, comprising:

a comparator means for receiving said ECL signal and for comparing it with a predetermined reference potential;

level shifting means, coupled to said comparator means, for shifting the signal level resulting from said comparison;

amplification means for amplifying the signal shifted by said level shifter, said amplification means coupled to said level shifter; and,

reference potential means integral with said MOS circuit for generating said predetermined reference potential,

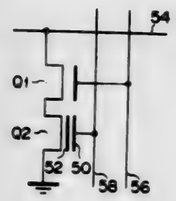
whereby said ECL signal is converted to an MOS compatible signal.

4,437,172

SEMICONDUCTOR MEMORY DEVICE

Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1981, Ser. No. 321,320
Claims priority, application Japan, Dec. 8, 1980, 55/172915; Dec. 8, 1980, 55/172916; Dec. 8, 1980, 55/172917; Dec. 20, 1980, 55/180953; Jul. 30, 1981, 56/119780; Jul. 30, 1981, 56/119781
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 **25 Claims**



1. A semiconductor memory device comprising:

a memory cell which has

a semiconductor region of first conductivity type having an impurity region of second conductivity type,

a first conductive layer formed on said semiconductor region with a first insulating film interposed therebetween,

a second conductive layer which is formed on said semiconductor region with a second insulating film interposed therebetween and which has a function of storing data, and

a third conductive layer which is formed on said second conductive layer with a third insulating film interposed therebetween and which is electrically insulated from said first and second conductive layers; and

means for discharging an electron from said second conductive layer by field emission which includes

first means for applying a voltage of high level for erasing data to said first conductive layer to erase the data, and

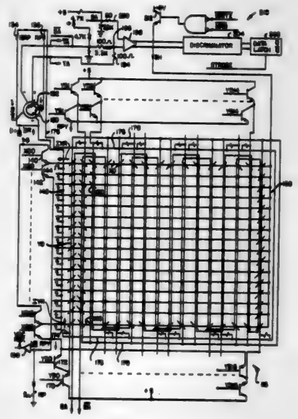
second means for applying a voltage of low level to said third conductive layer to erase the data.

4,437,173

CORE MEMORY CONTROLLED BY AUXILIARY CORE

Jules E. Canel, Granada Hills, and Thomas J. Gilligan, Rolling Hills Estates, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jul. 16, 1981, Ser. No. 284,133
Int. Cl.³ G11C *7/02*
U.S. Cl. 365—193 **18 Claims**



1. A core memory comprising:

a data storage stack including an array of data storage cores and a timing core coupled to receive substantially the same magnitude of drive current as a selected data storage core;

a timing core sensing circuit coupled to sense the switching signal output of the timing core and generate a feedback switching signal corresponding thereto as the timing core is switched by the drive current;

current drive circuitry coupled to drive a selected data storage core and the timing core with currents of sufficient magnitude to switch the cores from one state of magnetization to another in response to current command signals; and

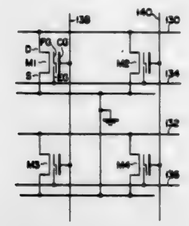
a timing and control circuit responsive to address and data commands and to the feedback switching signal for generating the current command signals required to switch selected data storage cores.

4,437,174

SEMICONDUCTOR MEMORY DEVICE

Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1981, Ser. No. 320,937
Claims priority, application Japan, Jan. 19, 1981, 56/6172; Jan. 19, 1981, 56/6173
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—218 **6 Claims**



1. A semiconductor memory device comprising:

a memory matrix having a plurality of memory cells arranged in a matrix form, each of said plurality of memory cells including

a semiconductor region of first conductivity type,

a source region and a drain region of second conductivity type,

an erase gate formed on said semiconductor region with a first insulating film interposed between said erase gate and said semiconductor region,

a floating gate which is formed on said semiconductor region with a second insulating film being interposed between said floating gate and said semiconductor region, said floating gate being capable of storing data and overlapping said erase gate, and with a third insulating film being interposed between said floating gate and said erase gate, and

a control gate which is formed on said floating gate with a fourth insulating film being interposed between said control gate and said floating gate and said control gate being insulated from said erase gate and said floating gate;

a row line commonly connected to said control gates of said memory cells of each row of said memory matrix;

a column line commonly connected to said sources or drains of said memory cells of each column of said memory matrix;

an erase line commonly connected to said erase gates of said memory cells of each column of said memory matrix;

first applying means for applying an erase voltage having a high level to said erase gate of said memory cell to erase data from said floating gate thereof, said memory cell being connected to said row line, said column line and said erase line which are selected;

second applying means for applying a voltage of a predetermined level to said selected column line to detect a data erasure condition of said memory cells which is selected;

means for inhibiting supply of said erase voltage when a current flowing through said column line is detected; and

third applying means for applying a voltage of low level to said selected row line when data is erased and when data erasure is detected.

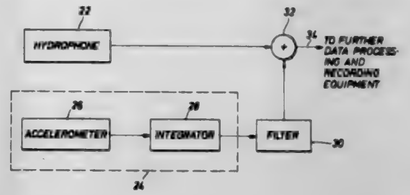
4,437,175

MARINE SEISMIC SYSTEM

Albert J. Berni, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 20, 1981, Ser. No. 323,631
Int. Cl.³ G01V *1/36, 1/38*
U.S. Cl. 367—24 **10 Claims**

1. A method of producing a seismic signal indicative of the substrata beneath a body of water, said method comprising the steps of: supplying acoustic energy to said body of water; sensing at a predetermined depth the pressure wave reflected from said substrata beneath said body of water and the secondary pressure wave caused by a secondary reflection of said pressure wave from the air-water interface and generating a first signal indicative thereof; sensing at said predetermined depth the particle velocity of the water accompanying said pressure wave reflected from said substrata and said secondary pressure wave and generating a second signal indicative thereof; filtering said second signal such that portions of said second signal that have a frequency that is less than a first



frequency are attenuated by said filtering to generate a third signal, said first frequency being less than a second frequency defined by the equation

$$f = C/2D$$

where

f: said second frequency,

C: wave propagation velocity for said body of water, and

D: said predetermined depth; and

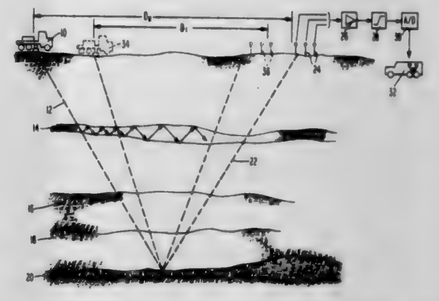
combining said first and third signals to produce a signal indicative of said substrata beneath said body of water.

4,437,176

METHOD OF OPTIMIZING SIGNAL-TO-NOISE RATIO IN SEISMIC EXPLORATION

Harry Mack, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,549
Int. Cl.³ G01V *1/36*
U.S. Cl. 367—38 **3 Claims**



1. A method for exploring subterranean structures of the earth having at least one reflection interface which has a broadband acoustic wave reflection attenuation characteristic which varies cyclically with the angle of acoustic wave incidence, comprising the steps of:

(a) transmitting acoustic waves into the earth from a plurality of sources located along the surface of the earth;

(b) detecting reflected acoustic waves from said reflection interface at a plurality of receivers offset from said plurality of sources along the surface of the earth;

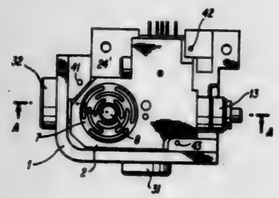
(c) gathering said reflected acoustic waves into groups of selected offset intervals;
(d) determining from said gathered acoustic waves at what incidence angles, with respect to said subterranean interface having said cyclical attenuation characteristic, said acoustic energy is reflected with minimum attenuation;
(e) selecting a portion of said gathered acoustic waves which have offsets from acoustic wave sources to acoustic wave receivers such that the angle of incidence and reflection of the acoustic waves from said interface are substantially equal to the incidence angles at which attenuation of reflection acoustic waves at said interface is minimized;
(f) processing said selection portion of said gathered acoustic waves using common depth point stacking to produce signals having an improved signal-to-noise ratio; and
(g) producing seismograms from said signals.

4,437,177

SMALL-SIZED VIDEO OR AUDIO PICKUP DEVICE HAVING A BEAM DEFLECTOR DISPOSED WITHIN A FOCUSING DEVICE SUPPORT

Akinori Watabe, Yokohama; Susumu Yonezawa, Yokosuka, and Yoshiharu Tanaka, Omiya, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Mansei Kogyo Kabushiki Kaisha, Saitama, both of, Japan

Filed Nov. 12, 1980, Ser. No. 206,382
Claims priority, application Japan, Nov. 12, 1979, 54-145462; Nov. 12, 1979, 54-155838[U]
Int. Cl.³ G11B *7/08*
U.S. Cl. 369—45 **26 Claims**



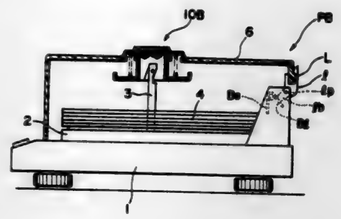
1. A pickup device for use in an apparatus for reading video and/or audio information recorded in an optically readable structure on an information carrier, comprising:
a resiliently supported frame having a cylindrical hollow support,
a beam generating means for generating a light beam,
a focussing lens disposed in an upper portion of the cylindrical hollow support to focus the light beam generated by the beam generating means into a beam spot on the surface of the information carrier,
a first electro-magnetic controlling means arranged under the cylindrical hollow support for moving the cylindrical support upwardly and downwardly to control the size of the beam spot formed on the surface of the information carrier through the focussing lens,
a beam deflecting mirror fixedly mounted on said frame within said cylindrical hollow support independently of said cylindrical hollow support in vertical alignment with the focussing lens between the latter and the first electromagnetic controlling means to deflect the light beam from the beam generating means toward the focussing lens,
a second electro-magnetic controlling means for laterally displacing the frame to control the place of the beam spot on the surface of the information carrier, and
a photo-sensitive detector for converting the returning light beam after reflection at the surface of the information carrier into electrical signals.

4,437,178

RECORD PLAYER

Seizo Miyoshi, Neyagawa, and Bunitsu Yamaguchi, Yawata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 21, 1981, Ser. No. 304,339
Int. Cl.³ G11B *17/04, 25/04*
U.S. Cl. 369—75.1 **15 Claims**



1. A record player comprising:
a main body;
a turntable rotatably mounted on said main body for supporting a record to be played;
a changer spindle extending upwardly from a central portion of said turntable for supporting a stack of records to be lowered one-by-one to said turntable;
a dust cover pivotally mounted to said main body for selective movement between a closed position and an open position; and
means for, when said dust cover is in said closed position thereof, maintaining records supported by said changer spindle in a horizontal alignment, said means comprising an opening formed in a central portion of said dust cover, a record presser member movably mounted in said opening and biased for movement with respect to said dust cover in a direction to press against the upper surface of an uppermost record supported by said changer spindle when said dust cover is in said closed position thereof, and means for enabling vertical movement and for preventing horizontal movement of said presser member with respect to said dust cover, said enabling and preventing means comprising recesses formed in one of said dust cover, said presser member or a member adjacent said dust cover and projections extending from another of said presser member, said dust cover or said member adjacent said dust cover, said projections fitting into said recesses, thereby guiding vertical movement of said presser member with respect to said dust cover and restraining relative horizontal movement therebetween.

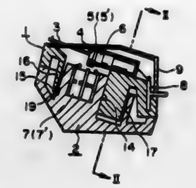
4,437,179

PHONO PICKUP CARTRIDGE

Kazuo Nishikawa; Kiyoshi Sato; Hiroyuki Ichino, and Keaiti Okura, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,462
Claims priority, application Japan, Jun. 9, 1980, 55-76694; Jun. 9, 1980, 55-76695
Int. Cl.³ G11B *3/02, 3/44*
U.S. Cl. 369—172 **7 Claims**

1. A phono pickup cartridge comprising: a stylus unit having moving coils, a cantilever coupled to said moving coils, at least three positioning surface members, and a substantially planar tab member substantially perpendicular to said positioning surface members, a first of said positioning surface members being forward of said moving coils and a second and a third of said positioning surface members being behind said moving coils, said first positioning surface being perpendicular to said cantilever, and said second and third positioning surfaces being parallel to said cantilever; and a cartridge body having at least three lateral exterior positioning surfaces and a substantially planar upper surface perpendicular to said lateral surface, said three positioning surface members being in resilient contact with corresponding ones of said positioning surfaces of said cartridge body when said stylus unit is mounted on said cartridge body, a mounting position of said stylus unit on said cartridge body being entirely determined by positions of engagement of said positioning surface members with said corresponding ones of said positioning surfaces and said tab member with said upper surface.

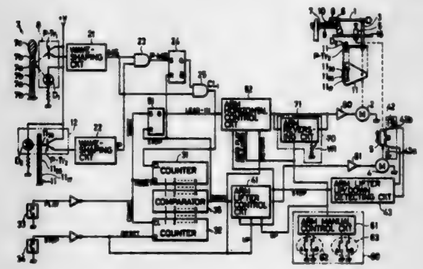


4,437,180

APPARATUS FOR CONTROLLING PICKUP ARM IN RECORD OR VIDEO DISK PLAYER

Atsushi Takeuchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 8, 1981, Ser. No. 328,517
Claims priority, application Japan, Dec. 24, 1980, 55-182140
Int. Cl.³ G11B *17/06, 17/00*
U.S. Cl. 369—217 **23 Claims**



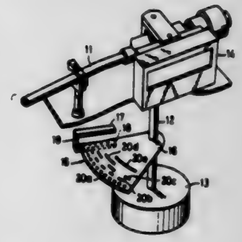
1. A pickup arm controlling apparatus for an audio record or a video disk player, comprising:
lead-in position detecting means for detecting a non-recorded portion of a disk onto which a stylus is to descend during a movement of a pickup arm toward the center of said disk;
reproduction-start operating means for providing an operating signal;
pickup arm horizontal controlling means for outputting a lead-in command signal in response to the receipt of an operating signal from the reproduction-start operating means, said lead-in command signal being ceased to be outputted upon receipt of a detection signal from said lead-in position detecting means;
pickup arm lifter controlling means for causing a pickup arm lifter to descend from an uplifted position to a lowered position upon receipt of said detection signal from said lead-in position detecting means to thereby lower said stylus onto said disk;
pickup arm reversing controlling means for outputting, for a preset length of time after a cease of said lead-in command signal delivered from said pickup arm horizontal controlling means, a pickup arm reversing command signal; and
pickup arm horizontal driving means for horizontally driving said pickup arm in a first direction upon receipt of an output from said pickup arm horizontal controlling means and in the opposite direction upon receipt of an output from said pickup arm reversing controlling means, wherein said preset length of time corresponds to the amount of time necessary to drive the pickup arm in the opposite direction to compensate for the pickup arm overrunning said non-recorded portion on the disk after the cessation of the lead-in command signal.

4,437,181

AUTOMATIC RECORD PLAYING APPARATUS HAVING A TONE ARM POSITION DETECTING DEVICE

Yukihiro Kishima, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Aug. 26, 1980, Ser. No. 182,407
Claims priority, application Japan, Aug. 27, 1979, 54-117781[U]; Aug. 27, 1979, 54-117782[U]
Int. Cl.³ G11B *3/06*
U.S. Cl. 369—244 **6 Claims**

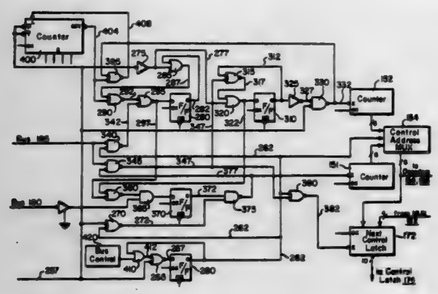


1. A record disc playing apparatus having a tone arm position detecting device comprising:
(a) a code part;
(b) a position detection part comprising a group of optical reading elements disposed at spaced intervals with respect to each other, one of the code part and the position detection part being mounted for movement through a plurality of positions as a function of the position of the tone arm as the tone arm moves between the periphery and the center of the record disc, and scanning the other to detect the position of the tone arm with respect to the apparatus;
(c) a plurality of rows of slots of various length length provided on the code part, said code part being unevenly divided in the direction of scanning to form short and long division, the short and long divisions conveying information specifying an address, said address indicating the position of the tone arm with a combination of existence and non-existence of the slots of various length along each row of said short and long divisions, the short divisions being defined by offsetting ends of at least two of said rows of slots of various length and disposed between said ends at spaced positions with respect to each other in the direction of the scanning, said short divisions being located on the code part corresponding respectively to particular positions of the tone arm, said rows of slots of various length of the short and long divisions being aligned to said optical reading elements to be exposed thereto as the tone arm moves; and
(d) an encoder producing binary address codes in response to outputs from said position detection part.

4,437,182
METHOD AND APPARATUS FOR INTERLEAVING CONTROL SIGNALS

David A. Lambert, New Fairfield, and Gary A. Profet, Watertown, both of Conn., assignors to General DataComm Industries, Inc., Danbury, Conn.

Filed Jan. 12, 1981, Ser. No. 224,337
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.1 20 Claims



1. In a time division multiplexer for multiplexing data and control signals from a plurality of channels so as to produce a single stream of signals on a transmission line, said stream having a first set of time slots allocated to the transmission of data signals and a second set of time slots allocated to the transmission of control signals, a method of transmitting the control signals comprising the steps of:

monitoring the channels for a change in the control signals associated with a channel,

when a control signal changes, transmitting the changed control signal in at least one time slot in the second set of time slots,

counting the number of changed control signals that are transmitted,

after a specified number of changed control signals are transmitted, transmitting at least one of the control signals associated with one of said channels without regard to whether there has been any change in the control signals associated with said one of said channels,

repeating the steps of monitoring the channels, transmitting the changed control signal and counting the number of changed control signals that are transmitted, and

after a specified number of changed control signals are transmitted, transmitting at least one of the control signals associated with a different one of said channels without regard to whether there has been any change in the control signals associated with said different one of said channels.

4,437,183
METHOD AND APPARATUS FOR DISTRIBUTING CONTROL SIGNALS

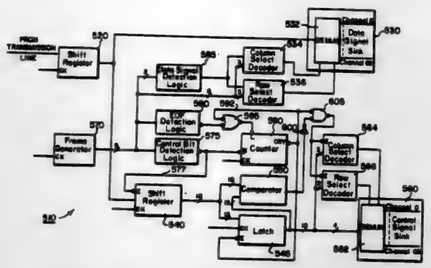
Gary A. Profet, Watertown, Conn., assignor to General DataComm Industries, Inc., Danbury, Conn.

Filed Jan. 12, 1981, Ser. No. 224,340
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.1 10 Claims

1. In a bit-interleaved time division multiplexer for multiplexing data and control signals from a plurality of individual data channels so as to produce a single stream of signals on an aggregate transmission line, said multiplexer including a frame generator which generates select signals that are used to select for transmission either data from individual data channels or overhead signals including control signals, a method of transmitting control signals associated with individual data channels comprising the steps of:

storing at a transmitter a control signal for a channel together with an address for said channel,

generating at said transmitter a sequence of select signals that are used to select for transmission either data signals or overhead signals, the select signals for the transmission



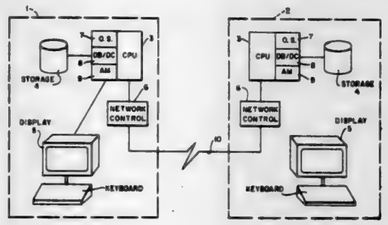
of control signals associated with individual data channels (hereinafter CONTROL select signals) being distributed throughout said sequence, and

responsive to each CONTROL select signal, transmitting one bit of the stored control signal and its address.

4,437,184
METHOD OF TESTING A DATA COMMUNICATION SYSTEM

Robin M. S. Cork, Winchester, England, and David B. Rose, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 9, 1981, Ser. No. 281,814
Int. Cl.³ G06F 11/34
U.S. Cl. 371—19 3 Claims



1. A method of testing the implementation of any defined portion of a data communication system, said system having a computational model thereof constructed in a high level computing language and said model having been compiled to produce an executable machine language program and said communications system also including an element for logging trace files of messages sent or received over said system, said method comprising the steps of:

running an application program that requires the use of the elements of said defined portion in said communications system to be tested;

monitoring and logging messages sent and received by said defined portion of said data communications system during the running of said application program, said logging constructing trace files for logging in said element in said system, each message having been constructed to have a format determined by said defined portion of said communications system;

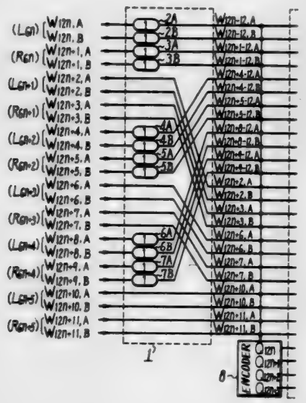
extracting relevant message related information from said trace file and using said extracted message related information as input data for said executable machine language program;

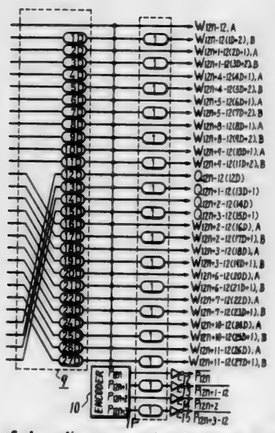
executing said machine language program, the results of said execution indicating whether said messages were constructed correctly according to said communications system requirements over said defined portion thereof.

4,437,185
METHOD OF ERROR CORRECTION

Yoichiro Sako, and Kentaro Odaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,262
Claims priority, application Japan, Jun. 20, 1980, 55-84425
Int. Cl.³ G06F 11/10
U.S. Cl. 371—39 11 Claims





1. A method of decoding transmitted digital information signals to correct errors occurring therein as a result of transmission, wherein said information signals are received as blocks of interleaved digital data word signals and are applied to a first decoder as first error-correcting blocks comprised of a plurality of information word signals, a series of first check word signals associated with said plurality of information word signals, and a series of second check word signals associated with said plurality of information word signals, said information word signals, said first check word signals and said second check word signals being interleaved, comprising the steps of:

decoding the received digital data word signals in said first decoder and correcting the decoded digital information word signals and said first check word signals by generating error syndromes using said second check word signals,

the corrected and decoded digital information word signals forming a block of interleaved word signals;

tagging a pointer code signal to each of said information word signals of the block of interleaved word signals to represent whether an uncorrected error remains in such word signals;

delaying the tagged interleaved word signals of each such block of tagged interleaved word signals in a deinterleaving stage by respective different amounts so as to deinterleave such tagged interleaved word signals into a different arranging order, thereby providing a second error-correcting block;

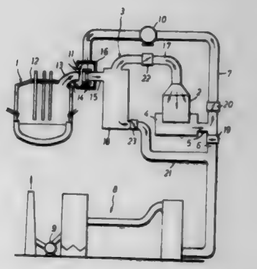
decoding the digital information word signals of each such second error-correcting block in a second decoder by generating error syndromes using said first check word signals, while, if at least one such word signal is determined to be erroneous, correcting at least one such erroneous word signal by said syndromes and said first check word signals, then comparing, for each said second error-correcting block in which at least one word signal is determined to be erroneous, the number of erroneous word signals as indicated by said pointer code signals with a predetermined value and, if such number is less than said value, clearing the pointer code signals associated with the corrected erroneous word signals, but, if such number exceeds such value, leaving such pointer code signals uncleared; and

thereafter compensating any uncorrected erroneous word signals as determined by said pointer code signals.

4,437,186
WASTE GAS APPARATUS FOR ELECTRIC FURNACE

Kunihiro Inai, Takarazuka, Japan, assignor to Nikko Industry Co., Ltd., Hyogo, Japan

Filed Mar. 29, 1982, Ser. No. 362,989
Claims priority, application Japan, Nov. 21, 1981, 56-175269[U]
Int. Cl.³ F27D 7/00
U.S. Cl. 373—9 6 Claims



1. A waste gas recycling apparatus for an electric furnace comprising:

a heat storage chamber;

a preheater bucket charged with scrap;

a first duct positioned between said electric furnace and said heat storage chamber;

a second duct connected from said heat storage chamber to said preheater bucket;

a recycling duct connected between said preheater bucket and said first duct; and

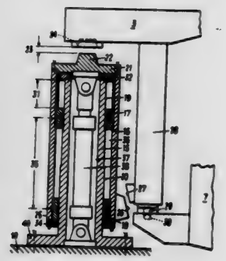
an air inlet located at the juncture of said recycling duct and said first duct and so arranged that hot waste gas from said furnace and recycled gas from said preheater bucket are mixed with air and fed through said first duct to said heat storage chamber.

4,437,187

ELECTRIC FURNACE ARRANGEMENT

Ernst Riegler, Enns, and Ernst Zajicek, Ottensheim, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 24, 1982, Ser. No. 423,223
Claims priority, application Austria, Oct. 9, 1981, 4348/81
Int. Cl.³ F27D 1/18
U.S. Cl. 373—73 6 Claims



1. In an electric furnace arrangement, such as an electric arc furnace, a plasma melting furnace and the like, and of the type including a furnace cover, a furnace cover carrying structure, and a lifting structure for raising and lowering said furnace cover relative to said furnace, said lifting structure comprising

a stationary supporting post,

a lifting means arranged within said stationary supporting post,

a lifting column engageable with and disengageable from said furance cover carrying structure, said lifting column being vertically displaceable by operation of said lifting means, and

an upper bearing means and a lower bearing means for guiding said lifting column on said stationary supporting post, the improvement wherein

said lifting column is hollow and said stationary supporting post is arranged within and peripherally surrounded by said lifting column, whereby said lifting column and said stationary supporting post are telescopingly displaceable relative to each other by operation of said lifting means, the improvement further comprising

a head plate closing said lifting column on an upper end thereof, an upper end of said lifting means being articulately connected with said head plate and a lower end of said lifting means being articulately connected with one of a base supporting said furance arrangement and a lower end of said stationary support post.

4,437,188

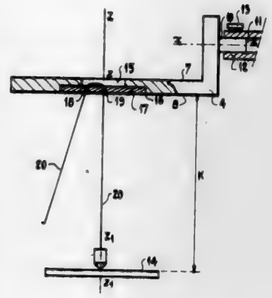
X-RAY EMITTING ASSEMBLY COMPRISING A FLANGE FOR ASSEMBLING A SHEATH ASSEMBLY AND A BEAM LIMITING DEVICE

Marcel Le Sonn, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 3, 1982, Ser. No. 374,408
Claims priority, application France, May 8, 1981, 81 09229
Int. Cl.³ G21K 1/00, 1/02, 5/10
U.S. Cl. 378—205 14 Claims

1. In an X-ray emitting assembly, comprising a flange for assembling a sheath assembly and a beam limiting device, operationally associated with one or more radiation detectors situated in a radiology equipment stand, said flange is adapted to cooperate with alignment means, so as to determine in a first stage, the positioning of said flange with respect to the operating axis of one of the radiation detectors and, in a second stage, to enable alignment along this axis of the operating axes of the sheath assembly and of the beam limiting device; said sheath assembly and said beam limiting device are fixed to said flange, independently of each other;

said flange is a bracket adjustable in position; and said



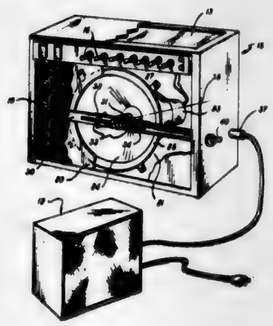
bracket comprises a recess for receiving in a first phase a leaded washer having a hole centrally therethrough and in a second phase a centering means integral with said beam limiting device.

4,437,189

SOUND SYSTEM FOR A MUSICAL INSTRUMENT

Richard L. Newman, Kline Rd., Pennellville, N.Y. 13132

Filed Jun. 26, 1981, Ser. No. 277,997
Int. Cl.³ H04R 1/02
U.S. Cl. 381—91 12 Claims



1. Apparatus for amplifying the sound of a musical instrument that includes

a speaker that is arranged to be wired to the amplifier of a musical instrument which contains a drive section and an output cone wherein one end of the cone forms the mouth of the speaker,

a mounting bar attached to the mouth of the speaker so that the axis of the bar is aligned along one diameter of the cone,

a microphone supported in the mounting bar with the body of the microphone extending rearwardly into the cone so that it is substantially enclosed therein, and

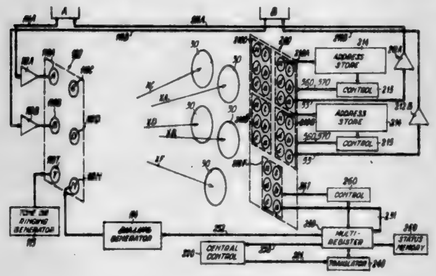
connecting means for attaching the microphone to a public address system.

4,437,190

DEVICE FOR SWITCHING SIGNALS BY OPTICAL MEANS AND AUTOMATIC SWITCHING UNITS COMPRISING SAID DEVICE

Boris Rozenwaig, 17, Place d'Orion, Meudon-La-Foret, France (92360), and Yves J. Robin-Champigneul, 4, Rue Georges Ville, Paris, France (75116)

PCT No. PCT/FR79/00102, § 371 Date Jul. 8, 1980, § 102(e) Date Jul. 8, 1980, PCT Pub. No. WO80/01028, PCT Pub. Date May 15, 1980
PCT Filed Nov. 8, 1979, Ser. No. 196,083
Int. Cl.³ H04B 9/00
U.S. Cl. 455—600 16 Claims



1. A device for switching optically modulated signals conveyed by at least one link of N input links towards at least one link of P output links, where N and P are integers greater than one which may be the same or different, comprising:

a transmit board including N optical sources each associated with a designated input link for delivering an optical signal reproducing the modulations of the signal delivered by said input link,

a receive board including P optical receivers, each associated with a designated output link for supplying the output link a signal reproducing the modulations of optical flux incident thereon,

optical means for projecting the image of the transmit board on each optical receiver,

each of said receivers comprising (a) an array of at least N optical receptor cells having positions respectively conjugated with the positions of the optical sources of the transmit board by means of the optical projection means and (b) switching means for selectively transmitting to the output link associated with said optical receiver signals delivered by each of said receptor cells,

the transmit board including at least one supplemental reference optical source,

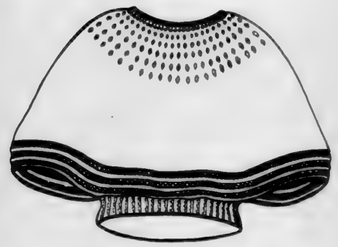
each optical receiver of the receive board being coupled to a supplemental reference receptor cell exposed to optical flux from said reference source,

the receive board including means for adjusting at least one of (a) the position of each optical receiver and (b) the position of the optical projection means in such a manner that the reference cell coupled with the said optical receiver derives a signal of optimum level.

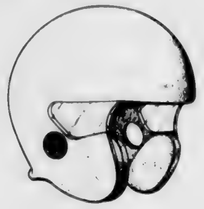
DESIGNS

MARCH 13, 1984

272,959
SWEATER OR SIMILAR ARTICLE
Eloise Waite, P.O. Box 72, Marshall, N.C. 28753, assignor to Eloise Waite, Marshall, N.C.
Filed Nov. 26, 1980, Ser. No. 210,835
U.S. Cl. D2—44



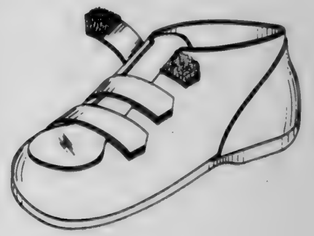
272,960
ATHLETIC HELMET OR SIMILAR ARTICLE
Paul S. Vinson, 3170 Avant Rd., Macon, Ga. 31206
Filed Jul. 28, 1980, Ser. No. 172,712
U.S. Cl. D2—231



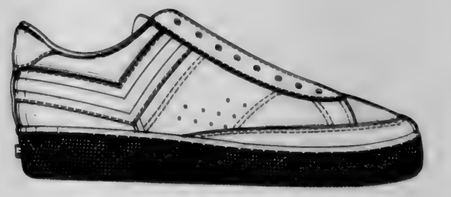
272,961
BABY SHOE
Richard N. Clarvit, 10798 SW. 51st Dr., Miami, Fla. 33165
Division of Ser. No. 113,033, Jan. 17, 1980, Pat. No. 267,441, which is a continuation-in-part of Ser. No. 99,602, Dec. 3, 1979, which is a continuation-in-part of Ser. No. 810,584, Jun. 27, 1977. This application Nov. 16, 1981, Ser. No. 322,046
U.S. Cl. D2—278



272,962
BABY SHOE
Richard N. Clarvit, 10798 SW. 51st Dr., Miami, Fla. 33165
Division of Ser. No. 113,033, Jan. 17, 1980, Pat. No. Des. 267,441, which is a continuation-in-part of Ser. No. 99,602, Dec. 3, 1979, which is a continuation-in-part of Ser. No. 810,584, Jun. 27, 1977. This application Nov. 16, 1981, Ser. No. 322,048
U.S. Cl. D2—278



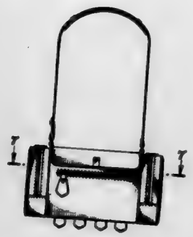
272,963
SHOE
Roberto Muller, 370 E. 76th St., New York, N.Y. 10021, and Antonio M. Sousa, 183 Highland St., Taunton, Mass. 02780
Filed Oct. 3, 1979, Ser. No. 81,522
U.S. Cl. D2—310



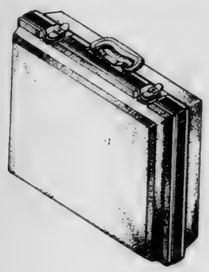
272,964
HIGH CUT ATHLETIC SHOE
Roberto Muller Feigelstock, Scarsdale, N.Y., assignor to Pony International, Inc., Secaucus, N.J.
Filed Jun. 17, 1982, Ser. No. 389,334
U.S. Cl. D2—310



272,965
CAMERA BAG
Lawrence A. Simon, 7022 Kildare Rd., Montreal, Quebec, Canada H4W 1B9
Filed Mar. 29, 1982, Ser. No. 362,882
U.S. Cl. D3—33



272,966
CARRYING CASE
William W. Ward, Clayton, N.C., assignor to Southern Case, Inc., Raleigh, N.C.
Filed May 3, 1982, Ser. No. 374,249
U.S. Cl. D3—76



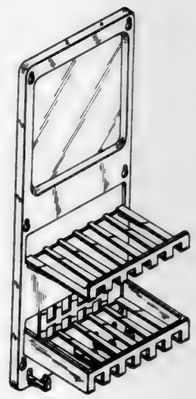
272,967
DINING CHAIR
Arthur Umanoff, Ardsley, N.Y., assignor to Contemporary Shells Inc., New York, N.Y.
Filed Nov. 18, 1980, Ser. No. 207,989
U.S. Cl. D6—56



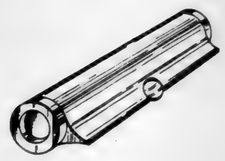
272,968
CONVERTIBLE SOFA
Igal Fairaizen, 58 Eilat Rd., Tel Aviv, Israel
Filed Feb. 13, 1981, Ser. No. 234,552
U.S. Cl. D6—61



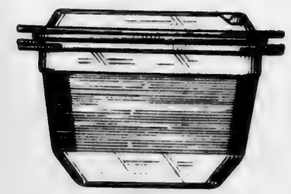
272,969
HOLDER FOR TOILETRY ITEMS
Howard Sussman, 3101 NW. 25th Ave., Pompano Beach, Fla. 33060
Filed Feb. 10, 1983, Ser. No. 443,150
U.S. Cl. D6—86

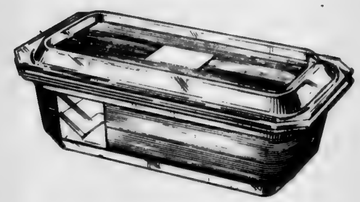


272,970
DISPENSER FOR SHEET MATERIAL
Hideaki Hasegawa; Saburo Shibano, and Terutoshi Kaneko, all of Tokyo, Japan, assignors to Riken Vinyl Kogyo Kabushiki Kaisha, Japan
Filed Jun. 10, 1981, Ser. No. 272,395
U.S. Cl. D6—96

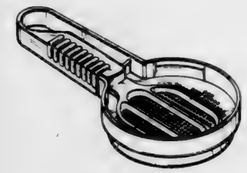


272,971
FOOD CONTAINER
Roger Tallon, Paris, France, assignor to Cidelcem, Paris, France
Filed Apr. 6, 1981, Ser. No. 251,130
Claims priority, application France, Oct. 9, 1980, 80 3139
U.S. Cl. D7—16

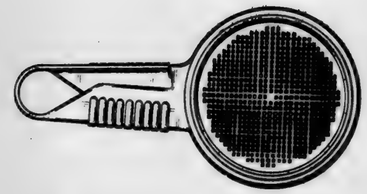




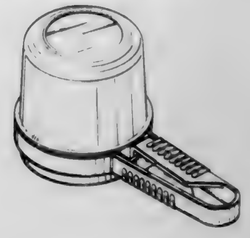
272,972
SIFTER OR THE LIKE
Pieter K. J. De Coster, Aalst, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 3, 1981, Ser. No. 289,421
U.S. Cl. D7—47

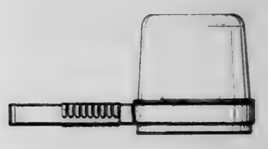


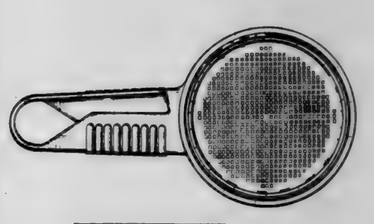




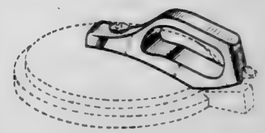
272,973
COMBINED SIFTER AND CONTAINER OR THE LIKE
Pieter K. J. De Coster, Aalst, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 3, 1981, Ser. No. 289,423
U.S. Cl. D7—47





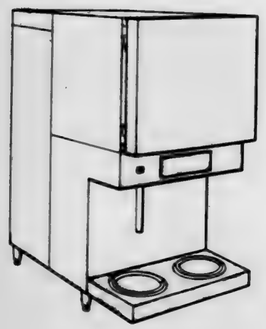


272,974
HANDLE FOR COVERS OF COOKING UTENSILS
Theophil Ryser, Beckenried, Switzerland, assignor to AMC International Alfa Metalcraft Corporation AG, Rotkreuz, Switzerland
Filed May 28, 1980, Ser. No. 154,159
U.S. Cl. D7—394





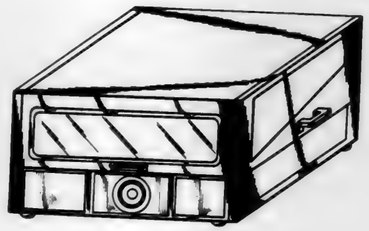
272,975
COFFEE DISPENSER
Gordon R. Miller, Glenview, Ill., assignor to American Metal Ware Co., Ill.
Filed Jan. 29, 1982, Ser. No. 344,192
U.S. Cl. D7—309



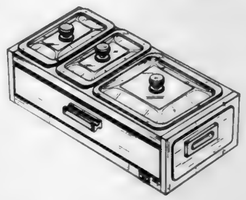
272,976
BEVERAGE DISPENSER
Edward J. LaLumiere, Woburn, Mass., assignor to Jet Spray Corp., Norwood, Mass.
Filed Dec. 28, 1981, Ser. No. 334,874
U.S. Cl. D7—311



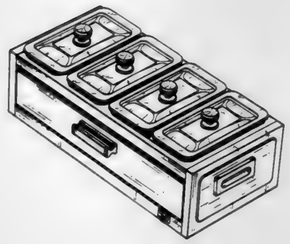
272,977
BACON GRILL
Johannes F. Erkelenz, Seoul, Rep. of Korea, assignor to Top-Qua & Company Ltd., Hong Kong, Hong Kong
Filed Jul. 6, 1981, Ser. No. 280,774
Claims priority, application United Kingdom, Feb. 23, 1981, 999047
U.S. Cl. D7—350



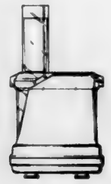
272,978
BUFFET SERVER
Dan E. Gremponrez, West Bend, Wis., and David L. Painter, Glenview, Ill., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 6, 1981, Ser. No. 280,566
U.S. Cl. D7—357

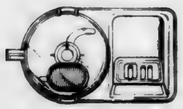


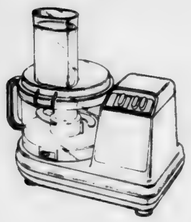




272,979
FOOD PROCESSOR
Tsugio Akita, Osaka, and Shinichi Nagayama, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 19, 1981, Ser. No. 312,475
Claims priority, application Japan, Apr. 24, 1981, 56-17921
U.S. Cl. D7—384







272,980
SICKLE GUARD STRAIGHTENING HAND TOOL
John M. Kapphahn, Rte. 1, Elbow Lake, Minn. 56511
Filed Jul. 20, 1981, Ser. No. 285,025
U.S. Cl. D8—14

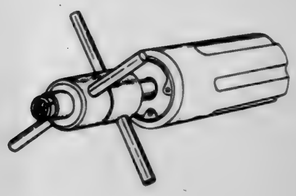


272,981
SPRAY PAINT SHIELD
Andrew C. Justice, 6320 Macleay Rd. SE., Salem, Oreg. 97301
Filed Feb. 12, 1982, Ser. No. 348,342
U.S. Cl. D8—16

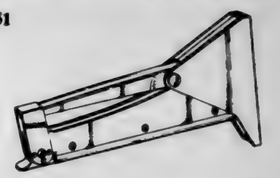




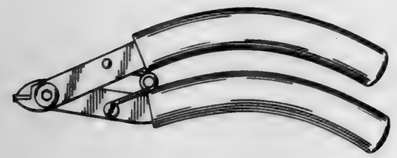
272,982
TORQUE WRENCH
Frank J. Rizzo, 16 Waverly St., Everett, Mass. 02149, and Bruce M. Smith, 11 Meadowbrook Rd., Dover, Mass. 02030
Filed Mar. 13, 1981, Ser. No. 243,590
U.S. Cl. D8—24



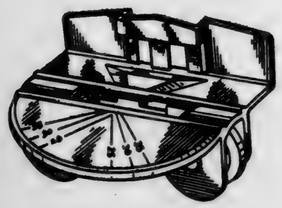
272,983
TACKER
Howard W. Biddle, Histon, England, assignor to Ofrex Group Limited, London, England
Filed Oct. 14, 1980, Ser. No. 197,013
Claims priority, application United Kingdom, Mar. 14, 1980, 80994464
U.S. Cl. D8—51



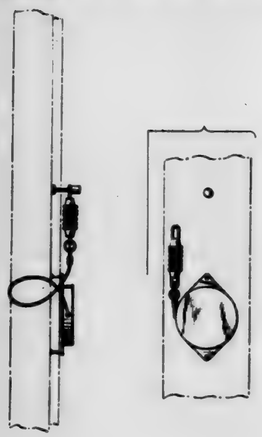
272,984
SMALL HEADED CABLE CUTTER
Frank E. Shaffer, 33 Beach Dr., Newport Beach, Calif. 92660
Continuation-in-part of Ser. No. 944,926, Sep. 22, 1978, Pat. No. Des. 260,132. This application Apr. 20, 1981, Ser. No. 255,896
U.S. Cl. D8—52



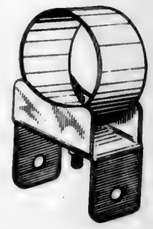
272,985
SAW SHARPENING GUIDE
Cornelis J. M. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia 3020
Filed Mar. 4, 1981, Ser. No. 240,463
Claims priority, application Australia, Sep. 9, 1980, 81985
U.S. Cl. D8—71



272,986
COMBINED KEEPER AND COMBINATION LOCK WITH RETRACTABLE CABLE UNIT
Joseph T. DeStefano, 12 Squawbrook Rd., North Haledon, N.J. 07508
Filed Sep. 25, 1978, Ser. No. 945,689
U.S. Cl. D8—331



272,987
RAIL SUPPORT FITTING FOR A DOUBLE POST, RAIL FENCE UNIT OR THE LIKE
John Allen, 5897 Avenue Juan Bautista, Riverside, Calif. 92509
Filed Mar. 6, 1981, Ser. No. 241,134
U.S. Cl. D8—354



272,988
COMBINED CONTAINER AND PUMP
Robert Podall, Riverwoods, and Henry Robertz, Chicago, both of Ill., assignors to Jovan, Inc., Chicago, Ill.
Filed Nov. 12, 1981, Ser. No. 320,444
U.S. Cl. D9—300



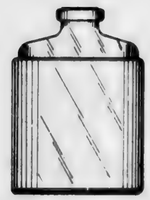
272,989
BOTTLE
Vittorio Moretti, Via Cavour 3, Erbusco (Brescia), Italy
Filed Jun. 11, 1981, Ser. No. 272,758
Claims priority, application Italy, May 27, 1981, 6990/81[U]
U.S. Cl. D9—349



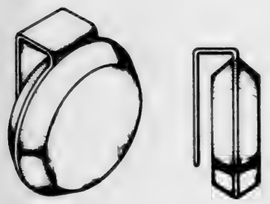
272,990
BOTTLE
Gordon A. Strand, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 30, 1982, Ser. No. 305,436
U.S. Cl. D9—355



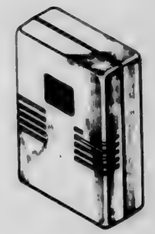
272,991
COMBINED BOTTLE AND CAP
Donald V. R. Thompson, New York, N.Y., assignor to Newburgh Cosmetic Packaging Corporation, Newburgh, N.Y.
Filed Oct. 14, 1980, Ser. No. 196,337
U.S. Cl. D9—377



272,992
ELECTRONIC INTRUSION ALARM TRANSMITTER
Ka W. Wong, Ngau Tau Kok, China, and Albert K. H. Au, Wanchai, Hong Kong, assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 30, 1981, Ser. No. 335,969
U.S. Cl. D10—106



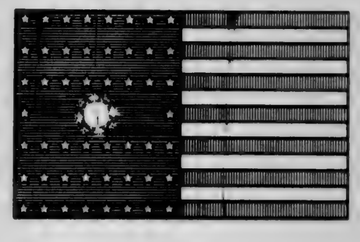
272,993
PORTABLE CABINET DOOR ALARM
Chung K. Chan, Hong Kong, Hong Kong, assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 30, 1981, Ser. No. 335,970
U.S. Cl. D10—106



272,994
PIERCED EARRING FINDING
Frank Serapiglia, 69 Russe St., Cranston, R.I. 02910
Filed Mar. 8, 1982, Ser. No. 356,191
U.S. Cl. D11—86



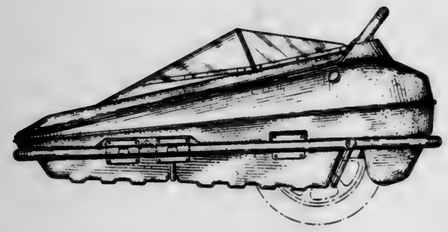
272,995
FLAG
Leroy C. Jones, P.O. Box 20142, Los Angeles, Calif. 90006
Filed Jul. 7, 1980, Ser. No. 166,135
U.S. Cl. D11—180



272,996
VEHICLE TRAILER
Thomas M. Trabue, Rte. 2, Box 51, White Bluff, Tenn. 37187, and Augusto Villalon, 1804 SE. 13 Ter., Cape Coral, Fla. 33904
Filed Apr. 20, 1981, Ser. No. 255,385
U.S. Cl. D12—102



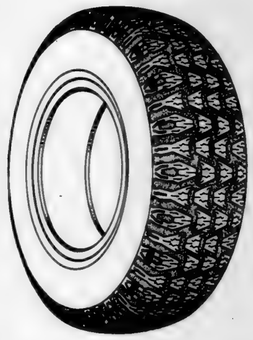
272,997
MOTORCYCLE SIDECAR
Duane L. Anderson, Grover City; Robert S. Clarke, Arroyo Grande, and Lewis R. Morris, Grover City, all of Calif., assignors to First Champaign Corporation, Rantoul, Ill.
Filed May 8, 1981, Ser. No. 262,203
U.S. Cl. D12—116



272,998
VEHICLE TIRE
Kenji Takehara, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Aug. 26, 1981, Ser. No. 296,249
Claims priority, application Japan, Feb. 26, 1981, 56-7835
U.S. Cl. D12—146



272,999
VEHICLE TIRE
Hideaki Nagayasu, Kakogawa, Japan, assignor to Sumitomo Rubber Industries Limited, Kobe, Japan
Filed Jan. 8, 1982, Ser. No. 337,997
Claims priority, application Japan, Jul. 8, 1981, Sho-56-30126
U.S. Cl. D12—146

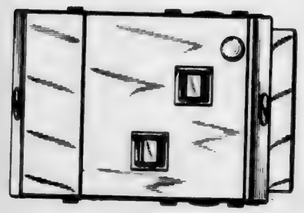


273,000
VEHICLE TIRE
Kenji Takehara, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Nov. 4, 1981, Ser. No. 318,196
Claims priority, application Japan, May 6, 1981, Sho 56-19513
U.S. Cl. D12—147

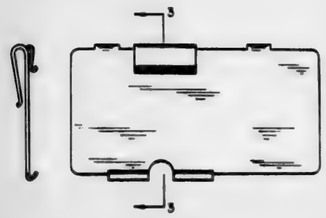


273,001
VEHICLE MOUNTED CAMPER UNIT
Alexander Fink, 80 Dogwood Rd., Boonton, N.J. 07005
Filed Dec. 14, 1981, Ser. No. 330,463
U.S. Cl. D12—156





273,002
NOTE CLIPBOARD FOR AN AUTOMOBILE VISOR
Edward R. Schafer, 13023 Lockmoor Dr., Grand Blanc, Mich. 48439
Filed Jul. 31, 1981, Ser. No. 288,854
U.S. Cl. D12—191



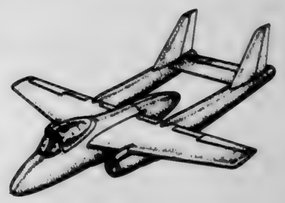
273,003
VEHICLE WHEEL
Ulf K. Svanblick, Lilla Edet, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Sep. 17, 1981, Ser. No. 303,029
Claims priority, application Sweden, Mar. 26, 1981, 81-0779
U.S. Cl. D12—211



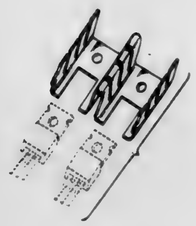
273,004
WHEEL COVER
Björn E. A. Envall, Vänersborg, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Dec. 30, 1981, Ser. No. 335,803
Claims priority, application Sweden, Jun. 30, 1981, 81-1494
U.S. Cl. D12—211



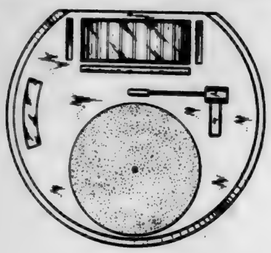
273,005
AIRCRAFT
Jean McComas, West Babylon, N.Y., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Mar. 19, 1981, Ser. No. 245,554
U.S. Cl. D12—335



273,006
TWIN HEAT SINK FOR ELECTRONIC SEMICONDUCTOR DEVICES
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Apr. 8, 1981, Ser. No. 252,029
U.S. Cl. D13—23

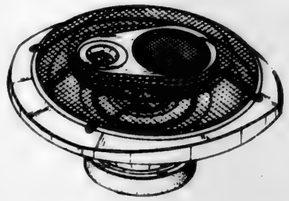


273,007
COMBINED PHONOGRAPH AND TAPE PLAYER OR THE LIKE
Marianne Spottswood, 249 E. 48th St., New York, N.Y. 10017
Filed May 22, 1981, Ser. No. 266,680
U.S. Cl. D14—5

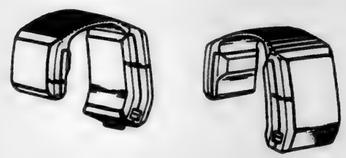




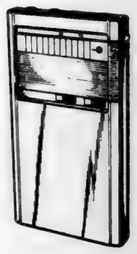
273,008
SPEAKER
Hideaki Ishizaki, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 24, 1981, Ser. No. 305,243
Claims priority, application Japan, Apr. 1, 1981, 56-13708[U]
U.S. Cl. D14—30



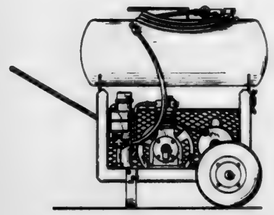
273,009
TACTILE ALERTING BRACELET
Robert B. Isaacs, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Feb. 8, 1982, Ser. No. 347,231
U.S. Cl. D14—52



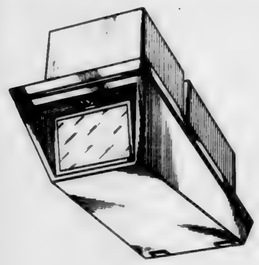
273,010
PORTABLE RADIO
Masanori Hamada; Yoshiyuki Saigo; Etsuko Ichino, all of Osaka, and Takao Okada, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 19, 1981, Ser. No. 313,013
Claims priority, application Japan, Apr. 20, 1981, 56-17007[U]
U.S. Cl. D14—68



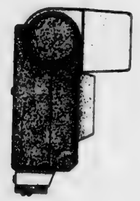
273,011
PORTABLE AIR COMPRESSOR
Wayne C. Dudley, Parkersburg, Iowa 50665
Filed Jul. 15, 1981, Ser. No. 259,831
U.S. Cl. D15—9



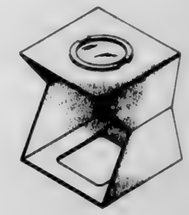
273,012
SURVEILLANCE CAMERA HOUSING
Edward Kozloski, Babylon Village, N.Y., assignor to Vicon Industries, Inc., Plainview, N.Y.
Filed Nov. 27, 1981, Ser. No. 325,488
U.S. Cl. D16—2



273,013
ELECTRIC FLASH UNIT
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeko Corporation, Tokyo, Japan, a part interest
Filed Nov. 20, 1981, Ser. No. 323,473
Claims priority, application Japan, May 20, 1981, 56-021638
U.S. Cl. D16—42



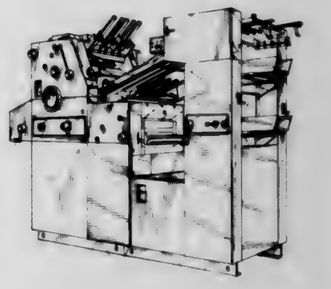
273,014
LINEN TESTER
Benjamin A. Cuoco, 315 Prospect St., East Longmeadow, Mass. 01028
Filed May 11, 1981, Ser. No. 262,784
U.S. Cl. D16—135



273,015
ORGAN
Thomas E. Kimble, Covington, Ky., assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio
Filed Jun. 15, 1981, Ser. No. 273,462
U.S. Cl. D17—5



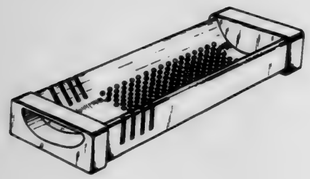
273,016
PRINTING MACHINE
Etsuo Hiraishi, Hiroshima, and Takeshi Shohoji, Chiba, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Jul. 9, 1982, Ser. No. 396,549
Claims priority, application Japan, Jan. 12, 1982, 57-823
U.S. Cl. D18—13



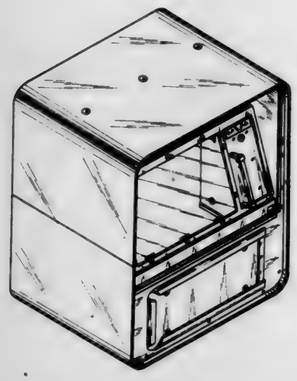
273,017
WRITING INSTRUMENT
Pierre Bertrac, Ecouen, France, assignor to Parker Pen France, France
Filed Jul. 15, 1980, Ser. No. 169,077
U.S. Cl. D19—49



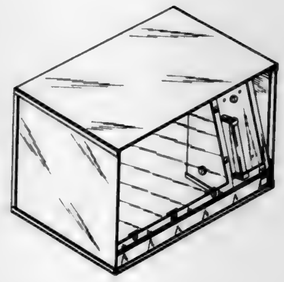
273,018
TRAY FOR HOLDING STATIONERY ARTICLES
Raul Barbieri, and Giorgio Marianelli, both of Via Faruffini, 13, 20149 Milan, Italy
Filed Jul. 31, 1981, Ser. No. 288,895
Claims priority, application Italy, Feb. 13, 1981, 20781 B/81[U]
U.S. Cl. D19—75



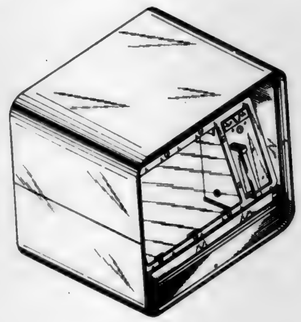
273,019
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,043
U.S. Cl. D20—6



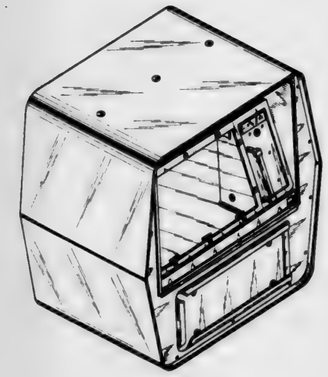
273,020
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,044
U.S. Cl. D20—6



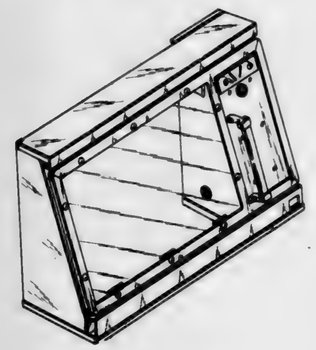
273,021
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,045
U.S. Cl. D20—6



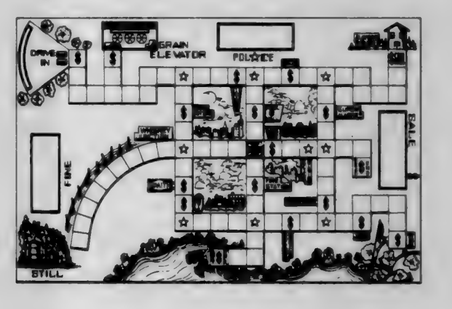
273,022
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,046
U.S. Cl. D20—6



273,023
NEWSPAPER VENDING MACHINE INSERT
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Mar. 29, 1982, Ser. No. 363,047
U.S. Cl. D20—8



273,024
GAME BOARD
James M. Emge, Vanderburgh, Ind., assignor to Cougar Plastics, Inc., Evansville, Ind.
Filed Mar. 8, 1982, Ser. No. 355,798
U.S. Cl. D21—31



273,025
CHILD'S TOY
Norman R. Emms, Welwyn Garden City, England, and Peter D. Bryant, St. Helier, Channel Islands, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Mar. 19, 1982, Ser. No. 359,816
Claims priority, application United Kingdom, Dec. 3, 1981, 81 1003 967
U.S. Cl. D21—69



273,026
CHILD'S TOY
Norman R. Emms, Welwyn Garden City, England, and Peter D. Bryant, St. Helier, Channel Islands, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Mar. 19, 1982, Ser. No. 359,692
Claims priority, application United Kingdom, Dec. 3, 1981, 811003968
U.S. Cl. D21—69



273,027
TOY TABLE
Eugene J. Echterling, 22740 Macfarlane Dr., Woodland Hills, Calif. 91364
Filed May 26, 1981, Ser. No. 267,264
U.S. Cl. D21—121



273,028
STUFFED TOY
Donna K. Finney, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,746
U.S. Cl. D21—190



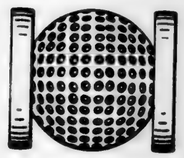
273,029
EXERCISE TREADMILL
Fred W. Kullenberg, Ralston, Nebr., assignor to Instruments for Cardiac Research, Inc., Liverpool, N.Y.
Filed Sep. 16, 1981, Ser. No. 302,488
U.S. Cl. D21—192



273,030
DUMBBELL
Howard A. Anderson, Allegheny County, Pa., assignor to Leonard Schwartz, Pittsburgh, Pa.
Filed Aug. 3, 1981, Ser. No. 289,780
U.S. Cl. D21—197



273,031
GOLF PUTTING AID
Luther G. Simjian, Ft. Lauderdale, Fla., assignor to Command Automation, Inc., Greenwich, Conn.
Filed Jul. 9, 1981, Ser. No. 281,605
U.S. Cl. D21—234



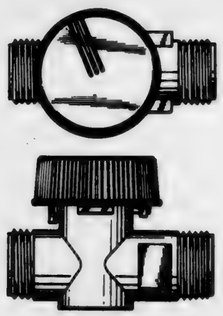
273,032
INSECT FEEDING STATION OR SIMILAR ARTICLE
Keith Woodruff, Mountainside, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Apr. 6, 1981, Ser. No. 251,670
U.S. Cl. D22—19



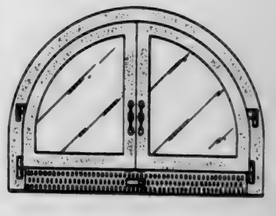
273,033
SWIMMING POOL CHEMICAL DISPENSER OR THE LIKE
Arlon G. Sangster, Sterling, Mass., and Joseph J. Tepas, Jr., Easton, Conn., assignors to Olin Corporation, New Haven, Conn.
Continuation-in-part of Ser. No. 257,051, Apr. 24, 1981. This application Apr. 11, 1983, Ser. No. 484,826
U.S. Cl. D23—3



273,034
FLUID FLOW CONTROL VALVE
David F. Higgins, Hereford, England, assignor to IMI Mouldings Limited, Herford, England
Filed Jul. 20, 1981, Ser. No. 284,814
Claims priority, application United Kingdom, Jan. 29, 1981, 998704
U.S. Cl. D23—19



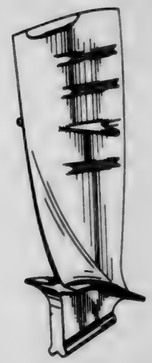
273,035
FIREPLACE DOOR
Gary Booker, 17325 McIntyre, Detroit, Mich. 48219
Filed Aug. 4, 1980, Ser. No. 174,948
U.S. Cl. D23—128



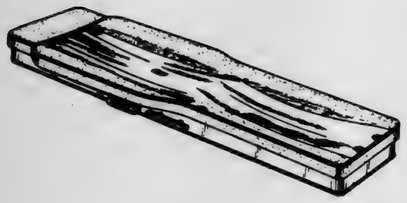
273,036
VENTURI WALL FOR WET SEPARATORS AND THE LIKE
Lennart Gustavsson, and Osten Maatta, both of S-Vaxjo, Sweden, assignors to Flakt Aktiebolag, Nacka, Sweden
Filed Dec. 29, 1980, Ser. No. 220,734
Claims priority, application Sweden, Jul. 4, 1980, 80-1336
U.S. Cl. D23—163



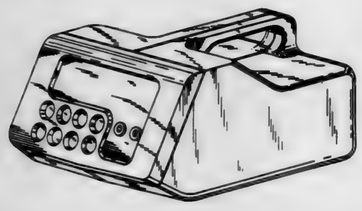
273,037
GAS TURBINE FAN BLADE
Paul R. Dodge, Mesa, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Jan. 15, 1981, Ser. No. 225,299
U.S. Cl. D23—165



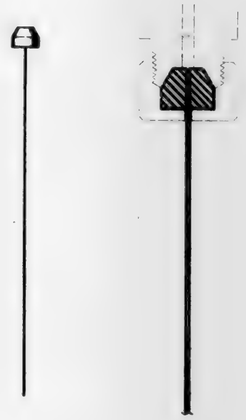
273,038
APPARATUS FOR CHIROPRACTIC THERAPY AND MASSAGE
Teruo Masuda, Tokyo, Japan, assignor to France Bed Co., Tokyo, Japan
Filed Oct. 14, 1981, Ser. No. 311,242
U.S. Cl. D24—03



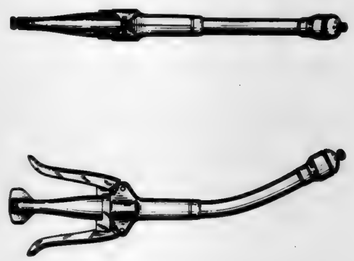
273,039
HOUSING FOR A PORTABLE ELECTRONIC CONTROL FOR A INTRAESOPHAGEAL PACER
James D. Behrens, Arvada, Colo., assignor to Associated Medical Devices, Inc., Denver, Colo.
Filed Sep. 10, 1981, Ser. No. 301,099
U.S. Cl. D24—17



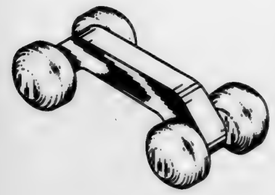
273,040
FUSED SILICA SYRINGE NEEDLE
Rand G. Jenkins, Fair Oaks, and Norman W. Wohlers, Davis, both of Calif., assignors to J&W Scientific, Inc., Rancho Cordova, Calif.
Filed Apr. 23, 1981, Ser. No. 256,924
U.S. Cl. D24—25



273,041
CURVED CIRCULAR ANASTOMOSIS SURGICAL STAPLER
Douglas G. Noiles, New Canaan; Paul O. Rawson, Easton, and Richard Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 2, 1981, Ser. No. 308,086
U.S. Cl. D24—26



273,042
MASSAGE ROLLER
William G. Jackson, 1018 Idaho St., Lewiston, Id. 83501
Filed Aug. 24, 1981, Ser. No. 295,636
U.S. Cl. D24—36

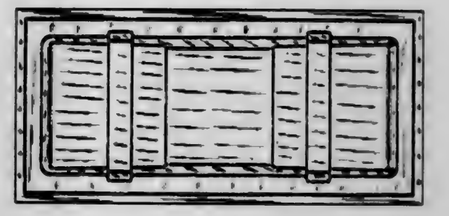


273,043
ICE PACK
Lois Rusch, 3626 Haddonfield Rd., Pennsauken, N.J. 08109
Filed Jun. 24, 1981, Ser. No. 276,629
U.S. Cl. D24—43

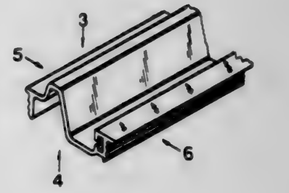
273,044
BABY BOTTLE HOLDER
William T. Holcomb, 2175 Mailul Dr., Anaheim, Calif. 92802
Filed Oct. 2, 1981, Ser. No. 307,776
U.S. Cl. D24—48



273,045
BASEMENT WINDOW COVER
Kert E. Artwick, Brecksville, Ohio, assignor to Questor Corporation, Tampa, Fla.
Filed Nov. 20, 1981, Ser. No. 323,417
U.S. Cl. D25—54



273,046
METAL MOLDING FOR A WALL PANEL OR SIMILAR ARTICLE
Michael D. Fisher, Mooreland; Thomas S. Flowers, and George E. Fort, both of New Castle, all of Ind., assignors to American Standard Inc., New York, N.Y.
Filed Feb. 1, 1982, Ser. No. 344,698
U.S. Cl. D25—74



273,047
CORNICE MOULD
Robert Lloyd-Jones, Unit 2, 27 Sixth Ave., Sandgate, Brisbane, Queensland, Australia
Filed Dec. 16, 1981, Ser. No. 331,553
U.S. Cl. D25—79



273,048
AUTOMATIC SAFETY ENTRY LIGHT
Chung K. Chan, Hong Kong, Hong Kong, assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 30, 1981, Ser. No. 335,966
U.S. Cl. D26—37



273,049
COMBINATION DOOR LOCK DE-ICER AND TORCH AND KEY RING
Siu L. Lam; Yuk-Ying Wong Chan, and King M. Chan, all of Block 16, 3rd Floor, Shing Wan Industrial Bldg., 15-17 Shing Yip St., Kwun Tong, Kowloon, Hong Kong
Filed Feb. 26, 1981, Ser. No. 238,629
Claims priority, application United Kingdom, Sep. 9, 1980, 996484
U.S. Cl. D26—38



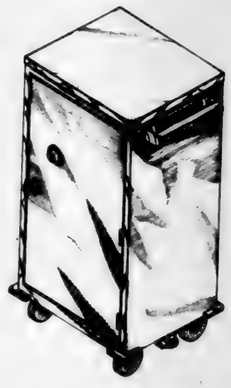
273,050
SMOKER'S PIPE
Mark S. Kaufman, Greenwich, Conn., assignor to Puff International Industries, Inc., New York, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,911
U.S. Cl. D27—3



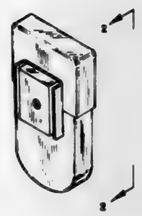
273,051
SOAP DISH
Richard Runyon, Los Angeles, Calif., assignor to Celle, Inc., New York, N.Y.
Filed Jul. 7, 1981, Ser. No. 281,016
U.S. Cl. D28—76



273,052
SAFE FOR CURRENCY CASSETTES
Clyde R. Snodgrass, Paoli, Pa., assignor to Chubb Industries Inc., Toledo, Ohio
Filed Oct. 19, 1981, Ser. No. 312,741
U.S. Cl. D99—28



273,053
ELASTOMERIC MAGNETIZED KEY CONTAINER
Peter M. Hamborg, 457 Princeton Dr., Costa Mesa, Calif. 92626
Filed Nov. 2, 1981, Ser. No. 317,160
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MARCH, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Betong AB: *See—*
Osterberg, Thomas V., 4,437,017, Cl. 290-52.000.
A. O. Smith Harvestore Products, Inc.: *See—*
Olson, George E., 4,436,473, Cl. 414-310.000.
A/S Raufoss Ammunisjonsfabrikker: *See—*
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.
Strandli, Kaare R.; and Ostlie, Arne M., 4,435,887, Cl. 29-123.000.
Strandli, Kaare R., 4,436,035, Cl. 102-364.000.
AB Karlstads Mekaniska Werkstad: *See—*
Andersson, Ingmar, 4,436,587, Cl. 162-123.000.
AB Welin: *See—*
Nilsson, Per, 4,436,180, Cl. 182-97.000.
Abe, Akira: *See—*
Iwao, Noriaki; and Abe, Akira, 4,435,916, Cl. 46-201.000.
Abe, Masaru: *See—*
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,436,130, Cl. 152-353.00R.
Abrams, Howard; and Allen, Barrington T., to Pall Corporation. Process for filtration of oil and gas well treatment fluids. 4,436,635, Cl. 210-806.000.
Abramson, Edward A., to Du Pont de Nemours, E. I., and Company. End capping an optical fiber. 4,436,366, Cl. 350-96.200.
Acea Manodomestici S.r.l.: *See—*
Ferrighi, Antonietta, 4,436,499, Cl. 425-195.000.
ACF Industries, Incorporated: *See—*
Bonds, James V.; and Orum, Paul R., 4,436,279, Cl. 251-86.000.
Achard, Serge, to S.A. Promocab. Dual sensitivity intrusion detection system. 4,437,089, Cl. 340-541.000.
Acme Resin Corporation: *See—*
Laitar, Robert A., 4,436,881, Cl. 525-504.000.
Acme Solar Works, Inc.: *See—*
Larsen, Raymond B., 4,436,085, Cl. 126-450.000.
Adamek, John A.: *See—*
Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., 4,436,301, Cl. 271-177.000.
Adams, Ladd M.: *See—*
Hayatdavoudi, Asadollah; and Adams, Ladd M., 4,436,166, Cl. 175-65.000.
Adlhart, Otto J., to Engelhard Corporation. Control system for hydrogen generators. 4,436,793, Cl. 429-17.000.
Adoniev, Viktor A.: *See—*
Petrov, Lev N.; Adoniev, Viktor A.; and Kononov, Valery I., 4,436,619, Cl. 209-573.000.
Adrian, David L.; and Young, Sam H., to King, Frank J. Card carrying microfilm and associated reading lens. 4,435,912, Cl. 40-365.000.
ADS - Anker GmbH: *See—*
Schuldt, Gerhardt, 4,436,989, Cl. 235-22.000.
Advanced Color Technology, Inc.: *See—*
Hudson, David M., 4,437,104, Cl. 346-140.00R.
Advanced Micro Devices, Inc.: *See—*
Alfke, Peter H.; Rallapali, Krishna; and MacMillan, David, 4,437,158, Cl. 364-200.000.
Agency of Industrial Science & Technology: *See—*
Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, 4,436,761, Cl. 427-38.000.
Mitsuoka, Toyokazu, 4,437,045, Cl. 318-561.000.
Agfa-Gevaert Aktiengesellschaft: *See—*
Kuffner, Karl; Marx, Paul; and Lassig, Wolfgang, 4,436,810, Cl. 430-551.000.
Aggen, Alvin F. Material metering device. 4,436,226, Cl. 222-280.000.
Agrawal, Balkishan: *See—*
Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, 4,436,553, Cl. 75-52.000.
Agri-Tech Ltd., Inc.: *See—*
Gorby, Oliver L., 4,435,996, Cl. 74-713.000.
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, to Kansai Paint Company, Limited. Aqueous resin composition. 4,436,849, Cl. 523-501.000.
Air Products and Chemicals, Inc.: *See—*
Buck, Daniel M.; Sibley, Alan T.; and Kaiser, John J., 4,436,696, Cl. 419-57.000.
Daly, Francis P.; and Wilhelm, Frederick C., 4,436,836, Cl. 502-317.000.
Harwell, Howard L., 4,436,842, Cl. 521-115.000.
Aisin Seiki Kabushiki Kaisha: *See—*
Akagi, Motonobu; Nomura, Ishi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.
Hayashi, Motomu; Ishikawa, Atuo; and Yukimoto, Kazuyoshi, 4,437,143, Cl. 362-272.000.
Akagi, Jiro, to Kabushiki Kaisha Komatsu Seisakusho. Fuel injection nozzle and holder assembly for internal combustion engines. 4,436,247, Cl. 239-533.700.
Akagi, Motonobu; Nomura, Isshi; Hattori, Kyo; and Kato, Kichiro, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling the proportion of air and fuel in an air-fuel mixture of the internal combustion engine. 4,436,070, Cl. 123-440.000.
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, to Nippon Electric Co., Ltd.; and Nippon Telegraph & Telephone Public Corporation. Selective call receiver having timed power supply. 4,437,095, Cl. 340-825.440.
Akao, Mutsuo; and Kawata, Tadashi, to Fuji Photo Film Co., Ltd. Method for light-shielding a roll photographic film. 4,436,809, Cl. 430-501.000.
Akchurin, Rashid Z.: *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.
Akiyama, Hiroyuki; Shimada, Sumio; Hirosawa, Kunimori; and Kuwabara, Hideki, to Japan Styrene Paper Corporation. Process for producing pre-foamed particles of polyolefin resin. 4,437, Cl. 521-58.000.
Akiyama, Masanori: *See—*
Taniguchi, Yoshiharu; Edano, Shigeki; and Akiyama, Masanori, 4,437,002, Cl. 250-338.000.
Aktiebolaget Bofors: *See—*
Mohlin, Kjell, 4,436,017, Cl. 89-14.00C.
Aktiebolaget SKF: *See—*
Hallerback, Stig L., 4,436,349, Cl. 308-189.00R.
Akzo NV: *See—*
Behnke, Joachim; and Loffelmann, Walter, 4,436,839, Cl. 521-64.000.
Akzona Incorporated: *See—*
Schroeder, Arnold; and Roskott, Lodewijk, 4,436,844, Cl. 523-144.000.
Albany International Corporation: *See—*
Nicholson, Charles B., 4,435,891, Cl. 29-157.00C.
Albee, Paul J., Jr.; and Burdick, Patricia E., to Allied Corporation. Use of ethylene-vinyl acetate copolymers and oxidized high density polyethylene homopolymers as processing aids for talc filled polypropylene compounds. 4,436,863, Cl. 524-451.000.
Albers, Arthur L. H. Lap device for wheelchair patients. 4,436,339, Cl. 297-153.000.
Albert, Gordon H.; and Feinman, Harvey M., to Sealectro Corporation. Badge reader using infrared light. 4,436,991, Cl. 235-468.000.
Alcon Laboratories, Inc.: *See—*
York, Billie M., Jr., 4,436,745, Cl. 424-273.00R.
Alejandro Llera, Santos A., to Precision Plastic Products Corp. Tamper proof closure. 4,436,212, Cl. 215-252.000.
Alfke, Peter H.; Rallapali, Krishna; and MacMillan, David, to Advanced Micro Devices, Inc. System bus protocol interface circuit. 4,437,158, Cl. 364-200.000.
Allen, Barrington T.: *See—*
Abrams, Howard; and Allen, Barrington T., 4,436,635, Cl. 210-806.000.
Allen, Fred E.; Thuener, Bruce W.; and Shadinger, Peter R., to Wheaton Industries. In-line rotational casting apparatus. 4,436,500, Cl. 425-290.000.
Allen, Linus S., to Mobil Oil Corporation. Method for the determination of clay and mica concentrations in subsurface sandstone formations through radioactive logging. 4,436,997, Cl. 250-256.000.
Allen, Roland M.; and Kalocai, Andrew J., to West Company, The. Apparatus for making molded articles. 4,436,478, Cl. 414-752.000.
Allied Corporation: *See—*
Albee, Paul J., Jr.; and Burdick, Patricia E., 4,436,863, Cl. 524-451.000.
Burdick, Patricia E.; and Rapp, Ronald J., 4,436,850, Cl. 524-8.000.
Flood, Paul W.; Mason, Charles D.; and Schulze, Stephen R., 4,436,872, Cl. 525-179.000.
Kasper, Alan H.; and Mathe, Istvan, 4,436,359, Cl. 339-61.00M.
Allis-Chalmers Corporation: *See—*
Gilgore, William H., 4,435,979, Cl. 73-168.000.
Alps Electric Co., Ltd.: *See—*
Hori, Fumihisa, 4,436,031, Cl. 101-93.170.
Shimaoka, Motohiro, 4,437,132, Cl. 360-105.000.
Aluminum Company of America: *See—*
Hartley, Louis A., II, 4,436,597, Cl. 204-67.000.
McMonigle, Matthew J., 4,436,627, Cl. 210-695.000.
Alvero, Ernesto J.: *See—*
Kelly, William R.; and Alvero, Ernesto J., 4,436,394, Cl. 354-1.000.

ALZA Corporation: *See—*
Urquhart, John; Chandrasekaran, Santosh K.; and Shaw, Jane E., 4,436,741, Cl. 424-267.000.

Aman, Mitsuji: *See—*
Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, 4,437,129, Cl. 360-85.000.

Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, to Taisho Pharmaceutical Co., Ltd.; and Kuraray Co., Ltd. Process for producing 1-(p-prenylphenyl)ethanol. 4,436,939, Cl. 568-813.000.

American Hoechst Corporation: *See—*
Walls, John E., 4,436,804, Cl. 430-157.000.
Walls, John E., 4,436,807, Cl. 430-331.000.

American Sports Equipment: *See—*
Fernandez, David, 4,436,305, Cl. 273-73.00C.

American Standard Inc.: *See—*
Pierro, Joseph J., Jr., 4,437,056, Cl. 324-73.0AT.

AMF Inc.: *See—*
Freyrie, Leonardo, 4,436,047, Cl. 114-102.000.

Ammermann, Eberhard: *See—*
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Jung, Johann, 4,436,548, Cl. 71-76.000.

AMP Incorporated: *See—*
Coldren, Daniel R.; and Schwenk, Dennis P., 4,436,358, Cl. 339-17.00C.
McCleerey, Earl W., 4,436,361, Cl. 339-97.00P.

Ampex Corporation: *See—*
Canel, Jules E.; and Gilligan, Thomas J., 4,437,173, Cl. 365-193.000.
Miller, Jerry W.; and Rudnick, Paul J., 4,437,086, Cl. 340-347.0DD.

Anderson, Edward M. Apparatus and method for separating a mixture of two liquids. 4,436,630, Cl. 210-744.000.

Anderson, Harold E. Self-standing marine riser. 4,436,451, Cl. 405-195.000.

Anderson, William, to Siemens Gammasonics Inc. Medical imaging apparatus. 4,437,161, Cl. 364-414.000.

Andersson, Bengt U. I.: *See—*
Larsson, Sven B.; and Andersson, Bengt U. I., 4,436,467, Cl. 411-34.000.

Andersson, Ingmar, to AB Karlstads Mekaniska Werkstad. Method for producing multilayer paper. 4,436,587, Cl. 162-123.000.

Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K. Coating for metal-cutting tools. 4,436,830, Cl. 501-96.000.

Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, to Union Carbide Corporation. Process to produce low hydrogen steel. 4,436,553, Cl. 75-52.000.

Andros Analyzers Incorporated: *See—*
Passaro, Robert E.; and Burough, Irvin G., 4,437,004, Cl. 250-343.000.

Angeles Metal Trim Co.: *See—*
Davenport, Jeanne A.; Campbell, Robert L.; and Gallaway, James F., 4,435,940, Cl. 52-641.000.

Annen, Oskar; Egli, Hermann; and Zesiger, Karl, to Sandoz Ltd. Process for producing dyed and anti-shrink treated wool. 4,436,521, Cl. 8-493.000.

Ante, Louis E.; Lindquist, Richard A.; and Roeschlein, Eugene R., to United States of America, Navy. Simulator for testing sonobuoys. 4,436,049, Cl. 114-254.000.

Anthony, Thomas R.; Connery, Richard J.; and Hoeschele, David F., Jr., to General Electric Company. Silicon-on-sapphire body with conductive paths therethrough. 4,437,109, Cl. 357-68.000.

Aoki, Masaaki: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Aoki, Masahiro: *See—*
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.

Aoki, Mitsugu, to Tokyo Kogaku Kikai Kabushiki Kaisha. Ophthalmic instrument having a cross cylinder lens. 4,436,390, Cl. 351-234.000.

Aoki, Takashi: *See—*
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,436,411, Cl. 355-14.00D.

Aotsuka, Yasuo: *See—*
Ohtsuka, Shuichi; and Aotsuka, Yasuo, 4,436,802, Cl. 430-100.000.

APM Corporation: *See—*
Morse, Milton, 4,436,965, Cl. 179-184.000.

Applications Mecaniques et Robinetterie Industrielle: *See—*
Chiron, Alain, 4,436,281, Cl. 251-305.000.

Arai, Akira: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Arai, Tohru: *See—*
Fujita, Hironori; and Arai, Tohru, 4,436,559, Cl. 148-6.000.
Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, 4,436,560, Cl. 148-6.000.

Araki, Tamio: *See—*
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, 4,436,131, Cl. 152-361.0FP.

Arana Erana, Agustin. Molding sand blowers. 4,436,141, Cl. 164-201.000.

Araoka, Katsumasa: *See—*
Nakaya, Shunichi; and Araoka, Katsumasa, 4,437,016, Cl. 290-1.00R.

Arbed S/A: *See—*
Metz, Paul, 4,436,763, Cl. 427-47.000.

Arden, Terry D.; and Foglesong, Robert M. Fireplace rotisserie. 4,436,024, Cl. 99-421.0HV.

Argon Medical Corp.: *See—*
O'Neill, William J., 4,436,519, Cl. 604-175.000.

Armco Inc.: *See—*
Seaburg, Paul A.; and Lautensleger, Richard W., 4,435,932, Cl. 52-263.000.
Stone, Lester W., 4,435,937, Cl. 52-520.000.

Armstrong World Industries, Inc.: *See—*
Ehrhart, Wendell A., 4,436,784, Cl. 428-423.100.

Arnold, Dan M.; Smith, Harry D., Jr.; and Schultz, Ward E., to Halliburton Company. Borehole compensated KUT log. 4,436,996, Cl. 250-256.000.

Arnold, Fred E.: *See—*
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,436,886, Cl. 526-257.000.

Arnold, Winfried, to Robert Bosch GmbH. Control system for a pulled load, particularly agricultural tractor-and-plough control system. 4,437,048, Cl. 318-663.000.

Arthur D. Little, Inc.: *See—*
McCullough, John E., 4,436,495, Cl. 418-55.000.

Asahi Glass Company, Ltd.: *See—*
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Koya, Masahiko; and Fukuoka, Yohei, 4,436,945, Cl. 585-488.000.
Matsuzaki, Kazuhiko; Iwaisako, Toshiyuki; and Masamoto, Junzo, 4,436,900, Cl. 528-490.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Takeo, 4,436,397, Cl. 354-465.000.
Negoro, Ikuo; and Iwanade, Hisao, 4,436,416, Cl. 355-57.000.
Suzuki, Kozaburo, 4,436,421, Cl. 356-153.000.

Asami, Fumitaka, to Fujitsu Limited. Lock detecting circuit for phase-locked loop frequency synthesizer. 4,437,072, Cl. 331-1.00A.

ASEA Aktiebolag: *See—*
Jonsson, Per-Erik; and Svedberg, Per, 4,437,107, Cl. 357-38.000.

Ashby, Bruce A.; and Schroeter, Siegfried H., to General Electric Company. Ultraviolet light absorbing agents and compositions and articles containing same. 4,436,924, Cl. 556-416.000.

Ask, Jonas W. Saw unit having mutually displaceable saw parts. 4,436,009, Cl. 83-72.000.

Asoyants, Grigory B.: *See—*
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, to Societe d'Expansion Scientifique "EXPANSIA". Acrylic copolymers and their use in solid phase peptide synthesis. 4,436,874, Cl. 525-327.100.

Aspisi, Christian; Bonato, Marc; and Jacquier, Robert, to Societe d'Expansion Scientifique "EXPANSIA". Borane complexes. 4,436,919, Cl. 549-4.000.

Assay Tec Associates, Inc.: *See—*
Manning, Charles R., 4,436,819, Cl. 436-1.000.

Ateliers et Chantiers de Bretagne-ABC: *See—*
Ninet, Jean-Louis; and Vaillant, Robert, 4,436,454, Cl. 405-204.000.

Atkins, Terrance J.; and Field, Martin J., to General Motors Corporation. Fuel pressure regulator. 4,436,112, Cl. 137-510.000.

Atlantic Richfield Company: *See—*
Emery, Leonard W., 4,436,165, Cl. 175-61.000.

Atsugi Motor Parts Company Limited: *See—*
Ichikawa, Mamoru; and Satake, Sachio, 4,436,318, Cl. 280-104.000.

Aufderhaar, Ernst; Sprecher, Klemenz; and Zergenyi, Janos, to Ciba-Geigy Corporation. Process for the production of 5-cyano-and 5-carboxamido-5H-dibenz[b,f]azepines. 4,436,660, Cl. 260-239.00D.

Augat Inc.: *See—*
Wey, Robert A.; and Roberts, Harold A., 4,436,295, Cl. 269-21.000.

Automatic Liquid Packaging, Inc.: *See—*
Weiler, Gerhard H.; and Pagels, Louis T., 4,436,210, Cl. 215-32.000.

Automation Industries, Inc.: *See—*
Stenabaugh, Donald D., 4,436,692, Cl. 376-204.000.
Vassalotti, Michael; and Obligado, Alvaro, 4,436,694, Cl. 376-310.000.
Zezza, Louis J.; and Husain, Iqbal, 4,436,693, Cl. 376-272.000.

B & B Insulation, Inc.: *See—*
Harris, Kendall R., 4,436,868, Cl. 524-783.000.

B. F. Goodrich Company, The: *See—*
Houck, Robert J.; and King, Kevin J., 4,436,198, Cl. 198-502.000.
Kramer, James H., 4,436,274, Cl. 248-633.000.

Baardman, Frank; van Helden, Robert; and de Nie-Sarink, Margaretha J., to Shell Oil Company. Process for the ring alkylation of an aniline. 4,436,937, Cl. 564-409.000.

Baas, Albertus H.: *See—*
Nacken, Lambertus J. G.; and Baas, Albertus H., 4,436,706, Cl. 423-65.000.

Baba, Kiyokazu; and Nishida, Kenji, to Kabushiki Kaisha Komatsu Seisakusho. Cam-operated multistroke feed mechanism. 4,436,199, Cl. 198-750.000.

Baba, Mikito: *See—*
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.

Baber, David J.: *See—*
Witalka, Jerome J.; Kurth, Duane G.; and Baber, David J., 4,437,157, Cl. 364-200.000.

Babler, Fridolin, to Ciba-Geigy Corporation. Process for the coloration of linear polyesters in the melt with perylenetetracarboxylic acid bis-methylimide. 4,436,852, Cl. 524-88.000.

Bade & Theelen GmbH: *See—*
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.

Bailey, Daniel D.: *See—*
Campbell, Robert L.; and Bailey, Daniel D., 4,436,075, Cl. 123-557.000.

Baker CAC, Inc.: *See—*
Goans, Kip B., 4,436,105, Cl. 137-1.000.

Baker International Corporation: *See—*
Brooks, Robert T., 4,436,157, Cl. 166-344.000.

Baker Oil Tools, Inc.: *See—*
Callihan, Rudy B.; and Stone, Lyndon R., 4,436,151, Cl. 166-154.000.

Baker, Ronald: *See—*
Kennington, Kerry S.; and Baker, Ronald, 4,436,002, Cl. 81-57.200.

Balbis, Manuel G.; and King, Colin V., to Firestone Tire & Rubber Company, The. Advanced profile radial tire having relatively high inflation pressure. 4,436,127, Cl. 152-209.00R.

Balbo, Anthony M.: *See—*
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., 4,436,184, Cl. 187-29.00R.

Balco, Inc.: *See—*
Borner, Willy; and Jackson, Bernie F., 4,435,982, Cl. 73-462.000.

Baldwin, John J., to Merck & Co., Inc. 3-Cycloalkylamino-2-OR-propoxycyanopyridines. 4,436,740, Cl. 424-263.000.

Ball Corporation: *See—*
Dugal, Jeffrey N., 4,436,778, Cl. 428-36.000.
Nichols, C. Ross; and Miller, Edward C., 4,435,969, Cl. 72-126.000.

Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito. Direct current motor. 4,437,029, Cl. 310-198.000.

Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, to Omron Tateisi Electronics Co. Polarized electromagnetic device. 4,437,078, Cl. 335-81.000.

Banko, Anton, to Surgical Design Corporation. Surgical cutting instrument with release mechanism. 4,436,091, Cl. 128-305.000.

Bankovsky, Alexandr I.: *See—*
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.

Bannon, Robert P., to Shell Oil Company. Adsorption process. 4,436,533, Cl. 55-26.000.

Barbee, Robert B.; and Davis, Burns, to Eastman Kodak Company. Polyester containers having improved gas barrier properties. 4,436,895, Cl. 528-288.000.

Barber, Franklin T.: *See—*
Wood, William E.; and Barber, Franklin T., 4,436,902, Cl. 528-501.000.

Barczak, Virgil J.; Perkins, Haywood A.; and Daigle, O. L. Process for producing iron oxide weighting material from iron chloride solutions. 4,436,681, Cl. 264-67.000.

Barker, Dale E.: *See—*
Dirksing, Robert S.; and Barker, Dale E., 4,436,269, Cl. 248-214.000.

Barker, James M., to Otis Engineering Corporation. Bridge plug. 4,436,150, Cl. 166-31.000.

Barkoczy, Istvan: *See—*
Kaderjak, Gyula; Veres, Albert; Barkoczy, Istvan; and Lonscsak, Janos, 4,436,954, Cl. 174-128.00R.

Barlow, Gordon A.; Newcomer, John R.; and Bezark, Fred, to Gordon Barlow Design. Strategy card game. 4,436,309, Cl. 273-267.000.

Barnes, George D., to Wilkinson Rubber Linatex Limited. Blending of fluid materials. 4,436,433, Cl. 366-152.000.

Barnowski, Reinhard. Toilet flush tank. 4,435,859, Cl. 4-324.000.

Barthold, Klaus: *See—*
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,436,639, Cl. 252-8.55E.

Barton, Lyndon O. Bridge bidding aid. 4,436,324, Cl. 283-50.000.

Bartsch, Wolfgang: *See—*
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, 4,436,742, Cl. 424-269.000.

BASF Aktiengesellschaft: *See—*
Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, 4,436,854, Cl. 524-139.000.
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.
Harder, Wolfgang; Merger, Franz; and Towae, Friedrich, 4,436,668, Cl. 260-463.000.
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,436,639, Cl. 252-8.55E.
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, 4,436,702, Cl. 422-195.000.
Strehler, Hugo; Hoerauf, Werner; and Urbanek, Friedrich, 4,436,897, Cl. 528-323.000.
Weitz, Hans-Martin; Fischer, Rolf; and Pohl, Hans H., 4,436,944, Cl. 585-408.000.
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Jung, Johann, 4,436,548, Cl. 71-76.000.

BASF Farben & Fasern AG: *See—*
Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, 4,436,878, Cl. 525-438.000.

Basic Machinery Co., Inc.: *See—*
Kenworthy, Samuel P., 4,436,501, Cl. 425-308.000.

Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, to Boehringer Mannheim GmbH. Reactive asymmetrical dicarboxylic acid esters and reagents for the investigation of cardiac glycosides. 4,436,828, Cl. 436-545.000.

Batzill, Wolfgang: Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, to BASF Farben & Fasern AG. Water-dispersible binders for cationic electropaints, and a process for their preparation. 4,436,878, Cl. 525-438.000.

Baum, Frank. Multi-purpose traveling bag. 4,436,189, Cl. 190-108.000.

Baumgartner Papiers S.A.: *See—*
Lebet, Jean-Pierre, 4,436,517, Cl. 493-45.000.

Bausch & Lomb Incorporated: *See—*
Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,436,887, Cl. 526-263.000.

Bax, Ronald F., to Diasonics (NMR) Inc. Gradient power supply. 4,437,053, Cl. 323-268.000.

Baxter Travenol Laboratories, Inc.: *See—*
Bellotti, Marc; Goldhaber, Richard P.; Phillips, Earl G.; and Toch, Theodore H., 4,436,620, Cl. 210-90.000.

Bay, David L., to GTE Products Corporation. Method of effecting stabilized dimming of fluorescent lamps. 4,437,040, Cl. 315-209.00R.

Bayer Aktiengesellschaft: *See—*
Bonse, Gerhard, 4,436,905, Cl. 544-182.000.
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,436,907, Cl. 544-335.000.
Marhold, Albrecht; and Klauke, Erich, 4,436,941, Cl. 570-144.000.
Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, 4,436,570, Cl. 156-273.300.
Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, 4,436,841, Cl. 521-106.000.
Rauleder, Gebhard; and Waldmann, Helmut, 4,436,943, Cl. 585-357.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Fritzenwenger, Josef, 4,436,067, Cl. 123-198.00C.

Beard, Harold J. Clarifier skimmer. 4,436,632, Cl. 210-776.000.

Beard, Walter C. High flow tilt valve with accelerating cam equipped moveable cup. 4,436,229, Cl. 222-402.220.

Beck, Ernst: *See—*
Lenard, Peter; and Beck, Ernst, 4,436,000, Cl. 76-41.000.

Becker, Herbert, to Metallwerk Max Brose GmbH & Co. Drive unit for a transport cable. 4,436,250, Cl. 242-54.00R.

Beckman Instruments, Inc.: *See—*
Meyer, Richard C.; and Carroll, Edward L., 4,435,989, Cl. 73-864.140.
Van Vliet, James G.; and Brown, James R., 4,436,994, Cl. 250-207.000.

Becton Dickinson Company: *See—*
Kaufman, Joseph, 4,436,098, Cl. 128-766.000.

Beecham Group Limited: *See—*
O'Hanlon, Peter J.; and Walker, Graham, 4,436,751, Cl. 424-283.000.

Beerens, Cornelis J. M. Saw sharpening guide. 4,435,999, Cl. 76-36.000.

Beese, John G., to IMI Marston Limited. Reverse buckling bursting disc. 4,436,218, Cl. 220-89.00A.

Beever, William H., to Phillips Petroleum Company. Poly(arylene sulfide) composition suitable for molding. 4,436,865, Cl. 524-504.000.

Beggs, William R.; and Crane, Barry D., to United States of America, Air Force. High energy single pulse laser calorimeter. 4,436,437, Cl. 374-32.000.

Behnke, Joachim; and Loffelmann, Walter, to Akzo NV. Process for preparing polycarbonate-polyether-blockcopolymers. 4,436,839, Cl. 521-64.000.

Belfoure, Edward: *See—*
Miller, Kenneth F.; and Belfoure, Edward, 4,436,879, Cl. 525-439.000.

Bell, Frank H., to Thiokol Corporation. Projectile for dispensing gaseous material. 4,436,036, Cl. 102-367.000.

Bell & Howell Company: *See—*
Orsinger, Winston A., 4,436,299, Cl. 271-100.000.

Bell Telephone Laboratories, Incorporated: *See—*
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.
Davis, Richard A.; Harris, Susan K.; and Jones, Bernard R., 4,436,962, Cl. 179-18.00B.
Harmon, William R., Jr., 4,436,960, Cl. 179-51.0AA.
Hodgins, Martin G.; and Jordan, William J., 4,436,365, Cl. 350-96.160.
Khanna, Sarwan K.; and Khanna, Satya P., 4,436,648, Cl. 252-511.000.
Parrillo, Louis C.; Reutlinger, George W.; and Wang, Li-Kong, 4,435,895, Cl. 29-571.000.
Parrillo, Louis C.; and Payne, Richard S., 4,435,896, Cl. 29-571.000.
Petr, David W., 4,437,087, Cl. 340-347.0DD.

Belloli, Archille, to Joule' Technical Corporation. Method and means for orienting bevel tipped needles and the like. 4,436,479, Cl. 414-757.000.

Bellotti, Marc; Goldhaber, Richard P.; Phillips, Earl G.; and Toch, Theodore H., to Baxter Travenol Laboratories, Inc. Integral hydraulic circuit for hemodialysis apparatus. 4,436,620, Cl. 210-90.000.

Beloit Corporation: *See—*
Frye, Kenneth G.; Fitzpatrick, Donald C.; and Karis, Arthur T., 4,436,302, Cl. 271-202.000.

Belt, Kenneth W., to Norland Corporation. Cardiac pacer having active notch filter system. 4,436,093, Cl. 128-419.0PG.

Bemis Company, Inc.: *See—*
Cooper, Barry A., 4,436,788, Cl. 428-483.000.

Bendix Corporation, The: *See—*
Bolenbaugh, Daniel L.; and Wegh, John R., 4,436,187, Cl. 188-73.450.
Garnett, Jack L., 4,435,924, Cl. 51-327.000.
Ritsema, Irving R.; and Colpaert, James J., 4,436,186, Cl. 188-71.800.

Bennett, Robert W.: *See—*
Purvis, Fay A.; Bennett, Robert W.; and Ruth, Roger A., 4,436,487, Cl. 417-46.000.

Bennett, William R.; and Clere, Thomas M., to Diamond Shamrock Corporation. Narrow gap gas electrode electrolytic cell. 4,436,608, Cl. 204-265.000.

Bequette, Robert J.; Hobbs, Linda G.; and Scott, Joseph A., to Mead Johnson & Company. Stabilized estradiol cream composition. 4,436,738, Cl. 424-238.000.

Berfield, Robert C., to Shop-Vac Corporation. Noise reducing means for vacuum cleaner. 4,435,877, Cl. 15-326.000.

Berger, Elena S.: *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Berger, Elisabeth J.: *See—*
Haines, Richard M.; Wong, Robert; and Berger, Elisabeth J., 4,436,848, Cl. 523-426.000.

Berger, Ove R.: *See—*
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.

Berglund, Lennart H. A., to Boliden Aktiebolag. Method for recovering useful products from waste products obtained when manufacturing aluminium fluoride. 4,436,629, Cl. 210-712.000.

Bergwerksverband GmbH: *See—*
Richter, Ekkehard; and Reinke, Martin, 4,436,701, Cl. 422-173.000.

Berkhof, Hendrikus, to Honeywell B.V. Control system for a gas heated water or air heater. 4,436,506, Cl. 431-76.000.

Berkley, E. Bertram, to Tension Envelope Corporation. Reusable envelope. 4,436,202, Cl. 206-455.000.

Bernacki, Stephen E.; and Kosicki, Bernard B., to Sperry Corporation. Anisotropic plasma etching of semiconductors. 4,436,584, Cl. 156-643.000.

Berni, Albert J., to Shell Oil Company. Marine seismic system. 4,437,175, Cl. 367-24.000.

Berning & Sohne: *See—*
Rohrig, Klaus, 4,435,945, Cl. 53-589.000.

Berrer, Dagmar; Pissiotas, Georg; and Rohr, Otto, to Ciba-Geigy Corporation. Thiocarbamoylalkoxyphenylureas. 4,436,935, Cl. 564-49.000.

Berrill, William H.; Boot, Herbert W.; and Hartshorn, Frank, to USM Corporation. Shoe lasting machines. 4,435,869, Cl. 12-12.000.

Bertenshaw, David R.; Lockwood, Edwin P.; and Brown, Anthony R., to Rank Organisation Limited, The. Stage lighting control system. 4,437,169, Cl. 364-900.000.

Berthold, Heinz, to Brueninghaus Hydraulik GmbH. Adjusting device for axial and radial piston machines. 4,435,992, Cl. 74-89.150.

Bertin, Patrice, to VALEO. Power assisted steering device for a vehicle. 4,436,171, Cl. 180-148.000.

Berube, Richard G.: *See—*
Deyesso, Joseph P.; Sarser, David; and Berube, Richard G., 4,436,251, Cl. 242-56.00R.

Best, Gerd; and Weikert, Norbert B., to Krampe & Co. Fertigung in Bergbaubedarf GmbH. Cutting roller for a mining machine. 4,436,346, Cl. 299-87.000.

Best Lock Corporation: *See—*
Best, Walter E.; and Foshee, William R., 4,435,967, Cl. 70-224.000.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Doorknob. 4,435,967, Cl. 70-224.000.

Bethlehem Steel Corporation: *See—*
Swift, John E., Sr., 4,437,054, Cl. 324-51.000.

Beyerle, Rudi: *See—*
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.

Beyers, Joseph W.: *See—*
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.

Bezark, Fred: *See—*
Barlow, Gordon A.; Newcomer, John R.; and Bezark, Fred, 4,436,309, Cl. 273-267.000.

Biehl, Reinhard; and Schmalbein, Dieter, to Bruker Analytische MeBtechnik GmbH. Specimen head for electron spin resonance and paramagnetic electron resonance measurements. 4,437,063, Cl. 324-316.000.

Bielomatik Leuze GmbH & Co.: *See—*
Kunzmann, Otto, 4,436,472, Cl. 414-50.000.

Biermann, Peter: *See—*
Storandt, Ralf; Scheck, Georg; and Biermann, Peter, 4,436,321, Cl. 280-612.000.

Big Inch Marine Systems, Inc.: *See—*
Miller, Jack E., 4,436,325, Cl. 285-18.000.

Biggs, Ian; and Goy, Ronald S., to Dunlop Limited. Rubber/polymeric material composites. 4,436,774, Cl. 427-40.000.

Billeter, Henry R., to Sloan Valve Company. Four-way valve. 4,436,116, Cl. 137-625.470.

Bischoff, Peter G.: *See—*
Osborne, John R.; and Bischoff, Peter G., 4,436,593, Cl. 204-15.000.

Bishop, David C., to Ortho Diagnostic Systems, Inc. Leukocyte migration through antigen containing agaroses for immunocompetence testing. 4,436,824, Cl. 436-514.000.

Bissot, Thomas C.; and Li, Stephen, to RCA Corporation. Method for making a cathode, and method for lowering hydrogen overvoltage in a chloralkali cell. 4,436,599, Cl. 204-98.000.

Black & Decker Inc.: *See—*
Simpson, Frank F., 4,436,163, Cl. 173-117.000.

Blagg, Leon, to Rolligon Corporation. Log skidder with load distributing boom attachment. 4,436,475, Cl. 414-569.000.

Blenkush, Brian J., to Colder Products Company. Quick connect coupling. 4,436,125, Cl. 141-330.000.

Bloedorn, William H.: *See—*
Hodlewsky, Wasly G.; and Bloedorn, William H., 4,436,200, Cl. 198-851.000.

Bloem, Russell J.: *See—*
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., 4,436,750, Cl. 424-279.000.

Blom, Eric D.; and Singer, Mark I., to Hansa Medical Products, Inc. Voice prosthesis device and placement tool therefor. 4,435,853, Cl. 3-1.300.

Blum, Alvin S. Photon emission imaging apparatus and method. 4,437,160, Cl. 364-414.000.

Blumcke, Alfred; Fischer, Peter; and Vahlensieck, Hans-Joachim, to Dragerwerk Aktiengesellschaft. Silica gels incorporating insolubilized reagents. 4,436,823, Cl. 436-169.000.

Blumenkranz, James J., to R & G Sloane Mfg. Co., Inc. Spiral bifilar welding sleeve. 4,436,988, Cl. 219-544.000.

Bobsein, Rex L., to Phillips Petroleum Company. Catalyst compositions. 4,436,948, Cl. 585-532.000.

Bocquet, Jacques; and Werquin, Jean C., to Union Siderurgique du Nord et de l'Est de la France. Cast cold rolling roll. 4,436,791, Cl. 428-682.000.

Boda, Janos: *See—*
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.

Boden, Richard M.; Tyszkiewicz, Theodore J.; and Watkins, Hugh, to International Flavors & Fragrances Inc. Phenylethylmethylcarbonate mixtures containing same and organoleptic uses thereof. 4,436,652, Cl. 252-522.00R.

Bodine, Albert G. Sonic pile driver system employing resonant drive member and phased coupling. 4,436,452, Cl. 405-232.000.

Boduch, Paul A.: *See—*
Rendulic, Francis J.; Trasavage, Robert K.; and Boduch, Paul A., 4,436,806, Cl. 430-311.000.

Boehringer Mannheim GmbH: *See—*
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, 4,436,828, Cl. 436-545.000.
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, 4,436,742, Cl. 424-269.000.
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.

Boeing Company, The: *See—*
Gratzer, Louis B.; and Gillette, Walter B., 4,436,263, Cl. 244-130.000.
Klees, Garry W., 4,435,958, Cl. 60-204.000.
Russon, Darrel L.; and Wheeler, Warren H., 4,436,007, Cl. 83-23.000.

Bohn, Helmut: *See—*
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.

Bolen, Charles E.: *See—*
Grossi, Anthony V.; Hahn, Louis T.; Marzocchi, Alfred; and Bolen, Charles E., 4,436,767, Cl. 427-138.000.

Bolenbaugh, Daniel L.; and Wegh, John R., to Bendix Corporation, The. Disc brake assembly. 4,436,187, Cl. 188-73.450.

Boliden Aktiebolag: *See—*
Berglund, Lennart H. A., 4,436,629, Cl. 210-712.000.
Fahlstrom, Per A. H. H.; and Gorling, Karl G., 4,436,529, Cl. 48-197.00R.

Bollmann, Heinz: *See—*
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, 4,436,869, Cl. 525-51.000.

Bonato, Marc: *See—*
Aspisi, Christian; Bonato, Marc; and Jacquier, Robert, 4,436,919, Cl. 549-4.000.

Bonds, James V.; and Orum, Paul R., to ACF Industries, Incorporated. Stem connection for gate valve. 4,436,279, Cl. 251-86.000.

Bonham, Richard T.; Sigiols, John P.; and Dinkelacker, Paul H., to Union Special Corporation. Differential feed mechanism for sewing machines. 4,436,045, Cl. 112-313.000.

Bonse, Gerhard, to Bayer Aktiengesellschaft. Preparation of 4-methyl-5-oxo-3-thioxo-tetrahydro-1,2,4,-(2H,4H)-triazines. 4,436,905, Cl. 544-182.000.

Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, to United States Steel Corporation. Process for removing solids from coal tar. 4,436,615, Cl. 208-177.000.

Boot, Herbert W.: *See—*
Berrill, William H.; Boot, Herbert W.; and Hartshorn, Frank, 4,435,869, Cl. 12-12.000.

Booth, John L.; and Rittmaster, Peter A., to Booth Manufacturing Company. Packaging machine. 4,435,941, Cl. 53-475.000.

Booth Manufacturing Company: *See—*
Booth, John L.; and Rittmaster, Peter A., 4,435,941, Cl. 53-475.000.

Boray, Joseph C., to Ciba-Geigy Corporation. Anthelmintic compositions. 4,436,737, Cl. 424-225.000.

Borg-Warner Corporation: *See—*
Overzet, John K., 4,437,050, Cl. 318-798.000.
Smirl, Richard L., 4,436,193, Cl. 192-107.00C.

Borner, Willy; and Jackson, Bernie F., to Balco, Inc. Machine and method for balancing wheels. 4,435,982, Cl. 73-462.000.

Borstelmann, Wolfgang, to Holstein und Kappert GmbH. Process and apparatus for bottling oxygen-sensitive liquids. 4,436,124, Cl. 141-5.000.

Boryaev, Klim I.: *See—*
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.

Bosch, Alfred, to Lindauer Dornier Gesellschaft mbH. Clip-chain track for tenter clips. 4,435,884, Cl. 26-93.000.

Botros, Radamis, to Darome, Inc. Conference microphone unit. 4,436,966, Cl. 179-121.00D.

Boukamp, Bernard A.: *See—*
Huggins, Robert A.; and Boukamp, Bernard A., 4,436,796, Cl. 429-112.000.

Bourke, Patrick T. Apparatus for cutting stone panels. 4,436,078, Cl. 125-13.00R.

Bowen, Leslie J., to GTE Laboratories Incorporated. Low voltage ceramic varistor. 4,436,650, Cl. 252-518.000.

Bowes, Laurence B.; and Gray, Thomas J., to General Motors Corporation. Vehicle body molding assembly. 4,436,337, Cl. 296-201.000.

Boyd, Phillip R.; Green, Gary K.; and Sumner, Barbara E., to United States of America, Army. Method of preparing a mercury cadium telluride substrate for passivation and processing. 4,436,580, Cl. 156-636.000.

Braach, Otto: *See—*
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.

Bradley, David J., to International Business Machines Corporation. Apparatus and method for scrolling text and graphic data in selected portions of a graphic display. 4,437,093, Cl. 340-726.000.

Brady, Michael J.; Meyerson, Bernard S.; and Warlaumont, John M., to International Business Machines Corporation. X-Ray mask. 4,436,797, Cl. 430-5.000.

Braginski, Aleksander I.: *See—*
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., 4,437,080, Cl. 335-216.000.

Braley, William W. Ice-breaking hull. 4,436,046, Cl. 114-42.000.

Branch, Howard R., III, to Bristol Babcock Inc. Ridge circuit compensation for environmental effects. 4,437,164, Cl. 364-571.000.

Branchick, Kenneth J.; Nalkin, Irving; and Suchanski, Mary R., to Diamond Shamrock Corporation. Metal removal process. 4,436,601, Cl. 204-149.000.

Brandenstein, Manfred: *See—*
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, 4,435,890, Cl. 29-148.40R.
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,436,516, Cl. 464-128.000.

Brandon, Ronald E. Segmented labyrinth-type shaft sealing system for fluid turbines. 4,436,311, Cl. 277-27.000.

Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, to BASF Aktiengesellschaft. Self-extinguishing thermoplastic molding material. 4,436,854, Cl. 524-139.000.

Braud, Societe Anonyme Francaise: *See—*
Deux, Alain; and Merant, Jean C., 4,435,950, Cl. 56-330.000.

Brendel, Gottfried: *See—*
Krennrich, Otmar; Brendel, Gottfried; and Pietsch, Hartmut, 4,436,704, Cl. 423-11.000.

Bridgestone Tire Co., Ltd.: *See—*
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,436,130, Cl. 152-353.00R.
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, 4,436,131, Cl. 152-361.0FP.
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.

Brieger, Emmet F., to GEO Vann, Inc. Well cleanup and completion apparatus. 4,436,155, Cl. 166-297.000.

Brightman, Barrie; and Nierttit, Frank, to Stromberg-Carlson Corp. Concentrator circuit incorporating solid state bilateral bridge arrangement. 4,437,096, Cl. 340-825.960.

Bristol Babcock Inc.: *See—*
Branch, Howard R., III, 4,437,164, Cl. 364-571.000.

British Telecommunications: *See—*
Moss, Rodney H.; and Faktor, Marc M., 4,436,769, Cl. 427-252.000.

Brixius, Darryl W.; and Simms, John A., to Du Pont de Nemours, E. I., and Company. Preparation of isocyanate-functional polymers containing a terminal monosulfide group. 4,436,885, Cl. 526-214.000.

Brockway, Inc. (NY): *See—*
McCausland, Thomas W., 4,436,544, Cl. 65-374.120.

Broddon, Alan J.: *See—*
Glickman, Howard E.; Broddon, Alan J.; and Broddon, Norman C., 4,436,331, Cl. 292-270.000.

Broddon, Norman C.: *See—*
Glickman, Howard E.; Broddon, Alan J.; and Broddon, Norman C., 4,436,331, Cl. 292-270.000.

Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, to BASF Aktiengesellschaft. Preparation of methanol synthesis catalyst comprising zinc, copper and aluminum. 4,436,833, Cl. 502-176.000.

Broken Hill Proprietary Company Limited, The: *See—*
Rigby, Geoffrey R.; and Callcott, Thomas G., 4,436,618, Cl. 209-5.000.

Brooks, Robert T., to Baker International Corporation. Latch mechanism for subsea test tree. 4,436,157, Cl. 166-344.000.

Brossman, James W., Jr.; Nemeth, Carol A.; and Shapiro, Alan K., to Western Electric Co., Inc. Selecting articles from an array thereof 4,436,474, Cl. 414-417.000.

Brown, Anthony R.: *See—*
Bertenshaw, David R.; Lockwood, Edwin P.; and Brown, Anthony R., 4,437,169, Cl. 364-900.000.

Brown, Boveri & Cie AG: *See—*
Rief, Rolf; and Wetzel, Peter, 4,436,951, Cl. 174-52.0PE.

Brown, Edmund J.: *See—*
McKillip, James B.; and Brown, Edmund J., 4,436,303, Cl. 272-132.000.

Brown, James R.: *See—*
Van Vliet, James G.; and Brown, James R., 4,436,994, Cl. 250-207.000.

Brown, Royden. Pollen trap for beehives with dual entranceways. 4,435,866, Cl. 6-4.00R.

Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., to Everest & Jennings, Inc. Chassis for invalid wheelchairs. 4,436,320, Cl. 280-242.0WC.

Brueninghaus Hydraulik GmbH: *See—*
Berthold, Heinz, 4,435,992, Cl. 74-89.150.

Bruker Analytische MeBtechnik GmbH: *See—*
Biehl, Reinhard; and Schmalbein, Dieter, 4,437,063, Cl. 324-316.000.

Brumfield, Elmer B. Flying device. 4,436,264, Cl. 244-153.00R.

Brunner, Josef: *See—*
Rock, Erich; and Brunner, Josef, 4,436,357, Cl. 312-338.000.

Brunswick Corporation: *See—*
McCormick, Daniel F., 4,436,443, Cl. 403-14.000.
Scheie, Carl E.; and Muma, G. Arnold, 4,437,010, Cl. 250-459.100.

Bryan, James B., to United States of America, Energy. Telescoping magnetic ball bar test gage. 4,435,905, Cl. 33-181.00R.

Bubnis, Benard P.: *See—*
Pacey, Gilbert E.; and Bubnis, Benard P., 4,436,923, Cl. 549-352.000.

Buck, Daniel M.; Sibley, Alan T.; and Kaiser, John J., to Air Products and Chemicals, Inc. Process for providing a uniform carbon distribution in ferrous compacts at high temperatures. 4,436,696, Cl. 419-57.000.

Buckstaff Company, Inc., The: *See—*
Nilson, Warren C.; and Rabe, Thomas L., 4,436,342, Cl. 297-445.000.

Budd Company, The: *See—*
Kirsch, Paul A., 4,436,373, Cl. 350-296.000.

Budda Hajia Handotai Kenkyu Shinkokai: *See—*
Nishizawa, Jun-ichi; and Shiota, Ikuo, 4,436,770, Cl. 427-255.300.

Budzich, Tadeusz, to Caterpillar Tractor Company. Pressure compensated fluid control valve. 4,436,019, Cl. 91-446.000.

Budzich, Tadeusz, to Caterpillar Tractor Company. Dual input pressure compensated fluid control valve. 4,436,020, Cl. 91-446.000.

Budzich, Tadeusz, to Caterpillar Tractor Company. Pressure compensated fluid control valve with maximum flow adjustment. 4,436,115, Cl. 137-596.100.

Budzich, Tadeusz: *See—*
Gold, Harold; and Budzich, Tadeusz, 4,436,111, Cl. 137-498.000.

Buffalo Color Corp.: *See—*
Grotta, Henry M.; and Gaughan, Perry J., 4,436,625, Cl. 210-634.000.

Buhler, Arthur; and Schutz, Hans U., to Ciba-Geigy Corporation. Metalized dyes, their manufacture and use. 4,436,659, Cl. 260-146.00R.

Bukowski, William A., to Optimax III, Inc. Stereoscopic lens system. 4,436,369, Cl. 350-130.000.

Bull, Michael J., to Shell Internationale Research Maatschappij B. V. Process for preparing cyclopropane carboxylic acid ester derivatives. 4,436,667, Cl. 260-465.00D.

Bunge, Richard H.: *See—*
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., 4,436,750, Cl. 424-279.000.

Bunkenburg, Joachim, to GCA Corporation. Interferometer using transverse deviation of test beam. 4,436,424, Cl. 356-356.000.

Burdick, Patricia E.; and Rapp, Ronald J., to Allied Corporation. Stabilizing SBR latex in cement formulations with low molecular weight polymers. 4,436,850, Cl. 524-8.000.

Burdick, Patricia E.: *See—*
Albee, Paul J., Jr.; and Burdick, Patricia E., 4,436,863, Cl. 524-451.000.

Burger, Helga; and Rossmann, Christian, to Henkel KGaA. Regeneration of aqueous degreasing and cleaning solutions. 4,436,643, Cl. 252-135.000.

Burkle, Wolfgang; and Opitz, Dieter. Tension shaft for winding frames. 4,436,252, Cl. 242-72.00B.

Burlington Industries, Inc.: *See—*
Sumner, John H., 4,435,955, Cl. 57-409.000.

Burns, Richard D.: *See—*
Moodie, Eldon E.; and Burns, Richard D., 4,436,585, Cl. 156-73.100.

Burough, Irvin G.: *See—*
Passaro, Robert E.; and Burough, Irvin G., 4,437,004, Cl. 250-343.000.

Burroughs Corporation: *See—*
Harvey, Edgar L., 4,437,037, Cl. 313-585.000.

Burt Precision Products, Inc.: *See—*
DiMartino, Michelangelo, 4,436,461, Cl. 409-132.000.

Busch, George E.: *See—*
Schaap, A. Paul; Busch, George E.; and Nolen, Robert L., Jr., 4,436,715, Cl. 423-579.000.

Buss, David L. Metal trough. 4,436,518, Cl. 428-595.000.

Bussell, Hugh M. Modified A-frame structure. 4,435,929, Cl. 52-93.000.

Bussmann, Alfons: *See—*
Rammler, Roland; and Bussmann, Alfons, 4,436,588, Cl. 201-12.000.

Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, to Imperial Chemical Industries PLC. Apparatus and process for the production of pile surface articles. 4,436,503, Cl. 425-384.000.

Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, to Imperial Chemical Industries PLC. Apparatus and process for the production of pile surface articles. 4,436,687, Cl. 264-164.000.

C-R-O, Inc.: *See—*
Kellogg, James D.; and Mingesz, August C., 4,436,288, Cl. 266-69.000.

Calas, Bernard: *See—*
Aspist, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.

Caldwell, Lawrence G., to Ducon Company, Inc., The. Pneumatic stream divider. 4,436,459, Cl. 406-181.000.

Caldwell, T. Francis, to Puzzle Specialties. Device for facilitating assembly, storage and transportation of a jigsaw puzzle. 4,436,307, Cl. 273-157.00R.

Calgon Corporation: *See—*
Ralston, Paul H.; and Whitney, Sandra L., 4,436,628, Cl. 210-697.000.

Callaway, Milton A., to Simons U.S.A. Corporation. Air bed arrangement. 4,435,864, Cl. 5-453.000.

Callcott, Thomas G.: *See—*
Rigby, Geoffrey R.; and Callcott, Thomas G., 4,436,618, Cl. 209-5.000.

Callihan, Rudy B.; and Stone, Lyndon R., to Baker Oil Tools, Inc. Apparatus for well cementing through a tubular member. 4,436,151, Cl. 166-154.000.

Calton, Gary J.: *See—*
Wood, Louis L.; and Calton, Gary J., 4,436,813, Cl. 435-109.000.

Campbell, Robert L.; and Bailey, Daniel D., to Bailey, Daniel D. Fuel pre-heat device. 4,436,075, Cl. 123-557.000.

Campbell, Robert L.: *See—*
Davenport, Jeanne A.; Campbell, Robert L.; and Gallaway, James F., 4,435,940, Cl. 52-641.000.

Campbell, Willis R.: *See—*
Freimuth, John H.; and Campbell, Willis R., 4,436,027, Cl. 100-88.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Dyck, Walter R.; and Hay, Burns R., 4,436,096, Cl. 128-689.000.

Canadian Gas Research Institute: *See—*
Galati, Antonio, 4,436,059, Cl. 122-17.000.

Canadian Patents & Development Limited: *See—*
Gauthier, Michel; Hackett, Peter A.; and Willis, Clive, 4,436,709, Cl. 423-437.000.

Canel, Jules E.; and Gilligan, Thomas J., to Ampex Corporation. Core memory controlled by auxiliary core. 4,437,173, Cl. 365-193.000.

Canella, Marco; and Sodini, Giancarlo, to E.N.I. Ente Nazionale Idrocarburi. Method for extracting mycotoxins from vegetable flours. 4,436,756, Cl. 426-430.000.

Canon Kabushiki Kaisha: *See—*
Endo, Kiyonobu; and Nose, Noriyuki, 4,436,398, Cl. 354-476.000.
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, 4,436,408, Cl. 355-14.00R.
Kashiwagi, Kazuo, 4,436,391, Cl. 353-26.00R.
Komiya, Yutaka, 4,436,410, Cl. 355-14.00E.
Sugitani, Hiroshi; Matsuda, Hiroto; and Ikeda, Masami, 4,437,100, Cl. 346-1.100.
Takahashi, Junichi; Sakane, Toshio; and Itoh, Yuji, 4,436,388, Cl. 351-206.000.
Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, 4,437,112, Cl. 358-44.000.

Cantada, Edilberto, to Singer Company, The. Gate bracketing cushioning spring arrangement for a sewing machine. 4,436,043, Cl. 112-221.000.

Cantrell, John L.: *See—*
Ribi, Edgar E.; Schwartzman, Steven M.; and Cantrell, John L., 4,436,728, Cl. 424-177.000.

Carbonaro, Antonio; and Ripani, Luciano, to Enoxy Chimica, S.p.A. Process for polymerizing conjugate diolefins, and means suitable for this purpose. 4,436,884, Cl. 526-111.000.

Caribou Fisheries, Inc.: *See—*
Trilling, David M.; and Smadar, Yechiel, 4,436,759, Cl. 426-573.000.

Carl Freudenberg, Firma: *See—*
Schmitt, Wilhelm, 4,436,317, Cl. 277-134.000.

Carl Manufacturing Co., Ltd.: *See—*
Mori, Chuzo, 4,435,906, Cl. 33-185.00R.

Carl-Zeiss-Stiftung: *See—*
Fischer, Horst; and Mollring, Friedrich K., 4,436,385, Cl. 350-529.000.

Carlson, Francis M., to Standard Oil Company. In-situ combustion method for controlled thermal linking of wells. 4,436,153, Cl. 166-260.000.

Carlson, Gordon S., to Sunbeam Corporation. Electric blanket safety circuit. 4,436,986, Cl. 219-505.000.

Carlston, Jack E.; and Johnson, Harold W. Portable pane mountable solar panel. 4,436,084, Cl. 126-429.000.

Carnicom, William M., to NL Industries, Inc. Invert emulsion well servicing fluids. 4,436,636, Cl. 252-8.50P.

Carpency, Joseph F.: *See—*
Dowd, Edward J., deceased; and Carpency, Joseph F., 4,436,540, Cl. 62-30.000.

Carpenter, Ralph F., to Pacific Electro Dynamics, Inc. Boost power supply having power factor correction circuit. 4,437,146, Cl. 363-21.000.

Carroll, Edward L.: *See—*
Meyer, Richard C.; and Carroll, Edward L., 4,435,989, Cl. 73-864.140.

Carroll, Frank I.: *See—*
Stelz, Dale E.; Carroll, Frank I.; and Whaley, Wilson M., 4,436,641, Cl. 252-68.000.

Carson, Franklin D.; and Gumert, William R., to Carson Helicopters, Inc. Airborne gravity surveying. 4,435,981, Cl. 73-382.00R.

Carson Helicopters, Inc.: *See—*
Carson, Franklin D.; and Gumert, William R., 4,435,981, Cl. 73-382.00R.

Carstensen, Kenneth J. Releasable drill string device and method. 4,436,158, Cl. 166-377.000.

Cash, Daniel L.; and Stoddard, Frank L. Inert gas distributor attachment for arc welding torches. 4,436,977, Cl. 219-75.000.

Cassella Aktiengesellschaft: *See—*
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.

Castagnos, Leonce F., Jr.: *See—*
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.

Castleman, Bonnie L.; and Jean, Mary. Tennis teaching aid. 4,436,304, Cl. 273-29.00A.

Castro, Robert M.: *See—*
Norris, Brian; and Castro, Robert M., 4,436,592, Cl. 204-15.000.

Caterpillar Tractor Company: *See—*
Budzich, Tadeusz, 4,436,019, Cl. 91-446.000.
Budzich, Tadeusz, 4,436,020, Cl. 91-446.000.
Budzich, Tadeusz, 4,436,115, Cl. 137-596.100.

Cavy, Claude; and Rolland, Marie L., to Commissariat a l'Energie Atomique. Device for bringing about coincidence between the axis of a measuring probe and a normal to the surface of a part to be controlled. 4,437,012, Cl. 250-491.100.

Ceaser, Anthony V. Fluoride containing compositions for removal of pollutants from waste waters and methods of utilizing same. 4,436,645, Cl. 252-179.000.

Ceelen, Theodorus M.; Jeromin, Lothar S.; and Wright, Lamont R., to Xerox Corporation. Xerographic toner cleaning station. 4,436,054, Cl. 118-652.000.

Cellitti, Raymond A.: *See—*
Connelly, John J.; and Cellitti, Raymond A., 4,436,289, Cl. 266-80.000.

Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Nargenicin C1. 4,436,747, Cl. 424-274.000.

Centre Electronique Horloger S.A.: *See—*
Choffat, Hubert, 4,435,986, Cl. 73-702.000.

Cerami, Anthony, to Evreka, Inc. Monitor for continuous in vivo measurement of glucose concentration. 4,436,094, Cl. 128-635.000.

Cesar, Jean-Pierre; and Charvet, Jean-Louis, to Compagnie Generale des Etablissements Michelin. Bead rings for tires. 4,436,132, Cl. 152-362.00R.

Chachowski, Rosemary K.: *See—*
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,436,631, Cl. 210-772.000.

Chalmers, Samuel A. Power take off gear box. 4,435,990, Cl. 74-15.630.

Chandhoke, Mohanjit S., to Harris Graphics Corporation. Horizontal bindery loader adaptor for feeding signatures into a vertical pocket. 4,436,297, Cl. 271-3.100.

Chandrasekaran, Santosh K.: *See—*
Urquhart, John; Chandrasekaran, Santosh K.; and Shaw, Jane E., 4,436,741, Cl. 424-267.000.

Chang, Hui-Huang. Universal multi-socket ratchet wrench. 4,436,004, Cl. 81-60.000.

Chang, Long F., to Owens-Illinois, Inc. Ribbed base cups. 4,436,216, Cl. 220-69.000.

Chang, Melvin C.; and Howell, John L., to United States Steel Corporation. Method of furnace operation with high pellet burdens. 4,436,552, Cl. 75-41.000.

Chappell, Joseph S.: *See—*
Sasseville, Roland E.; Chappell, Joseph S.; and Corcoran, Daniel J., Jr., 4,435,965, Cl. 68-205.00R.

Charis, Phillip S.; and Sweeney, Roy, to Charis, Phillip Stewart, a part interest. Apparatus for positive vignetting. 4,436,400, Cl. 354-296.000.

Charis, Phillip Stewart: *See—*
Charis, Phillip S.; and Sweeney, Roy, 4,436,400, Cl. 354-296.000.

Charles, Hugh G. Window insulation system. 4,436,137, Cl. 160-242.000.

Charvet, Jean-Louis: *See—*
Cesar, Jean-Pierre; and Charvet, Jean-Louis, 4,436,132, Cl. 152-362.00R.

Chass, Jacob, to Pickering & Company, Inc. Linear differential transformer with constant amplitude and variable phase output. 4,437,019, Cl. 307-83.000.

Chemische Fabrik Grunau GmbH: *See—*
Kadelka, Friedrich, 4,436,556, Cl. 106-90.000.

Chernosky, John E. Keyless lock. 4,436,328, Cl. 292-67.000.

Chevron Research Company: *See—*
Olbrich, Hazel C.; O'Rear, Dennis J.; and Zakarian, John A., 4,436,614, Cl. 208-89.000.
Stemke, Jeffrey E., 4,436,649, Cl. 252-51.50A.
Yamaguchi, Elaine S., 4,436,640, Cl. 252-32.70E.

Cheynet et ses fils: *See—*
Cheynet, Rene, 4,436,121, Cl. 139-116.000.

Cheynet, Rene, to Cheynet et ses fils. Process for manufacturing an elastic or non-elastic ribbon. 4,436,121, Cl. 139-116.000.

Child, Edward T.; and Crouch, William B., to Texaco Development Corporation. Process for gasifying solid carbon containing materials. 4,436,530, Cl. 48-197.00R.

Chimici Perdomini S.p.A.: *See—*
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, 4,436,755, Cl. 426-15.000.

Chiron, Alain, to Applications Mecaniques et Robinetterie Industrielle. Butterfly valve with an improved obturation device. 4,436,281, Cl. 251-305.000.

Chloride Group Public Limited Company: *See—*
Cooper, Michael J.; and Parker, James, 4,436,795, Cl. 429-53.000.

Choffat, Hubert, to Centre Electronique Horloger S.A. Pressure transducer of the vibrating element type. 4,435,986, Cl. 73-702.000.

Cholod, Michael S., to Rohm and Haas Company. Copolyester of polyethylene terephthalate and sulfonyl diphenol. 4,436,893, Cl. 528-173.000.

Christidis, Yani; and Fournex, Robert, to Roussel Uclaf. Treatment of gastric and gastro-duodenal disorders with derivatives of phenyl aliphatic carboxylic acids. 4,436,752, Cl. 424-317.000.

Christie, George A.: *See—*
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,436,914, Cl. 548-348.000.

Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., to Hewlett-Packard Company. Programmable calculator. 4,437,156, Cl. 364-200.000.

Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, to Bausch & Lomb Incorporated. N-Vinyl lactam based biomedical devices. 4,436,887, Cl. 526-263.000.

Chumley, William M. Landscaping and seeding apparatus. 4,436,040, Cl. 111-10.000.

Church, Kenneth: *See—*
Strong, William A.; and Church, Kenneth, 4,436,429, Cl. 366-2.000.
Strong, William A.; and Church, Kenneth, 4,436,431, Cl. 366-17.000.

Ciba-Geigy AG: *See—*
Fryberg, Mario; and Weiss, Viktor, 4,436,811, Cl. 430-564.000.
Shennan, Christopher D.; and Fry, Michael W., 4,436,798, Cl. 430-17.000.

Ciba-Geigy Corporation: *See—*
Aufderhaar, Ernst; Sprecher, Klemenz; and Zergenyi, Janos, 4,436,660, Cl. 260-239.00D.
Babler, Fridolin, 4,436,852, Cl. 524-88.000.
Berrer, Dagmar; Pissiotas, Georg; and Rohr, Otto, 4,436,935, Cl. 564-49.000.
Boray, Joseph C., 4,436,737, Cl. 424-225.000.
Buhler, Arthur; and Schutz, Hans U., 4,436,659, Cl. 260-146.00R.
Howell, Frederick H., 4,436,936, Cl. 564-409.000.
Hugelshofer, Paul; Zbinden, Peter; and Koci, Zdenek, 4,436,523, Cl. 8-527.000.
Irving, Edward, 4,436,880, Cl. 525-504.000.
Pfaendler, Hans R., 4,436,661, Cl. 260-245.300.
Renfroe, Harris B., 4,436,746, Cl. 424-273.00R.
Sasseville, Roland E.; Chappell, Joseph S.; and Corcoran, Daniel J., Jr., 4,435,965, Cl. 68-205.00R.
Sedelmeier, Gottfried; and Scartazzini, Riccardo, 4,436,903, Cl. 544-016.000.
Zondler, Helmut; Lohse, Friedrich; and Moser, Roland, 4,436,892, Cl. 528-117.000.

Ciciora, John A., to Nelson & Johnson Engineering. Material compactor utilizing a power transmission mechanism. 4,436,030, Cl. 100-268.000.

Claire, Edward W.: *See—*
Dahlgren, William V., Jr.; Silverstein, Lewis S.; and Claire, Edward W., 4,437,150, Cl. 364-474.000.

Clarke, William C.: *See—*
Fields, Ellis K.; and Clarke, William C., 4,436,940, Cl. 568-857.000.

Clayton, Harold K., Jr., to Cooper Industries, Inc. Encapsulated, waterproof temperature sensitive device and method of manufacture. 4,437,084, Cl. 338-22.00R.

Clere, Thomas M.: *See—*
Bennett, William R.; and Clere, Thomas M., 4,436,608, Cl. 204-265.000.

Clutter, James E. Vehicle wheel splash guard. 4,436,319, Cl. 280-154.50R.

Clyde Corporation: *See—*
MacDonald, Murdo A., 4,436,197, Cl. 198-389.000.

Coca-Cola Company, The: *See—*
Credle, William S., Jr., 4,436,493, Cl. 417-393.000.

Cocal, Inc.: *See—*
Moore, Wilcy I.; and Tassoni, Ronald L., 4,436,617, Cl. 209-3.000.

Cochran, Larry A., to RCA Corporation. Dynamic coring circuit. 4,437,124, Cl. 358-166.000.

Cohen, Eric S. Telephone lock. 4,436,967, Cl. 179-189.00R.

Cohen, Georges; and Heroux, Jean, to Thomson-CSF. Ultrahigh-frequency transmission line of the three-plate air type and uses thereof. 4,437,074, Cl. 333-128.000.

Colder Products Company: *See—*
Blenkush, Brian J., 4,436,125, Cl. 141-330.000.

Coldren, Daniel R.; and Schwenk, Dennis P., to AMP Incorporated. Terminal tab intended for mounting on a circuit board. 4,436,358, Cl. 339-17.00C.

Cole, James H., to United States of America, Navy. Signal waveform detector using synthetic FM demodulation. 4,436,425, Cl. 356-361.000.

Coleman Company, Inc., The: *See—*
Hefling, Dennis V., 4,436,081, Cl. 126-285.00A.

Colgate-Palmolive Company: *See—*
Gaffar, Abdul, 4,436,721, Cl. 424-52.000.
Ramachandran, Pallassana N.; and Peterson, Kenneth S., 4,436,637, Cl. 252-8.700.
Zmoda, Barney J.; and Fessock, Paul J., 4,436,525, Cl. 44-7.300.

Collonia, Harald, to VDO Adolf Schindling AG. Setting device for the controlled displacement of a stop connected with a setting member. 4,436,069, Cl. 123-339.000.

Colpaert, James J.: *See—*
Rittsema, Irving R.; and Colpaert, James J., 4,436,186, Cl. 188-71.800.

Combustion Engineering, Inc.: *See—*
Wentzell, Timothy H., 4,436,190, Cl. 191-12.20R.

Comitatonazionale Per Lienergia Nucleare: *See—*
Masotto, Ermanno; and Gagliardi, Sergio, 4,436,655, Cl. 252-628.000.

Commissariat a l'Energie Atomique: *See—*
Cavy, Claude; and Rolland, Marie L., 4,437,012, Cl. 250-491.100.

Compagnie Francaise des Petroles: *See—*
Josien, Daniel; and Migliarese, Jean-Louis, 4,436,120, Cl. 138-93.000.

Compagnie Generale des Etablissements Michelin: *See—*
Cesar, Jean-Pierre; and Charvet, Jean-Louis, 4,436,132, Cl. 152-362.00R.

Compagnie Industrielle des Telecommunications: *See—*
Tallon, Jacques, 4,436,998, Cl. 250-288.000.

Conger/Murray Systems, Inc.: *See—*
Murray, John A., 4,436,498, Cl. 425-73.000.

Connelly, John J.; and Cellitti, Raymond A., to International Harvester Co. Method and apparatus for controlling the atmosphere in a carburizing furnace utilizing a cascaded valving system. 4,436,289, Cl. 266-80.000.

Connery, Richard J.: *See—*
Anthony, Thomas R.; Connery, Richard J.; and Hoeschele, David F., Jr., 4,437,109, Cl. 357-68.000.

Contour Med Partners, Ltd.: *See—*
White, David N., 4,436,684, Cl. 264-138.000.

Converse, Maurice. Infant safety car seat. 4,436,341, Cl. 297-250.000.

Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., to Purdue Research Foundation. Exercise responsive cardiac pacemaker. 4,436,092, Cl. 128-419.0PG.

Cooper, Barry A., to Bemis Company, Inc. Composite stretch wrap film. 4,436,788, Cl. 428-483.000.

Cooper Industries, Inc.: *See—*
Clayton, Harold K., Jr., 4,437,084, Cl. 338-22.00R.

Cooper, Michael J.; and Parker, James, to Chloride Group Public Limited Company. Alkaline electric storage cells. 4,436,795, Cl. 429-53.000.

Coose, James P.: *See—*
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.

Copple, Kerry J., to Du Pont de Nemours, E. I., and Company. Method for making balanced low shrink tension polyolefin film. 4,436,888, Cl. 526-348.100.

Coquillart, Michel, to Mavilor Systemes. Rotor with a cooling device, more particularly of the commutator, for electric motors, and the method and means for making this device. 4,437,030, Cl. 310-227.000.

Corcoran, Daniel J., Jr.: *See—*
Sasseville, Roland E.; Chappell, Joseph S.; and Corcoran, Daniel J., Jr., 4,435,965, Cl. 68-205.00R.

Cork, Robin M. S.; and Rose, David B., to International Business Machines Corp. Method of testing a data communication system. 4,437,184, Cl. 371-19.000.
Corneille, David M., to Corneille, David M. Thermionic cathode and process for preparing the same. 4,436,651, Cl. 252-521.000.
Cornell-Dubilier Electric Corporation: *See—*
Pitel, Ira J., 4,437,043, Cl. 315-308.000.
Corning Glass Works: *See—*
Howell, Robert G., 4,436,829, Cl. 501-22.000.
Keck, Donald B., 4,436,368, Cl. 350-96.330.
Corry, Stuart E.; and Grade, Lanny V., to Geolograph Company, The. Apparatus for indicating critical torque load. 4,435,988, Cl. 73-862.190.
Cota, Albert O.; and Obray, Dean C. Delayed vehicle starter. 4,436,176, Cl. 180-287.000.
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., to Bell Telephone Laboratories, Incorporated. Implied principal addressing in a call coverage arrangement. 4,436,963, Cl. 179-18.00B.
Coura, Herbert R.: *See—*
Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., 4,436,106, Cl. 137-240.000.
Covington, Wayne F.: *See—*
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.
Cox, Raymond G. Tool for supporting and turning threaded members. 4,436,003, Cl. 81-57.430.
CR Industries: *See—*
Hatch, Seymour A.; and Morley, James P., 4,436,315, Cl. 277-92.000.
Craig, Clark E., to Keystone Consolidated Industries, Inc. Motorcycle saddle bag lock. 4,435,966, Cl. 70-161.000.
Crane, Barry D.: *See—*
Beggs, William R.; and Crane, Barry D., 4,436,437, Cl. 374-32.000.
Crane, Walton B.: *See—*
Nason, Frederic L.; and Crane, Walton B., 4,436,243, Cl. 229-27.000.
Credle, William S., Jr., to Coca-Cola Company, The. Self contained pump and reversing mechanism therefor. 4,436,493, Cl. 417-393.000.
Crisp, Malcolm; and Lewis, Christopher, to Plessey Overseas Limited. Method of and apparatus for assessing coins. 4,436,196, Cl. 194-100.00A.
Crompton & Knowles Corporation: *See—*
Faillace, Louie M., 4,437,046, Cl. 318-571.000.
Cronan, Walter I. Guide member for a roller-type classifying machine. 4,436,208, Cl. 209-668.000.
Cross, Henry F.; and Harman, Maurice, to Energy Equipment Co. Ltd. Method and apparatus enabling thermal energy recovery in combustor operation. 4,436,057, Cl. 122-4.00D.
Crouch, William B.: *See—*
Child, Edward T.; and Crouch, William B., 4,436,530, Cl. 48-197.00R.
Crowe, Robert E., to Terrafix Erosion Control Products, Inc. Erosion control blocks. 4,436,447, Cl. 405-76.000.
Crowley, Burlon C.: *See—*
Tetenbaum, Marvin T.; and Crowley, Burlon C., 4,436,862, Cl. 524-445.000.
Crown Zellerbach Corporation: *See—*
Lane, Stanley C., 4,436,703, Cl. 422-225.000.
Crutcher, John P.: *See—*
Vornberger, George F.; and Crutcher, John P., 4,436,237, Cl. 227-130.000.
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., to Multiform Desiccants, Inc. Adsorbent cartridge. 4,436,623, Cl. 210-282.000.
Cullen, Walter P.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,436,747, Cl. 424-274.000.
Cummings, Robert J., to United States of America, Air Force. Windblast head protector for use during pilot ejection from an aircraft. 4,436,262, Cl. 244-122.0AG.
Cunningham, Patrick J. Cardiovascular exercise apparatus. 4,436,097, Cl. 128-707.000.
Cuscurida, Michael: *See—*
Rowton, Richard L.; and Cuscurida, Michael, 4,436,843, Cl. 521-167.000.
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., to Goodyear Tire & Rubber Company, The. Mold and vent plug therefor. 4,436,497, Cl. 425-28.00R.
Dahlgren, William V., Jr.; Silverstein, Lewis S.; and Claire, Edward W. Tool manipulating method and apparatus for multiple job processing. 4,437,150, Cl. 364-474.000.
Dai Nippon Toryo Co., Ltd.: *See—*
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.
Daicel Chemical Industries, Ltd.: *See—*
Okamoto, Ichiro; and Toga, Yuzo, 4,436,896, Cl. 156-332.000.
Daigle, O. L.: *See—*
Barczak, Virgil J.; Perkins, Haywood A.; and Daigle, O. L., 4,436,681, Cl. 264-67.000.
Daimler-Benz Aktiengesellschaft: *See—*
Mehren, Herbert; and Panik, Ferdinand, 4,436,170, Cl. 180-131.000.
Daiwa Can Company, Limited: *See—*
Nishida, Yoshiaki; Yano, Shunji; and Masuyama, Tadahiro, 4,436,594, Cl. 204-33.000.
Daly, Francis P.; and Wilhelm, Frederick C., to Air Products and Chemicals, Inc. Catalyst for the hydrodealkylation of alkylaromatic compounds. 4,436,836, Cl. 502-317.000.
Dambroth, Jurgen, to Rux GmbH, Firma. Gardening device. 4,435,951, Cl. 56-400.050.
Danfoss A/S: *See—*
Zangenberg, Jan, 4,436,489, Cl. 417-218.000.
Daniel Industries, Inc.: *See—*
Geisow, Bernard H., 4,436,280, Cl. 251-229.000.
Daniels, Jesse: *See—*
Temple, William F.; and Daniels, Jesse, 4,436,484, Cl. 416-178.000.
Darby, Kenneth S. Free-sail system sailboard simulator. 4,436,513, Cl. 434-60.000.
Darling, Phillip H. Piston actuated, pilot valve operated breathing regulator. 4,436,090, Cl. 128-204.260.
Darmouni, Corinne, to Thomson-CSF. Self-corrected electric filters. 4,437,075, Cl. 333-167.000.
Darome, Inc.: *See—*
Botros, Radamis, 4,436,966, Cl. 179-121.00D.
Datakey, Inc.: *See—*
Flies, William P., 4,436,993, Cl. 235-382.000.
Daunis, Jacques: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Davenport, Jeanne A.; Campbell, Robert L.; and Gallaway, James F., to Angeles Metal Trim Co. Metal building truss. 4,435,940, Cl. 52-641.000.
Davis, Burns: *See—*
Barbee, Robert B.; and Davis, Burns, 4,436,895, Cl. 528-288.000.
Davis, Richard A.; Harris, Susan K.; and Jones, Bernard R., to Bell Telephone Laboratories, Incorporated. Call coverage arrangement. 4,436,962, Cl. 179-18.00B.
Davis, Richard A.: *See—*
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.
Davis, Richard F., to Dayco Corporation. Curved mandrel for curing polymeric hose and method. 4,436,690, Cl. 264-313.000.
Davis, Roy A.; and Madison, Norman L., to Dow Chemical Company, The. Polyoxazoline-modified, paper coating. 4,436,789, Cl. 428-537.000.
Davis, Sydney; and Malakhoff, Alexander. Transversely supported seal. 4,436,312, Cl. 277-34.000.
Davy McKee Aktiengesellschaft: *See—*
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,436,688, Cl. 264-176.00F.
Davy McKee Aktiengesellschaft, Borsigalle: *See—*
Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, 4,436,898, Cl. 528-336.000.
Dayco Corporation: *See—*
Davis, Richard F., 4,436,690, Cl. 264-313.000.
Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., to International Business Machines Corporation. Color video display system having programmable border color. 4,437,092, Cl. 340-703.000.
Deere & Company: *See—*
Gradmann, Gerhard, 4,436,065, Cl. 123-179.00B.
Hauk, Klaus, 4,435,875, Cl. 15-250.230.
Hurt, James J.; and Foss, Susan K., 4,437,151, Cl. 364-571.000.
DeFilippis, John: *See—*
Mazza, Frank J.; and DeFilippis, John, 4,436,957, Cl. 179-2.0EA.
Degremont: *See—*
Holca, Radu, 4,436,605, Cl. 204-225.000.
de Groot, Marius: *See—*
Leeuwma, Derk B.; and de Groot, Marius, 4,436,110, Cl. 137-487.500.
Degussa Aktiengesellschaft: *See—*
Kleemann, Axel; Lehmann, Bernd; and Martens, Jurgen, 4,436,910, Cl. 546-245.000.
de Hek, Johan A., to Veco Beheer B.V. Process of electroforming screen material. 4,436,591, Cl. 204-11.000.
De Jong, Sijtze: *See—*
Smoot, Arren F.; and De Jong, Sijtze, 4,436,449, Cl. 405-170.000.
Demirjian, Ara M.; and Solbes, Albert, to United States of America, Energy. Apparatus for electrode current control in linear MHD generators. 4,437,026, Cl. 310-11.000.
Demke, Kent R.; and Dwire, Jerold D., to International Business Machines Corporation. Multiple half-line spacing on a miniature page. 4,437,167, Cl. 364-900.000.
de Nie-Sarink, Margaretha J.: *See—*
Baardman, Frank; van Helden, Robert; and de Nie-Sarink, Margaretha J., 4,436,937, Cl. 564-409.000.
Depp, Steven W.; and Sincerbox, Glenn T., to International Business Machines Corporation. Optical fluid analyzing apparatus and method. 4,436,420, Cl. 356-128.000.
Deuschle, Steffi: *See—*
Nonnenmann, Manfred; and Deuschle, Steffi, 4,436,245, Cl. 236-49.000.
Deux, Alain; and Merant, Jean C., to Braud, Societe Anonyme Francaise. Fruit or berry harvesting device for in-line crops. 4,435,950, Cl. 56-330.000.
de Vries, Jan, to Thomassen Amsterdam B.V. Gate valve with reinforcing ribs. 4,436,282, Cl. 251-329.000.

de Wilde, Johannes, to U.S. Philips Corporation. Method of manufacturing a magnetic head unit. 4,435,900, Cl. 29-603.000.
Deyesso, Joseph P.; Sarser, David; and Berube, Richard G., to King Instrument Corporation. Tape winding system. 4,436,251, Cl. 242-56.00R.
Diamond Shamrock Chemicals Company: *See—*
Schick, Martin J.; and Knitter, Kathy A., 4,436,528, Cl. 44-51.000.
Diamond Shamrock Corporation: *See—*
Bennett, William R.; and Clere, Thomas M., 4,436,608, Cl. 204-265.000.
Branchick, Kenneth J.; Nalkin, Irving; and Suchanski, Mary R., 4,436,601, Cl. 204-149.000.
Diasonics (NMR) Inc.: *See—*
Bax, Ronald F., 4,437,053, Cl. 323-268.000.
Dick, Neil M., to 4-D Electronics Company, Inc. Coin collecting and counting systems. 4,436,103, Cl. 133-3.00D.
Didier-Werke AG: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.
Diefenbach, Horst: *See—*
Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, 4,436,878, Cl. 525-438.000.
Diepers, Heinrich, to Siemens Aktiengesellschaft. Ultrasonic transducer matrix having filler material with different acoustical impedance. 4,437,033, Cl. 310-334.000.
Diery, Helmut, to Hoechst Aktiengesellschaft. Polymeric ethylene oxide/propylene oxide or ethylene oxide/butylene oxide ether carboxylic acids, a process for their preparation and their use. 4,436,933, Cl. 562-470.000.
Dietrich, Manfred: *See—*
Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, 4,436,841, Cl. 521-106.000.
Dietz, Raymond L.; Featherby, Michael; and Margetts, Peter K., to Johnson Matthey Inc. Silver-filled glass. 4,436,785, Cl. 428-427.000.
DiGiacomo, Peter M.; and Dines, Martin B., to Occidental Research Corporation. Layered organophosphorus inorganic polymers. 4,436,899, Cl. 528-395.000.
Dillingham, Edward W.: *See—*
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000
DiMartino, Michelangelo, to Burt Precision Products, Inc. Method and apparatus for fabricating fusion reactor coils. 4,436,461, Cl. 409-132.000.
Dines, Martin B.: *See—*
DiGiacomo, Peter M.; and Dines, Martin B., 4,436,899, Cl. 528-395.000.
Dinka, Stephen K., to Pitman-Moore, Inc. Cell growth promoting material. 4,436,816, Cl. 435-240.000.
Dinkelacker, Paul H.: *See—*
Bonham, Richard T.; Sigiols, John P.; and Dinkelacker, Paul H., 4,436,045, Cl. 112-313.000.
Dipper, Barry: *See—*
Wood, Denis; Thomas, John F., Jr.; and Dipper, Barry, 4,436,371, Cl. 350-281.000.
Dirksing, Robert S.; and Barker, Dale E., to Procter & Gamble Company, The. Dispenser suspension means employing planar spring-loaded detent. 4,436,269, Cl. 248-214.000.
Dirnberger, Linus R.: *See—*
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.
Dismukes, Newton B. Thrust generator for boring tools. 4,436,168, Cl. 175-94.000.
Dobhan, Herbert: *See—*
Horling, Peter; Hetterich, Hermann; Dobhan, Herbert; and Klupfel, Norbert, 4,435,889, Cl. 29-148.40C.
Dobkin, Igor I.: *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.
Doctor, Alan P., to Eltec Instruments, Inc. Differential pyroelectric sensor with static discharge. 4,437,003, Cl. 250-338.000.
Dodge, Marlow W.: *See—*
Johnson, Arthur L., Jr.; and Dodge, Marlow W., 4,436,227, Cl. 222-382.000.
Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., to Xerox Corporation. Document restack transport. 4,436,301, Cl. 271-177.000.
Dohi, Takashi: *See—*
Shinozaki, Nozomu; Neki, Shigeo; and Dohi, Takashi, 4,437,061, Cl. 324-166.000.
Dolan, John E. Automatic toilet bowl cleaning device. 4,435,858, Cl. 4-228.000.
Dollhausen, Manfred: *See—*
Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, 4,436,570, Cl. 156-273.300.
Donahue, Gordon J., to Voplex Corporation. Pin support and mold for foaming and curing resin exterior over ball core. 4,436,276, Cl. 249-91.000.
Donato, Anthony C.; and Russo, Neil, to Lightolier Incorporated. Lighting fixture with snap replaceable bulb feature. 4,437,142, Cl. 362-226.000.
Donelan, Edward J., to United States of America, Air Force. Optical scanner for use in confined areas. 4,436,260, Cl. 244-3.160.
Donnelly, Bernard J., to Thorburn Technics (International) Limited. Eddy current testing apparatus including a two coil probe having sandwiched windings. 4,437,062, Cl. 324-238.000.
Donnelly Mirrors, Inc.: *See—*
Wood, Denis; Thomas, John F., Jr.; and Dipper, Barry, 4,436,371, Cl. 350-281.000.
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, to Kleindienst GmbH & Co.; and KG Maschinenfabrik. Sheet feeder. 4,436,298, Cl. 271-10.000.
Donskoi, Efim M.: *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., to Westinghouse Electric Corp. Elevator system. 4,436,184, Cl. 187-29.00R.
Dornier System GmbH: *See—*
Schmidt, Gunther; and Etzler, Carl-Christian, 4,436,259, Cl. 244-3.100.
Douglas, George H.: *See—*
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,436,911, Cl. 546-291.000.
Dow Chemical Company, The: *See—*
Davis, Roy A.; and Madison, Norman L., 4,436,789, Cl. 428-537.000.
Janiga, Eugene R., 4,436,875, Cl. 525-385.000.
Dow Corning Corporation: *See—*
Mikami, Ryuzo; and Nakasuji, Katsuyoshi, 4,436,787, Cl. 428-447.000.
Dowd, Dorothy N., legal representative: *See—*
Dowd, Edward J., deceased; and Carpency, Joseph F., 4,436,540, Cl. 62-30.000.
Dowd, Edward J., deceased (by Dowd, Dorothy N., legal representative); and Carpency, Joseph F., to Exxon Research & Engineering Co. Low pressure separation for light hydrocarbon recovery. 4,436,540, Cl. 62-30.000.
Downey, Robert C., Jr., to Harsco Corporation. Insulated slat. 4,436,136, Cl. 160-232.000.
Dragerwerk Aktiengesellschaft: *See—*
Blumcke, Alfred; Fischer, Peter; and Vahlensieck, Hans-Joachim, 4,436,823, Cl. 436-169.000.
Dran, Maurice; and Jamet, Bernard, to Saint Gobain Vitrage. Device for manufacturing a heating glass plate. 4,436,575, Cl. 156-433.000.
Dravo Corporation: *See—*
Jaquay, Louis H.; and Venetti, Mark, 4,436,611, Cl. 208-11.00R.
Drocco, Amabile, to Sancassiano S.p.A. Kneading machine. 4,436,432, Cl. 366-95.000.
Drori, Michael. Method of manufacturing level vials. 4,436,686, Cl. 264-163.000.
Ducon Company, Inc., The: *See—*
Caldwell, Lawrence G., 4,436,459, Cl. 406-181.000.
Dufour, Philippe; Predali, Jean-Jacques; Ranchin, Guy, deceased; by Ranchin, Marc, legal heir; and by Ranchin, Genevieve, legal heir. Process for the beneficiation of phosphate ores. 4,436,616, Cl. 209-3.000.
Dugal, Jeffrey N., to Ball Corporation. Multilayer tubular body with uncentered barrier layer. 4,436,778, Cl. 428-36.000.
Dunlop Limited: *See—*
Biggs, Ian; and Goy, Ronald S., 4,436,774, Cl. 427-40.000.
Du Pont de Nemours, E. I., and Company: *See—*
Abramson, Edward A., 4,436,366, Cl. 350-96.200.
Brixius, Darryl W.; and Simms, John A., 4,436,885, Cl. 526-214.000.
Copple, Kerry J., 4,436,888, Cl. 526-348.100.
Ho, Chungfah H., 4,436,782, Cl. 428-402.000.
Dupont, Francois: *See—*
Hunaut, Roger; and Dupont, Francois, 4,437,110, Cl. 358-41.000.
Dupraz, Jean-Pierre, to Societe Anonyme dite: Alsthom-Atlantique. Discharge circuit for rapidly eliminating charge trapped in a capacitor voltage divider used for monitoring high voltage AC. 4,437,134, Cl. 361-56.000.
Duracell Inc.: *See—*
Karpiloff, Kenneth M., 4,436,777, Cl. 428-36.000.
Dwire, Jerold D.: *See—*
Demke, Kent R.; and Dwire, Jerold D., 4,437,167, Cl. 364-900.000.
Dyck, Walter R.; and Hay, Burns R., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Portable digital heart rate meter/stethoscope. 4,436,096, Cl. 128-689.000.
E.N.I. Ente Nazionale Indrocarburi: *See—*
Canella, Marco; and Sodini, Giancarlo, 4,436,756, Cl. 426-430.000.
Eads, Harold O.; and Fowler, Ronald R., to O. Ames Co. Hose hanger. 4,436,267, Cl. 248-75.000.
Eagle-Picher Industries, Inc.: *See—*
Long, Robert C.; and Peters, Richard K., 4,436,574, Cl. 156-415.000.
Eastman Kodak Company: *See—*
Barbee, Robert B.; and Davis, Burns, 4,436,895, Cl. 528-288.000.
Evans, Steven; and Elwood, James K., 4,436,799, Cl. 430-17.000.
Kindt, Robert J., 4,436,405, Cl. 355-3.0TR.
Simmons, William J.; and Tinder, Richard, 4,436,404, Cl. 355-3.0SH.
Eaton Corporation: *See—*
Hastings, Jerome K., 4,437,079, Cl. 335-170.000.
Rueckert, Barry J., 4,437,133, Cl. 361-33.000.

Ebata, Yoshikazu: *See—*
Hanyu, Susumu; and Ebata, Yoshikazu, 4,436,042, Cl. 112-217.100.
Ebato, Seigo: *See—*
Iguchi, Shigeru; and Ebato, Seigo, 4,436,805, Cl. 430-248.000.
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,437,101, Cl. 346-75.000.
Ebisawa, Masuo; and Suzuki, Tetsuya, to Honda Giken Kogyo Kabushiki Kaisha. Method of charging molten metal into a vertical die casting machine. 4,436,140, Cl. 164-120.000.
Echte, Adolf: *See—*
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.
Edamatsu, Mitisuke: *See—*
Nakazima, Atushi; Edamatsu, Mitisuke; and Kushi, Kenji, 4,436,764, Cl. 427-54.100.
Edano, Shigeki: *See—*
Taniguchi, Yoshiharu; Edano, Shigeki; and Akiyama, Masanori, 4,437,002, Cl. 250-338.000.
Edelman, Robert R.: *See—*
Koslow, Evan E.; and Edelman, Robert R., 4,437,007, Cl. 250-366.000.
Edward, Robert M., Jr., to J B Development Corporation. Apparatus and method for cutting a flat surface on a metallic member. 4,435,975, Cl. 73-81.000.
Edward, Robert M., Jr., to J B Development Corporation. Apparatus for measuring the hardness properties of materials. 4,435,976, Cl. 73-83.000.
Edwards, Arnold G., to Halliburton Company. Hydraulic setting tool. 4,436,149, Cl. 166-120.000.
Egami, Kazuhito: *See—*
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,437,029, Cl. 310-198.000.
Eggebrecht, Lewis C.: *See—*
Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,437,092, Cl. 340-703.000.
Egli, Hermann: *See—*
Annen, Oskar; Egli, Hermann; and Zesiger, Karl, 4,436,521, Cl. 8-493.000.
Ehrhart, Wendell A., to Armstrong World Industries, Inc. Process for preparing plasticized polyvinyl chloride substrates comprising a moisture-cured polyurethane coating and the products resulting therefrom. 4,436,784, Cl. 428-423.100.
Eisele Apparate-und Geratebau GmbH: *See—*
Taddicken, Hermann, 4,436,041, Cl. 112-110.000.
Eisele, Hermann; Moller, Heinz; and Schmitt, Manfred, to Robert Bosch GmbH. Device for generating control signals with a primary control unit and an auxiliary control unit. 4,437,154, Cl. 364-187.000.
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., to United States of America, Air Force; and United States of America, Air Force. Method and apparatus utilizing crystalline compound superconducting elements having extended strain operating range capabilities without critical current degradation. 4,437,080, Cl. 335-216.000.
Elastogran GmbH: *See—*
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, 4,436,869, Cl. 525-51.000.
Electric Power Research Institute, Inc.: *See—*
Emery, Franklin T., 4,437,083, Cl. 336-65.000.
Elephant Chain Block Company Limited: *See—*
Tsuda, Kinji, 4,436,333, Cl. 294-82.00R.
Eli Lilly and Company: *See—*
Hall, David A., 4,436,596, Cl. 204-59.00R.
Hershberger, Charles L.; and Rosteck, Paul R., Jr., 4,436,815, Cl. 435-172.000.
Kirst, Herbert A., 4,436,733, Cl. 424-180.000.
Krumkalns, Eriks V., 4,436,739, Cl. 424-246.000.
Ose, Earl E., 4,436,734, Cl. 424-181.000.
Thibault, Thomas D., 4,436,549, Cl. 71-90.000.
Wheeler, William J., 4,436,912, Cl. 548-233.000.
Elkins, Stephen: *See—*
Mercer, John E.; Olsen, John H.; and Elkins, Stephen, 4,435,902, Cl. 30-296.00R.
Ellinger, Hunter D.: *See—*
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.
Ellis, David G.: *See—*
Slack, Ian D.; Ellis, David G.; and Firth, Colin, 4,436,564, Cl. 156-42.000.
Ellis, Edward J.; and Salamone, Joseph C., to Polymer Technology Corporation. Ionic opthalmic cellulose polymer solutions. 4,436,730, Cl. 424-180.000.
Ellison, Elmer L. Mop head installation tool. 4,436,332, Cl. 294-1.00R.
Elliston, Thomas L., to Hydra-Rig, Inc. Truck operator's cab with equipment control station. 4,436,177, Cl. 180-324.000.
Ellsworth, Eugene W. Valve assembly. 4,436,108, Cl. 137-375.000.
Elmore, Carl L., to Kamyr, Inc. Method of producing kraft pulp using an acid prehydrolysis and pre-extraction. 4,436,586, Cl. 162-19.000.
Eltec Instruments, Inc.: *See—*
Doctor, Alan P., 4,437,003, Cl. 250-338.000.
Elwood, James K.: *See—*
Evans, Steven; and Elwood, James K., 4,436,799, Cl. 430-17.000.
Emery, Franklin T., to Electric Power Research Institute, Inc. Current transformer for turbine generators. 4,437,083, Cl. 336-65.000.
Emery, Leonard W., to Atlantic Richfield Company. Drain hole drilling. 4,436,165, Cl. 175-61.000.
Emi, Toshihiko: *See—*
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.
Emoto, Masami, to Ricoh Company, Ltd. Exposure process for use in a variable magnification copying machine. 4,436,415, Cl. 355-55.000.
Emura, Koji; Suzuki, Tuneo; and Kazama, Hidemichi, to Yamakawa Industrial Company, Limited. Continuous press forming method for sheet resin. 4,436,685, Cl. 264-148.000.
Endo, Akira, to Godo Shusei Co., Ltd. Physiologically active novel substance mutastein and process for its production. 4,436,725, Cl. 424-116.000.
Endo, Haruyoshi: *See—*
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, 4,437,076, Cl. 333-206.000.
Endo, Kiyonobu; and Nose, Noriyuki, to Canon Kabushiki Kaisha. Device for splitting part of light incident on an image forming optical system. 4,436,398, Cl. 354-476.000.
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, to Fuji Electric Co., Ltd. Process of calibrating a blood sugar analyzing apparatus. 4,436,812, Cl. 435-14.000.
Endoh, Noboru: *See—*
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.
Energy Equipment Co. Ltd.: *See—*
Cross, Henry F.; and Harman, Maurice, 4,436,057, Cl. 122-4.00D.
Engelhard Corporation: *See—*
Adlhart, Otto J., 4,436,793, Cl. 429-17.000.
Englebert, Stephen M.: *See—*
Hotchkiss, Harry W.; Notheis, Patrick J.; and Englebert, Stephen M., 4,436,780, Cl. 428-198.000.
Engler, Donald J.: *See—*
King, Frank R.; and Engler, Donald J., 4,435,862, Cl. 5-66.000.
Enoguchi, Yuji: *See—*
Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, 4,436,406, Cl. 355-3.0SH.
Enoxy Chimica, S.p.A.: *See—*
Carbonaro, Antonio; and Ripani, Luciano, 4,436,884, Cl. 526-111.000.
Enterra Corporation: *See—*
Purvis, Fay A.; Bennett, Robert W.; and Ruth, Roger A., 4,436,487, Cl. 417-46.000.
Enzer, Steven E.; and Sarrine, Robert J., to Transidyne General Corporation. Apparatus for measuring electrochemical activity. 4,436,610, Cl. 204-400.000.
Epson Corporation: *See—*
Koto, Haruhiko, 4,436,439, Cl. 400-126.000.
Erdmannsdorfer, Hans; Wagner, Manfred; and Weyh, Gerd, to Filterwerk Mann & Hummel GmbH. Method and device for removing soot from exhaust gases. 4,436,535, Cl. 55-96.000.
Ergler, James M.; Kohn, Harold; and Smetana, Michael, to International Business Machines Corporation. Centripetal cutter and stripper apparatus. 4,436,001, Cl. 81-9.510.
Erhardt, Rolf: *See—*
Stahlecker, Fritz; Lang, Kurt; and Erhardt, Rolf, 4,435,952, Cl. 57-18.000.
Erickson, Eric D., to University of Nebraska, The Board of Regents of the. Autoclavable pipette jar and method of using it. 4,436,700, Cl. 422-102.000.
Erickson, John W.: *See—*
Peterson, Daniel G.; and Erickson, John W., 4,436,492, Cl. 417-386.000.
Erickson, Leland E. Multi-row crop harvesting attachment. 4,435,946, Cl. 56-15.600.
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, to SKF Kugellagerfabriken GmbH. Method for production of plastic extrusion-coated bearing races for rolling bearings and bearing races produced thereby. 4,435,890, Cl. 29-148.40R.
Erven Dr. Hubertus Josephus van Doorne: *See—*
van Doorne, Hubertus J., deceased, 4,435,997, Cl. 74-796.000.
Erwin Sick GmbH Optik-Elektronik: *See—*
Lauer, Reinhard; and Pfefferle, Dietmar, 4,436,364, Cl. 350-6.600.
Escher Wyss Aktiengesellschaft: *See—*
Schuwerk, Wolfgang, 4,435,971, Cl. 72-243.000.
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, to Didier-Werke AG. Process for producing granular, fire-resistant material. 4,436,680, Cl. 264-60.000.
Eseifan, Ali H., to Sherwood Medical Company. Reagent mixing system and method. 4,436,822, Cl. 436-164.000.
Estabrook, Lawrence E.; and Suggitt, Robert M., to Texaco Development Corporation. Synthesis gas from slurries of solid carbonaceous fuels. 4,436,531, Cl. 48-197.00R.
Estad Products, Inc.: *See—*
Hird, Richard E., 4,435,939, Cl. 52-582.000.
Estel Hoogovens BV: *See—*
van den Bemt, Johannes C., 4,436,508, Cl. 432-214.000.
Etablissement Texcontor: *See—*
Maltz, Javier E., 4,436,731, Cl. 424-18.000.
Ethyl Corporation: *See—*
Sanders, Robert N., 4,436,708, Cl. 423-329.000.

Etoh, Yukihiro: *See—*
Tanaka, Toshiaki; Ushimura, Shoji; and Etoh, Yukihiro, 4,436,060, Cl. 123-41.100.
Etzler, Carl-Christian: *See—*
Schmidt, Gunther; and Etzler, Carl-Christian, 4,436,259, Cl. 244-3.100.
Evans, Jeffrey L., to Ting Enterprises, Inc. Fireplace and stove apparatus. 4,436,080, Cl. 126-139.000.
Evans, Steven; and Elwood, James K., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible magenta dye-releasing compounds and precursors thereof. 4,436,799, Cl. 430-17.000.
Everest & Jennings, Inc.: *See—*
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.
Evreka, Inc.: *See—*
Cerami, Anthony, 4,436,094, Cl. 128-635.000.
Ex-Cell-O Corporation: *See—*
Powell, Thomas A., 4,436,460, Cl. 408-14.000.
Extraversion, Inc.: *See—*
Ytter, Willy, 4,436,135, Cl. 160-135.000.
Exxon Production Research Co.: *See—*
Reed, Don C., 4,436,450, Cl. 405-171.000.
Exxon Research & Engineering Co.: *See—*
Dowd, Edward J., deceased; and Carpency, Joseph F., 4,436,540, Cl. 62-30.000.
Feng, Tom; and Ghosh, Amal K., 4,436,765, Cl. 427-74.000.
Lipko, Robert J.; and Laurent, Douglas J., 4,436,520, Cl. 604-385.000.
Oyekan, Soni O.; and Swan, George A., 4,436,612, Cl. 208-65.000.
Walker, Thad O.; and Matthews, Patricia C., 4,436,638, Cl. 252-8.55R.
Wright, Franklin J., 4,436,834, Cl. 502-201.000.
Fahlstrom, Per A. H. H.; and Gorling, Karl G., to Boliden Aktiebolag. Method for removing sulphur in conjunction with the gasification of carbonaceous material in metal smelts. 4,436,529, Cl. 48-197.00R.
Faillace, Louie M., to Crompton & Knowles Corporation. Extrusion drive control system. 4,437,046, Cl. 318-571.000.
Faktor, Marc M.: *See—*
Moss, Rodney H.; and Faktor, Marc M., 4,436,769, Cl. 427-252.000.
Farmer, Felta C., Jr.; and Knight, Donald P., to RCA Corporation. Drive level control system for testing kinescopes. 4,437,120, Cl. 358-139.000.
Farmhand, Inc.: *See—*
Lenertz, John B.; and Moore, Carroll E., 4,436,477, Cl. 414-723.000.
Farr, Elvin L.: *See—*
Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, 4,436,615, Cl. 208-177.000.
Farr, Glyn P. R., to Lucas Industries Limited. Hydraulic power boosters for vehicle hydraulic systems. 4,435,960, Cl. 60-547.100.
Farr, Glyn P. R., to Lucas Industries Limited. Anti-skid hydraulic braking systems for vehicles. 4,436,348, Cl. 303-115.000.
Farrand Optical Co., Inc.: *See—*
LaRussa, Joseph A., 4,437,114, Cl. 358-101.000.
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, to Boehringer Mannheim GmbH. 4-Hydroxy-2,1,3-benzthiadiazole compounds and β-adrenergic method of use therefor. 4,436,742, Cl. 424-269.000.
Fearnot, Neal E.: *See—*
Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., 4,436,092, Cl. 128-419.0PG.
Featherby, Michael: *See—*
Dietz, Raymond L.; Featherby, Michael; and Margetts, Peter K., 4,436,785, Cl. 428-427.000.
Feinberg, Jay H.; and Knowles, Terrance, to Zenith Radio Corporation. Method for plating dielectric elements in an isolator and for assembling the isolator. 4,436,240, Cl. 228-122.000.
Feinman, Harvey M.: *See—*
Albert, Gordon H.; and Feinman, Harvey M., 4,436,991, Cl. 235-468.000.
Feng, Tom; and Ghosh, Amal K., to Exxon Research and Engineering Co. Method for forming indium oxide/n-silicon heterojunction solar cells. 4,436,765, Cl. 427-74.000.
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, to Magyar Tudomanyos Akademia Muszaki Fizikai Kutato Intezete. Method for deep level transient spectroscopy scanning and apparatus for carrying out the method. 4,437,060, Cl. 324-158.00D.
Fergason, James L. Light modulator, demodulator and method of communication employing the same. 4,436,376, Cl. 350-332.000.
Ferguson, Harry D., to General Signal Corporation. Electrical simulation of percussive bell. 4,437,088, Cl. 340-384.00E.
Fernandez, David, to American Sports Equipment. Composite reinforced racket structure. 4,436,305, Cl. 273-73.00C.
Ferrighi, Antonietta, to Aces Manodomestici S.r.l. Household handdevice for use as meat-presser to shape mincement into steaks. 4,436,499, Cl. 425-195.000.
Fessock, Paul J.: *See—*
Zmoda, Barney J.; and Fessock, Paul J., 4,436,525, Cl. 44-7.300.
Fiat Veicoli Industriali S.p.A.: *See—*
Formia, Antonio; and Filtri, Giorgio, 4,436,066, Cl. 123-193.00H.
Fides Treuhand GmbH: *See—*
Mohr, Ernst, 4,435,959, Cl. 60-512.000.
Field, Martin J.: *See—*
Atkins, Terrance J.; and Field, Martin J., 4,436,112, Cl. 137-510.000.
Fields, Ellis K.; and Clarke, William C., to Standard Oil Company (Indiana). Photochemical method for preparing low molecular weight olefin polymers and copolymers of 3-butene-1-ol. 4,436,940, Cl. 568-857.000.
Figgie International Inc.: *See—*
Mitchell, Hal D.; and Walker, Donald R., 4,435,851, Cl. 2-2.000.
Filterwerk Mann & Hummel GmbH: *See—*
Erdmannsdorfer, Hans; Wagner, Manfred; and Weyh, Gerd, 4,436,535, Cl. 55-96.000.
Filtri, Giorgio: *See—*
Formia, Antonio; and Filtri, Giorgio, 4,436,066, Cl. 123-193.00H.
Fine, Dwight A.: *See—*
Miles, Melvin H.; and Fine, Dwight A., 4,436,590, Cl. 204-1.00T.
Finger, John F., to Sioux Steam Cleaner Corporation. Cleaning apparatus. 4,436,113, Cl. 137-565.000.
Finnieston, Alan. Upper arm brace. 4,436,088, Cl. 128-77.000.
Firestone Tire & Rubber Company, The: *See—*
Balbis, Manuel G.; and King, Colin V., 4,436,127, Cl. 152-209.00R.
Firth, Colin: *See—*
Slack, Ian D.; Ellis, David G.; and Firth, Colin, 4,436,564, Cl. 156-42.000.
Fischer, Dirk: *See—*
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.
Fischer, Horst; and Mollring, Friedrich K., to Carl-Zeiss-Stiftung. Specimen holder for inverted microscopes. 4,436,385, Cl. 350-529.000.
Fischer, Peter: *See—*
Blumcke, Alfred; Fischer, Peter; and Vahlensieck, Hans-Joachim, 4,436,823, Cl. 436-169.000.
Fischer, Rolf: *See—*
Weitz, Hans-Martin; Fischer, Rolf; and Pohl, Hans H., 4,436,944, Cl. 585-408.000.
Fischer, Werner K., to Swiss Aluminium Ltd. Anode superstructure of a fused salt electrolytic cell and pot room fitted out with same. 4,436,607, Cl. 204-246.000.
Fish, Joe W., to RCA Corporation. System for controlling indicators for switches. 4,437,094, Cl. 340-825.500.
Fisher, Ernest P., Jr.; and Welch, William R., to Otis Engineering Corporation. Shifting tool. 4,436,152, Cl. 166-214.000.
Fitzpatrick, Donald C.: *See—*
Frye, Kenneth G.; Fitzpatrick, Donald C.; and Karis, Arthur T., 4,436,302, Cl. 271-202.000.
Flex-Kleen Corporation: *See—*
Robinson, James W., 4,436,536, Cl. 55-341.00R.
Flies, William P., to Datakey, Inc. Electronic key. 4,436,993, Cl. 235-382.000.
Flood, Paul W.; Mason, Charles D.; and Schulze, Stephen R., to Allied Corporation. High impact molding compositions. 4,436,872, Cl. 525-179.000.
Flow Industries, Inc.: *See—*
Mercer, John E.; Olsen, John H.; and Elkins, Stephen, 4,435,902, Cl. 30-296.00R.
FMC Corporation: *See—*
Jennerjohn, Dennis A.; and Jensen, Lyle B., 4,436,169, Cl. 180-89.140.
Scherrer, Edward P., 4,436,444, Cl. 403-24.000.
Foglesong, Robert M.: *See—*
Arden, Terry D.; and Foglesong, Robert M., 4,436,024, Cl. 99-421.0HV.
Follet, Michel: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Folsom, Jerry B.: *See—*
Christopher, Chris J.; Wenninger, Fred W., Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.
Fondacci, Jean-Luc, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.). Device to regulate the flow rate of a liquid fuel supply system of a gas turbine engine. 4,435,957, Cl. 60-39.281.
Fonio, Carlo, to Rockwell International Corporation. Feeder device for folding machines. 4,436,296, Cl. 270-31.000.
Forgac, John M.; and Hoekstra, Gerald B., deceased (by Hoekstra, Edith, executrix), to Standard Oil Company (Indiana). In situ retorting of oil shale with pulsed combustion. 4,436,344, Cl. 299-2.000.
Formia, Antonio; and Filtri, Giorgio, to Fiat Veicoli Industriali S.p.A. Cylinder head for compression-ignition internal combustion engine. 4,436,066, Cl. 123-193.00H.
Fortune, William S. Modular storage system. 4,436,355, Cl. 312-270.000.
Foshee, William R.: *See—*
Best, Walter E.; and Foshee, William R., 4,435,967, Cl. 70-224.000.
Foss, Susan K.: *See—*
Hurt, James J.; and Foss, Susan K., 4,437,151, Cl. 364-571.000.
Foster Wheeler Energy Corporation: *See—*
Stewart, Robert D.; and Gamble, Robert L., 4,436,507, Cl. 431-170.000.
4-D Electronics Company, Inc.: *See—*
Dick, Neil M., 4,436,103, Cl. 133-3.00D.
Fournex, Robert: *See—*
Christidis, Yani; and Fournex, Robert, 4,436,752, Cl. 424-317.000.

Fowler, Ronald R.: *See—*
Eads, Harold O.; and Fowler, Ronald R., 4,436,267, Cl. 248-75.000.

Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V.: *See—*
Fuchs, Helmut V.; Schupp, Gerold; and Voigtsberger, Carl-Alexander, 4,435,974, Cl. 73-40.50A.

Frederick, Roger A.; and Moody, Jerry W., to Monsanto Company. Method of regulating concentration and distribution of oxygen in Czochralski grown silicon. 4,436,577, Cl. 156-617.0SP.

Fredrickson, Sherman E., to Halliburton Company. Method of treating well formations employing foamed treatment fluids. 4,436,156, Cl. 166-307.000.

Freeouf, John L.; Haag, William J.; and Woodall, Jerry M., to International Business Machines Corporation. Refractory structure and process for the preparation thereof. 4,436,768, Cl. 427-227.000.

Freimuth, John H.; and Campbell, Willis R., to Sperry Corporation. Stripper bar for roll baling machine. 4,436,027, Cl. 100-88.000.

French, James C.: *See—*
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., 4,436,750, Cl. 424-279.000.

Frey, John A., to Hoff-Stevens, Inc. Keg tapping apparatus having improved retainer. 4,436,228, Cl. 222-400.700.

Freyrie, Leonardo, to AMF Inc. Boom for sailboards. 4,436,047, Cl. 114-102.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Friedrich, Ronald; and Muller, Manfred, 4,436,697, Cl. 420-440.000.

Friedrich, Ronald; and Muller, Manfred, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Soldering alloy. 4,436,697, Cl. 420-440.000.

Friends, Gary D.: *See—*
Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,436,887, Cl. 526-263.000.

Frito-Lay, Inc.: *See—*
Wisdom, Lawrence W.; and Wilson, Gordon R., 4,436,458, Cl. 406-135.000.

Fritzenwenger, Josef, to Bayerische Motoren Werke Aktiengesellschaft. Engine driven pump arrangement. 4,436,067, Cl. 123-198.00C.

Frohberger, Paul-Ernst: *See—*
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,436,907, Cl. 544-335.000.

Fry, Michael W.: *See—*
Shennan, Christopher D.; and Fry, Michael W., 4,436,798, Cl. 430-17.000.

Fryberg, Mario; and Weiss, Viktor, to Ciba-Geigy AG. Photographic material. 4,436,811, Cl. 430-564.000.

Frye, Kenneth G.; Fitzpatrick, Donald C.; and Karis, Arthur T., to Beloit Corporation. Apparatus for slowing down and preventing edge damage on moving sheets. 4,436,302, Cl. 271-202.000.

Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Pyrrolo[3,4-d][2]benzazepinones. 4,436,662, Cl. 260-245.700.

Frymaster Corporation, The: *See—*
Waugh, Gerald F., 4,437,159, Cl. 364-400.000.

Fuchs, Helmut V.; Schupp, Gerold; and Voigtsberger, Carl-Alexander, to Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V. Method and apparatus for locating leakages in pipes and similar conduits. 4,435,974, Cl. 73-40.50A.

Fuji Electric Co., Ltd.: *See—*
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.
Watanabe, Atsuo; and Uno, Masahiro, 4,436,428, Cl. 356-432.000.

Fuji Photo Film Co., Ltd.: *See—*
Akao, Mutsuo; and Kawata, Tadashi, 4,436,809, Cl. 430-501.000.
Ishiyama, Masashi; and Ishibashi, Michinori, 4,436,491, Cl. 417-385.000.
Ohtsuka, Shuichi; and Aotsuka, Yasuo, 4,436,802, Cl. 430-100.000.
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, 4,436,920, Cl. 549-227.000.
Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, 4,436,808, Cl. 430-381.000.

Fuji Xerox Co., Ltd.: *See—*
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,437,102, Cl. 346-76.0PH.

Fujii, Hiroshi: *See—*
Imamura, Yoshinobu; Kamei, Shigeki; Yamagata, Tetuo; and Fujii, Hiroshi, 4,436,026, Cl. 100-45.000.

Fujii, Takumi: *See—*
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, 4,436,453, Cl. 405-263.000.

Fujii, Tetsuya: *See—*
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.

Fujii, Toru: *See—*
Ikari, Kazuo; and Fujii, Toru, 4,436,382, Cl. 350-458.000.

Fujimura, Akira: *See—*
Miyazaki, Naomi; and Fujimura, Akira, 4,436,710, Cl. 423-552.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Horii, Isamu, 4,436,205, Cl. 206-530.000.
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

Fujita, Hironori; and Arai, Tohru, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Process for manufacturing boride dispersion copper alloys. 4,436,559, Cl. 148-6.000.

Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Process for manufacturing boride dispersion copper alloys. 4,436,560, Cl. 148-6.000.

Fujita, Yoshiji: *See—*
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.

Fujitsu Fanuc Limited: *See—*
Nomura, Yoshiyuki; Okuda, Kanemasa; and Ishii, Hisao, 4,436,975, Cl. 219-69.00W.

Fujitsu Limited: *See—*
Asami, Fumitaka, 4,437,072, Cl. 331-1.00A.
Sumi, Hideji; and Kokado, Masayuki, 4,437,021, Cl. 307-270.000.

Fukase, Hiroshi: *See—*
Horii, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, 4,436,918, Cl. 548-546.000.

Fukazawa, Takao: *See—*
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Fukuhara, Seiichi: *See—*
Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, 4,436,465, Cl. 409-243.000.

Fukuhara, Toru, to Nippon Kogaku K.K. Focus detecting device in a single lens reflex camera. 4,436,395, Cl. 354-406.000.

Fukunaga, Masaaki: *See—*
Takahashi, Nobuyuki; Furuno, Yoshikuni; and Fukunaga, Masaaki, 4,436,561, Cl. 148-12.00F.

Fukuoka, Yohei: *See—*
Koya, Masahiko; and Fukuoka, Yohei, 4,436,945, Cl. 585-488.000.

Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, to Sanden Corporation. Scroll manufacturing tool. 4,436,465, Cl. 409-243.000.

Fuminier, Claude; and Pierrel, Michel, to Pont-A-Mousson S.A. Ductile cast iron pipe having constricted end casing. 4,435,894, Cl. 29-527.500.

Funada, Fumiaki; Kozaki, Syuichi; Matsuura, Masataka; and Wada, Tomio, to Sharp Kabushiki Kaisha. Two-layer liquid crystal display panel. 4,436,379, Cl. 350-347.00E.

Furth, Harold P.: *See—*
Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, 4,436,691, Cl. 376-137.000.

Furukawa Denchi Kabushiki Kaisha: *See—*
Suzuki, Yuichi; and Sano, Ichiro, 4,435,885, Cl. 29-2.000.

Furukawa Denki Kogyo Kabushiki Kaisha: *See—*
Suzuki, Yuichi; and Sano, Ichiro, 4,435,885, Cl. 29-2.000.

Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, to Sumitomo Chemical Co., Ltd. Conjugated diene block polymer and process for preparing the same. 4,436,873, Cl. 525-314.000.

Furukawa, Hiroyasu: *See—*
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, 4,436,861, Cl. 524-425.000.

Furuno, Yoshikuni: *See—*
Takahashi, Nobuyuki; Furuno, Yoshikuni; and Fukunaga, Masaaki, 4,436,561, Cl. 148-12.00F.

Furuoya, Itsuo; and Kitazawa, Yuzuru, to Takeda Chemical Industries, Limited. Process for producing unsaturated aliphatic dinitriles. 4,436,671, Cl. 260-465.300.

G.A. Pfleiderer GmbH & Co., KG: *See—*
Rother, Bruno; and Trommen, Hartmut, 4,436,781, Cl. 428-365.000.

Gach, Peter P., to Sunbeam Plastics Corporation. Safety package. 4,436,211, Cl. 215-216.000.

Gaffal, Karl; and Klepp, Christian, to Klein, Schanzlin & Becker Aktiengesellschaft. System for sealing passages in the walls of glandless circulating pumps or the like. 4,436,950, Cl. 174-11.0BH.

Gaffar, Abdul, to Colgate-Palmolive Company. Oral composition having mole ratio of tetra (methylene phosphonate) to alkali metal fluoride of at least 1.4:1. 4,436,721, Cl. 424-52.000.

Gagliardi, Sergio: *See—*
Masotto, Ermanno; and Gagliardi, Sergio, 4,436,655, Cl. 252-628.000.

Gaither, Dolphard. Tire tool. 4,436,134, Cl. 157-1.300.

Galati, Antonio, to Canadian Gas Research Institute. Flue condensate shield. 4,436,059, Cl. 122-17.000.

Galian, Boris A.: *See—*
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Gallaway, James F.: *See—*
Davenport, Jeanne A.; Campbell, Robert L.; and Gallaway, James F., 4,435,940, Cl. 52-641.000.

Gamble, Robert L.: *See—*
Stewart, Robert D.; and Gamble, Robert L., 4,436,507, Cl. 431-170.000.

Ganguly, Ashit K.; Liu, Yi-Tsung; and Mallams, Alan K., to Schering Corporation. 23-Demycinosyltylosin compounds, pharmaceutical compositions and method of use. 4,436,729, Cl. 424-180.000.

Ganz, Rudolf: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.

Garcia, Philippe, to Micro-Mega S.A. Device for fixing drill bits into the head of air motors for hand-held dentists' tools. 4,436,512, Cl. 433-129.000.

Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., to International Business Machines Corporation. Double polysilicon contact structure. 4,437,108, Cl. 357-59.000.

Gardner, Irving. Collar clasp. 4,435,880, Cl. 24-49.0KC.

Garner, Lloyd L., to Globe Oil Tools, Inc. Lubrication failure detection system. 4,436,164, Cl. 175-39.000.

Garnett, Jack L., to Bendix Corporation, The. Method of grinding workpieces. 4,435,924, Cl. 51-327.000.

Garrett Corporation, The: *See—*
Linder, Charles G., 4,436,481, Cl. 415-119.000.
Manfredo, Joseph N.; and Hirsch, Selwyn R., 4,436,145, Cl. 165-67.000.

Garrett, William R., to Smith International, Inc. Sleeved drill pipe. 4,436,118, Cl. 138-110.000.

Gaughan, Perry J.: *See—*
Grotta, Henry M.; and Gaughan, Perry J., 4,436,625, Cl. 210-634.000.

Gaur, Santosh P.; Lechaton, John S.; and Srinivasan, Gurumakonda R., to International Business Machines Corporation. Method for making a base etched transistor integrated circuit. 4,435,898, Cl. 29-577.00C.

Gauthier-Lafaye, Jean; and Perron, Robert, to Rhone-Poulenc Industries. Preparation of carboxylic acids by carbonylation of alcohols. 4,436,889, Cl. 562-519.000.

Gauthier, Michel; Hackett, Peter A.; and Willis, Clive, to Canadian Patents & Development Limited. Laser production of carbon-13 based on CF_2HCl. 4,436,709, Cl. 423-437.000.

Gavaler, John R.: *See—*
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., 4,437,080, Cl. 335-216.000.

Gavrilko, Igor V.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.

Gavrilov, Alexei G.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.

GCA Corporation: *See—*
Bunkenburg, Joachim, 4,436,424, Cl. 356-356.000.
Weber, T. Jerome, 4,436,985, Cl. 219-388.000.

Gebke, Klaus; Huhn, Friedrich; and Lekutat, Rolf, to Kraftwerk Union Aktiengesellschaft. Cooling plant. 4,436,676, Cl. 261-151.000.

Geddes, Leslie A.: *See—*
Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., 4,436,092, Cl. 128-419.0PG.

Geisow, Bernard H., to Daniel Industries, Inc. Valve actuator mechanism for lift-turn type valves. 4,436,280, Cl. 251-229.000.

Geissmann, Felix: *See—*
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, 4,436,913, Cl. 548-316.000.

Geist, Michael: *See—*
Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, 4,436,878, Cl. 525-438.000.

Gelhard, Egon. Sensor for distance measurement by ultrasound. 4,437,032, Cl. 310-324.000.

General DataComm Industries, Inc.: *See—*
Lambert, David A.; and Profet, Gary A., 4,437,182, Cl. 370-110.100.
Profet, Gary A., 4,437,183, Cl. 370-110.100.

General Electric Company: *See—*
Anthony, Thomas R.; Connery, Richard J.; and Hoeschele, David F., Jr., 4,437,109, Cl. 357-68.000.
Ashby, Bruce A.; and Schroeter, Siegfried H., 4,436,924, Cl. 556-416.000.
Graham, Donald E., 4,436,775, Cl. 427-419.700.
Hepp, Leonard R., 4,436,860, Cl. 524-394.000.
Krantz, Karl W., 4,436,846, Cl. 523-175.000.
Laghi, Aldo A., 4,436,496, Cl. 425-543.000.
Loucks, George R., 4,436,876, Cl. 525-394.000.
Miller, Kenneth F.; and Belfoure, Edward, 4,436,879, Cl. 525-439.000.
Moodie, Eldon E.; and Burns, Richard D., 4,436,585, Cl. 156-73.100.
Morais, Don; and Owen, Daniel V., 4,437,042, Cl. 315-289.000.
Rea, Ike D., 4,436,463, Cl. 409-232.000.
Roberts, Victor D., 4,437,041, Cl. 315-248.000.
Scott, Allen W., 4,435,993, Cl. 74-553.000.
Vaughn, Howard A., Jr., 4,436,851, Cl. 524-43.000.
Whitten, James R., 4,436,995, Cl. 250-227.000.

General Mills, Inc.: *See—*
Lange, Donald A.; Hanson, Marc C.; and Kriva, Kenneth J., 4,436,757, Cl. 426-438.000.

General Motors Corporation: *See—*
Atkins, Terrance J.; and Field, Martin J., 4,436,112, Cl. 137-510.000.
Bowes, Laurence B.; and Gray, Thomas J., 4,436,337, Cl. 296-201.000.
Kuo, Hong-Hsiang, 4,436,037, Cl. 110-245.000.
Vonnegut, George L., 4,436,485, Cl. 416-241.00R.

General Signal Corporation: *See—*
Ferguson, Harry D., 4,437,088, Cl. 340-384.00E.

General Tire & Rubber Company, The: *See—*
Kuan, Tiong H.; and Sommer, John G., 4,436,857, Cl. 524-260.000.

Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., to Mobil Oil Corporation. Rotary transfer subsystems and tensioning assemblies for a process vessel. 4,436,048, Cl. 114-230.000.

GEO Vann, Inc.: *See—*
Brieger, Emmet F., 4,436,155, Cl. 166-297.000.
Vann, Roy R.; and George, Flint R., 4,436,154, Cl. 166-281.000.

Geolograph Company, The: *See—*
Corry, Stuart E.; and Grade, Lanny V., 4,435,988, Cl. 73-862.190.

Georg Fischer Aktiengesellschaft: *See—*
Thalmann, Alfred; and Reich, Fritz, 4,436,987, Cl. 219-535.000.

George, Allan P.: *See—*
Hare, Alan L.; and George, Allan P., 4,436,984, Cl. 219-383.000.

George Fischer Ltd.: *See—*
Rohr, Jakob, 4,436,133, Cl. 152-381.300.

George, Flint R.: *See—*
Vann, Roy R.; and George, Flint R., 4,436,154, Cl. 166-281.000.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz J., 4,436,013, Cl. 83-747.000.

Gerber, Heinz J., to Gerber Garment Technology, Inc. Reciprocating cutting apparatus with theta dither. 4,436,013, Cl. 83-747.000.

Gerber Products Company: *See—*
Spletzer, Barry L.; and Swiatlowski, George, 4,436,470, Cl. 414-36.000.

Gerber Scientific Products, Inc.: *See—*
Logan, David J.; Webster, Ronald B.; and Sullivan, Daniel J., 4,435,904, Cl. 33-143.00K.

Gerding, Thomas W. Conduit support device. 4,436,266, Cl. 248-74.00R.

Geze GmbH: *See—*
Storandt, Ralf; Scheck, Georg; and Biermann, Peter, 4,436,321, Cl. 280-612.000.

Gfeller, Karl: *See—*
Koch, Carl; and Gfeller, Karl, 4,436,399, Cl. 354-159.000.

Ghosh, Amal K.: *See—*
Feng, Tom; and Ghosh, Amal K., 4,436,765, Cl. 427-74.000.

Gieger, Hans-Joachim. Housing loudspeaker. 4,436,178, Cl. 181-151.000.

Gilbride, Andrew J.: *See—*
Simmonds, Robert C., Jr.; and Gilbride, Andrew J., 4,436,771, Cl. 427-284.000.

Gilgore, William H., to Allis-Chalmers Corporation. Apparatus for testing valve actuators. 4,435,979, Cl. 73-168.000.

Gill, Harry A., Jr., to Raytheon Company. Current mirror source circuitry. 4,437,023, Cl. 307-296.00R.

Gill Industries, Inc.: *See—*
Hayatdavoudi, Asadollah; and Adams, Ladd M., 4,436,166, Cl. 175-65.000.

Gillette, Walter B.: *See—*
Gratzer, Louis B.; and Gillette, Walter B., 4,436,263, Cl. 244-130.000.

Gilligan, Thomas J.: *See—*
Canel, Jules E.; and Gilligan, Thomas J., 4,437,173, Cl. 365-193.000.

Girgis, Mikhail M., to PPG Industries, Inc. Aqueous, adhesive coating composition with a non-selfcrosslinkable elastomer for use with filamentary materials. 4,436,866, Cl. 524-510.000.

Giulie, Joe D. Multiple position switch. 4,436,968, Cl. 200-5.00R.

Glasser, Fredrik P.; and Gunawardane, Richard P., to National Research Development Corporation. Fertilizer material from apatite. 4,436,546, Cl. 71-36.000.

Glattli, Hans-Heinrich: *See—*
Stoll, Kurt; and Glattli, Hans-Heinrich, 4,436,434, Cl. 368-65.000.

Glatz, John J. Hot wire anemometer flow meter. 4,435,978, Cl. 73-155.000.

Glickman, Howard E.; Broddon, Alan J.; and Broddon, Norman C. Multiple-position hasp-type door check. 4,436,331, Cl. 292-270.000.

Globe Oil Tools, Inc.: *See—*
Garner, Lloyd L., 4,436,164, Cl. 175-39.000.

Glyzin, Vladimir I.: *See—*
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.

Goans, Kip B., to Baker CAC, Inc. Valve actuator having an adjustable collet lock. 4,436,105, Cl. 137-1.000.

Godo Shusei Co., Ltd.: *See—*
Endo, Akira, 4,436,725, Cl. 424-116.000.

Goetz, Norbert: *See—*
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Jung, Johann, 4,436,548, Cl. 71-76.000.

Goetze AG: *See—*
Vossieck, Paul, 4,436,314, Cl. 277-86.000.

Goi, Kouichi, to Laurel Bank Machine Co., Ltd. Paper sheet stripper device. 4,436,300, Cl. 271-107.000.

Gokel, George W., to W. R. Grace & Co. Nitrogen-containing polyether macrocycles with a sidearm containing neutral electron donor groups. 4,436,664, Cl. 260-330.600.

Gold, Harold; and Budzich, Tadeusz. Hydraulic fuse valve. 4,436,111, Cl. 137-498.000.

Goldhaber, Richard P.: *See—*
Bellotti, Marc; Goldhaber, Richard P.; Phillips, Earl G.; and Toch, Theodore H., 4,436,620, Cl. 210-90.000.

Goldhammer, Albert. Device for the press door of a baling press. 4,436,029, Cl. 100-250.000.

Goldsmith, David S. Traction devices. 4,436,246, Cl. 238-14.000.

Gonski, Joseph: *See—*
Silks, Walter; and Gonski, Joseph, 4,436,345, Cl. 299-59.000.

Goodman Equipment Corporation: *See—*
Silks, Walter; and Gonski, Joseph, 4,436,345, Cl. 299-59.000.

Goodyear Tire & Rubber Company, The: *See—*
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.
Schloman, William W., Jr., 4,436,853, Cl. 524-91.000.

Gorby, Oliver L., to Agri-Tech Ltd., Inc. Differential assembly for vehicles. 4,435,996, Cl. 74-713.000.

Gordon Barlow Design: *See—*
Barlow, Gordon A.; Newcomer, John R.; and Bezark, Fred, 4,436,309, Cl. 273-267.000.

Gordon, Bruce E., to Raytheon Company. Apparatus for synthesizing a signal by producing samples of such signal at a rate less than the Nyquist sampling rate. 4,437,066, Cl. 328-14.000.

Gordon, James R. Adjustable, quick-release barrier clamp. 4,436,446, Cl. 403-384.000.

Gorling, Karl G.: *See—*
Fahlstrom, Per A. H. H.; and Gorling, Karl G., 4,436,529, Cl. 48-197.00R.

Gosudarstvenny Nauchnoissledovatelsky, Proektny I Konstruktorsky Institut Splavov I Obrabotki Tsvetnykh Metallov "Giprotsvetmetobrabotka": *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Gotaverken Arendal AB: *See—*
Liden, Hadar, 4,436,050, Cl. 114-265.000.

Gottlieb, Michael M., to Rogers Corporation. Bus bar assembly with discrete capacitor elements. 4,436,953, Cl. 174-72.00B.

Gottschalk, Robert E., to Panavision, Incorporated. Electronic cinema camera. 4,437,126, Cl. 358-224.000.

Gournay, Luke S., to Mobil Oil Corporation. Method for locating low resistivity pay sands using well logs. 4,435,977, Cl. 73-152.000.

Goy, Ronald S.: *See—*
Biggs, Ian; and Goy, Ronald S., 4,436,774, Cl. 427-40.000.

Grade, Lanny V.: *See—*
Corry, Stuart E.; and Grade, Lanny V., 4,435,988, Cl. 73-862.190.

Gradmann, Gerhard, to Deere & Company. Starter arrangement for internal combustion engine. 4,436,065, Cl. 123-179.00B.

Graham, Donald E., to General Electric Company. Hard metal body and method of making same. 4,436,775, Cl. 427-419.700.

Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., to Ortho Diagnostic Systems Inc. Multiple particle washing system and method of use. 4,436,631, Cl. 210-772.000.

Gratzer, Louis B.; and Gillette, Walter B., to Boeing Company, The. Aerodynamically contoured, low drag wing, engine and engine nacelle combination. 4,436,263, Cl. 244-130.000.

Gray, Thomas J.: *See—*
Bowes, Laurence B.; and Gray, Thomas J., 4,436,337, Cl. 296-201.000.

Green, Gary K.: *See—*
Boyd, Phillip R.; Green, Gary K.; and Sumner, Barbara E., 4,436,580, Cl. 156-636.000.

Green, Neulan B., III: *See—*
Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, 4,436,615, Cl. 208-177.000.

Green, William D., Jr. Smoke generator. 4,436,100, Cl. 131-330.000.

Gribauskas, Joseph F., Jr.: *See—*
Menconi, K. Anthony; and Gribauskas, Joseph F., Jr., 4,436,779, Cl. 428-169.000.

Grossi, Anthony V.; Hahn, Louis T.; Marzocchi, Alfred; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Slurry seal method using acrylamide and rubber modified asphaltic emulsion. 4,436,767, Cl. 427-138.000.

Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Aqueous emulsions of acrylamide and rubber modified asphalts. 4,436,864, Cl. 524-458.000.

Grotta, Henry M.; and Gaughan, Perry J., to Buffalo Color Corp. Method for purification of cresidine sulfonic acid by solvent extraction. 4,436,625, Cl. 210-634.000.

Grow, Harry N.: *See—*
Zboralski, Jon A.; Grow, Harry N.; and Holschbach, Stephen E., 4,436,022, Cl. 98-115.0LH.

Grube, Herbert E.: *See—*
Pomplun, William S.; and Grube, Herbert E., 4,436,867, Cl. 524-503.000.

Gruber, George J., to Southwest Research Institute. Ultrasonic multiple-beam technique for detecting cracks in bimetallic or coarse-grained materials. 4,435,984, Cl. 73-628.000.

Gruendler, Karl-Heinz: *See—*
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.

Grundfos A/S: *See—*
Jensen, Niels D.; Komossa, Horst; and Nielsen, Kurt F., 4,436,486, Cl. 417-45.000.

GTE Laboratories Incorporated: *See—*
Bowen, Leslie J., 4,436,650, Cl. 252-518.000.
Lapatovich, Walter P.; Proud, Joseph M.; and Riseberg, Leslie A., 4,436,762, Cl. 427-39.000.

GTE Products Corporation: *See—*
Bay, David L., 4,437,040, Cl. 315-209.00R.

Guenther, Werner, to Siemens Aktiengesellschaft. Height-adjustable support arm with a parallelogram linkage. 4,437,144, Cl. 362-275.000.

Gulf Research & Development Company: *See—*
Morganson, Neal E.; and Vayda, Adam V., 4,436,947, Cl. 585-525.000.

Gumert, William R.: *See—*
Carson, Franklin D.; and Gumert, William R., 4,435,981, Cl. 73-382.00R.

Gunawardane, Richard P.: *See—*
Glasser, Fredrik P.; and Gunawardane, Richard P., 4,436,546, Cl. 71-36.000.

Gunshor, Robert L.; Pierret, Robert F.; and Melloch, Michael R., to Purdue Research Foundation. ZnO SAW Device having separate comb transducer. 4,437,031, Cl. 310-313.00B.

Gutman, David. Escape system. 4,436,181, Cl. 182-236.000.

Gyugyi, Laszlo, to Westinghouse Electric Corp. Static VAR generator. 4,437,052, Cl. 323-210.000.

Haag, William J.: *See—*
Freeouf, John L.; Haag, William J.; and Woodall, Jerry M., 4,436,768, Cl. 427-227.000.

Hackett, Peter A.: *See—*
Gauthier, Michel; Hackett, Peter A.; and Willis, Clive, 4,436,709, Cl. 423-437.000.

Haendle, Joerg; and Horbaschek, Heinz, to Siemens Aktiengesellschaft. X-Ray television installation for monitor photography. 4,437,117, Cl. 358-111.000.

Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, to Robert Bosch GmbH. Electromagnetically actuatable valve, in particular a fuel injection valve. 4,436,071, Cl. 123-472.000.

Hagelee, Leon A.: *See—*
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,436,864, Cl. 524-458.000.

Hahn, Louis T.: *See—*
Grossi, Anthony V.; Hahn, Louis T.; Marzocchi, Alfred; and Bolen, Charles E., 4,436,767, Cl. 427-138.000.
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,436,864, Cl. 524-458.000.

Haines, Richard M.; Wong, Robert; and Berger, Elisabeth J., to Owens-Corning Fiberglas Corporation. Aqueous co-emulsions of epoxy resin and mineral oil. 4,436,848, Cl. 523-426.000.

Haisma, Jan: *See—*
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,436,381, Cl. 350-432.000.

Hajime Industries Ltd.: *See—*
Yoshida, Hajime, 4,437,115, Cl. 358-106.000.

Hall, David A., to Eli Lilly and Company. N-Substituted-2-(R)-(sulfinic acid)-3-(S)-(acylamido)-4-oxo-azetidines and process. 4,436,596, Cl. 204-59.00R.

Hallerback, Stig L., to Aktiebolaget SKF. Rolling bearing. 4,436,349, Cl. 308-189.00R.

Halliburton Company: *See—*
Arnold, Dan M.; Smith, Harry D., Jr.; and Schultz, Ward E., 4,436,996, Cl. 250-256.000.
Edwards, Arnold G., 4,436,149, Cl. 166-120.000.
Fredrickson, Sherman E., 4,436,156, Cl. 166-307.000.

Halpert, David E.: *See—*
Walsh, Brian F.; and Halpert, David E., 4,437,122, Cl. 358-166.000.

Halvorsen, Rolf I.: *See—*
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.

Hamada, Hiroshi: *See—*
Yano, Kohzo; Hamada, Hiroshi; Inami, Yasuhiko; and Wada, Tomio, 4,436,380, Cl. 350-357.000.

Hamada, Toshiyoshi: *See—*
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.

Hambrecht, Juergen: *See—*
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.

Hamilton Industries, Inc.: *See—*
Zboralski, Jon A.; Grow, Harry N.; and Holschbach, Stephen E., 4,436,022, Cl. 98-115.0LH.

Hanley, Dean C.: *See—*
Jacobson, Ronald L.; and Hanley, Dean C., 4,436,653, Cl. 252-547.000.

Hanley, James O. Coin operated delivery system for vending machines. 4,436,194, Cl. 194-63.000.

Hanna, Terry J.: *See—*
Pellegrin, Michael T.; Hanna, Terry J.; and Thompson, Thomas K., 4,436,541, Cl. 65-2.000.

Hansa Medical Products, Inc.: *See—*
Blom, Eric D.; and Singer, Mark I., 4,435,853, Cl. 3-1.300.

Hansen, Robert C.; and Novorolsky, Paul G., to Western Electric Company, Inc. System using the telephone network to control locks at a number of remote locations. 4,436,958, Cl. 179-2.00A.

Hanson, Alan R. Rotary torque adapter. 4,436,005, Cl. 81-177.00G.

Hanson, Marc C.: *See—*
Lange, Donald A.; Hanson, Marc C.; and Kriva, Kenneth J., 4,436,757, Cl. 426-438.000.

Hanson, R. Edward. Apparatus for indicating creosote buildup in a chimney. 4,437,090, Cl. 340-613.000.

Hanyu, Susumu; and Ebata, Yoshikazu, to Janome Sewing Machine Co. Ltd. Dual function sewing machine with a rotatable base. 4,436,042, Cl. 112-217.100.

Hanzlik, Edward W. C.: *See—*
Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., 4,436,301, Cl. 271-177.000.

Hapao, Norio: *See—*
Noji, Takashi; Hapao, Norio; and Obata, Yoshiharu, 4,437,011, Cl. 250-486.100.

Harada, Nobuo: *See—*
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.

Harada, Seiki: *See—*
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, 4,436,583, Cl. 156-659.100.

Harada, Yoshiaki, to Konishiroku Photo Industry Co., Ltd. Corona generating apparatus. 4,437,001, Cl. 250-324.000.

Harder, Wolfgang; Merger, Franz; and Towae, Friedrich, to BASF Aktiengesellschaft. Preparation of carbonates. 4,436,668, Cl. 260-463.000.

Hare, Alan L.; and George, Allan P., to Tioxide Group PLC. Electric arc discharge apparatus. 4,436,984, Cl. 219-383.000.

Harlan, Wayne E., to RCA Corporation. Dynamically controlled horizontal peaking system. 4,437,123, Cl. 358-166.000.

Harman, Maurice: *See—*
Cross, Henry F.; and Harman, Maurice, 4,436,057, Cl. 122-4.00D.

Harmon, William R., Jr., to Bell Telephone Laboratories, Incorporated. Telephone ringing signal generator. 4,436,960, Cl. 179-51.0AA.

Harr, Jost, to Sandoz Ltd. Fungicidal compositions comprising N-amino-2-oxo-3-oxazolidine derivatives and folpet or captan. 4,436,744, Cl. 424-272.000.

Harra, David J.; Turner, Frederick T.; and Hutchinson, Martin A., to Varian Associates, Inc. Blocking shield and method for contouring the thickness of sputter coated layers. 4,436,602, Cl. 204-192.00R.

Harris Graphics Corporation: *See—*
Chandhoke, Mohanjit S., 4,436,297, Cl. 271-3.100.

Harris, Kendall R., to B & B Insulation, Inc. Insulation composition. 4,436,868, Cl. 524-783.000.

Harris, Susan K.: *See—*
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.
Davis, Richard A.; Harris, Susan K.; and Jones, Bernard R., 4,436,962, Cl. 179-18.00B.

Harrison, Don E.: *See—*
Radford, Kenneth C.; and Harrison, Don E., 4,436,677, Cl. 264-0.500.

Harrison, Irene R.: *See—*
Stetson, Karl A.; and Harrison, Irene R., 4,436,419, Cl. 356-35.500.

Harsco Corporation: *See—*
Downey, Robert C., Jr., 4,436,136, Cl. 160-232.000.

Hartley, Louis A., II, to Aluminum Company of America. Method and apparatus for producing aluminum in an electrolysis cell with quarry tile lining. 4,436,597, Cl. 204-67.000.

Hartshorn, Frank: *See—*
Berrill, William H.; Boot, Herbert W.; and Hartshorn, Frank, 4,435,869, Cl. 12-12.000.

Harvey, Edgar L., to Burroughs Corporation. Display panel and keep-alive arrangement therefor. 4,437,037, Cl. 313-585.000.

Harvey Hubbell Incorporated: *See—*
Mather, David S., 4,436,142, Cl. 164-337.000.

Harvill, Melvin J.: *See—*
Schmitt, Donald C.; and Harvill, Melvin J., 4,436,195, Cl. 194-92.000.

Harwell, Howard L., to Air Products and Chemicals, Inc. Alkyl polyamine ethers as catalysts for isocyanate reactions. 4,436,842, Cl. 521-115.000.

Hasegawa, Yutaka: *See—*
Kamiyama, Shin-ichi; and Hasegawa, Yutaka, 4,436,414, Cl. 355-15.000.

Hashimoto, Osami: *See—*
Okuyama, Shigeaki; Nakamura, Norimi; and Hashimoto, Osami, 4,435,907, Cl. 33-366.000.

Hashimoto, Seiji: *See—*
Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, 4,437,112, Cl. 358-44.000.

Haskins, Delbert E.: *See—*
Murphy, Milford R.; and Haskins, Delbert E., 4,436,018, Cl. 91-363.00A.

Haskins, Steve W., to International Telephone and Telegraph Corporation. Hookswitch mechanism for telephone instrument. 4,436,964, Cl. 179-164.000.

Hastings, Jerome K., to Eaton Corporation. Magnetic snap latch. 4,437,079, Cl. 335-170.000.

Hata, Shuji; Yamada, Toshio; and Murakawa, Katsuji, to Toyo Kogyo Co., Ltd. Automobile transmission casing having reinforcement. 4,435,994, Cl. 74-606.00R.

Hatch, Seymour A.; and Morley, James P., to CR Industries. Two piece seal adapted for simplified installation. 4,436,315, Cl. 277-92.000.

Hatinguais, Philippe; Patoiseau, Jean-Francois; and Marcelon, Gilbert, to Pierre Fabre S.A. Compounds of the benzoxepine series and sulphur- and nitrogen-containing analogues; their processes for the preparation of these products and the use thereof in the pharmaceutical field. 4,436,749, Cl. 424-278.000.

Hatori, Yoshinori: *See—*
Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo, 4,437,119, Cl. 358-136.000.

Hattori, Kyo: *See—*
Akagi, Motonobu; Nomura, Iashi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.

Hauk, Klaus, to Deere & Company. Parallel arm windshield wiper assembly. 4,435,875, Cl. 15-250.230.

Hauptmann, Eric A., to Rochester Instrument Systems, Inc. Wattmeter. 4,437,059, Cl. 324-142.000.

Hawk, Johnna B.: *See—*
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,436,631, Cl. 210-772.000.

Hay, Burns R.: *See—*
Dyck, Walter R.; and Hay, Burns R., 4,436,096, Cl. 128-689.000.

Hayase, Tomio: *See—*
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, 4,436,532, Cl. 48-209.000.

Hayashi, Motomu; Ishikawa, Atun; and Yukimoto, Kazuyoshi, to Aisin Seiki Kabushiki Kaisha. Retractable headlamp assembly for automobiles. 4,437,143, Cl. 362-272.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Automotive internal combustion engine. 4,436,061, Cl. 123-41.740.

Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for treatment of metal substrate for growth of hydrogen-containing semiconductor film. 4,436,761, Cl. 427-38.000.

Hayashida, Takayuki: *See—*
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, 4,436,532, Cl. 48-209.000.

Hayatdavoudi, Asadollah; and Adams, Ladd M., to Gill Industries, Inc. Downhole vortex generator and method. 4,436,166, Cl. 175-65.000.

Hazemeijer B.V.: *See—*
Lipperts, Joseph H. F. G., 4,436,241, Cl. 228-124.000.

Hebert, Francis A., to South Louisiana Contractors Inc. Portable pneumatic nail driving apparatus. 4,436,235, Cl. 227-111.000.

Hefling, Dennis V., to Coleman Company, Inc., The. Damper assembly for barbecue grill. 4,436,081, Cl. 126-285.00A.

Hehl, Karl. Potentiometer drive for displacement transducer of reciprocating unit. 4,435,991, Cl. 74-89.200.

Hehl, Karl. Locking device for the tape cassette compartment of a magnetic tape apparatus. 4,437,131, Cl. 360-96.600.

Heie, Ingar H.: *See—*
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.

Heil, Eduard: *See—*
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.

Heilig, Thomas, to Licentia Patent-Verwaltungs-GmbH. Communications system connecting circuit for controlling derivation of operating power from subscriber line current. 4,436,961, Cl. 179-77.000.

Heinemann Electric Company: *See—*
Scanlon, William F., 4,436,972, Cl. 200-315.000.

Heismann, Richard A., to Outboard Marine Corporation. Mulching adapter for rotary lawn mower. 4,435,949, Cl. 56-320.200.

Heitzmann, Michel: *See—*
Henry, Raymond; and Heitzmann, Michel, 4,437,077, Cl. 333-245.000.

Hendershot, Gary L. Concrete form extender device. 4,436,275, Cl. 249-47.000.

Henderson, David. Anti-theft picnic device. 4,436,214, Cl. 220-18.000.

Henkel KGaA: *See—*
Burger, Helga; and Rossmann, Christian, 4,436,643, Cl. 252-135.000.

Hennessy, John B.; and Lane, Derek. Cassette adapter for eight track machines. 4,437,130, Cl. 360-94.000.

Henry, Raymond; and Heitzmann, Michel, to Thomson-CSF. Semiconductor device usable at very high frequencies and its production process. 4,437,077, Cl. 333-245.000.

Hens, Carolus M.: *See—*
Viellefont, Jean F.; Hens, Carolus M.; and Tobbeck, Hubert J., 4,436,606, Cl. 204-225.000.

Hepp, Leonard R., to General Electric Company. Reinforced thermoplastic composition. 4,436,860, Cl. 524-394.000.

Hercules Incorporated: *See—*
Klosiewicz, Daniel W., 4,436,858, Cl. 524-296.000.

Hernandez, Henry. Fishing seat, rod holder and pail. 4,436,340, Cl. 297-193.000.

Heroux, Jean: *See—*
Cohen, Georges; and Heroux, Jean, 4,437,074, Cl. 333-128.000.

Hershberger, Charles L.; and Rosteck, Paul R., Jr., to Eli Lilly and Company. Method for stabilizing and selecting recombinant DNA containing host cells. 4,436,815, Cl. 435-172.000.

Herth, Harro: *See—*
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Hetterich, Hermann: *See—*
Horling, Peter; Hetterich, Hermann; Dobhan, Herbert; and Klupfel, Norbert, 4,435,889, Cl. 29-148.40C.

Heubner, Ulrich: *See—*
Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, 4,436,790, Cl. 428-675.000.

Hewlett-Packard Company: *See—*
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.

Higaki, Hiromichi: *See—*
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.

Higashide, Eiji: *See—*
Horii, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, 4,436,918, Cl. 548-546.000.

Higgins, William A.; and Perz, John S., to Lubrizol Corporation, The. Two-component urethane coating system. 4,436,855, Cl. 524-145.000.

Higuchi, Masahiro: *See—*
Okumura, Fumio; Higuchi, Masahiro; Kamei, Shun; and Miyauchi, Masahiro, 4,436,783, Cl. 428-411.000.

Hihara, Toshio: *See—*
Niwa, Toshio; and Hihara, Toshio, 4,436,906, Cl. 544-187.000.

Hill, James B.; and Hill, Sally F. Baby carrier. 4,436,233, Cl. 224-159.000.

Hill, Sally F.: *See—*
Hill, James B.; and Hill, Sally F., 4,436,233, Cl. 224-159.000.

Hiller, Jeffrey H.; and Hiller, Stephen S. Assembly for steam heating or cooking food products and its method of operation. 4,436,082, Cl. 126-348.000.

Hiller, Stephen S.: *See—*
Hiller, Jeffrey H.; and Hiller, Stephen S., 4,436,082, Cl. 126-348.000.

Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, to BASF Aktiengesellschaft. Production of molding materials containing polyphenylene ethers. 4,436,870, Cl. 525-53.000.

Hinson, Neil R.: *See—*
Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., 4,437,121, Cl. 358-160.000.

Hirabayashi, Yasuji: *See—*
Urasaki, Takanori; Hirabayashi, Yasuji; Yoshida, Tugusi; and Inata, Hiroo, 4,436,894, Cl. 528-176.000.

Hiraga, Masaharu: *See—*
Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, 4,436,465, Cl. 409-243.000.

Hirai, Yukio: *See—*
Tokuhisa, Masaaki; and Hirai, Yukio, 4,436,562, Cl. 148-24.000.

Hirano, Tsumoru: *See—*
Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, 4,436,808, Cl. 430-381.000.

Hirata, Minoru: *See—*
Imada, Isuke; Nagaoka, Akinobu; and Hirata, Minoru, 4,436,753, Cl. 424-331.000.

Hirata, Toshitaka: *See—*
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Hirayama, Fumitoshi: *See—*
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.

Hird, Richard E., to Estad Products, Inc. Panel locking means. 4,435,939, Cl. 52-582.000.

Hirokawa, Toshio: *See—*
Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, 4,436,239, Cl. 228-17.000.

Hirosawa, Kuninori: *See—*
Akiyama, Hiroyuki; Shimada, Sumio; Hirosawa, Kuninori; and Kuwabara, Hideki, 4,436,840, Cl. 521-58.000.

Hirose, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Document information filing system. 4,437,127, Cl. 358-296.000.

Hirsch, Selwyn R.: *See—*
Manfredo, Joseph N.; and Hirsch, Selwyn R., 4,436,145, Cl. 165-67.000.

Hisao, Makino; and Sadao, Kozima, to Kaiyo Kogyo Co., Ltd. Multistage water purification apparatus. 4,436,675, Cl. 261-77.000.

Hisey, Durward A., to HY-C Company Inc. Chimney cap. 4,436,021, Cl. 98-67.000.

Hitachi Kiden Kogyo, Ltd.: *See—*
Imamura, Yoshinobu; Kamei, Shigeki; Yamagata, Tetuo; and Fujii, Hiroshi, 4,436,026, Cl. 100-45.000.

Hitachi, Ltd.: *See—*
Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, 4,436,982, Cl. 219-130.510.
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.
Muto, Nobuyoshi; Nagase, Hiroshi; Sakai, Keijiro; and Matsuda, Yasuo, 4,437,051, Cl. 318-808.000.
Narato, Kiyoshi; Ohtsuka, Keizou; Inada, Tooru; and Watanabe, Takashi, 4,436,699, Cl. 422-68.000.
Ogata, Masahiro; and Sakai, Osamu, 4,437,135, Cl. 361-91.000.
Ohe, Etsuo; Sugawara, Katsuo; Tani, Ititaro; and Tsukioka, Hideo, 4,436,654, Cl. 252-574.000.
Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, 4,436,581, Cl. 156-643.000.
Onodera, Osamu, 4,437,165, Cl. 364-749.000.
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, 4,436,583, Cl. 156-659.100.
Sekiya, Teruo, 4,435,970, Cl. 72-239.000.
Takeuchi, Masato; Okada, Hideo; Tobita, Hiroai; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.
Yamamoto, Etsuji; Sekihara, Kensuke; and Kohno, Hideki, 4,437,136, Cl. 361-146.000.
Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, 4,437,129, Cl. 360-85.000.

Hitachi Metals, Ltd.: *See—*
Yamashita, Keitaro; and Kashiwagi, Hiromi, 4,436,055, Cl. 118-658.000.

Hitachi Microcomputer Engineering, Ltd.: *See—*
Ogata, Masahiro; and Sakai, Osamu, 4,437,135, Cl. 361-91.000.

HMVH Corporation: *See—*
Holder, Morris E., 4,436,526, Cl. 44-10.00B.

Ho, Chungfah H., to Du Pont de Nemours, E. I., and Company. Oligomer pellets of ethylene terephthalate. 4,436,782, Cl. 428-402.000.

Hobbs, Linda G.: *See—*
Bequette, Robert J.; Hobbs, Linda G.; and Scott, Joseph A., 4,436,738, Cl. 424-238.000.

Hochanadel, Thomas A., to J. E. Grote Pepp-A-Matic Co., Inc. Pendulum-type product slicing machine. 4,436,012, Cl. 83-703.000.

Hochtief AG, vorm. Gebr. Helfmann: *See—*
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.

Hodakowski, Leonard E.; and Wilson, Charles A., II, to Union Carbide Corporation. Methods for controlling pests with substituted phenyl thio(thiono)phosphates and the thio(thiono)phosphates. 4,436,736, Cl. 424-211.000.

Hodgins, Martin G.; and Jordan, William J., to Bell Telephone Laboratories, Incorporated. Data link using integrated optics devices. 4,436,365, Cl. 350-96.160.

Hodlewsky, Wasly G.; and Bloedorn, William H., to Rexnord Inc. Low friction flat-top article carrying chain. 4,436,200, Cl. 198-851.000.

Hoechst Aktiengesellschaft: *See—*
Diery, Helmut, 4,436,933, Cl. 562-470.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Ong, Helen H.; and Profitt, James A., 4,436,748, Cl. 424-275.000.

Hoekstra, Edith, executrix: *See—*
Forgac, John M.; and Hoekstra, Gerald B., deceased, 4,436,344, Cl. 299-2.000.

Hoekstra, Gerald B., deceased: *See—*
Forgac, John M.; and Hoekstra, Gerald B., deceased, 4,436,344, Cl. 299-2.000.

Hoerauf, Werner: *See—*
Strehler, Hugo; Hoerauf, Werner; and Urbanek, Friedrich, 4,436,897, Cl. 528-323.000.

Hoeschele, David F., Jr.: *See—*
Anthony, Thomas R.; Connery, Richard J.; and Hoeschele, David F., Jr., 4,437,109, Cl. 357-68.000.

Hoff-Stevens, Inc.: *See—*
Frey, John A., 4,436,228, Cl. 222-400.700.

Hoffmann-La Roche Inc.: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,436,662, Cl. 260-245.700.

Hoffmann, Richard; and Zobawa, Franz, to Siemens Aktiengesellschaft. Connector for printed circuit boards. 4,436,362, Cl. 339-103.00M.

Hofmann, Frank, to Walter Hofmann Maschinenfabrik, Firma. Arrangement for pulsation-free feeding of a liquid medium. 4,436,230, Cl. 222-614.000.

Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, to Davy McKee Aktiengesellschaft, Borsigalle. Preparation of spinnable polyamide from dinitrile, diamine, H_2O with P containing catalyst. 4,436,898, Cl. 528-336.000.

Hogg, John A. Frame for comb honey. 4,435,865, Cl. 6-2.00R.

Holca, Radu, to Degremont. Bipolar electrode electrolysis apparatus. 4,436,605, Cl. 204-225.000.

Holder, Morris E., to HMVH Corporation. Method for making an artificial fuel log. 4,436,526, Cl. 44-10.00B.

Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Benzyl-pyrimidinylalkyl-ethers as plant growth regulators and fungicides, and corresponding pyrimidinyl-carbinols. 4,436,907, Cl. 544-335.000.

Holschbach, Stephen E.: *See—*
Zboralski, Jon A.; Grow, Harry N.; and Holschbach, Stephen E., 4,436,022, Cl. 98-115.0LH.

Holstein und Kappert GmbH: *See—*
Borstelmann, Wolfgang, 4,436,124, Cl. 141-5.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ebisawa, Masuo; and Suzuki, Tetsuya, 4,436,140, Cl. 164-120.000.
Inoue, Kazuo; and Otsuka, Tsuneo, 4,436,172, Cl. 180-219.000.
Morisono, Akira, 4,436,174, Cl. 180-227.000.
Takahashi, Hirotake, 4,436,173, Cl. 180-226.000.

Honda, Nobuyasu: *See—*
Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, 4,436,803, Cl. 430-122.000.

Honda, Sueaki: *See—*
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Honda, Tadatoshi: *See—*
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.

Hondorp, Hugh L., to United States of America, Energy. Neutron and gamma radiation shielding material, structure, and process of making structure. 4,437,013, Cl. 250-515.100.

Honeck, Manfred Fred: *See—*
Sapkowski, Mechislao, 4,437,128, Cl. 358-335.000.

Honeywell B.V.: *See—*
Berkhof, Hendrikus, 4,436,506, Cl. 431-76.000.

Honeywell Inc.: *See—*
Rebholz, Joseph J.; and Tamura, Poohsan N., 4,436,370, Cl. 350-162.120.

Horak, Josef, to Veitscher Magnesitwerke-Actien-Gesellschaft. Prismatic brick of refractory material. 4,436,144, Cl. 165-9.100.

Horbaschek, Heinz: *See—*
Haendle, Joerg; and Horbaschek, Heinz, 4,437,117, Cl. 358-111.000.

Hori, Fumihisa, to Alps Electric Co., Ltd. Serial printer. 4,436,031, Cl. 101-93.170.

Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, to Toyama Chemical Co., Ltd. 1-(4-Aminobenzyl)-2,3-dioxopiperazine derivatives, acid addition salts thereof and process for producing same. 4,436,921, Cl. 544-238.000.

Horiba, Ltd.: *See—*
Kinoshita, Dainichiro, 4,437,058, Cl. 324-120.000.

Horie, Shigeru; Yamamoto, Yasuo; and Ikarashi, Takeo, to Mitsubishi Gas Chemical Company Inc. Process for preparation of catalysts. 4,436,835, Cl. 502-208.000.

Horii, Isamu, to Fujisawa Pharmaceutical Co., Ltd. Ampule case. 4,436,205, Cl. 206-530.000.

Horii, Kenju: *See—*
Kuroda, Takao; and Horii, Kenju, 4,435,897, Cl. 29-572.000.

Horii, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, to Takeda Chemical Industries, Ltd. Method for production of peptide, and its intermediate. 4,436,918, Cl. 548-546.000.

Horike, Masanori: *See—*
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Horl, Manfred, to U.S. Philips Corporation. Amplifier arrangement whose overall gain is controllable by means of a control voltage. 4,437,070, Cl. 330-254.000.

Horling, Peter; Hetterich, Hermann; Dobhan, Herbert; and Klupfel, Norbert, to SKF Kugellagerfabriken GmbH. Method and apparatus for the production of a rolling bearing cage. 4,435,889, Cl. 29-148.40C.

Horvath, Peter: *See—*
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.

Hoshino, Satoshi: *See—*
Inoue, Morio; Hoshino, Satoshi; Namura, Hideki; and Watari, Takashi, 4,436,482, Cl. 416-1.000.

Hotchkiss, Harry W.; Notheis, Patrick J.; and Englebert, Stephen M., to Kimberly-Clark Corporation. Nonwoven wiper laminate. 4,436,780, Cl. 428-198.000.

Houck, Robert J.; and King, Kevin J., to B. F. Goodrich Company, The. Conveyor belt system having a phase shift indicator and adjuster for optimum tuning of a synchronous rip detector circuit. 4,436,198, Cl. 198-502.000.

Howard, James K., to International Business Machines Corporation. Laser annealed dielectric for dual dielectric capacitor. 4,437,139, Cl. 361-313.000.

Howell, Frederick H., to Ciba-Geigy Corporation. Alkylation and aralkylation of aromatic amines. 4,436,936, Cl. 564-409.000.

Howell, John L.: *See—*
Chang, Melvin C.; and Howell, John L., 4,436,552, Cl. 75-41.000.

Howell, Robert G., to Corning Glass Works. Glass frits containing WO_3 or MoO_3 in RuO_2-based resistors. 4,436,829, Cl. 501-22.000.

Hoya Corporation: *See—*
Ishibai, Isao; and Kobayashi, Kunimitsu, 4,436,386, Cl. 350-550.000.

Hoyer, Edgar: *See—*
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.

Hoyrup, Sigurd J., to Kliklok Corporation. Method and apparatus for folding carton flanges. 4,435,943, Cl. 53-491.000.

Hudson, David M., to Advanced Color Technology, Inc. Ink disposal system for ink jet printer. 4,437,104, Cl. 346-140.00R.

Hudson, Edwin L.; and Smith, Stephen L., to Intel Corporation. ECL Compatible CMOS memory. 4,437,171, Cl. 365-177.000.

Hudson, John A., to United States of America, Navy. Buoyant electrode. 4,437,097, Cl. 340-852.000.

Hudson, Sharon J., Jr., to Sharon Manufacturing Company. Dual fluid heat exchanger. 4,436,147, Cl. 165-165.000.

Hugelshofer, Paul; Zbinden, Peter; and Koci, Zdenek, to Ciba-Geigy Corporation. Process for the preparation of storage stable colorant compositions by ultrafiltration and wet milling. 4,436,523, Cl. 8-527.000.

Huggins, Robert A.; and Boukamp, Bernard A., to United States of America, Energy. All-solid electrodes with mixed conductor matrix. 4,436,796, Cl. 429-112.000.

Hughes Aircraft Company: *See—*
Smay, John W., 4,437,047, Cl. 318-649.000.

Hughes Tool Company: *See—*
Kennington, Kerry S.; and Baker, Ronald, 4,436,002, Cl. 81-57.200.
Witten, Raymond L., 4,436,488, Cl. 417-53.000.

Huhn, Friedrich: *See—*
Gebke, Klaus; Huhn, Friedrich; and Lekutat, Rolf, 4,436,676, Cl. 261-151.000.

Huhn, Karl; and Marwitz, Heinrich, to Wacker-Chemie GmbH. Aqueous organopolysiloxane emulsiers and a process for treating organic fibers therewith. 4,436,856, Cl. 524-211.000.

Huling, Edwin. Low energy building. 4,435,928, Cl. 52-90.000.

Hunaut, Roger; and Dupont, Francois, to Thomson-CSF. Convergence device for a color-camera. 4,437,110, Cl. 358-41.000.

Hurt, James J.; and Foss, Susan K., to Deere & Company. Coordinate measuring machine inspection and adjustment method. 4,437,151, Cl. 364-571.000.

Husain, Iqbal: *See—*
Zezza, Louis J.; and Husain, Iqbal, 4,436,693, Cl. 376-272.000.

Husson, Alan L.: *See—*
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.

Hutchin, Richard A., to Itek Corporation. Beam director for optical ranging system. 4,436,417, Cl. 356-4.500.

Hutchinson, Franklin D.: *See—*
Schmidt, William P.; and Hutchinson, Franklin D., 4,436,372, Cl. 350-293.000.

Hutchinson, Martin A.: *See—*
Harra, David J.; Turner, Frederick T.; and Hutchinson, Martin A., 4,436,602, Cl. 204-192.00R.

HY-C Company Inc.: *See—*
Hisey, Durward A., 4,436,021, Cl. 98-67.000.

Hydra-Rig, Inc.: *See—*
Elliston, Thomas L., 4,436,177, Cl. 180-324.000.

Ichikawa, Mamoru; and Satake, Sachio, to Nissan Motor Company, Limited; and Atsugi Motor Parts Company Limited. Vehicle level detector with fail-safe mechanism. 4,436,318, Cl. 280-104.000.

Ichikawa, Tetsuya: *See—*
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Ichino, Hiroyuki: *See—*
Nishikawa, Kazuo; Sato, Kiyoshi; Ichino, Hiroyuki; and Okura, Keniti, 4,437,179, Cl. 369-172.000.

Igarashi, Akira: *See—*
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, 4,436,920, Cl. 549-227.000.

Igarashi, Taizo: *See—*
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.

Iguchi, Shigeru; and Ebato, Seigo, to Mitsubishi Paper Mills, Ltd. Silver complex diffusion transfer process using two toning agents. 4,436,805, Cl. 430-248.000.

Iida, Kazuyoshi: *See—*
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.

Ikarashi, Takeo: *See—*
Horie, Shigeru; Yamamoto, Yasuo; and Ikarashi, Takeo, 4,436,835, Cl. 502-208.000.

Ikari, Kazuo; and Fujii, Toru, to Olympus Optical Co., Ltd. Retrofocus type super wide angle lens system. 4,436,382, Cl. 350-458.000.

Ikeda, Kenske. Armature winding for a DC multi-pole motor. 4,437,028, Cl. 310-198.000.

Ikeda, Kunio, to Ricoh Company, Ltd. Ink-jet nozzle and a method for manufacturing same. 4,437,103, Cl. 346-140.00R.

Ikeda, Masami: *See—*
Sugitani, Hiroshi; Matsuda, Hiroto; and Ikeda, Masami, 4,437,100, Cl. 346-1.100.

Ikeda, Nobumasa: *See—*
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, 4,436,131, Cl. 152-361.0FP.

Ikeda, Nobuo; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. High frequency heating appliance with an antenna and stirrer assembly. 4,436,973, Cl. 219-10.55F.

Ikeda, Osamu: *See—*
Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, 4,436,792, Cl. 429-1.000.

Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, to Mita Industrial Co., Ltd. Method of developing electrostatic image with magnetic brush ear promoter. 4,436,803, Cl. 430-122.000.

Imada, Isuke; Nagaoka, Akinobu; and Hirata, Minoru, to Takeda Chemical Industries, Ltd. Method for therapy of ischemic disease. 4,436,753, Cl. 424-331.000.

Imai, Akio: *See—*
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.

Imamura, Tatsuo; and Katoh, Mitsuo, to Nippon Mining Co., Ltd. Method for treatment of copper anodes to be electrorefined. 4,436,600, Cl. 204-140.000.

Imamura, Yoshinobu; Kamei, Shigeki; Yamagata, Tetuo; and Fujii, Hiroshi, to Hitachi Kiden Kogyo, Ltd. Empty can crusher. 4,436,026, Cl. 100-45.000.

Imanaka, Hiroshi: *See—*
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

IMI Marston Limited: *See—*
Beese, John G., 4,436,218, Cl. 220-89.00A.

Imperial Chemical Industries PLC: *See—*
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,503, Cl. 425-384.000.
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,687, Cl. 264-164.000.
Tompsett, Alan J., 4,436,938, Cl. 564-474.000.

Inaba, Shosei, to Victor Company of Japan Limited. Disc cartridge having a detachable lid. 4,436,201, Cl. 206-444.000.

Inada, Tooru: *See—*
Narato, Kiyoshi; Ohtsuka, Keizou; Inada, Tooru; and Watanabe, Takashi, 4,436,699, Cl. 422-68.000.

Inai, Kunihiro, to Nikko Industry Co., Ltd. Waste gas apparatus for electric furnace. 4,437,186, Cl. 373-9.000.

Inai, Takayoshi; Saitoh, Teruo; and Sannomiya, Hisayuki, to Matsushita Electric Industrial Co., Ltd. Color television camera. 4,437,111, Cl. 358-44.000.

Inami, Yasuhiko: *See—*
Yano, Kohzo; Hamada, Hiroshi; Inami, Yasuhiko; and Wada, Tomio, 4,436,380, Cl. 350-357.000.

Inata, Hiroo: *See—*
Urasaki, Takanori; Hirabayashi, Yasuji; Yoshida, Tugusi; and Inata, Hiroo, 4,436,894, Cl. 528-176.000.

Incorvia, Samuel A.: *See—*
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,436,623, Cl. 210-282.000.

Independent Maching Company: *See—*
Santa Lucia, Jack; and Trapp, Kenneth, 4,436,249, Cl. 242-18.00R.

Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See—*
Pache, Norbert; and Mazac, Karel, 4,436,980, Cl. 219-123.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Knirsch, Franco, 4,436,801, Cl. 430-73.000.
Simonotti, Lucio; and Motta, Carlo, 4,436,182, Cl. 186-37.000.

Innertsberger, Ernst: *See—*
Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, 4,436,647, Cl. 252-358.000.

Inoue, Hideya: *See—*
Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, 4,436,792, Cl. 429-1.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,436,976, Cl. 219-69.00V.

Inoue, Kazuo; and Otsuka, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle having an engine with a turbo-supercharger. 4,436,172, Cl. 180-219.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electroerosion machining method and apparatus with automatic vibrations-sensing electrode wear compensation. 4,436,976, Cl. 219-69.00V.

Inoue, Morio; Hoshino, Satoshi; Namura, Hideki; and Watari, Takashi, to Nippon Kokan Kabushiki Kaisha. Constant ship speed control method. 4,436,482, Cl. 416-1.000.

Institut Elektrosvarki Imeni E.O.Patona Akademii Nauk Ukrainskoi SSR: *See—*
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Intel Corporation: *See—*
Hudson, Edwin L.; and Smith, Stephen L., 4,437,171, Cl. 365-177.000.
Liu, Wei-Ti; and Lee, Douglas J., 4,437,025, Cl. 307-475.000.
Rose, Donald K.; and Silverman, Peter J., 4,436,579, Cl. 156-626.000.

International Business Machines Corporation: *See—*
Bradley, David J., 4,437,093, Cl. 340-726.000.
Brady, Michael J.; Meyerson, Bernard S.; and Warlaumont, John M., 4,436,797, Cl. 430-5.000.
Cork, Robin M. S.; and Rose, David B., 4,437,184, Cl. 371-19.000.
Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,437,092, Cl. 340-703.000.
Demke, Kent R.; and Dwire, Jerold D., 4,437,167, Cl. 364-900.000.
Depp, Steven W.; and Sincerbox, Glenn T., 4,436,420, Cl. 356-128.000.
Ergler, James M.; Kohn, Harold; and Smetana, Michael, 4,436,001, Cl. 81-9.510.
Freeouf, John L.; Haag, William J.; and Woodall, Jerry M., 4,436,768, Cl. 427-227.000.
Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., 4,437,108, Cl. 357-59.000.
Gaur, Santosh P.; Lechaton, John S.; and Srinivasan, Gurumakonda R., 4,435,898, Cl. 29-577.00C.
Howard, James K., 4,437,139, Cl. 361-313.000.
Kirkman, David H., 4,436,378, Cl. 350-345.000.
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, 4,437,022, Cl. 307-270.000.
Pomerene, James H.; and Rechtschaffen, Rudolph N., 4,437,149, Cl. 364-200.000.
Queener, Carl A., 4,436,409, Cl. 355-14.00R.
Rhodes, John H., Jr.; and Rosati, Alfonso A., 4,436,403, Cl. 355-3.0SH.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Watkins, Hugh, 4,436,652, Cl. 252-522.00R.

International Harvester Co.: *See—*
Connelly, John J.; and Cellitti, Raymond A., 4,436,289, Cl. 266-80.000.

International Telephone and Telegraph Corporation: *See—*
Haskins, Steve W., 4,436,964, Cl. 179-164.000.
Mazza, Frank J.; and DeFilippis, John, 4,436,957, Cl. 179-2.0EA.

Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
O'Neill, Terence C., 4,436,014, Cl. 83-762.000.

Inui, Toshiharu; and Moriguchi, Haruhiko, to Fuji Xerox Co., Ltd. Heat-sensitive recording apparatus. 4,437,102, Cl. 346-76.0PH.

Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Image forming apparatus including power switch operating means. 4,436,408, Cl. 355-14.00R.

Iowa State University Research Foundation, Inc.: *See—*
Larock, Richard C., 4,436,934, Cl. 562-502.000.

Irelan, Robert L. One hand clamping device. 4,436,294, Cl. 269-6.000.

Irving, Edward, to Ciba-Geigy Corporation. Heat-curable epoxide resin compositions. 4,436,880, Cl. 525-504.000.

Ishibai, Isao; and Kobayashi, Kunimitsu, to Hoya Corporation. Binoculars housing. 4,436,386, Cl. 350-550.000.

Ishibashi, Michinori: *See—*
Ishiyama, Masashi; and Ishibashi, Michinori, 4,436,491, Cl. 417-385.000.

Ishida, Keiichi: *See—*
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.

Ishida, Masato: *See—*
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, 4,436,408, Cl. 355-14.00R.

Ishigura, Michihiro: *See—*
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.

Ishii, Hisao: *See—*
Nomura, Yoshiyuki; Okuda, Kanemasa; and Ishii, Hisao, 4,436,975, Cl. 219-69.00W.

Ishii, Isao: *See—*
Nishizako, Shizutaka; Ishii, Isao; and Sakamoto, Yoshiaki, 4,436,831, Cl. 501-119.000.

Ishikawa, Atuo: *See—*
Hayashi, Motomu; Ishikawa, Atuo; and Yukimoto, Kazuyoshi, 4,437,143, Cl. 362-272.000.

Ishikawa, Chuji: *See—*
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Ishiyama, Masashi; and Ishibashi, Michinori, to Fuji Photo Film Co., Ltd.; and Nikkiso Co., Ltd. Method of supplying hydraulic operating fluid in diaphragm type. 4,436,491, Cl. 417-385.000.

Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, to Toyo Soda Manufacturing Co., Ltd.; and Sajami Chemical Research Center. Addition compound of dipeptide derivative and amino acid derivative. 4,436,925, Cl. 560-19.000.

Itek Corporation: *See—*
Hutchin, Richard A., 4,436,417, Cl. 356-4.500.

Ito, Hiroshi: *See—*
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.

Itoh, Yuji: *See—*
Takahashi, Junichi; Sakane, Toshio; and Itoh, Yuji, 4,436,388, Cl. 351-206.000.

Itou, Takeo: *See—*
Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, 4,436,646, Cl. 252-301.40S.

Iwai, Fumio: *See—*
Seimiya, Ryubun; Iwai, Fumio; and Nosaka, Isao, 4,436,402, Cl. 355-3.00R.

Iwaisako, Toshiyuki: *See—*
Matsuzaki, Kazuhiko; Iwaisako, Toshiyuki; and Masamoto, Junzo, 4,436,900, Cl. 528-490.000.

Iwakura, Ken: *See—*
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, 4,436,920, Cl. 549-227.000.

Iwanade, Hisao: *See—*
Negoro, Ikuo; and Iwanade, Hisao, 4,436,416, Cl. 355-57.000.

Iwao, Noriaki; and Abe, Akira, to Tomy Kogyo Co., Inc. Toy vehicle capable of changing size and shape. 4,435,916, Cl. 46-201.000.

Iwasaki, Kyuhachiro: *See—*
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Iwase, Yoshiyuki: *See—*
Umeda, Arihiko; and Iwase, Yoshiyuki, 4,436,891, Cl. 528-111.000.

Iwata, Nobuo, to Ricoh Company, Ltd. Shiftable daisy wheel printer. 4,436,440, Cl. 400-144.200.

Iwayanagi, Takao: *See—*
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, 4,436,583, Cl. 156-659.100.

Izaki, Susumu: *See—*
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.

J. A. Webb, Inc.: *See—*
Sobieniak, Mathew G., 4,436,609, Cl. 204-267.000.

J B Development Corporation: *See—*
Edward, Robert M., Jr., 4,435,975, Cl. 73-81.000.
Edward, Robert M., Jr., 4,435,976, Cl. 73-83.000.

J.C. Schumacher Co.: *See—*
McMenamin, Joseph C., 4,436,674, Cl. 261-64.00B.

J. E. Grote Pepp-A-Matic Co., Inc.: *See—*
Hochanadel, Thomas A., 4,436,012, Cl. 83-703.000.

Jackson, Bernie F.: *See—*
Borner, Willy; and Jackson, Bernie F., 4,435,982, Cl. 73-462.000.

Jackson, Robert R.; and Klink, Jerome P., to Owens-Corning Fiberglas Corporation. Method of and apparatus for simultaneously packaging linear bundles of filaments into individual packages. 4,436,258, Cl. 242-18.00G.

Jacobs, Bernard B.: *See—*
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.

Jacobs, Paul T., to Surgikos, Inc. Disinfecting and sterilizing composition. 4,436,754, Cl. 424-333.000.

Jacobs, Pierre; Poncelet, Georges; and Schutz, Alain. Process for the preparation of bridged clays, clays prepared by said process, and uses for said clays. 4,436,832, Cl. 502-84.000.

Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., to A/S Raufoss Ammunisjonsfabrikker. Smoke grenade with successive slow and fast burning charges. 4,436,034, Cl. 102-334.000.

Jacobson, Jeff A. Blind cleaning device. 4,435,874, Cl. 15-210.00A.

Jacobson, Ronald L.; and Hanley, Dean C., to Procter & Gamble Company, The. Stable liquid detergent compositions. 4,436,653, Cl. 252-547.000.

Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, to Rhone-Poulenc Specialites Chimiques. Preparation of aromatic/aliphatic nitriles. 4,436,669, Cl. 260-465.00B.

Jacquier, Robert: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Aspisi, Christian; Bonato, Marc; and Jacquier, Robert, 4,436,919, Cl. 549-4.000.

Jagger, James W.: *See—*
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.

Jahn, Ulrich: *See—*
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, 4,436,913, Cl. 548-316.000.

James River/Dixie-Northern, Inc.: *See—*
Kuchenbecker, Morris W., 4,436,206, Cl. 206-625.000.

Jamet, Bernard: *See—*
Dran, Maurice; and Jamet, Bernard, 4,436,575, Cl. 156-433.000.

Janiga, Eugene R., to Dow Chemical Company, The. Curable polymeric compositions. 4,436,875, Cl. 525-385.000.

Janome Sewing Machine Co. Ltd.: *See—*
Hanyu, Susumu; and Ebata, Yoshikazu, 4,436,042, Cl. 112-217.100.

Japan Styrene Paper Corporation: *See—*
Akiyama, Hiroyuki; Shimada, Sumio; Hirosawa, Kuninori; and Kuwabara, Hideki, 4,436,840, Cl. 521-58.000.

Japanese National Railways: *See—*
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.

Jaquay, Louis H.; and Venetti, Mark, to Dravo Corporation. Process for heating recycle gas in oil shale retorting. 4,436,611, Cl. 208-11.00R.

Jardin, Hans, to Webasto-Werk W. Baier GmbH & Co. Operating mechanism for a tiltable sliding cover. 4,436,338, Cl. 296-223.000.

Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, to United States of America, Energy. Method and apparatus for the formation of a spheromak plasma. 4,436,691, Cl. 376-137.000.

Jean, Mary: *See—*
Castleman, Bonnie L.; and Jean, Mary, 4,436,304, Cl. 273-29.00A.

Jefferys, Henry J. Shield for eaves drain gutter. 4,435,925, Cl. 52-12.000.

JENAer Glaswerk Schott & Gen.: *See—*
Schnabel, Roland, 4,436,626, Cl. 210-652.000.

Jennerjohn, Dennis A.; and Jensen, Lyle B., to FMC Corporation. Elevating and tilting mechanism for crane cab. 4,436,169, Cl. 180-89.140.

Jennings, Richard E., to Sperry Corporation. Mechanism for pivoting windrow shields into a vertical transport position. 4,435,948, Cl. 56-228.000.

Jensen, Lyle B.: *See—*
Jennerjohn, Dennis A.; and Jensen, Lyle B., 4,436,169, Cl. 180-89.140.

Jensen, Niels D.; Komossa, Horst; and Nielsen, Kurt F., to Grundfos A/S. Circulating pump unit. 4,436,486, Cl. 417-45.000.

Jeong, Tae S. Device for gathering the pollen from a bee. 4,435,867, Cl. 6-4.00R.

Jeromin, Lothar S.: *See—*
Ceelen, Theodorus M.; Jeromin, Lothar S.; and Wright, Lamont R., 4,436,054, Cl. 118-652.000.

JGC Corporation: *See—*
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, 4,436,532, Cl. 48-209.000.

Jinnai, Koichiro: *See—*
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Jobe, William T., to Senco Products, Inc. Front gate and latch assembly for the guide body of an industrial fastener driving tool. 4,436,236, Cl. 227-123.000.

Johnson, Arthur L., Jr.; and Dodge, Marlow W., to Johnson Enterprises, Inc. Pump and tap assembly for beverage containers. 4,436,227, Cl. 222-382.000.

Johnson Enterprises, Inc.: *See—*
Johnson, Arthur L., Jr.; and Dodge, Marlow W., 4,436,227, Cl. 222-382.000.

Johnson, Harold W.: *See—*
Carlston, Jack E.; and Johnson, Harold W., 4,436,084, Cl. 126-429.000.

Johnson Matthey Inc.: *See—*
Dietz, Raymond L.; Featherby, Michael; and Margetts, Peter K., 4,436,785, Cl. 428-427.000.

Johnson, Orville O. Cleaner for a tubular wick. 4,435,871, Cl. 15-104.00R.

Johnson, Richard S.; and Potter, John K., to Lever Brothers Company. Adjuncts for use in the manufacture of detergent powders. 4,436,644, Cl. 252-174.130.

Jolin, Bart. Housing and related mounting system for stereo systems on motorcycles. 4,436,350, Cl. 312-7.100.

Jones, Bernard B. Injection-molded gaming token and process therefor. 4,435,911, Cl. 40-27.500.

Jones, Bernard R.: *See—*
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.
Davis, Richard A.; Harris, Susan K.; and Jones, Bernard R., 4,436,962, Cl. 179-18.00B.

Jones, Cecil R. Controlled motion apparatus. 4,436,188, Cl. 188-378.000.

Jones, Frank W. Slicing device for rounded food articles. 4,436,011, Cl. 83-425.300.

Jones, Frank W. Sectioning device for rounded food articles. 4,436,025, Cl. 99-538.000.

Jones, Lawrence J. Smoke detection and disconnection apparatus. 4,437,014, Cl. 250-574.000.

Jones, Stephen H., to Nordson Corporation. Control arrangement for multifunction industrial machine. 4,437,152, Cl. 364-138.000.

Jonsson, Per-Erik; and Svedberg, Per, to ASEA Aktiebolag. Self-igniting thyristor with a plurality of discrete, field controlled zener diodes. 4,437,107, Cl. 357-38.000.

Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, to U.S. Philips Corporation. Precision pressed glass object. 4,436,381, Cl. 350-432.000.

Jordan, William J.: *See—*
Hodgins, Martin G.; and Jordan, William J., 4,436,365, Cl. 350-96.160.

Josien, Daniel; and Migliarese, Jean-Louis, to Compagnie Francaise des Petroles. Inflatable internal pipe obturator with hardenable core. 4,436,120, Cl. 138-93.000.

Joule' Technical Corporation: *See—*
Belloli, Archille, 4,436,479, Cl. 414-757.000.

Joy Research Incorporated: *See—*
Reyner, Ellis M., 4,436,203, Cl. 206-524.800.

Jozic, Ljerka, to Wuelfing, Johann A. Heterosulfonamides. 4,436,908, Cl. 546-206.000.

Julius Blum Ges. m.b.H.: *See—*
Rock, Erich; and Brunner, Josef, 4,436,357, Cl. 312-338.000.

Jung, Johann: *See—*
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Jung, Johann, 4,436,548, Cl. 71-76.000.

Just, Melitta: *See—*
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.

Juvinall, John W., to Owens-Illinois, Inc. Method and apparatus for comparing data signals in a container inspection device. 4,437,116, Cl. 358-106.000.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
Roderburg, Harald, 4,435,968, Cl. 72-77.000.

Kabushiki Kaisha Akashi Seisakusho: *See—*
Yamazaki, Shigetomo, 4,437,009, Cl. 250-396.0ML.

Kabushiki Kaisha Cubic Engineering: *See—*
Nakanishi, Motoyasu, 4,436,571, Cl. 156-384.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Akagi, Jiro, 4,436,247, Cl. 239-533.700.
Baba, Kiyokazu; and Nishida, Kenji, 4,436,199, Cl. 198-750.000.

Kabushiki Kaisha Medos Kenkyusho: *See—*
Ouchi, Teruo, 4,436,087, Cl. 128-6.000.

Kabushiki Kaisha Sato: *See—*
Sato, Yo; and Kashiwaba, Tadao, 4,436,573, Cl. 156-384.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kitano, Masuo, 4,436,436, Cl. 368-204.000
Koto, Haruhiko, 4,436,439, Cl. 400-126.000.
Ushikoshi, Kenichi, 4,436,435, Cl. 368-71.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, 4,436,560, Cl. 148-6.000.
Matsui, Kenji; and Terasoka, Fuminori, 4,436,255, Cl. 242-107.40A.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Fujita, Hironori; and Arai, Tohru, 4,436,559, Cl. 148-6.000.
Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, 4,436,560, Cl. 148-6.000.

Kabushiki Kaisha Veno Seiyaku Oyokenkyuso: *See—*
Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, 4,436,670, Cl. 260-465.00B.

Kadelka, Friedrich, to Chemische Fabrik Grunau GmbH. Process for consolidating soil and frost protection layers produced thereby. 4,436,556, Cl. 106-90.000.

Kaderjak, Gyula; Veres, Albert; Barkoczy, Istvan; and Lonscsak, Janos. Steel-cored aluminum cable. 4,436,954, Cl. 174-128.00R.

Kadnikova, Galina I.: *See—*
Pakhomov, Gennady N.; Luste, Anita Y.; Kadnikova, Galina I.; and Kolesnik, Anatoly G., 4,436,720, Cl. 424-44.000.

Kaiser, Fritz: *See—*
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.

Kaiser, John J.: *See—*
Buck, Daniel M.; Sibley, Alan T.; and Kaiser, John J., 4,436,696, Cl. 419-57.000.

Kaiyo Kogyo Co., Ltd.: *See—*
Hisao, Makino; and Sadao, Kozima, 4,436,675, Cl. 261-77.000.

Kakita, Kazutoshi: *See—*
Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, 4,436,239, Cl. 228-17.000.

Kalocai, Andrew J.: *See—*
Allen, Roland M.; and Kalocai, Andrew J., 4,436,478, Cl. 414-752.000.

Kalopissis, Gregoire; and Vanlerberghe, Guy, to L'Oreal. Cationic surface-active agents. 4,436,909, Cl. 546-248.000.

Kamei, Shigeki: *See—*
Imamura, Yoshinobu; Kamei, Shigeki; Yamagata, Tetuo; and Fujii, Hiroshi, 4,436,026, Cl. 100-45.000.

Kamei, Shun: *See—*
Okumura, Fumio; Higuchi, Masahiro; Kamei, Shun; and Miyauchi, Masahiro, 4,436,783, Cl. 428-411.000.

Kamiyama, Mituo; and Namazue, Hirotoshi, to Kokusan Kinzoku Kogyo Kabushiki Kaisha. Apparatus control system. 4,437,153, Cl. 364-140.000.

Kamiyama, Shin-ichi; and Hasegawa, Yutaka, to Ricoh Company, Ltd. Toner collection device. 4,436,414, Cl. 355-15.000.

Kampe, Wolfgang: *See—*
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, 4,436,742, Cl. 424-269.000.

Kamyr, Inc.: *See—*
Elmore, Carl L., 4,436,586, Cl. 162-19.000.

Kandler, Erich, to Siemens Aktiengesellschaft. Polarization converter for electromagnetic waves. 4,437,099, Cl. 343-756.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, 4,436,861, Cl. 524-425.000.

Kaneko, Yoshimasa: *See—*
Ozaki, Nobuo; and Kaneko, Yoshimasa, 4,436,468, Cl. 411-248.000.

Kansai Paint Company, Limited: *See—*
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.

Kanto Ishi Pharmaceutical Co., Ltd.: *See—*
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, 4,436,904, Cl. 544-27.000.

Kao Soap Co., Ltd.: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,436,722, Cl. 424-70.000.
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.

Kapolyi, Laszlo, to Tatabanyai Szenbanyak. Process for recovery of aluminum from carbonaceous waste products. 4,436,550, Cl. 75-10.00R.

Karasawa, Hideyuki: *See—*
Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, 4,436,761, Cl. 427-38.000.

Karis, Arthur T.: *See—*
Frye, Kenneth G.; Fitzpatrick, Donald C.; and Karis, Arthur T., 4,436,302, Cl. 271-202.000.

Karpiloff, Kenneth M., to Duracell Inc. Method for making decorated battery casings. 4,436,777, Cl. 428-36.000.

Karr, Michael A., Jr. Fluid seal. 4,436,316, Cl. 277-124.000.

Karwat, Heinz, to Linde Aktiengesellschaft. Method for the removal of acidic gases such as carbon dioxide from gaseous mixtures. 4,436,707, Cl. 423-226.000.

Kashiwaba, Tadao: *See—*
Sato, Yo; and Kashiwaba, Tadao, 4,436,573, Cl. 156-384.000.

Kashiwagi, Hidehiro, to Taiyo Denko Kabushiki Kaisha. Method of treatment for recycling a waste film as a raw material and apparatus therefor. 4,436,104, Cl. 134-63.000.

Kashiwagi, Hiromi: *See—*
Yamashita, Keitaro; and Kashiwagi, Hiromi, 4,436,055, Cl. 118-658.000.

Kashiwagi, Kazuo, to Canon Kabushiki Kaisha. Apparatus for projecting any selected image in a recording medium having images recorded thereon in at least two lines. 4,436,391, Cl. 353-26.00R.

Kasper, Alan H.; and Mathe, Istvan, to Allied Corporation. Electrical connector termination system for quick field service. 4,436,359, Cl. 339-61.00M.

Kasten, Harold B. Neck ring mold apparatus for glass bottle manufacture. 4,436,543, Cl. 65-172.000.

Kasuga, Takuzo; Takahashi, Katsuhiko; and Nakashima, Tuneyasu, to Polyplastics Co., Ltd. Thermoplastic polyester composition. 4,436,877, Cl. 525-437.000.

Kato, Hiroshi: *See—*
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.

Kato, Kichiro: *See—*
Akagi, Motonobu; Nomura, Isshi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.

Kato, Takazo: *See—*
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.
Matsuda, Fujio; and Kato, Takazo, 4,436,917, Cl. 548-508.000.

Kato, Yasuo: *See—*
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.

Kato, Yoshiaki, to Nissan Motor Company, Limited. Residual liquid meter using computer responsive to measurements of liquid level and flow. 4,437,162, Cl. 364-442.000.

Katoh, Mitsuo: *See—*
Imamura, Tatsuo; and Katoh, Mitsuo, 4,436,600, Cl. 204-140.000.

Kaufman, Joseph, to Becton Dickinson Company. Needle assembly with vein entry indicator. 4,436,098, Cl. 128-766.000.

Kaufman, Marvin L., to Mobil Oil Corporation. Aromatic urea-based curing agent system for epoxy resin coating compositions. 4,436,890, Cl. 528-93.000.

Kawakubo, Toshio: *See—*
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.

Kawasaki Steel Corporation: *See—*
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suchiro, 4,436,981, Cl. 219-124.320.
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.
Tokuhisa, Masaaki; and Hirai, Yukio, 4,436,562, Cl. 148-24.000.

Kawashima, Katsumi: *See—*
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Kawata, Keiji: *See—*
Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, 4,436,670, Cl. 260-465.00B.

Kawata, Tadashi: *See—*
Akao, Mutsuo; and Kawata, Tadashi, 4,436,809, Cl. 430-501.000.

Kazama, Hidemichi: *See—*
Emura, Koji; Suzuki, Tuneo; and Kazama, Hidemichi, 4,436,685, Cl. 264-148.000.

KBL Corporation: *See—*
Zane, Peter L.; and Zane, Michael S., 4,436,232, Cl. 224-39.000.

Keck, Donald B., to Corning Glass Works. Multiple core optical waveguide for secure transmission. 4,436,368, Cl. 350-96.330.

Kellar, Paul R. N.: *See—*
Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., 4,437,121, Cl. 358-160.000.

Keller, Arnold, to Waldemar Link GmbH & Co. Hip joint prosthesis with a shaft to be fitted into the medullary canal of the femur. 4,435,854, Cl. 3-1.913.

Keller, Wolfgang; and Schrotter, Gerhard, to Siemens Aktiengesellschaft. Method of setting a stable melting zone in a semiconductor crystalline rod during crucible-free zone melting thereof. 4,436,578, Cl. 156-620.000.

Kellogg, James D.; and Mingesz, August C., to C-R-O, Inc. Metal machining device with control circuit isolation. 4,436,288, Cl. 266-69.000.

Kelly, Eugene L. Auxiliary feed hopper for permitting the trimming, in a saddle binder of perfect bound books. 4,436,469, Cl. 412-16.000.

Kelly, James C.; and Shurden, Charles H., to Starkville Tool & Die Company. Method and machine for pre-forming and turning gloves. 4,436,231, Cl. 223-40.000.

Kelly, William R.; and Alvero, Ernesto J., to RCA Corporation. System and method for controlling the exposure of color picture tube phosphor screens. 4,436,394, Cl. 354-1.000.

Kennedy, George W., to Senco Southeast, Inc. Frame fastener. 4,436,234, Cl. 227-4.000.

Kennington, Kerry S.; and Baker, Ronald, to Hughes Tool Company. Reversal mechanism for power tong. 4,436,002, Cl. 81-57.200.

Kenworthy, Samuel P., to Basic Machinery Co., Inc. Apparatus for making special brick shapes. 4,436,501, Cl. 425-308.000.

Kern, Werner, to RCA Corporation. Structural defect detection. 4,436,999, Cl. 250-302.000.

Keystone Consolidated Industries, Inc.: *See—*
Craig, Clark E., 4,435,966, Cl. 70-161.000.

KG Maschinenfabrik: *See—*
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, 4,436,298, Cl. 271-10.000.

Khanna, Sarwan K.; and Khanna, Satya P., to Bell Telephone Laboratories, Incorporated. Electrically conducting thermoplastic material, its manufacture, and resulting article. 4,436,648, Cl. 252-511.000.

Khanna, Satya P.: *See—*
Khanna, Sarwan K.; and Khanna, Satya P., 4,436,648, Cl. 252-511.000.

Khurgin, Boris: *See—*
Rosinek, Shlomo; Rinkewich, Isaac; and Khurgin, Boris, 4,437,098, Cl. 340-870.020.

Kiba, Yasuo: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Kidde, Inc.: *See—*
Revay, Blaise, 4,436,159, Cl. 169-28.000.
Thomas, William D., 4,436,456, Cl. 406-19.000.

Kienzle, Wolfgang: *See—*
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Kihara, Keiichi: *See—*
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Kikuchi, Ko: *See—*
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, 4,437,076, Cl. 333-206.000.

Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, to Voest-Alpine Aktiengesellschaft. Plasma melting furnace arrangement. 4,436,290, Cl. 266-158.000.

Kim, Kwon S., to Star Manufacturing Co. Prefabricated panel construction system. 4,435,934, Cl. 52-309.700.

Kim, Syng N., to Wico Corporation. Snap-in switch mounting structure. 4,436,971, Cl. 200-295.000.

Kimberly-Clark Corporation: *See—*
Hotchkiss, Harry W.; Notheis, Patrick J.; and Englebert, Stephen M., 4,436,780, Cl. 428-198.000.
Pomplun, William S.; and Grube, Herbert E., 4,436,867, Cl. 524-503.000.

Kindt, Robert J., to Eastman Kodak Company. Apparatus and method for registering related transferable images in accurate superposition on a receiver member. 4,436,405, Cl. 355-3.0TR.

King, Colin V.: *See—*
Balbis, Manuel G.; and King, Colin V., 4,436,127, Cl. 152-209.00R.

King, Frank J.: *See—*
Adrian, David L.; and Young, Sam H., 4,435,912, Cl. 40-365.000.

King, Frank R.; and Engler, Donald J., to Simmons Universal Corporation. Control arrangement and method for an adjustable bed. 4,435,862, Cl. 5-66.000.

King Instrument Corporation: *See—*
Deyesso, Joseph P.; Sarser, David; and Berube, Richard G., 4,436,251, Cl. 242-56.00R.

King, Kevin J.: *See—*
Houck, Robert J.; and King, Kevin J., 4,436,198, Cl. 198-502.000.

Kinoshita, Dainichiro, to Horiba, Ltd. Indicating means for measuring instrument. 4,437,058, Cl. 324-120.000.

Kinoshita, Keijiro, to Nissan Motor Co., Ltd. Roller type planetary gear having a preloading arrangement. 4,435,998, Cl. 74-798.000.

Kinoshita, Toyohiro: *See—*
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.

Kirkman, David H., to International Business Machines Corporation. Passive display module and system. 4,436,378, Cl. 350-345.000.

Kirsch, Paul A., to Budd Company, The. Solar reflector panel. 4,436,373, Cl. 350-296.000.

Kirschbaum, Robert: *See—*
Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., 4,436,689, Cl. 264-204.000.

Kirst, Herbert A., to Eli Lilly and Company. 4"- And 3-ester derivatives of DMT and DMOT. 4,436,733, Cl. 424-180.000.

Kishi, Akira: *See—*
Umezu, Hiroaki; Kishi, Akira; and Yamagami, Hiroshi, 4,435,927, Cl. 52-79.130.

Kishima, Yukihiro, to Victor Company of Japan, Ltd. Automatic record playing apparatus having a tone arm position detecting device. 4,437,181, Cl. 369-244.000.

Kishimoto, Sumiko: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Kishimoto, Syuichi: *See—*
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Kiss, Jozsef: *See—*
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.

Kita, Yuichi; Sakamoto, Kentaro; and Sato, Takahisa, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for manufacture of high-purity phthalic anhydride. 4,436,922, Cl. 549-251.000.

Kitano, Masao, to Toa Paint Co., Ltd. Traffic marking paint. 4,436,845, Cl. 523-172.000.

Kitano, Masuo, to Shimauchi Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Detection circuit for an electronic timepiece. 4,436,436, Cl. 368-204.000.

Kitazawa, Yuzuru: *See—*
Furuoya, Itsuo; and Kitazawa, Yuzuru, 4,436,671, Cl. 260-465.300.

Kitrell, John V., to Radio Engineering Service, Inc. Apparatus for mounting electronics equipment. 4,436,351, Cl. 312-223.000.

Klauke, Erich: *See—*
Marhold, Albrecht; and Klauke, Erich, 4,436,941, Cl. 570-144.000.

Kleemann, Axel; Lehmann, Bernd; and Martens, Jurgen, to Degussa Aktiengesellschaft. Process for the production of aqueous solutions of sodium salts of α-amino carboxylic acids. 4,436,910, Cl. 546-245.000.

Klees, Garry W., to Boeing Company, The. Turbine bypass turbofan with mid-turbine reingestion and method of operating the same. 4,435,958, Cl. 60-204.000.

Klein, Paul E., to Modcom, Inc. Orthodontic chain application tool. 4,436,510, Cl. 433-4.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Gaffal, Karl; and Klepp, Christian, 4,436,950, Cl. 174-11.0BH.

Kleinberg, Leonard L., to United States of America, National Aeronautics and Space Administration. Low noise tuned amplifier. 4,437,069, Cl. 330-109.000.

Kleindienst GmbH & Co.: *See—*
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, 4,436,298, Cl. 271-10.000.

Kleiner, Matvei: *See—*
Ron, Moshe; Kleiner, Matvei; and Navon, Uri, 4,436,539, Cl. 62-4.000.

Kleinert, Karl W.; and Kleinert, Kenneth B. Storage drawer with retained partitions. 4,436,215, Cl. 220-22.300.

Kleinert, Kenneth B.: *See—*
Kleinert, Karl W.; and Kleinert, Kenneth B., 4,436,215, Cl. 220-22.300.

Klepp, Christian: *See—*
Gaffal, Karl; and Klepp, Christian, 4,436,950, Cl. 174-11.0BH.

Kliklok Corporation: *See—*
Hoyrup, Sigurd J., 4,435,943, Cl. 53-491.000.

Klink, Jerome P.: *See—*
Jackson, Robert R.; and Klink, Jerome P., 4,436,258, Cl. 242-18.00G.

Klosiewicz, Daniel W., to Hercules Incorporated. Plasticized polydicyclopentadiene and a method for making the same. 4,436,858, Cl. 524-296.000.

Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A. Benzodioxane-imidazoline compounds as antihypertensives. 4,436,914, Cl. 548-348.000.

Klukis, Edward L. Automatic corn sorting and inspection system. 4,436,207, Cl. 209-577.000.

Klupfel, Norbert: *See—*
Horling, Peter; Hetterich, Hermann; Dobhan, Herbert; and Klupfel, Norbert, 4,435,889, Cl. 29-148.40C.

KMS Fusion, Inc.: *See—*
Schaap, A. Paul; Busch, George E.; and Nolen, Robert L., Jr., 4,436,715, Cl. 423-579.000.

Knapp, Heinrich: *See—*
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Knickerbocker, Robert H., to Siemon Company, The. Electrical connectors and terminal connecting block. 4,436,360, Cl. 339-97.00P.

Knight, Donald P.: *See—*
Farmer, Felta C., Jr.; and Knight, Donald P., 4,437,120, Cl. 358-139.000.

Knirsch, Franco, to Ing. C. Olivetti & C., S.p.A. Electrophotographic recording element having an aniline sulphonephthelein charge generator. 4,436,801, Cl. 430-73.000.

Knitter, Kathy A.: *See—*
Schick, Martin J.; and Knitter, Kathy A., 4,436,528, Cl. 44-51.000.

Knoll International, Inc.: *See—*
Unger, Gotz W., 4,435,882, Cl. 24-265.00R.

Knopfel, Hans-Peter: *See—*
Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., 4,436,814, Cl. 435-162.000.

Knopp, Walter V., to Revere Copper and Brass, Inc. Roll compacting of polymer powders into fully dense products. 4,436,682, Cl. 264-70.000.

Knowles, Terrance: *See—*
Feinberg, Jay H.; and Knowles, Terrance, 4,436,240, Cl. 228-122.000.

Kobayashi, Kunimitsu: *See—*
Ishibai, Isao; and Kobayashi, Kunimitsu, 4,436,386, Cl. 350-550.000.

Kobayashi, Masahiro: *See—*
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, 4,436,861, Cl. 524-425.000.

Kobayashi, Takeo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photographic information display systems for use in photographic cameras. 4,436,397, Cl. 354-465.000.

Kobe, Inc.: *See—*
Peterson, Daniel G.; and Erickson, John W., 4,436,492, Cl. 417-386.000.

Koch, Carl; and Gfeller, Karl. Apparatus for transporting or positioning of a strip-shaped light-sensitive material with reference to a picture window. 4,436,399, Cl. 354-159.000.

Koch, Walter: *See—*
Senn, Georg; and Koch, Walter, 4,436,123, Cl. 139-452.000.

Koci, Zdenek: *See—*
Hugelshofer, Paul; Zbinden, Peter; and Koci, Zdenek, 4,436,523, Cl. 8-527.000.

Kocmanek, Karl H.; and Shambelan, Robert C., to RCA Corporation. Controlled environment for diffusion furnace. 4,436,509, Cl. 432-253.000.

Koehler, Charles F. Method and apparatus for stacking for bars and the like. 4,436,471, Cl. 414-36.000.

Kogure, Yasuo: *See—*
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.

Kohn, Harold: *See—*
Ergler, James M.; Kohn, Harold; and Smetana, Michael, 4,436,001, Cl. 81-9.510.

Kohno, Hideki: *See—*
Yamamoto, Etsuji; Sekihara, Kensuke; and Kohno, Hideki, 4,437,136, Cl. 361-146.000.

Kohsaka, Masanobu: *See—*
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

Koizumi, Nobuyuki: *See—*
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, 4,436,131, Cl. 152-361.0FP.

Kojima, Ichiro: *See—*
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.

Kojima, Koichi: *See—*
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, 4,436,131, Cl. 152-361.0FP.

Kojima, Tatsuo: *See—*
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.

Kokado, Masayuki: *See—*
Sumi, Hideji; and Kokado, Masayuki, 4,437,021, Cl. 307-270.000.

Kokubo, Eiichi; and Osako, Kyoichi, to Laurel Bank Machine Co., Ltd. Coin discharge machine and partitioned carton. 4,436,102, Cl. 133-2.000.

Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, to Hitachi, Ltd. Two electrode welding with different currents supplied to the electrodes. 4,436,982, Cl. 219-130.510.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo, 4,437,119, Cl. 358-136.000.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See—*
Kamiyama, Mituo; and Namazue, Hirotoshi, 4,437,153, Cl. 364-140.000.

Koleff, Kolio. V/STOL Aircraft. 4,436,261, Cl. 244-51.000.

Kolesnik, Anatoly G.: *See—*
Pakhomov, Gennady N.; Luste, Anita Y.; Kadnikova, Galina I.; and Kolesnik, Anatoly G., 4,436,720, Cl. 424-44.000.

Komiya, Yutaka, to Canon Kabushiki Kaisha. Image forming apparatus. 4,436,410, Cl. 355-14.00E.

Kommm, Rolf. Apparatus for monitoring exhaust gases. 4,436,504, Cl. 431-15.000.

Komossa, Horst: *See—*
Jensen, Niels D.; Komossa, Horst; and Nielsen, Kurt F., 4,436,486, Cl. 417-45.000.

Kondo, Toshio, to Nippon Chuzo Kabushiki Kaisha. Method of and apparatus for reclaiming molding sand. 4,436,138, Cl. 164-5.000.

Kondo, Yoshikazu: *See—*
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Harada, Yoshiaki, 4,437,001, Cl. 250-324.000.
Seimiya, Ryubun; Iwai, Fumio; and Nosaka, Isao, 4,436,402, Cl. 355-3.00R.

Kononov, Valery I.: *See—*
Petrov, Lev N.; Adoniev, Viktor A.; and Kononov, Valery I., 4,436,619, Cl. 209-573.000.

Konwitza, Vladimir: *See—*
Wittmann, Heinz; and Konwitza, Vladimir, 4,436,322, Cl. 280-614.000.

Koper, James G.: *See—*
Kumar, Shri A.; Ljung, Bo H. G.; and Koper, James G., 4,436,423, Cl. 356-350.000.

Korzendorfer, Joseph E.: *See—*
Mayo, Henry C.; and Korzendorfer, Joseph E., 4,436,330, Cl. 292-263.000.

Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, to Davy McKee Aktiengesellschaft. Process for melt-spinning of synthetic polymers. 4,436,688, Cl. 264-176.00F.

Kosicki, Bernard B.: *See—*
Bernacki, Stephen E.; and Kosicki, Bernard B., 4,436,584, Cl. 156-643.000.

Koslow, Evan E.; and Edelman, Robert R., to Koslow Technologies Corporation. Large arrays of discrete ionizing radiation detectors multiplexed using fluorescent optical converters. 4,437,007, Cl. 250-366.000.

Koslow Technologies Corporation: *See—*
Koslow, Evan E.; and Edelman, Robert R., 4,437,007, Cl. 250-366.000.

Kosuzume, Hiroshi: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,436,724, Cl. 424-101.000.

Koto, Haruhiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Small printer. 4,436,439, Cl. 400-126.000.

Kotter, Wolfgang, to Robert Bosch GmbH. Hydraulic valve mechanism. 4,436,114, Cl. 137-596.000.

Koya, Masahiko; and Fukuoka, Yohei, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of hydro-dealkylation. 4,436,945, Cl. 585-488.000.

Koyabu, Koji: *See—*
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.

Koyama, Shigeo: *See—*
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.

Kozaki, Syuichi: *See—*
Funada, Fumiaki; Kozaki, Syuichi; Matsuura, Masataka; and Wada, Tomio, 4,436,379, Cl. 350-347.00E.

Kozuka, Nobuhiko: *See—*
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Gebke, Klaus; Huhn, Friedrich; and Lekutat, Rolf, 4,436,676, Cl. 261-151.000.

Kramer, James H., to B. F. Goodrich Company, The. Vibration dampening support. 4,436,274, Cl. 248-633.000.

Krampe & Co. Fertigung in Bergbaubedarf GmbH: *See—*
Best, Gerd; and Weikert, Norbert B., 4,436,346, Cl. 299-87.000.

Krantz, Karl W., to General Electric Company. Composition and method for improving the properties of liquid media. 4,436,846, Cl. 523-175.000.

Krauss, Rudolf: *See—*
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Krehl, Gunter: *See—*
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.

Krennrich, Otmar; Brendel, Gottfried; and Pietsch, Hartmut, to Metallgesellschaft Aktiengesellschaft. Method of recovering uranium oxide from alkaline sodium uranyl carbonate solutions. 4,436,704, Cl. 423-11.000.

Kretschmann, Bernd: *See—*
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,436,688, Cl. 264-176.00F.

Kretz, Rolf H.: *See—*
Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., 4,436,814, Cl. 435-162.000.

Kreuels, Klaus: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.

Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, to Universal Gesellschaft fur Umwelttechnik mbH; and Rohm GmbH. CRT Method of converting and separating substances contained, dissolved or dissolvable in a carrier liquid. 4,436,624, Cl. 210-632.000.

Kriva, Kenneth J.: *See—*
Lange, Donald A.; Hanson, Marc C.; and Kriva, Kenneth J., 4,436,757, Cl. 426-438.000.

Krowl, Thomas R., to National Gypsum Company. Vinyl siding attachment. 4,435,933, Cl. 52-309.100.

Krowl, Thomas R.: *See—*
Rutkowski, Edward J.; and Krowl, Thomas R., 4,435,938, Cl. 52-521.000.

Krueger, Henry A. Forklift safety scope. 4,436,374, Cl. 350-302.000.

Kruger, Robert A., to Thomson-CSF Broadcast, Inc. Method and apparatus for imaging a body. 4,436,095, Cl. 128-654.000.

Krumkalns, Eriks V., to Eli Lilly and Company. Substituted 1-thia-3-aza-4-ones. 4,436,739, Cl. 424-246.000.

Krupp-Koppers GmbH: *See—*
Petrovic, Vladan; and Rotthaus, Heinz, 4,436,589, Cl. 201-41.000.

Kuan, Tiong H.; and Sommer, John G., to General Tire & Rubber Company, The. Coating rubber with a composition which resists removal by water. 4,436,857, Cl. 524-260.000.

Kubota, Ltd.: *See—*
Okuyama, Shigeaki; Nakamura, Norimi; and Hashimoto, Osami, 4,435,907, Cl. 33-366.000.

Kuchenbecker, Morris W., to James River/Dixie-Northern, Inc. Reclosable paperboard carton structure. 4,436,206, Cl. 206-625.000.

Kuchuk-Yatsenko, Sergei I.: *See—*
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Kudo, Mituo: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Kuerten, Heribert: *See—*
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, 4,436,702, Cl. 422-195.000.

Kuffner, Karl; Marx, Paul; and Lassig, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Color-photographic recording material containing non-diffusing electron donor precursor compounds. 4,436,810, Cl. 430-551.000.

Kukacka, Lawrence E.: *See—*
Sugama, Toshifumi; and Kukacka, Lawrence E., 4,436,555, Cl. 106-85.000.

Kukino, Yoshinori: *See—*
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, 4,436,453, Cl. 405-263.000.

Kumagai, Tadanobu: *See—*
Sawabe, Masaki; and Kumagai, Tadanobu, 4,436,310, Cl. 277-11.000.

Kumar, Shri A.; Ljung, Bo H. G.; and Koper, James G., to Singer Company, The. Ring laser gyroscope suspension. 4,436,423, Cl. 356-350.000.

Kummer, David A.: *See—*
Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,437,092, Cl. 340-703.000.

Kunkel, Heinrich: *See—*
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,436,516, Cl. 464-128.000.

Kunze, Karl-H.: *See—*
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.

Kunzmann, Otto, to Bielomatik Leuze GmbH & Co. Sheet piling devices. 4,436,472, Cl. 414-50.000.

Kuo, Hong-Hsiang, to General Motors Corporation. Continuous ignition source for controlled disposal of combustible polymer waste in a fluidized bed reactor. 4,436,037, Cl. 110-245.000.

Kuraray Co., Ltd.: *See—*
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.

Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, to Hitachi, Ltd. Method and apparatus for symptom diagnosis by monitoring vibration of shaft of rotary machine. 4,437,163, Cl. 364-508.000.

Kuroda, Takao; and Horii, Kenju, to Matsushita Electronics Corporation. Method for fabricating solid-state image sensor. 4,435,897, Cl. 29-572.000.

Kurosaki, Shiro, to Sumitomo Electric Industries, Ltd. Process for the production of an optical glass article. 4,436,542, Cl. 65-18.100.

Kurth, Duane G.: *See—*
Witalka, Jerome J.; Kurth, Duane G.; and Baber, David J., 4,437,157, Cl. 364-200.000.

Kurz, Robert A.: *See—*
Walsh, Edward J.; and Kurz, Robert A., 4,437,082, Cl. 336-58.000.

Kushi, Kenji: *See—*
Nakazima, Atushi; Edamatsu, Mitisuke; and Kushi, Kenji, 4,436,764, Cl. 427-54.100.

Kuwabara, Hideki: *See—*
Akiyama, Hiroyuki; Shimada, Sumio; Hirosawa, Kuninori; and Kuwabara, Hideki, 4,436,840, Cl. 521-58.000.

Kuwayama, Tetsuro: *See—*
Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, 4,437,112, Cl. 358-44.000.

Kvasnikoff, Georges; and Voirin, Robert, to Societe Nationale Elf Aquitaine (Production). Process for the production of sulphur with increased energy recovery from a gas containing H_2S, SO_2, H_2 and/or CO. 4,436,716, Cl. 423-574.00R.

Kyle, James C. Terminal assembly. 4,436,955, Cl. 174-152.0GM.

Kyusyu Refractories Co., Ltd.: *See—*
Nishikawa, Yasuo; and Takahashi, Hirokuni, 4,436,678, Cl. 264-30.000.

L. & C. Steinmuller GmbH: *See—*
Leikert, Klaus; and Rennert, Klaus-Dieter, 4,436,038, Cl. 110-347.000.

Laghi, Aldo A., to General Electric Company. Mold for a liquid injection molding composition. 4,436,496, Cl. 425-543.000.

Laing, David H.: *See—*
Robinsky, Eli I.; and Laing, David H., 4,436,633, Cl. 210-791.000.

Laitar, Robert A., to Acme Resin Corporation. Polyurethane binder compositions. 4,436,881, Cl. 525-504.000.

Lalezari, Parviz, to Montefiore Hospital and Medical Center, Inc. Process and reagents for antibody detection involving erythrocyte agglutination. 4,436,825, Cl. 436-520.000.

Lambert, David A.; and Profet, Gary A., to General DataComm Industries, Inc. Method and apparatus for interleaving control signals. 4,437,182, Cl. 370-110.100.

Lamkewitz, Falk; and Riedmaier, Josef, to Webasto-Werk W. Baier GmbH & Co. Process and apparatus for determination and utilization of a quantity of preheating energy. 4,436,064, Cl. 123-142.50R.

Landi den Hartog BV: *See—*
Leeuwma, Derk B.; and de Groot, Marius, 4,436,110, Cl. 137-487.500.

Lane, Derek: *See—*
Hennessy, John B.; and Lane, Derek, 4,437,130, Cl. 360-94.000.

Lane, Stanley C., to Crown Zellerbach Corporation. Lime slaker. 4,436,703, Cl. 422-225.000.

Lang, Kurt: *See—*
Stahlecker, Fritz; Lang, Kurt; and Erhardt, Rolf, 4,435,952, Cl. 57-18.000.

Lange, Donald A.; Hanson, Marc C.; and Kriva, Kenneth J., to General Mills, Inc. Cryogenic process for decortication and hulling of sunflower seeds. 4,436,757, Cl. 426-438.000.

Lapatovich, Walter P.; Proud, Joseph M.; and Riseberg, Leslie A., to GTE Laboratories Incorporated. Low pressure plasma discharge formation of refractory coatings. 4,436,762, Cl. 427-39.000.

Larock, Richard C., to Iowa State University Research Foundation, Inc. Bicyclic prostaglandin analogs and method of synthesis. 4,436,934, Cl. 562-502.000.

Larrea, D. Juan, to Perfil En Frio, S.A. (PERFRISA). Panel joining system. 4,435,935, Cl. 52-461.000.

Larsen, Raymond B., to Acme Solar Works, Inc. Solar collector assembly and frame. 4,436,085, Cl. 126-450.000.

Larson, Daniel A., to North American Philips Electric Corp. Starting arrangement for high-intensity-discharge sodium lamp. 4,437,039, Cl. 315-60.000.

Larsson, Sven B.; and Andersson, Bengt U. I. Easily releasable blind rivets. 4,436,467, Cl. 411-34.000.

LaRussa, Joseph A., to Farrand Optical Co., Inc. Robotic vision system. 4,437,114, Cl. 358-101.000.

Lassig, Wolfgang: *See—*
Kuffner, Karl; Marx, Paul; and Lassig, Wolfgang, 4,436,810, Cl. 430-551.000.

Lauer, Reinhard; and Pfefferle, Dietmar, to Erwin Sick GmbH Optik-Elektronik. Piezoelectric apparatus for producing rotary oscillation of a mirror. 4,436,364, Cl. 350-6.600.

Laurel Bank Machine Co., Ltd.: *See—*
Goi, Kouichi, 4,436,300, Cl. 271-107.000.
Kokubo, Eiichi; and Osako, Kyoichi, 4,436,102, Cl. 133-2.000.

Laurent, Douglas J.: *See—*
Lipko, Robert J.; and Laurent, Douglas J., 4,436,520, Cl. 604-385.000.

Laurich-Trost, Victor R. Material handling apparatus. 4,436,183, Cl. 187-9.00E.

Lausch, H. Nevin: *See—*
Lindblom, Curtis H.; Lausch, H. Nevin; and Priepke, Edward H., 4,436,248, Cl. 241-101.700.

Lautensleger, Richard W.: *See—*
Seaburg, Paul A.; and Lautensleger, Richard W., 4,435,932, Cl. 52-263.000.

Lawson, Peter, to Rockwell International Corporation. Wood planing machine. 4,436,126, Cl. 144-130.000.

Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., to Institut Elektrosvarki Imeni E.O.Patona Akademii Nauk Ukrainskoi SSR. Pipe resistance butt welding apparatus. 4,436,974, Cl. 219-66.000.

Lebet, Jean-Pierre, to Baumgartner Papiers S.A. Apparatus for making transverse flow cigarette filters. 4,436,517, Cl. 493-45.000.

Lechaton, John S.: *See—*
Gaur, Santosh P.; Lechaton, John S.; and Srinivasan, Gurumakonda R., 4,435,898, Cl. 29-577.00C.

Lee, David R.; and McCreary, Robert B., to United States of America, Air Force. Anti-flutter apparatus for head mounted visual display. 4,437,113, Cl. 358-93.000.

Lee, Douglas J.: *See—*
Liu, Wei-Ti; and Lee, Douglas J., 4,437,025, Cl. 307-475.000.

Lee, William B. Lighting system for rotatable toy. 4,435,917, Cl. 46-228.000.

Leeuwma, Derk B.; and de Groot, Marius, to Landi den Hartog BV. Pressure regulating systems. 4,436,110, Cl. 137-487.500.

Leggett & Platt, Incorporated: *See—*
Lyons, Donald W., Jr.; and Wyatt, Everette L., 4,436,545, Cl. 71-25.000.

Legille, Edouard: *See—*
Schmidt, Paul; and Legille, Edouard, 4,436,293, Cl. 266-276.000.

Lehmann, Bernd: *See—*
Kleemann, Axel; Lehmann, Bernd; and Martens, Jurgen, 4,436,910, Cl. 546-245.000.

Leikam, Vernon. Spheroid pig launcher. 4,435,872, Cl. 15-104.06A.

Leikert, Klaus; and Rennert, Klaus-Dieter, to L. & C. Steinmuller GmbH. Method of preparing pulverized fuel withdrawn from a primary fuel flow for a pulverized fuel pilot light by means of a sifter device or a supplemental pulverizing plant. 4,436,038, Cl. 110-347.000.

Lekutat, Rolf: *See—*
Gebke, Klaus; Huhn, Friedrich; and Lekutat, Rolf, 4,436,676, Cl. 261-151.000.

Lembke, Manfred: *See—*
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Lemelson, Jerome H. Sampling device. 4,436,978, Cl. 219-121.0LC.

Lemstra, Pieter J.: *See—*
Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., 4,436,689, Cl. 264-204.000.

Lenard, Peter; and Beck, Ernst, to Vollmer Werke Maschinenfabrik GmbH. Sharpening machine for saws. 4,436,000, Cl. 76-41.000.

Lenertz, John B.; and Moore, Carroll E., to Farmhand, Inc. Quick attachment carrier assembly. 4,436,477, Cl. 414-723.000.

Lerich, Joel. Patient transporting device. 4,435,863, Cl. 5-81.00B.

Le Sonn, Marcel, to Thomson-CSF. X-Ray emitting assembly comprising a flange for assembling a sheath assembly and a beam limiting device. 4,437,188, Cl. 378-205.000.

L'Esperance, Francis A. Bifocal intraocular lens structure and spectacle actuation frame. 4,435,856, Cl. 3-13.000.

Lever Brothers Company: *See—*
Johnson, Richard S.; and Potter, John K., 4,436,644, Cl. 252-174.130.
Verhagen, Laurentius A. M.; and Warnaar, Leendert G., 4,436,760, Cl. 426-603.000.

Lewandowski, Edward F.; and Vrabec, John, to United States of America, Energy. Parallel-wire grid assembly with method and apparatus for construction thereof. 4,437,034, Cl. 313-348.000.

Lewis, Christopher: *See—*
Crisp, Malcolm; and Lewis, Christopher, 4,436,196, Cl. 194-100.00A.

Lewis, Norris E.; and Miller, Michael B., to Litton Systems, Inc. Optical slip ring assembly. 4,436,367, Cl. 350-96.200.

Li, Stephen: *See—*
Bissot, Thomas C.; and Li, Stephen, 4,436,599, Cl. 204-98.000.

Liberty Carton Co.: *See—*
Thorud, Stanley R., 4,436,354, Cl. 312-259.000.

Libit, Sidney M. Dispenser having a trigger-bulb pump. 4,436,225, Cl. 222-207.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Heilig, Thomas, 4,436,961, Cl. 179-77.000.

Liden, Hadar, to Gotaverken Arendal AB. Semi-submersible vessel. 4,436,050, Cl. 114-265.000.

Light Koki Co., Ltd.: *See—*
Shimizu, Fumio, 4,436,387, Cl. 350-556.000.

Lightolier Incorporated: *See—*
Donato, Anthony C.; and Russo, Neil, 4,437,142, Cl. 362-226.000.

Likins, Merle R., Jr.: *See—*
Stacy, Galen D.; and Likins, Merle R., Jr., 4,436,698, Cl. 422-62.000.

Lile, James B.; and Mathes, Dan C., Jr. Christmas tree stand having stabilized clamping members. 4,436,272, Cl. 248-527.000.

Lilliston Corporation: *See—*
Temple, William F.; and Daniels, Jesse, 4,436,484, Cl. 416-178.000.

Lin, Jiang-Jen, to Texaco Inc. Preparation of alkanols from synthesis gas. 4,436,837, Cl. 518-700.000.

Lin, Jiang-Jen, to Texaco Inc. Process for preparing alkanols and esters from synthesis gas. 4,436,838, Cl. 518-700.000.

Lindaberry, Harold L., to Pennwalt Corporation. Microencapsulated insecticidal persistency through the use of gelatin. 4,436,719, Cl. 424-37.000.

Lindauer Dornier Gesellschaft mbH: *See*—
Bosch, Alfred, 4,435,884, Cl. 26-93.000.

Lindblom, Curtis H.; Lausch, H. Nevin; and Priepke, Edward H., to Sperry Corporation. Adjustable shearbar apparatus. 4,436,248, Cl. 241-101.700.

Linde Aktiengesellschaft: *See*—
Karwat, Heinz, 4,436,707, Cl. 423-226.000.

Linde, E. Volker: *See*—
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.

Lindenstruth, Werner: *See*—
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,503, Cl. 425-384.000.
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,687, Cl. 264-164.000.

Linder, Charles G., to Garrett Corporation, The. Intake vortex whistle silencing apparatus and methods. 4,436,481, Cl. 415-119.000.

Lindley, William L. Ledge bed. 4,435,861, Cl. 5-65.000.

Lindquist, Richard A.: *See*—
Ante, Louis E.; Lindquist, Richard A.; and Roeschlein, Eugene R., 4,436,049, Cl. 114-254.000.

Link, Vincent F.; and Yamasaki, George K., to Westinghouse Electric Corp. Hollow cathode lamp with improved stability alloy for the cathode. 4,437,038, Cl. 313-633.000.

Linke, Hans-Ralf: *See*—
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, 4,436,828, Cl. 436-545.000.

Lion Corporation: *See*—
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.

Lipko, Robert J.; and Laurent, Douglas J., to Exxon Research & Engineering Co. Low gloss films of enhanced adhesion. 4,436,520, Cl. 604-385.000.

Lipovac, Joseph E.: *See*—
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.

Lipperts, Joseph H. F. G., to Hazemeijer B.V. Metal-ceramic joint. 4,436,241, Cl. 228-124.000.

Lisle Corporation: *See*—
Pool, James L., 4,435,873, Cl. 15-105.000.

Litton Industrial Products, Inc.: *See*—
Muszynski, Jerome D., 4,435,883, Cl. 26-71.000.

Litton Systems, Inc.: *See*—
Lewis, Norris E.; and Miller, Michael B., 4,436,367, Cl. 350-96.200.

Liu, Wei-Ti; and Lee, Douglas J., to Intel Corporation. MOS Buffer for receiving TTL level signals. 4,437,025, Cl. 307-475.000.

Liu, Yi-Tsung: *See*—
Ganguly, Ashit K.; Liu, Yi-Tsung; and Mallams, Alan K., 4,436,729, Cl. 424-180.000.

Ljung, Bo H. G.: *See*—
Kumar, Shri A.; Ljung, Bo H. G.; and Koper, James G., 4,436,423, Cl. 356-350.000.

Lockheed Corporation: *See*—
Peaster, Bertram A., 4,436,326, Cl. 285-178.000.

Lockwood, Alan C. Cable clamping device integrally formed with plastic molded electrical box. 4,436,952, Cl. 174-65.00R.

Lockwood, Edwin P.: *See*—
Bertenshaw, David R.; Lockwood, Edwin P.; and Brown, Anthony R., 4,437,169, Cl. 364-900.000.

Loffelmann, Walter: *See*—
Behnke, Joachim; and Loffelmann, Walter, 4,436,839, Cl. 521-64.000.

Logan, David J.; Webster, Ronald B.; and Sullivan, Daniel J., to Gerber Scientific Products, Inc. Automated measuring scale. 4,435,904, Cl. 33-143.00K.

Lohse, Friedrich: *See*—
Zondler, Helmut; Lohse, Friedrich; and Moser, Roland, 4,436,892, Cl. 528-117.000.

Long, Robert C.; and Peters, Richard K., to Eagle-Picher Industries, Inc. Radial mandrel. 4,436,574, Cl. 156-415.000.

Longrod, Scott J., to SCM Corporation. Ribbon drive clutch. 4,436,192, Cl. 192-43.100.

Lonscsak, Janos: *See*—
Kaderjak, Gyula; Veres, Albert; Barkoczy, Istvan; and Lonscsak, Janos, 4,436,954, Cl. 174-128.00R.

Loomis International Inc.: *See*—
Rathburn, Lloyd C., 4,436,334, Cl. 294-86.300.

L'Oreal: *See*—
Kalopissis, Gregoire; and Vanlerberghe, Guy, 4,436,909, Cl. 546-248.000.

Lorenz, Dieter R.: *See*—
Brudermann, Uwe; Kunze, Karl-H.; Krehl, Gunter; Linde, E. Volker; and Lorenz, Dieter R., 4,436,320, Cl. 280-242.0WC.

Loucks, George R., to General Electric Company. Block copolymers of polyphenylene oxides and sterically-hindered aromatic polycarbonates. 4,436,876, Cl. 525-394.000.

Lowe, Gary D.: *See*—
McKenzie, Joe A.; and Lowe, Gary D., 4,437,067, Cl. 328-167.000.

Lubrizol Corporation, The: *See*—
Higgins, William A.; and Perz, John S., 4,436,855, Cl. 524-145.000.

Lucas Industries Limited: *See*—
Farr, Glyn P. R., 4,435,960, Cl. 60-547.100.
Farr, Glyn P. R., 4,436,348, Cl. 303-115.000.

Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., to Westinghouse Electric Corp. Elevator system. 4,436,185, Cl. 187-29.00R.

Lugscheider, Walter: *See*—
Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,436,290, Cl. 266-158.000.

Lurssen, Klaus: *See*—
Holmwood, Graham; Lurssen, Klaus; and Frohberger, Paul-Ernst, 4,436,907, Cl. 544-335.000.

Luste, Anita Y.: *See*—
Pakhomov, Gennady N.; Luste, Anita Y.; Kadnikova, Galina I.; and Kolesnik, Anatoly G., 4,436,720, Cl. 424-44.000.

Lyman, Dale E., to Mobil Oil Corporation. Extracting chromium (III) from aqueous solutions with 2-ethylhexyl acid phosphate. 4,436,705, Cl. 423-54.000.

Lyons, Donald W., Jr.; and Wyatt, Everette L., to Leggett & Platt, Incorporated. Process having the two-fold result of the disposal of waste pickle liquor and the production of fertilizer. 4,436,545, Cl. 71-25.000.

Maag Gear-Wheel & Machine Company Limited: *See*—
Seiberlich, Walter, 4,436,464, Cl. 409-233.000.

MacDonald, Murdo A., to Clyde Corporation. Article orienting apparatus. 4,436,197, Cl. 198-389.000.

Mack, Harry, to Mobil Oil Corporation. Method of optimizing signal-to-noise ratio in seismic exploration. 4,437,176, Cl. 367-38.000.

MacLeod, Norman J. Spill-resistant pet animal dish. 4,436,056, Cl. 119-72.000.

MacMillan, David: *See*—
Alfke, Peter H.; Rallapali, Krishna; and MacMillan, David, 4,437,158, Cl. 364-200.000.

Madison, Norman L.: *See*—
Davis, Roy A.; and Madison, Norman L., 4,436,789, Cl. 428-537.000.

Maeda, Haruo, to Olympus Optical Co., Ltd. F-θ Lens system. 4,436,383, Cl. 350-469.000.

Maeda Industries, Ltd.: *See*—
Ozaki, Nobuo; and Kaneko, Yoshimasa, 4,436,468, Cl. 411-248.000.

Maeda, Koji: *See*—
Suzuki, Sunao; and Maeda, Koji, 4,437,057, Cl. 324-78.00R.

Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, to Hochtief AG, vorm. Gebr. Helfmann; and Bade & Theelen GmbH. Excavating machine for tunnels and galleries. 4,436,448, Cl. 405-143.000.

Magyar Tudomanyos Akademia Muszaki Fizikai Kutato Intezete: *See*—
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.

Maida, Osamu, to Nippon Kogaku K.K. Electroflash unit. 4,436,396, Cl. 354-416.000.

Makarewicz, Stanley R.: *See*—
Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., 4,437,108, Cl. 357-59.000.

Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Coaxial filter having a plurality of resonators each having a bottomed cylinder. 4,437,076, Cl. 333-206.000.

Makley, James A., to Monarch Marking Systems, Inc. Hand-held labeler. 4,436,572, Cl. 156-384.000.

Malakhoff, Alexander: *See*—
Davis, Sydney; and Malakhoff, Alexander, 4,436,312, Cl. 277-34.000.

Mallams, Alan K.: *See*—
Ganguly, Ashit K.; Liu, Yi-Tsung; and Mallams, Alan K., 4,436,729, Cl. 424-180.000.

Mallet, Bernard, to Nadella. Articulation device having a double universal joint and a ball joint unit. 4,436,515, Cl. 464-114.000.

Maltz, Javier E., to Etablissement Texcontor. Semi-synthetic chitin derivative, the process for its preparation, and therapeutic compositions which contain it as active principle. 4,436,731, Cl. 424-18.000.

Manfredo, Joseph N.; and Hirsch, Selwyn R., to Garrett Corporation, The. Charge air cooler mounting arrangement. 4,436,145, Cl. 165-67.000.

Manley, Stephen C. Audio component coupler. 4,437,018, Cl. 307-38.000.

Manning, Charles R., to Assay Tec Associates, Inc. Ethylene oxide process dosimeter. 4,436,819, Cl. 436-1.000.

Manoski, Laurence A.: *See*—
Nordstrom, Eric W.; and Manoski, Laurence A., 4,436,044, Cl. 112-286.000.

Manov, Grigory L.: *See*—
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Mansei Kogyo Kabushiki Kaisha: *See*—
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, 4,437,177, Cl. 369-45.000.

Manso, Hipolito S. Book holding device. 4,436,271, Cl. 248-460.000.

Marbach, Andre: *See*—
Stein, Claude; and Marbach, Andre, 4,436,859, Cl. 524-297.000.

Marc, Michel. Shoe insole. 4,435,910, Cl. 36-44.000.

Marcelon, Gilbert: *See*—
Hatinguais, Philippe; Patoiseau, Jean-Francois; and Marcelon, Gilbert, 4,436,749, Cl. 424-278.000.

Margetts, Peter K.: *See*—
Dietz, Raymond L.; Featherby, Michael; and Margetts, Peter K., 4,436,785, Cl. 428-427.000.

Margulies, Herman, to Sterling Drug Inc. Container and dispensing plate for a roll of pre-moistened towelettes. 4,436,221, Cl. 221-46.000.

Marhold, Albrecht; and Klauke, Erich, to Bayer Aktiengesellschaft. Process for the isomerization of alkylbenzotrifluorides. 4,436,941, Cl. 570-144.000.

Marin, Manuel. Safety door. 4,435,921, Cl. 49-395.000.

Marino, Frank J. Cargo restraining apparatus. 4,436,466, Cl. 410-118.000.

Marosi, Laszlo: *See*—
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.

Mars Limited: *See*—
Taylor, Michael; and Withnall, Malcolm D. N., 4,436,222, Cl. 221-223.000.

Marshall and Williams Company: *See*—
Williamson, John G., Jr., 4,435,909, Cl. 34-82.000.

Martens, Jurgen: *See*—
Kleemann, Axel; Lehmann, Bernd; and Martens, Jurgen, 4,436,910, Cl. 546-245.000.

Martin, John E. Leak resistant plug assembly. 4,436,117, Cl. 138-89.000.

Martinez, Rafael. Multi-stop depth control. 4,436,462, Cl. 409-218.000.

Martorana, Piero A.: *See*—
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.

Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, to Nippon Oil Company, Ltd. Process for separating porphyrins. 4,436,663, Cl. 260-245.910.

Maruyama, Masato: *See*—
Yamashita, Masahide; Oku, Hikaru; and Maruyama, Masato, 4,437,168, Cl. 364-900.000.

Maruzen Oil Co., Ltd.: *See*—
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,657, Cl. 260-112.00R.

Marvin Glass & Associates: *See*—
Zaruba, John V.; and Terzian, Rouben T., 4,435,915, Cl. 46-12.000.

Marwick, Edward F. Larger contained nuclear explosion breeder reactor systems. 4,436,695, Cl. 376-317.000.

Marwitz, Heinrich: *See*—
Huhn, Karl; and Marwitz, Heinrich, 4,436,856, Cl. 524-211.000.

Marx, Paul: *See*—
Kuffner, Karl; Marx, Paul; and Lassig, Wolfgang, 4,436,810, Cl. 430-551.000.

Maryland Cup Corporation: *See*—
Winstead, Thomas W., 4,436,679, Cl. 264-40.300.

Marzocchi, Alfred: *See*—
Grossi, Anthony V.; Hahn, Louis T.; Marzocchi, Alfred; and Bolen, Charles E., 4,436,767, Cl. 427-138.000.
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,436,864, Cl. 524-458.000.

Masamoto, Junzo: *See*—
Matsuzaki, Kazuhiko; Iwaisako, Toshiyuki; and Masamoto, Junzo, 4,436,900, Cl. 528-490.000.

Mashida, Hiromi: *See*—
Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, 4,436,982, Cl. 219-130.510.

Mason, Charles D.: *See*—
Flood, Paul W.; Mason, Charles D.; and Schulze, Stephen R., 4,436,872, Cl. 525-179.000.

Masotto, Ermanno; and Gagliardi, Sergio, to Comitatonazionale Per Lienergia Nucleare. Process for the continuous purification of contaminated fluids and for conditioning the resulting concentrates. 4,436,655, Cl. 252-628.000.

Masuda, Masakazu; and Matsumoto, Hironori, to Okumura Corporation. Method of excavating a pile hole and an apparatus therefor. 4,436,167, Cl. 175-72.000.

Masui, Mikio: *See*—
Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, 4,436,406, Cl. 355-3.0SH.

Masuoka, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,437,172, Cl. 365-182.000.

Masuoka, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,437,174, Cl. 365-218.000.

Masuyama, Tadahiro: *See*—
Nishida, Yoshiaki; Yano, Shunji; and Masuyama, Tadahiro, 4,436,594, Cl. 204-33.000.

Matam, Ltd.: *See*—
Rosinek, Shlomo; Rinkewich, Isaac; and Khurgin, Boris, 4,437,098, Cl. 340-870.020.

Mathe, Istvan: *See*—
Kasper, Alan H.; and Mathe, Istvan, 4,436,359, Cl. 339-61.00M.

Mather, David S., to Harvey Hubbell Incorporated. Method and apparatus for making ductile iron castings. 4,436,142, Cl. 164-337.000.

Mathes, Dan C., Jr.: *See*—
Lile, James B.; and Mathes, Dan C., Jr., 4,436,272, Cl. 248-527.000.

Matre, Tore: *See*—
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.

Matson, Walter T., to Metal Surfaces, Inc. Electroplating bath and method. 4,436,595, Cl. 204-40.000.

Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of indoles. 4,436,916, Cl. 548-508.000.

Matsuda, Fujio; and Kato, Takazo, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of indoles. 4,436,917, Cl. 548-508.000.

Matsuda, Hiroto: *See*—
Sugitani, Hiroshi; Matsuda, Hiroto; and Ikeda, Masami, 4,437,100, Cl. 346-1.100.

Matsuda, Shinpei: *See*—
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, to Nippon Telegraph & Telephone Public Corporation; and Hitachi, Ltd. Electron beam control system. 4,437,008, Cl. 250-396.00R.

Matsuda, Yasuo: *See*—
Muto, Nobuyoshi; Nagase, Hiroshi; Sakai, Keijiro; and Matsuda, Yasuo, 4,437,051, Cl. 318-808.000.

Matsui, Kenji; and Teraoka, Fuminori, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Seatbelt retractor. 4,436,255, Cl. 242-107.40A.

Matsumoto, Hironori: *See*—
Masuda, Masakazu; and Matsumoto, Hironori, 4,436,167, Cl. 175-72.000.

Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo, to Kokusai Denshin Denwa Kabushiki Kaisha. Interframe adaptive prediction system for television signals. 4,437,119, Cl. 358-136.000.

Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, to Kao Soap Co., Ltd. Hair rinse composition. 4,436,722, Cl. 424-70.000.

Matsuo, Kazuya: *See*—
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Matsuoka, Hiroki: *See*—
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.

Matsuoka, Seiichi: *See*—
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, 4,436,532, Cl. 48-209.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,436,973, Cl. 219-10.55F.
Inai, Takayoshi; Saitoh, Teruo; and Sannomiya, Hisayuki, 4,437,111, Cl. 358-44.000.
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, 4,437,076, Cl. 333-206.000.
Miyoshi, Seizo; and Yamaguchi, Bunitsu, 4,437,178, Cl. 369-75.100.
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.
Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, 4,436,352, Cl. 312-228.000.
Shinozaki, Nozomu; Neki, Shigeo; and Dohi, Takashi, 4,437,061, Cl. 324-166.000.

Matsushita Electronics Corporation: *See*—
Kuroda, Takao; and Horii, Kenju, 4,435,897, Cl. 29-572.000.

Matsushita, Yukinobu: *See*—
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.

Matsuura, Masataka: *See*—
Funada, Fumiaki; Kozaki, Syuichi; Matsuura, Masataka; and Wada, Tomio, 4,436,379, Cl. 350-347.00E.

Matsuzaki, Kazuhiko; Iwaisako, Toshiyuki; and Masamoto, Junzo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for deactivating polymerization catalyst. 4,436,900, Cl. 528-490.000.

Matsuzawa, Yoshio: *See*—
Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, 4,436,792, Cl. 429-1.000.

Matthews, Patricia C.: *See*—
Walker, Thad O.; and Matthews, Patricia C., 4,436,638, Cl. 252-8.55R.

Mavilor Systemes: *See*—
Coquillart, Michel, 4,437,030, Cl. 310-227.000.

Maxwell, Richard. Chemical treatment for oil wells. 4,436,148, Cl. 166-53.000.

Mayer, Karl M.; and Schafer, Rudolf. Device for the continuous mixing of a dry finished mortar. 4,436,430, Cl. 366-13.000.

Mayo, Henry C.; and Korzendorfer, Joseph E., to United States of America, Army. Folding support with double-positive lock. 4,436,330, Cl. 292-263.000.

Mazac, Karel: *See*—
Pache, Norbert; and Mazac, Karel, 4,436,980, Cl. 219-123.000.

Mazza, Frank J.; and DeFilippis, John, to International Telephone and Telegraph Corporation. Telephone security system for cordless telephony. 4,436,957, Cl. 179-2.0EA.

McAlister, Roy E. Hot water supply tank assembly. 4,436,058, Cl. 122-13.00R.

McCausland, Thomas W., to Brockway, Inc. (NY). Aluminum bronze glassmaking molds. 4,436,544, Cl. 65-374.120.

McCleerey, Earl W., to AMP Incorporated. Hermaphroditic back shell cover. 4,436,361, Cl. 339-97.00P.

McCormick, Daniel F., to Brunswick Corporation. Connecting rod. 4,436,443, Cl. 403-14.000.

McCreary, Robert B.: *See—*
Lee, David R.; and McCreary, Robert B., 4,437,113, Cl. 358-93.000.
McCullough, John E., to Arthur D. Little, Inc. Method of fabricating two-piece scroll members for scroll apparatus and resulting scroll members. 4,436,495, Cl. 418-55.000.
McInerny, John. Dispenser for fluids and paper towels. 4,436,224, Cl. 222-183.000.
McKeny, Stanley T., executor: *See—*
Meginnis, Charles E., deceased, 4,436,375, Cl. 350-319.000.
McKenzie, Joe A.; and Lowe, Gary D., to United States of America, Navy. Transient error reduction for stored charged circuits. 4,437,067, Cl. 328-167.000.
McKillip, James B.; and Brown, Edmund J. Physical therapy apparatus. 4,436,303, Cl. 272-132.000.
McLaughlin, William J.: *See—*
Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., 4,436,301, Cl. 271-177.000.
McMenamin, Joseph C., to J.C. Schumacher Co. Vapor mass flow control system. 4,436,674, Cl. 261-64.00B.
McMonigle, Matthew J., to Aluminum Company of America. Magnetic removal of impurities from molten salt baths. 4,436,627, Cl. 210-695.000.
McQueen, Sidney J. Hiker's hatchet. 4,435,868, Cl. 7-158.000.
McVety, Ronald E.: *See—*
Shisler, Robert W.; and McVety, Ronald E., 4,436,242, Cl. 228-264.000.
Mead Johnson & Company: *See—*
Bequette, Robert J.; Hobbs, Linda G.; and Scott, Joseph A., 4,436,738, Cl. 424-238.000.
Medical Packaging Corporation: *See—*
Nason, Frederic L.; and Crane, Walton B., 4,436,243, Cl. 229-27.000.
Meginnis, Charles E., deceased (by McKeny, Stanley T., executor), to Pressure Products Company. Sight glass apparatus. 4,436,375, Cl. 350-319.000.
Meglen, Ralph A.: *See—*
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.
Mehlman, Stewart K.: *See—*
Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, 4,436,553, Cl. 75-52.000.
Mehren, Herbert; and Panik, Ferdinand, to Daimler-Benz Aktiengesellschaft. Externally track-guided vehicle, especially for the local public passenger traffic. 4,436,170, Cl. 180-131.000.
Melloch, Michael R.: *See—*
Gunshor, Robert L.; Pierret, Robert F.; and Melloch, Michael R., 4,437,031, Cl. 310-313.00B.
Meloy, Gilbert K., to Twinoak Products, Inc. Apparatus for cleansing and disinfecting toilet tanks and bowls. 4,435,857, Cl. 4-228.000.
Memorex Corporation: *See—*
Osborne, John R.; and Bischoff, Peter G., 4,436,593, Cl. 204-15.000.
Menconi, K. Anthony; and Gribauskas, Joseph F., Jr. Modular surface such as for use in sports. 4,436,779, Cl. 428-169.000.
Merant, Jean C.: *See—*
Deux, Alain; and Merant, Jean C., 4,435,950, Cl. 56-330.000.
Mercer, John E.; Olsen, John H.; and Elkins, Stephen, to Flow Industries, Inc. Articulated boom water jet cutting apparatus. 4,435,902, Cl. 30-296.00R.
Merck & Co., Inc.: *See—*
Baldwin, John J., 4,436,740, Cl. 424-263.000.
Merger, Franz: *See—*
Harder, Wolfgang; Merger, Franz; and Towae, Friedrich, 4,436,668, Cl. 260-463.000.
Messina, Samuel E. Decoy. 4,435,913, Cl. 43-3.000.
Metal Surfaces, Inc.: *See—*
Matson, Walter T., 4,436,595, Cl. 204-40.000.
Metallgesellschaft Aktiengesellschaft: *See—*
Krennrich, Otmar; Brendel, Gottfried; and Pietsch, Hartmut, 4,436,704, Cl. 423-11.000.
Rammler, Roland; and Bussmann, Alfons, 4,436,588, Cl. 201-12.000.
Schnabel, Wolfram; Scheu, Ernst; and Serbent, Harry, 4,436,286, Cl. 266-44.000.
Metallurgie Hoboken-Overpelt: *See—*
Viellefont, Jean F.; Hens, Carolus M.; and Tobback, Hubert J., 4,436,606, Cl. 204-225.000.
Metallwerk Max Brose GmbH & Co.: *See—*
Becker, Herbert, 4,436,250, Cl. 242-54.00R.
Methode Electronics, Inc.: *See—*
Swisher, William F., 4,436,970, Cl. 200-61.560.
Metro Hoist & Body Co., Inc.: *See—*
Petretti, Anthony V., 4,436,622, Cl. 210-232.000.
Metz, Paul, to Arbed S/A. Method of plating a wire with metal. 4,436,763, Cl. 427-47.000.
Metzger, Thomas J. Locking mechanism. 4,436,329, Cl. 292-150.000.
Meyer, Alfons. Apparatus for orderly transport and storage of flat objects. 4,435,944, Cl. 53-531.000.
Meyer, Hans U. Process for the capacitive measurement of lengths and of angles. 4,437,055, Cl. 324-61.00R.
Meyer, Richard C.; and Carroll, Edward L., to Beckman Instruments, Inc. Plunger operated pipet. 4,435,989, Cl. 73-864.140.
Meyerson, Bernard S.: *See—*
Brady, Michael J.; Meyerson, Bernard S.; and Warlaumont, John M., 4,436,797, Cl. 430-5.000.
Meyman, Usher. Bracelet. 4,435,956, Cl. 59-79.100.
Micro Consultants Limited: *See—*
Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., 4,437,121, Cl. 358-160.000.
Micro-Mega S.A.: *See—*
Garcia, Philippe, 4,436,512, Cl. 433-129.000.
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, to International Business Machines Corporation. Monolithically integrated push-pull driver. 4,437,022, Cl. 307-270.000.
Mieth, Hans O. E.: *See—*
Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., 4,436,106, Cl. 137-240.000.
Migliarese, Jean-Louis: *See—*
Josien, Daniel; and Migliarese, Jean-Louis, 4,436,120, Cl. 138-93.000.
Mihayashi, Keiji: *See—*
Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, 4,436,808, Cl. 430-381.000.
Mikami, Ryuzo; and Nakasuji, Katsuyoshi, to Dow Corning Corporation. Durable primer composition. 4,436,787, Cl. 428-447.000.
Miles, Melvin H.; and Fine, Dwight A., to United States of America, Navy. Detection of nitrate esters using silver electrode. 4,436,590, Cl. 204-1.00T.
Miller, Edward C.: *See—*
Nichols, C. Ross; and Miller, Edward C., 4,435,969, Cl. 72-126.000.
Miller, Jack E., to Big Inch Marine Systems, Inc. Coupling. 4,436,325, Cl. 285-18.000.
Miller, James A., to Morgan Adhesives Company. Transmissive reflector including nacreous, pressure sensitive adhesive layer. 4,436,377, Cl. 350-345.000.
Miller, Jerry W.; and Rudnick, Paul J., to Ampex Corporation. Limited look-ahead means. 4,437,086, Cl. 340-347.0DD.
Miller, Kenneth F.; and Belfoure, Edward, to General Electric Company. Copolyester-carbonate blends. 4,436,879, Cl. 525-439.000.
Miller, Michael B.: *See—*
Lewis, Norris E.; and Miller, Michael B., 4,436,367, Cl. 350-96.200.
Minami, Kiyoshi: *See—*
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,657, Cl. 260-112.00R.
Mingesz, August C.: *See—*
Kellogg, James D.; and Mingesz, August C., 4,436,288, Cl. 266-69.000.
Ministry of International Trade & Industry: *See—*
Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, 4,436,761, Cl. 427-38.000.
Mitsuoka, Toyokazu, 4,437,045, Cl. 318-561.000.
Minnesota Mining and Manufacturing Co.: *See—*
Paul, Fred R., Jr.; and Mrozinski, James S., 4,436,213, Cl. 215-365.000.
Tullos, Robert N.; and Ostroff, Arthur, 4,437,049, Cl. 318-696.000.
Vanderwerf, Dennis F., 4,436,392, Cl. 353-38.000.
Vanderwerf, Dennis F., 4,436,393, Cl. 353-38.000.
Wyatt, Gerald A., 4,437,081, Cl. 335-229.000.
Minolta Camera Kabushiki Kaisha: *See—*
Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, 4,436,406, Cl. 355-3.0SH.
Oka, Tateki, 4,436,413, Cl. 355-15.000.
Mirror Lite Company: *See—*
Schmidt, William P.; and Hutchinson, Franklin D., 4,436,372, Cl. 350-293.000.
Misawa Homes K.K.: *See—*
Umezu, Hiroaki; Kishi, Akira; and Yamagami, Hiroshi, 4,435,927, Cl. 52-79.130.
Misawa, Nobuo. Automatic washing machine for shoes. 4,435,964, Cl. 68-19.200.
Miskin, Renold A. Directory holder. 4,436,442, Cl. 402-73.000.
Mita Industrial Co., Ltd.: *See—*
Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, 4,436,803, Cl. 430-122.000.
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,436,411, Cl. 355-14.00D.
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.
Mitchell, Alvin L.: *See—*
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.
Mitchell, Hal D.; and Walker, Donald R., to Figgie International Inc. Flap hinge for a shoulder pad. 4,435,851, Cl. 2-2.000.
Mitchell, John W., Sr. Molded dental press. 4,436,511, Cl. 433-49.000.
Mitsubishi Chemical Industries Limited: *See—*
Niwa, Toshio; and Nagashima, Susumu, 4,436,522, Cl. 8-524.000.
Niwa, Toshio; and Hihara, Toshio, 4,436,906, Cl. 544-187.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Motoki, Yoshiaki, 4,436,969, Cl. 200-38.00R.
Nishizako, Shizutaka; Ishii, Isao; and Sakamoto, Yoshiaki, 4,436,831, Cl. 501-119.000.
Sugimoto, Hiroshi, 4,435,987, Cl. 73-862.170.
Suzuki, Sunao; and Maeda, Koji, 4,437,057, Cl. 324-78.00R.
Yamaguchi, Hiroshi; and Negishi, Nobumasa, 4,436,505, Cl. 431-76.000.
Yamamoto, Sakuei; and Nishida, Mitsuhiro, 4,437,027, Cl. 310-78.000.

Mitsubishi Gas Chemical Company Inc.: *See—*
Horie, Shigeru; Yamamoto, Yasuo; and Ikarashi, Takeo, 4,436,835, Cl. 502-208.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.
Mitsubishi Metal Corporation: *See—*
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.
Mitsubishi Paper Mills, Ltd.: *See—*
Iguchi, Shigeru; and Ebato, Seigo, 4,436,805, Cl. 430-248.000.
Okumura, Fumio; Higuchi, Masahiro; Kamei, Shun; and Miyauchi, Masahiro, 4,436,783, Cl. 428-411.000.
Mitsubishi Rayon Company, Ltd.: *See—*
Nakazima, Atushi; Edamatsu, Mitisuke; and Kushi, Kenji, 4,436,764, Cl. 427-54.100.
Mitsui Toatsu Chemicals, Inc.: *See—*
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.
Matsuda, Fujio; and Kato, Takazo, 4,436,917, Cl. 548-508.000.
Mitsumi Electric Co. Ltd.: *See—*
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.
Mitsuoka, Toyokazu, to Agency of Industrial Science & Technology; and Ministry of International Trade and Industry. Method and apparatus for controlling servomechanism by use of model reference servo-control system. 4,437,045, Cl. 318-561.000.
Miura, Kiyoshi: *See—*
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, to Takenaka Komuten Co., Ltd.; and Takenaka Doboku Co., Ltd. Machine for and method of hardening soft ground in depths. 4,436,453, Cl. 405-263.000.
Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of and apparatus for controlling the fuel feeding rate of an internal combustion engine. 4,436,073, Cl. 123-491.000.
Miyamoto, Kazumichi: *See—*
Nishihara, Yoshiki; and Miyamoto, Kazumichi, 4,436,683, Cl. 264-107.000.
Miyauchi, Masahiro: *See—*
Okumura, Fumio; Higuchi, Masahiro; Kamei, Shun; and Miyauchi, Masahiro, 4,436,783, Cl. 428-411.000.
Miyazaki, Jingo: *See—*
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.
Miyazaki, Naomi; and Fujimura, Akira, to Onoda Chemical Industry Co., Ltd. Method of manufacturing potassium sulfate. 4,436,710, Cl. 423-552.000.
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, to Mita Industrial Co., Ltd. Toner dispenser and detector for an electrostatic copying apparatus. 4,436,411, Cl. 355-14.00D.
Miyoshi, Seizo; and Yamaguchi, Bunitsu, to Matsushita Electric Industrial Co., Ltd. Record player. 4,437,178, Cl. 369-75.100.
Mizuno, Jiro: *See—*
Fujita, Hironori; Arai, Tohru; and Mizuno, Jiro, 4,436,560, Cl. 148-6.000.
Mizuno, Toshiaki: *See—*
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.
Mizusaki, Yoshinobu, to Nissin Kogyo Co., Ltd. Fluid-quantity alarming devices for the master cylinder. 4,437,091, Cl. 340-623.000.
Moba Holding Barneveld B.V.: *See—*
van 't Slot, Kornelis, 4,435,879, Cl. 17-11.000.
Mobil Oil Corporation: *See—*
Allen, Linus S., 4,436,997, Cl. 250-256.000.
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., 4,436,048, Cl. 114-230.000.
Gournay, Luke S., 4,435,977, Cl. 73-152.000.
Kaufman, Marvin L., 4,436,890, Cl. 528-93.000.
Lyman, Dale E., 4,436,705, Cl. 423-54.000.
Mack, Harry, 4,437,176, Cl. 367-38.000.
Mochida, Ei: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,436,724, Cl. 424-101.000.
Mochida, Haruo, to Nissan Motor Company, Limited. Electronic door locking system for an automotive vehicle. 4,437,137, Cl. 361-172.000.
Mochida Pharmaceutical Co., Ltd.: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,436,724, Cl. 424-101.000.
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaki; Ohmori, Masaichi; and Nishi, Genichiro, to Shin Meiwa Industry Co., Ltd.; and Hitachi, Ltd. Refrigerating apparatus. 4,435,962, Cl. 62-175.000.
Modcom, Inc.: *See—*
Klein, Paul E., 4,436,510, Cl. 433-4.000.
Mohlin, Kjell, to Aktiebolaget Bofors. Muzzle brake for artillery guns. 4,436,017, Cl. 89-14.00C.
Mohr, Ernst, to Fides Treuhand GmbH. Hot-gas piston-type engine and use thereof in heating, cooling and power plants. 4,435,959, Cl. 60-512.000.
Moller, Heinz: *See—*
Eisele, Hermann; Moller, Heinz; and Schmitt, Manfred, 4,437,154, Cl. 364-187.000.
Mollring, Friedrich K.: *See—*
Fischer, Horst; and Mollring, Friedrich K., 4,436,385, Cl. 350-529.000.
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, to Siegfried Aktiengesellschaft. 1H- and 2H- indazole derivatives. 4,436,913, Cl. 548-316.000.
Monarch Marking Systems, Inc.: *See—*
Makley, James A., 4,436,572, Cl. 156-384.000.
Monarch Wine Co., Inc.: *See—*
Zaltsman, Efim, 4,435,942, Cl. 53-489.000.
Monsanto Company: *See—*
Frederick, Roger A.; and Moody, Jerry W., 4,436,577, Cl. 156-617.0SP.
Monsheimer, Rolf: *See—*
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.
Montedison S.p.A.: *See—*
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, 4,436,755, Cl. 426-15.000.
Montefiore Hospital and Medical Center, Inc.: *See—*
Lalezari, Parviz, 4,436,825, Cl. 436-520.000.
Moodie, Eldon E.; and Burns, Richard D., to General Electric Company. Methods for making connection insulators. 4,436,585, Cl. 156-73.100.
Moody, Jerry W.: *See—*
Frederick, Roger A.; and Moody, Jerry W., 4,436,577, Cl. 156-617.0SP.
Moore, Carroll E.: *See—*
Lenertz, John B.; and Moore, Carroll E., 4,436,477, Cl. 414-723.000.
Moore, Wilcy I.; and Tassoni, Ronald L., to Cocal, Inc. Froth flotation ore beneficiation process utilizing enhanced gasification and flow techniques. 4,436,617, Cl. 209-3.000.
Morais, Don; and Owen, Daniel V., to General Electric Company. Starting and operating circuit for gaseous discharge lamps. 4,437,042, Cl. 315-289.000.
Morgan Adhesives Company: *See—*
Miller, James A., 4,436,377, Cl. 350-345.000.
Morgan Industries, Inc.: *See—*
Smith, Glen H., 4,436,278, Cl. 251-130.000.
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., to Scientific Measurement Systems, Inc. Method and apparatus for measuring radiation in computer-assisted tomography and radiographic applications. 4,437,006, Cl. 250-363.00S.
Morganson, Neal E.; and Vayda, Adam V., to Gulf Research & Development Company. Olefin oligomerization using boron trifluoride and a three-component cocatalyst. 4,436,947, Cl. 585-525.000.
Mori, Chuzo, to Carl Manufacturing Co., Ltd. Perforating jig. 4,435,906, Cl. 33-185.00R.
Mori, Kaoru: *See—*
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.
Mori, Kei. Sunbeam concentrating and collecting apparatus. 4,436,083, Cl. 126-417.000.
Mori, Takashi, to Sumitomo Heavy Industries, Ltd. Process for making steel from direct-reduced iron. 4,436,551, Cl. 75-12.000.
Moriguchi, Haruhiko: *See—*
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,437,102, Cl. 346-76.0PH.
Morino, Yukio, to Seiko Koki Kabushiki Kaisha. Distance detector device. 4,436,418, Cl. 356-1.000.
Morisono, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Vehicular power unit supporting device. 4,436,174, Cl. 180-227.000.
Morley, James P.: *See—*
Hatch, Seymour A.; and Morley, James P., 4,436,315, Cl. 277-92.000.
Morooka, Yasuo: *See—*
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.
Morris, Charles K. Carton blank with integral handle. 4,436,244, Cl. 229-52.00B.
Morris, Donald E.: *See—*
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.
Morse, Milton, to APM Corporation. Sealing means for telephone cover device. 4,436,965, Cl. 179-184.000.
Moschitz, Gerhard; and Schoonhoven, Richard, to Siemens Aktiengesellschaft. Method and circuit arrangement for the acceptance and temporary storage of data signals in a switching system. 4,437,170, Cl. 364-900.000.
Moser, Roland: *See—*
Zondler, Helmut; Lohse, Friedrich; and Moser, Roland, 4,436,892, Cl. 528-117.000.
Moss, Herbert H.: *See—*
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., 4,436,048, Cl. 114-230.000.
Moss, Rodney H.; and Faktor, Marc M., to British Telecommunications. Metal organic vapor deposition procedure for preparing group III—V compounds on a heated substrate. 4,436,769, Cl. 427-252.000.

Motobayashi, Kozo: *See—*
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.
Motoki, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Timing device for time switch. 4,436,969, Cl. 200-38.00R.
Motor Wheel Corporation: *See—*
Strader, Don S., 4,436,139, Cl. 164-112.000.
Motta, Carlo: *See—*
Simonotti, Lucio; and Motta, Carlo, 4,436,182, Cl. 186-37.000.
MPD Technology Corporation: *See—*
Turillon, Pierre P., 4,436,537, Cl. 55-387.000.
Mrazek, Gustav; and Obenaus, Franz, to U.S. Philips Corporation. Cassette comprising a capping device and/or a cleaning device for a printing head of an ink jet printer. 4,437,105, Cl. 346-140.00R.
Mrozinski, James S.: *See—*
Paul, Fred R., Jr.; and Mrozinski, James S., 4,436,213, Cl. 215-365.000.
Muench, Volker: *See—*
Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, 4,436,854, Cl. 524-139.000.
Muller-Albrecht, Horst: *See—*
Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, 4,436,570, Cl. 156-273.300.
Muller, Felix: *See—*
Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., 4,436,814, Cl. 435-162.000.
Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., to PEC Process Engineering Company. Method for the recovery of enzymes after the treatment of starch-containing raw materials used for the production of fermentation alcohol. 4,436,814, Cl. 435-162.000.
Muller, Manfred: *See—*
Friedrich, Ronald; and Muller, Manfred, 4,436,697, Cl. 420-440.000.
Mulligan, William L., to Parks-Cramer Company. Fiber waste disposal system for traveling pneumatic cleaners. 4,435,876, Cl. 15-312.00R.
Multiform Desiccants, Inc.: *See—*
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,436,623, Cl. 210-282.000.
Muma, G. Arnold: *See—*
Scheie, Carl E.; and Muma, G. Arnold, 4,437,010, Cl. 250-459.100.
Muraishi, Masakazu, to Nissan Motor Company, Limited. Support mechanism of swivel seat structure. 4,436,270, Cl. 248-416.000.
Murakami, Hitomi: *See—*
Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo, 4,437,119, Cl. 358-136.000.
Murakami, Ryohei: *See—*
Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, 4,436,352, Cl. 312-228.000.
Murakami, Shohachi: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.
Murakawa, Katsuji: *See—*
Hata, Shuji; Yamada, Toshio; and Murakawa, Katsuji, 4,435,994, Cl. 74-606.00R.
Muramatsu, Motoyasu: *See—*
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,436,072, Cl. 123-488.000.
Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, to Minolta Camera Kabushiki Kaisha. Paper feeder for recording apparatus. 4,436,406, Cl. 355-3.0SH.
Murase, Hiroyuki: *See—*
Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, 4,436,062, Cl. 123-90.270.
Murphy, Milford R.; and Haskins, Delbert E., to Textron Inc. Multiple loop control system. 4,436,018, Cl. 91-363.00A.
Murray, John A., to Conger/Murray Systems, Inc. Apparatus for curing concrete products. 4,436,498, Cl. 425-73.000.
Muszynski, Jerome D., to Litton Industrial Products, Inc. Stretch ratio control circuit for multiple station web stretching apparatus. 4,435,883, Cl. 26-71.000.
Muto, Nobuyoshi; Nagase, Hiroshi; Sakai, Keijiro; and Matsuda, Yasuo, to Hitachi, Ltd. Method and apparatus for controlling induction motor. 4,437,051, Cl. 318-808.000.
Myers, John W.; and Strope, Daniel J., to Phillips Petroleum Company. Olefin conversion process. 4,436,949, Cl. 585-664.000.
Myhrvold, Erling: *See—*
Jacobsen, Kjell O.; Matre, Tore; Halvorsen, Rolf I.; Heie, Ingar H.; Myhrvold, Erling; and Berger, Ove R., 4,436,034, Cl. 102-334.000.
Naarmann, Herbert: *See—*
Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, 4,436,854, Cl. 524-139.000.
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.
Nacken, Lambertus J. G.; and Baas, Albertus H., to Shell Internationale Research Maatschappij B. V. Process for the recovery of pentavalent vanadium compounds from acid catalyst extracts. 4,436,706, Cl. 423-65.000.
Nadella: *See—*
Mallet, Bernard, 4,436,515, Cl. 464-114.000.
Nagahashi, Yoshitoshi: *See—*
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.
Nagano Keiki Seisakusho, Ltd.: *See—*
Yamaizumi, Kazuo, 4,436,494, Cl. 417-403.000.
Nagaoka, Akinobu: *See—*
Imada, Isuke; Nagaoka, Akinobu; and Hirata, Minoru, 4,436,753, Cl. 424-331.000.
Nagase, Hiroshi: *See—*
Muto, Nobuyoshi; Nagase, Hiroshi; Sakai, Keijiro; and Matsuda, Yasuo, 4,437,051, Cl. 318-808.000.
Nagashima, Susumu: *See—*
Niwa, Toshio; and Nagashima, Susumu, 4,436,522, Cl. 8-524.000.
Nagati, Rashed N., to Pennsylvania Engineering Corporation. Metallurgical vessel suspension system. 4,436,291, Cl. 266-246.000.
Nairn, John H.: *See—*
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.
Naito, Sachio: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,436,722, Cl. 424-70.000.
Naito, Yoshiyuki: *See—*
Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, 4,436,670, Cl. 260-465.00B.
Nakajima, Akira: *See—*
Takamura, Yoshio; and Nakajima, Akira, 4,437,147, Cl. 363-61.000.
Nakajima, Fumito: *See—*
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.
Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rocker arm mechanism in overhead cam type engine. 4,436,062, Cl. 123-90.270.
Nakamichi, Kazuya: *See—*
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,657, Cl. 260-112.00R.
Nakamura, Hideo: *See—*
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, 4,436,287, Cl. 266-47.000.
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, to Matsushita Electric Industrial Co., Ltd.; and Mitsubishi Metal Corporation. Method for cutting lead wires. 4,436,006, Cl. 83-13.000.
Nakamura, Keijiroh: *See—*
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.
Nakamura, Norihiko; and Shibata, Yoshiaki, to Toyota Jidosha Kabushiki Kaisha. Ignition system of an internal combustion engine. 4,436,068, Cl. 123-310.000.
Nakamura, Norimi: *See—*
Okuyama, Shigeaki; Nakamura, Norimi; and Hashimoto, Osami, 4,435,907, Cl. 33-366.000.
Nakanishi, Motoyasu, to Kabushiki Kaisha Cubic Engineering. Printing apparatus. 4,436,571, Cl. 156-384.000.
Nakano, Joji: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.
Nakano, Tetsuya: *See—*
Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, 4,436,803, Cl. 430-122.000.
Nakano, Yoshitomo: *See—*
Nakatsuyama, Takashi; and Nakano, Yoshitomo, 4,436,959, Cl. 179-6.090.
Nakashima, Tuneyasu: *See—*
Kasuga, Takuzo; Takahashi, Katsuhiko; and Nakashima, Tuneyasu, 4,436,877, Cl. 525-437.000.
Nakasuji, Katsuyoshi: *See—*
Mikami, Ryuzo; and Nakasuji, Katsuyoshi, 4,436,787, Cl. 428-447.000.
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the fuel injection in internal combustion engine. 4,436,074, Cl. 123-492.000.
Nakatsuyama, Takashi; and Nakano, Yoshitomo, to Sony Corporation. Automatic telephone answering device. 4,436,959, Cl. 179-6.090.
Nakaya, Shunichi; and Araoka, Katsumasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Power absorbing device for low-temperature refrigerating machine. 4,437,016, Cl. 290-1.00R.
Nakayama, Shunsuke: *See—*
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.
Nakayama, Yasuharu: *See—*
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.
Nakazawa, Shigeo; and Sato, Shintaro, to Nissan Motor Co., Ltd. Method of producing ring-shaped metal parts. 4,435,973, Cl. 72-327.000.

Nakazima, Atushi; Edamatsu, Mitisuke; and Kushi, Kenji, to Mitsubishi Rayon Company, Ltd. Method and apparatus for surface-hardening treatment of synthetic resin shaped articles. 4,436,764, Cl. 427-54.100.
Nalkin, Irving: *See—*
Branchick, Kenneth J.; Nalkin, Irving; and Suchanski, Mary R., 4,436,601, Cl. 204-149.000.
Namazue, Hirotoshi: *See—*
Kamiyama, Mituo; and Namazue, Hirotoshi, 4,437,153, Cl. 364-140.000.
Namura, Hideki: *See—*
Inoue, Morio; Hoshino, Satoshi; Namura, Hideki; and Watari, Takashi, 4,436,482, Cl. 416-1.000.
Narato, Kiyoshi; Ohtsuka, Keizou; Inada, Tooru; and Watanabe, Takashi, to Hitachi, Ltd. Monitoring system for checking electric rotary machine for local overheating. 4,436,699, Cl. 422-68.000.
Nason, Frederic L.; and Crane, Walton B., to Medical Packaging Corporation. Storage file for slides and tissue blocks. 4,436,243, Cl. 229-27.000.
National Gypsum Company: *See—*
Krowl, Thomas R., 4,435,933, Cl. 52-309.100.
Rutkowski, Edward J., 4,435,936, Cl. 52-481.000.
Rutkowski, Edward J.; and Krowl, Thomas R., 4,435,938, Cl. 52-521.000.
Sowinski, Gerard T., 4,436,204, Cl. 206-525.000.
National Research Development Corporation: *See—*
Glasser, Fredrik P.; and Gunawardane, Richard P., 4,436,546, Cl. 71-36.000.
Wickramasinghe, Hemantha K., 4,435,985, Cl. 73-642.000.
Navon, Uri: *See—*
Ron, Moshe; Kleiner, Matvei; and Navon, Uri, 4,436,539, Cl. 62-4.000.
Naylor, Carter G., to Texaco, Inc. Oil recovery method utilizing glyceryl ether sulfonates. 4,436,672, Cl. 260-512.00R.
Negishi, Nobumasa: *See—*
Yamaguchi, Hiroshi; and Negishi, Nobumasa, 4,436,505, Cl. 431-76.000.
Negoro, Ikuo; and Iwanade, Hisao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Mirror scanning control mechanism in variable magnification type copying machine. 4,436,416, Cl. 355-57.000.
Neki, Shigeo: *See—*
Shinozaki, Nozomu; Neki, Shigeo; and Dohi, Takashi, 4,437,061, Cl. 324-166.000.
Nelson, Garth C.; White, Henry J.; and Nelson, Gerald B., to Papakube Corporation. Auger feed arrangement for cubing machine. 4,436,502, Cl. 425-331.000.
Nelson, Gerald B.: *See—*
Nelson, Garth C.; White, Henry J.; and Nelson, Gerald B., 4,436,502, Cl. 425-331.000.
Nelson & Johnson Engineering: *See—*
Ciciora, John A., 4,436,030, Cl. 100-268.000.
Nelson, Stanford C.: *See—*
Walters, Anthony J.; and Nelson, Stanford C., 4,436,604, Cl. 204-196.000.
Nemeth, Carol A.: *See—*
Brossman, James W., Jr.; Nemeth, Carol A.; and Shapiro, Alan K., 4,436,474, Cl. 414-417.000.
Nemetz, Herbert. Method and apparatus for aerobic decomposition or drying of organic waste material. 4,436,817, Cl. 435-313.000.
Nepon, Juanita. Arthritis composition of matter, and methods of preparing and utilizing same. 4,436,723, Cl. 424-95.000.
Nesler, Todd G. Goggle. 4,435,852, Cl. 2-436.000.
Neubert, Peter: *See—*
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.
Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, to Bayer Aktiengesellschaft. Process for bonding films. 4,436,570, Cl. 156-273.300.
Newbanks, James A. Guy wire protector device. 4,435,931, Cl. 52-147.000.
Newcomer, John R.: *See—*
Barlow, Gordon A.; Newcomer, John R.; and Bezark, Fred, 4,436,309, Cl. 273-267.000.
Newman, Richard L. Sound system for a musical instrument. 4,437,189, Cl. 381-91.000.
Nichols, C. Ross; and Miller, Edward C., to Ball Corporation. Spinflanger for beverage containers. 4,435,969, Cl. 72-126.000.
Nicholson, Charles B., to Albany International Corporation. Method of manufacturing a sanitary fan spray nozzle. 4,435,891, Cl. 29-157.00C.
Nicol, Klaus, to Nicol, Klaus. Force sensing means and method of producing such sensing means. 4,437,138, Cl. 361-283.000.
Nielsen, Kurt F.: *See—*
Jensen, Niels D.; Komossa, Horst; and Nielsen, Kurt F., 4,436,486, Cl. 417-45.000.
Niertit, Frank: *See—*
Brightman, Barrie; and Niertit, Frank, 4,437,096, Cl. 340-825.960.
NIFCO, Inc.: *See—*
Watanabe, Koji, 4,436,253, Cl. 242-74.100.
Yuda, Takuo; and Notoya, Yoshiaki, 4,436,273, Cl. 248-549.000.
Nihei, Masayasu: *See—*
Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, 4,436,982, Cl. 219-130.510.
Nihon Ceramic Co., Ltd.: *See—*
Taniguchi, Yoshiharu; Edano, Shigeki; and Akiyama, Masanori, 4,437,002, Cl. 250-338.000.
Nikkiso Co., Ltd.: *See—*
Ishiyama, Masashi; and Ishibashi, Michinori, 4,436,491, Cl. 417-385.000.
Nikko Industry Co., Ltd.: *See—*
Inai, Kunihiro, 4,437,186, Cl. 373-9.000.
Nikles, Albert: *See—*
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.
Nilsen, Carl J., to SWS, Incorporated. Apparatus for continuous laser welding. 4,436,979, Cl. 219-121.0LC.
Nilson, Warren C.; and Rabe, Thomas L., to Buckstaff Company, Inc., The. Furniture joint assembly. 4,436,342, Cl. 297-445.000.
Nilsson, Per, to AB Welin. Method and a device for pivoting an accommodation ladder. 4,436,180, Cl. 182-97.000.
Ninet, Jean-Louis; and Vaillant, Robert, to Ateliers et Chantiers de Bretagne-ABC. Device for positioning an off-shore platform on its support structure. 4,436,454, Cl. 405-204.000.
Nippon Chuzo Kabushiki Kaisha: *See—*
Kondo, Toshio, 4,436,138, Cl. 164-5.000.
Nippon Electric Co., Ltd.: *See—*
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, 4,437,095, Cl. 340-825.440.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Takeuchi, Atsushi, 4,437,180, Cl. 369-217.000.
Nippon Kogaku K.K.: *See—*
Fukuhara, Toru, 4,436,395, Cl. 354-406.000.
Maida, Osamu, 4,436,396, Cl. 354-416.000.
Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, 4,436,792, Cl. 429-1.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Inoue, Morio; Hoshino, Satoshi; Namura, Hideki; and Watari, Takashi, 4,436,482, Cl. 416-1.000.
Nippon Mining Co., Ltd.: *See—*
Imamura, Tatsuo; and Katoh, Mitsuo, 4,436,600, Cl. 204-140.000.
Nippon Oil Company, Ltd.: *See—*
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.
Nippon Oil and Fats Co., Ltd.: *See—*
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.
Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
Kita, Yuichi; Sakamoto, Kentaro; and Sato, Takahisa, 4,436,922, Cl. 549-251.000.
Nippon Soken, Inc.: *See—*
Tomita, Masahiro; and Takagi, Shigeru, 4,436,538, Cl. 55-482.000.
Nippon Steel Corporation: *See—*
Takahashi, Nobuyuki; Furuno, Yoshikuni; and Fukunaga, Masaaki, 4,436,561, Cl. 148-12.00F.
Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, 4,436,239, Cl. 228-17.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, 4,437,095, Cl. 340-825.440.
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, 4,437,177, Cl. 369-45.000.
Nippon Telegraph & Telephone Public Corp. of 1-6: *See—*
Yamashita, Masahide; Oku, Hikaru; and Maruyama, Masato, 4,437,168, Cl. 364-900.000.
Nippondenso Co., Ltd.: *See—*
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.
Nishi, Genichiro: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.
Nishida, Kenji: *See—*
Baba, Kiyokazu; and Nishida, Kenji, 4,436,199, Cl. 198-750.000.
Nishida, Mitsuhiro: *See—*
Yamamoto, Sakuei; and Nishida, Mitsuhiro, 4,437,027, Cl. 310-78.000.
Nishida, Takashi: *See—*
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, 4,436,583, Cl. 156-659.100.
Nishida, Yoshiaki; Yano, Shunji; and Masuyama, Tadahiro, to Daiwa Can Company, Limited. Method of treating the surface of a metal container. 4,436,594, Cl. 204-33.000.
Nishihama, Hitoshi: *See—*
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.
Nishihara, Yoshiki; and Miyamoto, Kazumichi, to Victor Company of Japan, Ltd. Method for fabricating an information signal recorded medium of the electrostatic capacity type. 4,436,683, Cl. 264-107.000.
Nishikawa, Kazuo; Sato, Kiyoshi; Ichino, Hiroyuki; and Okura, Keniti, to Pioneer Electronic Corporation. Phono pickup cartridge. 4,437,179, Cl. 369-172.000.
Nishikawa, Masatoshi. Method of manufacturing scissors and scissors. 4,435,901, Cl. 30-254.000.
Nishikawa, Mitsuyo: *See—*
Kurihara, Nobuo; Morooka, Yasuo; Nishikawa, Mitsuyo; Miura, Kiyoshi; and Nagahashi, Yoshitoshi, 4,437,163, Cl. 364-508.000.

Nishikawa, Yasuo; and Takahashi, Hirokuni, to Kyusyu Refractories Co., Ltd. Method for hot repairing the inside of a furnace. 4,436,678, Cl. 264-30.000.

Nishimatsu, Shigeru: *See—*
Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, 4,436,581, Cl. 156-643.000.

Nishimura, Shigeaki: *See—*
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Nishimura, Shozo: *See—*
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, 4,437,095, Cl. 340-825.440.

Nishizako, Shizutaka; Ishii, Isao; and Sakamoto, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Calcined member for arc-extinguishing chambers. 4,436,831, Cl. 501-119.000.

Nishizawa, Jun-ichi; and Shiota, Ikuo, to Budda Hajia Handotai Kenkyu Shinkokai. Oxynitride film and its manufacturing method. 4,436,770, Cl. 427-255.300.

Nissan Motor Co., Ltd.: *See—*
Hayashi, Yoshimasa, 4,436,061, Cl. 123-41.740.
Ichikawa, Mamoru; and Satake, Sachio, 4,436,318, Cl. 280-104.000.
Kato, Yoshiaki, 4,437,162, Cl. 364-442.000.
Kinoshita, Keijiro, 4,435,998, Cl. 74-798.000.
Mochida, Haruo, 4,437,137, Cl. 361-172.000.
Muraishi, Masakazu, 4,436,270, Cl. 248-416.000.
Nakazawa, Shigeo; and Sato, Shintaro, 4,435,973, Cl. 72-327.000.
Shimizu, Tetsuo, 4,436,336, Cl. 296-76.000.
Tanaka, Toshiaki; Ushimura, Shoji; and Etoh, Yukihiro, 4,436,060, Cl. 123-41.100.
Yamaguchi, Noboru; and Satoh, Seiichi, 4,435,881, Cl. 24-16.0PB.

Nissin Kogyo Co., Ltd.: *See—*
Mizusaki, Yoshinobu, 4,437,091, Cl. 340-623.000.

Nitta, Jun: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Nitz, Rolf-Eberhard: *See—*
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,436,743, Cl. 424-269.000.

Niwa, Toshio; and Nagashima, Susumu, to Mitsubishi Chemical Industries Limited. Disperse dye composition. 4,436,522, Cl. 8-524.000.

Niwa, Toshio; and Hihara, Toshio, to Mitsubishi Chemical Industries Ltd. Anthraquinone dyes for cellulose-containing fibers and process for producing the same. 4,436,906, Cl. 544-187.000.

NL Industries, Inc.: *See—*
Carnicom, William M., 4,436,636, Cl. 252-8.50P.
Tetenbaum, Marvin T.; and Crowley, Burlon C., 4,436,862, Cl. 524-445.000.

Noji, Takashi; Hapao, Norio; and Obata, Yoshiharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Radiation excited phosphor screen and method for manufacturing the same. 4,437,011, Cl. 250-486.100.

Nolen, Robert L., Jr.: *See—*
Schaap, A. Paul; Busch, George E.; and Nolen, Robert L., Jr., 4,436,715, Cl. 423-579.000.

Nollez, Jacques; Ragain, Jacques; and Prevost, Marc, to Societe d'Optique, Precision Electronique et Mechanique, Sopelem. Hoisting and lowering mechanism for a rotatable mast. 4,436,051, Cl. 114-340.000.

Nomura, Isshi: *See—*
Akagi, Motonobu; Nomura, Isshi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.

Nomura, Yoshiyuki; Okuda, Kanemasa; and Ishii, Hisao, to Fujitsu Fanuc Limited. Wire-cut, electric discharge machining method. 4,436,975, Cl. 219-69.00W.

Nonaka, Yuji: *See—*
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Nonnenmann, Manfred; and Deuschle, Steffi, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Pneumatic control system, especially for vehicle heating systems. 4,436,245, Cl. 236-49.000.

Nonogaki, Saburo: *See—*
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, 4,436,583, Cl. 156-659.100.

Nordson Corporation: *See—*
Jones, Stephen H., 4,437,152, Cl. 364-138.000.

Nordstrom, Eric W.; and Manoski, Laurence A., to Union Special Corporation. Thread wiping device. 4,436,044, Cl. 112-286.000.

Norland Corporation: *See—*
Belt, Kenneth W., 4,436,093, Cl. 128-419.0PG.

Norman, Bill K., to Norman Manufacturing Co., Inc. Fish lure. 4,435,914, Cl. 43-42.120.

Norman Manufacturing Co., Inc.: *See—*
Norman, Bill K., 4,435,914, Cl. 43-42.120.

Normann, Carl N. Spinning reel for fly-fishing. 4,436,254, Cl. 242-84.21R.

Norris, Brian; and Castro, Robert M., to Rohr Industries, Inc. Method of selectively electroplating the nodes of dimpled titanium material. 4,436,592, Cl. 204-15.000.

North American Philips Electric Corp.: *See—*
Larson, Daniel A., 4,437,039, Cl. 315-60.000.

Nosaka, Isao: *See—*
Seimiya, Ryubun; Iwai, Fumio; and Nosaka, Isao, 4,436,402, Cl. 355-3.00R.

Nose, Noriyuki: *See—*
Endo, Kiyonobu; and Nose, Noriyuki, 4,436,398, Cl. 354-476.000.

Notheis, Patrick J.: *See—*
Hotchkiss, Harry W.; Notheis, Patrick J.; and Englebert, Stephen M., 4,436,780, Cl. 428-198.000.

Notoya, Yoshiaki: *See—*
Yuda, Takuo; and Notoya, Yoshiaki, 4,436,273, Cl. 248-549.000.

Novorolsky, Paul G.: *See—*
Hansen, Robert C.; and Novorolsky, Paul G., 4,436,958, Cl. 179-2.00A.

NSK-Warner K.K.: *See—*
Yamamoto, Kazuo, 4,436,323, Cl. 280-804.000.

O. Ames Co.: *See—*
Eads, Harold O.; and Fowler, Ronald R., 4,436,267, Cl. 248-75.000.

Oakland Products, Inc.: *See—*
Picker, Charles W., 4,436,621, Cl. 210-232.000.

Obata, Yoshiharu: *See—*
Noji, Takashi; Hapao, Norio; and Obata, Yoshiharu, 4,437,011, Cl. 250-486.100.

Obenaus, Franz: *See—*
Mrazek, Gustav; and Obenaus, Franz, 4,437,105, Cl. 346-140.00R.

Obligado, Alvaro: *See—*
Vassalotti, Michael; and Obligado, Alvaro, 4,436,694, Cl. 376-310.000.

Obray, Dean C.: *See—*
Cota, Albert O.; and Obray, Dean C., 4,436,176, Cl. 180-287.000.

O'Brien, Steven M., to Sperry Corporation. High speed byte shifter for a bi-directional data bus. 4,437,166, Cl. 364-900.000.

Occidental Chemical Corporation: *See—*
Rader, Charles G.; and Robota, Stephen, 4,436,942, Cl. 570-145.000.

Occidental Research Corporation: *See—*
DiGiacomo, Peter M.; and Dines, Martin B., 4,436,899, Cl. 528-395.000.

Oda, Suehiro: *See—*
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, 4,436,981, Cl. 219-124.320.

Odaka, Kentaro: *See—*
Sako, Yoichiro; and Odaka, Kentaro, 4,437,185, Cl. 371-39.000.

Ogata, Masahiro; and Sakai, Osamu, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. Semiconductor integrated circuit device. 4,437,135, Cl. 361-91.000.

Ogawa, Masaya: *See—*
Murasaki, Hiroshi; Ogawa, Masaya; Enoguchi, Yuji; and Masui, Mikio, 4,436,406, Cl. 355-3.0SH.

Oguchi, Yutaka: *See—*
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.

O'Hanlon, Peter J.; and Walker, Graham, to Beecham Group Limited. Nitrobenzyl monates antibacterial compounds. 4,436,751, Cl. 424-283.000.

Ohe, Etsuo; Sugawara, Katsuo; Tani, Itaro; and Tsukioka, Hideo, to Hitachi, Ltd. Fire-retardant insulating oils. 4,436,654, Cl. 252-574.000.

Ohkawa, Takehisa; and Yoda, Kuniichi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,436,786, Cl. 428-447.000.

Ohmori, Masaichi: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.

Ohmori, Muncki: *See—*
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, to Mochida Pharmaceutical Co., Ltd. Method of producing γ-globulin for intravenous injection and therapeutic agent produced thereby. 4,436,724, Cl. 424-101.000.

Ohta, Masafumi; and Sakai, Kiyoshi, to Ricoh Co., Ltd. Multilayer electrophotographic element containing a trisazo charge carrier generating substance and a hydrazone charge carrier transfer substance. 4,436,800, Cl. 430-59.000.

Ohtsuka, Keizou: *See—*
Narato, Kiyoshi; Ohtsuka, Keizou; Inada, Tooru; and Watanabe, Takashi, 4,436,699, Cl. 422-68.000.

Ohtsuka, Shuichi; and Aotsuka, Yasuo, to Fuji Photo Film Co., Ltd. Reversal electrophotography developing method. 4,436,802, Cl. 430-100.000.

Ohuchi, Kutaka: *See—*
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.

Ohyagi, Takashi: *See—*
Akahori, Masaaki; Ohyagi, Takashi; and Nishimura, Shozo, 4,437,095, Cl. 340-825.440.

Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, to Mitsumi Electric Co. Ltd. Printed circuit device. 4,437,140, Cl. 361-402.000.

Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Magnetic brush developing apparatus. 4,436,413, Cl. 355-15.000.

Okabayashi, Mitcheo: *See—*
Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, 4,436,691, Cl. 376-137.000.

Okabe, Sigeru: *See—*
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Okada, Hideo: *See—*
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Okada, Morikazu: *See—*
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.

Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Kitchen furnishings. 4,436,352, Cl. 312-228.000.

Okamoto, Ichiro; and Toga, Yuzo, to Daicel Chemical Industries, Ltd. Polyester copolymer. 4,436,896, Cl. 156-332.000.

Oku, Hikaru: *See—*
Yamashita, Masahide; Oku, Hikaru; and Maruyama, Masato, 4,437,168, Cl. 364-900.000.

Okuda, Kanemasa: *See—*
Nomura, Yoshiyuki; Okuda, Kanemasa; and Ishii, Hisao, 4,436,975, Cl. 219-69.00W.

Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, to Hitachi, Ltd. Uniform etching of silicon (doped and undoped) utilizing ions. 4,436,581, Cl. 156-643.000.

Okumura Corporation: *See—*
Masuda, Masakazu; and Matsumoto, Hironori, 4,436,167, Cl. 175-72.000.

Okumura, Fumio; Higuchi, Masahiro; Kamei, Shun; and Miyauchi, Masahiro, to Mitsubishi Paper Mills, Ltd. Thermosensitive recording material. 4,436,783, Cl. 428-411.000.

Okumura, Masahide: *See—*
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.

Okumura, Takeo: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,436,722, Cl. 424-70.000.

Okura, Keniti: *See—*
Nishikawa, Kazuo; Sato, Kiyoshi; Ichino, Hiroyuki; and Okura, Keniti, 4,437,179, Cl. 369-172.000.

Okuyama, Shigeaki; Nakamura, Norimi; and Hashimoto, Osami, to Kubota, Ltd. Machine body inclination detector device. 4,435,907, Cl. 33-366.000.

Olbrich, Hazel C.; O'Rear, Dennis J.; and Zakarian, John A., to Chevron Research Company. Process for dewaxing and desulfurizing oils. 4,436,614, Cl. 208-89.000.

Olderaan, Wilhelmus F. T. C., to Wavin B.V. Apparatus for installing a sealing ring. 4,435,888, Cl. 29-235.000.

Olmsted, Gaylord S.; and Rosno, Gordon W., to Westinghouse Electric Corp. Variable energy missile eject system. 4,436,016, Cl. 89-1.809.

Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Cylindrical roller bearing support for trunnions in fork eyes of universal joints. 4,436,516, Cl. 464-128.000.

Olschewski, Armin: *See—*
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, 4,435,890, Cl. 29-148.40R.

Olsen, John H.: *See—*
Mercer, John E.; Olsen, John H.; and Elkins, Stephen, 4,435,902, Cl. 30-296.00R.

Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate solution and regenerating the solution in a fuel cell. 4,436,711, Cl. 423-573.00G.

Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate of nitrilotriacetic acid and electrolytically regenerating the solution. 4,436,712, Cl. 423-573.00G.

Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate of nitrilotriacetic acid and regenerating the solution in a fuel cell. 4,436,713, Cl. 423-573.00G.

Olson, Donald C., to Shell Oil Company. Method of removing hydrogen sulfide from gases utilizing a polyvalent metal chelate of nitrilotriacetic acid and electrolytically regenerating the solution. 4,436,714, Cl. 423-573.00G.

Olson, George E., to A. O. Smith Harvestore Products, Inc. Drive mechanism for a rotatable sweep arm. 4,436,473, Cl. 414-310.000.

Olympus Optical Co., Ltd.: *See—*
Ikari, Kazuo; and Fujii, Toru, 4,436,382, Cl. 350-458.000.
Maeda, Haruo, 4,436,383, Cl. 350-469.000.
Osanai, Akira, 4,436,257, Cl. 242-201.000.
Saitou, Sinichi, 4,436,256, Cl. 242-200.000.
Taira, Akio, 4,436,384, Cl. 350-515.000.
Tamagawa, Akira, 4,436,827, Cl. 436-534.000.

Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, to Mitsubishi Jukogyo Kabushiki Kaisha. High strength and high toughness welding material. 4,436,554, Cl. 75-128.00T.

Omron Tateisi Electronics Co.: *See—*
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

O'Neill, Terence C., to Internationale Octrooi Maatschappij "Octropa" B.V. Miter block. 4,436,014, Cl. 83-762.000.

O'Neill, William J., to Argon Medical Corp. Removable hemostasis valve. 4,436,519, Cl. 604-175.000.

Ong, Helen H.; and Profitt, James A., to Hoechst-Roussel Pharmaceuticals Inc. Benzo[b]thiophenes. 4,436,748, Cl. 424-275.000.

Onoda Chemical Industry Co., Ltd.: *See—*
Miyazaki, Naomi; and Fujimura, Akira, 4,436,710, Cl. 423-552.000.

Onodera, Osamu, to Hitachi, Ltd. Overflow detection for a decimal arithmetic unit. 4,437,165, Cl. 364-749.000.

Onoue, Keiji: *See—*
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.

Ophoff, Paul-Arthur; and Weinel, Johann, to Siemens Aktiengesellschaft. Nondispersive infrared gas analyzer. 4,437,005, Cl. 250-343.000.

Opitz, Dieter: *See—*
Burkle, Wolfgang; and Opitz, Dieter, 4,436,252, Cl. 242-72.00B.

Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, to BASF Aktiengesellschaft. Ammonium salts of polymaleic acids and use as corrosion inhibitors in water-in-oil emulsions. 4,436,639, Cl. 252-8.55E.

Optimax III, Inc.: *See—*
Bukowski, William A., 4,436,369, Cl. 350-130.000.

O'Rear, Dennis J.: *See—*
Olbrich, Hazel C.; O'Rear, Dennis J.; and Zakarian, John A., 4,436,614, Cl. 208-89.000.

Orsinger, Winston A., to Bell & Howell Company. Sheet feeding device. 4,436,299, Cl. 271-100.000.

Ortho Diagnostic Systems, Inc.: *See—*
Bishop, David C., 4,436,824, Cl. 436-514.000.
Graham, Henry A., Jr.; Hawk, Johnna B.; and Chachowski, Rosemary K., 4,436,631, Cl. 210-772.000.

Orum, Paul R.: *See—*
Bonds, James V.; and Orum, Paul R., 4,436,279, Cl. 251-86.000.

Osaka, Susumu; and Toda, Minoru, to RCA Corporation. Shutter construction. 4,435,920, Cl. 49-82.000.

Osako, Kyoichi: *See—*
Kokubo, Eiichi; and Osako, Kyoichi, 4,436,102, Cl. 133-2.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Reel driving method for tape recorder and a driving mechanism for its practice. 4,436,257, Cl. 242-201.000.

Osborne, Jeffrey C.: *See—*
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.

Osborne, John R.; and Bischoff, Peter G., to Memorex Corporation. Self-aligned pole tips. 4,436,593, Cl. 204-15.000.

Ose, Earl E., to Eli Lilly and Company. Control of swine dysentery. 4,436,734, Cl. 424-181.000.

Osterberg, Thomas V., to A-Betong AB Arrangement for hydroelectric power plants. 4,437,017, Cl. 290-52.000.

Osterholm, Robert J.: *See—*
Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, 4,436,615, Cl. 208-177.000.

Ostlie, Arne M.: *See—*
Strandli, Kaare R.; and Ostlie, Arne M., 4,435,887, Cl. 29-123.000.

Ostroff, Arthur: *See—*
Tullos, Robert N.; and Ostroff, Arthur, 4,437,049, Cl. 318-696.000.

Otis Engineering Corporation: *See—*
Barker, James M., 4,436,150, Cl. 166-31.000.
Fisher, Ernest P., Jr.; and Welch, William R., 4,436,152, Cl. 166-214.000.

Otsuka, Tsuneo: *See—*
Inoue, Kazuo; and Otsuka, Tsuneo, 4,436,172, Cl. 180-219.000.

Otto Tuchenhagen GmbH & Co. KG: *See—*
Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., 4,436,106, Cl. 137-240.000.

Ouchi, Teruo, to Kabushiki Kaisha Medos Kenkyusho. Bioptic instrument. 4,436,087, Cl. 128-6.000.

Outboard Marine Corporation: *See—*
Heismann, Richard A., 4,435,949, Cl. 56-320.200.

Overton, William C., Jr.; and Steyert, William A., Jr., to United States of America, Energy. Apparatus for detecting a magnetic anomaly contiguous to remote location by squid gradiometer and magnetometer systems. 4,437,064, Cl. 324-346.000.

Overzet, John K., to Borg-Warner Corporation. Stabilizing circuit for controlled inverter-motor system. 4,437,050, Cl. 318-798.000.

Owen, Daniel V.: *See—*
Morais, Don; and Owen, Daniel V., 4,437,042, Cl. 315-289.000.

Owens-Corning Fiberglas Corporation: *See—*
Grossi, Anthony V.; Hahn, Louis T.; Marzocchi, Alfred; and Bolen, Charles E., 4,436,767, Cl. 427-138.000.
Grossi, Anthony V.; Hagelee, Leon A.; Hahn, Louis T.; and Marzocchi, Alfred, 4,436,864, Cl. 524-458.000.
Haines, Richard M.; Wong, Robert; and Berger, Elisabeth J., 4,436,848, Cl. 523-426.000.
Jackson, Robert R.; and Klink, Jerome P., 4,436,258, Cl. 242-18.00G.
Pellegrin, Michael T.; Hanna, Terry J.; and Thompson, Thomas K., 4,436,541, Cl. 65-2.000.

Owens-Illinois, Inc.: *See—*
Chang, Long F., 4,436,216, Cl. 220-69.000.
Juvinall, John W., 4,437,116, Cl. 358-106.000.

Oyama, Kiyotaka: *See—*
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Oyekan, Soni O.; and Swan, George A., to Exxon Research and Engineering Co. Catalytic reforming process. 4,436,612, Cl. 208-65.000.

Ozaki, Nobuo; and Kaneko, Yoshimasa, to Maeda Industries, Ltd. Ball head lock nut as a component element of bicycle head parts. 4,436,468, Cl. 411-248.000.

Ozasa, Susumu: *See—*
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.

Ozawa, Yukio: *See—*
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, 4,436,313, Cl. 277-80.000.

Pacey, Gilbert E.; and Bubnis, Benard P., to President and Trustees of the Miami University, The. Trifluoromethyl-substituted chromogenic crown ethers and methods of using same. 4,436,923, Cl. 549-352.000.

Pache, Norbert; and Mazac, Karel, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Electric arc welding apparatus. 4,436,980, Cl. 219-123.000.

Pacific Electro Dynamics, Inc.: *See—*
Carpenter, Ralph F., 4,437,146, Cl. 363-21.000.

Padalka, Valentin G.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.

Pagels, Louis T.: *See—*
Weiler, Gerhard H.; and Pagels, Louis T., 4,436,210, Cl. 215-32.000.

Pakhomov, Gennady N.; Luste, Anita Y.; Kadnikova, Galina I.; and Kolesnik, Anatoly G. Granulated treatment-and-prophylactic dental preparation possessing anticarious effect. 4,436,720, Cl. 424-44.000.

Pako Corporation: *See—*
Strunc, Gerald R., 4,436,008, Cl. 83-42.000.

Pall Corporation: *See—*
Abrams, Howard; and Allen, Barrington T., 4,436,635, Cl. 210-806.000.

Panavision, Incorporated: *See—*
Gottschalk, Robert E., 4,437,126, Cl. 358-224.000.

Panicker, Narayana N.: *See—*
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., 4,436,048, Cl. 114-230.000.

Panik, Ferdinand: *See—*
Mehren, Herbert; and Panik, Ferdinand, 4,436,170, Cl. 180-131.000.

Pannu, Jaswant S. Universal intraocular lens and a method of measuring an eye chamber size. 4,435,855, Cl. 3-13.000.

Papakube Corporation: *See—*
Nelson, Garth C.; White, Henry J.; and Nelson, Gerald B., 4,436,502, Cl. 425-331.000.

Parello, Joseph: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.

Parker, James: *See—*
Cooper, Michael J.; and Parker, James, 4,436,795, Cl. 429-53.000.

Parks-Cramer Company: *See—*
Mulligan, William L., 4,435,876, Cl. 15-312.00R.

Parman, David G.: *See—*
Weitzel, Harold B.; and Parman, David G., 4,436,565, Cl. 156-49.000.

Paronetto, Lanfranco: *See—*
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, 4,436,755, Cl. 426-15.000.

Parrillo, Louis C.; Reutlinger, George W.; and Wang, Li-Kong, to Bell Telephone Laboratories, Incorporated. Process for forming complementary integrated circuit devices. 4,435,895, Cl. 29-571.000.

Parrillo, Louis C.; and Payne, Richard S., to Bell Telephone Laboratories, Incorporated. Method for fabricating complementary field effect transistor devices. 4,435,896, Cl. 29-571.000.

Paschke, Werner: *See—*
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.

Passaro, Robert E.; and Burough, Irvin G., to Andros Analyzers Incorporated. Modular gas analyzer. 4,437,004, Cl. 250-343.000.

Patel, Bhupendra P.: *See—*
Prusak, John J.; and Patel, Bhupendra P., 4,436,603, Cl. 204-194.000.

Paterson Products Limited: *See—*
Taylor, Eric, 4,436,401, Cl. 354-312.000.

Patoiseau, Jean-Francois: *See—*
Hatinguais, Philippe; Patoiseau, Jean-Francois; and Marcelon, Gilbert, 4,436,749, Cl. 424-278.000.

Paul, Fred R., Jr.; and Mrozinski, James S., to Minnesota Mining and Manufacturing Co. Container having tamper evident seal and imaged polymer film useful as such a seal. 4,436,213, Cl. 215-365.000.

Paul Wurth S.A.: *See—*
Schmidt, Paul; and Legille, Edouard, 4,436,293, Cl. 266-276.000.

Pavlov, Alexei A.: *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Payne, Richard S.: *See—*
Parrillo, Louis C.; and Payne, Richard S., 4,435,896, Cl. 29-571.000.

Payseur, John Y.: *See—*
Cottrell, Jennie L.; Davis, Richard A.; Harris, Susan K.; Jones, Bernard R.; and Payseur, John Y., 4,436,963, Cl. 179-18.00B.

Peaster, Bertram A., to Lockheed Corporation. Flexible coupling for fluid ducts. 4,436,326, Cl. 285-178.000.

PEC Process Engineering Company: *See—*
Muller, Hans; Knopfel, Hans-Peter; Muller, Felix; and Kretz, Rolf H., 4,436,814, Cl. 435-162.000.

Pellegrin, Michael T.; Hanna, Terry J.; and Thompson, Thomas K., to Owens-Corning Fiberglas Corporation. Method for production of mineral fibers. 4,436,541, Cl. 65-2.000.

Pennsylvania Engineering Corporation: *See—*
Nagati, Rashed N., 4,436,291, Cl. 266-246.000.

Pennwalt Corporation: *See—*
Lindaberry, Harold L., 4,436,719, Cl. 424-37.000.

Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, to Montedison S.p.A.; and Chimici Perdomini S.p.A. Separation of fruit juice with fibers of an olefin polymer. 4,436,755, Cl. 426-15.000.

Perfil En Frio, S.A. (PERFRISA): *See—*
Larrea, D. Juan, 4,435,935, Cl. 52-461.000.

Perkins, Haywood A.: *See—*
Barczak, Virgil J.; Perkins, Haywood A.; and Daigle, O. L., 4,436,681, Cl. 264-67.000.

Perrey, Hermann: *See—*
Neuhaus, Karl-Friedrich; Muller-Albrecht, Horst; Dollhausen, Manfred; and Perrey, Hermann, 4,436,570, Cl. 156-273.300.

Perron, Robert: *See—*
Gauthier-Lafaye, Jean; and Perron, Robert, 4,436,889, Cl. 562-519.000.

Perry, William E. Automobile hand control. 4,436,191, Cl. 192-3.00S.

Persson, Bengt A. Ventilation valve. 4,436,107, Cl. 137-314.000.

Perz, John S.: *See—*
Higgins, William A.; and Perz, John S., 4,436,855, Cl. 524-145.000.

Peters, Richard K.: *See—*
Long, Robert C.; and Peters, Richard K., 4,436,574, Cl. 156-415.000.

Peterson, Daniel G.; and Erickson, John W., to Kobe, Inc. Surface power unit for a downhole pump. 4,436,492, Cl. 417-386.000.

Peterson, Kenneth S.: *See—*
Ramachandran, Pallassana N.; and Peterson, Kenneth S., 4,436,637, Cl. 252-8.700.

Peterson Manufacturing Co.: *See—*
Templeman, Arthur R., 4,436,445, Cl. 403-189.000.

Petr, David W., to Bell Telephone Laboratories, Incorporated. Adaptive differential PCM coding. 4,437,087, Cl. 340-347.0DD.

Petretti, Anthony V., to Metro Hoist & Body Co., Inc. Eductor truck. 4,436,622, Cl. 210-232.000.

Petrov, Lev N.; Adoniev, Viktor A.; and Kononov, Valery I. Method of sorting semiconductor devices and apparatus for performing this method. 4,436,619, Cl. 209-573.000.

Petrovic, Vladan; and Rotthaus, Heinz, to Krupp-Koppers GmbH. Method of pretreating coal for coking plant. 4,436,589, Cl. 201-41.000.

Peyrouset, Andre; and Spring, Francois, to Societe Nationale Elf Aquitaine. Process of extraction of lactoferrine and immunoglobulins of milk. 4,436,658, Cl. 260-122.000.

Pfaendler, Hans R., to Ciba-Geigy Corporation. 3-Substituted bicyclic azetidinone derivatives. 4,436,661, Cl. 260-245.300.

Pfannschmidt, Martin, to SMS Schloemann-Siemag AG. System for the treatment of a continuous metal web. 4,436,292, Cl. 266-107.000.

Pfefferle, Dietmar: *See—*
Lauer, Reinhard; and Pfefferle, Dietmar, 4,436,364, Cl. 350-6.600.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,436,747, Cl. 424-274.000.

Pfleiderer, Ernst: *See—*
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.

Phillips, Earl G.: *See—*
Bellotti, Marc; Goldhaber, Richard P.; Phillips, Earl G.; and Toch, Theodore H., 4,436,620, Cl. 210-90.000.

Phillips Petroleum Company: *See—*
Beever, William H., 4,436,865, Cl. 524-504.000.
Bobsein, Rex L., 4,436,948, Cl. 585-532.000.
Myers, John W.; and Strope, Daniel J., 4,436,949, Cl. 585-664.000.
Sherk, Fred T., 4,436,901, Cl. 528-498.000.
Stacy, Galen D.; and Likins, Merle R., Jr., 4,436,698, Cl. 422-62.000.
Witt, Donald R., 4,436,882, Cl. 526-106.000.
Witt, Donald R., 4,436,883, Cl. 526-106.000.
Wood, William E.; and Barber, Franklin T., 4,436,902, Cl. 528-501.000.

Piazzetta, Domenico. Fireplace for heating indoor spaces and water for sanitary use. 4,436,079, Cl. 126-121.000.

Picart, Francois, to Societe de Recherches Industrielles. Pyranoindoles. 4,436,913, Cl. 548-432.000.

Picker, Charles W., to Oakland Products, Inc. Pressure vessel having a plurality of filtering elements. 4,436,621, Cl. 210-232.000.

Pickering & Company, Inc.: *See—*
Chass, Jacob, 4,437,019, Cl. 307-83.000.

Picquendar, Jean E., to Thomson-CSF. FSK Demodulator for frequency-modulation modem. 4,437,068, Cl. 329-105.000.

Pierce Chemical Company: *See—*
Smith, Paul K., 4,436,718, Cl. 424-1.100.

Pierre Fabre S.A.: *See—*
Hatinguais, Philippe; Patoiseau, Jean-Francois; and Marcelon, Gilbert, 4,436,749, Cl. 424-278.000.

Pierrel, Michel: *See—*
Fuminier, Claude; and Pierrel, Michel, 4,435,894, Cl. 29-527.500.

Pierret, Robert F.: *See—*
Gunshor, Robert L.; Pierret, Robert F.; and Melloch, Michael R., 4,437,031, Cl. 310-313.00B.

Pierro, Joseph J., Jr., to American Standard Inc. Cab signal test set for automatically testing the pickup coils and checking an amplifier of cab signal equipment. 4,437,056, Cl. 324-73.0AT.

Pietsch, Hartmut: *See—*
Krennrich, Otmar; Brendel, Gottfried; and Pietsch, Hartmut, 4,436,704, Cl. 423-11.000.

Pijpers, Jacques P. L.: *See—*
Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., 4,436,689, Cl. 264-204.000.

Pimenov, Mikhail G.: *See—*
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.

Pioneer Electronic Corporation: *See—*
Nishikawa, Kazuo; Sato, Kiyoshi; Ichino, Hiroyuki; and Okura, Keniti, 4,437,179, Cl. 369-172.000.

Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, to Wacker-Chemie GmbH. Self-emulsifiable antifoams. 4,436,647, Cl. 252-358.000.

Pissiotas, Georg: *See—*
Berrer, Dagmar; Pissiotas, Georg; and Rohr, Otto, 4,436,935, Cl. 564-49.000.

Pitel, Ira J., to Cornell-Dubilier Electric Corporation. Lighting control for high intensity discharge lamp. 4,437,043, Cl. 315-308.000.

Piteo, Michael J., to R. E. Phelon Company, Inc. Electronic speed control for capacitor discharge ignition system. 4,436,076, Cl. 123-602.000.

Pitman-Moore, Inc.: *See—*
Dinka, Stephen K., 4,436,816, Cl. 435-240.000.

Pitts, Loren: *See—*
Shahan, James E.; and Pitts, Loren, 4,436,119, Cl. 138-149.000.

Plasticisers Limited: *See—*
Slack, Ian D.; Ellis, David G.; and Firth, Colin, 4,436,564, Cl. 156-42.000.

Plessey Overseas Limited: *See—*
Crisp, Malcolm; and Lewis, Christopher, 4,436,196, Cl. 194-100.00A.

Plym, Oscar W. Traffic safe pole. 4,435,930, Cl. 52-98.000.

Pohl, Hans H.: *See—*
Weitz, Hans-Martin; Fischer, Rolf; and Pohl, Hans H., 4,436,944, Cl. 585-408.000.

Pointer, Simon P. Tires for wheels. 4,436,128, Cl. 152-209.00R.

Poisson, Leandre. Integrated window and thermal shutter assembly. 4,435,919, Cl. 49-63.000.

Polis, Marjorie J.: *See—*
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.

Pollmann, Kurt: *See—*
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, 4,437,022, Cl. 307-270.000.

Polymer Technology Corporation: *See—*
Ellis, Edward J.; and Salamone, Joseph C., 4,436,730, Cl. 424-180.000.

Polyplastics Co., Ltd.: *See—*
Kasuga, Takuzo; Takahashi, Katsuhiko; and Nakashima, Tuneyasu, 4,436,877, Cl. 525-437.000.

Pomerene, James H.; and Rechtschaffen, Rudolph N., to International Business Machines Corporation. Cache memory architecture with decoding. 4,437,149, Cl. 364-200.000.

Pomplun, William S.; and Grube, Herbert E., to Kimberly-Clark Corporation. Creping adhesives containing poly 2-ethyl-2-oxazoline. 4,436,867, Cl. 524-503.000.

Poncelet, Georges: *See—*
Jacobs, Pierre; Poncelet, Georges; and Schutz, Alain, 4,436,832, Cl. 502-84.000.

Pont-A-Mousson S.A.: *See—*
Fuminier, Claude; and Pierrel, Michel, 4,435,894, Cl. 29-527.500.

Pool, James L., to Lisle Corporation. Battery post and terminal cleaner. 4,435,873, Cl. 15-105.000.

Popov, Valery M.: *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.

Potter, John K.: *See—*
Johnson, Richard S.; and Potter, John K., 4,436,644, Cl. 252-174.130.

Powell, Thomas A., to Ex-Cell-O Corporation. Automatic depth compensating system. 4,436,460, Cl. 408-14.000.

PPG Industries, Inc.: *See—*
Girgis, Mikhail M., 4,436,866, Cl. 524-510.000.
Wagner, Melvin P., 4,436,847, Cl. 523-203.000.

Precision Plastic Products Corp.: *See—*
Alejandro Llera, Santos A., 4,436,212, Cl. 215-252.000.

Precoul, Michel, to Societe d'Etudes, de Realisations et d'Applications Techniques (SERAT). Hollow charges with plural conical configurations. 4,436,033, Cl. 102-307.000.

Predali, Jean-Jacques: *See—*
Dufour, Philippe; Predali, Jean-Jacques; Ranchin, Guy, deceased; Ranchin, Marc, legal heir; and Ranchin, Genevieve, legal heir, 4,436,616, Cl. 209-3.000.

President and Trustees of the Miami University, The: *See—*
Pacey, Gilbert E.; and Bubnis, Benard P., 4,436,923, Cl. 549-352.000.

Pressure Products Company: *See—*
Meginnis, Charles E., deceased, 4,436,375, Cl. 350-319.000.

Prevost, Marc: *See—*
Nollez, Jacques; Ragain, Jacques; and Prevost, Marc, 4,436,051, Cl. 114-340.000.

Priebe, Edmund: *See—*
Brandstetter, Franz; Muench, Volker; Naarmann, Herbert; and Priebe, Edmund, 4,436,854, Cl. 524-139.000.

Priepke, Edward H.: *See—*
Lindblom, Curtis H.; Lausch, H. Nevin; and Priepke, Edward H., 4,436,248, Cl. 241-101.700.

Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, to Vereinigte Deutsch Metallwerke AG. Gold-colored coin material. 4,436,790, Cl. 428-675.000.

Procter & Gamble Company, The: *See—*
Dirksing, Robert S.; and Barker, Dale E., 4,436,269, Cl. 248-214.000.
Jacobson, Ronald L.; and Hanley, Dean C., 4,436,653, Cl. 252-547.000.

Profet, Gary A., to General DataComm Industries, Inc. Method and apparatus for distributing control signals. 4,437,183, Cl. 370-110.100.

Profet, Gary A.: *See—*
Lambert, David A.; and Profet, Gary A., 4,437,182, Cl. 370-110.100.

Profitt, James A.: *See—*
Ong, Helen H.; and Profitt, James A., 4,436,748, Cl. 424-275.000.

Prokop, Jon S., to Texas Instruments Incorporated. High terminal count integrated circuit device package. 4,437,141, Cl. 361-403.000.

Proud, Joseph M.: *See—*
Lapatovich, Walter P.; Proud, Joseph M.; and Riseberg, Leslie A., 4,436,762, Cl. 427-39.000.

Prusak, John J., to RCA Corporation. Apparatus for grinding the back surfaces of record molding stampers. 4,435,922, Cl. 51-58.000.

Prusak, John J.; and Patel, Bhupendra P., to RCA Corporation. Apparatus for separating a replica from a matrix. 4,436,603, Cl. 204-194.000.

Puestel, Hubert: *See—*
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, 4,436,702, Cl. 422-195.000.

Purdue Research Foundation: *See—*
Cook, William A.; Fearnot, Neal E.; and Geddes, Leslie A., 4,436,092, Cl. 128-419.0PG.
Gunshor, Robert L.; Pierret, Robert F.; and Melloch, Michael R., 4,437,031, Cl. 310-313.00B.

Purification Engineering, Inc.: *See—*
Wood, Louis L.; and Calton, Gary J., 4,436,813, Cl. 435-109.000.

Purvis, Fay A.; Bennett, Robert W.; and Ruth, Roger A., to Enterra Corporation. Foam liquid concentrate supply system. 4,436,487, Cl. 417-46.000.

Puzzle Specialties: *See—*
Caldwell, T. Francis, 4,436,307, Cl. 273-157.00R.

Quan, Wing C.: *See—*
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.

Queener, Carl A., to International Business Machines Corporation. File compaction apparatus and method for copiers. 4,436,609, Cl. 355-14.00R.

R. E. Phelon Company, Inc.: *See—*
Piteo, Michael J., 4,436,076, Cl. 123-602.000.

R & G Sloane Mfg. Co., Inc.: *See—*
Blumenkranz, James J., 4,436,988, Cl. 219-544.000.

Raasch, Hans: *See—*
Schmid, Friedbert; and Raasch, Hans, 4,435,953, Cl. 57-408.000.

Rabe, Thomas L.: *See—*
Nilson, Warren C.; and Rabe, Thomas L., 4,436,342, Cl. 297-445.000.

Racon Incorporated: *See—*
Stelz, Dale E.; Carroll, Frank I.; and Whaley, Wilson M., 4,436,641, Cl. 252-68.000.

Rader, Charles G.; and Robota, Stephen, to Occidental Chemical Corporation. Process for the catalyzed fluorination of haloalkyl aromatic compounds. 4,436,942, Cl. 570-145.000.

Radford, Kenneth C.; and Harrison, Don E., to Westinghouse Electric Corp. Nuclear fuel fabrication process. 4,436,677, Cl. 264-0.500.

Radio Engineering Service, Inc.: *See—*
Kitrell, John V., 4,436,351, Cl. 312-223.000.

Raftopoulos, Demetrios D., to University of Toledo, The. Instrument for measuring the range of motion associated with a human body joint. 4,436,099, Cl. 128-782.000.

Ragailler, Franz. Sprayer. 4,436,160, Cl. 169-74.000.

Ragain, Jacques: *See—*
Nollez, Jacques; Ragain, Jacques; and Prevost, Marc, 4,436,051, Cl. 114-340.000.

Ragland, Frank R., Jr., to RCA Corporation. Cathode-ray tube having a temperature compensated mask-frame assembly. 4,437,036, Cl. 313-402.000.

Rallapali, Krishna: *See—*
Alfke, Peter H.; Rallapali, Krishna; and MacMillan, David, 4,437,158, Cl. 364-200.000.

Ralston, Paul H.; and Whitney, Sandra L., to Calgon Corporation. Polyphosphoric acid as a scale and corrosion inhibitor. 4,436,628, Cl. 210-697.000.

Ramachandran, Pallassana N.; and Peterson, Kenneth S., to Colgate-Palmolive Company. Fabric softening heavy duty liquid detergent containing a mixture of water insoluble soap and clay. 4,436,637, Cl. 252-8.700.

Rammler, Roland; and Bussmann, Alfons, to Metallgesellschaft Aktiengesellschaft. Process for devolatilizing devolatilizable fine-grained material by means of hot, fine-grained heat-carrying material. 4,436,588, Cl. 201-12.000.

Ranchin, Genevieve, legal heir: *See—*
Dufour, Philippe; Predali, Jean-Jacques; Ranchin, Guy, deceased; Ranchin, Marc, legal heir; and Ranchin, Genevieve, legal heir, 4,436,616, Cl. 209-3.000.

Ranchin, Guy, deceased: *See—*
Dufour, Philippe; Predali, Jean-Jacques; Ranchin, Guy, deceased; Ranchin, Marc, legal heir; and Ranchin, Genevieve, legal heir, 4,436,616, Cl. 209-3.000.

Ranchin, Marc, legal heir: *See—*
Dufour, Philippe; Predali, Jean-Jacques; Ranchin, Guy, deceased; Ranchin, Marc, legal heir; and Ranchin, Genevieve, legal heir, 4,436,616, Cl. 209-3.000.

Randall, Charles E.: *See—*
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., 4,436,184, Cl. 187-29.00R.

Rank Organisation Limited, The: *See—*
Bertenshaw, David R.; Lockwood, Edwin P.; and Brown, Anthony R., 4,437,169, Cl. 364-900.000.

Rapp, Ronald J.: *See—*
Burdick, Patricia E.; and Rapp, Ronald J., 4,436,850, Cl. 524-8.000.

Rasmussen, Ole-Bendt. In situ precipitated fibrous laminate and method of producing same. 4,436,568, Cl. 156-176.000.

Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, to Bayer Aktiengesellschaft. Single-phase, storage-stable polyol compositions containing salts and the use thereof in the production of polyurethanes. 4,436,841, Cl. 521-106.000.

Rathburn, Lloyd C., to Loomis International Inc. Releasing overshot apparatus. 4,436,334, Cl. 294-86.300.

Rauleder, Gebhard; and Waldmann, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of 2,2-dicyclohexenylpropane. 4,436,943, Cl. 585-357.000.

Raverdy, Claude Y.; and Veron, Serge, to Thomson-CSF. Pyroelectric target and image pick up tube provided with such a target. 4,437,035, Cl. 313-388.000.

Raychem Corporation: *See—*
Tight, Dexter C., Jr., 4,436,566, Cl. 156-56.000.

Raytheon Company: *See—*
Gill, Harry A., Jr., 4,437,023, Cl. 307-296.00R.
Gordon, Bruce E., 4,437,066, Cl. 328-14.000.
Smith, Irl W., 4,436,426, Cl. 356-369.000.

Razza, Aldo. Composite semirigid snow chain, without rear hooking means, for motor vehicles. 4,436,129, Cl. 152-213.00A.

RCA Corporation: *See—*
Bissot, Thomas C.; and Li, Stephen, 4,436,599, Cl. 204-98.000.
Cochran, Larry A., 4,437,124, Cl. 358-166.000.
Farmer, Felta C., Jr.; and Knight, Donald P., 4,437,120, Cl. 358-139.000.
Fish, Joe W., 4,437,094, Cl. 340-825.500.
Harlan, Wayne E., 4,437,123, Cl. 358-166.000.
Kelly, William R.; and Alvero, Ernesto J., 4,436,394, Cl. 354-1.000.
Kern, Werner, 4,436,999, Cl. 250-302.000.
Kocmanek, Karl H.; and Shambelan, Robert C., 4,436,509, Cl. 432-253.000.
Osaka, Susumu; and Toda, Minoru, 4,435,920, Cl. 49-82.000.
Prusak, John J., 4,435,922, Cl. 51-58.000.
Prusak, John J.; and Patel, Bhupendra P., 4,436,603, Cl. 204-194.000.
Ragland, Frank R., Jr., 4,437,036, Cl. 313-402.000.
Shisler, Robert W.; and McVety, Ronald E., 4,436,242, Cl. 228-264.000.
Wacyk, Ihor T., 4,437,024, Cl. 307-475.000.

Rea, Ike D., to General Electric Company. Quick change tooling system. 4,436,463, Cl. 409-232.000.

Rebholz, Joseph J.; and Tamura, Poohsan N., to Honeywell Inc. Space variant linear phase shifter for optical ambiguity function generator. 4,436,370, Cl. 350-162.120.

Rechtschaffen, Rudolph N.: *See—*
Pomerene, James H.; and Rechtschaffen, Rudolph N., 4,437,149, Cl. 364-200.000.

Reed, Don C., to Exxon Production Research Co. Apparatus and method for removing buoyancy modules from submerged pipe. 4,436,450, Cl. 405-171.000.

Reed Industries, Inc.: *See—*
Schmitt, Donald C.; and Harvill, Melvin J., 4,436,195, Cl. 194-92.000.

Reffert, Rudi W.: *See—*
Hinselmann, Klaus; Naarmann, Herbert; Echte, Adolf; Heil, Eduard; Nikles, Albert; Reffert, Rudi W.; and Hambrecht, Juergen, 4,436,870, Cl. 525-53.000.

Regina, Ralph. Abrading tool. 4,435,923, Cl. 51-170.0TL.

Reh, Carter K.: *See—*
Robak, Edward; and Reh, Carter K., 4,436,277, Cl. 251-6.000.

Reich, Fritz: *See—*
Thalmann, Alfred; and Reich, Fritz, 4,436,987, Cl. 219-535.000.

Reichmann, Wolfgang: *See—*
Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, 4,436,841, Cl. 521-106.000.

Reinke, Martin: *See—*
Richter, Ekkehard; and Reinke, Martin, 4,436,701, Cl. 422-173.000.

Reiter, Paul C. Method and apparatus for glycosylated hemoglobin separating and measuring fractions. 4,436,820, Cl. 436-67.000.

Rendulic, Francis J.; Trasavage, Robert K.; and Boduch, Paul A., to W. R. Grace & Co. Method and apparatus for making printed circuit boards. 4,436,806, Cl. 430-311.000.

Renfroe, Harris B., to Ciba-Geigy Corporation. Thromboxane synthetase inhibitory N-substituted-2-(1-imidazolyl)indoles. 4,436,746, Cl. 424-273.00R.

Renken, Terry L.: *See—*
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,926, Cl. 560-246.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,928, Cl. 560-246.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,436,931, Cl. 560-246.000.

Rennert, Klaus-Dieter: *See—*
Leikert, Klaus; and Rennert, Klaus-Dieter, 4,436,038, Cl. 110-347.000.

Reppelin, Michel: *See—*
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,436,669, Cl. 260-465.00B.

Reutlinger, George W.: *See—*
Parrillo, Louis C.; Reutlinger, George W.; and Wang, Li-Kong, 4,435,895, Cl. 29-571.000.

Reutter, Heinrich, to Reutter Metallwarenfabrik GmbH. Sealing cap for a gasoline tank. 4,436,219, Cl. 220-295.000.

Reutter Metallwarenfabrik GmbH: *See—*
Reutter, Heinrich, 4,436,219, Cl. 220-295.000.

Revay, Blaise, to Kidde, Inc. Manual/electric activated squib actuated discharge valve for fire extinguishers. 4,436,159, Cl. 169-28.000.

Revere Copper and Brass, Inc.: *See—*
Knopp, Walter V., 4,436,682, Cl. 264-70.000.

Revitz, Martin: *See—*
Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., 4,437,108, Cl. 357-59.000.

Rexham Corporation: *See—*
Seiden, Frederick C., 4,436,576, Cl. 156-543.000.

Rexnord Inc.: *See—*
Hodlewsky, Wasly G.; and Bloedorn, William H., 4,436,200, Cl. 198-851.000.

Reyner, Ellis M., to Joy Research Incorporated. Tamper resistant packaging device. 4,436,203, Cl. 206-524.800.

Reynolds Metals Company: *See—*
Tabereaux, Alton T.; and Willett, John T., 4,436,598, Cl. 204-67.000.

Rhodes, John H., Jr.; and Rosati, Alfonso A., to International Business Machines Corporation. Guidance correction method and apparatus for copy paper path in a copier. 4,436,403, Cl. 355-3.0SH.

Rhone-Poulenc Industries: *See—*
Gauthier-Lafaye, Jean; and Perron, Robert, 4,436,889, Cl. 562-519.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,436,669, Cl. 260-465.00B.

Ribi, Edgar E., to Ribi ImmunoChem Research, Inc. Refined detoxified endotoxin product. 4,436,727, Cl. 424-177.000.

Ribi, Edgar E.; Schwartzman, Steven M.; and Cantrell, John L., to Ribi ImmunoChem Research, Inc. Refined detoxified endotoxin product. 4,436,728, Cl. 424-177.000.

Ribi ImmunoChem Research, Inc.: *See—*
Ribi, Edgar E., 4,436,727, Cl. 424-177.000.
Ribi, Edgar E.; Schwartzman, Steven M.; and Cantrell, John L., 4,436,728, Cl. 424-177.000.

Richartz, Adolf: *See—*
Rasshofer, Werner; Reichmann, Wolfgang; Richartz, Adolf; and Dietrich, Manfred, 4,436,841, Cl. 521-106.000.

Richter, Ekkehard; and Reinke, Martin, to Bergwerksverband GmbH. Adsorption reactor and method for removing SO_2 from waste gases. 4,436,701, Cl. 422-173.000.

Ricoh Company, Ltd.: *See—*
Ebi, Yutaka; Fukazawa, Takao; Kawakubo, Toshio; Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; Ishikawa, Chuji; and Hirata, Toshitaka, 4,437,101, Cl. 346-75.000.
Emoto, Masami, 4,436,415, Cl. 355-55.000.
Ikeda, Kunio, 4,437,103, Cl. 346-140.00R.
Iwata, Nobuo, 4,436,440, Cl. 400-144.200.
Kamiyama, Shin-ichi; and Hasegawa, Yutaka, 4,436,414, Cl. 355-15.000.
Ohta, Masafumi; and Sakai, Kiyoshi, 4,436,800, Cl. 430-59.000.
Satomi, Toyokazu; and Sakuma, Nobuo, 4,436,407, Cl. 355-11.000.

Ricwil, Incorporated: *See—*
Weitzel, Harold B.; and Parman, David G., 4,436,565, Cl. 156-49.000.

Riedmaier, Josef: *See—*
Lamkewitz, Falk; and Riedmaier, Josef, 4,436,064, Cl. 123-142.50R.

Rief, Rolf; and Wetzel, Peter, to Brown, Boveri & Cie AG. Semiconductor power module. 4,436,951, Cl. 174-52.0PE.

Riegler, Ernst; and Zajicek, Ernst, to Voest-Alpine Aktiengesellschaft. Electric furnace arrangement. 4,437,187, Cl. 373-73.000.

Riegler, Ernst: *See—*
Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,436,290, Cl. 266-158.000.

Rigby, Geoffrey R.; and Callcott, Thomas G., to Broken Hill Proprietary Company Limited, The. Recovery of coal from coal handling operations. 4,436,618, Cl. 209-5.000.

Rinkewich, Isaac: *See—*
Rosinek, Shlomo; Rinkewich, Isaac; and Khurgin, Boris, 4,437,098, Cl. 340-870.020.

Ripani, Luciano: *See—*
Carbonaro, Antonio; and Ripani, Luciano, 4,436,884, Cl. 526-111.000.

Riseberg, Leslie A.: *See—*
Lapatovich, Walter P.; Proud, Joseph M.; and Riseberg, Leslie A., 4,436,762, Cl. 427-39.000.

Rittsema, Irving R.; and Colpaert, James J., to Bendix Corporation, The. Disc brake assembly. 4,436,186, Cl. 188-71.800.

Ritter, John C. Paint brush support. 4,436,217, Cl. 220-85.00D.

Rittmaster, Peter A.: *See—*
Booth, John L.; and Rittmaster, Peter A., 4,435,941, Cl. 53-475.000.

Robak, Edward; and Reh, Carter K. Torque pinch valve. 4,436,277, Cl. 251-6.000.

Robert Bosch GmbH: *See—*
Arnold, Winfried, 4,437,048, Cl. 318-663.000.
Eisele, Hermann; Moller, Heinz; and Schmitt, Manfred, 4,437,154, Cl. 364-187.000.
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.
Kotter, Wolfgang, 4,436,114, Cl. 137-596.000.
Stumpe, Werner, 4,436,347, Cl. 303-6.00R.

Robert, George R. Typewriter accessory device for bold face typing. 4,436,441, Cl. 400-304.000.

Roberts, Harold A.: *See—*
Wey, Robert A.; and Roberts, Harold A., 4,436,295, Cl. 269-21.000.

Roberts, Victor D., to General Electric Company. Amalgam heating system for solenoidal electric field lamps. 4,437,041, Cl. 315-248.000.

Robin-Champigneul, Yves J.: *See—*
Rozenwaig, Boris; and Robin-Champigneul, Yves J., 4,437,190, Cl. 455-600.000.

Robinsky, Eli I.; and Laing, David H. Filtration thickening method and apparatus. 4,436,633, Cl. 210-791.000.

Robinson, James W., to Flex-Kleen Corporation. Dust collecting filter cartridge and attachment structure for suspending same from baghouse tube sheet. 4,436,536, Cl. 55-341.00R.

Robota, Stephen: *See—*
Rader, Charles G.; and Robota, Stephen, 4,436,942, Cl. 570-145.000.

Rochester Instrument Systems, Inc.: *See—*
Hauptmann, Eric A., 4,437,059, Cl. 324-142.000.

Rock, Erich; and Brunner, Josef, to Julius Blum Ges. m.b.H. Pull-out guide assembly for drawers, shelves or the like. 4,436,357, Cl. 312-338.000.

Rockel, Manfred B.: *See—*
Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, 4,436,790, Cl. 428-675.000.

Rockwell International Corporation: *See—*
Fonio, Carlo, 4,436,296, Cl. 270-31.000.
Lawson, Peter, 4,436,126, Cl. 144-130.000.
Soclof, Sidney I., 4,435,899, Cl. 29-577.00R.

Roderburg, Harald, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Apparatus for corrugating pipes. 4,435,968, Cl. 72-77.000.

Roeschlein, Eugene R.: *See—*
Ante, Louis E.; Lindquist, Richard A.; and Roeschlein, Eugene R., 4,436,049, Cl. 114-254.000.

Rogers Corporation: *See—*
Gottlieb, Michael M., 4,436,953, Cl. 174-72.00B.

Rohm GmbH: *See—*
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.

Rohm and Haas Company: *See—*
Cholod, Michael S., 4,436,893, Cl. 528-173.000.
Staas, William H., 4,436,871, Cl. 525-64.000.

Rohr Industries, Inc.: *See—*
Norris, Brian; and Castro, Robert M., 4,436,592, Cl. 204-15.000.

Rohr, Jakob, to George Fischer Ltd. Cast vehicle wheel rim. 4,436,133, Cl. 152-381.300.

Rohr, Otto: *See—*
Berrer, Dagmar; Pissiotas, Georg; and Rohr, Otto, 4,436,935, Cl. 564-49.000.

Rohrig, Klaus, to Berning & Sohne. Apparatus for girding package with bonded synthetic-resin strip. 4,435,945, Cl. 53-589.000.

Rolland, Marie L.: *See—*
Cavy, Claude; and Rolland, Marie L., 4,437,012, Cl. 250-491.100.

Roller, Philip C.; and Suckow, Chris A., to Truck-Lite Company, Inc. Shock absorbing lamp assembly for baseless cartridge bulbs and the like. 4,437,145, Cl. 362-306.000.

Rolligon Corporation: *See—*
Blagg, Leon, 4,436,475, Cl. 414-569.000.

Ron, Moshe; Kleiner, Matvei; and Navon, Uri, to Technion Research and Development Foundation Ltd. Method and apparatus for air-conditioning by means of a hydrogen heat pump. 4,436,539, Cl. 62-4.000.

Rood, William E., Jr. Towed cotton retrieving belt assembly. 4,435,947, Cl. 56-28.000.

Rosati, Alfonso A.: *See—*
Rhodes, John H., Jr.; and Rosati, Alfonso A., 4,436,403, Cl. 355-3.0SH.

Rose, David B.: *See—*
Cork, Robin M. S.; and Rose, David B., 4,437,184, Cl. 371-19.000.

Rose, David M.: *See—*
Rose, William; and Rose, David M., 4,436,308, Cl. 273-237.000.

Rose, Donald K.; and Silverman, Peter J., to Intel Corporation. Method of forming multiplexed magnetic bubble detectors. 4,436,579, Cl. 156-626.000.

Rose, William; and Rose, David M. Bingo game display. 4,436,308, Cl. 273-237.000.

Rosenblum, Jack. Method and apparatus for automobile actuated power generation. 4,437,015, Cl. 290-1.00R.

Rosinek, Shlomo; Rinkewich, Isaac; and Khurgin, Boris, to Matam, Ltd. Apparatus for electronically reading mechanical meters having non-simultaneously changing digits. 4,437,098, Cl. 340-870.020.

Roskott, Lodewijk: *See—*
Schroeder, Arnold; and Roskott, Lodewijk, 4,436,844, Cl. 523-144.000.

Rosno, Gordon W.: *See—*
Olmsted, Gaylord S.; and Rosno, Gordon W., 4,436,016, Cl. 89-1.809.

Ross, Dennis W.: *See—*
Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F., 4,435,870, Cl. 15-98.000.

Rossmann, Christian: *See—*
Burger, Helga; and Rossmann, Christian, 4,436,643, Cl. 252-135.000.

Rosteck, Paul R., Jr.: *See—*
Hershberger, Charles L.; and Rosteck, Paul R., Jr., 4,436,815, Cl. 435-172.000.

Rotelmann & Co., Firma: *See—*
Schmidt, Ulrich, 4,435,980, Cl. 73-198.000.

Rothe, Hans-Jochen: *See—*
Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, 4,436,898, Cl. 528-336.000.

Rother, Bruno; and Trommen, Hartmut, to G.A. Pfleiderer GmbH & Co., KG. Centrifugally cast pole comprised of a reinforced resin for supporting a light or the like upon an end thereof. 4,436,781, Cl. 428-365.000.

Rotthaus, Heinz: *See—*
Petrovic, Vladan; and Rotthaus, Heinz, 4,436,589, Cl. 201-41.000.

Rougeolle, Daniel, to Thomson-CSF. Device for the recovery of a clock signal from a binary signal. 4,437,071, Cl. 331-1.00A.

Roussel Uclaf: *See—*
Christidis, Yani; and Fournex, Robert, 4,436,752, Cl. 424-317.000.

Rowton, Richard L.; and Cuscurida, Michael, to Texaco Inc. High-resilience polyurethane foams having improved resistance to shrinkage. 4,436,843, Cl. 521-167.000.

Rozenwaig, Boris; and Robin-Champigneul, Yves J. Device for switching signals by optical means and automatic switching units comprising said device. 4,437,190, Cl. 455-600.000.

Rudnick, Paul J.: *See—*
Miller, Jerry W.; and Rudnick, Paul J., 4,437,086, Cl. 340-347.0DD.

Rudolph, Gunther: *See—*
Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, 4,436,790, Cl. 428-675.000.

Rueckert, Barry J., to Eaton Corporation. Current source inverter commutation-spike-voltage protection circuit including over-current and over-voltage protection. 4,437,133, Cl. 361-33.000.

Russak, Michael A., to United States of America, Energy. Electrochemical photovoltaic cell having ternary alloy film. 4,436,558, Cl. 148-1.500.

Russo, Neil: *See—*
Donato, Anthony C.; and Russo, Neil, 4,437,142, Cl. 362-226.000.

Russon, Darrel L.; and Wheeler, Warren H., to Boeing Company, The. Automated feed for a punch press and method of using same. 4,436,007, Cl. 83-23.000.

Ruth, Roger A.: *See—*
Purvis, Fay A.; Bennett, Robert W.; and Ruth, Roger A., 4,436,487, Cl. 417-46.000.

Ruti Machinery Works Ltd.: *See—*
Senn, Georg; and Koch, Walter, 4,436,123, Cl. 139-452.000.

Ruti-te Strake, B.V.: *See—*
van Mullekom, Hubert P., 4,436,122, Cl. 139-435.000.

Rutkowski, Edward J., to National Gypsum Company. Metal stud. 4,435,936, Cl. 52-481.000.

Rutkowski, Edward J.; and Krowl, Thomas R., to National Gypsum Company. Vinyl siding attachment. 4,435,938, Cl. 52-521.000.

Rux GmbH, Firma: *See—*
Dambroth, Jurgen, 4,435,951, Cl. 56-400.050.

Ryan, Wayne L., to Streck Laboratories, Inc. Simulated human platelets from red blood cells. 4,436,821, Cl. 436-10.000.

Saccucci, Michael R. Counting device. 4,436,990, Cl. 235-1.00R.

Sadao, Kozima: *See—*
Hisao, Makino; and Sadao, Kozima, 4,436,675, Cl. 261-77.000.

Saenz, Jesus A.: *See—*
Dean, Mark E.; Eggebrecht, Lewis C.; Kummer, David A.; and Saenz, Jesus A., 4,437,092, Cl. 340-703.000.

Saida, Hiroji: *See—*
Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, 4,436,581, Cl. 156-643.000.

Saikawa, Isamu: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shoha-

chi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.
Saiki, Atsushi; Iwayanagi, Takao; Nonogaki, Saburo; Nishida, Takashi; and Harada, Seiki, to Hitachi, Ltd. Selective etching method of polyimide type resin film. 4,436,583, Cl. 156-659.100.
Saint Gobain Vitrage: *See*—
Dran, Maurice; and Jamet, Bernard, 4,436,575, Cl. 156-433.000.
Saita, Hiroshi: *See*—
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.
Saito, Yuichi: *See*—
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.
Saitoh, Teruo: *See*—
Inai, Takayoshi; Saitoh, Teruo; and Sannomiya, Hisayuki, 4,437,111, Cl. 358-44.000.
Saitou, Sinichi, to Olympus Optical Co., Ltd. Reel shaft/reel hub fitting apparatus. 4,436,256, Cl. 242-200.000.
Sajami Chemical Research Center: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.
Sakaguchi, Kiyoshi: *See*—
Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, 4,436,062, Cl. 123-90.270.
Sakai, Kazutada: *See*—
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,436,412, Cl. 355-15.000.
Sakai, Keijiro: *See*—
Muto, Nobuyoshi; Nagase, Hiroshi; Sakai, Keijiro; and Matsuda, Yasuo, 4,437,051, Cl. 318-808.000.
Sakai, Kiyoshi: *See*—
Ohta, Masafumi; and Sakai, Kiyoshi, 4,436,800, Cl. 430-59.000.
Sakai, Osamu: *See*—
Ogata, Masahiro; and Sakai, Osamu, 4,437,135, Cl. 361-91.000.
Sakai, Yoshio: *See*—
Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, 4,436,581, Cl. 156-643.000.
Sakamaki, Hisashi: *See*—
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, 4,436,408, Cl. 355-14.00R.
Sakamoto, Kentaro: *See*—
Kita, Yuichi; Sakamoto, Kentaro; and Sato, Takahisa, 4,436,922, Cl. 549-251.000.
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, to Kawasaki Steel Corporation. Vertical down welding process by gravity arc welding and welding machine therefor. 4,436,981, Cl. 219-124.320.
Sakamoto, Yoshiaki: *See*—
Nishizako, Shizutaka; Ishii, Isao; and Sakamoto, Yoshiaki, 4,436,831, Cl. 501-119.000.
Sakane, Toshio: *See*—
Takahashi, Junichi; Sakane, Toshio; and Itoh, Yuji, 4,436,388, Cl. 351-206.000.
Sakharnov, Vasily A.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.
Sako, Yoichiro; and Odaka, Kentaro, to Sony Corporation. Method of error correction. 4,437,185, Cl. 371-39.000.
Sakota, Kazuyuki: *See*—
Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, 4,436,670, Cl. 260-465.00B.
Sakuma, Nobuo: *See*—
Satomi, Toyokazu; and Sakuma, Nobuo, 4,436,407, Cl. 355-11.000.
Sakuraya, Toshikazu; Nakamura, Hideo; Harada, Nobuo; Fujii, Tetsuya; and Emi, Toshihiko, to Kawasaki Steel Corporation. Method for protecting tuyeres for refining a molten iron. 4,436,287, Cl. 266-47.000.
Salamone, Joseph C.: *See*—
Ellis, Edward J.; and Salamone, Joseph C., 4,436,730, Cl. 424-180.000.
Salant, Richard. Route mapping device. 4,437,085, Cl. 340-286.00M.
Sampson, Michael J., to Staart Enterprises Ltd. Plant technique. 4,436,547, Cl. 71-76.000.
Sancassiano S.p.A.: *See*—
Drocco, Amabile, 4,436,432, Cl. 366-95.000.
Sanden Corporation: *See*—
Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, 4,436,465, Cl. 409-243.000.
Sanders, David M. Eight-sided game dice with suit attribute markings. 4,436,306, Cl. 273-146.000.
Sanders, Robert N., to Ethyl Corporation. Production of synthetic zeolites. 4,436,708, Cl. 423-329.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over a catalyst containing a rare earth oxide. 4,436,926, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over thallium borate. 4,436,927, Cl. 560-246.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over catalyst systems containing oxides and borates. 4,436,928, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over alkali earth metal borates. 4,436,929, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over alkali metal borates. 4,436,930, Cl. 560-246.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over certain oxide catalysts. 4,436,931, Cl. 560-246.000.
Sanderson, John R.; Vanderpool, Steven H.; and Watts, Lewis W., Jr., to Texaco Inc. Alkane acetates produced by oxidative esterification of olefins over ammonium borate in the presence of a carboxylate ion source. 4,436,932, Cl. 560-246.000.
Sandoz Ltd.: *See*—
Annen, Oskar; Egli, Hermann; and Zesiger, Karl, 4,436,521, Cl. 8-493.000.
Harr, Jost, 4,436,744, Cl. 424-272.000.
Valenti, Salvatore, 4,436,524, Cl. 8-551.000.
Sannomiya, Hisayuki: *See*—
Inai, Takayoshi; Saitoh, Teruo; and Sannomiya, Hisayuki, 4,437,111, Cl. 358-44.000.
Sano, Eiichi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Ophthalmic instrument having working distance detecting means. 4,436,389, Cl. 351-208.000.
Sano, Ichiro: *See*—
Suzuki, Yuichi; and Sano, Ichiro, 4,435,885, Cl. 29-2.000.
Sano, Tatsuhiko: *See*—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Santa Lucia, Jack; and Trapp, Kenneth, to Independent Maching Company. Winding system. 4,436,249, Cl. 242-18.00R.
Sapkowski, Mechislao, to Honeck, Manfred Fred, a part interest. System and method of recording and reproducing wide band channel information by means of several narrow band channels. 4,437,128, Cl. 358-335.000.
Sarrine, Robert J.: *See*—
Enzer, Steven E.; and Sarrine, Robert J., 4,436,610, Cl. 204-400.000.
Sarser, David: *See*—
Deyesso, Joseph P.; Sarser, David; and Berube, Richard G., 4,436,251, Cl. 242-56.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, to Maruzen Oil Co., Ltd. Novel antitumor glycoprotein substance and its preparation. 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, to Maruzen Oil Co., Ltd. Antitumor glycoprotein substance and preparation thereof. 4,436,657, Cl. 260-112.00R.
Sasseville, Roland E.; Chappell, Joseph S.; and Corcoran, Daniel J., Jr., to Ciba-Geigy Corporation. Apparatus for treating a porous, absorbent material with a foamable chemical composition. 4,435,965, Cl. 68-205.00R.
Satake, Sachio: *See*—
Ichikawa, Mamoru; and Satake, Sachio, 4,436,318, Cl. 280-104.000.
Sato, Kiyoshi: *See*—
Nishikawa, Kazuo; Sato, Kiyoshi; Ichino, Hiroyuki; and Okura, Keniti, 4,437,179, Cl. 369-172.000.
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, to Fuji Photo Film Co., Ltd. Image recording members. 4,436,920, Cl. 549-227.000.
Sato, Kunihiko: *See*—
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,436,072, Cl. 123-488.000.
Sato, Shintaro: *See*—
Nakazawa, Shigeo; and Sato, Shintaro, 4,435,973, Cl. 72-327.000.
Sato, Takahisa: *See*—
Kita, Yuichi; Sakamoto, Kentaro; and Sato, Takahisa, 4,436,922, Cl. 549-251.000.
Sato, Takeo: *See*—
Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, 4,436,646, Cl. 252-301.40S.
Sato, Yo; and Kashiwaba, Tadao, to Kabushiki Kaisha Sato. Portable label applying machine. 4,436,573, Cl. 156-384.000.
Satoh, Heijiro: *See*—
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.
Satoh, Seiichi: *See*—
Yamaguchi, Noboru; and Satoh, Seiichi, 4,435,881, Cl. 24-16.0PB.
Satoh, Tetsuo: *See*—
Maruhashi, Kenji; Kojima, Ichiro; Oguchi, Yutaka; Endoh, Noboru; and Satoh, Tetsuo, 4,436,663, Cl. 260-245.910.
Satomi, Toyokazu; and Sakuma, Nobuo, to Ricoh Company, Ltd. Electrophotographic reproduction of a three-dimensional object. 4,436,407, Cl. 355-11.000.
Sauer, Rudolf: *See*—
Hafner, Udo; Herth, Harro; Kienzle, Wolfgang; Knapp, Heinrich; Krauss, Rudolf; Lembke, Manfred; Paschke, Werner; and Sauer, Rudolf, 4,436,071, Cl. 123-472.000.
Saueressig GmbH: *See*—
van Ouwerkerk, Wouter C., 4,436,032, Cl. 101-120.000.
Sawabe, Masaki; and Kumagai, Tadanobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sealing device for joint. 4,436,310, Cl. 277-11.000.
Sawada, Kozo: *See*—
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.

Sawyer, Daniel D.; and Thompson, Marvin J., to Sperry Corporation. Cache/disk subsystem with dual aging of cache entries. 4,437,155, Cl. 364-200.000.
Saxena, Arjun N. Multilevel metallization process for integrated circuits. 4,436,582, Cl. 156-656.000.
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased (by Scott, Candice Chord, executrix), to Texaco Inc. Two stage catalytic cracking process. 4,436,613, Cl. 208-74.000.
Scanlon, William F., to Heinemann Electric Company. Circuit protector having a lamp within its handle and terminals therefor. 4,436,972, Cl. 200-315.000.
Scartazzini, Riccardo: *See*—
Sedelmeier, Gottfried; and Scartazzini, Riccardo, 4,436,903, Cl. 544-016.000.
Schaap, A. Paul; Busch, George E.; and Nolen, Robert L., Jr., to KMS Fusion, Inc. Storage and retrieval of singlet oxygen. 4,436,715, Cl. 423-579.000.
Schaefer, Rudolf. Clamp joint for pipes. 4,436,327, Cl. 285-364.000.
Schafer, Rudolf: *See*—
Mayer, Karl M.; and Schafer, Rudolf, 4,436,430, Cl. 366-13.000.
Schall, William R. Globe-shaped bells with single-piece shells. 4,436,052, Cl. 116-148.000.
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, to Boehringer Mannheim GmbH. Ketals of 3'''-dehydrocardenolide tridigitoxosides. 4,436,735, Cl. 424-182.000.
Scheck, Georg: *See*—
Storandt, Ralf; Scheck, Georg; and Biermann, Peter, 4,436,321, Cl. 280-612.000.
Scheie, Carl E.; and Muma, G. Arnold, to Brunswick Corporation. Method and apparatus for analyzing conditioner on a bowling lane surface. 4,437,010, Cl. 250-459.100.
Schering Corporation: *See*—
Ganguly, Ashit K.; Liu, Yi-Tsung; and Mallams, Alan K., 4,436,729, Cl. 424-180.000.
Scherrer, Edward P., to FMC Corporation. Mechanism for connecting and disconnecting crane sections. 4,436,444, Cl. 403-24.000.
Schettler, Helmut: *See*—
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, 4,437,022, Cl. 307-270.000.
Scheu, Ernst: *See*—
Schnabel, Wolfram; Scheu, Ernst; and Serbent, Harry, 4,436,286, Cl. 266-44.000.
Schick, Martin J.; and Knitter, Kathy A., to Diamond Shamrock Chemicals Company. Aqueous slurries of carbonaceous materials. 4,436,528, Cl. 44-51.000.
Schiffner, Gerhard, to Siemens Aktiengesellschaft. Sensor which is sensitive to pressure, tension, torsion and heat and a process of operation. 4,436,422, Cl. 356-349.000.
Schloman, William W., Jr., to Goodyear Tire & Rubber Company, The. Phenol-melamine resins for improving rubber to metal adhesion. 4,436,853, Cl. 524-91.000.
Schmalbein, Dieter: *See*—
Biehl, Reinhard; and Schmalbein, Dieter, 4,437,063, Cl. 324-316.000.
Schmid, Eduard. Pressure dressing with cushion. 4,436,089, Cl. 128-155.000.
Schmid, Friedbert; and Raasch, Hans, to Stahlecker, Fritz; and Stahlecker, Hans. Opening roller unit for open-end spinning installations. 4,435,953, Cl. 57-408.000.
Schmid, Manfred: *See*—
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, 4,436,298, Cl. 271-10.000.
Schmidlkofer, Jakob: *See*—
Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, 4,436,647, Cl. 252-358.000.
Schmidt, Gunther; and Etzler, Carl-Christian, to Dornier System GmbH. Apparatus for the controlled advance and retraction of a flexible pay-out connection fixed to a satellite body. 4,436,259, Cl. 244-3.100.
Schmidt, Paul; and Legille, Edouard, to Paul Wurth S.A. Rotary support for continuous casting ladles. 4,436,293, Cl. 266-276.000.
Schmidt, Ulrich, to Rotelmann & Co., Firma. Pipe-mounted valve-type flow meter. 4,435,980, Cl. 73-198.000.
Schmidt, William P.; and Hutchinson, Franklin D., to Mirror Lite Company. Elliptical mirror for vehicular use. 4,436,372, Cl. 350-293.000.
Schmitt, Donald C.; and Harvill, Melvin J., to Reed Industries, Inc. Multi-coin chute mechanism. 4,436,195, Cl. 194-92.000.
Schmitt, Manfred: *See*—
Eisele, Hermann; Moller, Heinz; and Schmitt, Manfred, 4,437,154, Cl. 364-187.000.
Schmitt, Wilhelm, to Carl Freudenberg, Firma. Cassette seal having a counterring free from unrelieved internal stress. 4,436,317, Cl. 277-134.000.
Schnabel, Roland, to JENAer Glaswerk Schott & Gen. Capillary diaphragms for use in diafiltration. 4,436,626, Cl. 210-652.000.
Schnabel, Wolfram; Scheu, Ernst; and Serbent, Harry, to Metallgesellschaft Aktiengesellschaft. Process of afterburning combustible constituents of exhaust gases from rotary kilns. 4,436,286, Cl. 266-44.000.
Schnedig Corporation: *See*—
Talley, Thomas H.; Sheets, Lee W.; and Wiley, Alvin F., 4,435,860, Cl. 5-13.000.
Schneider, Charles. Frameless foam base for upholstered seating furniture and method. 4,436,343, Cl. 297-456.000.
Scholz, Wolfgang: *See*—
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, 4,436,869, Cl. 525-51.000.
Schonafinger, Karl; Beyerle, Rudi; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, to Casella Aktiengesellschaft. 3-[N-(Lower alkyl)-N-(tetrahydro-3-thienyl 5,5-dioxide)]aydnonimines. 4,436,743, Cl. 424-269.000.
Schonwald, Siegfried, to Siemens Aktiengesellschaft. Compressor and lubricating pump assembly. 4,436,490, Cl. 417-372.000.
Schoonhoven, Richard: *See*—
Moschitz, Gerhard; and Schoonhoven, Richard, 4,437,170, Cl. 364-900.000.
Schrader, Charles H.: *See*—
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.
Schreiber, Paul T., to Tandy Corporation. Switchable bandpass filter. 4,436,956, Cl. 179-2.00C.
Schriever, Frederick G. Self-aligning load leveling device. 4,436,268, Cl. 248-188.300.
Schroeder, Arnold; and Roskott, Lodewijk, to Akzona Incorporated. Process for the manufacture of a foundry core or mould. 4,436,844, Cl. 523-144.000.
Schroeter, Siegfried H.: *See*—
Ashby, Bruce A.; and Schroeter, Siegfried H., 4,436,924, Cl. 556-416.000.
Schrother, Gerhard, to Siemens Aktiengesellschaft. Electromagnetic switchgear. 4,437,020, Cl. 307-135.000.
Schrotter, Gerhard: *See*—
Keller, Wolfgang; and Schrotter, Gerhard, 4,436,578, Cl. 156-620.000.
Schruben, Johanna S.: *See*—
Steinbruegge, Kenneth B.; Schruben, Johanna S.; and Taylor, Lyle H., 4,436,363, Cl. 350-1.600.
Schuldt, Gerhardt, to ADS - Anker GmbH. Cash drawer for cash registers in tellers' stations, sales counters or the like. 4,436,989, Cl. 235-22.000.
Schultz, Ward E.: *See*—
Arnold, Dan M.; Smith, Harry D., Jr.; and Schultz, Ward E., 4,436,996, Cl. 250-256.000.
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, to BASF Aktiengesellschaft. Reactor for hydrogenating coal slurry. 4,436,702, Cl. 422-195.000.
Schulze, Stephen R.: *See*—
Flood, Paul W.; Mason, Charles D.; and Schulze, Stephen R., 4,436,872, Cl. 525-179.000.
Schupp, Eberhard: *See*—
Batzill, Wolfgang; Diefenbach, Horst; Geist, Michael; and Schupp, Eberhard, 4,436,878, Cl. 525-438.000.
Schupp, Gerold: *See*—
Fuchs, Helmut V.; Schupp, Gerold; and Voigtaberger, Carl-Alexander, 4,435,974, Cl. 73-40.50A.
Schutz, Alain: *See*—
Jacobs, Pierre; Poncelet, Georges; and Schutz, Alain, 4,436,832, Cl. 502-84.000.
Schutz, Hans U.: *See*—
Buhler, Arthur; and Schutz, Hans U., 4,436,659, Cl. 260-146.00R.
Schuwerk, Wolfgang, to Escher Wyss Aktiengesellschaft. Controlled deflection roll with control arrangement. 4,435,971, Cl. 72-243.000.
Schwartz, Hermann, to Siegfried Preyer. Photoelectric measurement of moving filamentary material. 4,436,427, Cl. 356-385.000.
Schwartzman, Steven M.: *See*—
Ribi, Edgar E.; Schwartzman, Steven M.; and Cantrell, John L., 4,436,728, Cl. 424-177.000.
Schwarzmann, Matthias: *See*—
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.
Schwenk, Dennis P.: *See*—
Coldren, Daniel R.; and Schwenk, Dennis P., 4,436,358, Cl. 339-17.00C.
Scientific Measurement Systems, Inc.: *See*—
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.
SCM Corporation: *See*—
Longrod, Scott J., 4,436,192, Cl. 192-43.100.
Scott, Allen W., to General Electric Company. Control knob to shaft assembly. 4,435,993, Cl. 74-553.000.
Scott, Candice Chord, executrix: *See*—
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.
Scott, Joseph A.: *See*—
Bequette, Robert J.; Hobbs, Linda G.; and Scott, Joseph A., 4,436,738, Cl. 424-238.000.
Scott, Richard P., deceased: *See*—
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.
Scott, Robert J., to Union Carbide Corporation. Nonionic surfactants for automatic dishwasher detergents. 4,436,642, Cl. 252-95.000.
Seaburg, Paul A.; and Lautensleger, Richard W., to Armco Inc. Alternating V-truss roof system and method of erection. 4,435,932, Cl. 52-263.000.

Sealectro Corporation: *See—*
Albert, Gordon H.; and Feinman, Harvey M., 4,436,991, Cl. 235-468.000.
Seatts, William. Self-extinguishing cigar or cigarette. 4,436,101, Cl. 131-349.000.
Sedelmeier, Gottfried; and Scartazzini, Riccardo, to Ciba-Geigy Corporation. Process for the production of 7 β-substituted-3-unsubstituted-3-cephem-4-carboxylic acid compounds. 4,436,903, Cl. 544-016.000.
Segal, David A.: *See—*
Sheads, Richard E.; and Segal, David A., 4,436,665, Cl. 260-404.000.
Segawa, Yoshiaki: *See—*
Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, 4,436,352, Cl. 312-228.000.
Seguy, Bernard R. Method for reducing desorbent consumption in recovery systems. 4,436,534, Cl. 55-58.000.
Seiberlich, Walter, to Maag Gear-Wheel & Machine Company Limited. Clamping apparatus for a cutter. 4,436,464, Cl. 409-233.000.
Seibert, Michael J. Implement attachment for the front end of a tractor. 4,436,162, Cl. 172-810.000.
Seiden, Frederick C., to Rexham Corporation. Apparatus for forming bottom heat seals. 4,436,576, Cl. 156-543.000.
Seigneurin, Laurent: *See—*
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,436,669, Cl. 260-465.00B.
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Fiber opening device in open-end spinning unit. 4,435,954, Cl. 57-408.000.
Seiko Koki Kabushiki Kaisha: *See—*
Morino, Yukio, 4,436,418, Cl. 356-1.000.
Seimiya, Ryubun; Iwai, Fumio; and Nosaka, Isao, to Konishiroku Photo Industry Co., Ltd. Copying machine. 4,436,402, Cl. 355-3.00R.
Seki, Fumio, to Yoshida Kogyo K K. Apparatus for attaching fastener elements onto a garment. 4,436,238, Cl. 227-149.000.
Sekihara, Kensuke: *See—*
Yamamoto, Etsuji; Sekihara, Kensuke; and Kohno, Hideki, 4,437,136, Cl. 361-146.000.
Sekiwa, Mitsunao: *See—*
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.
Sekiya, Teruo, to Hitachi, Ltd. Roll changing device for rolling mill. 4,435,970, Cl. 72-239.000.
Selines, Ronald J.: *See—*
Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, 4,436,553, Cl. 75-52.000.
Semler, Paul M., Jr. Offset, extendable, quick-release plumbness indicating apparatus. 4,435,908, Cl. 33-376.000.
Senco Products, Inc.: *See—*
Jobe, William T., 4,436,236, Cl. 227-123.000.
Vornberger, George F.; and Crutcher, John P., 4,436,237, Cl. 227-130.000.
Senco Southeast, Inc.: *See—*
Kennedy, George W., 4,436,234, Cl. 227-4.000.
Senda, Kousaku: *See—*
Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, 4,436,982, Cl. 219-130.510.
Senn, Georg; and Koch, Walter, to Ruti Machinery Works Ltd. Device for storing filamentary material for use on a loom. 4,436,123, Cl. 139-452.000.
Serbent, Harry: *See—*
Schnabel, Wolfram; Scheu, Ernst; and Serbent, Harry, 4,436,286, Cl. 266-44.000.
Sette, Robert A.: *See—*
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., 4,436,184, Cl. 187-29.00R.
Sevastakis, Gus. Horizontal continuous casting apparatus. 4,436,143, Cl. 164-440.000.
Shadinger, Peter R.: *See—*
Allen, Fred E.; Thuener, Bruce W.; and Shadinger, Peter R., 4,436,500, Cl. 425-290.000.
Shahan, James E.; and Pitts, Loren. Thermal acoustical pipe insulation. 4,436,119, Cl. 138-149.000.
Shain, Guey-Ji. Decorative flower pot. 4,435,918, Cl. 47-79.000.
Shambelan, Robert C.: *See—*
Kocmanek, Karl H.; and Shambelan, Robert C., 4,436,509, Cl. 432-253.000.
Shapiro, Alan K.: *See—*
Brossman, James W., Jr.; Nemeth, Carol A.; and Shapiro, Alan K., 4,436,474, Cl. 414-417.000.
Sharon Manufacturing Company: *See—*
Hudson, Sharon J., Jr., 4,436,147, Cl. 165-165.000.
Sharp Kabushiki Kaisha: *See—*
Funada, Fumiaki; Kozaki, Syuichi; Matsuura, Masataka; and Wada, Tomio, 4,436,379, Cl. 350-347.00E.
Yano, Kohzo; Hamada, Hiroshi; Inami, Yasuhiko; and Wada, Tomio, 4,436,380, Cl. 350-357.000.
Shaw, Jane E.: *See—*
Urquhart, John; Chandrasekaran, Santosh K.; and Shaw, Jane E., 4,436,741, Cl. 424-267.000.
Sheads, Richard E.; and Segal, David A., to Union Carbide Corporation. Two solvent process for preparation of esters of 3,5-dibromo-4-hydroxybenzonitrile. 4,436,665, Cl. 260-404.000.
Sheets, Lee W.: *See—*
Talley, Thomas H.; Sheets, Lee W.; and Wiley, Alvin F., 4,435,860, Cl. 5-13.000.
Shell Internationale Research Maatschappij B. V.: *See—*
Bull, Michael J., 4,436,667, Cl. 260-465.00D.
Nacken, Lambertus J. G.; and Baas, Albertus H., 4,436,706, Cl. 423-65.000.
Shell Oil Company: *See—*
Baardman, Frank; van Helden, Robert; and de Nie-Sarink, Margaretha J., 4,436,937, Cl. 564-409.000.
Bannon, Robert P., 4,436,533, Cl. 55-26.000.
Berni, Albert J., 4,437,175, Cl. 367-24.000.
Olson, Donald C., 4,436,711, Cl. 423-573.00G.
Olson, Donald C., 4,436,712, Cl. 423-573.00G.
Olson, Donald C., 4,436,713, Cl. 423-573.00G.
Olson, Donald C., 4,436,714, Cl. 423-573.00G.
Smoot, Arren F.; and De Jong, Sijtze, 4,436,449, Cl. 405-170.000.
Smutny, Edgar J., 4,436,946, Cl. 585-510.000.
Shennan, Christopher D.; and Fry, Michael W., to Ciba-Geigy AG. Method of treating a dye image. 4,436,798, Cl. 430-17.000.
Shepard, Joseph F.: *See—*
Gardiner, James R.; Makarewicz, Stanley R.; Revitz, Martin; and Shepard, Joseph F., 4,437,108, Cl. 357-59.000.
Sherk, Fred T., to Phillips Petroleum Company. Hydrocarbon wash liquid for catalyst separation. 4,436,901, Cl. 528-498.000.
Sherwood Medical Company: *See—*
Eseifan, Ali H., 4,436,822, Cl. 436-164.000.
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., to Gosudarstvenny Nauchnoissledovatelsky, Proektny I Konstruktorsky Institut Splavov I Obrabotki Tsvetnykh Metallov "Giprotsvetmetobrabotka". Pipe-welding mill for production of coiled pipes. 4,435,886, Cl. 29-33.00D.
Shibakawa, Riichiro: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,436,747, Cl. 424-274.000.
Shibata, Yoshiaki: *See—*
Nakamura, Norihiko; and Shibata, Yoshiaki, 4,436,068, Cl. 123-310.000.
Shibaura Denki Kabushiki Kaisha: *See—*
Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, 4,436,646, Cl. 252-301.40S.
Shigemura, Tatsuya: *See—*
Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, 4,437,129, Cl. 360-85.000.
Shigeru, Jhono, to Tempo G. Means for retaining jewelery for interlocking with precise preforms. 4,435,963, Cl. 63-18.000.
Shimada, Sumio: *See—*
Akiyama, Hiroyuki; Shimada, Sumio; Hirosawa, Kuninori; and Kuwabara, Hideki, 4,436,840, Cl. 521-58.000.
Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,435,983, Cl. 73-493.000.
Shimano, Keizo, to Shimano Industrial Company Limited. Handle stem for a bicycle. 4,435,983, Cl. 73-493.000.
Shimaoka, Motohiro, to Alps Electric Co., Ltd. Flexible magnetic disk device. 4,437,132, Cl. 360-105.000.
Shimauchi Seiki Kabushiki Kaisha: *See—*
Kitano, Masuo, 4,436,436, Cl. 368-204.000.
Shimazaki, Yasumi: *See—*
Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, 4,436,239, Cl. 228-17.000.
Shimizu, Fumio, to Light Koki Co., Ltd. Lens group shifting mechanism for zoom binoculars. 4,436,387, Cl. 350-556.000.
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, to Kanto Ishi Pharmaceutical Co., Ltd. Cephalosporins. 4,436,904, Cl. 544-27.000.
Shimizu, Tetsuo, to Nissan Motor Company, Limited. Hatchback door of a motor vehicle. 4,436,336, Cl. 296-76.000.
Shin Meiwa Industry Co., Ltd.: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.
Shinohara, Masaaki: *See—*
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.
Shinohara, Toshio: *See—*
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.
Shinozaki, Nozomu; Neki, Shigeo; and Dohi, Takashi, to Matsushita Electric Industrial Co., Ltd. Speed detector for sewing machines. 4,437,061, Cl. 324-166.000.
Shiono, Manzo: *See—*
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Shiota, Ikuo: *See—*
Nishizawa, Jun-ichi; and Shiota, Ikuo, 4,436,770, Cl. 427-255.300.
Shipulina, Ljudmila D.: *See—*
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I., 4,436,732, Cl. 424-180.000.
Shiraki, Manabu: *See—*
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,437,029, Cl. 310-198.000.
Shisler, Robert W.; and McVety, Ronald E., to RCA Corporation. Desoldering tool and method of desoldering leadless components. 4,436,242, Cl. 228-264.000.

Shiue, Chyng-Yann; and Wolf, Alfred P., to United States of America, Energy. ^{18}F-4-Fluoroantipyrine. 4,436,717, Cl. 424-1.100.
Shono, Keizi: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.
Shop-Vac Corporation: *See—*
Berfield, Robert C., 4,435,877, Cl. 15-326.000.
Shore, John H. Gate valve. 4,436,283, Cl. 251-174.000.
Shurden, Charles H.: *See—*
Kelly, James C.; and Shurden, Charles H., 4,436,231, Cl. 223-40.000.
Sibley, Alan T.: *See—*
Buck, Daniel M.; Sibley, Alan T.; and Kaiser, John J., 4,436,696, Cl. 419-57.000.
Siegfried Aktiengesellschaft: *See—*
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, 4,436,913, Cl. 548-316.000.
Siegfried Preyer: *See—*
Schwartz, Hermann, 4,436,427, Cl. 356-385.000.
Siemens Aktiengesellschaft: *See—*
Diepers, Heinrich, 4,437,033, Cl. 310-334.000.
Guenther, Werner, 4,437,144, Cl. 362-275.000.
Haendle, Joerg; and Horbaschek, Heinz, 4,437,117, Cl. 358-111.000.
Hoffmann, Richard; and Zobawa, Franz, 4,436,362, Cl. 339-103.00M.
Kandler, Erich, 4,437,099, Cl. 343-756.000.
Keller, Wolfgang; and Schrotter, Gerhard, 4,436,578, Cl. 156-620.000.
Moschitz, Gerhard; and Schoonhoven, Richard, 4,437,170, Cl. 364-900.000.
Ophoff, Paul-Arthur; and Weinel, Johann, 4,437,005, Cl. 250-343.000.
Schiffner, Gerhard, 4,436,422, Cl. 356-349.000.
Schonwald, Siegfried, 4,436,490, Cl. 417-372.000.
Schrother, Gerhard, 4,437,020, Cl. 307-135.000.
Veith, Werner, 4,437,044, Cl. 315-366.000.
Siemens Gammasonics Inc.: *See—*
Anderson, William, 4,437,161, Cl. 364-414.000.
Siemon Company, The: *See—*
Knickerbocker, Robert H., 4,436,360, Cl. 339-97.00P.
Sigiols, John P.: *See—*
Bonham, Richard T.; Sigiols, John P.; and Dinkelacker, Paul H., 4,436,045, Cl. 112-313.000.
Silks, Walter; and Gonski, Joseph, to Goodman Equipment Corporation. Continuous mining machine having contour cutters. 4,436,345, Cl. 299-59.000.
Silverman, Peter J.: *See—*
Rose, Donald K.; and Silverman, Peter J., 4,436,579, Cl. 156-626.000.
Silverstein, Lewis S.: *See—*
Dahlgren, William V., Jr.; Silverstein, Lewis S.; and Claire, Edward W., 4,437,150, Cl. 364-474.000.
Simjian, Luther G. Check controlled metering device. 4,436,992, Cl. 235-381.000.
Simmonds, Robert C., Jr.; and Gilbride, Andrew J., to USM Corporation. Method of lasting shoes. 4,436,771, Cl. 427-284.000.
Simmons, Louis D., to United States of America, Air Force. Hermetic package using membrane seal. 4,436,220, Cl. 220-359.000.
Simmons Universal Corporation: *See—*
King, Frank R.; and Engler, Donald J., 4,435,862, Cl. 5-66.000.
Simmons, William J.; and Tinder, Richard, to Eastman Kodak Company. Sheet handling apparatus. 4,436,404, Cl. 355-3.0SH.
Simms, John A.: *See—*
Brixius, Darryl W.; and Simms, John A., 4,436,885, Cl. 526-214.000.
Simon, Hans. Cable socket with traction relief for the housings of electric machines. 4,436,265, Cl. 248-56.000.
Simon, Joseph A. Process for forming integral spindle-axle tubes. 4,435,972, Cl. 72-256.000.
Simonotti, Lucio; and Motta, Carlo, to Ing. C. Olivetti & C., S.p.A. Apparatus for depositing valuables in envelopes with automatic envelope dispensing. 4,436,182, Cl. 186-37.000.
Simons U.S.A. Corporation: *See—*
Callaway, Milton A., 4,435,864, Cl. 5-453.000.
Simpson, Frank F., to Black & Decker Inc. Arrangement for converting rotary motion to reciprocatory motion. 4,436,163, Cl. 173-117.000.
Sims, James O. Method of manufacture of hydraulic cylinders utilizing bronze overlays for engaging surfaces. 4,435,893, Cl. 29-412.000.
Sincerbox, Glenn T.: *See—*
Depp, Steven W.; and Sincerbox, Glenn T., 4,436,420, Cl. 356-128.000.
Sinelschikov, Andrei K.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.
Singer, Barry M., to U.S. Philips Corporation. Pyroelectric vidicon with improved signal-to-noise ratio. 4,437,118, Cl. 358-113.000.
Singer Company, The: *See—*
Cantada, Edilberto, 4,436,043, Cl. 112-221.000.
Kumar, Shri A.; Ljung, Bo H. G.; and Koper, James G., 4,436,423, Cl. 356-350.000.
Singer, Mark I.: *See—*
Blom, Eric D.; and Singer, Mark I., 4,435,853, Cl. 3-1.300.
Sioux Steam Cleaner Corporation: *See—*
Finger, John F., 4,436,113, Cl. 137-565.000.
SKF Kugellagerfabriken GmbH: *See—*
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, 4,435,890, Cl. 29-148.40R.
Horling, Peter; Hetterich, Hermann; Dobhan, Herbert; and Klupfel, Norbert, 4,435,889, Cl. 29-148.40C.
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,436,516, Cl. 464-128.000.
Skrzec, Adam E., to Stauffer Chemical Company. Fluid bed process for preparing phenylphosphonous dichloride. 4,436,673, Cl. 260-543.00P.
Skupin, Georg: *See—*
Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, 4,436,898, Cl. 528-336.000.
Slack, Ian D.; Ellis, David G.; and Firth, Colin, to Plasticisers Limited. Reinforcement product for use in cement boards and a method of manufacturing said product and boards. 4,436,564, Cl. 156-42.000.
Sloan Valve Company: *See—*
Billeter, Henry R., 4,436,116, Cl. 137-625.470.
Smadar, Yechiel: *See—*
Trilling, David M.; and Smadar, Yechiel, 4,436,759, Cl. 426-573.000.
Smay, John W., to Hughes Aircraft Company. System for autonomous earth-pointing acquisition of a dual-spin satellite. 4,437,047, Cl. 318-649.000.
Smetana, Michael: *See—*
Ergler, James M.; Kohn, Harold; and Smetana, Michael, 4,436,001, Cl. 81-9.510.
Smirl, Richard L., to Borg-Warner Corporation. Variable pulley transmission. 4,436,193, Cl. 192-107.00C.
Smith, Glen H., to Morgan Industries, Inc. Disconnectable valve motor drive. 4,436,278, Cl. 251-130.000.
Smith, Harry D., Jr.: *See—*
Arnold, Dan M.; Smith, Harry D., Jr.; and Schultz, Ward E., 4,436,996, Cl. 250-256.000.
Smith International, Inc.: *See—*
Garrett, William R., 4,436,118, Cl. 138-110.000.
Smith, Irl W., to Raytheon Company. High-precision reflectometer. 4,436,426, Cl. 356-369.000.
Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., to Stamicarbon B.V. Process for the production of polymer filaments having high tensile strength. 4,436,689, Cl. 264-204.000.
Smith, Paul K., to Pierce Chemical Company. Iodinating reagent. 4,436,718, Cl. 424-1.100.
Smith, Stephen L.: *See—*
Hudson, Edwin L.; and Smith, Stephen L., 4,437,171, Cl. 365-177.000.
Smith, Wayne G. Gun and resilient loop projectile therefor. 4,436,077, Cl. 124-18.000.
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., to Warner-Lambert Company. 12'-Hydroxyverrucarin J and iso-satratoxin H. 4,436,750, Cl. 424-279.000.
Smolarek, James, to Union Carbide Corporation. Shell and tube heat exchanger. 4,436,146, Cl. 165-111.000.
Smoot, Arren F.; and De Jong, Sijtze, to Shell Oil Company. Drill ship pipe capture. 4,436,449, Cl. 405-170.000.
SMS Schloemann-Siemag AG: *See—*
Pfannschmidt, Martin, 4,436,292, Cl. 266-107.000.
Smutny, Edgar J., to Shell Oil Company. Preparation of propylene and butylene dimers using palladium cyanide as catalyst. 4,436,946, Cl. 585-510.000.
Sobieniak, Mathew G., to J. A. Webb, Inc. Electrolytic cell having an elastomeric sheet covering the cell base. 4,436,609, Cl. 204-267.000.
Societe Anonyme dite: Alsthom-Atlantique: *See—*
Dupraz, Jean-Pierre, 4,437,134, Cl. 361-56.000.
S.A. Promocab: *See—*
Achard, Serge, 4,437,089, Cl. 340-541.000.
Societe Chimique des Charbonnages S.A.: *See—*
Stein, Claude; and Marbach, Andre, 4,436,859, Cl. 524-297.000.
Societe de Recherches Industrielles: *See—*
Picart, Francois, 4,436,915, Cl. 548-432.000.
Societe d'Etudes, de Realisations et d'Applications Techniques (SERAT): *See—*
Precoul, Michel, 4,436,033, Cl. 102-307.000.
Societe d'Expansion Scientifique "EXPANSIA": *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,436,874, Cl. 525-327.100.
Aspisi, Christian; Bonato, Marc; and Jacquier, Robert, 4,436,919, Cl. 549-4.000.
Societe d'Optique, Precision Electronique et Mechanique, Sopelem: *See—*
Nollez, Jacques; Ragain, Jacques; and Prevost, Marc, 4,436,051, Cl. 114-340.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.): *See—*
Fondacci, Jean-Luc, 4,435,957, Cl. 60-39.281.
Societe Nationale Elf Aquitaine: *See—*
Peyrouset, Andre; and Spring, Francois, 4,436,658, Cl. 260-122.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Kvasnikoff, Georges; and Voirin, Robert, 4,436,716, Cl. 423-574.00R.
Soclof, Sidney I., to Rockwell International Corporation. Method of producing lateral transistor separated from substrate by intersecting slots filled with substrate oxide. 4,435,899, Cl. 29-577.00R.
Sodini, Giancarlo: *See—*
Canella, Marco; and Sodini, Giancarlo, 4,436,756, Cl. 426-430.000.

Solbes, Albert: *See—*
Demirjian, Ara M.; and Solbes, Albert, 4,437,026, Cl. 310-11.000.
Solobay, Leo A. Electric water heater with upwardly inclined zig-zag flow path. 4,436,983, Cl. 219-306.000.
Somerfleck, Harold H., to United States of America, Navy. Method for forming a protective cover for aircraft having conical radomes. 4,436,569, Cl. 156-217.000.
Sommer, John G.: *See—*
Kuan, Tiong H.; and Sommer, John G., 4,436,857, Cl. 524-260.000.
Sony Corporation: *See—*
Nakatsuyama, Takashi; and Nakano, Yoshitomo, 4,436,959, Cl. 179-6.090.
Sako, Yoichiro; and Odaka, Kentaro, 4,437,185, Cl. 371-39.000.
Yamamoto, Kaichi, 4,437,125, Cl. 358-167.000.
South Louisiana Contractors Inc.: *See—*
Hebert, Francis A., 4,436,235, Cl. 227-111.000.
South Plains Sheet Metal, Inc.: *See—*
Willingham, James T., 4,436,457, Cl. 406-116.000.
Southwest Research Institute: *See—*
Gruber, George J., 4,435,984, Cl. 73-628.000.
Sowinski, Gerard T., to National Gypsum Company. Drywall joint compound packaging. 4,436,204, Cl. 206-525.000.
Sperry Corporation: *See—*
Bernacki, Stephen E.; and Kosicki, Bernard B., 4,436,584, Cl. 156-643.000.
Freimuth, John H.; and Campbell, Willis R., 4,436,027, Cl. 100-88.000.
Jennings, Richard E., 4,435,948, Cl. 56-228.000.
Lindblom, Curtis H.; Lausch, H. Nevin; and Priepke, Edward H., 4,436,248, Cl. 241-101.700.
O'Brien, Steven M., 4,437,166, Cl. 364-900.000.
Sawyer, Daniel D.; and Thompson, Marvin J., 4,437,155, Cl. 364-200.000.
Witalka, Jerome J.; Kurth, Duane G.; and Baber, David J., 4,437,157, Cl. 364-200.000.
Spletzer, Barry L.; and Swiatlowski, George, to Gerber Products Company. Retort crate loader and unloader. 4,436,470, Cl. 414-36.000.
Sprague, Robert A., to Xerox Corporation. Method and means for reducing illumination nulls in electro-optic line printers. 4,437,106, Cl. 346-160.000.
Sprecher, Klemenz: *See—*
Aufderhaar, Ernst; Sprecher, Klemenz; and Zergenyi, Janos, 4,436,660, Cl. 260-239.00D.
Spring, Francois: *See—*
Peyrouset, Andre; and Spring, Francois, 4,436,658, Cl. 260-122.000.
Srinivasan, Gurumakonda R.: *See—*
Gaur, Santosh P.; Lechaton, John S.; and Srinivasan, Gurumakonda R., 4,435,898, Cl. 29-577.00C.
Staart Enterprises Ltd.: *See—*
Sampson, Michael J., 4,436,547, Cl. 71-76.000.
Staas, William H., to Rohm and Haas Company. Imide-san polymer-blends. 4,436,871, Cl. 525-64.000.
Stach, Kurt: *See—*
Fauland, Erich; Kampe, Wolfgang; Stach, Kurt; and Bartsch, Wolfgang, 4,436,742, Cl. 424-269.000.
Stacy, Galen D.; and Likins, Merle R., Jr., to Phillips Petroleum Company. Feed forward carbon black reactor control. 4,436,698, Cl. 422-62.000.
Stahlecker, Fritz; Lang, Kurt; and Erhardt, Rolf, to Stahlecker, Fritz; and Stahlecker, Hans. Spinning assembly for a wrapped yarn spinning machine. 4,435,952, Cl. 57-18.000.
Stahlecker, Fritz: *See—*
Schmid, Friedbert; and Raasch, Hans, 4,435,953, Cl. 57-408.000.
Stahlecker, Hans: *See—*
Schmid, Friedbert; and Raasch, Hans, 4,435,953, Cl. 57-408.000.
Stahlecker, Fritz; Lang, Kurt; and Erhardt, Rolf, 4,435,952, Cl. 57-18.000.
Stamicarbon B.V.: *See—*
Smith, Paul; Lemstra, Pieter J.; Kirschbaum, Robert; and Pijpers, Jacques P. L., 4,436,689, Cl. 264-204.000.
Woudstra, Gerrit, 4,437,065, Cl. 324-425.000.
Standard Oil Company: *See—*
Carlson, Francis M., 4,436,153, Cl. 166-260.000.
Standard Oil Company (Indiana): *See—*
Fields, Ellis K.; and Clarke, William C., 4,436,940, Cl. 568-857.000.
Forgac, John M.; and Hoekstra, Gerald B., deceased, 4,436,344, Cl. 299-2.000.
Stanistreet, Harold P.: *See—*
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,503, Cl. 425-384.000.
Bye, Donald J.; Stanistreet, Harold P.; and Lindenstruth, Werner, 4,436,687, Cl. 264-164.000.
Star Manufacturing Co.: *See—*
Kim, Kwon S., 4,435,934, Cl. 52-309.700.
Starkville Tool & Die Company: *See—*
Kelly, James C.; and Shurden, Charles H., 4,436,231, Cl. 223-40.000.
Stauffer Chemical Company: *See—*
Skrzec, Adam E., 4,436,673, Cl. 260-543.00P.
Stein, Claude; and Marbach, Andre, to Societe Chimique des Charbonnages S.A. Polynorbornenes cured with isocyanates and optionally with polyols. 4,436,859, Cl. 524-297.000.
Stein, Hermann: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.
Steinbruegge, Kenneth B.; Schruben, Johanna S.; and Taylor, Lyle H., to Westinghouse Electric Corp. Broadband antireflection coating for infrared transmissive materials. 4,436,363, Cl. 350-1.600.
Stelling, Desi D. Oven supporting apparatus incorporating slidable cookware support. 4,436,356, Cl. 312-281.000.
Stellner, Klaus: *See—*
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, 4,436,828, Cl. 436-545.000.
Stelz, Dale E.; Carroll, Frank I.; and Whaley, Wilson M., to Racon Incorporated. Refrigeration liquid with blue leak indicator and process of using same. 4,436,641, Cl. 252-68.000.
Stemke, Jeffrey E., to Chevron Research Company. Grease composition with improved low shear stability. 4,436,649, Cl. 252-51.50A.
Stenabaugh, Donald D., to Automation Industries, Inc. Plug for reactor pressure vessel nozzle. 4,436,692, Cl. 376-204.000.
Stephens, Marion A., Jr. Rolling drum tree planter. 4,436,039, Cl. 111-2.000.
Sterling Drug Inc.: *See—*
Margulies, Herman, 4,436,221, Cl. 221-46.000.
Stetson, Karl A.; and Harrison, Irene R., to United Technologies Corporation. Optical strain gauge. 4,436,419, Cl. 356-35.500.
Stewart, Glenn D. Method and apparatus for automatically synchronizing multiple engines. 4,435,961, Cl. 60-719.000.
Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Fluidized bed reactor utilizing zonal fluidization and anti-mounding air distributors. 4,436,507, Cl. 431-170.000.
Steyert, William A., Jr.: *See—*
Overton, William C., Jr.; and Steyert, William A., Jr., 4,437,064, Cl. 324-346.000.
Stoddard, Frank L.: *See—*
Cash, Daniel L.; and Stoddard, Frank L., 4,436,977, Cl. 219-75.000.
Stoll, Kurt; and Glattli, Hans-Heinrich. Pneumatic timer. 4,436,434, Cl. 368-65.000.
Stone, Lester W., to Armco Inc. Concealed fastener support for interlocked channel section panels. 4,435,937, Cl. 52-520.000.
Stone, Lyndon R.: *See—*
Callihan, Rudy B.; and Stone, Lyndon R., 4,436,151, Cl. 166-154.000.
Storandt, Ralf; Scheck, Georg; and Biermann, Peter, to Geze GmbH. Electrically releasable safety ski binding. 4,436,321, Cl. 280-612.000.
Stork, Karl: *See—*
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,436,639, Cl. 252-8.55E.
Strader, Don S., to Motor Wheel Corporation. Method and apparatus for manufacture of brake drums. 4,436,139, Cl. 164-112.000.
Strandli, Kaare R.; and Ostlie, Arne M., to A/S Raufoss Ammunisjonsfabrikker. Method of making projectile. 4,435,887, Cl. 29-123.000.
Strandli, Kaare R., to A/S Raufoss Ammunisjonsfabrikker. Tubular projectile. 4,436,035, Cl. 102-364.000.
Streck Laboratories, Inc.: *See—*
Ryan, Wayne L., 4,436,821, Cl. 436-10.000.
Strehler, Hugo; Hoerauf, Werner; and Urbanek, Friedrich, to BASF Aktiengesellschaft. Preparation of polycaprolactam with aqueous extract containing caprolactam and caprolactam oligomers. 4,436,897, Cl. 528-323.000.
Strempler, Gunter: *See—*
Donner, Siegmar; Strempler, Gunter; and Schmid, Manfred, 4,436,298, Cl. 271-10.000.
Stromberg-Carlson Corp.: *See—*
Brightman, Barrie; and Niertit, Frank, 4,437,096, Cl. 340-825.960.
Strong, William A.; and Church, Kenneth, to Strong, William A. Slurry production system. 4,436,429, Cl. 366-2.000.
Strong, William A.; and Church, Kenneth, to Strong, William A. Slurry production system. 4,436,431, Cl. 366-17.000.
Strope, Daniel J.: *See—*
Myers, John W.; and Strope, Daniel J., 4,436,949, Cl. 585-664.000.
Strosberg, Arthur M.: *See—*
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,436,914, Cl. 548-348.000.
Struben, Francis L. Ridge roof. 4,435,926, Cl. 52-3.000.
Strunc, Gerald R., to Pako Corporation. Photographic film web cutter and method. 4,436,008, Cl. 83-42.000.
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., to William H. Rorer, Inc. Heterocyclic amidinoureas. 4,436,911, Cl. 546-291.000.
Stumpe, Werner, to Robert Bosch GmbH. Pressure medium brake system having a dual-valve control. 4,436,347, Cl. 303-6.00R.
Stutz, Herbert: *See—*
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, 4,436,869, Cl. 525-51.000.
Suchanski, Mary R.: *See—*
Branchick, Kenneth J.; Nalkin, Irving; and Suchanski, Mary R., 4,436,601, Cl. 204-149.000.
Suckow, Chris A.: *See—*
Roller, Philip C.; and Suckow, Chris A., 4,437,145, Cl. 362-306.000.
Sudarshan, E. C. George: *See—*
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,437,006, Cl. 250-363.00S.
Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Nonnenmann, Manfred; and Deuschle, Steffi, 4,436,245, Cl. 236-49.000.
Sugama, Toshifumi; and Kukacka, Lawrence E., to United States of America, Energy. Magnesium phosphate glass cements with ceramic-type properties. 4,436,555, Cl. 106-85.000.

Sugawara, Katsuo: *See—*
Ohe, Etsuo; Sugawara, Katsuo; Tani, Ititaro; and Tsukioka, Hideo, 4,436,654, Cl. 252-574.000.
Suggitt, Robert M.: *See—*
Estabrook, Lawrence E.; and Suggitt, Robert M., 4,436,531, Cl. 48-197.00R.
Sugimoto, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Device for correcting torque detected by an electric dynamometer. 4,435,987, Cl. 73-862.170.
Sugitani, Hiroshi; Matsuda, Hiroto; and Ikeda, Masami, to Canon Kabushiki Kaisha. Ink-jet head and method for production thereof. 4,437,100, Cl. 346-1.100.
Sullivan, Daniel J.: *See—*
Logan, David J.; Webster, Ronald B.; and Sullivan, Daniel J., 4,435,904, Cl. 33-143.00K.
Sumi, Hideji; and Kokado, Masayuki, to Fujitsu Limited. Line driver circuit. 4,437,021, Cl. 307-270.000.
Sumimoto, Takashi: *See—*
Watanabe, Kenichi; and Sumimoto, Takashi, 4,436,175, Cl. 180-254.000.
Sumitomo Chemical Co., Ltd.: *See—*
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.
Sumitomo Electric Industries, Ltd.: *See—*
Kurosaki, Shiro, 4,436,542, Cl. 65-18.100.
Sumitomo Heavy Industries, Ltd.: *See—*
Mori, Takashi, 4,436,551, Cl. 75-12.000.
Sumner, Barbara E.: *See—*
Boyd, Phillip R.; Green, Gary K.; and Sumner, Barbara E., 4,436,580, Cl. 156-636.000.
Sumner, John H., to Burlington Industries, Inc. Method and apparatus for producing open-end-spun novelty yarns. 4,435,935, Cl. 57-409.000.
Sunbeam Corporation: *See—*
Carlson, Gordon S., 4,436,986, Cl. 219-505.000.
Sunbeam Plastics Corporation: *See—*
Gach, Peter P., 4,436,211, Cl. 215-216.000.
Suranyi, Gabriel G., to Western Electric Co., Inc. Peak voltage clamped power supply. 4,437,148, Cl. 363-89.000.
Surgical Design Corporation: *See—*
Banko, Anton, 4,436,091, Cl. 128-305.000.
Surgikos, Inc.: *See—*
Jacobs, Paul T., 4,436,754, Cl. 424-333.000.
Suzuki, Keizo: *See—*
Okudaira, Sadayuki; Saida, Hiroji; Sakai, Yoshio; Nishimatsu, Shigeru; and Suzuki, Keizo, 4,436,581, Cl. 156-643.000.
Suzuki, Kozaburo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Polaris axis finder. 4,436,421, Cl. 356-153.000.
Suzuki, Sunao; and Maeda, Koji, to Mitsubishi Denki Kabushiki Kaisha. Frequency detection system. 4,437,057, Cl. 324-78.00R.
Suzuki, Tetsuya: *See—*
Ebisawa, Masuo; and Suzuki, Tetsuya, 4,436,140, Cl. 164-120.000.
Suzuki, Tuneo: *See—*
Emura, Koji; Suzuki, Tuneo; and Kazama, Hidemichi, 4,436,685, Cl. 264-148.000.
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, to Bridgestone Tire Co., Ltd. Pneumatic radial tire having an excellent side-cut resistant property. 4,436,130, Cl. 152-353.00R.
Suzuki, Yasuo: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,436,724, Cl. 424-101.000.
Suzuki, Yoshiaki: *See—*
Okada, Yoshio; Suzuki, Yoshiaki; Murakami, Ryohei; and Segawa, Yoshiaki, 4,436,352, Cl. 312-228.000.
Suzuki, Yuichi; and Sano, Ichiro, to Furukawa Denchi Kabushiki Kaisha; and Furukawa Denki Kogyo Kabushiki Kaisha. Process and apparatus for manufacturing storage battery plates. 4,435,885, Cl. 29-2.000.
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, to Toyota Jidosha Kabushiki Kaisha. Fuel injection control in an internal-combustion engine. 4,436,072, Cl. 123-488.000.
Svedberg, Per: *See—*
Jonsson, Per-Erik; and Svedberg, Per, 4,437,107, Cl. 357-38.000.
Swan, George A.: *See—*
Oyekan, Soni O.; and Swan, George A., 4,436,612, Cl. 208-65.000.
Sweeney, Roy: *See—*
Charis, Phillip S.; and Sweeney, Roy, 4,436,400, Cl. 354-296.000.
Swiatlowski, George: *See—*
Spletzer, Barry L.; and Swiatlowski, George, 4,436,470, Cl. 414-36.000.
Swift, John E., Sr., to Bethlehem Steel Corporation. Adaptor to facilitate testing of a lamp holder. 4,437,054, Cl. 324-51.000.
Swisher, William F., to Methode Electronics, Inc. Switch assemblies. 4,436,970, Cl. 200-61.560.
Swiss Aluminium Ltd.: *See—*
Fischer, Werner K., 4,436,607, Cl. 204-246.000.
SWS, Incorporated: *See—*
Nilsen, Carl J., 4,436,979, Cl. 219-121.0LC.
Tabereaux, Alton T.; and Willett, John T., to Reynolds Metals Company. Alumina reduction cell. 4,436,598, Cl. 204-67.000.
Tachibana, Yakudo: *See—*
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,656, Cl. 260-112.00R.
Sasaki, Takuma; Nakamichi, Kazuya; Tachibana, Yakudo; and Minami, Kiyoshi, 4,436,657, Cl. 260-112.00R.
Taddicken, Hermann, to Eisele Apparate-und Geratebau GmbH. Attachment for feeding reinforcing back buttons to a sewing machine. 4,436,041, Cl. 112-110.000.
Taeger, Tilman: *See—*
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.
Taira, Akio, to Olympus Optical Co., Ltd. Binocular stereo-microscope. 4,436,384, Cl. 350-515.000.
Taisho Pharmaceutical Co., Ltd.: *See—*
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Taiyo Denko Kabushiki Kaisha: *See—*
Kashiwagi, Hidehiro, 4,436,104, Cl. 134-63.000.
Takada, Kinji: *See—*
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, 4,436,904, Cl. 544-27.000.
Takagi, Shigeru: *See—*
Tomita, Masahiro; and Takagi, Shigeru, 4,436,538, Cl. 55-482.000.
Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, to Shibaura Denki Kabushiki Kaisha. Green-emitting phosphor for cathode-ray tube. 4,436,646, Cl. 252-301.40S.
Takahashi, Hirokuni: *See—*
Nishikawa, Yasuo; and Takahashi, Hirokuni, 4,436,678, Cl. 264-30.000.
Takahashi, Hirotake, to Honda Giken Kogyo Kabushiki Kaisha. Shaft drive apparatus for motorized two-wheeled vehicle. 4,436,173, Cl. 180-226.000.
Takahashi, Junichi; Sakane, Toshio; and Itoh, Yuji, to Canon Kabushiki Kaisha. Eye-fundus camera provided with automatic focusing function. 4,436,388, Cl. 351-206.000.
Takahashi, Katsuhiko: *See—*
Kasuga, Takuzo; Takahashi, Katsuhiko; and Nakashima, Tuneyasu, 4,436,877, Cl. 525-437.000.
Takahashi, Kensuke. Apparatus for cooking food and extracting smoke. 4,436,023, Cl. 99-400.000.
Takahashi, Masanori; and Uehara, Hidehiko, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust means for marine propulsion unit. 4,436,514, Cl. 440-89.000.
Takahashi, Nobuyuki; Furuno, Yoshikuni; and Fukunaga, Masaaki, to Nippon Steel Corporation. Press-formable high strength dual phase structure cold rolled steel sheet and process for producing the same. 4,436,561, Cl. 148-12.00F.
Takahashi, Yoshihiko: *See—*
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.
Takamura, Yoshio; and Nakajima, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Rectifier circuit. 4,437,147, Cl. 363-61.000.
Takano, Hiroyuki: *See—*
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, 4,436,904, Cl. 544-27.000.
Takao, Hiroyoshi: *See—*
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.
Takeba, Kazuhiro: *See—*
Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, 4,436,563, Cl. 148-26.000.
Takeda Chemical Industries, Limited: *See—*
Furuoya, Itsuo; and Kitazawa, Yuzuru, 4,436,671, Cl. 260-465.300.
Horii, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, 4,436,918, Cl. 548-546.000.
Imada, Isuke; Nagaoka, Akinobu; and Hirata, Minoru, 4,436,753, Cl. 424-331.000.
Takenaka Doboku Co., Ltd.: *See—*
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, 4,436,453, Cl. 405-263.000.
Takenaka Komuten Co., Ltd.: *See—*
Miura, Mituo; Kukino, Yoshinori; and Fujii, Takumi, 4,436,453, Cl. 405-263.000.
Takeno, Ryuko: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.
Takeuchi, Atsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Apparatus for controlling pickup arm in record or video disk player. 4,437,180, Cl. 369-217.000.
Takeuchi, Masato; Okada, Hideo; Tobita, Hiroi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, to Hitachi, Ltd. Molten carbonate fuel cell. 4,436,794, Cl. 429-40.000.
Talley, Thomas H.; Sheets, Lee W.; and Wiley, Alvin F., to Schnadig Corporation. Spring suspension for sofa-bed. 4,435,860, Cl. 5-13.000.
Tallon, Jacques, to Compagnie Industrielle des Telecommunications. Helium leakage detector. 4,436,998, Cl. 250-288.000.
Tamagawa, Akira, to Olympus Optical Co. Ltd. Detecting particle agglutination with vessel having inclined, stepped bottom surface. 4,436,827, Cl. 436-534.000.
Tamama, Hiroshi; Ozawa, Yukio; Miyazaki, Jingo; Ito, Hiroshi; and Kinoshita, Toyohiro, to Japanese National Railways. Device for sealing a propeller shaft against invasion of sea water. 4,436,313, Cl. 277-80.000.

Tamatani, Masaaki: *See—*
Takahara, Takeshi; Sato, Takeo; Itou, Takeo; and Tamatani, Masaaki, 4,436,646, Cl. 252-301.40S.

Tamura, Kohki: *See—*
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Tamura, Poohsan N.: *See—*
Rebholz, Joseph J.; and Tamura, Poohsan N., 4,436,370, Cl. 350-162.120.

Tanabe, Hiroyuki: *See—*
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, 4,436,773, Cl. 427-380.000.

Tanaka, Hirokazu: *See—*
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

Tanaka, Kisaburoo: *See—*
Omae, Takashi; Tanaka, Kisaburoo; Aoki, Masahiro; Hirayama, Fumitoshi; and Izaki, Susumu, 4,436,554, Cl. 75-128.00T.

Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, to Canon Kabushiki Kaisha. Solid-state color imaging apparatus. 4,437,112, Cl. 358-44.000.

Tanaka, Osamu; Takeba, Kazuhiro; Saita, Hiroshi; Matsushita, Yukinobu; and Koyabu, Koji, to Kabushiki Kaisha Kobe Seiko Sho. Flux for overlay welding. 4,436,563, Cl. 148-26.000.

Tanaka, Toshiaki; Ushimura, Shoji; and Etoh, Yukihiro, to Nissan Motor Company, Ltd. Engine cooling system. 4,436,060, Cl. 123-41.100.

Tanaka, Toshiki: *See—*
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Tanaka, Yoshiharu: *See—*
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, 4,437,177, Cl. 369-45.000.

Tandy Corporation: *See—*
Schreiber, Paul T., 4,436,956, Cl. 179-2.00C.

Tani, Itaro: *See—*
Ohe, Etsuo; Sugawara, Katsuo; Tani, Itaro; and Tsukioka, Hideo, 4,436,654, Cl. 252-574.000.

Taniguchi, Norihisa: *See—*
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, 4,436,179, Cl. 181-210.000.

Taniguchi, Yoshiharu; Edano, Shigeki; and Akiyama, Masanori, to Nihon Ceramic Co., Ltd. Pyroelectric infrared sensor. 4,437,002, Cl. 250-338.000.

Tanioka, Hiroshi: *See—*
Inuzuka, Tsuneki; Ishida, Masato; Tanioka, Hiroshi; and Sakamaki, Hisashi, 4,436,408, Cl. 355-14.00R.

Tassoni, Ronald L.: *See—*
Moore, Wilcy I.; and Tassoni, Ronald L., 4,436,617, Cl. 209-3.000.

Tatabanyai Szenbanyak: *See—*
Kapolyi, Laszlo, 4,436,550, Cl. 75-10.00R.

Taylor, Eric, to Paterson Products Limited. Tank with light-tight closure. 4,436,401, Cl. 354-312.000.

Taylor, Lyle H.: *See—*
Steinbruegge, Kenneth B.; Schruben, Johanna S.; and Taylor, Lyle H., 4,436,363, Cl. 350-1.600.

Taylor, Michael; and Withnall, Malcolm D. N., to Mars Limited. Apparatus for dispensing containers. 4,436,222, Cl. 221-223.000.

Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., to Micro Consultants Limited. Video picture processing apparatus and method. 4,437,121, Cl. 358-160.000.

Taylor, Wesley L. Magnetically coupled positive acting level control. 4,436,109, Cl. 137-413.000.

TDK Electronics Co., Ltd.: *See—*
Ohkawa, Takehisa; and Yoda, Kuniichi, 4,436,786, Cl. 428-447.000.

Technion Research and Development Foundation Ltd.: *See—*
Ron, Moshe; Kleiner, Matvei; and Navon, Uri, 4,436,539, Cl. 62-4.000.

Teijin Limited: *See—*
Urasaki, Takanori; Hirabayashi, Yasuji; Yoshida, Tugusi; and Inata, Hiroo, 4,436,894, Cl. 528-176.000.

Temple, William F.; and Daniels, Jesse, to Lilliston Corporation. Transverse flow fan rotor. 4,436,484, Cl. 416-178.000.

Templeman, Arthur R., to Peterson Manufacturing Co. Stud anchor for securing a hollow non-round extension base. 4,436,445, Cl. 403-189.000.

Tempo G: *See—*
Shigeru, Jhono, 4,435,963, Cl. 63-18.000.

Tension Envelope Corporation: *See—*
Berkley, E. Bertram, 4,436,202, Cl. 206-455.000.

Terada, Kazuhiro: *See—*
Matsuda, Fujio; Kato, Takazo; Honda, Tadatoshi; Terada, Kazuhiro; and Kogure, Yasuo, 4,436,916, Cl. 548-508.000.

Terasoka, Fuminori: *See—*
Matsui, Kenji; and Terasoka, Fuminori, 4,436,255, Cl. 242-107.40A.

Terrafix Erosion Control Products, Inc.: *See—*
Crowe, Robert E., 4,436,447, Cl. 405-76.000.

Terzian, Rouben T.: *See—*
Zaruba, John V.; and Terzian, Rouben T., 4,435,915, Cl. 46-12.000.

Tetenbaum, Marvin T.; and Crowley, Burlon C., to NL Industries, Inc. Thermally stable thickener. 4,436,862, Cl. 524-445.000.

Texaco Development Corporation: *See—*
Child, Edward T.; and Crouch, William B., 4,436,530, Cl. 48-197.00R.
Estabrook, Lawrence E.; and Suggitt, Robert M., 4,436,531, Cl. 48-197.00R.

Texaco Inc.: *See—*
Lin, Jiang-Jen, 4,436,837, Cl. 518-700.000.
Lin, Jiang-Jen, 4,436,838, Cl. 518-700.000.
Naylor, Carter G., 4,436,672, Cl. 260-512.00R.
Rowton, Richard L.; and Cuscurida, Michael, 4,436,843, Cl. 521-167.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,926, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,927, Cl. 560-246.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,928, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,929, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,930, Cl. 560-246.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,436,931, Cl. 560-246.000.
Sanderson, John R.; Vanderpool, Steven H.; and Watts, Lewis W., Jr., 4,436,932, Cl. 560-246.000.
Sayles, Scott M.; Castagnos, Leonce F., Jr.; Schrader, Charles H.; Dillingham, Edward W.; and Scott, Richard P., deceased, 4,436,613, Cl. 208-74.000.
Umeda, Arihiko; and Iwase, Yoshiyuki, 4,436,891, Cl. 528-111.000.

Texas Instruments Incorporated: *See—*
Prokop, Jon S., 4,437,141, Cl. 361-403.000.

Textron Inc.: *See—*
Murphy, Milford R.; and Haskins, Delbert E., 4,436,018, Cl. 91-363.00A.

Tezuka, Toshiro: *See—*
Suzuki, Yasuo; Abe, Masaru; and Tezuka, Toshiro, 4,436,130, Cl. 152-353.00R.

Thal, Herbert L., Jr., to United States of America, Air Force. Equalizer cavity with independent amplitude control. 4,437,073, Cl. 333-28.00R.

Thalenfeld, David R., to Trion Industries Inc. Merchandise display hook. 4,436,209, Cl. 211-57.100.

Thalmann, Alfred; and Reich, Fritz, to Georg Fischer Aktiengesellschaft. Weld connection for plastic pipe. 4,436,987, Cl. 219-535.000.

Thibault, Thomas D., to Eli Lilly and Company. Thiadiazine herbicides. 4,436,549, Cl. 71-90.000.

Thiele, Kurt: *See—*
Molnar, Istvan; Thiele, Kurt; Geissmann, Felix; and Jahn, Ulrich, 4,436,913, Cl. 548-316.000.

Thiokol Corporation: *See—*
Bell, Frank H., 4,436,036, Cl. 102-367.000.

Thomas, John F., Jr.: *See—*
Wood, Denis; Thomas, John F., Jr.; and Dipper, Barry, 4,436,371, Cl. 350-281.000.

Thomas, William D., to Kidde, Inc. Pneumatic communication system for banking and the like. 4,436,456, Cl. 406-19.000.

Thomassen Amsterdam B.V.: *See—*
de Vries, Jan, 4,436,282, Cl. 251-329.000.

Thompson, Jerome B. Dough conditioning composition. 4,436,758, Cl. 426-549.000.

Thompson, Marvin J.: *See—*
Sawyer, Daniel D.; and Thompson, Marvin J., 4,437,155, Cl. 364-200.000.

Thompson, Thomas K.: *See—*
Pellegrin, Michael T.; Hanna, Terry J.; and Thompson, Thomas K., 4,436,541, Cl. 65-2.000.

Thomson-CSF: *See—*
Cohen, Georges; and Heroux, Jean, 4,437,074, Cl. 333-128.000.
Darmouni, Corinne, 4,437,075, Cl. 333-167.000.
Henry, Raymond; and Heitzmann, Michel, 4,437,077, Cl. 333-245.000.
Hunaut, Roger; and Dupont, Francois, 4,437,110, Cl. 358-41.000.
Le Sonn, Marcel, 4,437,188, Cl. 378-205.000.
Picquendar, Jean E., 4,437,068, Cl. 329-105.000.
Raverdy, Claude Y.; and Veron, Serge, 4,437,035, Cl. 313-388.000.
Rougeolle, Daniel, 4,437,071, Cl. 331-1.00A.

Thomson-CSF Broadcast, Inc.: *See—*
Kruger, Robert A., 4,436,095, Cl. 128-654.000.

Thorburn Technics (International) Limited: *See—*
Donnelly, Bernard J., 4,437,062, Cl. 324-238.000.

Thorud, Stanley R., to Liberty Carton Co. Flat-file. 4,436,354, Cl. 312-259.000.

Thuener, Bruce W.: *See—*
Allen, Fred E.; Thuener, Bruce W.; and Shadinger, Peter R., 4,436,500, Cl. 425-290.000.

Tieleman, Rudolf J. Poultry eviscerating tool. 4,435,878, Cl. 17-11.000.

Tight, Dexter C., Jr., to Raychem Corporation. Re-enterable closure. 4,436,566, Cl. 156-56.000.

Tinder, Richard: *See—*
Simmons, William J.; and Tinder, Richard, 4,436,404, Cl. 355-3.0SH.

Ting Enterprises, Inc.: *See—*
Evans, Jeffrey L., 4,436,080, Cl. 126-139.000.

Tioxide Group PLC: *See—*
Hare, Alan L.; and George, Allan P., 4,436,984, Cl. 219-383.000.

Tishura, Vladimir I.: *See—*
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galian, Boris A.; Asoyants, Grigory B.; and Tishura, Vladimir I., 4,436,974, Cl. 219-66.000.

Tkotz, Gunter: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,436,680, Cl. 264-60.000.

TMC Corporation: *See—*
Wittmann, Heinz; and Konwitza, Vladimir, 4,436,322, Cl. 280-614.000.

Toa Paint Co., Ltd.: *See—*
Kitano, Masao, 4,436,845, Cl. 523-172.000.

Tobback, Hubert J.: *See—*
Viellefont, Jean F.; Hens, Carolus M.; and Tobback, Hubert J., 4,436,606, Cl. 204-225.000.

Tobita, Hirosi: *See—*
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Toch, Theodore H.: *See—*
Bellotti, Marc; Goldhaber, Richard P.; Phillips, Earl G.; and Toch, Theodore H., 4,436,620, Cl. 210-90.000.

Toda, Minoru: *See—*
Osaka, Susumu; and Toda, Minoru, 4,435,920, Cl. 49-82.000.

Toga, Yuzo: *See—*
Okamoto, Ichiro; and Toga, Yuzo, 4,436,896, Cl. 156-332.000.

Tokuhisa, Masaaki; and Hirai, Yukio, to Kawasaki Steel Corporation. Basic bonded fluxes for submerged arc welding having an excellent removability of slag at a narrow groove. 4,436,562, Cl. 148-24.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Aoki, Mitsugu, 4,436,390, Cl. 351-234.000.
Sano, Eiichi, 4,436,389, Cl. 351-208.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hirose, Kenji, 4,437,127, Cl. 358-296.000.
Masuoka, Fujio, 4,437,172, Cl. 365-182.000.
Masuoka, Fujio, 4,437,174, Cl. 365-218.000.
Nakaya, Shunichi; and Araoka, Katsumasa, 4,437,016, Cl. 290-1.00R.
Noji, Takashi; Hapao, Norio; and Obata, Yoshiharu, 4,437,011, Cl. 250-486.100.
Takamura, Yoshio; and Nakajima, Akira, 4,437,147, Cl. 363-61.000.

Tomino, Naoki; Ikeda, Osamu; Matsuzawa, Yoshio; and Inoue, Hideya, to Nippon Kogaku K.K. Container device for planar battery. 4,436,792, Cl. 429-1.000.

Tomita, Masahiro; and Takagi, Shigeru, to Nippon Soken, Inc. Filter for cleaning exhaust gases from diesel engine. 4,436,538, Cl. 55-482.000.

Tompsett, Alan J., to Imperial Chemical Industries PLC. Manufacture of amines. 4,436,938, Cl. 564-474.000.

Tomy Kogyo Co., Inc.: *See—*
Iwao, Noriaki; and Abe, Akira, 4,435,916, Cl. 46-201.000.

Tonami, Munehiko: *See—*
Takeuchi, Masato; Okada, Hideo; Tobita, Hirosi; Okabe, Sigeru; Matsuda, Shinpei; Tonami, Munehiko; Tamura, Kohki; and Nakajima, Fumito, 4,436,794, Cl. 429-40.000.

Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,436,747, Cl. 424-274.000.

Tonon, Elia: *See—*
Perdomini, Luciano; Tonon, Elia; and Paronetto, Lanfranco, 4,436,755, Cl. 426-15.000.

Toth, Ferenc: *See—*
Ferenczi, Gyorgy; Horvath, Peter; Toth, Ferenc; Kiss, Jozsef; and Boda, Janos, 4,437,060, Cl. 324-158.00D.

Towae, Friedrich: *See—*
Harder, Wolfgang; Merger, Franz; and Towae, Friedrich, 4,436,668, Cl. 260-463.000.

Toyama Chemical Co., Ltd.: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Toyo Kogyo Co., Ltd.: *See—*
Hata, Shuji; Yamada, Toshio; and Murakawa, Katsuji, 4,435,994, Cl. 74-606.00R.
Watanabe, Kenichi; and Sumimoto, Takashi, 4,436,175, Cl. 180-254.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Isowa, Yoshikazu; Ohmori, Muncki; Mori, Kaoru; Ichikawa, Tetsuya; Nonaka, Yuji; Kihara, Keiichi; Oyama, Kiyotaka; Satoh, Heijiro; and Nishimura, Shigeaki, 4,436,925, Cl. 560-19.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Akagi, Motonobu; Nomura, Isshi; Hattori, Kyo; and Kato, Kichiro, 4,436,070, Cl. 123-440.000.
Nakamura, Norihiko; and Shibata, Yoshiaki, 4,436,068, Cl. 123-310.000.
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,436,072, Cl. 123-488.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Miyagi, Hideo, 4,436,073, Cl. 123-491.000.
Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, 4,436,062, Cl. 123-90.270.
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.
Sawabe, Masaki; and Kumagai, Tadanobu, 4,436,310, Cl. 277-11.000.

Transidyne General Corporation: *See—*
Enzer, Steven E.; and Sarrine, Robert J., 4,436,610, Cl. 204-400.000.

Trapp, Kenneth: *See—*
Santa Lucia, Jack; and Trapp, Kenneth, 4,436,249, Cl. 242-18.00R.

Trasavage, Robert K.: *See—*
Rendulic, Francis J.; Trasavage, Robert K.; and Boduch, Paul A., 4,436,806, Cl. 430-311.000.

Triebskorn, Bruno: *See—*
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.

Trilling, David M.; and Smadar, Yechiel, to Caribou Fisheries, Inc. Production of shaped food products. 4,436,759, Cl. 426-573.000.

Trion Industries Inc.: *See—*
Thalenfeld, David R., 4,436,209, Cl. 211-57.100.

Trommen, Hartmut: *See—*
Rother, Bruno; and Trommen, Hartmut, 4,436,781, Cl. 428-365.000.

Truck-Lite Company, Inc.: *See—*
Roller, Philip C.; and Suckow, Chris A., 4,437,145, Cl. 362-306.000.

Trybulski, Eugene J.: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,436,662, Cl. 260-245.700.

Tsai, Tsu-Tzu; and Arnold, Fred E., to United States of America, Air Force. 2-Phenylbanzothiazole polymers. 4,436,886, Cl. 526-257.000.

Tsuda, Hisatsugu: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.

Tsuda, Kinji, to Elephant Chain Block Company Limited. Hand operated hoist having improved means controlling free rotation of a load sheave. 4,436,333, Cl. 294-82.00R.

Tsuji, Nobuhiko: *See—*
Endoh, Koichi; Tsuji, Nobuhiko; Nakamura, Keijiroh; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,436,812, Cl. 435-14.000.

Tsukioka, Hideo: *See—*
Ohe, Etsuo; Sugawara, Katsuo; Tani, Itaro; and Tsukioka, Hideo, 4,436,654, Cl. 252-574.000.

Tsukishima Kikai Co., Ltd.: *See—*
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, 4,436,532, Cl. 48-209.000.

Tsuruyoshi, Kenichi: *See—*
Bando, Yoshihide; Tanaka, Toshiki; Honda, Sueaki; Takahashi, Yoshihiko; Tsuruyoshi, Kenichi; Kawashima, Katsumi; and Kishimoto, Syuichi, 4,437,078, Cl. 335-81.000.

Tsushima, Rikio: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,436,722, Cl. 424-70.000.

Tsuyama, Yoshito; Shimazaki, Yasumi; Kakita, Kazutoshi; and Hirokawa, Toshio, to Nippon Steel Corporation. Method and apparatus for manufacturing spiral pipe. 4,436,239, Cl. 228-17.000.

Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., to Otto Tuchenhagen GmbH & Co. KG. Pipeline switch with leakage control and cleanable leakage cavity. 4,436,106, Cl. 137-240.000.

Tucker, Hartwell F.: *See—*
Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F., 4,435,870, Cl. 15-98.000.

Tucker, Jeffery R.; Ross, Dennis W.; and Tucker, Hartwell F. Floor machine. 4,435,870, Cl. 15-98.000.

Tucker, Myron B. Portable storage device and table. 4,436,353, Cl. 312-241.000.

Tullos, Robert N.; and Ostroff, Arthur, to Minnesota Mining and Manufacturing Company. Stepper motor controller. 4,437,049, Cl. 318-696.000.

Turillon, Pierre P., to MPD Technology Corporation. Modular hydride container. 4,436,537, Cl. 55-387.000.

Turner, Frederick T.: *See—*
Harra, David J.; Turner, Frederick T.; and Hutchinson, Martin A., 4,436,602, Cl. 204-192.00R.

Twinoak Products, Inc.: *See—*
Meloy, Gilbert K., 4,435,857, Cl. 4-228.000.

Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Watkins, Hugh, 4,436,652, Cl. 252-522.00R.

Uchida, Itsuo: *See—*
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,436,726, Cl. 424-177.000.

Ueda, Fumio: *See—*
Nakakobara, Takeshi; Sakaguchi, Kiyoshi; Ueda, Fumio; and Murase, Hiroyuki, 4,436,062, Cl. 123-90.270.

Uehara, Hidehiko: *See—*
Takahashi, Masanori; and Uehara, Hidehiko, 4,436,514, Cl. 440-89.000.

Ueno, Kenji: *See—*
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, 4,436,861, Cl. 524-425.000.

Ueno, Ryuzo; Sakota, Kazuyuki; Kawata, Keiji; and Naito, Yoshiyuki, to Kabushiki Kaisha Veno Seiyaku Oyokenkyuso. Process for producing hydroxybenzonitriles. 4,436,670, Cl. 260-465.00B.

Ukigai, Toshiyuki: *See—*
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,436,527, Cl. 44-51.000.

Umeda, Arihiko; and Iwase, Yoshiyuki, to Texaco Inc. Modified polyoxyalkylenepolyamine curing agents for epoxy resins. 4,436,891, Cl. 528-111.000.

Umeda, Tadashi: *See—*
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,436,411, Cl. 355-14.00D.
Umehara, Kazuyoshi; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, to Fujisawa Pharmaceutical Co., Ltd. N-Acylpeptide compound, processes for the preparation thereof and the pharmaceutical compositions. 4,436,726, Cl. 424-177.000.
Umeyama, Koichi: *See—*
Aihara, Tetsuo; Nakayama, Yasuharu; Umeyama, Koichi; Sawada, Kozo; and Shinohara, Masaaki, 4,436,849, Cl. 523-501.000.
Umezu, Hiroaki; Kishi, Akira; and Yamagami, Hiroshi, to Misawa Homes K.K. Modular building structure and module for it. 4,435,927, Cl. 52-79.130.
Unger, Gotz W., to Knoll International, Inc. Assembly for holding and tensioning a webbing. 4,435,882, Cl. 24-265.00R.
Union Carbide Corporation: *See—*
Andreini, Rockne J.; Mehlman, Stewart K.; Selines, Ronald J.; and Agrawal, Balkishan, 4,436,553, Cl. 75-52.000.
Hodakowski, Leonard E.; and Wilson, Charles A., II, 4,436,736, Cl. 424-211.000.
Scott, Robert J., 4,436,642, Cl. 252-95.000.
Sheads, Richard E.; and Segal, David A., 4,436,665, Cl. 260-404.000.
Smolarek, James, 4,436,146, Cl. 165-111.000.
Wheeler, Thomas N., 4,436,666, Cl. 260-455.00B.
Union Siderurgique du Nord et de l'Est de la France: *See—*
Bocquet, Jacques; and Werquin, Jean C., 4,436,791, Cl. 428-682.000.
Union Special Corporation: *See—*
Bonham, Richard T.; Sigiols, John P.; and Dinkelacker, Paul H., 4,436,045, Cl. 112-313.000.
Nordstrom, Eric W.; and Manoski, Laurence A., 4,436,044, Cl. 112-286.000.
United States of America
Air Force: *See—*
Beggs, William R.; and Crane, Barry D., 4,436,437, Cl. 374-32.000.
Cummings, Robert J., 4,436,262, Cl. 244-122.0AG.
Donelan, Edward J., 4,436,260, Cl. 244-3.160.
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., 4,437,080, Cl. 335-216.000.
Ekin, John W.; Gavaler, John R.; and Braginski, Aleksander I., 4,437,080, Cl. 335-216.000.
Lee, David R.; and McCreary, Robert B., 4,437,113, Cl. 358-93.000.
Simmons, Louis D., 4,436,220, Cl. 220-359.000.
Thal, Herbert L., Jr., 4,437,073, Cl. 333-28.00R.
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,436,886, Cl. 526-257.000.
Army: *See—*
Boyd, Phillip R.; Green, Gary K.; and Sumner, Barbara E., 4,436,580, Cl. 156-636.000.
Mayo, Henry C.; and Korzendorfer, Joseph E., 4,436,330, Cl. 292-263.000.
Energy: *See—*
Bryan, James B., 4,435,905, Cl. 33-181.00R.
Demirjian, Ara M.; and Solbes, Albert, 4,437,026, Cl. 310-11.000.
Hondorp, Hugh L., 4,437,013, Cl. 250-515.100.
Huggins, Robert A.; and Boukamp, Bernard A., 4,436,796, Cl. 429-112.000.
Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, 4,436,691, Cl. 376-137.000.
Lewandowski, Edward F.; and Vrabec, John, 4,437,034, Cl. 313-348.000.
Overton, William C., Jr.; and Steyert, William A., Jr., 4,437,064, Cl. 324-346.000.
Russak, Michael A., 4,436,558, Cl. 148-1.500.
Shiue, Chyng-Yann; and Wolf, Alfred P., 4,436,717, Cl. 424-1.100.
Sugama, Toshifumi; and Kukacka, Lawrence E., 4,436,555, Cl. 106-85.000.
Wood, Richard F.; and Young, Rosa T., 4,436,557, Cl. 148-1.500.
National Aeronautics and Space Administration: *See—*
Kleinberg, Leonard L., 4,437,069, Cl. 330-109.000.
Navy: *See—*
Ante, Louis E.; Lindquist, Richard A.; and Roeschlein, Eugene R., 4,436,049, Cl. 114-254.000.
Cole, James H., 4,436,425, Cl. 356-361.000.
Hudson, John A., 4,437,097, Cl. 340-852.000.
McKenzie, Joe A.; and Lowe, Gary D., 4,437,067, Cl. 328-167.000.
Miles, Melvin H.; and Fine, Dwight A., 4,436,590, Cl. 204-1.00T.
Somerfleck, Harold H., 4,436,569, Cl. 156-217.000.
Williams, Ralph E., 4,436,766, Cl. 427-96.000.
U.S. Philips Corporation: *See—*
de Wilde, Johannes, 4,435,900, Cl. 29-603.000.
Horl, Manfred, 4,437,070, Cl. 330-254.000.
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,436,381, Cl. 350-432.000.
Mrazek, Gustav; and Obenaus, Franz, 4,437,105, Cl. 346-140.00R.
Singer, Barry M., 4,437,118, Cl. 358-113.000.
United States Steel Corporation: *See—*
Boodman, Norman S.; Farr, Elvin L.; Osterholm, Robert J.; and Green, Neulan B., III, 4,436,615, Cl. 208-177.000.
Chang, Melvin C.; and Howell, John L., 4,436,552, Cl. 75-41.000.
United Technologies Corporation: *See—*
Stetson, Karl A.; and Harrison, Irene R., 4,436,419, Cl. 356-35.500.
Universal Gesellschaft fur Umwelttechnik mbH: *See—*
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.
University of Nebraska, The Board of Regents of the: *See—*
Erickson, Eric D., 4,436,700, Cl. 422-102.000.
University of Toledo, The: *See—*
Raftopoulos, Demetrios D., 4,436,099, Cl. 128-782.000.
Uno, Masahiro: *See—*
Watanabe, Atsuo; and Uno, Masahiro, 4,436,428, Cl. 356-432.000.
UPA Technology, Inc.: *See—*
Weinstock, Jacques, 4,437,000, Cl. 250-308.000.
Urano, Haruya: *See—*
Nakamura, Hiromichi; Urano, Haruya; Kojima, Tatsuo; and Sekiwa, Mitsunao, 4,436,006, Cl. 83-13.000.
Urasaki, Takanori; Hirabayashi, Yasuji; Yoshida, Tugusi; and Inata, Hiroo, to Teijin Limited. Novel wholly aromatic copolyester, process for production thereof, and film melt-shaped therefrom. 4,436,894, Cl. 528-176.000.
Urbanek, Friedrich: *See—*
Strehler, Hugo; Hoerauf, Werner; and Urbanek, Friedrich, 4,436,897, Cl. 528-323.000.
Urquhart, John; Chandrasekaran, Santosh K.; and Shaw, Jane E., to ALZA Corporation. Method for administering scopolamine transdermally. 4,436,741, Cl. 424-267.000.
Ushikoshi, Kenichi, to Kabushiki Kaisha Suwa Seikosha. Analog and digital display timepiece. 4,436,435, Cl. 368-71.000.
Ushimura, Shoji: *See—*
Tanaka, Toshiaki; Ushimura, Shoji; and Etoh, Yukihiro, 4,436,060, Cl. 123-41.100.
Ushioda, Minoru; Ueno, Kenji; Furukawa, Hiroyasu; and Kobayashi, Masahiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyvinyl chloride containing alkyl acrylate and alkyl methacrylate sequentially polymerized thereon. 4,436,861, Cl. 524-425.000.
USM Corporation: *See—*
Berrill, William H.; Boot, Herbert W.; and Hartshorn, Frank, 4,435,869, Cl. 12-12.000.
Simmonds, Robert C., Jr.; and Gilbride, Andrew J., 4,436,771, Cl. 427-284.000.
Usui Kokusai Sangyo Kabushiki Kaisha: *See—*
Usui, Masayoshi, 4,436,063, Cl. 123-90.610.
Usui, Masayoshi, to Usui Kokusai Sangyo Kabushiki Kaisha. Push rod for operating an intake or exhaust valve of an internal combustion engine. 4,436,063, Cl. 123-90.610.
Vahlensieck, Hans-Joachim: *See—*
Blumcke, Alfred; Fischer, Peter; and Vahlensieck, Hans-Joachim, 4,436,823, Cl. 436-169.000.
Vaillant, Robert: *See—*
Ninet, Jean-Louis; and Vaillant, Robert, 4,436,454, Cl. 405-204.000.
Valenti, Salvatore, to Sandoz Ltd. After treating composition for direct or reactive dyeings on cellulose. 4,436,524, Cl. 8-551.000.
Valentine, John M. Apparatus for cutting fusible material. 4,436,010, Cl. 83-171.000.
VALEO: *See—*
Bertin, Patrice, 4,436,171, Cl. 180-148.000.
Vance, Ershell C. Universally positionable low profile mine drilling machine and method. 4,436,455, Cl. 405-303.000.
van den Bemt, Johannes C., to Estel Hoogovens BV. Ceramic burner for gas, particularly for a hot-blast stove for a blast furnace. 4,436,508, Cl. 432-214.000.
van der Lely, Cornelis. Soil cultivating implements. 4,436,161, Cl. 172-49.500.
Vanderpool, Steven H.: *See—*
Sanderson, John R.; Vanderpool, Steven H.; and Watts, Lewis W., Jr., 4,436,932, Cl. 560-246.000.
Vanderwerf, Dennis F., to Minnesota Mining and Manufacturing Company. Distortion correction for an overhead projector system. 4,436,392, Cl. 353-38.000.
Vanderwerf, Dennis F., to Minnesota Mining and Manufacturing Company. Distortion correction for an overhead projector system. 4,436,393, Cl. 353-38.000.
van Doorne, Hubertus J., deceased (by van Doorne, Martinus P. J. H., executor), to Erven Dr. Hubertus Josephus van Doorne. Automatic continuously variable transmission. 4,435,997, Cl. 74-796.000.
van Doorne, Martinus P. J. H., executor: *See—*
van Doorne, Hubertus J., deceased, 4,435,997, Cl. 74-796.000.
van Helden, Robert: *See—*
Baardman, Frank; van Helden, Robert; and de Nie-Sarink, Margaretha J., 4,436,937, Cl. 564-409.000.
Vanlerberghe, Guy: *See—*
Kalopissis, Gregoire; and Vanlerberghe, Guy, 4,436,909, Cl. 546-248.000.
van Mullekom, Hubert P., to Ruti-te Strake, B.V. Device for inserting a thread into the weaving shed of a pneumatic weaving machine by means of a flowing fluid. 4,436,122, Cl. 139-435.000.
Vann, Roy R.; and George, Flint R., to Geo Vann, Inc. Method for controlling subsurface blowout. 4,436,154, Cl. 166-281.000.
van Ouwerkerk, Wouter C., to Saueressig GmbH. Rotary screen printing apparatus. 4,436,032, Cl. 101-120.000.
van 't Slot, Kornelis, to Moba Holding Barneveld B.V. Modelling or packing device for fowl. 4,435,879, Cl. 17-11.000.
Van Vliet, James G.; and Brown, James R., to Beckman Instruments, Inc. Photomultiplier detector protection device and method. 4,436,994, Cl. 250-207.000.
Varela-Hernandez, Arturo G. Tensed wire suspension system. 4,436,284, Cl. 256-35.000.

Varian Associates, Inc.: *See—*
Harra, David J.; Turner, Frederick T.; and Hutchinson, Martin A., 4,436,602, Cl. 204-192.00R.
Vary, Philip. Hydro-turbine device for generating electricity. 4,436,480, Cl. 415-2.00R.
Vassalotti, Michael; and Obligado, Alvaro, to Automation Industries, Inc. Nuclear reactor cavity decontamination machine. 4,436,694, Cl. 376-310.000.
Vaughn, Howard A., Jr., to General Electric Company. Silicone resin coating composition containing an ultravinlet light absorbing agent. 4,436,851, Cl. 524-43.000.
Vayda, Adam V.: *See—*
Morganson, Neal E.; and Vayda, Adam V., 4,436,947, Cl. 585-525.000.
VDO Adolf Schindling AG: *See—*
Collonia, Harald, 4,436,069, Cl. 123-339.000.
Veco Beheer B.V.: *See—*
de Hek, Johan A., 4,436,591, Cl. 204-11.000.
Veith, Werner, to Siemens Aktiengesellschaft. Flat cathode ray tube and method of operation. 4,437,044, Cl. 315-366.000.
Veitscher Magnesitwerke-Actien-Gesellschaft: *See—*
Horak, Josef, 4,436,144, Cl. 165-9.100.
Venetti, Mark: *See—*
Jaquay, Louis H.; and Venetti, Mark, 4,436,611, Cl. 208-11.00R.
Vereinigte Deutsch Metallwerke AG: *See—*
Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, 4,436,790, Cl. 428-675.000.
Veres, Albert: *See—*
Kaderjak, Gyula; Veres, Albert; Barkoczy, Istvan; and Lonscsak, Janos, 4,436,954, Cl. 174-128.00R.
Vereschaka, Anatoly S.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.
Verhagen, Laurentius A. M.; and Warnaar, Leendert G., to Lever Brothers Company. Low-calorie spread based on a low-melting butterfat fraction. 4,436,760, Cl. 426-603.000.
Veron, Serge: *See—*
Raverdy, Claude Y.; and Veron, Serge, 4,437,035, Cl. 313-388.000.
Verweij, Hendrik: *See—*
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,436,381, Cl. 350-432.000.
Vichkanova, Serafima A.; Shipulina, Ljudmila D.; Glyzin, Vladimir I.; Bankovsky, Alexandr I.; Pimenov, Mikhail G.; and Boryaev, Klim I. Medicated compound for treating diseases infected by virus of the herpes group. 4,436,732, Cl. 424-180.000.
Victor Company of Japan Limited: *See—*
Inaba, Shosei, 4,436,201, Cl. 206-444.000.
Kishima, Yukihiro, 4,437,181, Cl. 369-244.000.
Nishihara, Yoshiki; and Miyamoto, Kazumichi, 4,436,683, Cl. 264-107.000.
Viellefont, Jean F.; Hens, Carolus M.; and Tobback, Hubert J., to Metallurgie Hoboken-Overpelt. Electrolysis apparatus. 4,436,606, Cl. 204-225.000.
Voest-Alpine Aktiengesellschaft: *See—*
Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,436,290, Cl. 266-158.000.
Riegler, Ernst; and Zajicek, Ernst, 4,437,187, Cl. 373-73.000.
Vogt, James A.: *See—*
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,436,623, Cl. 210-282.000.
Voigtlander, Wolfgang: *See—*
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Neubert, Peter, 4,436,735, Cl. 424-182.000.
Voigtsberger, Carl-Alexander: *See—*
Fuchs, Helmut V.; Schupp, Gerold; and Voigtsberger, Carl-Alexander, 4,435,974, Cl. 73-40.50A.
Voirin, Robert: *See—*
Kvasnikoff, Georges; and Voirin, Robert, 4,436,716, Cl. 423-574.00R.
Vollmer Werke Maschinenfabrik GmbH: *See—*
Lenard, Peter; and Beck, Ernst, 4,436,000, Cl. 76-41.000.
Von Der Pahle, Dietrich J.: *See—*
Kreuzburg, Eberhard; Von Der Pahle, Dietrich J.; Monsheimer, Rolf; Pfleiderer, Ernst; and Taeger, Tilman, 4,436,624, Cl. 210-632.000.
Vonnegut, George L., to General Motors Corporation. Turbine wheel with integral DS blades and equiaxed hub. 4,436,485, Cl. 416-241.00R.
Voplex Corporation: *See—*
Donahue, Gordon J., 4,436,276, Cl. 249-91.000.
Vornberger, George F.; and Crutcher, John P., to Senco Products, Inc. Automatic firing system for pneumatic tools. 4,436,237, Cl. 227-130.000.
Vossieck, Paul, to Goetze AG. Slide ring seal with spring to radially bias in opposite radial directions. 4,436,314, Cl. 277-86.000.
Voznick, Henry P., to Wahl Instruments, Inc. Multiple probe temperature measuring system and probes therefor. 4,436,438, Cl. 374-165.000.
Vrabec, John: *See—*
Lewandowski, Edward F.; and Vrabec, John, 4,437,034, Cl. 313-348.000.
W. R. Grace & Co.: *See—*
Gokel, George W., 4,436,664, Cl. 260-330.600.
Rendulic, Francis J.; Trasavage, Robert K.; and Boduch, Paul A., 4,436,806, Cl. 430-311.000.
Wachi, Hiroshi: *See—*
Kokura, Satoshi; Nihei, Masayasu; Wachi, Hiroshi; Mashida, Hiromi; and Senda, Kousaku, 4,436,982, Cl. 219-130.510.
Wacker-Chemie GmbH: *See—*
Huhn, Karl; and Marwitz, Heinrich, 4,436,856, Cl. 524-211.000.
Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, 4,436,647, Cl. 252-358.000.
Wacyk, Ihor T., to RCA Corporation. Actively controlled input buffer. 4,437,024, Cl. 307-475.000.
Wada, Satoshi: *See—*
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, 4,436,981, Cl. 219-124.320.
Wada, Tomio: *See—*
Funada, Fumiaki; Kozaki, Syuichi; Matsuura, Masataka; and Wada, Tomio, 4,436,379, Cl. 350-347.00E.
Yano, Kohzo; Hamada, Hiroshi; Inami, Yasuhiko; and Wada, Tomio, 4,436,380, Cl. 350-357.000.
Wada, William T.: *See—*
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; and Wada, William T., 4,436,048, Cl. 114-230.000.
Wagner, Manfred: *See—*
Erdmannsdorfer, Hans; Wagner, Manfred; and Weyh, Gerd, 4,436,535, Cl. 55-96.000.
Wagner, Melvin P., to PPG Industries, Inc. Rubber compositions. 4,436,847, Cl. 523-203.000.
Wahl Instruments, Inc.: *See—*
Voznick, Henry P., 4,436,438, Cl. 374-165.000.
Waldemar Link GmbH & Co.: *See—*
Keller, Arnold, 4,435,854, Cl. 3-1.913.
Waldmann, Helmut: *See—*
Rauleder, Gebhard; and Waldmann, Helmut, 4,436,943, Cl. 585-357.000.
Walker, Donald R.: *See—*
Mitchell, Hal D.; and Walker, Donald R., 4,435,851, Cl. 2-2.000.
Walker, Graham: *See—*
O'Hanlon, Peter J.; and Walker, Graham, 4,436,751, Cl. 424-283.000.
Walker, Thad O.; and Matthews, Patricia C., to Exxon Research & Engineering Co. Additive composition for release of stuck drill pipe. 4,436,638, Cl. 252-8.55R.
Walls, John E., to American Hoechst Corporation. Light-sensitive polymeric diazonium condensates and reproduction compositions and materials therewith. 4,436,804, Cl. 430-157.000.
Walls, John E., to American Hoechst Corporation. Developer composition with sodium, lithium and/or potassium salts for developing negative working imaged photographic material. 4,436,807, Cl. 430-331.000.
Walser, Armin: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,436,662, Cl. 260-245.700.
Walsh, Brian F.; and Halpert, David E., to Xerox Corporation. Low resolution raster images. 4,437,122, Cl. 358-166.000.
Walsh, Edward J.; and Kurz, Robert A., to Westinghouse Electric Corp. Apparatus for continually upgrading transformer dielectric liquid. 4,437,082, Cl. 336-58.000.
Walter Hofmann Maschinenfabrik, Firma: *See—*
Hofmann, Frank, 4,436,230, Cl. 222-614.000.
Walter, Lothar: *See—*
Ernst, Horst M.; Brandenstein, Manfred; Walter, Lothar; and Olschewski, Armin, 4,435,890, Cl. 29-148.40R.
Walters, Anthony J.; and Nelson, Stanford C., to Walters, Anthony J. Descaler for systems employing water as a heat transfer agent. 4,436,604, Cl. 204-196.000.
Wandel, Dietmar: *See—*
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,436,688, Cl. 264-176.00F.
Wang Associates: *See—*
Wang, Chia-Gee, 4,436,826, Cl. 436-525.000.
Wang, Chia-Gee, to Wang Associates. Tagged immunoassay. 4,436,826, Cl. 436-525.000.
Wang, Li-Kong: *See—*
Parrillo, Louis C.; Reutlinger, George W.; and Wang, Li-Kong, 4,435,895, Cl. 29-571.000.
Ward, Donald W.: *See—*
Dahl, James M.; Jacobs, Bernard B.; Lipovac, Joseph E.; Meglen, Ralph A.; and Ward, Donald W., 4,436,497, Cl. 425-28.00R.
Warlaumont, John M.: *See—*
Brady, Michael J.; Meyerson, Bernard S.; and Warlaumont, John M., 4,436,797, Cl. 430-5.000.
Warnaar, Leendert G.: *See—*
Verhagen, Laurentius A. M.; and Warnaar, Leendert G., 4,436,760, Cl. 426-603.000.
Warner-Lambert Company: *See—*
Smitka, Tim A.; Bunge, Richard H.; French, James C.; and Bloem, Russell J., 4,436,750, Cl. 424-279.000.
Warner, Philip E. Left-handed letterer. 4,435,903, Cl. 33-23.00D.
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, to Nippon Telegraph & Telephone Public Corporation; and Mansei Kogyo Kabushiki Kaisha. Small-sized video or audio pickup device having a beam deflector disposed within a focusing device support. 4,437,177, Cl. 369-45.000.
Watanabe, Atsuo; and Uno, Masahiro, to Fuji Electric Co., Ltd. Photoacoustic spectrometer. 4,436,428, Cl. 356-432.000.
Watanabe, Kenichi; and Sumimoto, Takashi, to Toyo Kogyo Co., Ltd. Front wheel suspension for a front engine-front wheel drive automobile. 4,436,175, Cl. 180-254.000.

Watanabe, Koji, to NIFCO, Inc. Device for clamping one terminal end of a tape in a tape reel. 4,436,253, Cl. 242-74.100.
Watanabe, Takashi: *See—*
Narato, Kiyoshi; Ohtsuka, Keizou; Inada, Tooru; and Watanabe, Takashi, 4,436,699, Cl. 422-68.000.
Watari, Takashi: *See—*
Inoue, Morio; Hoshino, Satoshi; Namura, Hideki; and Watari, Takashi, 4,436,482, Cl. 416-1.000.
Watkins, Hugh: *See—*
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Watkins, Hugh, 4,436,652, Cl. 252-522.00R.
Watson, Kenneth, to Westland plc. Helicopter rotors. 4,436,483, Cl. 416-143.000.
Watts, Lewis W., Jr.: *See—*
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,926, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,927, Cl. 560-246.000.
Sanderson, John R.; Renken, Terry L.; and Watts, Lewis W., Jr., 4,436,928, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,929, Cl. 560-246.000.
Sanderson, John R.; and Watts, Lewis W., Jr., 4,436,930, Cl. 560-246.000.
Sanderson, John R.; Watts, Lewis W., Jr.; and Renken, Terry L., 4,436,931, Cl. 560-246.000.
Sanderson, John R.; Vanderpool, Steven H.; and Watts, Lewis W., Jr., 4,436,932, Cl. 560-246.000.
Waugh, Gerald F., to Frymaster Corporation, The. Cooking computer. 4,437,159, Cl. 364-400.000.
Wavin B.V.: *See—*
Olderaan, Wilhelmus F. T. C., 4,435,888, Cl. 29-235.000.
Webasto-Werk W. Baier GmbH & Co.: *See—*
Jardin, Hans, 4,436,338, Cl. 296-223.000.
Lamkewitz, Falk; and Riedmaier, Josef, 4,436,064, Cl. 123-142.50R.
Weber, Georg: *See—*
Schulz, Rudi; Puestel, Hubert; Weber, Georg; and Kuerten, Heribert, 4,436,702, Cl. 422-195.000.
Weber, T. Jerome, to GCA Corporation. Apparatus for heat treating semiconductor wafers. 4,436,985, Cl. 219-388.000.
Webster, Ronald B.: *See—*
Logan, David J.; Webster, Ronald B.; and Sullivan, Daniel J., 4,435,904, Cl. 33-143.00K.
Wegh, John R.: *See—*
Bolenbaugh, Daniel L.; and Wegh, John R., 4,436,187, Cl. 188-73.450.
Weikert, Norbert B.: *See—*
Best, Gerd; and Weikert, Norbert B., 4,436,346, Cl. 299-87.000.
Weikert, Roy J. Method for joining webs of aseptic pouches. 4,436,567, Cl. 156-158.000.
Weiler, Gerhard H.; and Pagels, Louis T., to Automatic Liquid Packaging, Inc. Threaded cap for severing a closure from a hermetically sealed container. 4,436,210, Cl. 215-32.000.
Weimann, Gunter: *See—*
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Weimann, Gunter, 4,436,828, Cl. 436-545.000.
Weinel, Johann: *See—*
Ophoff, Paul-Arthur; and Weinel, Johann, 4,437,005, Cl. 250-343.000.
Weinstock, Jacques, to UPA Technology, Inc. Aperture piece and method for calibrating backscatter thickness measuring instruments for measuring concave workpieces. 4,437,000, Cl. 250-308.000.
Weiss, Viktor: *See—*
Fryberg, Mario; and Weiss, Viktor, 4,436,811, Cl. 430-564.000.
Weitz, Hans-Martin; Fischer, Rolf; and Pohl, Hans H., to BASF Aktiengesellschaft. Preparation of o-xylene and ethylbenzene. 4,436,944, Cl. 585-408.000.
Weitzel, Harold B.; and Parman, David G., to Ricwil, Incorporated. Method of making a heating device for utilizing the skin effect of alternating current. 4,436,565, Cl. 156-49.000.
Welander, Walter E. Positive drive differential for vehicle including tractors. 4,435,995, Cl. 74-711.000.
Welch, William R.: *See—*
Fisher, Ernest P., Jr.; and Welch, William R., 4,436,152, Cl. 166-214.000.
Wells, John R., to Wescor, Inc. Method and apparatus for separating cells by sedimentation velocity. 4,436,634, Cl. 210-800.000.
Wenninger, Fred W.: *See—*
Christopher, Chris J.; Wenninger, Fred W.; Morris, Donald E.; Covington, Wayne F.; Folsom, Jerry B.; Beyers, Joseph W.; Nairn, John H.; and Osborne, Jeffrey C., 4,437,156, Cl. 364-200.000.
Wentzell, Timothy H., to Combustion Engineering, Inc. Torsionless multiple connector reel device. 4,436,190, Cl. 191-12.20R.
Werquin, Jean C.: *See—*
Bocquet, Jacques; and Werquin, Jean C., 4,436,791, Cl. 428-682.000.
Wescor, Inc.: *See—*
Wells, John R., 4,436,634, Cl. 210-800.000.
West Company, The: *See—*
Allen, Roland M.; and Kalocai, Andrew J., 4,436,478, Cl. 414-752.000.
Western Electric Co., Inc.: *See—*
Brossman, James W., Jr.; Nemeth, Carol A.; and Shapiro, Alan K., 4,436,474, Cl. 414-417.000.
Hansen, Robert C.; and Novorolsky, Paul G., 4,436,958, Cl. 179-2.00A.
Suranyi, Gabriel G., 4,437,148, Cl. 363-89.000.
Westinghouse Electric Corp.: *See—*
Dorman, John G.; Balbo, Anthony M.; Randall, Charles E.; and Sette, Robert A., 4,436,184, Cl. 187-29.00R.
Gyugyi, Laszlo, 4,437,052, Cl. 323-210.000.
Link, Vincent F.; and Yamasaki, George K., 4,437,038, Cl. 313-633.000.
Ludwig, Richard H.; Quan, Wing C.; Husson, Alan L.; Dirnberger, Linus R.; and Polis, Marjorie J., 4,436,185, Cl. 187-29.00R.
Olmsted, Gaylord S.; and Rosno, Gordon W., 4,436,016, Cl. 89-1.809.
Radford, Kenneth C.; and Harrison, Don E., 4,436,677, Cl. 264-0.500.
Steinbruegge, Kenneth B.; Schruben, Johanna S.; and Taylor, Lyle H., 4,436,363, Cl. 350-1.600.
Walsh, Edward J.; and Kurz, Robert A., 4,437,082, Cl. 336-58.000.
Westland plc: *See—*
Watson, Kenneth, 4,436,483, Cl. 416-143.000.
Wetzel, Peter: *See—*
Rief, Rolf; and Wetzel, Peter, 4,436,951, Cl. 174-52.0PE.
Wey, Robert A.; and Roberts, Harold A., to Augat Inc. Vacuum chuck for holding filaments. 4,436,295, Cl. 269-21.000.
Weyh, Gerd: *See—*
Erdmannsdorfer, Hans; Wagner, Manfred; and Weyh, Gerd, 4,436,535, Cl. 55-96.000.
Whaley, Wilson M.: *See—*
Stelz, Dale E.; Carroll, Frank I.; and Whaley, Wilson M., 4,436,641, Cl. 252-68.000.
Wheaton Industries: *See—*
Allen, Fred E.; Thuener, Bruce W.; and Shadinger, Peter R., 4,436,500, Cl. 425-290.000.
Wheeler, Thomas N., to Union Carbide Corporation. Biocidal enol derivatives of 2-aryl-1,3-cycloalkanedione compounds. 4,436,666, Cl. 260-455.00B.
Wheeler, Warren H.: *See—*
Russon, Darrel L.; and Wheeler, Warren H., 4,436,007, Cl. 83-23.000.
Wheeler, William J., to Eli Lilly and Company. 7-[2-(2-Aminooxazol-4-yl)-2-(oximino)acetamido cephalosporin antibiotics and intermediates therefor. 4,436,912, Cl. 548-233.000.
White, David N., to Contour Med Partners, Ltd. Method of forming implantable prostheses for reconstructive surgery. 4,436,684, Cl. 264-138.000.
White, Henry J.: *See—*
Nelson, Garth C.; White, Henry J.; and Nelson, Gerald B., 4,436,502, Cl. 425-331.000.
Whiting, Roger L.: *See—*
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,436,914, Cl. 548-348.000.
Whitney, Sandra L.: *See—*
Ralston, Paul H.; and Whitney, Sandra L., 4,436,628, Cl. 210-697.000.
Whitten, James R., to General Electric Company. Fiber optics transducers for sensing parameter magnitude. 4,436,995, Cl. 250-227.000.
Wickramasinghe, Hemantha K., to National Research Development Corporation. Acoustic coupling device. 4,435,985, Cl. 73-642.000.
Wico Corporation: *See—*
Kim, Syng N., 4,436,971, Cl. 200-295.000.
Widmer, Peter. Apparatus for carrying out an anaerobic fermentation of organic solid matter for the purpose of extracting a combustible gas. 4,436,818, Cl. 435-316.000.
Wilder, David M. Roll mill for reduction of moisture content in waste material. 4,436,028, Cl. 100-121.000.
Wiley, Alvin F.: *See—*
Talley, Thomas H.; Sheets, Lee W.; and Wiley, Alvin F., 4,435,860, Cl. 5-13.000.
Wilhelm, Frederick C.: *See—*
Daly, Francis P.; and Wilhelm, Frederick C., 4,436,836, Cl. 502-317.000.
Wilkinson Rubber Linatex Limited: *See—*
Barnes, George D., 4,436,433, Cl. 366-152.000.
Willett, John T.: *See—*
Tabereaux, Alton T.; and Willett, John T., 4,436,598, Cl. 204-67.000.
William H. Rorer, Inc.: *See—*
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,436,911, Cl. 546-291.000.
Williams, Lonnie M., to Williams Panel Board Company. Method of disassembling wooden pallets. 4,435,892, Cl. 29-239.000.
Williams Panel Board Company: *See—*
Williams, Lonnie M., 4,435,892, Cl. 29-239.000.
Williams, Ralph E., to United States of America, Navy. Plated bridge step-over connection for monolithic devices and method for making thereof. 4,436,766, Cl. 427-96.000.
Williamson, John G., Jr., to Marshall and Williams Company. Automatic lint screen. 4,435,909, Cl. 34-82.000.
Willingham, James T., to South Plains Sheet Metal, Inc. Suction pipe. 4,436,457, Cl. 406-116.000.
Willis, Clive: *See—*
Gauthier, Michel; Hackett, Peter A.; and Willis, Clive, 4,436,709, Cl. 423-437.000.
Wilson, Charles A., II: *See—*
Hodakowski, Leonard E.; and Wilson, Charles A., II, 4,436,736, Cl. 424-211.000.

Wilson, Gordon R.: *See—*
Wisdom, Lawrence W.; and Wilson, Gordon R., 4,436,458, Cl. 406-135.000.
Wilson, Jerry L. Device for recording the dispensing of fluids. 4,436,223, Cl. 222-36.000.
Winstead, Thomas W., to Maryland Cup Corporation. Method and apparatus for generating foamed thermoplastic materials. 4,436,679, Cl. 264-40.300.
Wippig, Werner: *See—*
Magnus, Wolf; Braach, Otto; Fischer, Dirk; and Wippig, Werner, 4,436,448, Cl. 405-143.000.
Wisdom, Lawrence W.; and Wilson, Gordon R., to Frito-Lay, Inc. Liquid-solid contacting apparatus. 4,436,458, Cl. 406-135.000.
Wissman, Lawrence Y.: *See—*
Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,436,887, Cl. 526-263.000.
Witalka, Jerome J.; Kurth, Duane G.; and Baber, David J., to Sperry Corporation. Dynamic subchannel allocation. 4,437,157, Cl. 364-200.000.
Withnall, Malcolm D. N.: *See—*
Taylor, Michael; and Withnall, Malcolm D. N., 4,436,222, Cl. 221-223.000.
Witt, Donald R., to Phillips Petroleum Company. Polymerization process utilizing a catalyst prepared by aging of a chromium-containing gel at high pH. 4,436,882, Cl. 526-106.000.
Witt, Donald R., to Phillips Petroleum Company. Polymerization using a support formed by heating silica gel in inert atmosphere. 4,436,883, Cl. 526-106.000.
Witten, Raymond L., to Hughes Tool Company. Below motor pressure compensation system for submersible pump. 4,436,488, Cl. 417-53.000.
Wittmann, Heinz; and Konwitza, Vladimir, to TMC Corporation. Locking mechanism. 4,436,322, Cl. 280-614.000.
Wojcik, William. Process for customizing glass greeting cards and glass greeting card product. 4,436,776, Cl. 428-14.000.
Wolf, Alfred P.: *See—*
Shiue, Chyng-Yann; and Wolf, Alfred P., 4,436,717, Cl. 424-1.100.
Wolff, Konrad: *See—*
Hofmann, Hansdieter; Rothe, Hans-Jochen; Skupin, Georg; and Wolff, Konrad, 4,436,898, Cl. 528-336.000.
Wong, Robert: *See—*
Haines, Richard M.; Wong, Robert; and Berger, Elisabeth J., 4,436,848, Cl. 523-426.000.
Wood, Denis; Thomas, John F., Jr.; and Dipper, Barry, to Donnelly Mirrors, Inc. Vehicle mirror assembly. 4,436,371, Cl. 350-281.000.
Wood, Louis L.; and Calton, Gary J., to Purification Engineering, Inc. Immobilized microbial cell composition for making L-aspartic acid. 4,436,813, Cl. 435-109.000.
Wood, Richard F.; and Young, Rosa T., to United States of America, Energy. Modified laser-annealing process for improving the quality of electrical P-N junctions and devices. 4,436,557, Cl. 148-1.500.
Wood, William E.; and Barber, Franklin T., to Phillips Petroleum Company. Removal of contaminants in liquid purification. 4,436,902, Cl. 528-501.000.
Woodall, Jerry M.: *See—*
Freeouf, John L.; Haag, William J.; and Woodall, Jerry M., 4,436,768, Cl. 427-227.000.
Woodings, Robert T. Method and apparatus for opening blast-furnace tap holes. 4,436,285, Cl. 266-45.000.
Woudstra, Gerrit, to Stamicarbon B.V. Arrangement for monitoring cathodically protected structures. 4,437,065, Cl. 324-425.000.
Wright, Franklin J., to Exxon Research and Engineering Co. Iron-thallium catalysts for use in CO hydrogenation and process of preparing the catalysts. 4,436,834, Cl. 502-201.000.
Wright, Lamont R.: *See—*
Ceelen, Theodorus M.; Jeromin, Lothar S.; and Wright, Lamont R., 4,436,054, Cl. 118-652.000.
Wuelfing, Johann A.: *See—*
Jozic, Ljerka, 4,436,908, Cl. 546-206.000.
Wyatt, Everette L.: *See—*
Lyons, Donald W., Jr.; and Wyatt, Everette L., 4,436,545, Cl. 71-25.000.
Wyatt, Gerald A., to Minnesota Mining and Manufacturing Company. Rocking armature transformer relay. 4,437,081, Cl. 335-229.000.
Xerox Corporation: *See—*
Ceelen, Theodorus M.; Jeromin, Lothar S.; and Wright, Lamont R., 4,436,054, Cl. 118-652.000.
Doery, Michael S.; Hanzlik, Edward W. C.; Adamek, John A.; and McLaughlin, William J., 4,436,301, Cl. 271-177.000.
Sprague, Robert A., 4,437,106, Cl. 346-160.000.
Walsh, Brian F.; and Halpert, David E., 4,437,122, Cl. 358-166.000.
Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,436,808, Cl. 430-381.000.
Yaguchi, Sadao: *See—*
Ohyama, Sadahiro; Kato, Hiroshi; Yaguchi, Sadao; Baba, Mikito; and Okada, Morikazu, 4,437,140, Cl. 361-402.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, to Dai Nippon Toryo Co., Ltd.; and Asahi Glass Company, Ltd. Anticorrosive coating process. 4,436,772, Cl. 427-379.000.
Yamabe, Masaaki; Higaki, Hiromichi; Shinohara, Toshio; Tanabe, Hiroyuki; and Nakayama, Shunsuke, to Dai Nippon Toryo Co., Ltd.; and Asahi Glass Company Ltd. Anticorrosive coating process. 4,436,773, Cl. 427-380.000.
Yamada, Junichi: *See—*
Mochizuki, Taketoshi; Matsuo, Kazuya; Kudo, Mituo; Arai, Akira; Yamada, Junichi; Shono, Keizi; Aoki, Masaaki; Ohmori, Masaichi; and Nishi, Genichiro, 4,435,962, Cl. 62-175.000.
Yamada, Masaaki: *See—*
Jardin, Stephen C.; Yamada, Masaaki; Furth, Harold P.; and Okabayashi, Mitcheo, 4,436,691, Cl. 376-137.000.
Yamada, Toshio: *See—*
Hata, Shuji; Yamada, Toshio; and Murakawa, Katsuji, 4,435,994, Cl. 74-606.00R.
Yamagami, Hiroshi: *See—*
Umezu, Hiroaki; Kishi, Akira; and Yamagami, Hiroshi, 4,435,927, Cl. 52-79.130.
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, to Mita Industrial Company Limited. Cleaning device for use on an electrostatic copying apparatus. 4,436,412, Cl. 355-15.000.
Yamagata, Tetuo: *See—*
Imamura, Yoshinobu; Kamei, Shigeki; Yamagata, Tetuo; and Fujii, Hiroshi, 4,436,026, Cl. 100-45.000.
Yamaguchi, Bunitsu: *See—*
Miyoshi, Seizo; and Yamaguchi, Bunitsu, 4,437,178, Cl. 369-75.100.
Yamaguchi, Elaine S., to Chevron Research Company. Glycolate dithiophosphoric acids, metal salts thereof and oil compositions containing the salts. 4,436,640, Cl. 252-32.70E.
Yamaguchi, Hiroshi; and Negishi, Nobumasa, to Mitsubishi Denki Kabushiki Kaisha. Device for detecting flame in open-type combustor and oxygen density of indoor air. 4,436,505, Cl. 431-76.000.
Yamaguchi, Katsunobu; Matsuoka, Seiichi; Hayashida, Takayuki; and Hayase, Tomio, to JGC Corporation; and Tsukishima Kikai Co., Ltd., a part interest. Process for converting solid wastes to gases for use as a town gas. 4,436,532, Cl. 48-209.000.
Yamaguchi, Noboru; and Satoh, Seiichi, to Nissan Motor Co., Ltd. Harness clip. 4,435,881, Cl. 24-16.0PB.
Yamaguchi, Yutaka; Koizumi, Nobuyuki; Araki, Tamio; Kojima, Koichi; and Ikeda, Nobumasa, to Bridgestone Tire Co., Ltd. Pneumatic radial tires. 4,436,131, Cl. 152-361.0FP.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Takahashi, Masanori; and Uehara, Hidehiko, 4,436,514, Cl. 440-89.000.
Yamaizumi, Kazuo, to Nagano Keiki Seisakusho, Ltd. Plunger pump. 4,436,494, Cl. 417-403.000.
Yamakawa Industrial Company, Limited: *See—*
Emura, Koji; Suzuki, Tuneo; and Kazama, Hidemichi, 4,436,685, Cl. 264-148.000.
Yamamoto, Etsuji; Sekihara, Kensuke; and Kohno, Hideki, to Hitachi, Ltd. Electromagnet. 4,437,136, Cl. 361-146.000.
Yamamoto, Hideo: *See—*
Matsumoto, Shuichi; Hatori, Yoshinori; Murakami, Hitomi; and Yamamoto, Hideo, 4,437,119, Cl. 358-136.000.
Yamamoto, Kaichi, to Sony Corporation. Digital signal processing method and apparatus. 4,437,125, Cl. 358-167.000.
Yamamoto, Kazuo, to NSK-Warner K.K. Locking device for a moving anchor of a seat belt. 4,436,323, Cl. 280-804.000.
Yamamoto, Keisaku: *See—*
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.
Yamamoto, Sakuei; and Nishida, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Molded submersible motor. 4,437,027, Cl. 310-78.000.
Yamamoto, Tsuyoshi; Taniguchi, Norihisa; Iida, Kazuyoshi; and Kondo, Yoshikazu, to Japanese National Railways; and Bridgestone Tire Company Limited. Noise control apparatus. 4,436,179, Cl. 181-210.000.
Yamamoto, Yasuo: *See—*
Horie, Shigeru; Yamamoto, Yasuo; and Ikarashi, Takeo, 4,436,835, Cl. 502-208.000.
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, to Kao Soap Co., Ltd.; Lion Corporation; and Nippon Oil and Fats Co., Ltd. Stabilizer for mixed fuels. 4,436,527, Cl. 44-51.000.
Yamanaka, Mitsuyuki: *See—*
Hayashi, Yutaka; Yamanaka, Mitsuyuki; and Karasawa, Hideyuki, 4,436,761, Cl. 427-38.000.
Yamasaki, George K.: *See—*
Link, Vincent F.; and Yamasaki, George K., 4,437,038, Cl. 313-633.000.
Yamashita, Itaru: *See—*
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, 4,436,981, Cl. 219-124.320.
Yamashita, Keitaro; and Kashiwagi, Hiromi, to Hitachi Metals, Ltd. Developing apparatus. 4,436,055, Cl. 118-658.000.
Yamashita, Masahide; Oku, Hikaru; and Maruyama, Masato, to Nippon Telegraph & Telephone Public Corp. of 1-6. Communication control unit. 4,437,168, Cl. 364-900.000.
Yamashita, Sadahiko: *See—*
Makimoto, Mitsuo; Endo, Haruyoshi; Kikuchi, Ko; and Yamashita, Sadahiko, 4,437,076, Cl. 333-206.000.
Yamazaki, Shigetomo, to Kabushiki Kaisha Akashi Seisakusho. Scanning electron microscope or similar equipment. 4,437,009, Cl. 250-396.0ML.
Yamazoe, Hisamitsu: *See—*
Nakatsuka, Hirotaka; Mizuno, Toshiaki; Yamazoe, Hisamitsu; and Matsuoka, Hiroki, 4,436,074, Cl. 123-492.000.
Yano, Kenichi: *See—*
Sakamoto, Noboru; Yamashita, Itaru; Wada, Satoshi; Yano, Kenichi; and Oda, Suehiro, 4,436,981, Cl. 219-124.320.

Yano, Kohzo; Hamada, Hiroshi; Inami, Yasuhiko; and Wada, Tomio, to Sharp Kabushiki Kaisha. Electrochromic display device. 4,436,380, Cl. 350-357.000.
Yano, Shunji: *See—*
Nishida, Yoshiaki; Yano, Shunji; and Masuyama, Tadahiro, 4,436,594, Cl. 204-33.000.
Yoda, Kuniichi: *See—*
Ohkawa, Takehisa; and Yoda, Kuniichi, 4,436,786, Cl. 428-447.000.
Yokota, Hajime: *See—*
Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, 4,437,129, Cl. 360-85.000.
Yokouchi, Hisatake: *See—*
Matsuda, Tadahito; Okumura, Masahide; Yokouchi, Hisatake; Ozasa, Susumu; and Kato, Yasuo, 4,437,008, Cl. 250-396.00R.
Yonezawa, Susumu: *See—*
Watabe, Akinori; Yonezawa, Susumu; and Tanaka, Yoshiharu, 4,437,177, Cl. 369-45.000.
Yoos, Charles J. Appliance supports. 4,436,335, Cl. 296-24.00R.
Yoritomi, Ryutaro. Rod device for use as an arm of an excavator. 4,436,476, Cl. 414-690.000.
York, Billie M., Jr., to Alcon Laboratories, Inc. Method of inhibiting aldose reductase activity. 4,436,745, Cl. 424-273.00R.
Yoshida, Chosaku: *See—*
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,436,921, Cl. 544-238.000.
Yoshida, Hajime, to Hajime Industries Ltd. Object and inspection system. 4,437,115, Cl. 358-106.000.
Yoshida Kogyo K K: *See—*
Seki, Fumio, 4,436,238, Cl. 227-149.000.
Yoshida, Masashi; Yokota, Hajime; Aman, Mitsuji; and Shigemura, Tatsuya, to Hitachi, Ltd. Magnetic recording and reproducing apparatus enabling tape transport in the forward and reverse directions. 4,437,129, Cl. 360-85.000.
Yoshida, Nobuyuki: *See—*
Furukawa, Hiroshi; Saito, Yuichi; Imai, Akio; Yamamoto, Keisaku; Takao, Hiroyoshi; and Yoshida, Nobuyuki, 4,436,873, Cl. 525-314.000.
Yoshida, Tugusi: *See—*
Urasaki, Takanori; Hirabayashi, Yasuji; Yoshida, Tugusi; and Inata, Hiroo, 4,436,894, Cl. 528-176.000.
Yoshida, Yoshiaki: *See—*
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.
Yoshikawa, Kensei: *See—*
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Kutaka; Ishigura, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,436,939, Cl. 568-813.000.
Yoshimura, Hirofumi: *See—*
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,436,973, Cl. 219-10.55F.
Yoshimura, Shoji: *See—*
Shimizu, Shigeo; Takano, Hiroyuki; Yoshimura, Shoji; and Takada, Kinji, 4,436,904, Cl. 544-27.000.
Yoshizawa, Toshio: *See—*
Seiki, Kazuo; Motobayashi, Kozo; Yoshizawa, Toshio; Yoshida, Yoshiaki; and Onoue, Keiji, 4,435,954, Cl. 57-408.000.
Young, Rosa T.: *See—*
Wood, Richard F.; and Young, Rosa T., 4,436,557, Cl. 148-1.500.
Young, Sam H.: *See—*
Adrian, David L.; and Young, Sam H., 4,435,912, Cl. 40-365.000.
Yourd, Raymond A., III: *See—*
Chromecek, Richard C.; Friends, Gary D.; Wissman, Lawrence Y.; and Yourd, Raymond A., III, 4,436,887, Cl. 526-263.000.
Ytter, Willy, to Extraversion, Inc. Portable display system. 4,436,135, Cl. 160-135.000.
Yuda, Takuo; and Notoya, Yoshiaki, to Nifco Inc. Fastening means for rearview mirror in automobile interior. 4,436,273, Cl. 248-549.000.
Yukimoto, Kazuyoshi: *See—*
Hayashi, Motomu; Ishikawa, Atuo; and Yukimoto, Kazuyoshi, 4,437,143, Cl. 362-272.000.
Zajicek, Ernst: *See—*
Kilches, Helmut D.; Lugscheider, Walter; Riegler, Ernst; and Zajicek, Ernst, 4,436,290, Cl. 266-158.000.
Riegler, Ernst; and Zajicek, Ernst, 4,437,187, Cl. 373-73.000.
Zakarian, John A.: *See—*
Olbrich, Hazel C.; O'Rear, Dennis J.; and Zakarian, John A., 4,436,614, Cl. 208-89.000.
Zaltsman, Efim, to Monarch Wine Co., Inc. Method and apparatus for stoppering modified bottles with a one-piece corking means. 4,435,942, Cl. 53-489.000.
Zane, Michael S.: *See—*
Zane, Peter L.; and Zane, Michael S., 4,436,232, Cl. 224-39.000.
Zane, Peter L.; and Zane, Michael S., to KBL Corporation. Bracket for motorcycle lock. 4,436,232, Cl. 224-39.000.
Zangenberg, Jan, to Danfoss A/S. Control device for a liquid pump with adjustable pumping volume. 4,436,489, Cl. 417-218.000.
Zarich, Milan S. Stringed instrument bridge. 4,436,015, Cl. 84-298.000.
Zaruba, John V.; and Terzian, Rouben T., to Marvin Glass & Associates. Hanging doll house structure. 4,435,915, Cl. 46-12.000.
Zbinden, Peter: *See—*
Hugelshofer, Paul; Zbinden, Peter; and Koci, Zdenek, 4,436,523, Cl. 8-527.000.
Zboralski, Jon A.; Grow, Harry N.; and Holschbach, Stephen E., to Hamilton Industries, Inc. Fume hood incorporating high efficiency auxiliary air plenum. 4,436,022, Cl. 98-115.0LH.
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Jung, Johann, to BASF Aktiengesellschaft. Plant growth regulating α-azolylglycols. 4,436,548, Cl. 71-76.000.
Zeisky, Andre L. Clip-on bookmark. 4,436,053, Cl. 116-237.000.
Zenith Radio Corporation: *See—*
Feinberg, Jay H.; and Knowles, Terrance, 4,436,240, Cl. 228-122.000.
Zergenyi, Janos: *See—*
Aufderhaar, Ernst; Sprecher, Klemenz; and Zergenyi, Janos, 4,436,660, Cl. 260-239.00D.
Zesiger, Karl: *See—*
Annen, Oskar; Egli, Hermann; and Zesiger, Karl, 4,436,521, Cl. 8-493.000.
Zezza, Louis J.; and Husain, Iqbal, to Automation Industries, Inc. Non-impacting loose rod storage canister. 4,436,693, Cl. 376-272.000.
Zhdanov, Vasily V.: *See—*
Shevakin, Jury F.; Dobkin, Igor I.; Donskoi, Efim M.; Manov, Grigory L.; Zhdanov, Vasily V.; Berger, Elena S.; Popov, Valery M.; Pavlov, Alexei A.; and Akchurin, Rashid Z., 4,435,886, Cl. 29-33.00D.
Zhed, Viktor P.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; and Sinelschikov, Andrei K., 4,436,830, Cl. 501-96.000.
Zimmerman, Harry K.: *See—*
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,436,911, Cl. 546-291.000.
Zinsser, Rolf: *See—*
Koschinek, Gunter; Wandel, Dietmar; Kretschmann, Bernd; and Zinsser, Rolf, 4,436,688, Cl. 264-176.00F.
Zipp, Otmar; Bollmann, Heinz; Stutz, Herbert; and Scholz, Wolfgang, to Elastogran GmbH. Production of closed-cell polyurethane moldings having a densified surface zone. 4,436,869, Cl. 525-51.000.
Zirker, Guenter: *See—*
Broecker, Franz J.; Gruendler, Karl-Heinz; Marosi, Laszlo; Schwarzmann, Matthias; Triebskorn, Bruno; and Zirker, Guenter, 4,436,833, Cl. 502-176.000.
Zmoda, Barney J.; and Fessock, Paul J., to Colgate-Palmolive Company. Fuel gel for charcoal or wood fires. 4,436,525, Cl. 44-7.300.
Zobawa, Franz: *See—*
Hoffmann, Richard; and Zobawa, Franz, 4,436,362, Cl. 339-103.00M.
Zoebe, Hugo: *See—*
Prinz, Bruno; Rockel, Manfred B.; Rudolph, Gunther; Heubner, Ulrich; and Zoebe, Hugo, 4,436,790, Cl. 428-675.000.
Zondler, Helmut; Lohse, Friedrich; and Moser, Roland, to Ciba-Geigy Corporation. Imidazolides. 4,436,892, Cl. 528-117.000.
Zuhlke, Rainer: *See—*
Miersch, Eddehard F.; Pollmann, Kurt; Schettler, Helmut; and Zuhlke, Rainer, 4,437,022, Cl. 307-270.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Flatland, Lloyd P. Dental handpiece connector. Re. 31,537, Cl. 433-82.000.
Holdiman, Joseph W.; and Justice, Douglas E. Metal cladded window products. Re. 31,536, Cl. 49-501.000.
Justice, Douglas E.: *See—*
Holdiman, Joseph W.; and Justice, Douglas E., Re. 31,536, Cl. 49-501.000.
Schleicher, Louis C. Spot clinch means and method. Re. 31,535, Cl. 29-432.200.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See—*
McCarthy, Alfred F., 273,006, Cl. D13-23.000.
Akita, Tsugio; and Nagayama, Shinichi, to Matsushita Electric Industrial Co., Ltd. Food processor. 272,979, 3-13-84, Cl. D7-384.000.
Allen, John. Rail support fitting for a double post, rail fence unit or the like. 272,987, 3-13-84, Cl. D8-354.000.
AMC International Alfa Metalcraft Corporation AG: *See—*
Ryser, Theophil, 272,974, Cl. D7-394.000.
American Cyanamid Company: *See—*
Woodruff, Keith, 273,032, Cl. D22-19.000.
American Metal Ware Co.: *See—*
Miller, Gordon R., 272,975, Cl. D7-309.000.
American Standard Inc.: *See—*
Fisher, Michael D.; Flowers, Thomas S.; and Fort, George E., 273,046, Cl. D25-74.000.
Anderson, Duane L.; Clarke, Robert S.; and Morris, Lewis R., to First Champaign Corporation. Motorcycle sidecar. 272,997, 3-13-84, Cl. D12-116.000.
Anderson, Howard A., to Schwartz, Leonard. Dumbbell. 273,030, 3-13-84, Cl. D21-197.000.
Artwick, Kert E., to Questor Corporation. Basement window cover. 273,045, 3-13-84, Cl. D25-54.000.
Associated Medical Devices, Inc.: *See—*
Behrens, James D., 273,039, Cl. D24-17.000.
Au, Albert K. H.: *See—*
Wong, Ka W.; and Au, Albert K. H., 272,992, Cl. D10-106.000.
Baldwin Piano & Organ Company: *See—*
Kimble, Thomas E., 273,015, Cl. D17-5.000.
Barbieri, Raul; and Marianelli, Giorgio. Tray for holding stationery articles. 273,018, 3-13-84, Cl. D19-75.000.
Beerens, Cornelis J. M. Saw sharpening guide. 272,985, 3-13-84, Cl. D8-71.000.
Behrens, James D., to Associated Medical Devices, Inc. Housing for a portable electronic control for a intraesophageal pacer. 273,039, 3-13-84, Cl. D24-17.000.
Bertrac, Pierre, to Parker Pen France. Writing instrument. 273,017, 3-13-84, Cl. D19-49.000.
Biddle, Howard W., to Ofrex Group Limited. Tacker. 272,983, 3-13-84, Cl. D8-51.000.
Booker, Gary. Fireplace door. 273,035, 3-13-84, Cl. D23-128.000.
Bryant, Peter D.: *See—*
Emms, Norman R.; and Bryant, Peter D., 273,025, Cl. D21-69.000.
Emms, Norman R.; and Bryant, Peter D., 273,026, Cl. D21-69.000.
Celle, Inc.: *See—*
Runyon, Richard, 273,051, Cl. D28-76.000.
Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine. 273,019, 3-13-84, Cl. D20-6.000.
Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine. 273,020, 3-13-84, Cl. D20-6.000.
Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine. 273,021, 3-13-84, Cl. D20-6.000.
Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine. 273,022, 3-13-84, Cl. D20-6.000.
Chalabian, Jack S., to K-Jack Engineering Company, Inc. Newspaper vending machine insert. 273,023, 3-13-84, Cl. D20-8.000.
Chan, Chung K., to Mattel, Inc. Portable cabinet door alarm. 272,993, 3-13-84, Cl. D10-106.000.
Chan, Chung K., to Mattel, Inc. Automatic safety entry light. 273,048, 3-13-84, Cl. D26-37.000.
Chan, King M.: *See—*
Lam, Siu L.; Wong Chan, Yuk-Ying; and Chan, King M., 273,049, Cl. D26-38.000.
Chubb Industries Inc.: *See—*
Snodgrass, Clyde R., 273,052, Cl. D99-28.000.
Cidelcem: *See—*
Tallon, Roger, 272,971, Cl. D7-16.000.
Clarke, Robert S.: *See—*
Anderson, Duane L.; Clarke, Robert S.; and Morris, Lewis R., 272,997, Cl. D12-116.000.
Clarvit, Richard N. Baby shoe. 272,961, 3-13-84, Cl. D2-278.000.
Clarvit, Richard N. Baby shoe. 272,962, 3-13-84, Cl. D2-278.000.
Command Automation, Inc.: *See—*
Simjian, Luther G., 273,031, Cl. D21-234.000.
Contemporary Shells Inc.: *See—*
Umanoff, Arthur, 272,967, Cl. D6-56.000.
Cougar Plastics, Inc.: *See—*
Emge, James M., 273,024, Cl. D21-31.000.
Cuoco, Benjamin A. Linen tester. 273,014, 3-13-84, Cl. D16-135.000.
Dart Industries Inc.: *See—*
De Coster, Pieter K. J., 272,972, Cl. D7-47.000.
De Coster, Pieter K. J., 272,973, Cl. D7-47.000.
Gremponrez, Dan E.; and Painter, David L., 272,978, Cl. D7-357.000.
De Coster, Pieter K. J., to Dart Industries Inc. Sifter or the like. 272,972, 3-13-84, Cl. D7-47.000.
De Coster, Pieter K. J., to Dart Industries Inc. Combined sifter and container or the like. 272,973, 3-13-84, Cl. D7-47.000.
DeStefano, Joseph T. Combined keeper and combination lock with retractable cable unit. 272,986, 3-13-84, Cl. D8-331.000.
Dodge, Paul R., to Garrett Corporation, The. Gas turbine fan blade. 273,037, 3-13-84, Cl. D23-165.000.
Dudley, Wayne C. Portable air compressor. 273,011, 3-13-84, Cl. D15-9.000.
Echterling, Eugene J. Toy table. 273,027, 3-13-84, Cl. D21-121.000.
Emge, James M., to Cougar Plastics, Inc. Game board. 273,024, 3-13-84, Cl. D21-31.000.
Emms, Norman R.; and Bryant, Peter D., to Hestair Kiddicraft Limited. Child's toy. 273,025, 3-13-84, Cl. D21-69.000.
Emms, Norman R.; and Bryant, Peter D., to Hestair Kiddicraft Limited. Child's toy. 273,026, 3-13-84, Cl. D21-69.000.
Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Wheel cover. 273,004, 3-13-84, Cl. D12-211.000.
Erkelenz, Johannes F., to Top-Qua & Company Ltd. Bacon grill. 272,977, 3-13-84, Cl. D7-350.000.
Fairaizen, Igal. Convertible sofa. 272,968, 3-13-84, Cl. D6-61.000.
Fairchild Industries, Inc.: *See—*
McComas, Jean, 273,005, Cl. D12-335.000.
Fink, Alexander. Vehicle mounted camper unit. 273,001, 3-13-84, Cl. D12-156.000.
Finney, Donna K., to Quaker Oats Company, The. Stuffed toy. 273,028, 3-13-84, Cl. D21-190.000.
First Champaign Corporation: *See—*
Anderson, Duane L.; Clarke, Robert S.; and Morris, Lewis R., 272,997, Cl. D12-116.000.
Fisher, Michael D.; Flowers, Thomas S.; and Fort, George E., to American Standard Inc. Metal molding for a wall panel or similar article. 273,046, 3-13-84, Cl. D25-74.000.
Flakt Aktiebolag: *See—*
Gustavsson, Lennart; and Maatta, Osten, 273,036, Cl. D23-163.000.
Flowers, Thomas S.: *See—*
Fisher, Michael D.; Flowers, Thomas S.; and Fort, George E., 273,046, Cl. D25-74.000.
Fort, George E.: *See—*
Fisher, Michael D.; Flowers, Thomas S.; and Fort, George E., 273,046, Cl. D25-74.000.
France Bed Co.: *See—*
Masuda, Teruo, 273,038, Cl. D24-03.000.
Fuji Koeko Corporation: *See—*
Takematsu, Yoshiyuki, 273,013, Cl. D16-42.000.
Garrett Corporation, The: *See—*
Dodge, Paul R., 273,037, Cl. D23-165.000.
Gremponrez, Dan E.; and Painter, David L., to Dart Industries Inc. Buffet server. 272,978, 3-13-84, Cl. D7-357.000.

Gustavsson, Lennart; and Maatta, Osten, to Flakt Aktiebolag. Venturi wall for wet separators and the like. 273,036, 3-13-84, Cl. D23-163.000.

Hamada, Masanori; Saigo, Yoshiyuki; Ichino, Etsuko; and Okada, Takao, to Matsushita Electric Industrial Co., Ltd. Portable radio. 273,010, 3-13-84, Cl. D14-68.000.

Hamborg, Peter M. Elastomeric magnetized key container. 273,053, 3-13-84, Cl. D99-28.000.

Hasegawa, Hideaki; Shibano, Saburo; and Kaneko, Terutoshi, to Riken Vinyl Kogyo Kabushiki Kaisha. Dispenser for sheet material. 272,970, 3-13-84, Cl. D6-96.000.

Hestair Kiddicraft Limited: *See—*
Emms, Norman R.; and Bryant, Peter D., 273,025, Cl. D21-69.000.
Emms, Norman R.; and Bryant, Peter D., 273,026, Cl. D21-69.000.

Higgins, David F., to IMI Mouldings Limited. Fluid flow control valve. 273,034, 3-13-84, Cl. D23-19.000.

Hiraishi, Etsuo; and Shohoji, Takeshi, to Ryobi Ltd. Printing machine. 273,016, 3-13-84, Cl. D18-13.000.

Holcomb, William T. Baby bottle holder. 273,044, 3-13-84, Cl. D24-48.000.

Ichino, Etsuko: *See—*
Hamada, Masanori; Saigo, Yoshiyuki; Ichino, Etsuko; and Okada, Takao, 273,010, Cl. D14-68.000.

IMI Mouldings Limited: *See—*
Higgins, David F., 273,034, Cl. D23-19.000.

Instruments for Cardiac Research, Inc.: *See—*
Kullenberg, Fred W., 273,029, Cl. D21-192.000.

Isaacs, Robert B., to Northern Telecom Limited. Tactile alerting bracelet. 273,009, 3-13-84, Cl. D14-52.000.

Ishizaki, Hideaki, to Pioneer Electronic Corporation. Speaker. 273,008, 3-13-84, Cl. D14-30.000.

J&W Scientific, Inc.: *See—*
Jenkins, Rand G.; and Wohlers, Norman W., 273,040, Cl. D24-25.000.

Jackson, William G. Massage roller. 273,042, 3-13-84, Cl. D24-36.000.

Jenkins, Rand G.; and Wohlers, Norman W., to J&W Scientific, Inc. Fused silica syringe needle. 273,040, 3-13-84, Cl. D24-25.000.

Jet Spray Corp.: *See—*
LaLumiere, Edward J., 272,976, Cl. D7-311.000.

Jones, Leroy C. Flag. 272,995, 3-13-84, Cl. D11-180.000.

Jovan, Inc.: *See—*
Podall, Robert; and Robertz, Henry, 272,988, Cl. D9-300.000.

Justice, Andrew C. Spray paint shield. 272,981, 3-13-84, Cl. D8-16.000.

K-Jack Engineering Company, Inc.: *See—*
Chalabian, Jack S., 273,019, Cl. D20-6.000.
Chalabian, Jack S., 273,020, Cl. D20-6.000.
Chalabian, Jack S., 273,021, Cl. D20-6.000.
Chalabian, Jack S., 273,022, Cl. D20-6.000.
Chalabian, Jack S., 273,023, Cl. D20-8.000.

Kaneko, Terutoshi: *See—*
Hasegawa, Hideaki; Shibano, Saburo; and Kaneko, Terutoshi, 272,970, Cl. D6-96.000.

Kapphahn, John M. Sickle guard straightening hand tool. 272,980, 3-13-84, Cl. D8-14.000.

Kaufman, Mark S., to Puff International Industries, Inc. Smoker's pipe. 273,050, 3-13-84, Cl. D27-3.000.

Kimble, Thomas E., to Baldwin Piano & Organ Company. Organ. 273,015, 3-13-84, Cl. D17-5.000.

Kozloski, Edward, to Vicon Industries, Inc. Surveillance camera housing. 273,012, 3-13-84, Cl. D16-2.000.

Kullenberg, Fred W., to Instruments for Cardiac Research, Inc. Exercise treadmill. 273,029, 3-13-84, Cl. D21-192.000.

LaLumiere, Edward J., to Jet Spray Corp. Beverage dispenser. 272,976, 3-13-84, Cl. D7-311.000.

Lam, Siu L.; Wong Chan, Yuk-Ying; and Chan, King M. Combination door lock de-icer and torch and key ring. 273,049, 3-13-84, Cl. D26-38.000.

Lloyd-Jones, Robert. Cornice mould. 273,047, 3-13-84, Cl. D25-79.000.

Maatta, Osten: *See—*
Gustavsson, Lennart; and Maatta, Osten, 273,036, Cl. D23-163.000.

Marianelli, Giorgio: *See—*
Barbieri, Raul; and Marianelli, Giorgio, 273,018, Cl. D19-75.000.

Masuda, Teruo, to France Bed Co. Apparatus for chiropractic therapy and massage. 273,038, 3-13-84, Cl. D24-03.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Akita, Tsugio; and Nagayama, Shinichi, 272,979, Cl. D7-384.000.
Hamada, Masanori; Saigo, Yoshiyuki; Ichino, Etsuko; and Okada, Takao, 273,010, Cl. D14-68.000.

Mattel, Inc.: *See—*
Chan, Chung K., 272,993, Cl. D10-106.000.
Chan, Chung K., 273,048, Cl. D26-37.000.
Wong, Ka W.; and Au, Albert K. H., 272,992, Cl. D10-106.000.

McCarthy, Alfred F., to Aavid Engineering, Inc. Twin heat sink for electronic semiconductor devices. 273,006, 3-13-84, Cl. D13-23.000.

McComas, Jean, to Fairchild Industries, Inc. Aircraft. 273,005, 3-13-84, Cl. D12-335.000.

Miller, Gordon R., to American Metal Ware Co. Coffee dispenser. 272,975, 3-13-84, Cl. D7-309.000.

Moretti, Vittorio. Bottle. 272,989, 3-13-84, Cl. D9-349.000.

Morris, Lewis R.: *See—*
Anderson, Duane L.; Clarke, Robert S.; and Morris, Lewis R., 272,997, Cl. D12-116.000.

Muller Feigelstock, Roberto, to Pony International, Inc. High cut athletic shoe. 272,964, 3-13-84, Cl. D2-310.000.

Muller, Roberto; and Sousa, Antonio M. Shoe. 272,963, 3-13-84, Cl. D2-310.000.

Nagayama, Shinichi: *See—*
Akita, Tsugio; and Nagayama, Shinichi, 272,979, Cl. D7-384.000.

Nagayasu, Hideaki, to Sumitomo Rubber Industries Limited. Vehicle tire. 272,999, 3-13-84, Cl. D12-146.000.

Newburgh Cosmetic Packaging Corporation: *See—*
Thompson, Donald V. R., 272,991, Cl. D9-377.000.

Noiles, Douglas G.; Rawson, Paul O.; and Yagami, Richard, to United States Surgical Corporation. Curved circular anastomosis surgical stapler. 273,041, 3-13-84, Cl. D24-26.000.

Northern Telecom Limited: *See—*
Isaacs, Robert B., 273,009, Cl. D14-52.000.

Ofrex Group Limited: *See—*
Biddle, Howard W., 272,983, Cl. D8-51.000.

Okada, Takao: *See—*
Hamada, Masanori; Saigo, Yoshiyuki; Ichino, Etsuko; and Okada, Takao, 273,010, Cl. D14-68.000.

Olin Corporation: *See—*
Sangster, Arlon G.; and Tepas, Joseph J., Jr., 273,033, Cl. D23-3.000.

Owens-Illinois, Inc.: *See—*
Strand, Gordon A., 272,990, Cl. D9-355.000.

Painter, David L.: *See—*
Gremponrez, Dan E.; and Painter, David L., 272,978, Cl. D7-357.000.

Parker Pen France: *See—*
Bertrac, Pierre, 273,017, Cl. D19-49.000.

Pioneer Electronic Corporation: *See—*
Ishizaki, Hideaki, 273,008, Cl. D14-30.000.

Podall, Robert; and Robertz, Henry, to Jovan, Inc. Combined container and pump. 272,988, 3-13-84, Cl. D9-300.000.

Pony International, Inc.: *See—*
Muller Feigelstock, Roberto, 272,964, Cl. D2-310.000.

Puff International Industries, Inc.: *See—*
Kaufman, Mark S., 273,050, Cl. D27-3.000.

Quaker Oats Company, The: *See—*
Finney, Donna K., 273,028, Cl. D21-190.000.

Questor Corporation: *See—*
Artwick, Kert E., 273,045, Cl. D25-54.000.

Rawson, Paul O.: *See—*
Noiles, Douglas G.; Rawson, Paul O.; and Yagami, Richard, 273,041, Cl. D24-26.000.

Riken Vinyl Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Hideaki; Shibano, Saburo; and Kaneko, Terutoshi, 272,970, Cl. D6-96.000.

Rizzo, Frank J.; and Smith, Bruce M. Torque wrench. 272,982, 3-13-84, Cl. D8-24.000.

Robertz, Henry: *See—*
Podall, Robert; and Robertz, Henry, 272,988, Cl. D9-300.000.

Runyon, Richard, to Celle, Inc. Soap dish. 273,051, 3-13-84, Cl. D28-76.000.

Rusch, Lois. Ice pack. 273,043, 3-13-84, Cl. D24-43.000.

Ryobi Ltd.: *See—*
Hiraishi, Etsuo; and Shohoji, Takeshi, 273,016, Cl. D18-13.000.

Ryser, Theophil, to AMC International Alfa Metalcraft Corporation AG. Handle for covers of cooking utensils. 272,974, 3-13-84, Cl. D7-394.000.

Saab-Scania Aktiebolag: *See—*
Envall, Bjorn E. A., 273,004, Cl. D12-211.000.
Svanback, Ulf K., 273,003, Cl. D12-211.000.

Saigo, Yoshiyuki: *See—*
Hamada, Masanori; Saigo, Yoshiyuki; Ichino, Etsuko; and Okada, Takao, 273,010, Cl. D14-68.000.

Sangster, Arlon G.; and Tepas, Joseph J., Jr., to Olin Corporation. Swimming pool chemical dispenser or the like. 273,033, 3-13-84, Cl. D23-3.000.

Schafer, Edward R. Note clipboard for an automobile visor. 273,002, 3-13-84, Cl. D12-191.000.

Schwartz, Leonard: *See—*
Anderson, Howard A., 273,030, Cl. D21-197.000.

Serapiglia, Frank. Pierced earring finding. 272,994, 3-13-84, Cl. D11-86.000.

Shaffer, Frank E. Small headed cable cutter. 272,984, 3-13-84, Cl. D8-52.000.

Shibano, Saburo: *See—*
Hasegawa, Hideaki; Shibano, Saburo; and Kaneko, Terutoshi, 272,970, Cl. D6-96.000.

Shohoji, Takeshi: *See—*
Hiraishi, Etsuo; and Shohoji, Takeshi, 273,016, Cl. D18-13.000.

Simjian, Luther G., to Command Automation, Inc. Golf putting aid. 273,031, 3-13-84, Cl. D21-234.000.

Simon, Lawrence A. Camera bag. 272,965, 3-13-84, Cl. D3-33.000.

Smith, Bruce M.: *See—*
Rizzo, Frank J.; and Smith, Bruce M., 272,982, Cl. D8-24.000.

Snodgrass, Clyde R., to Chubb Industries Inc. Safe for currency cassettes. 273,052, 3-13-84, Cl. D99-28.000.

Sousa, Antonio M.: *See—*
Muller, Roberto; and Sousa, Antonio M., 272,963, Cl. D2-310.000.

Southern Case, Inc.: *See—*
Ward, William W., 272,966, Cl. D3-76.000.

Spottswood, Marianne. Combined phonograph and tape player or the like. 273,007, 3-13-84, Cl. D14-5.000.

Strand, Gordon A., to Owens-Illinois, Inc. Bottle. 272,990, 3-13-84, Cl. D9-355.000.

Sumitomo Rubber Industries Limited: *See—*
Nagayasu, Hideaki, 272,999, Cl. D12-146.000.
Takehara, Kenji, 272,998, Cl. D12-146.000.

Takehara, Kenji, 273,000, Cl. D12-147.000.

Sussman, Howard. Holder for toiletry items. 272,969, 3-13-84, Cl. D6-86.000.

Svanback, Ulf K., to Saab-Scania Aktiebolag. Vehicle wheel. 273,003, 3-13-84, Cl. D12-211.000.

Takehara, Kenji, to Sumitomo Rubber Industries, Ltd. Vehicle tire. 272,998, 3-13-84, Cl. D12-146.000.

Takehara, Kenji, to Sumitomo Rubber Industries, Ltd. Vehicle tire. 273,000, 3-13-84, Cl. D12-147.000.

Takematsu, Yoshiyuki, to Fuji Koeko Corporation, a part interest. Electric flash unit. 273,013, 3-13-84, Cl. D16-42.000.

Tallon, Roger, to Cidelcem. Food container. 272,971, 3-13-84, Cl. D7-16.000.

Tepas, Joseph J., Jr.: *See—*
Sangster, Arlon G.; and Tepas, Joseph J., Jr., 273,033, Cl. D23-3.000.

Thompson, Donald V. R., to Newburgh Cosmetic Packaging Corporation. Combined bottle and cap. 272,991, 3-13-84, Cl. D9-377.000.

Top-Qua & Company Ltd.: *See—*
Erkelenz, Johannes F., 272,977, Cl. D7-350.000.

Trabue, Thomas M.; and Villalon, Augusto. Vehicle trailer. 272,996, 3-13-84, Cl. D12-102.000.

Umanoff, Arthur, to Contemporary Shells Inc. Dining chair. 272,967, 3-13-84, Cl. D6-56.000.

United States Surgical Corporation: *See—*
Noiles, Douglas G.; Rawson, Paul O.; and Yagami, Richard, 273,041, Cl. D24-26.000.

Vicon Industries, Inc.: *See—*
Kozloski, Edward, 273,012, Cl. D16-2.000.

Villalon, Augusto: *See—*
Trabue, Thomas M.; and Villalon, Augusto, 272,996, Cl. D12-102.000.

Vinson, Paul S. Athletic helmet or similar article. 272,960, 3-13-84, Cl. D2-231.000.

Waite, Eloise, to Waite, Eloise. Sweater or similar article. 272,959, 3-13-84, Cl. D2-44.000.

Ward, William W., to Southern Case, Inc. Carrying case. 272,966, 3-13-84, Cl. D3-76.000.

Wohlers, Norman W.: *See—*
Jenkins, Rand G.; and Wohlers, Norman W., 273,040, Cl. D24-25.000.

Wong Chan, Yuk-Ying: *See—*
Lam, Siu L.; Wong Chan, Yuk-Ying; and Chan, King M., 273,049, Cl. D26-38.000.

Wong, Ka W.; and Au, Albert K. H., to Mattel, Inc. Electronic intrusion alarm transmitter. 272,992, 3-13-84, Cl. D10-106.000.

Woodruff, Keith, to American Cyanamid Company. Insect feeding station or similar article. 273,032, 3-13-84, Cl. D22-19.000.

Yagami, Richard: *See—*
Noiles, Douglas G.; Rawson, Paul O.; and Yagami, Richard, 273,041, Cl. D24-26.000.

LIST OF PLANT PATENTEES

Klemm, Siegfried. Carnation named Mintop. 5,204, 3-13-84, Cl. 70.000.

Klemm, Siegfried. Carnation named Klemorac. 5,205, 3-13-84, Cl. 70.000.

Klemm, Siegfried. Carnation named Kleronstar. 5,206, 3-13-84, Cl. 70.000.

Nurserymen's Exchange: *See—*
Rosendal, Erik, 5,203, Cl. 68.000.

Rosendal, Erik, to Nurserymen's Exchange. Exacum affine pot plant. 5,203, 3-13-84, Cl. 68.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 13, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2	4,435,851
436	4,435,852

CLASS 3

1.3	4,435,853
1.913	4,435,854
13	4,435,855
	4,435,856

CLASS 4

228	4,435,857
	4,435,858
324	4,435,859

CLASS 5

13	4,435,860
65	4,435,861
66	4,435,862
81 B	4,435,863
453	4,435,864

CLASS 6

2 R	4,435,865
4 R	4,435,866
	4,435,867

CLASS 7

158	4,435,868

CLASS 8

493	4,436,521
524	4,436,522
527	4,436,523
351	4,436,524

CLASS 12

12	4,435,869

CLASS 15

98	4,435,870
104 R	4,435,871
104.06 A	4,435,872
105	4,435,873
210 A	4,435,874
250.23	4,435,875
312 R	4,435,876
326	4,435,877

CLASS 17

11	4,435,878
	4,435,879

CLASS 24

16 PB	4,435,881
49 KC	4,435,880
265 R	4,435,882

CLASS 26

71	4,435,883
93	4,435,884

CLASS 29

2	4,435,885
33 D	4,435,886
123	4,435,887
148.4 C	4,435,889
148.4 R	4,435,890
157 C	4,435,891
235	4,435,888
239	4,435,892
412	4,435,893
432.2	Re.31,535
527.5	4,435,894
571	4,435,895
	4,435,896
572	4,435,897
577 C	4,435,898
577 R	4,435,899
603	4,435,900

CLASS 30

254	4,435,901
296 R	4,435,902

CLASS 33

23 D	4,435,903
143 K	4,435,904
181 R	4,435,905
185 R	4,435,906
366	4,435,907
376	4,435,908

CLASS 34

82	4,435,909

CLASS 36

44	4,435,910

CLASS 40

27.5	4,435,911
365	4,435,912

CLASS 43

3	4,435,913
42.12	4,435,914

CLASS 44

7.3	4,436,525
10 B	4,436,526
51	4,436,527
	4,436,528

CLASS 46

12	4,435,915
201	4,435,916
228	4,435,917

CLASS 47

79	4,435,918

CLASS 48

197 R	4,436,529
	4,436,530
	4,436,531
209	4,436,532

CLASS 49

63	4,435,919
82	4,435,920
395	4,435,921
501	Re.31,536

CLASS 51

58	4,435,922
170 TL	4,435,923
327	4,435,924

CLASS 52

3	4,435,926
12	4,435,925
79.13	4,435,927
90	4,435,928
93	4,435,929
98	4,435,930
147	4,435,931
263	4,435,932
309.1	4,435,933
309.7	4,435,934
461	4,435,935
481	4,435,936
520	4,435,937
521	4,435,938
582	4,435,939
641	4,435,940

CLASS 53

475	4,435,941
489	4,435,942
491	4,435,943
531	4,435,944
589	4,435,945

CLASS 55

26	4,436,533
58	4,436,534
96	4,436,535
341 R	4,436,536
387	4,436,537
462	4,436,538

CLASS 56

15.6	4,435,946
28	4,435,947
228	4,435,948
320.2	4,435,949
330	4,435,950
400.05	4,435,951

CLASS 57

18	4,435,952
408	4,435,953
	4,435,954
409	4,435,955

CLASS 59

79.1	4,435,956

CLASS 60

39.281	4,435,957
204	4,435,958
512	4,435,959
547.1	4,435,960
719	4,435,961

CLASS 62

4	4,436,539
30	4,436,540
175	4,435,962

CLASS 63

18	4,435,963

CLASS 65

2	4,436,541
18.1	4,436,542
172	4,436,543
374.12	4,436,544

CLASS 68

19.2	4,435,964
205 R	4,435,965

CLASS 70

161	4,435,966
224	4,435,967

CLASS 71

25	4,436,545
36	4,436,546
76	4,436,547
	4,436,548
90	4,436,549

CLASS 72

77	4,435,968
126	4,435,969
239	4,435,970
243	4,435,971
256	4,435,972
327	4,435,973

CLASS 73

40.5 A	4,435,974
81	4,435,975
83	4,435,976
152	4,435,977
155	4,435,978
168	4,435,979
198	4,435,980
382 R	4,435,981
462	4,435,982
493	4,435,983
628	4,435,984
642	4,435,985
702	4,435,986
862.17	4,435,987
862.19	4,435,988
864.14	4,435,989

CLASS 74

15.63	4,435,990
89.15	4,435,992
89.2	4,435,991
553	4,435,993
606 R	4,435,994
711	4,435,995
713	4,435,996
796	4,435,997
798	4,435,998

CLASS 75

10 R	4,436,550
12	4,436,551
41	4,436,552
52	4,436,553
128 T	4,436,554

CLASS 76

36	4,435,999
41	4,436,000

CLASS 81

9.51	4,436,001
57.2	4,436,002
57.43	4,436,003
60	4,436,004
177 G	4,436,005

CLASS 83

13	4,436,006
23	4,436,007
42	4,436,008
72	4,436,009
171	4,436,010
425.3	4,436,011
703	4,436,012
747	4,436,013
762	4,436,014

CLASS 84

298	4,436,015

CLASS 89

1.809	4,436,016
14 C	4,436,017

CLASS 91

363 A	4,436,018
446	4,436,019
	4,436,020

CLASS 98

67	4,436,021
115 LH	4,436,022

CLASS 99

400	4,436,023
421 HV	4,436,024
538	4,436,025

CLASS 100

45	4,436,026
88	4,436,027
121	4,436,028
250	4,436,029
268	4,436,030

CLASS 101

93.17	4,436,031
120	4,436,032

CLASS 102

307	4,436,033
334	4,436,034
364	4,436,035
367	4,436,036

CLASS 106

85	4,436,555
90	4,436,556

CLASS 110

245	4,436,037
347	4,436,038

CLASS 111

2	4,436,039
10	4,436,040

CLASS 112

110	4,436,041
217.1	4,436,042
221	4,436,043
286	4,436,044
313	4,436,045

CLASS 114

42	4,436,046
102	4,436,047
230	4,436,048
254	4,436,049
265	4,436,050
340	4,436,051

CLASS 116

148	4,436,052
237	4,436,053

CLASS 118

652	4,436,054
658	4,436,055

CLASS 119

72	4,436,056

CLASS 122

4 D	4,436,057
13 R	4,436,058
17	4,436,059

CLASS 123

41.1	4,436,060
41.74	4,436,061
90.27	4,436,062
90.61	4,436,063
142.5 R	4,436,064
179 B	4,436,065
193 H	4,436,066
198 C	4,436,067
310	4,436,068
339	4,436,069
440	4,436,070
472	4,436,071
488	4,436,072
491	4,436,073
492	4,436,074
557	4,436,075
602	4,436,076

CLASS 124

18	4,436,077

CLASS 125

13 R	4,436,078

CLASS 126

121	4,436,079
139	4,436,080
285 A	4,436,081
348	4,436,082
417	4,436,083
429	4,436,084
450	4,436,085

CLASS 128

6	4,436,087
77	4,436,088
155	4,436,089
204.26	4,436,090
305	4,436,091
419 PG	4,436,092
	4,436,093
635	4,436,094
654	4,436,095
689	4,436,096
707	4,436,097
766	4,436,098
782	4,436,099

CLASS 131

330	4,436,100
349	4,436,101

CLASS 133

2	4,436,102
3 D	4,436,103

CLASS 134

63	4,436,104

CLASS 137

1	4,436,105
240	4,436,106
314	4,436,107
375	4,436,108
413	4,436,109
487.5	4,436,110
498	4,436,111
510	4,436,112
565	4,436,113
596	4,436,114
596.1	4,436,115
625.47	4,436,116

CLASS 138

89	4,436,117
93	4,436,120
110	4,436,118
149	4,436,119

CLASS 139

116	4,436,121
435	4,436,122
452	4,436,123

CLASS 141

5	4,436,124
330	4,436,125

CLASS 144

130	4,436,126

CLASS 148

1.5	4,436,557
	4,436,558
6	4,436,559
	4,436,560
12 F	4,436,561
24	4,436,562
26	4,436,563

CLASS 152

209 R	4,436,127
	4,436,128
213 A	4,436,129
353 R	4,436,130
361 FP	4,436,131
362 R	4,436,132
381.3	4,436,133

CLASS 156

42	4,436,564
49	4,436,565
56	4,436,566
73.1	4,436,585
158	4,436,567
176	4,436,568
217	4,436,569
273.3	4,436,570
332	4,436,896
384	4,436,571
	4,436,572
	4,436,573
415	4,436,574
433	4,436,575
543	4,436,576
617 SP	4,436,577
620	4,436,578
626	4,436,579
636	4,436,580
643	4,436,581
	4,436,584
656	4,436,582
659.1	4,436,583

CLASS 157

1.3	4,436,134

CLASS 160

135	4,436,135
232	4,436,136
242	4,436,137

CLASS 162

19	4,436,586
123	4,436,587

CLASS 164

5	4,436,138
112	4,436,139
120	4,436,140
201	4,436,141
337	4,436,142
440	4,436,143

CLASS 165

9.1	4,436,144
67	4,436,145
111	4,436,146
165	4,436,147

CLASS 166

31	4,436,150
53	4,436,148
120	4,436,149
154	4,436,151
214	4,436,152
260	4,436,153
281	4,436,154
297	4,436,155
307	4,436,156
344	4,436,157
377	4,436,158

CLASS 169

28	4,436,159
74	4,436,160

CLASS 172

49.5	4,436,161
810	4,436,162

CLASS 173

117	4,436,163

CLASS 174

IT BH	4,436,950
52 PE	4,436,951
65 R	4,436,952
72 B	4,436,953
128 R	4,436,954
152 GM	4,436,955

CLASS 178

39	4,436,164
61	4,436,165

65 4,436,166
72 4,436,167
94 4,436,168

CLASS 179

2 A 4,436,958
2 C 4,436,956
2 EA 4,436,957
6.09 4,436,959
18 B 4,436,962
4,436,963
51 AA 4,436,960
77 4,436,961
121 D 4,436,966
164 4,436,964
184 4,436,965
189 R 4,436,967

CLASS 180

89.14 4,436,169
131 4,436,170
148 4,436,171
219 4,436,172
226 4,436,173
227 4,436,174
254 4,436,175
287 4,436,176
324 4,436,177

CLASS 181

151 4,436,178
210 4,436,179

CLASS 182

97 4,436,180
236 4,436,181

CLASS 186

37 4,436,182

CLASS 187

9 E 4,436,183
29 R 4,436,184
4,436,185

CLASS 188

71.8 4,436,186
73.45 4,436,187
378 4,436,188

CLASS 190

108 4,436,189

CLASS 191

12.2 R 4,436,190

CLASS 192

3 S 4,436,191
43.1 4,436,192
107 C 4,436,193

CLASS 194

63 4,436,194
92 4,436,195
100 A 4,436,196

CLASS 198

389 4,436,197
502 4,436,198
750 4,436,199
851 4,436,200

CLASS 200

5 R 4,436,968
38 R 4,436,969
61.56 4,436,970
295 4,436,971
315 4,436,972

CLASS 201

12 4,436,588
41 4,436,589

CLASS 204

1 T 4,436,590
11 4,436,591
15 4,436,592
4,436,593
33 4,436,594
40 4,436,595
59 R 4,436,596
67 4,436,597
4,436,598
98 4,436,599
140 4,436,600
149 4,436,601
192 R 4,436,602
194 4,436,603
196 4,436,604
225 4,436,605
4,436,606
246 4,436,607
265 4,436,608
267 4,436,609
400 4,436,610

CLASS 206

444 4,436,201
455 4,436,202
524.8 4,436,203
525 4,436,204
530 4,436,205
625 4,436,206

CLASS 208

11 R 4,436,611
65 4,436,612
74 4,436,613
89 4,436,614
177 4,436,615

CLASS 209

3 4,436,616
4,436,617
5 4,436,618
573 4,436,619
577 4,436,207
668 4,436,208

CLASS 210

90 4,436,620
232 4,436,621
4,436,622
282 4,436,623
632 4,436,624
634 4,436,625
652 4,436,626
695 4,436,627
697 4,436,628
712 4,436,629
744 4,436,630
772 4,436,631
776 4,436,632
791 4,436,633
800 4,436,634
806 4,436,635

CLASS 211

57.1 4,436,209

CLASS 215

32 4,436,210
216 4,436,211
252 4,436,212
365 4,436,213

CLASS 219

10.55 F 4,436,973
66 4,436,974
69 V 4,436,976
69 W 4,436,975
75 4,436,977
121 LC 4,436,978
4,436,979
123 4,436,980
124.32 4,436,981
130.51 4,436,982
306 4,436,983
383 4,436,984
388 4,436,985
505 4,436,986
535 4,436,987
544 4,436,988

CLASS 220

18 4,436,214
22.3 4,436,215
69 4,436,216
85 D 4,436,217
89 A 4,436,218
295 4,436,219
359 4,436,220

CLASS 221

46 4,436,221
223 4,436,222

CLASS 222

36 4,436,223
183 4,436,224
207 4,436,225
280 4,436,226
382 4,436,227
400.7 4,436,228
402.22 4,436,229
614 4,436,230

CLASS 223

40 4,436,231

CLASS 224

39 4,436,232
159 4,436,233

CLASS 227

4 4,436,234
111 4,436,235
123 4,436,236
130 4,436,237
149 4,436,238

CLASS 228

17 4,436,239
122 4,436,240
124 4,436,241
264 4,436,242

CLASS 229

27 4,436,243
52 B 4,436,244

CLASS 235

1 R 4,436,990
22 4,436,989
381 4,436,992
382 4,436,993
468 4,436,991

CLASS 236

49 4,436,245

CLASS 238

14 4,436,246

CLASS 239

533.7 4,436,247

CLASS 241

101.7 4,436,248

CLASS 242

18 G 4,436,258
18 R 4,436,249
54 R 4,436,250
56 R 4,436,251
72 B 4,436,252
74.1 4,436,253
84.21 R 4,436,254
107.4 A 4,436,255
200 4,436,256
201 4,436,257

CLASS 244

3.1 4,436,259
3.16 4,436,260
51 4,436,261
122 AG 4,436,262
130 4,436,263
153 R 4,436,264

CLASS 248

56 4,436,265
74 R 4,436,266
75 4,436,267
188.3 4,436,268
214 4,436,269
416 4,436,270
460 4,436,271
527 4,436,272
549 4,436,273
633 4,436,274

CLASS 249

47 4,436,275
91 4,436,276

CLASS 250

207 4,436,994
227 4,436,995
256 4,436,996
4,436,997
288 4,436,998
302 4,436,999
308 4,437,000
324 4,437,001
338 4,437,002
4,437,003
343 4,437,004
4,437,005
363 S 4,437,006
366 4,437,007
396 ML 4,437,009
396 R 4,437,008
459.1 4,437,010
486.1 4,437,011
491.1 4,437,012
515.1 4,437,013
574 4,437,014

CLASS 251

6 4,436,277
86 4,436,279
130 4,436,278
174 4,436,283
229 4,436,280
305 4,436,281
329 4,436,282

CLASS 252

8.5 P 4,436,636
8.55 E 4,436,639
8.55 R 4,436,638
8.7 4,436,637
32.7 E 4,436,640
51.5 A 4,436,649
68 4,436,641
95 4,436,642
135 4,436,643
174.13 4,436,644
179 4,436,645
301.4 S 4,436,646
358 4,436,647
511 4,436,648
518 4,436,650
521 4,436,651
522 R 4,436,652
547 4,436,653
574 4,436,654
628 4,436,655

CLASS 256

35 4,436,284

CLASS 260

112 R 4,436,656
4,436,657
122 4,436,658
146 R 4,436,659
239 D 4,436,660
245.3 4,436,661
245.7 4,436,662
245.91 4,436,663
330.6 4,436,664
404 4,436,665
455 B 4,436,666
463 4,436,668
465 B 4,436,669
4,436,670
465 D 4,436,667
465.3 4,436,671
512 R 4,436,672
543 P 4,436,673

CLASS 261

64 B 4,436,674
77 4,436,675
151 4,436,676

CLASS 264

0.5 4,436,677
30 4,436,678
40.3 4,436,679
60 4,436,680
67 4,436,681
70 4,436,682
107 4,436,683
138 4,436,684
148 4,436,685
163 4,436,686
164 4,436,687
176 F 4,436,688
204 4,436,689
313 4,436,690

CLASS 266

44 4,436,286
45 4,436,285
47 4,436,287
69 4,436,288
80 4,436,289
107 4,436,292
158 4,436,290
246 4,436,291
276 4,436,293

CLASS 269

6 4,436,294
21 4,436,295

CLASS 270

31 4,436,296

CLASS 271

3.1 4,436,297
10 4,436,298
100 4,436,299
107 4,436,300
177 4,436,301
202 4,436,302

CLASS 272

132 4,436,303

CLASS 273

29 A 4,436,304
73 C 4,436,305
146 4,436,306
157 R 4,436,307
237 4,436,308
267 4,436,309

CLASS 277

11 4,436,310
27 4,436,311
34 4,436,312
80 4,436,313
86 4,436,314
92 4,436,315
124 4,436,316
134 4,436,317

CLASS 280

104 4,436,318
154.5 R 4,436,319
242 WC 4,436,320
612 4,436,321
614 4,436,322
804 4,436,323

CLASS 283

50 4,436,324

CLASS 285

18 4,436,325
178 4,436,326
364 4,436,327

CLASS 290

1 R 4,437,015
4,437,016
52 4,437,017

CLASS 292

67 4,436,328
150 4,436,329
263 4,436,330
270 4,436,331

CLASS 294

1 R 4,436,332
82 R 4,436,333
86.3 4,436,334

CLASS 296

24 R 4,436,335
76 4,436,336
201 4,436,337
223 4,436,338

CLASS 297

153 4,436,339
193 4,436,340
250 4,436,341
445 4,436,342
456 4,436,343

CLASS 299

2 4,436,344
59 4,436,345
87 4,436,346

CLASS 303

6 R 4,436,347
115 4,436,348

CLASS 307

38 4,437,018
83 4,437,019
135 4,437,020
270 4,437,021
4,437,022
296 R 4,437,023
475 4,437,024
4,437,025

CLASS 308

189 R 4,436,349

CLASS 310

11 4,437,026
78 4,437,027
198 4,437,028
4,437,029
227 4,437,030
313 B 4,437,031
324 4,437,032
334 4,437,033

CLASS 312

7.1 4,436,350
223 4,436,351
228 4,436,352
241 4,436,353
259 4,436,354
270 4,436,355
281 4,436,356
338 4,436,357

CLASS 313

348 4,437,034
388 4,437,035
402 4,437,036
585 4,437,037
633 4,437,038

CLASS 315

60 4,437,039
209 R 4,437,040
248 4,437,041
289 4,437,042
308 4,437,043
366 4,437,044

CLASS 318

561 4,437,045
571 4,437,046
649 4,437,047
663 4,437,048
696 4,437,049
798 4,437,050
808 4,437,051

CLASS 323

210 4,437,052
268 4,437,053

CLASS 324

51 4,437,054
61 R 4,437,055
73 AT 4,437,056
78 R 4,437,057
120 4,437,058
142 4,437,059
158 D 4,437,060
166 4,437,061
238 4,437,062
316 4,437,063
346 4,437,064
425 4,437,065

CLASS 328

14 4,437,066
167 4,437,067

CLASS 329

105 4,437,068

CLASS 330

109 4,437,069
254 4,437,070

CLASS 331

1 A 4,437,071
4,437,072

CLASS 333

28 R 4,437,073
128 4,437,074
167 4,437,075
206 4,437,076
245 4,437,077

CLASS 335

81 4,437,078
170 4,437,079
216 4,437,080
229 4,437,081

CLASS 336

58 4,437,082
65 4,437,083

CLASS 338

22 R 4,437,084

CLASS 339

17 C 4,436,358
61 M 4,436,359
97 P 4,436,360
4,436,361
103 M 4,436,362

CLASS 340

286 M 4,437,085
347 DD 4,437,086
4,437,087
384 E 4,437,088
541 4,437,089
613 4,437,090
623 4,437,091
703 4,437,092
726 4,437,093
825.44 4,437,095
825.5 4,437,094
825.96 4,437,096
852 4,437,097
870.02 4,437,098

CLASS 343

756 4,437,099

CLASS 346

1.1 4,437,100
75 4,437,101
76 PH 4,437,102
140 R 4,437,103
4,437,104
4,437,105
160 4,437,106

CLASS 350

1.6 4,436,363
6.6 4,436,364
96.16 4,436,365
96.20 4,436,366
4,436,367
96.33 4,436,368
130 4,436,369
162.12 4,436,370
281 4,436,371
293 4,436,372
296 4,436,373
302 4,436,374
319 4,436,375
332 4,436,376
345 4,436,377
4,436,378
347 E 4,436,379
357 4,436,380
432 4,436,381
458 4,436,382
469 4,436,383
515 4,436,384
529 4,436,385
550 4,436,386
556 4,436,387

CLASS 351

206 4,436,388
208 4,436,389
234 4,436,390

CLASS 353

26 R 4,436,391
38 4,436,392
4,436,393

CLASS 354

1 4,436,394
159 4,436,399
296 4,436,400
312 4,436,401
406 4,436,395
416 4,436,396
465 4,436,397
476 4,436,398

CLASS 355

3 R 4,436,402
3 SH 4,436,403
4,436,404
4,436,406
3 TR 4,436,405
11 4,436,407
14 D 4,436,411
14 E 4,436,410
14 R 4,436,408
4,436,409
15 4,436,412
4,436,413
4,436,414
55 4,436,415
57 4,436,416

CLASS 356

1 4,436,418
4.5 4,436,417
35.5 4,436,419
128 4,436,420
153 4,436,421
349 4,436,422
350 4,436,423
356 4,436,424
361 4,436,425
369 4,436,426
385 4,436,427
432 4,436,428

CLASS 357

38 4,437,107
59 4,437,108
68 4,437,109

CLASS 358

41 4,437,110
44 4,437,111
4,437,112
93 4,437,113
101 4,437,114
106 4,437,115
4,437,116
111 4,437,117
113 4,437,118
136 4,437,119
139 4,437,120
160 4,437,121
166 4,437,122
4,437,123
4,437,124
167 4,437,125
224 4,437,126
296 4,437,127
335 4,437,128

CLASS 360

85 4,437,129
94 4,437,130
96.6 4,437,131
105 4,437,132

CLASS 361

33 4,437,133
56 4,437,134
91 4,437,135
146 4,437,136
172 4,437,137
283 4,437,138
313 4,437,139
402 4,437,140
403 4,437,141

CLASS 362

226 4,437,142
272 4,437,143
275 4,437,144
306 4,437,145

CLASS 363

21 4,437,146
61 4,437,147
89 4,437,148

CLASS 364

138 4,437,152
140 4,437,153
187 4,437,154
200 4,437,149
4,437,155
4,437,156
4,437,157
4,437,158
400 4,437,159
414 4,437,160
4,437,161
442 4,437,162
474 4,437,150
508 4,437,163
571 4,437,151
4,437,164
749 4,437,165
900 4,437,166
4,437,167
4,437,168
4,437,169
4,437,170

CLASS 365

177 4,437,171
182 4,437,172
193 4,437,173
218 4,437,174

CLASS 366

2 4,436,429
13 4,436,430
17 4,436,431
95 4,436,432
152 4,436,433

CLASS 367

24 4,437,175
38 4,437,176

CLASS 368

65 4,436,434
71 4,436,435
204 4,436,436

CLASS 369

45 4,437,177
75.1 4,437,178
172 4,437,179
217 4,437,180
244 4,437,181

CLASS 370

110.1 4,437,182
4,437,183

CLASS 371

19 4,437,184
39 4,437,185

CLASS 373

9 4,437,186
73 4,437,187

CLASS 374

32 4,436,437
165 4,436,438

CLASS 376

137 4,436,691
204 4,436,692
272 4,436,693
310 4,436,694
317 4,436,695

CLASS 378

205 4,437,188

CLASS 381

91 4,437,189

CLASS 400

126 4,436,439
144.2 4,436,440
304 4,436,441

CLASS 402

73 4,436,442

CLASS 403

14 4,436,443
24 4,436,444
189 4,436,445
384 4,436,446

CLASS 405

76 4,436,447
143 4,436,448
170 4,436,449
171 4,436,450
195 4,436,451
204 4,436,454
232 4,436,452
263 4,436,453
303 4,436,455

CLASS 406

19 4,436,456
116 4,436,457
135 4,436,458
181 4,436,459

CLASS 408

14 4,436,460

CLASS 409

132 4,436,461
218 4,436,462
232 4,436,463
233 4,436,464
243 4,436,465

CLASS 410

118 4,436,466

CLASS 411

34 4,436,467
248 4,436,468

CLASS 412

16 4,436,469

CLASS 414

36 4,436,470
4,436,471
50 4,436,472
310 4,436,473
417 4,436,474
569 4,436,475
690 4,436,476
723 4,436,477
752 4,436,478
757 4,436,479

CLASS 415

2 R 4,436,480
119 4,436,481

CLASS 416

1 4,436,482
143 4,436,483
178 4,436,484
241 R 4,436,485

CLASS 417

45 4,436,486
46 4,436,487
53 4,436,488
218 4,436,489
372 4,436,490
385 4,436,491
386 4,436,492
393 4,436,493
403 4,436,494

CLASS 418

55 4,436,495

CLASS 419

57 4,436,696

CLASS 420

440 4,436,697

CLASS 422

62 4,436,698
68 4,436,699
102 4,436,700
173 4,436,701
195 4,436,702
225 4,436,703

CLASS 423

11 4,436,704
54 4,436,705
65 4,436,706
226 4,436,707
329 4,436,708
437 4,436,709
552 4,436,710
573 G 4,436,711
4,436,712
4,436,713
4,436,714
574 R 4,436,716
579 4,436,715

CLASS 424

1.1 4,436,717
4,436,718
18.0 4,436,731
37 4,436,719
44 4,436,720
52 4,436,721
70 4,436,722
95 4,436,723
101 4,436,724
116 4,436,725
177 4,436,726
4,436,727
4,436,728
180 4,436,729
4,436,730
4,436,732
4,436,733
181 4,436,734
182 4,436,735
211 4,436,736
225 4,436,737
238 4,436,738
246 4,436,739
263 4,436,740
267 4,436,741
269 4,436,742
4,436,743
272 4,436,744
273 R 4,436,745
4,436,746
274 4,436,747
275 4,436,748
278 4,436,749
279 4,436,750
283 4,436,751
317 4,436,752
331 4,436,753
333 4,436,754

CLASS 425

28 R 4,436,497
73 4,436,498
195 4,436,499
290 4,436,500
308 4,436,501
331 4,436,502
384 4,436,503
543 4,436,496

CLASS 426

15 4,436,755
430 4,436,756
438 4,436,757
549 4,436,758
573 4,436,759
603 4,436,760

CLASS 427

38 4,436,761
39 4,436,762
40 4,436,774
47 4,436,763
54.1 4,436,764
74 4,436,765
96 4,436,766
138 4,436,767
227 4,436,768
252 4,436,769
255.3 4,436,770
284 4,436,771
379 4,436,772
380 4,436,773
419.7 4,436,775

CLASS 428

14 4,436,776
36 4,436,777
4,436,778
169 4,436,779
198 4,436,780
365 4,436,781
402 4,436,782
411 4,436,783
423.1 4,436,784
427 4,436,785
447 4,436,786
4,436,787
483 4,436,788
537 4,436,789
595 4,436,518
675 4,436,790
682 4,436,791

CLASS 429

1 4,436,792
17 4,436,793
40 4,436,794
53 4,436,795
112 4,436,796

CLASS 430

5 4,436,797
17 4,436,798
4,436,799
59 4,436,800
73 4,436,801
100 4,436,802
122 4,436,803
157 4,436,804
248 4,436,805
311 4,436,806
331 4,436,807
381 4,436,808
501 4,436,809
551 4,436,810
564 4,436,811

CLASS 431

15 4,436,504
76 4,436,505
4,436,506
170 4,436,507

CLASS 432

214 4,436,508
253 4,436,509

CLASS 433

4 4,436,510
49 4,436,511
82 Re.31,537
129 4,436,512

CLASS 434

60 4,436,513

CLASS 435

14 4,436,812
109 4,436,813
162 4,436,814
172 4,436,815
240 4,436,816
313 4,436,817
316 4,436,818

CLASS 436

1 4,436,819
10 4,436,821
67 4,436,820
164 4,436,822
169 4,436,823
514 4,436,824
520 4,436,825
325 4,436,826
534 4,436,827
545 4,436,828

CLASS 440

89 4,436,514

CLASS 455

600 4,437,190

CLASS 464

114 4,436,515
128 4,436,516

CLASS 493

45 4,436,517

CLASS 501

22 4,436,829
96 4,436,830
119 4,436,831

CLASS 502

84 4,436,832
176 4,436,833
201 4,436,834
208 4,436,835
317 4,436,836

CLASS 518

700 4,436,837
4,436,838

CLASS 521

58 4,436,840
64 4,436,839
106 4,436,841
115 4,436,842
167 4,436,843

CLASS 523

146 4,436,844
172 4,436,845
175 4,436,846
203 4,436,847
426 4,436,848
501 4,436,849

CLASS 534

8 4,436,850
43 4,436,851
88 4,436,852
91 4,436,853
139 4,436,854
145 4,436,855
211 4,436,856
260 4,436,857
296 4,436,858
297 4,436,859
394 4,436,860
425 4,436,861
445 4,436,862
451 4,436,863
458 4,436,864
503 4,436,867
504 4,436,865
510 4,436,866
783 4,436,868

CLASS 535

51 4,436,869
53 4,436,870
66 4,436,871
179 4,436,872
314 4,436,873
327.1 4,436,874
385 4,436,875
394 4,436,876
437 4,436,877
438 4,436,878
439 4,436,879
504 4,436,880
4,436,881

CLASS 536

106 4,436,882
4,436,883
111 4,436,884
214 4,436,885
257 4,436,886
263 4,436,887
348.1 4,436,888

CLASS 528

93 4,436,890
111 4,436,891
117 4,436,892
173 4,436,893
176 4,436,894
288 4,436,895
323 4,436,897
336 4,436,898
395 4,436,899
490 4,436,900
498 4,436,901
501 4,436,902

CLASS 544

27 4,436,904
016 4,436,903
182. 4,436,905
187 4,436,906
238 4,436,921
335 4,436,907

CLASS 546

206 4,436,908
245 4,436,910
248 4,436,909
291 4,436,911

CLASS 548

233 4,436,912
316 4,436,913
348 4,436,914
432 4,436,915
508 4,436,916
4,436,917
546 4,436,918

CLASS 549

4 4,436,919
227 4,436,920
251 4,436,922
352 4,436,923

CLASS 556

416 4,436,924

CLASS 560

19 4,436,925
246 4,436,926
4,436,927
4,436,928
4,436,929
4,436,930
4,436,931
4,436,932

CLASS 562

470 4,436,933
502 4,436,934
519 4,436,889

CLASS 564

49 4,436,935
409 4,436,936
4,436,937
474 4,436,938

CLASS 568

813 4,436,939
857 4,436,940

CLASS 570

164 4,436,941
145 4,436,942

CLASS 585

357 4,436,943
408 4,436,944
488 4,436,945
510 4,436,946
525 4,436,947
532 4,436,948
664 4,436,949

CLASS 604

175 4,436,519
385 4,436,520

CLASSIFICATION OF DESIGNS

D2—	44	272,959		311	272,976		377	272,991	D14—	5	273,007		8	273,023		17	273,039
	231	272,960		350	272,977	D10—	106	272,992		30	273,008	D21—	31	273,024		25	273,040
	278	272,961		357	272,978			272,993		52	273,009		69	273,025		26	273,041
		272,962		384	272,979	D11—	86	272,994		68	273,010			273,026		36	273,042
	310	272,963		394	272,974		180	272,995	D15—	9	273,011		121	273,027		43	273,043
		272,964	D8—	14	272,980	D12—	102	272,996	D16—	2	273,012		190	273,028		48	273,044
D3—	33	272,965		16	272,981		116	272,997		42	273,013		192	273,029	D25—	54	273,045
D6—	76	272,966		24	272,982		146	272,998		135	273,014		197	273,030		74	273,046
	56	272,967		51	272,983			272,999	D17—	5	273,015		234	273,031		79	273,047
	61	272,968		52	272,984		147	273,000	D18—	13	273,016	D22—	19	273,032	D26—	37	273,048
	86	272,969		71	272,985		156	273,001	D19—	49	273,017	D23—	3	273,033		38	273,049
	96	272,970		331	272,986		191	273,002		75	273,018		19	273,034	D27—	3	273,050
D7—	16	272,971		354	272,987		211	273,003	D20—	6	273,019		128	273,035	D28—	76	273,051
	47	272,972	D9—	300	272,988			273,004			273,020		163	273,036	D99—	28	273,052
		272,973		349	272,989		335	273,005			273,021		165	273,037			273,053
	309	272,975		355	272,990	D13—	23	273,006			273,022	D24—	03	273,038			

CLASSIFICATION OF PLANTS

P.—	68	5,203	70	5,204		5,205		5,206		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4 :	4,435,947		4,435,969		4,436,985		4,436,195		4,437,034		4,436,220
	4,436,356		4,436,010		4,436,994		4,436,326		4,437,042		4,436,312
	4,436,481		4,436,030		4,437,004		4,436,484		4,437,050		4,436,580
	4,437,113		4,436,080		4,437,047		4,436,493		4,437,084		4,436,664
5 :	4,436,272		4,436,962		4,437,049		4,436,780		4,437,161		4,436,679
	4,436,431	9 :	4,435,904		4,437,086	16 :	4,436,353	18 :	4,435,853		4,436,758
6 :	4,435,870		4,436,013		4,437,106	17 :	4,435,857		4,435,922		4,436,813
	4,435,874		4,436,192		4,437,126		4,435,860		4,436,049		4,437,053
	4,435,940		4,436,214		4,437,130		4,435,892		4,436,092		4,437,054
	4,435,943		4,436,228		4,437,139		4,435,915		4,436,186		4,437,069
	4,435,963		4,436,229		4,437,150		4,435,931		4,436,187	25 :	4,435,910
	4,435,978		4,436,360		4,437,158		4,435,939		4,436,211		4,436,224
	4,435,982		4,436,747		4,437,171		4,435,941		4,436,242		4,436,232
	4,435,989		4,437,046		4,437,173		4,435,949		4,436,319		4,436,251
	4,436,016		4,437,182	08 :	4,436,403		4,433,966		4,436,485		4,436,280
	4,436,048		4,437,183		4,436,409		4,435,967		4,436,549		4,436,295
	4,436,054	01 :	4,435,893		4,436,963		4,436,044		4,436,596		4,436,302
	4,436,097		4,436,598		4,437,080		4,438,045		4,436,603		4,436,417
	4,436,145	04 :	4,435,866		4,437,156		4,436,075		4,436,648		4,436,426
	4,436,226		4,435,908	09 :	4,436,076		4,436,119		4,436,733		4,436,441
	4,436,243		4,436,058		4,436,190		4,436,193		4,436,734		4,436,495
	4,436,262		4,436,108		4,436,304		4,436,210		4,436,738		4,436,384
	4,436,277		4,436,158		4,436,419		4,436,225		4,436,739		4,436,650
	4,436,303	05 :	4,435,914		4,436,682		4,436,227		4,436,778		4,436,730
	4,436,305		4,436,429		4,436,894		4,436,240		4,436,815		4,436,759
	4,436,306	06 :	Re.31,537		4,437,007		4,436,246		4,436,860		4,436,762
	4,436,350		4,435,899		4,437,164		4,436,289		4,436,879		4,436,771
	4,436,355		4,435,905	10 :	4,436,011		4,436,307		4,436,912		4,436,806
	4,436,420		4,436,082		4,436,025		4,436,309		4,437,031		4,437,018
	4,436,511		4,436,085		4,436,324		4,436,315		4,437,120		4,437,026
	4,436,531		4,436,090		4,436,366		4,436,344		4,437,123		4,437,040
	4,436,566		4,436,159		4,436,599		4,436,345		4,437,124		4,437,104
	4,436,582		4,436,176		4,436,689		4,436,359	19 :	Re.31,536	26 :	Re.31,535
	4,436,592		4,436,188		4,436,858		4,436,374		4,435,873		4,435,852
	4,436,595		4,436,254	12 :	4,435,855		4,436,446		4,436,169		4,435,865
	4,436,602		4,436,308		4,435,923		4,436,460		4,436,444		4,435,972
	4,436,614		4,436,400		4,436,088		4,436,469		4,436,436		4,436,037
	4,436,634		4,436,438		4,436,116		4,436,473		4,436,934		4,436,084
	4,436,640		4,436,449		4,436,189		4,436,534		4,437,151		4,436,139
	4,436,673		4,436,452		4,436,234		4,436,536	20 :	4,436,077		4,436,147
	4,436,674		4,436,461		4,436,329		4,436,543		4,436,081		4,436,197
	4,436,741		4,436,492		4,436,480		4,436,604		4,436,445		4,436,217
	4,436,785		4,436,502		4,436,509		4,436,620		4,436,545		4,436,344
	4,436,796		4,436,579		4,436,576		4,436,695		4,436,641		4,436,275
	4,436,819		4,436,590		4,436,990		4,436,718	21 :	4,435,993		4,436,337
	4,436,988		4,436,593		4,436,992		4,436,779	22 :	4,436,039		4,436,372
	4,437,015		4,436,649		4,437,003		4,436,881		4,436,105		4,436,463
	4,437,023		4,436,684		4,437,092		4,436,940		4,436,235		4,436,470
	4,437,025		4,436,822		4,437,093		4,436,958		4,436,632		4,436,585
	4,437,066		4,436,899		4,437,096		4,436,970		4,436,708		4,436,610
	4,437,067		4,436,914		4,437,097		4,436,971		4,437,139		4,436,621
	4,437,085		4,436,952		4,437,160		4,436,986	23 :	4,437,090		4,436,715
8 :	4,435,863		4,436,968	13 :	4,436,056		4,437,010	24 :	4,435,926		4,436,723

	4,436,750		4,436,721		4,436,609		4,436,376		4,436,471		4,436,475
	4,436,775		4,436,729		4,436,622		4,436,377		4,436,474		4,436,519
	4,436,789		4,436,748		4,436,623		4,436,497		4,436,478		4,436,533
	4,436,875		4,436,765		4,436,635		4,436,541		4,436,487		4,436,613
	4,436,885		4,436,793		4,436,642		4,436,565		4,436,498		4,436,636
	4,437,116		4,436,804		4,436,693		4,436,567		4,436,513		4,436,638
27 :	4,435,871		4,436,824		4,436,717		4,436,572		4,436,520		4,436,672
	4,435,995		4,436,834		4,436,746		4,436,574		4,436,544		4,436,711
	4,436,005		4,436,836		4,436,768		4,436,601		4,436,611		4,436,712
	4,436,008		4,436,850		4,436,777		4,436,608		4,436,615		4,436,713
	4,436,015		4,436,872		4,436,797		4,436,625		4,436,617		4,436,714
	4,436,125		4,436,890		4,436,799		4,436,651		4,436,627		4,436,745
	4,436,194		4,436,957		4,436,820		4,436,653		4,436,628		4,436,754
	4,436,213		4,436,965		4,436,825		4,436,767		4,436,677		4,436,766
	4,436,354		4,436,978		4,436,826		4,436,847		4,436,696		4,436,837
	4,436,370		4,436,979		4,436,829		4,436,848		4,436,719		4,436,838
	4,436,392		4,436,999		4,436,846		4,436,853		4,436,740		4,436,843
	4,436,393		4,437,013		4,436,851		4,436,855		4,436,784		4,436,868
	4,436,477		4,437,014		4,436,876		4,436,857		4,436,816		4,436,888
	4,436,630		4,437,024		4,436,887		4,436,864		4,436,842		4,436,926
	4,436,757		4,437,037		4,436,924		4,436,886		4,436,862		4,436,927
	4,436,788		4,437,039		4,436,942		4,436,923		4,436,863		4,436,928
	4,436,993		4,437,043		4,436,967	40 :	4,435,872		4,436,866		4,436,929
	4,437,081		4,437,087		4,436,991		4,435,934		4,436,871		4,436,930
	4,437,155		4,437,094		4,436,995		4,435,988		4,436,893		4,436,931
	4,437,157		4,437,142		4,437,000		4,435,990		4,436,911		4,436,932
28 :	4,436,231		4,437,148		4,437,019		4,436,024		4,436,947		4,436,946
29 :	4,436,964	35 :	4,435,868		4,437,038		4,436,109		4,436,972		4,436,956
	4,435,851		4,436,155		4,437,041		4,436,134		4,437,036		4,436,996
	4,436,003		4,436,294		4,437,059		4,436,149		4,437,052		4,436,997
	4,436,021		4,436,437		4,437,108		4,436,153		4,437,056		4,437,006
	4,436,202		4,437,064		4,437,109		4,436,156		4,437,073		4,437,141
	4,436,233	36 :	4,435,858		4,437,114		4,436,166		4,437,082		4,437,167
	4,436,266		4,435,880		4,437,118		4,436,283		4,437,083		4,437,175
	4,436,331		4,435,891		4,437,145		4,436,488		4,437,166		4,437,176
	4,436,518		4,435,898		4,437,149		4,436,681	43 :	4,436,212	49 :	4,435,917
	4,436,577		4,435,913		4,437,189		4,436,698	45 :	4,435,909		4,436,036
30 :	4,436,727		4,435,933	37 :	4,435,876		4,436,865		4,436,040		4,436,095
31 :	4,436,728		4,435,936		4,435,955		4,436,882		4,437,152		4,436,442
	4,436,343		4,435,938		4,435,965		4,436,883	46 :	4,436,113	50 :	4,435,928
	4,436,351		4,435,942		4,436,501		4,436,901	47 :	4,435,929	51 :	4,435,925
	4,436,700		4,435,956		4,436,552		4,436,902		4,436,223		4,436,100
	4,436,821		4,435,961		4,436,597		4,436,948		4,436,526		4,436,191
32 :	4,435,911		4,436,053		4,436,665		4,436,949		4,436,557		4,436,330
33 :	4,435,919		4,436,091		4,436,690		4,436,977		4,436,895		4,436,367
	4,437,122		4,436,094		4,436,736	41 :	4,435,864	48 :	4,435,861		4,436,425
34 :	4,435,856		4,436,101		4,436,776		4,436,028		4,435,912		4,436,455
	4,435,895		4,436,103		4,436,782		4,436,207		4,435,975		4,436,569
	4,435,896		4,436,112		4,436,960		4,436,332		4,435,976		4,436,705
	4,435,903		4,436,146	38 :	4,435,946		4,436,510		4,435,977	53 :	4,435,902
	4,436,043		4,436,204		4,435,996		4,436,955		4,435,984		4,435,958
	4,436,098		4,436,209	39 :	4,435,932	42 :	4,435,862		4,436,002		4,436,007
	4,436,184		4,436,261		4,435,937		4,435,877		4,436,018		4,436,263
	4,436,185		4,436,271		4,436,012		4,435,882		4,436,118		4,436,278
	4,436,203		4,436,276		4,436,019		4,435,948		4,436,148		4,436,553
	4,436,208		4,436,297		4,436,020		4,435,979		4,436,150		4,436,703
	4,436,221		4,436,301		4,436,099		4,435,981		4,436,151		4,437,146
	4,436,249		4,436,311		4,436,111		4,436,001		4,436,152	54 :	4,436,267
	4,436,423		4,436,328		4,436,115		4,436,027		4,436,154		4,436,375
	4,436,462		4,436,340		4,436,136		4,436,046		4,436,157		4,436,666
	4,436,500		4,436,365		4,436,143		4,436,052		4,436,164	55 :	4,435,883
	4,436,507		4,436,368		4,436,162		4,436,117		4,436,165		4,435,924
	4,436,525		4,436,369		4,436,183		4,436,181		4,436,168		4,436,022
	4,436,537		4,436,404		4,436,198		4,436,248		4,436,177		4,436,093
	4,436,540		4,436,405		4,436,215		4,436,285		4,436,264		4,436,200
	4,436,612		4,436,424		4,436,216		4,436,291		4,436,279		4,436,206
	4,436,631		4,436,466		4,436,236		4,436,299		4,436,280		4,436,288
	4,436,637		4,436,496		4,436,237		4,436,358		4,436,316		4,436,339
	4,436,645		4,436,528		4,436,258		4,436,361		4,436,325		4,436,342
	4,436,652		4,436,530		4,436,269		4,436,363		4,436,334		4,436,443
	4,436,662		4,436,555		4,436,274		4,436,373		4,436,450		4,436,867
	4,436,682		4,436,558		4,436,335		4,436,394		4,436,457		4,437,079
	4,436,691		4,436,586		4,436,341		4,436,459		4,436,458		4,437,133

DESIGN PATENTS

04 :	273,037		273,040		273,031	25 :	272,976		273,001		273,028
06 :	272,984		273,044	13 :	272,960		272,982		273,032	37 :	272,959
	272,987		273,051	16 :	273,042		273,014		273,043		272,966
	272,995		273,053	17 :	272,975		273,033	36 :	272,963	39 :	272,990
	272,997	08 :	273,039		272,988	26 :	273,002		272,964		273,045
	273,019	09 :	273,041	18 :	272,996		273,035		272,967	41 :	272,981
	273,020		273,050		273,024	27 :	272,980		272,991	42 :	273,030
	273,021	12 :	272,961		273,046	31 :	273,029		273,005		273,052
	273,022		272,962	19 :	273,011	33 :	273,006		273,007	44 :	272,994
	273,023		272,969	21 :	273,015	34 :	272,986		273,012	55 :	272,978
	273,027										

U.S. GOVERNMENT PRINTING OFFICE : O—1984

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM
ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

Route to:

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

Vol. 1040 Number 3

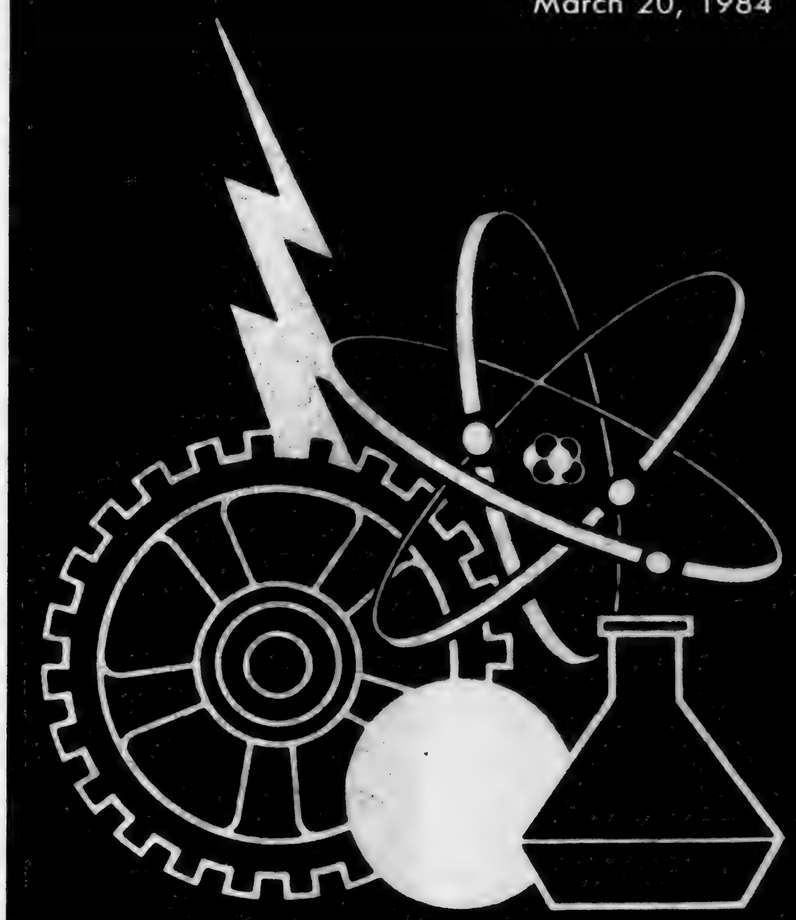
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 20, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
March 20, 1984 Volume 1040 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1040 OG 24
Reissue Applications Filed	1040 OG 24
Requests for Reexaminations Filed	1040 OG 24
Errata	1040 OG 24
Patent Suits	1040 OG 25
Patent Certificates of Correction	1040 OG 27
Disclaimers	1040 OG 27
Disclaimers and Dedications	1040 OG 27
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1040 OG 28
Condition of Patent Applications	1040 OG 29
Reexaminations	931
Reissue Patents Granted (31,538)	935
Plant Patents Granted (5,207)	937
Patents Granted	
General and Mechanical (4,437,191)	939
Chemical (4,437,861)	1175
Electrical (4,438,290)	1289
Design Patents Granted (273,054)	1373
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 50
Classification of	
Patents (Including Reissues and Reexaminations)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs and Plants	PI 58
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 30, 1984.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,645,835, Re. S.N. 570,011, Filed Jan. 11, 1984, Cl. 428/195, MOISTURE-VAPOR-PERMEABLE PRESSURE SENSITIVE ADHESIVE, Martin E. Hodgen, Owner of Record: *T. J. Smith & Nephew Ltd., Kington-Upon-Hull, England,* Attorney or Agent: Albert L. Jacobs, Ex. Gp.: 164

4,308,672, Re. S.N. 567,398, Filed Dec. 30, 1983, Cl. 36/50, ADJUSTABLE AND FLEXIBLE CLOSURE ASSEMBLY FOR SHOES WITH VARIABLE OPENING, Anthony J. Antonious, Owner of Record: *Inventor,* Attorney or Agent: Douglas B. Henderson, Ex. Gp.: 353

4,379,464, Re. S.N. 570,719, Filed Jan. 13, 1984, Cl. 131/84, COOKED FLAVORS FOR SMOKING PRODUCTS, Louise Wu., et al., Owner of Record: *Philip Morris, Inc., New York, N.Y.,* Attorney or Agent: George E. Inskeep, et al., Ex. Gp.: 335

4,394,464, Re. S.N. 565,574, Filed Dec. 27, 1983, Cl. 52.1/18D, MODIFIED POLYIMIDE FOAMS AND METHODS OF MAKING SAME, John Gagliani, et al., Owner of Record: *Inventor,* Attorney or Agent: Frank D. Gilliam, Ex. Gp.: 143

4,417,029, Re. S.N. 570,567, Filed Jan. 13, 1984, Cl. 525/314, DERIVATIZATION OF STAR-BLOCK COPOLYMERS, Ralph Milkovich, Owner of Record: *Atlantic Richfield Co., Los Angeles, Calif.,* Attorney or Agent: L. J. Young, et al., Ex. Gp.: 144

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,910,349, Reexam. No. 90/000,497, Requested: Feb. 6, 1984, Cl. 166/153, APPARATUS AND METHOD FOR CEMENTING WALL LINERS, Joe R. Brown, et al., Owner of Record: *Hughes Tool Co., Houston, Tex.,* Attorney or Agent: Robert A. Felsman, Ex. Gp.: 350, Requester: Otis Engineering Corp., Dallas, Tex.

3,963,178, Reexam. No. 90/000,501, Requested: Feb. 15, 1984, Cl. 239/8, SPRAYER NOZZLE, Dean E. Collins, Owner of Record: *Root-Lowell Manufacturing Co., Lowell, Mich.,* Attorney or Agent: Oltsch & Knoblock, Ex. Gp.: 310, Requester: B & G Equipment Co., Plumsteadville, Pa.

4,146,793, Reexam. No. 90/000,505, Requested: Feb. 15, 1984, Cl. 250/444, X-RAY DEVICES USING EPOXY RESINS STRENGHTENED WITH CARBONIC FIBROUS MATERIALS, Lennart Bergstrom, et al., Owner of Record: *Siemens AG, Munchen, Germany,* Attorney or Agent: Hill, van Santen, et al., Ex. Gp.: 250, Requester: Owner

4,249,281, Reexam. No. 90/000,495, Requested: Jan. 31, 1984, Cl. 15/340, SELF-PROPELLED VACUUM CLEANER, Robert B. Meyer, et al., Owner of Record: *National Union Electric Corp., Greenwich, Conn.,* Attorney or Agent: Alfred E. Miller, Ex. Gp.: 240, Requester: Owner

4,288,965, Reexam. No. 90/000,506, Requested: Feb. 17, 1984, Cl. 53/451, FORM-FILL-SEAL PACKAGING METHOD AND APPARATUS, Robert C. James, Owner of Record: *Hayssen Manufacturing Co., Sheboygan, Wis.,* Attorney or Agent: Senniger, Powers, et al., Ex. Gp.: 171, Requester: Hayssen Manufacturing Co., St. Louis, Mo.

4,305,091, Reexam. No. 90/000,504, Requested: Feb. 15, 1984, Cl. 358/036, ELECTRONIC NOISE REDUCING APPARATUS AND METHOD, J. Carl Cooper, Owner of Record: *Inventor,* Attorney or Agent: Charles R. Rust, Ex. Gp.: 231, Requester: Harris Corp., Melbourne, Fla.

4,372,974, Reexam. No. 90/000,508, Requested: Feb. 21, 1984, Cl. 424/319, ANTICONVULSIVE COMPOSITIONS AND METHOD OF TREATING CONVULSIVE DISORDERS, Irving Fish, et al., Owner of Record: *New York University, New York, N.Y.,* Attorney or Agent: Darby & Darby, Ex. Gp.: 123, Requester: Owner

Errata

"All reference to Patent No. 4,406,092 to Charles W. Lake et al. of Okla. for 'SURFACE CLEANING MACHINE' appearing in the Official Gazette of Sept. 27, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,428,446 to Akira Kimura et al. of Japan for 'MOTOR VEHICLE EQUIPPED WITH ENGINE NOISE EMISSION PREVENTING DEVICE' appearing in the Official Gazette of Jan. 31, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,431,694 to John T. Balkwill of Calif. for 'MULTIFIBER DESIGN FOR MICROCHANNEL PLATES' appearing in the Official Gazette of Feb. 14, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,433,074 to David H. Hawes of S.C. for 'DISCONTINUOUS FIBER PRETREATMENT' appearing in the Official Gazette of Feb. 21, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,433,101 to William H. Gibby, Jr. of N.J. for 'BLENDS OF VINYL HALIDE-POLYLEFIN GRAFT COPOLYMERS AND ABS POLYMERS' appearing in the Official Gazette of Feb. 21, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,433,169 to Hans-Joachim Scholl of Germany for 'DIAMINES AND A PROCESS FOR THEIR PREPARATION' appearing in the Official Gazette of Feb. 21, 1984 should be deleted since no patent was granted."

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,355,944, Anatole J. Sipin, MASS FLOW METERING MEANS; **3,485,098, same; 4,187,721,** James E. Smith, METHOD AND STRUCTURE FOR FLOW MEASUREMENT, **filed** Sept. 1, 1982, D.C., S.D.N.Y., Doc. 82-Civ-5796, *Micro Motion, Inc.* v. *Anatole J. Sipin Co., Inc.*

3,485,098. (See 3,355,944.)

3,807,713, Respiratory Care, Inc., BOTTLE CONTAINING FLUID FOR INHALATION THERAPY APPARATUS; **3,864,544, same,** ELECTRIC HEATING UNIT FOR LIQUID; **3,903,216, same,** INHALATION THERAPY APPARATUS; **3,915,386, same,** NEBULIZER; **4,187,951, same,** BLOW MOLDED BOTTLE WITH DIFFUSER AND METHOD FOR MAKING SAME; **4,217,328, same,** METHOD OF BLOW MOLDING A BOTTLE WITH A DIFFUSER; **D. 257,763, same,** BOTTLE, **filed** July 23, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 4575, *Respiratory Care, Inc.* v. *Walter G. Cornett, III, et al.*

3,864,544. (See 3,807,713.)

3,903,216. (See 3,807,713.)

3,915,386. (See 3,807,713.)

4,070,563, Peter D. Petroff, INFILTRATION-INFLOW SEWER LINE ANALYZER; **4,211,111, same,** **filed** July 2, 1981, D.C., W.D.N.C. (Charlotte), Doc. C-C-81-0265, *Condor Systems, Inc., et al.* v. *Environmental Leasing, Inc., et al.*

4,100,997, Bobbie D. Peacock, STEP CONSTRUCTION EMPLOYING INSERTABLE FASTENER HAVING DEFORMABLE PROJECTIONS, **filed** Oct. 6, 1983, D.C., W.D. Mo. (Kansas City), Doc. 83-1107-CV-W-6, *M. A. Industries, Inc.* v. *Clay and Bailey Mfg. Co.*

4,103,860, Haas and Schenken, MIRROR HOLDER, **filed** June 8, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 2865, *Cobbs Mfg. Co.* v. *Hollywood Accessories Co., et al.* Plaintiff's Notice of Stipulation dismissing action with prejudice entered on June 28, 1983.

4,109,343, Weis and Vander Meulen, TROLLEY WHEEL ASSEMBLY, **filed** Aug. 22, 1983, D.C., N.D. Ga. (Atlanta), Doc. C83-1752A, *C. L. Frost & Son, Inc.* v. *Tri-II, Inc.*

4,109,437, Player and Barton, BUILDING PANEL, **filed** Dec. 30, 1983, D.C., N.D. Tex. (Dallas), Doc. 3-83-2305 G, *Howmet Aluminum Corp.* v. *Mason Corp.*

4,114,804, Jones and Sherman, COUNTERFEIT DETECTION MEANS FOR PAPER COUNTING, **filed** Dec. 15, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6989, *Brandt, Inc.* v. *William Crane, doing business as Money Processing Consultants.* **Same, filed** Mar. 9, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1159, *Billcon International, Inc.* v. *Brandt, Inc., et al.*

4,131,195, Scott Paper Co., DISPOSABLE, COMPACTABLE MOISTURE IMPERVIOUS PACKAGE FOR PREMOISTENED SHEETS, **filed** Sept. 30, 1983, D.C. Del. (Wilmington), Doc. 83-649, *Scott Paper Co.* v. *Riegel Textile Corp.*

4,133,919, Robert C. Parsons, METHOD OF MAKING DECORATIVE PANELS, **filed** Oct. 19, 1983, D.C., N.D. Tex. (Dallas), Doc. CA3-83-1783-C, *Joe F. Miller* v. *Raid Parker and Cynthia Parker, doing business as Glass Etch Design.*

4,144,594, Melvin H. Chapman, FILIGREED BELT AND METHOD OF MAKING SAME, **filed** Oct. 23, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. CIV-81-1472-W, *Amsco Corp.* v. *Nocona Belt Co.* Judgment by default that all claims of Pat. No. 4,144,594 are invalid and unenforceable. Pat. No. 4,114,594 is not infringed by the manufacture, use or sale of plaintiff's belts. Filed Apr. 19, 1982.

4,147,896, Cannon and O'Neill, FIXED SPEECH BUFFER MEMORIES FOR SIGNALLING WITHOUT AN ORDER WIRE, **filed** Dec. 6, 1983, D.C., M.D. Fla. (Orlando), Doc. 83-966-CIV-ORL-11, *Comtech Communications Corp.* v. *Electronics Corp. of Israel Ltd., et al.*

4,172,359, Haas and Schenken, TIMEPIECE WITH ELECTRONIC CHIME GENERATOR, **filed** Aug. 10, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-3874, *Drugor Associates* v. *Franz Hermle & Sohn, et al.*

4,173,910, Lineberry, Buckner and Harris, METHOD AND APPARATUS FOR HANDLING BRICK, **filed** Apr. 20, 1981, D.C., M.D.N.C. (Greensboro), Doc. C-81-172-G, *Auto-Systems and Service, Inc.* v. *Clarksville Machine Works, Inc.* Stipulation of Dismissal with prejudice filed by Plaintiff on Dec. 1, 1981.

4,175,923, William G. Friend, METHOD AND APPARATUS FOR OCCULT BLOOD TESTING IN THE HOME, **filed** Nov. 28, 1983, D.C.N.J. (Newark), Doc. 83-4536D, *Warner-Lambert Co.* v. *C. B. Fleet Co., Inc.*

4,184,429, Max Widmer, CONSTANT BEVEL DOCTOR BLADE AND METHOD AND APPARATUS USING SAME, **filed** Oct. 26, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-4712, *Max Daetwyler Corp.* v. *R. Meyer.*

4,187,721. (See 3,355,944.)

4,187,951. (See 3,807,713.)

4,188,825, James G. Farrar, MONITOR FOR DIVERS TO AVOID DECOMPRESSION, **filed** Nov. 25, 1983, D.C., S.D. Fla. (Miami), Doc. 83-6834-CIV-JLK, *Aquatechnology, Inc.* v. *Divers Unlimited, Inc.*

4,189,664, Richard L. Hirschfeld, POWER CONTROL UNIT FOR AUTOMATIC CONTROL OF POWER CONSUMPTION IN A LIGHTING LOAD, **filed** Sept. 13, 1983, D.C., S.D. Ohio (Dayton), Doc. 3-83-956, *Voltage Control Corp.* v. *Staco Powernetics, Inc.*

4,191,590, John J. Sundheim, METHOD AND APPARATUS FOR CLEANING CARPETS AND

SURFACES USING CLEANING FLUID, **filed** Sept. 16, 1983, D.C. Ore. (Eugene), Doc. 83-6416-E, *Windsor Industries, Inc., et al.* v. *Arnold E. Ballweber, doing business as Ballweber Industries.* Defendants are permanently enjoined from further infringing U.S. Pat. No. 4,191,590 per Consent Decree and Judgment filed Dec. 21, 1983.

4,195,330, John M. Savage, Jr., LENS CLIP AND CAP FOR LED OR LIGHT UNIT ASSEMBLY, **filed** Nov. 12, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 5845, *Visual Communications Co., Inc.* v. *Data Display Products, et al.* Order and Consent Judgment entered June 27, 1983.

4,205,780, Burns and Ho, DOCUMENT PROCESSING SYSTEM AND METHOD, **filed** Dec. 23, 1982, D.C., N.D. Tex. (Dallas), Doc. CA3-82-2135-H, *Banctec, Inc.* v. *ROI Consulting, Inc.*

4,207,087, Morrison & Baer, MICROCOMPUTER CONTROLLED GAME, **filed** Mar. 5, 1981, D.C., S.D.N.Y., Doc. 81-Civ-1288, *Milton Bradley Co.* v. *Kingsford Ltd., et al.* Defendants are permanently enjoined from infringing Pat. No. 4,207,087 per Judgment entered Dec. 17, 1981.

4,211,111. (See 4,070,563.)

4,213,028, Arend Wolf, ELECTRIC HEATING DEVICE FOR VEHICLE WINDOWS, **filed** Dec. 5, 1983, D.C., N.D. Ohio (Toledo), Doc. 83-1097, *Audiovox Corp.* v. *Dana Corp.*

4,217,328. (See 3,807,713.)

4,229,211, Donald D. Battles, LADLE HEATING SYSTEM, **filed** Sept. 19, 1983, D.C., E.D. Ky. (Lexington), Doc. 83-300, *Thermecon, Inc.* v. *Hotwork Mfg. Co., Inc., et al.*

4,249,734, Eric Bromley, HAND-HELD TWO-PLAYER ELECTRONIC FOOTBALL GAME; **4,249,735, same,** ELECTRONIC SIMULATED FOOTBALL GAME AND METHOD; **4,249,744, same,** TWO-PLAYER ELECTRONIC SPORTS ACTION GAME, **filed** Feb. 19, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81-0848, *Entex Industries, Inc.* v. *Coleco Industries, Inc.*

4,249,735, Eric Bromley, ELECTRONIC SIMULATED FOOTBALL GAME AND METHOD, **filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0817, *Coleco Industries, Inc.* v. *Calfax, Inc.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0818, *Coleco Industries* v. *Tandy Corp.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0819, *Coleco Industries, Inc.* v. *Entex Industries, Inc.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0820, *Coleco Industries, Inc.* v. *Mattel, Inc.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0821, *Coleco Industries* v. *Conic Investment Co., Ltd.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0823, *Coleco Industries, Inc.* v. *Bambino, Inc.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0824, *Coleco Industries, Inc.* v. *Tudor Games, Inc.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0825, *Coleco Industries, Inc.* v. *Enterprex International Corp.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0827, *Coleco Industries, Inc.* v. *Tiger Electronic Toys, Inc.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0828, *Coleco Industries, Inc.* v. *Dimerco Enterprises Corp.* **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0822, *Coleco Industries, Inc.* v. *Pro-Quality Electronic Co., Ltd.* Notice and Order of Voluntary Dismissal without prejudice filed by Plaintiff on June 11, 1981. **Same, filed** Feb. 10, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0826, *Coleco Industries* v. *Barney Hongkong Ltd.* Defendants are enjoined from further infringing Pat. No. 4,249,735 per Consent Judgment filed July 27, 1981.

4,249,735. (See 4,249,734.)

4,249,744. (See 4,249,734.)

4,253,624, Robert E. Colbert, WELDING WIRE DISPENSER, **filed** May 19, 1982, D.C., S.D. Ohio (Dayton), Doc. C-3-82-242, *National-Standard Co.* v. *Hobart Brothers Co.* Order of Dismissal with prejudice filed Dec. 20, 1983.

4,254,929, Robert H. Popper, Jr., APPARATUS FOR ENABLING MOVEMENT OF A BINDER, **filed** May 13, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 3043, *J. S. Popper, Inc.* v. *Selzee, Inc.*

4,256,419, John R. Haan, ENDPLATE STOP FOR SILAGE DISTRIBUTOR, **filed** Sept. 1, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-4295, *Even-Flo Silage Distributor, Inc.* v. *Lancaster Level-Flo, Inc.*

4,278,414, Weisner and Walls, APPARATUS FOR MAKING PLASTIC SKYLIGHTS; **4,344,261, same,** IMPROVED SKYLIGHT, **filed** Oct. 7, 1982, D.C., M.D. Fla. (Orlando), Doc. 82-530 Orl-Civ-R, *Kenergy Corp.* v. *Sun-Tek Industries, Inc.*

4,298,601, Alan N. Howard, METHOD AND FORMULATIONS FOR THE TREATMENT OF OBESITY, **filed** June 9, 1983, D.C., W.D.N.Y. (Buffalo), Doc. 83-628C, *Cambridge Plan International* v. *Republic Drug Co.* Case closed administratively, without prejudice, on Oct. 25, 1983. **Same, filed** Nov. 7, 1983, D.C. Nev. (Las Vegas), Doc. CV-LV-83-754 RDF, *Cambridge Plan International* v. *Stanford International, Inc., et al.*

4,300,523, Robertson and Robertson, BARBECUE OVEN, **filed** Jan. 6, 1984, D.C., E.D. Mo. (St. Louis), Doc. 84-33C(3), *B. B. Robertson Co.* v. *David B. Knight & Associates, Inc., et al.*

4,312,808, Paul Lienhard, RED MONOAZO DYESTUFFS; **4,378,970, same,** RED MONOAZO SULPHONIC ACID DYESTUFFS FOR POLYAMIDE, **filed** June 2, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-2613, *Ciba-Geigy Corp.* v. *Crompton & Knowles Corp.* Pat. Nos. 4,312,808 and 4,378,970 are valid. Defendant is enjoined permanently from further infringing Pat. Nos. 4,312,808 and 4,378,970 during their unexpired terms. Dated Jan. 5, 1984.

4,328,794, Robert E. Holmes, TRACTION SPLINT, **filed** Mar. 28, 1983, D.C., W.D.N.C. (Charlotte), Doc. C-C-83-0188-M, *Conaway Enterprises, Inc.* v. *Emergency Products Group, Inc.*

4,344,261. (See 4,278,414.)

4,347,553, John R. Saron, FLEXIBLE LIGHT WITH PROTECTIVE CAP, **filed** Nov. 9, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 8030, *Key Medical, Inc.* v. *Lee's Enterprises, Inc., et al.*

4,367,564, John D. Holley, SWEEPER BRISTLE AND METHOD OF MAKING, **filed** Aug. 18, 1983, D.C. Colo. (Denver), Doc. 83-Z-1480, *Holley Engineering Co., Inc.* v. *Western Sling Co., Inc., et al.*

4,369,475, Ho and Bippy, ENCLOSED DISC DRIVE WITH IMPROVED AIR FLOW, **filed** Dec. 15, 1983, D.C., N.D. Calif. (San Jose), Doc. C-83-20427 WAI, *Priam Corp.* v. *Atasi Corp.*

4,373,277, Edward Cucheran, CUTTER EXTENSION CONE, **filed** Oct. 18, 1983, D.C., E.D. Va. (Norfolk), Doc. 83-694-N, *J. A. LaPorte, Inc.* v. *Norfolk Dredging Co.*

4,376,340, Ramun and Ramun, MATERIAL HANDLING AND SHEARING ATTACHMENT FOR A BACKHOE, **filed** Oct. 11, 1983, D.C. Minn. (Duluth), Doc. 5-83-299, *Allied Gator, Inc.* v. *LaBounty Mfg., Inc., et al.*

4,378,970. (See 4,312,808.)

4,384,795, Bill N. Lutes, STANDARDIZED INTERFACE FOR ACOUSTIC BAR TYPEWRITERS, **filed** June 21, 1983, D.C., C.D. Calif. (Los Angeles), Doc. CV834020 TJH, *Cord, Ltd.* v. *SCM Corp.*

D. 257,763. (See 3,807,713.)

PATENT NOTICES

Certificates of Correction for the Week of Mar. 20, 1984

D. 265,857	4,390,202	4,406,002	4,415,587
3,299,203	4,390,930	4,406,401	4,416,032
4,081,091	4,391,955	4,406,696	4,416,572
4,277,822	4,392,386	4,407,271	4,416,649
4,280,179	4,393,677	4,407,981	4,417,144
4,325,245	4,394,674	4,408,835	4,417,720
4,328,932	4,394,763	4,409,126	4,420,343
4,336,413	4,395,048	4,409,562	4,420,389
4,349,600	4,395,764	4,409,819	4,420,573
4,350,183	4,396,910	4,409,856	4,421,138
4,350,795	4,397,052	4,410,230	4,421,259
4,359,563	4,398,194	4,410,234	4,421,462
4,360,205	4,399,020	4,410,356	4,421,818
4,366,071	4,399,208	4,411,372	4,421,919
4,369,357	4,399,249	4,412,211	4,422,846
4,373,600	4,399,436	4,412,222	4,423,448
4,374,364	4,402,281	4,412,972	4,423,932
4,379,185	4,403,179	4,413,147	4,424,343
4,379,335	4,404,022	4,413,186	4,424,843
4,379,874	4,404,311	4,413,666	4,425,144
4,382,871	4,404,384	4,413,718	4,425,380
4,384,219	4,404,533	4,414,219	4,425,421
4,386,508	4,405,023	4,414,668	4,425,422
4,387,357	4,405,177	4,414,864	4,425,551
4,388,412	4,405,907	4,415,405	4,426,083
4,389,678	4,405,982	4,415,458	4,426,130

Disclaimers

3,613,818.—*George E. Schubert,* Aurora; *Lloyd D. Swayze,* Yorkville; and *John B. Waggoner,* Joliet, Ill. EMERGENCY SUPPLY SYSTEM FOR VEHICLE HYDRAULIC COMPONENTS. Patent dated Oct. 19, 1971. Disclaimer filed Jan. 16, 1984, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1, 2, 3, and 4 of said patent.

3,952,510.—*Wayne A. Peterson,* Joliet, Ill. FLOW SENSING AND CONTROL APPARATUS. Patent dated Apr. 27, 1976. Disclaimer filed Jan. 16, 1984, by the assignee, *CaterpillarTractor Co.*

Hereby enters this disclaimer to claims 1, 2, and 3 of said patent.

4,190,235.—*William C. Dell,* Washington, D.C. FLUIDIZED BED LADLE HEATING METHOD AND APPARATUS. Patent dated Feb. 26, 1980. Disclaimer filed June 6, 1983; by the assignee, *The Cadre Corp.*

Hereby enters this disclaimer to claims 1, 2, 4, 31 and 33 of said patent.

4,324,839.—*Robert B. Frye,* Menands, N.Y. SILICONE RESIN COATING COMPOSITION. Patent dated Apr. 13, 1982. Disclaimer filed Dec. 27, 1983, by the assignee, *General Electric Co.*

The term of this patent subsequent to Dec. 29, 1998, has been disclaimed.

4,341,550.—*Ferenc M. Pallos,* Walnut Creek; *Mervin E. Brokke,* Moraga and *Duane R. Arneklev,* Sunnyvale, Calif. HERBICIDE COMPOSITIONS. Patent dated July 27, 1982. Disclaimer filed Dec. 15, 1983, by the assignee, *Stauffer Chemical Co.*

The term of this patent subsequent to Nov. 2, 1993, has been disclaimed.

4,382,186.—*A. Stuart Denholm,* Lincoln; *William A. Frutiger,* Beverly; and *Kenneth E. Williams,* Andover, Mass. PROCESS AND APPARATUS FOR CONVERGED FINE LINE ELECTRON BEAM TREATMENT OF OBJECTS. Patent dated May 3, 1983. Disclaimer filed Jan. 4, 1984, by the assignee, *Sony Corp. of America.*

Hereby enters this disclaimer to all claims of said patent.

Disclaimers and Dedications

Des. 260,418.—*Stanley Z. Baker,* Cuyahoga County; and *Benjamin H. Baker,* Geauga County, Ohio. ADHESIVE TRAP FOR RODENTS. Patent dated Aug. 25, 1981. Disclaimer and Dedication filed Dec. 12, 1983, by the assignee, *J. T. Eaton & Co., Inc.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

3,959,624.—*Walter Kaslow,* New York, N.Y. CODED MERCHANDISING COUPON. Patent dated May 25, 1976. Disclaimer and Dedication filed Nov. 15, 1983, by the *inventor.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 18, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-28-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-16-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-05-83
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-03-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	3-17-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-30-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-04-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-21-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-20-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during February 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,302,213 to 3,307,199, inclusive

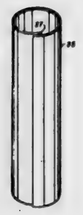
Plant Patents ..... Numbers 2,707 to 2,722 inclusive

REEXAMINATIONS

MARCH 20, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,560,287 (173rd)
METHOD AND APPARATUS FOR PROTECTING INSULATED PIPE
Robert W. Helling, Greeley, Colo., assignor to Ceel-Co., Lakewood, Colo.
Reexamination Request No. 90/000,130, Dec. 24, 1981.
Reexamination Certificate for Patent No. 3,560,287, issued Feb. 2, 1971, Ser. No. 634,347, Apr. 27, 1967.
Int. Cl.[3] B29D *23/10*
U.S. Cl. 156—218



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–7, having been finally determined to be unpatentable, are cancelled.

[1. A method for ensheathing an insulated pipe with a smooth-surfaced, impermeable sheet of tough, strong, synthetic resin having the characteristics of high-impact polystyrene formed to a thickness in the range of approximately 0.030 to 0.060 inch and prepared as a rectangular member having a length of a selected module and a width exceeding the circumference of the pipe insulation by an amount sufficient to provide for a lap and including the steps of:

curling the sheet to a permanent curl having a radius which will snugly embrace a predetermined range of sizes of pipe insulation with the edges wrapped;

wrapping the sheet about a straight section of the pipe;

lapping the longitudinal edges of the sheet as the wrap is completed; and

welding the contacting surfaces of the lapped edges with a fluid cement having therein a solvent of the said resin whereby to effect substantially hermetic seal of the insulation within the sheath.]

B1 3,579,540 (174th)
METHOD FOR PROTECTING NONPOROUS SUBSTRATES AND FOR RENDERING THEM WATER REPELLENT
Howard G. Ohlhausen, 82 Graymoor Ln., Olympia Fields, Ill. 60461
Reexamination Request No. 90/000,439, Aug. 30, 1983.
Reexamination Certificate for Patent No. 3,579,540, issued May 18, 1971, Ser. No. 772,856, Nov. 1, 1968.
Filed Aug. 30, 1983, Ser. No. 772,856
Int. Cl.[3] C08K *5/42*
U.S. Cl. 523—169

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 2, 9 and 11 are determined to be patentable as amended:

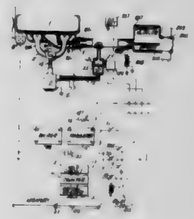
Claims 3–8, 10, and 12–16, dependent on amended claims, are determined to be patentable.

1. A process for rendering a nonporous substrate water repellent comprising treating said substrate with a composition consisting essentially of an alkyl polysiloxane having the formula:



[wheein] *wherein* n is an integer greater than 1, R_1 is a lower alkyl radical containing from 1–7 carbon atoms, and R_2 is hydrogen, a lower alkyl radical containing from 1–7 carbon atoms, or an aryl radical containing about 6 carbon atoms, *an organic solvent,* and a mineral acid selected from the group of sulfuric acid, phosphoric acid, aromatic sulfonic acids, aliphatic sulfonic acid and hydrochloric acid, said acid is present in an amount about 2.5% to 30% based on the weight of said polysiloxane.

B1 3,788,284 (175th)
FEEDBACK MODULATION OF EXHAUST GASES IN INTERNAL COMBUSTION ENGINES
Conrad O. Gardner, 22905 108th West, Edmonds,, Wash. 98020
Reexamination Request No. 90/000,390, Jun. 2, 1983.
Reexamination Certificate for Patent No. 3,788,284, issued Jan. 29, 1974, Ser. No. 255,327, May 22, 1972.
Int. Cl.[3] F02B *33/00;* F02M *25/06*
U.S. Cl. 123—571



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–11 and 15–18 is confirmed.

Claim 12 is determined to be patentable as amended:

Claims 13 and 14, dependent on amended claims, are determined to be patentable.

1. In an internal combustion engine having an intake manifold, and a feedback path coupled between said exhaust mani-

fold and said intake manifold for recirculating exhaust gases from said exhaust manifold to said intake manifold;
means for modulating the rate of flow of exhaust in said feedback path, said means comprising:
timing means including a pulse source for generating first control signals;
modulator circuit means including a multivibrator circuit responsive to said first control signals for providing valve control signals, and,
valve means disposed in said feedback path and responsive to said valve control signals for modulating the rate of flow of exhaust gases in said feedback path.

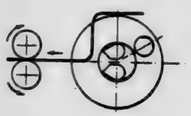
B1 3,808,340 (176th)
MEAT COATED PRODUCT
Hugh C. Palmer, Rutland, England, assignor to Kal Kan Foods, Inc., Vernon, Calif.
Reexamination Request No. 90/000,057, Aug. 17, 1981.
Reexamination Certificate for Patent No. 3,808,340, issued Apr. 30, 1974, Ser. No. 162,022, Jul. 12, 1971.
Int. Cl.[3] A23K *1/10, 1/14, 1/18*
U.S. Cl. 426—92

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–17 having been finally determined to be unpatentable, are cancelled.

[1. An animal food product having the substantial appearance, flavor and aroma of meat tissue in the form of discrete, bite-sized pieces comprising cores enclosed within covers of substantial thickness encasing the surfaces and tenaciously bonded around, concealing and masking the taste and appearance of said cores, said covers comprising a substantial quantity of natural meat materials as animal tissue solids to provide the flavor, taste and aroma characteristics of meat tissue of high palatability, and masking said core material, said cores being formed of material of generally lower palatability and composed in substantial part of starch-containing cereal alone or admixed with animal meals or fish meals.]

B1 3,991,600 (177th)
STIRRUP MACHINE
Remigio Del Fabro, Villaggio Morena n. 62, Reana Del Roiale, Udine, Italy 33010
Reexamination Request No. 90/000,331, Feb. 17, 1983.
Reexamination Certificate for Patent No. 3,991,600, issued Nov. 16, 1976, Ser. No. 597,372, Jul. 18, 1975.
Claims priority, application Italy, Nov. 15, 1974, 83429/74
Int. Cl.[3] B21D *7/02, 7/08*
U.S. Cl. 72—203



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 5 is confirmed.

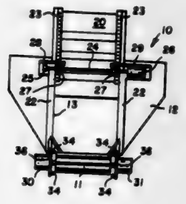
Claim 1 is determined to be patentable as amended:

Claims 2–4, dependent on amended claims, are determined to be patentable.

New claims 6–9 are added and determined to be patentable.

1. A stirrup machine for bending of stock material such as bars, wires, metal strips or the like and forming individual, bent pieces therefrom, the machine comprising:
advancing and reversing means for selectively advancing feed of the stock material which is to be bent and reversing feed of the stock material which has been bent;
support means for supporting the stock material to be bent;
first operating means connected to said support means for enabling said support means to be moved forward or backward with respect to the stock material;
bending means mounted on said support means for bending the stock material, said bending means being connected to said first operating means and being movable with said support means; and
shearing means mounted between said advancing and reversing means and said bending means for shearing the stock material at a desired location subsequent to bending and reversal thereof, *whereby after said stock material has been bent, said advancing and reversing means can be actuated to reverse the stock material to a position adjacent said shearing means, so that upon actuation of said shearing means, the bent piece is cut from the stock material close to the bend, thereby reducing stock material waste.*

B1 4,266,731 (178th)
DUMP SPREADER
Charles S. Musso, Jr., Bath, N.Y., assignor to Air-Flo Manufacturing Co., Inc., Prattsburg, N.Y.
Reexamination Request No. 90/000,356, Mar. 28, 1983.
Reexamination Certificate for Patent No. 4,266,731, issued May 12, 1981, Ser. No. 83,688, Oct. 11, 1979.
Continuation-in-part of Ser. No. 36,771, May 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,202, Dec. 4, 1978, abandoned.
No. 83,688
Int. Cl.[3] A01C *19/00*; E01C *19/20*
U.S. Cl. 239—676



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–3, having been finally determined to be unpatentable, are cancelled.

[1. A dump spreader truck body having hopper-shaped side walls sloping downward to a wide bottom conveyor that can drive at different speeds and extends beyond a rear end of said body, said dump spreader comprising:
a. a single rear door for both dumping and spreading material from said body;
b. a fixed rear wall connected between said side walls at said rear end of said body and extending vertically to provide support for said rear door;
c. said fixed rear wall having an opening approximately the width of said conveyor and extending vertically from said conveyor upward to about one-half to three-quarters of the height of said rear wall;

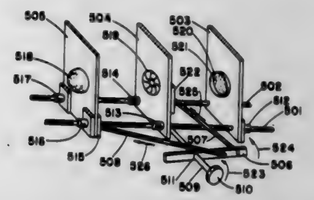
d. said door being large enough to close said opening and being mounted for vertical movement on said rear wall over said opening;
e. a hydraulic drive powerful enough for moving said door vertically against the resistance of material loaded in said body or lying on said conveyor under said door after partially dumping material from said body; and
f. said hydraulic drive being operable for setting said door at variable low heights above said conveyor for metering the flow of said material from said body during spreading and for raising said door above the top of said fixed rear wall for fully opening said opening for dumping material quickly.]

B1 4,338,654 (179th)
VARIABLE SPOT STAGE LIGHT
Richard Logothetis, 631 Johnson Ave., Bohemia, N.Y. 11716
Reexamination Request No. 90/000,355, Apr. 4, 1983.
Reexamination Certificate for Patent No. 4,338,654, issued Jul. 6, 1982, Ser. No. 183,058, Sep. 20, 1980.
Filed Apr. 4, 1983, Ser. No. 183,058
Int. Cl.[3] F21V *29/00*
U.S. Cl. 362—268

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 2, having been finally determined to be unpatentable, are cancelled.

[1. A stage light comprising:
(a) a frame, having a forward direction towards which the light is to be beamed, and a reward direction opposite the forward direction,
(b) an incandescent lamp movably mounted within the frame and located towards the rear of the frame,
(c) a reflector placed adjacent and to the rear of the lamp and on the same movable mounting as the lamp having general hemispherical coverage of the lamp generally parabolic contours to capture and beam the light from the rear of the lamp in the forward direction,



(d) a variable aperture iris fixedly mounted to the frame and positioned forward of the lamp to control the amount of light from the lamp and reflector passed in the forward direction by means of varying the aperture size,
(e) an objective lens system located forward of the iris to accept and focus the light passed through the iris, and
(f) means for linking the lamp and reflector on the movable mounting to the iris to automatically adjust the iris aperture with the movement of the lamp and reflector for maximum forward light transmission with each setting of the lamp and reflector position.]

REISSUES

MARCH 20, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,538

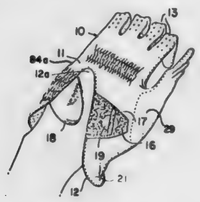
GOLF GLOVE

Anthony J. Antonious, 205 E. Joppa Rd., Unit 1603, Towson, Md. 21204

Original No. 3,588,917, dated Jun. 29, 1971, Ser. No. 840,347, Jul. 9, 1969. Application for reissue May 4, 1983, Ser. No. 491,552

Int. Cl.³ A41D *19/00*

U.S. Cl. 2—161 A **30 Claims**



1. An athletic glove comprising: a hollow flexible body member having *an access opening, a* front *portion* and *a* back [portions] *portion, said front portion including a palm area and ~~said back~~ portion including a knuckle area and a palm heel area located adjacent said knuckle area and between the front and back portions;* glove stalls for [at least] four fingers *and a thumb* of [the wearer] *a wearer's hand* projecting from the body member; the back portion being provided with [an] *a deep vent portion in the access* opening, *the deep vent portion* extending from the [end of] *access opening in* the body member to approximately the [stalls] *knuckle area*; first elastic means located in the back portion between the glove stalls and the *access* opening[,]; [a] *an elongated* flexible fastening tab extending from one edge of the *deep vent portion of the access* opening; a complementary fastener located *on the back portion* adjacent the opposite edge of the *deep vent portion of the access* opening [on the back portion], *said flexible fastening tab and said complementary fastener in combination providing multi-adjustable, separable hook and loop locking means for closing the deep vent portion; the flexible fastening tab and complementary fastener are located on opposite sides of the deep vent portion adjacent the knuckle area and positioned between the thumb stall and the palm heel area so that when the tab and complementary fastener coact to span and close the deep vent portion, direct pulling forces are applied to the back portion and the palm heel area to attain and retain a taut fit across the back and palm portions of the glove;* and second elastic means in conjunction with the back portion adjacent the flexible fastening tab.

Re. 31,539

REMOTE-CONTROL DEVICE FOR A CRANE

Frank P. Spalluto, Piscataway, N.J., assignor to Garden State Engine & Equipment Co., Inc., South Plainfield, N.J.

Original No. 4,307,810, dated Dec. 29, 1981, Ser. No. 106,374, Dec. 21, 1979. Application for reissue Sep. 30, 1982, Ser. No. 431,739

Int. Cl.³ B66C *13/42*

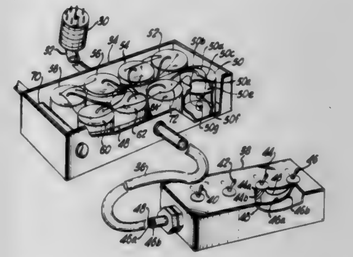
U.S. Cl. 212—160 **8 Claims**

7. A remote-control assembly for controlling a crane or the like having a movable member, wherein said crane includes an electrical control circuit for controlling said movable member, comprising:

a remote-control box including a plurality of fluid valves and means for operating said fluid valves;

a converter box including a plurality of pressure switches;

each of said pressure switches including movable means having an electrical contact;



each of said pressure switches being formed by a separate housing for enclosing said movable means and said electrical contact;

a plurality of fluid lines connecting said fluid valves to operate the movable means in each of said pressure switches; and

a plurality of electric lines connecting the electrical contacts of said pressure switches to said electrical control circuit on said crane for operating said movable member.

Re. 31,540

SEPARATION OF HIGH GRADE MAGNETITE FROM FLY ASH

Robert G. Aldrich, Manlius, N.Y., assignor to Halomet, Incorporated, Manlius, N.Y.

Original No. 4,319,988, dated Mar. 16, 1982, Ser. No. 146,697, May 5, 1980. Application for reissue May 26, 1982, Ser. No. 382,150

Int. Cl.³ B02C *23/14*

U.S. Cl. 209—172.5 **11 Claims**

1. A high purity magnetite derived from fly ash which is the product of coal combustion obtained by:

[(a) subjecting fly ash to dry magnetic separation;

(b) forming a slurry comprising the magnetic fraction obtained from said dry separation;]

[(c)] (*a*) subjecting *a slurry derived from fly ash* [such slurry] to a first wet magnetic separation;

[(d)] (*b*) screening the magnetic fraction from said first wet magnetic separation;

[(e)] (*c*) subjecting the oversized particles to grinding;

[(f)] (*d*) screening the products from said grinding step;

[(g)] (*e*) subjecting the passed material from the screening steps [(d) and (f)] (*b*) *and* (*d*) to a final wet magnetic separation; and

[(h)] (*f*) separating a high purity magnetite from said final wet separation.

PLANT PATENTS

GRANTED MARCH 20, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,207

ALSTROEMERIA NAMED STALILAS

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij, M. C. van Staaveren, Aalsmeer, Netherlands

Filed Sep. 13, 1982, Ser. No. 416,841
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. The new and distinct alstroemeria cultivar substantially as herein shown and described, characterized by the distinctive light purple coloration of the flowers with white coloring on about the inner third of the inside petals, and by the sturdy and relatively long peduncle for each of the flowers.

5,208

ALSTROEMERIA CULTIVAR NAMED STALLUC

Jacob van Andel, Aalsmeer, Netherlands, assignor to M. C. B. V. Handelskweke M. C. van Staaveren, Aalsmeer, Netherlands

Filed Sep. 13, 1982, Ser. No. 416,842
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct alstroemeria cultivar substantially as herein shown and described, characterized by the distinctive bluish-purple coloring of the flowers, and by the light yellow coloring toward the base of each of the inside petals and the bright longitudinally extending pencil stripes on the base of each inside petal to near the tip end thereof.

5,209

HIBISCUS PLANT NAMED "ANNE ARUNDEL"

Robert H. Darby, Oaknoll, Apt. S-432, 701 Oaknoll Dr., Iowa City, Iowa 52240

Filed Sep. 24, 1982, Ser. No. 422,878
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinctive cultivar of hibiscus substantially as herein shown and described, having a pink flower of elegant form and substance, a plant of great landscape value, blooming profusely from midsummer to frost.

PATENTS

GRANTED MAR. 20, 1984

ERRATA

For CLASS	See PATENT NO.
502–169	4,438,019
502–341	4,438,021
436–053	4,438,186

PATENTS

GRANTED MARCH 20, 1984

GENERAL AND MECHANICAL

4,437,191

IMPLANT OF CERAMIC MATERIAL

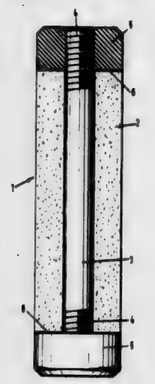
Joseph M. van der Zel, Zwaag, and Klaas de Groot, Heemstede, both of Netherlands, assignors to Delphi Dental Industries B.V., Le Hoorn, Netherlands

Filed Apr. 2, 1982, Ser. No. 364,975

Claims priority, application Netherlands, Apr. 3, 1981, 8101674

Int. Cl.³ A61F *1/00*

U.S. Cl. 3—1 **5 Claims**



1. A medical implant compatible with bone and similar tissue and exhibiting improved strength when subjected to cyclic bending and tensile stresses comprising a hollow cylindrical ceramic body composed of a material selected from the group consisting of alumina, sintered tricalcium phosphate, and bioactive glass ceramic having a glass matrix containing calcium phosphate, said body being longitudinally compressed by means of a metallic member extending longitudinally through a central portion thereof and by compression means affixed to each end of said metallic member to provide a constant compressive force sufficient to prestress the material of said body wherein the compressive force exterted against said ceramic body is lower than half the sum of cyclical tensile stress and cyclical compressive stress to which the implant will be subjected under normal conditions before implanting the same.

4,437,192

IMPLANTS OF BIOLOGICALLY ACTIVE GLASS OR GLASS CERAMIC CONTAINING TITANIA

Takamitsu Fujiu, Tokyo; Makoto Ogino; Michio Kariya, both of Yokohama, and Takeo Ichimura, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 270,588, Jun. 4, 1981, abandoned. This application Mar. 16, 1983, Ser. No. 476,041

Claims priority, application Japan, Jun. 11, 1980, 55-77841

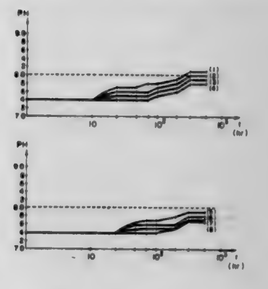
Int. Cl.³ A61F *1/00, 1/24*

U.S. Cl. 3—1.9 **3 Claims**

1. An improved implant comprising a biocompatible metal core coated with a layer of a biologically active glass or glass-ceramic having a composition consisting essentially of by mol%:

SiO_2	40–60
B_2O_3	8–15
Na_2O	15–30
CaO	8–30
P_2O_5	0–8
K_2O	0–20
Li_2O	0–10
MgO	0–5
$Al_2O_3 + ZrO_2 + Nb_2O_5$	0–8
$La_2O_3 + Ta_2O_5 + Y_2O_3$	0–8 and
F_2	0–15

the glass or glass-ceramic having substantially the same thermal expansion coefficient as that of the metal core, wherein the improvement comprises adding TiO_2 in an amount from 0.5 to 3 mole% to make up a total of 100 mol% glass composition to



regulate the degree of biological activity of the glass or glass-ceramic represented by a saturated pH-value at the time when the glass or glass-ceramic is immersed in a simulated physiolgical solution, with no substantial change of the thermal expansion coefficient of the glass or glass-ceramic.

4,437,193

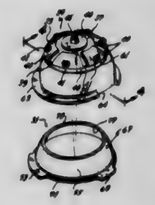
PROTRUSIO CUP

Isdong Oh, 851 Lyndon St., South Pasadena, Calif. 91030

Filed Jan. 18, 1982, Ser. No. 340,024

Int. Cl.³ A61F *1/04*

U.S. Cl. 3—1.912 **18 Claims**



1. A protrusio cup which can be implanted as a unit in the acetabulum comprising:

an acetabular cup adapted to be received within the acetabulum;

said acetabular cup having an inner concave bearing surface of generally part spherical configuration defining a cavity which opens at a mouth, said bearing surface being adapted to receive a femoral head and slidably cooperate therewith;

said acetabular cup having an outer surface;

a protrusio shell having a part spherical annular segment receiving a circumferentially extending annular region of the acetabular cup adjacent the mouth of the acetabular cup and flange means adjacent one end of the annular segment projecting generally radially of the annular seg-

ment and adapted to engage the bony region around the acetabulum, the other end of the annular segment of the protrusio shell being open with the acetabular cup extending through the opening;

means for mounting the protrusio shell on the acetabular cup prior to implantation whereby the acetabular cup with the protrusio shell mounted thereon can be implanted as a unit in the acetabulum; and

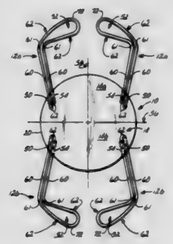
said mounting means including a circumferentially extending groove formed in the outer surface and lying entirely within the annular region of the acetabular cup which receives at least a portion of the annular segment of the protrusio shell.

4,437,194

INTRAOCULAR LENS ASSEMBLY

Gregory L. Hahs, Montclair, Calif., assignor to Optical Radiation Corp., Azusa, Calif.

Filed Feb. 25, 1982, Ser. No. 352,390
Int. Cl.³ A61F 1/16, 1/24
U.S. Cl. 3—13 **30 Claims**



1. An intraocular lens assembly for implantation into the human eye comprising:

(a) a lens body; and

(b) a pair of haptic positioners for contacting eye tissue to thereby hold the lens body in position in the eye, each such haptic positioner comprising a filament connected at both ends to the edge of the lens body for forming a closed loop extending away from the lens body, the closed loop being narrower at the end adjacent the lens body and wider at the end remote from the lens body, with the remote end of one of such loops facing the remote end of the other loop.

4,437,195

SELF-INFLATING BEDPAN

Ralph W. Mangels, 345 N. Arizona Ave., Chandler, Ariz. 85224

Filed Feb. 22, 1982, Ser. No. 351,128
Int. Cl.³ A61H 9/00
U.S. Cl. 4—456 **6 Claims**

1. A disposable, self-inflating bedpan comprising

(a) a closed, generally ring-shaped, flexible and inflatable portion constructed from a fluid imprevious material to produce a curved, pan-shaped configuration when said portion is inflated, said ring-shaped portion enclosing and defining an interior area and having

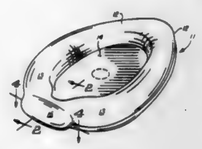
(i) a first end generally positioned under the sacrococcygeal area of a bedfast patient, and

(ii) a second end generally positioned beneath and spanning any space between the upper leg areas of said bedfast patient,

said material having an exterior surface area,

(b) a fluid impervious flexible panel connected to said ring-shaped portion and spanning said interior area thereof such that when said ring-shaped portion is inflated a self-supporting fluid-tight reservoir having a continuous upstanding wall for collecting and retaining bodily excrement is formed,

(c) manually activated means positioned adjacent said exterior surface of said material of said second end and outside of said interior area of said ring-shaped portion of said bedpan for producing gas for inflating said ring-shaped portion of said bedpan, said inflating means generally





being positioned on said exterior surface of said second end such that

said inflating means can be readily reached and manually activated by a medical attendant after said bedpan is positioned beneath said bedfast patient, and

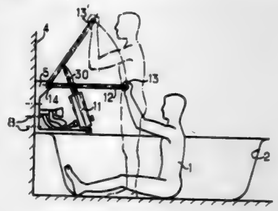
gas released when said inflating means is manually activated flows into said ring-shaped portion to inflate the same.

4,437,196

SUPPORT DEVICE FOR HELPING A PERSON TO GET OUT OF A BATHTUB

Pierre A. G. Louis, 38, Rue Ginoux, 75015 Paris, France

Filed Apr. 16, 1982, Ser. No. 369,285
Claims priority, application France, Oct. 14, 1981, 81 19296; Jan. 4, 1982, 82 00022
Int. Cl.³ A47K 3/12
U.S. Cl. 4—564 **18 Claims**



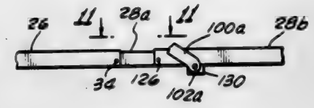
1. A self-operated support device which helps a person to get out of a bathtub, comprising essentially one water supply jack (11) supplied under pressure with the supply water from the bathtub and one handle (13) (or a harness) set in motion by said jack, characterized in that said handle (13) (or harness) is mounted on a lever (12) hinged towards one of its ends around an axis (14), the rotating of said lever (12) being controlled by said jack which exerts force, at one end (19) thereof, on said lever, the other jack end (17) being hinged thus allowing the conjugated hinging motions of said lever (12) and said jack(11).

4,437,197

FOLDING SOFA-BED MECHANISM

Melvin P. Spitz, Beverly Hills, Calif., assignor to Kinematic Industries, Inc., Whittier, Calif.

Continuation-in-part of Ser. No. 264,269, May 18, 1981, Pat. No. 4,398,311. This application Nov. 18, 1981, Ser. No. 322,337
Int. Cl.³ A47C 17/14
U.S. Cl. 5—13 **15 Claims**



1. In a folding sofa-bed construction including a bed frame having a plurality of frame sections, one of which is an inner head section and another an adjacent body section, said sections being pivotally interconnected in end-to-end relation for selective unfolding movement to an extended coplanar bed-forming position and folding movement to a folded retracted sofa seat-forming position in which the body section is disposed generally horizontally along the base of the sofa frame and the head section extends generally upright in a space at the rear of the sofa seat, and mechanism for supporting and controlling the movements of said frame sections during movement of the bed frame to said extended and retracted positions, the improvement comprising:

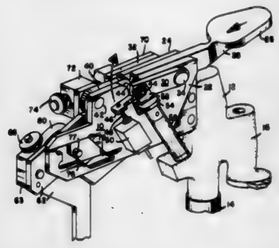
an inner head section fabricated to provide two frame structures which are pivotally interconnected in end-to-end relation and the outermost of said frame structures is pivotally connected in end-to-end relation to the frame structure of the adjacent body section.

4,437,198

METHOD OF ARTICULATING A WORK SUPPORTING SURFACE

Alphonse C. Kulik, Ipswich, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Oct. 27, 1981, Ser. No. 315,414
Int. Cl.³ A43D 23/04
U.S. Cl. 12—145 **9 Claims**



1. A method of articulating a work support surface in a machine comprising:

attaching said work support surface to a first end of a support arm;

journalling a first axis through a second end of said work support arm and through a slot in a pair of frame members secured to said machine;

emplacing an arrangement of toggle links with said first axis and a fixed position second axis, said arrangement of toggle links having a common axis connecting them;

extending an extended member from said first axis to a reciprocating means secured to a frame portion of said machine;

and

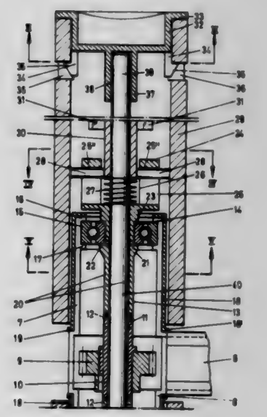
actuating said reciprocating means so as to cause said toggle link and said work support surface to move rearwardly.

4,437,199

CARPET CLEANING DEVICE

Peter Wulf, Ennepetal, and Anaegret Schlecht, Wuppertal, both of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,498
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114753
Int. Cl.³ A47L 11/18
U.S. Cl. 15—49 R **6 Claims**



1. In a carpet cleaning device having a housing and driven brush rollers, the rollers extending in both sides of a drive point, and wherein said rollers are replaceably seated on a shaft in the housing, the device comprising:

a drive gear located at said drive point, and having claws extending from both sides of a hub of said drive gear;

head pieces on both sides of said hub having bayonet slots therein and being rotatable about said shaft;

said brush rollers including means engageable into said bayonet slots of said head pieces;

coupling bushings integrally extend from said head pieces toward said drive gear,

ball bearings operatively disposed in said housing adjacent said coupling bushings, said bushings passing through said ball bearing and having free ends; and wherein

said brush rollers and said hub of the drive gear are rotatable about said shaft; and

said free ends of said coupling bushings having coupling claws operatively engaging with said claws of said hub.

4,437,200

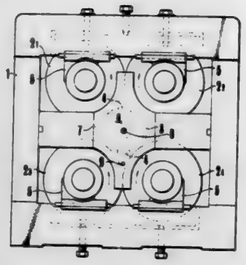
APPARATUS FOR CONTINUOUS DEHYDRATION

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Feb. 11, 1982, Ser. No. 347,958
Claims priority, application Japan, Feb. 25, 1981, 56-26610
Int. Cl.³ F26B 13/04
U.S. Cl. 15—306 A **3 Claims**

1. An apparatus for continuous dehydration of a cloth comprising two pairs of axially extending rubber rolls with the axes thereof arranged in parallel relation, the rolls in each said pair being pressed against one another and said pairs of rolls being spaced apart, an axially extending tubular seal plate with the axis thereof in parallel relation with the axes of said pairs of rolls and said seal plate is positioned between said two pairs of

rubber rolls with the surface of said seal plate disposed in pressure contact with each of the rubber rolls of said pairs, said seal plate is provided with a pair of oppositely disposed slits extending in the axial direction of said seal plate and aligned with the contact surfaces of said pairs of rubber rolls, and an end plane seal plate blocking each of the end planes of each of said rubber rolls so as to form in combination with said rubber



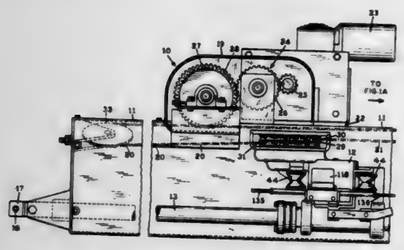
rolls a closed chamber containing and enclosing said tubular seal plate from the exterior of said rubber rolls, and means for maintaining one of high pressure and reduced pressure within said tubular seal plate so that cloth passed in turn between the contacting surfaces of one of said pairs of rolls, through the slits in said seal plate and then between the contacting surfaces of the other said pair of rolls can be dehydrated.

4,437,201

SOOT BLOWER

Gerald F. Zalewski, Erie, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 13, 1981, Ser. No. 321,276
Int. Cl.³ F23J 3/02
U.S. Cl. 15—316 R 26 Claims



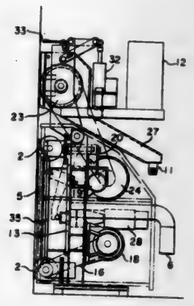
1. In a soot blower of the long retracting type including a traveling carriage rotatably supporting a lance tube and movable in an advancing and retracting direction along a predetermined horizontal path of travel between a forwardmost working position and a rearwardmost non-working position, means to impart a horizontal motion to the traveling carriage and a rotational motion to the lance tube, which comprises
(a) a motor means,
(b) horizontal drive means associated with said motor means whereby operation of the motor means energizes the horizontal drive means to advance and retract the traveling carriage along the predetermined horizontal path of travel, and
(c) a rotary drive means mounted on said traveling carriage for rotating said lance tube,
(d) said rotary drive means being mechanically coupled to said motor means through said horizontal drive means whereby operation of the motor means provides a driving input for the rotary drive means,
(e) said rotary drive means including independent control means for controlling the rotational velocity and direction of rotation of the lance tube independently of the speed and direction of travel of the traveling carriage.

4,437,202

AUTOMATIC WALL CLEANING MACHINE

Kenichi Nagatsuka, Tokyo, Japan, assignor to Mitsubishi Kakoki Kaisha Ltd.; Kakoki Engineering Service Co., Ltd. and Genshi-Ryoku Daiko Co., Ltd., all of Tokyo, Japan

Filed Aug. 11, 1981, Ser. No. 291,916
Int. Cl.³ A47L 11/202
U.S. Cl. 15—320 8 Claims



5. An automatic wall cleaning machine comprising:
a frame including means for spacing said frame from a wall;
a rotary brush rotatable about an axis fixed to said frame;
a water sprayer fixed to said frame; and
a suction device fixed to said frame, said suction device comprising:
(a) a disk,
(b) suction producing means,
(c) a suction conduit communicating one side of said disk with said suction producing means, and
(d) a plurality of trapezoidal elastic suction leaves connected to the periphery of said disk, each of said leaves having a first relatively narrow end connected to the periphery of said disk, a second relatively wide end longitudinally opposite said first end and side walls connecting said ends, wherein said side walls of adjacent ones of said leaves contact one another, wherein said second ends of said leaves lie in a plane spaced from said disk,
whereby said one side of said disk, said leaves and said wall define a vacuum space when said machine is positioned adjacent said wall.
8. The machine of claim 5 including:
a longitudinally extending reinforcing rib on each of said leaves;
drive means for moving said frame; and
remote control means for changing the direction of movement of said machine.

4,437,203

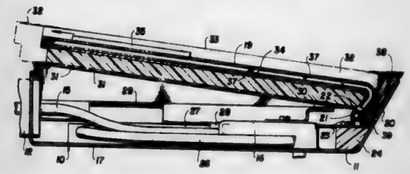
CLEANING HEAD FOR WALL WASHING MACHINES

John A. Wisner, 701 S. Luzerne Ave., Baltimore, Md. 21224

Filed Jun. 8, 1982, Ser. No. 386,429
Int. Cl.³ A47L 7/00
U.S. Cl. 15—322 7 Claims

1. A cleaning head for a wall washing machine or the like comprising a shell, conduit means connected with the shell to deliver cleaning and rinsing fluids thereto selectively and to withdraw such fluids in a continuing cycle of operation, a fluid distribution manifold extending longitudinally of the shell and being within the shell during normal operation and having one end thereof pivotally connected with the shell so that the manifold is swingable with relation to the shell to a sponge

insert release position, a retainer means on the shell to releasably secure the other end of the manifold in said normal use position within the shell substantially parallel to the longitudinal axis of the cleaning head, a replaceable sponge insert for the cleaning head of a size to engage within the shell and being longitudinally recessed to receive said manifold below the working face of the sponge insert and being bodily swingable with the manifold to and from said release position, said retainer means comprising a single removable fastener element



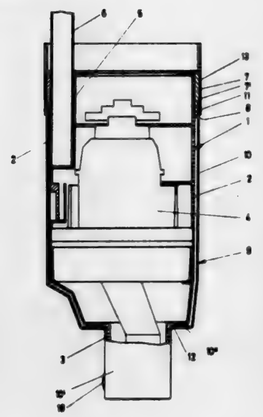
engageable with the other end of the manifold and with one end wall of the shell, the manifold comprising a single tube section having one end portion screw-threaded, the fastener element comprising a screw engaging the screw-threads of the manifold, and said one end of the manifold being shaped to provide a transverse bight adapted for connection with said conduit means within said shell, said bight forming the pivot element for the manifold, and a coacting anchored pivot element within the shell engaging the bight to maintain it on a fixed pivot axis relative to the shell.

4,437,204

VACUUM CLEANER HOUSING

Wieland Gühne, Remscheid, Fed. Rep. of Germany, assignor to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,499
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114752
Int. Cl.³ A47L 9/00
U.S. Cl. 15—325 6 Claims



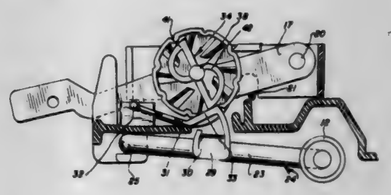
1. In a vacuum cleaner housing having a handle mount, a socket opposite said mount, and a covering which cushions side surfaces of the housing, the improvement wherein said covering comprises
a wall of semi-rigid material in the form of a cap, said cap being placed on said housing from said socket, said wall extending in self-supporting manner at a distance from sidewalls of said housing, said cap being centered in form-engaging manner on a cylindrical surface of the socket, said cap having an edge zone on the handle mount side, the improvement further comprising
a supporting rib disposed peripherally about said housing, and wherein
said cap is supported for longitudinal displacement in spaced position by said supporting rib.

4,437,205

VACUUM CLEANER NOZZLE LIFT DEVICE

David G. Koland, Sandstone Township, Pine County, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 11, 1982, Ser. No. 357,135
Int. Cl.³ A47L 5/34
U.S. Cl. 15—354 16 Claims



9. In a vacuum cleaner nozzle having a housing defining an air suction passage, rear wheels for supporting a rear portion of the housing for rolling movement of the nozzle on a subjacent surface to be cleaned, and a U-shaped front wheel assembly including a support having a rear bight pivotally mounted to the housing, a pair of forwardly extending legs, and wheels rotatively carried on a forward distal end portion of said legs to rollingly engage the subjacent surface forwardly of said rear wheels, an improved front-wheel height adjuster comprising:
a lifter movably connected to a leg of said support forwardly of said bight;
means movably mounting said lifter to a portion of the housing; and
means movably carried by the housing for selectively moving said lifter including a user-operated ratchet means for swinging said support about the axis of said bight to selectively raise and lower the front wheels and thereby adjust the angular disposition of the nozzle housing relative to said subjacent surface, said ratchet means comprising a lever pivotally mounted to the housing and having a foot pedal actuation portion, a ratchet wheel rotatably mounted to the housing and having notches and ratchet teeth, a cam rotatable with said ratchet wheel, means responsive to a depression of said foot pedal actuation portion of the lever for selectively engaging said ratchet teeth to advance the ratchet wheel a rotational step as an incident of each depression of the foot pedal actuation portion and a cam follower connected to said lifter for selectively moving the lifter in accordance with the rotational position of said cam.

4,437,206

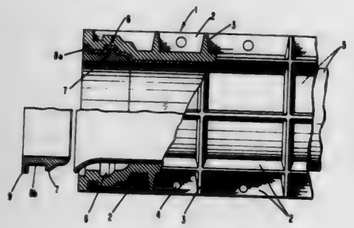
MULTIPLE REUSABLE TUBULAR CASING, AND APPARATUS AND PROCESS FOR USING SAME IN THE PRODUCTION OF CASELESS (SKINLESS) PARBOIL OR RAW SAUSAGES

Heinz Becker, Zurich, Switzerland, assignor to Ashland Food Technology Holdings S.A.

Division of Ser. No. 201,155, Oct. 27, 1980, Pat. No. 4,371,554. This application Sep. 29, 1982, Ser. No. 428,020
Claims priority, application Switzerland, Nov. 9, 1979, 10067/79
Int. Cl.³ A22C 11/00, 13/00
U.S. Cl. 17—1 F 23 Claims

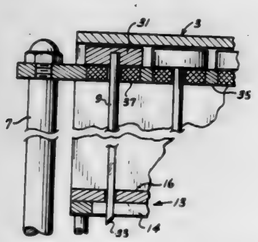
1. A sausage casing capable of multiple reuse for the production of caseless sausage, the casing comprising a tube formed of

a porous polytetrafluoroethylene (PTFE) membrane, said membrane having a microstructure made up of nodes interconnected by fibrils, said PTFE membrane having sufficient porosity to permit venting radially through said tube the steam, water vapor and other gaseous fluids released during processing from the sausage present within said tube, said PTFE membrane also having a surface texture to provide easy release of the processed sausage from said tube following processing while maintaining the integrity of the sausage surface and the sausage as a whole, the gaseous fluid flow paths through the node and fibril microstructure of said membrane limiting the extrusion of solid or liquid sausage material through the membrane during filling of said tube, said PTFE membrane also having



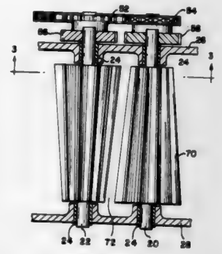
(i) a Gurley No. of about 1 to 650 seconds, as determined per ASTM Method D-726-58 Method A using a 1.00 sq. inch test area, 4.88 in. head of water, and represents the time in seconds to flow 100 cm^3 of air through the test area,
(ii) a Bubble Point pressure of about 3 to 60 psig, as determined per ASTM Method F-316-70, using anhydrous methanol at 21° C. and a test area of 9.6 sq. cm., and
(ii) a Water Entry Pressure of about 7 to 600 psig, as determined by the following procedure: using the apparatus employed in the Mullin's Burst Test (Fed. Std. 191, Method 5512) the pressure of water is raised to a test level over a period of approximately 10 seconds, held at that level for 30 seconds, and the lowest presence or absence of leakage is visually determined, the Water Entry Pressure being the pressure level at which leakage is determined to occur.

4,437,207
MAGNETIC, FORCE-LIMITED APPARATUS FOR TENDERIZING MEAT
Henry M. Ross, The Lawn, Nokesville, Va. 22123
Filed Jun. 24, 1982, Ser. No. 391,835
Int. Cl.³ A22C 9/00
U.S. Cl. 17—25
11 Claims



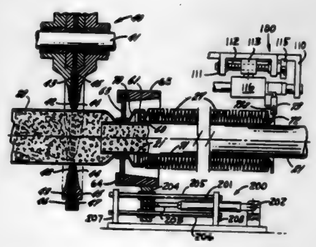
1. An apparatus for tenderizing meat comprising
support means for supporting meat to be tenderized,
a plurality of cutting elements comprising relatively thin blades with cutting edges for piercing and cutting meat,
means for mounting each of the cutting elements for independent, force-limited insertion into the meat,
said means for mounting comprising magnetic means associated with each of the cutting elements to provide a predetermined force for holding each cutting element in fixed position as the element is inserted in the meat to be tenderized.

4,437,208
MEAT TENDERIZER
Jacob Sampson, 6138 N. Clark St., Chicago, Ill. 60660
Continuation-in-part of Ser. No. 177,278, Aug. 11, 1980, Pat. No. 4,360,952. This application Jan. 25, 1982, Ser. No. 342,518
Int. Cl.³ A22C 9/00
U.S. Cl. 17—26
6 Claims



1. A meat tenderizing machine comprising a pair of surfaces in spaced parallel relation for passage of the meat therebetween, each surface having a plurality of longitudinally spaced, crosswise extending ribs projecting from the surface whereby the meat is engaged therebetween during passage of the meat between the surfaces, and means for moving the surfaces for travel of the adjacent surfaces in the same direction but with the ribs of one surface moving relative to the other to stretch the meat during passage between the surfaces while being engaged between said ribs, the surfaces comprising a pair of rolls mounted for rotational movement, the rolls being in the form of frusto-conical members of substantially the same cone angle, with the base of one frusto-conical member positioned alongside the apex of the other frusto-conical member whereby adjacent peripheral surfaces travel at substantially the same RPMs.

4,437,209
STUFFING METHOD
Herve Duroyon, Beauvais, France, assignor to Union Carbide Corporation, Danbury, Conn.
Filed Nov. 16, 1981, Ser. No. 321,664
Int. Cl.³ A22C 11/00
U.S. Cl. 17—49
6 Claims

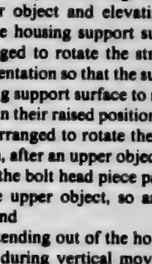


1. In a method of stuffing flowable product using a stuffing machine of the type compatible with a range of stuffing pressures associated with fully soaked casing, and of the type having a double clipper which constricts the stuffed product by means of a pair of gates, separates the gates, then applies a pair of clips, said method comprising the steps of stretching the casing with an internal sizing means to establish a holdback force and to stretch the casing to about its recommended stuffed circumference to thereby cause the casing to take a temporary set, interposing a sealing ring near the end of the stuffing horn and over the casing to prevent backup of flowable product, establishing a distance between the sealing ring and the sizing means to establish a casing angle therebetween which increases the holdback force to cause the stuffing of the casing to a desired circumference, the improvement comprising adapting said stuffing machine to stuff controllably premoisturized casing by translating the sealing ring away from the sizing ring after stuffing and during or before gathering to reduce the casing holdback force as evidenced by reduced casing angle, thereby to prevent pressure buildup beyond acceptable limits in the stuffed product during said constricting and separating.

4,437,210
BRIDGE TOP STOP FOR SLIDE FASTENERS
Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed May 11, 1981, Ser. No. 262,195
Claims priority, application Japan, May 30, 1980, 55-75372[U]
Int. Cl.³ A44B 19/36
U.S. Cl. 24—435
2 Claims

1. A bridge top stop for a slide fastener including a pair of stringer tapes each provided with a reinforced edge for carrying a row of cooperating interlocking fastener elements and a slider reciprocable along the reinforced edges for taking the fastener elements into and out of coupling engagement to open and close the slide fastener, said bridge top stop comprising:
(a) a body adapted to be clamped to the reinforced edges astride the stringer tapes;
(b) said body including a sidewall inwardly curved to define a substantially inverted U-shaped opening receptive of the front portion of the slider and a pair of plates connected at one edge by said sidewall, each of said plates including a pair of laterally spaced first and second wing portions extending away from said opening, said first wing portions and said second wing portions in confronting pair forming jointly with said sidewall a pair of grooves for receiving therein the reinforced edges, respectively;
(c) bulged rib projecting from said sidewall along said opening and extending longitudinally along said sidewall; said bulged rib defining a recess that grips said reinforced edges of the stringer tapes to secure the bridge top stop thereto, said bulged rib projecting progressively into said U-shaped opening in a direction from ends to the mid-portion of said sidewall to trace a crescent shape, and said recess having a depth progressively increasing in a direction from ends to the mid-portion of said sidewall; and
(d) each confronting pair of said wing portions having ridges disposed on the respective free ends thereof and extending longitudinally along one of said grooves for clamping engagement with one of the stringer tapes.

4,437,211
DEVICE FOR LOCKING TOGETHER STACKED OBJECTS
Willi Dorpmund, Else, Fed. Rep. of Germany, assignor to Graaff KG, Else, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 114,543, Jan. 23, 1980, abandoned. This application Jun. 1, 1981, Ser. No. 279,488
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927231
Int. Cl.³ A44B 21/00
U.S. Cl. 24—287
7 Claims



1. A device for locking together two stacked objects, the lower object having a plate at its upper end and the upper object having a plate at its lower end, the two plates being in superposed relation when the objects are stacked and each plate having a non-circular opening identical to and in registry with the opening in the other plate, the locking device comprising:
(a) a housing, the top wall of the housing being the plate of the lower object, the housing having a support surface within it and two side walls, each side wall having a front edge and one of the front edges having two pockets,
(b) a bolt within the housing movable vertically and rotatably with respect to the housing, the bolt having a head piece shaped to pass through the plate openings when the bolt is in a first angular orientation but not when the bolt is in a second angular orientation,
(c) a structural unit coaxial with the bolt and movable vertically with the bolt, the structural unit being rotatable with respect to the bolt and to the housing and having a supporting shoulder which does not engage the support surface of the housing when the structural unit is in a first angular orientation but does engage the support surface when the structural unit is in a second angular orientation,
(d) two levers for simultaneously moving the bolt and structural unit vertically between extreme upper and lower positions, movement of the bolt and structural unit upwardly while they are in their first angular orientations passing the bolt head piece through the opening in the plate of the lower object and elevating the supporting shoulder above the housing support surface, one of said levers being arranged to rotate the structural unit to its second angular orientation so that the supporting shoulder engages the housing support surface to maintain the structural unit and bolt in their raised positions, and the other of said levers being arranged to rotate the bolt to its second angular orientation, after an upper object is stacked on the lower object with the bolt head piece passing the opening in the plate of the upper object, so as to lock the two objects together, and
(e) the two levers extending out of the housing between the side walls thereof during vertical movement of the bolt and structural unit, both levers being located with each of the two pockets in the housing when the bolt and structural unit are in each of their two extreme positions, respectively, and also in their second angular orientations.

4,437,212

CLASP FOR GARMENTS, IN PARTICULAR FURS

Juergen Stahl; Wilhelm Schuster, and Wilhelm Wegner, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Gold- und Silber-Scheideanstalt Oberstein Franz Reischauer, Idar-Oberstein, Fed. Rep. of Germany

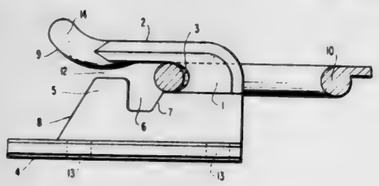
Filed Nov. 17, 1981, Ser. No. 322,163

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1980, 3045169

Int. Cl.³ A44B *13/00, 1/18*

U.S. Cl. 24—698

14 Claims



1. Hook element of a clasp for garments, in particular furs, which is used in conjunction with an eye element having an eye ring, the hook element consisting of:

(a) a base plate having holes therein for fastening to a garment;

(b) a narrow integral ridge extending in the vertical axial direction and mounted on base plate (a), base plate (a) and narrow integral ridge (b) having a fixed positional relationship;

(c) a hold-down arm, which is elastically movable in a direction normal to base plate (a), connected on one end to elongated narrow integral ridge (b) so as to form a passageway between narrow integral ridge (b) and hold-down arm (c);

(d) a first recess and a second recess provided in narrow integral ridge (b), the first and second recesses facing onto the passageway between narrow integral ridge (b) and hold-down arm (c), a locking web being formed by the portion of narrow integral ridge (b) between the end thereof and the first recess, the second recess being positioned further in the passageway than the first recess and being located in the region of narrow integral ridge (b) at the connection between hold-down arm (c) and narrow integral ridge (b), a positioning web being formed by the portion of narrow integral ridge (b) where the second recess is located; and

(e) an entrance slit provided in the passageway between hold-down arm (c) and the locking web,

the hook element, when engaged in the passageway, can slide between the first and second recesses and its motion is stopped by the locking web or the positioning web depending upon its direction of movement.

4,437,213

MEANS FOR TENON-FORMING A SHROUD TO A TURBINE ROTOR

Ira W. Reese, Trenton, and Nello B. Compagnucci, Yardville, both of N.J., assignors to Transamerica DeLaval Inc., Princeton, N.J.

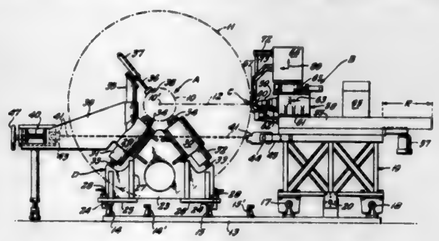
Filed Aug. 19, 1982, Ser. No. 409,600

Int. Cl.³ B23P *23/04*

U.S. Cl. 29—33 K

24 Claims

1. A tenon-forming machine for peening a blade tenon to secure a shroud band to a bladed turbine rotor, comprising means for supporting a turbine rotor on a horizontal axis at two locations offset on opposite axial sides of the axial region of a rotor stage at which shroud bands are to be secured to adjacent blades of the stage, tool-supporting means on one laterally offset side of the horizontal axis of turbine-rotor support, an elongate horizontally oriented cross-brace rail on the other lateral side of the horizontal axis of turbine-rotor support and supported by and between both rotor supports, and means including a chuck forming part of the turbine-rotor support means for engaging and selectively partially rotating a turbine rotor supported thereby; said tool-supporting means comprising a main slide and fixed horizontal ways for its travel parallel to the rotor axis, a secondary slide carried by said main slide and guided for horizontal action normal to the rotor axis, riveting means including an orbital riveting head carried by



said second slide and oriented normal to the rotor axis, an induction-heating element and movable support therefor such that said element may be positioned in and out of induction-heating relation with a blade tenon in advance of a tenon-forming cycle of riveting-head action on the blade tenon, and a tie rod for selectively connecting said secondary slide to the cross-brace rail on a transverse alignment close to but offset from the rotor axis.

4,437,214

NON-MACHINING METHOD OF MANUFACTURING A SOLID-BOTTOMED OR INTERNALLY FLANGED BEARING RACE

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt; Peter Horling, Mainberg; Hermann Hetterich, Heidenfeld, and Heinrich Kunkel, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

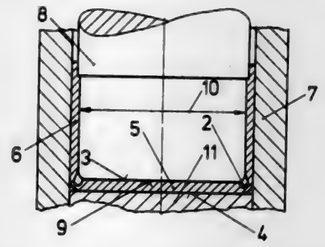
Filed Jan. 29, 1982, Ser. No. 343,873

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1981, 3103343

Int. Cl.³ B21K *1/04*

U.S. Cl. 29—149.5 DP

8 Claims



1. A method for the non-machining manufacturing a bearing race comprising the steps of: punching a flat roundel from band material, forming by non-machine working a concentric annular groove into one of the two planar surfaces of the roundel, the opposite planar surface of the roundel being supported on a flat supporting surface and deep drawing the roundel into a bearing race having a floor section, in a die, with a punch concentrically engaging with its end face that portion of the roundel's planar surface encompassed by the annular groove, said punch having a punch diameter at its end face equal to or larger than the diameter of the radially inner edge and smaller

than the diameter of the radially outer edge of the annular groove.

4,437,215

THRUST BEARING WITH TAPERED LANDS

Shigehiro Nozue, Toyota; Tatsuhiko Fukuoka, Aichi, and Hideaki Sugiura, Okazaki, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Division of Ser. No. 204,521, Nov. 6, 1980, Pat. No. 4,326,758.

This application Feb. 4, 1982, Ser. No. 345,646

Claims priority, application Japan, Dec. 25, 1979, 54-167602

Int. Cl.³ B21D *53/10*

U.S. Cl. 29—149.5 R

3 Claims



1. A method of producing a thrust bearing having tapered lands formed in a bearing face of said bearing, comprising the steps of:

punching a half-completed bearing part from a metallic plate material by a press working, said half-completed bearing part having, on both sides thereof, annular bearing faces extending around a central bore for receiving therein a rotating shaft, said half-completed bearing part further having a plurality of said tapered lands disposed in at least either one of said annular bearing faces;

applying a hardening treatment to said bearing faces for hardening surfaces of said tapered lands;

lapping upper portions of said tapered lands for forming, in said upper portions, flat planes lying on an equal plane; and

buffing said tapered lands having flat planes toward a predetermined circumferential direction so that said flat planes are gently angled and all acute angle corners of said tapered lands are rounded.

4,437,216

METHOD OF MANUFACTURING A HEAT EXCHANGER FOR COOLING AND HEATING PURPOSES

Karl G. Jonsson, Västerås, Sweden, assignor to Granges Metallverken Aktiebolag, Västerås, Sweden

PCT No. PCT/SE79/00153, § 371 Date Mar. 12, 1980, § 102(e) Date Mar. 12, 1980, PCT Pub. No. WO80/00228, PCT Pub. Date Feb. 21, 1980

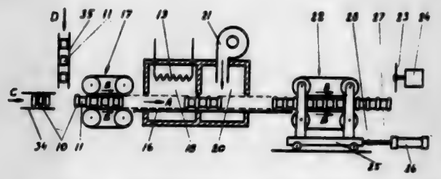
PCT Filed Jul. 11, 1979, Ser. No. 190,886

Claims priority, application Sweden, Jul. 13, 1978, 7807818

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.3 A

7 Claims



1. A method of manufacturing heat exchangers comprising tubes with substantially rectangular cross-section alternating with intermediate surface-enlarging means in the form of pleated thin metal strips, which are joined to each other by heating under mutual compression, the starting material used being tube element pieces and surface-enlarging means of predetermined length, the tube element pieces and surface-enlarging means mutually engaging with adjacent long sides in an advancing path, said method comprising: advancing a line of tubes alternating with surface-enlarging means through a heating zone and a cooling zone utilizing a first drive means acting in an advancing direction, uniting said tubes and said surface-enlarging means in said heating and cooling zones, and discharging united tube element pieces and surface-enlarging means from the cooling zone by means of a second drive, which is moved reciprocally as a unit in the path, the second drive means exerting a force on the line of tubes and surface-enlarging means acting opposite to the advancing direction so as to subject the line to a compressive force during advance of the line through the heating zone and the cooling zone, said metal strips having peaks brought into intimate contact with said tubes by heating during passage through the heating zone and by the compressive force.

4,437,217

COMPOSITE CERAMIC HEAT EXCHANGE TUBE

Paul G. Lallaye; John W. Bjerklie, and Robert A. Penty, all of Cape Elizabeth, Me., assignors to Hague International, Portland, Me.

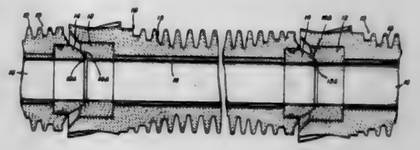
Division of Ser. No. 150,888, May 19, 1980, Pat. No. 4,332,295.

This application Feb. 1, 1982, Ser. No. 344,650

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.4

8 Claims



1. A method of fabricating a composite heat exchange tube having a porous thermal shock resistant ceramic main tube body, said method comprising the steps of, providing ceramic end inserts which are to form a seal at each end of the heat exchange tube and which are made of a more dense ceramic material than the main tube body, disposing the inserts in respective ends of the main tube body and depositing a thin ceramic liner within the main tube body, which liner is substantially impervious to fluids flowing within the tube at pressures at least up to 500 p.s.i.

4,437,218

PORTABLE OIL WELL TURBINE COLLAR REMOVING DEVICE

Whetstine B. Pridy, 2762 Blume, Los Alamitos, Calif. 90720

Filed Apr. 26, 1982, Ser. No. 372,211

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—240

10 Claims



1. An apparatus that includes an elongate chassis having forward and rearward ends onto which a length of oil well tubing having a collar secured on a first threaded end thereof may be positioned to have said collar removed therefrom, said removed collar transported to said rearward end of said chassis if found suitable for future use, said collar removably gripped on said rearward end and moved forwardly as said length of tubing is rotated to screw said collar on a second threaded end of said tubing, with said length of tubing then removed from said apparatus, said apparatus including:

a. a pair of longitudinally spaced transverse cross pieces supported on said chassis;

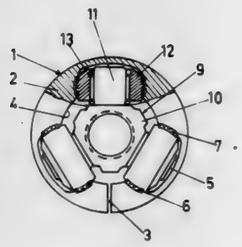
b. a first pair of transverse arms that extend outwardly from said chassis onto which arms said length of oil well tubing with said collar on said first end may be disposed to be rolled towards said chassis;
c. first means for receiving said length of tubing with said collar on said first end from said first pair of arms and lowering said length of tubing to rest on said pair of cross pieces where it may be rolled to a centered longitudinally extending position thereon;
d. second means for raising said length of tubing with said collar on said first end to a predetermined elevation above said chassis, with said collar adjacent said forward end of said chassis;
e. third means for rotating said length of tubing at said predetermined elevation;
f. fourth means for removably holding said collar stationary as said length of tubing is rotated at said predetermined elevation to unscrew said collar from said first threaded end;
g. fifth means for transporting said collar that has been removed from said length of tubing to said rearward end of said chassis;
h. sixth means for removably holding said collar stationary in a reversed position adjacent said rearward end of said chassis, said sixth means supported on said chassis and longitudinally movable thereon, said collar being screwed onto said second threaded end when said length of tubing is rotated and said sixth means is moved forwardly;
i. seventh means for raising said length of tubing with said collar on said second threaded end thereof to a first elevated position;
j. a pair of second transverse arms that extend outwardly from said chassis in a direction opposite to said first pair of arms, said second pair of arms receiving said length of tubing from said seventh means and so supporting said length of tubing with said collar on said second end that said length of tubing may be rolled outwardly on said second pair of arms to a position remote from said apparatus, with said first, second, third and seventh means at least being power operated;
k. power means for supplying power to said first, second, third and seventh means; and
l. manually operated control means for independently supplying power from said power means to said first, second, third and seventh means to permit them to operate independently of one another.

4,437,219

APPARATUS FOR RETAINING AND INSTALLING AN INTERIOR ASSEMBLY OF A UNIVERSAL JOINT

Jacques Dore, Colombes, France, assignor to Societe Anonyme Automobiles Citroen and Societe Anonyme Automobiles Peugeot, both of Paris, France

Filed Dec. 19, 1980, Ser. No. 218,308
Claims priority, application France, Dec. 20, 1979, 79 31323
Int. Cl.³ B23Q *1/00*
U.S. Cl. 29—283 **5 Claims**



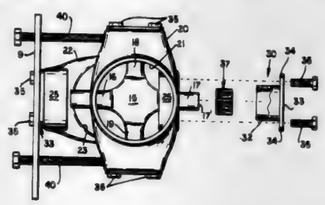
1. A retainer for the interior assembly of sliding universal joints of the type which includes an interior element constituted of a hub having at least two trunnions, a roller in the form of a spherical segment mounted on each trunnion, a substantially flat ring having sides, and of slightly elastically deformable material, said ring having a central opening and at least two inwardly opening recesses bordering said central opening and defined by the material of the ring, said central opening and recesses comprising a space to receive the assembled interior universal joint assembly within the ring, and seat means in each recess for engaging said rollers and maintaining said rollers in an assembled position on the trunnions, said seat means in each recess comprising, a pair of generally symmetrical elastically deformable spaced apart tongues connected to the material of the ring in the recess, each tongue having a concave interior surface, said concave surfaces facing toward each other to receive and engage a roller therebetween, said tongues projecting axially of the ring beyond the sides of the ring and terminating at ends spaced apart a distance slightly less than a diameter of the spherical segment of a roller so that the assembled interior assembly of the universal joint can be mounted in the retainer and can be removed from the retainer by moving the retainer axially relative to the assembled interior assembly of the universal joint.

4,437,220

METHOD AND APPARATUS FOR DISMOUNTING TRUNNION BEARINGS

Oran A. Gregory, 5334 N. Henry Blvd., Stockbridge, Ga. 30281

Filed Jul. 19, 1982, Ser. No. 399,708
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—426.5 **5 Claims**



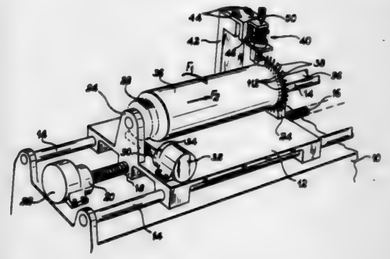
3. Apparatus for dismounting a trunnion bearing from a universal joint of the type having a crossed-pin member or spider to each pin of which member a yoke is mounted for pivotal movement by means of trunnion bearings having outer races secured to the arms of each yoke overlaying the ends of the pins and with each yoke arm having a pair of threaded holes straddling a pin of the crossed-pin member in which bolts may be threaded in securing the trunnion bearing race thereto, and with the apparatus comprising, in combination, a plate to be placed against a proximal trunnion bearing on one yoke with an inner pair of plate holes sized and located for bolts to be passed therethrough and threaded into the pair of threaded holes of the proximal arm of the one yoke and with a pair of outer threaded plate holes located so as to be aligned with the arms of the other yoke, and a pair of threaded dismounting bolts of a length more than sufficient to be threaded into said plate outer holes with the plate placed against the proximal trunnion bearing and into engagement with the other yoke arms, whereby the apparatus need be mounted to only one side of a universal joint in dismounting a trunnion bearing from the other joint side by threading the dismounting bolts into the plate against the other yoke arms until the trunnion bearing on the one yoke arm distal the plate has been urged at least partially therefrom.

4,437,221

PROCESS FOR INSERTING POINTS IN A MANDREL

Bruno Bompard, and Alain Bruyere, both of Lyons, France, assignors to Commissariat a l'Energie Atomique, Paris and Societe J. Brochier & Fils, Villeurbanne, both of, France

Filed Dec. 2, 1981, Ser. No. 326,755
Claims priority, application France, Jul. 16, 1981, 81 13868
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—429 **4 Claims**



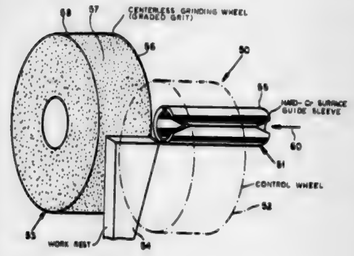
1. A process for the insertion of points to a supporting mandrel made at least in part form from a material able to receive the points by direct insertion under pressure in order to form rows of points aligned in accordance with the generatrixes of the mandrel, wherein it comprises rotating step by step the supporting mandrel, simultaneously making by means of a single working head a perforation for receiving a point and the insertion of a point in a perforation made beforehand in the same row and producing a given relative displacement parallel to the closet generatrix of the mandrel between the working head and the mandrel, at least once every complete revolution of the mandrel.

4,437,222

METHOD OF MANUFACTURING TAPE GUIDES FOR RECORDING AND/OR REPRODUCING APPARATUS

Yozaburo Umehara, 2-8-6, Shakujiimachi, Nerima-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 76,827, Sep. 19, 1979, abandoned, which is a division of Ser. No. 940,198, Sep. 7, 1978, Pat. No. 4,228,940. This application Aug. 18, 1981, Ser. No. 293,991
Claims priority, application Japan, Sep. 14, 1977, 52-124344[U]; Mar. 3, 1978, 53-24344
Int. Cl.³ B22D *11/126*
U.S. Cl. 29—527.4 **15 Claims**



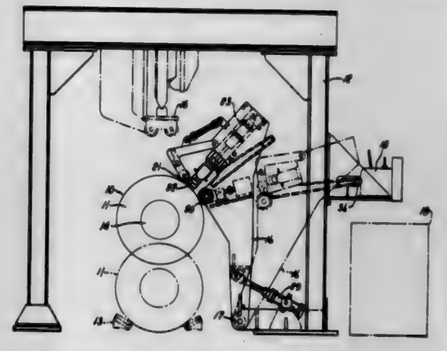
1. A method of manufacturing a tape guide for tape cassette of a recording or reproducing apparatus, comprising the steps of:
(a) forming a base body of nonmagnetic material having a cylindrical surface;
(b) applying a surface layer of nonmagnetic hard material to said base body along said cylindrical surface;
(c) forming microscopic tips on said layer with the pattern of said tips extending substantially linearly in a direction transverse to the axial direction of said body so that said layer will have a surface roughness of 0.2 to 0.6 μRmax; and
(d) fine-finishing the microscopic tips to round the same while substantially maintaining said surface roughness.

4,437,223

APPARATUS FOR DEBANDING COILED STRIP

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Mar. 5, 1982, Ser. No. 354,968
Int. Cl.³ B23P *23/00*; B23C *1/00*
U.S. Cl. 29—564.3 **17 Claims**



1. An apparatus for removing tightly encircling bands from the peripheries of coils of material, such as, coils of metallic rolled strip comprising:
support means for supporting a banded coil,
a frame having a first pinch roll transversely engageable with a band on a banded coil supported on said support means,
band severing means adjacent one side of said roll and including a cutting instrument with means for causing said cutting instrument to engage the band and sever it,
pinch means on said frame movable into engagement with said roll from said one side to pinch a severed band end therebetween, and
rotary drive means to rotate said roll such that a band pinched between said roll and said pinch means is fed outwardly away from a coil from which the band was severed.

4,437,224

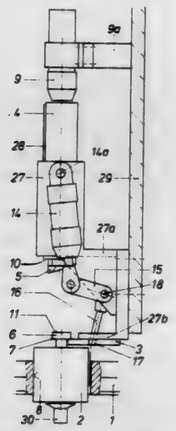
TOOL CHANGER FOR A REVOLVING CUTTING PRESS

Walter Bredow, and Gerhard Otto, both of Alfeld, Fed. Rep. of Germany, assignors to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,151
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005667
Int. Cl.³ B23Q *3/155*
U.S. Cl. 29—568 **13 Claims**

1. In a revolving press, a combination comprising a press frame; a turntable turnably mounted on said press frame; tool holder means adapted to carry a punch, said tool holder means having an axis and being mounted in an opening of the turntable for reciprocation along said axis while being prevented from turning about said axis and movable with the turntable between a working and an exchange position; means connected to said press frame above said turntable for releasably engaging said tool holder means and means for moving the latter, when

in said exchange position, in direction of said axis into or out of said opening; said tool holder means including at an upper end thereof a tool holder head, said moving means comprising a guide member operatively connected to said press frame and having an axis parallel with said axis of the tool holder means in the exchange position of the latter, said guide member being movable along its axis while being prevented from turning



about the same and carrying at an end thereof facing said tool holder head gripping means movable between a position engaging said tool holder head and a releasing position; and support means mounted on said press frame and movable in a direction transverse to said axis of said tool holder means for supporting the latter when said gripping means is in said releasing position.

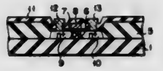
4,437,225

METHOD OF FORMING SOS DEVICES BY SELECTIVE LASER TREATMENT AND REACTIVE FORMATION OF ISOLATION REGIONS

Yoshihisa Mizutani, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 21, 1982, Ser. No. 341,583
Claims priority, application Japan, Jan. 28, 1981, 56-11086
Int. Cl.³ H01L *21/263, 21/26*
U.S. Cl. 29—576 B 8 Claims





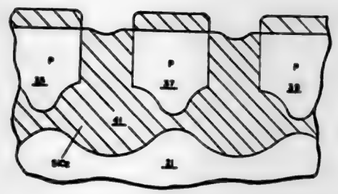
1. A method of fabricating semiconductor devices comprising the steps of:
- forming a non-single crystalline semiconductor layer on a single crystalline insulation substrate;
- ion-implanting selectively material, which reacts with said semiconductor layer to form insulating material, into said semiconductor layer; and
- applying an energy radiation or a heat treatment to said semiconductor layer, whereby the non-single crystalline semiconductor layer portion not implanted with said material is single crystallized with a seed of said single crystalline insulation substrate and at the same time the non-single crystalline semiconductor layer portion implanted with said material is rendered an insulation material.

4,437,226

PROCESS FOR PRODUCING NPN TYPE LATERAL TRANSISTOR WITH MINIMAL SUBSTRATE OPERATION INTERFERENCE

Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 239,749, Mar. 2, 1981. This application Dec. 16, 1982, Ser. No. 450,309
Int. Cl.³ H01L *21/31*
U.S. Cl. 29—577 R 1 Claim



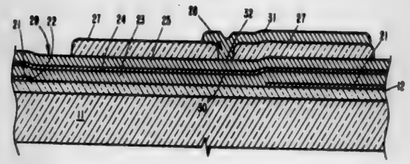
1. A method for forming an array of sub-micron dimensioned NPN-type lateral transistors on a substrate doped P-type, wherein each transistor is formed comprising the following steps:
- masking the substrate to outline a pair of boundary regions for each semi-array of active regions to comprise a transistor;
- slotting the substrate in said boundary regions to a given depth to form spaced apart slots removing any masking material from the substrate;
- angle evaporating etch resist to cover the active regions of the substrate between slots; and the edges of said slots to a depth less than said given depth by way of the slots;
- etching away the substrate below said depth less than the given depth sufficiently to separate the semi-arrays of active regions from the substrate except at spaced apart locations therealong;
- oxidizing the substrate to fill in the portions etched away and the slots;
- slotting the substrate orthogonally to the first mentioned slots to provide second slots with orthogonal pairs of slots defining active regions for the respective transistors;
- doping the regions defined by orthogonal pairs of slots P+ through a single corresponding edge of each of the second slots and driving in the P+ doping;
- doping of said last mentioned regions through both edges of each slot of said second slots N+ and driving in the N+ doping;
- oxidizing the substrate to completely isolate said active regions from the substrate; and,
- establishing electrical connections to the outer N+ regions and inner P+P region.

4,437,227

METHOD OF MAKING IMPROVED TUNNEL BARRIERS FOR SUPERCONDUCTING JOSEPHSON JUNCTION DEVICES

William E. Flannery, Norristown; Richard M. Josephs, Willow Grove; Barry F. Stein, Dresher; Tsing-Chow Wang, Norristown, and Peter L. Young, North Wales, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 28, 1982, Ser. No. 437,386
Int. Cl.³ H01L *39/22*
U.S. Cl. 29—589 14 Claims



1. The method of manufacturing electrodes and a tunnel barrier junction therebetween for Josephson superconducting devices without removing the devices in process from a vacuum chamber, comprising the steps of:
- providing an insulating substrate in a vacuum chamber,
- evaporating and depositing on said substrate a base electrode layer of superconducting material comprising lead,
- depositing over the exposed surface of said base electrode layer a tunnel barrier layer,
- evaporating and depositing on top of said tunnel barrier layer the counter electrode layer of superconducting material comprising lead to complete two electrodes and a tunnel barrier layer therebetween without removing the substrate from said vacuum chamber,
- said counter electrode layer being deposited in the presence of an inert gas atmosphere in said vacuum chamber at a partial vacuum pressure to provide a counter electrode layer which is vertically conductive and transversely non-conductive,
- removing said substrate from said vacuum chamber,
- providing a lift-off photoresist pattern on top of said counter electrode layer which defines the area of said counter electrode over the tunnel barrier junction of said Josephson superconducting devices,
- returning said substrate to said vacuum chamber,
- depositing an insulating layer on top of said counter electrode layer and said lift-off photoresist pattern,
- removing said substrate from said vacuum chamber,
- removing said lift-off pattern leaving areas of said counter electrode over said tunnel barrier junction exposed,
- providing a photoresist pattern comprising an open aperture over portions of said counter electrode layer which is over said tunnel barrier junctions,
- returning said substrate to said vacuum chamber, and
- depositing a conductive path in said open aperture of said photoresist pattern to provide a Josephson junction superconducting device.

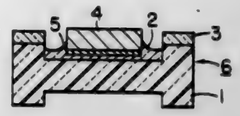
4,437,228

METHOD OF MOUNTING A SILICON PELLET ON A CERAMIC SUBSTRATE

Hideharu Yamamoto, Tokyo, and Hiroshi Tsuneno, Sayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 29, 1981, Ser. No. 306,863
Claims priority, application Japan, Oct. 1, 1980, 55-135869
Int. Cl.³ H01L *21/58*
U.S. Cl. 29—590 7 Claims

7. In a method of manufacturing a semiconductor device in which a silicon pellet is bonded to an insulation substrate by means of a glass material of a low melting point, the improvement comprising forming an adhesion reinforcing film which has a good wettability to said glass material of low melting point and exhibits a bonding strength in cooperation with said



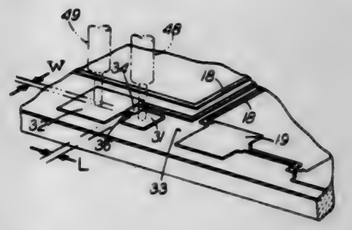
glass material, which strength is greater than that of said silicon pellet, on a lower surface of said silicon pellet to which said glass material of low melting point is to adhere.

4,437,229

METHODS OF MARKING AND ELECTRICALLY IDENTIFYING AN ARTICLE

Joel R. Bitler, Allentown; Michael W. Bodnar, Macungie; Raymond H. Booth, Walnutport; Daniel J. Roman, Bethlehem; Fred J. Schneider, Northampton; Philip W. Seitzer, Bethlehem, and George F. Wilkinson, Jr., Northampton, all of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 101,042, Dec. 6, 1979, Pat. No. 4,344,064.
This application May 24, 1982, Ser. No. 381,129
Int. Cl.³ G01R *17/00*
U.S. Cl. 29—593 3 Claims

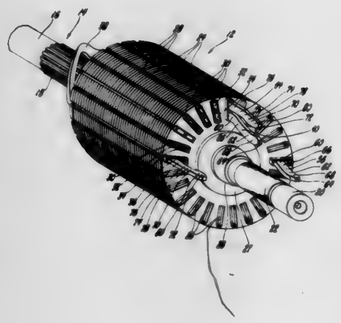


1. A method of making electronic articles, said articles including substrates and circuit elements supported by such substrates, wherein said circuit elements are tested and said articles are selectively grouped and marked based on the outcome of such tests, which comprises:
- forming at least one distinct resistive element of a first relatively low resistive value on each such substrate, said at least one distinct resistive element being functionally separate from any such circuit elements, said first resistive value of said at least one resistive element identifying such article as one of a first group of at least two groups of said articles as may be determined by said tests;
- testing said articles;
- applying energy to at least one such distinct resistive element on the substrate of any of said tested articles with respect to which such testing has determined that such articles are not of such first group, such energy altering said first resistive value to a second relatively high resistive value with respect to such first resistive value; and
- prior to further steps involving a selective treatment of the articles of such first group, measuring the resistive value of such at least one distinct resistive element of such tested articles to determine whether such articles are of such first group of articles.

4,437,230
MOTOR HAVING INSULATIONLESS ARMATURE CONNECTIONS

Hans Greutmann, Toledo, Ohio, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 19, 1982, Ser. No. 399,665
Int. Cl.³ H02K 15/09
U.S. Cl. 29—597 6 Claims

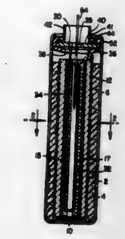


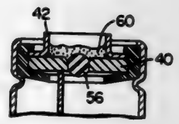
1. A method of manufacturing a rotor for a dynamoelectric machine, comprising the steps of:
providing an armature shaft having a slotted armature core mounted thereto;
placing a plurality of conductive windings in slots of said slotted armature to form at least a two-layer winding, each said slot containing at least an upper conductor and a lower conductor, each said upper conductor having an upper terminal portion and each said lower conductor having a lower terminal portion, said upper terminal portion and said lower terminal portion being disposed adjacent a first end of said armature shaft;
bending each said lower terminal portion toward said shaft at a first portion adjacent said armature core and away from said shaft at a second portion adjacent a free end of said lower terminal to form a first body portion directed towards said shaft and a first end portion parallel to said shaft;
bending each said upper terminal portion away from said shaft at a third portion adjacent a free end of said upper terminal portion and bending each said upper terminal portion towards said shaft at a fourth portion adjacent said third portion and distal to said armature core to form a second body portion parallel to said shaft, a first transition portion directed toward said shaft, and a second end portion parallel to said shaft;
installing a commutator on said armature shaft adjacent said first end of said shaft;
urging each said second end portion radially towards said shaft to force each said second end portion against each said first end portion and to force each said first end portion against said commutator, each said first body portion and each said second body portion defining a gap therebetween; and
bonding said second end portion to said first end portion and bonding said first end portion to said commutator;
whereby said rotor may be manufactured without the provision of an insulating body between said upper terminal portion and said lower terminal portion.

4,437,231
METHOD OF MAKING AN ELECTROCHEMICAL CELL HAVING A SAFETY VENT CLOSURE

Ronald L. Zupancic, Parma Heights, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 190,990, Sep. 26, 1980, Pat. No. 4,329,405.
This application Feb. 2, 1982, Ser. No. 344,944
Int. Cl.³ H01M 2/12
U.S. Cl. 29—623.2 3 Claims



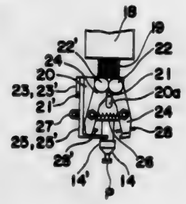


1. A method for assembling an electrochemical cell having a safety vent closure which comprises the steps:
(a) providing a metal cell housing comprising a container having an open end, a closed end and an upstanding circumference;
(b) inserting a cathode collector shell into said container, said cathode collector being in contact with the inner upstanding circumference of the container thereby adapting the container as the positive terminal of the cell;
(c) disposing a separator within and in contact with the inner circumference of the cathode collector shell;
(d) inserting a multimember anode comprised of a first half-cylindrical annular member and a second half-cylindrical annular member, each of said members have an inert electrically conductive metal screen disposed against their inner surface wall, said first and second cylindrical half annular members being disposed in an opposing fashion such that an axial cavity is formed therebetween;
(e) disposing an electrically conductive spring strip into the axial cavity between the screen-backed anode members such that said strip resiliently biases the two anode members via said strip so as to provide a substantially uniform and continuous pressure contact over the inner wall of the anode members;
(f) securing a first metal cover over the open end of said housing, said first cover having at least one vent orifice;
(g) securing a second metal cover to the open end of the cell's housing and placing said second metal cover over said first metal cover wherein at least one metal tubular member is secured to said second cover and surrounds the vent orifice defined in said first cover;
(h) feeding the liquid cathode/electrolyte of the cell through the vent orifice into the housing;
(i) force fitting a deformable member into the vent orifice thereby providing a fluid-tight seal over said vent orifice; and
(j) placing a layer of sealant having adhesion to metal within said metal tubular member over the deformable member and the area of the first metal cover defining the vent orifice and surrounded by the tubular member.

4,437,232
ELECTRONIC PARTS MOUNTING APPARATUS

Shigeru Araki, Katano; Yasuo Taki, Hirakata; Kazuhiro Mori; Yoshihiko Misawa, both of Katano, and Souhei Tanaka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 115,279, Jan. 25, 1980, Pat. No. 4,327,482.
This application Feb. 22, 1982, Ser. No. 351,312
Claims priority, application Japan, Jan. 25, 1979, 54-7764
Int. Cl.³ H05K 3/34, 13/04
U.S. Cl. 29—740 1 Claim



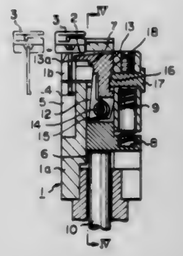
1. An apparatus for carrying and placing components onto a board or the like, comprising:
a body frame fixed at a position on a plane;
a rod means movably supported on said body frame for movement in vertical and horizontal directions with respect to the plane;
a first movable means connected to said rod means for moving said rod means in the vertical direction with respect to the plane;
a second movable means connected to said rod means for moving said rod means in the horizontal direction with respect to the plane;
a suction tool provided at a lower end of said rod means for picking up a component;
a suction means connected to said suction tool for supplying a vacuum to said suction tool when said suction tool is carrying a component;
at least one pair of positioning pawls rotatably mounted on said rod means and having free ends for grasping and positioning a component therebetween when the free ends are moved towards each other;
means for rotating said positioning pawls in synchronization with the movement of said rod means for causing the free ends to move away from each other when said rod means is in a lowered position to pick up a component and for causing the free ends to come close to each other when said rod means is in a raised position to bring the free ends into engagement with a component picked up by said suction tool; and
a pair of electrodes, one on each of the positioning pawls for contacting each other and abruptly conducting a predetermined level of current therebetween when said free ends of said positioning pawls move clower to each other than they move when a component is located therebetween, whereby an instantaneous signal indicating the absence of a component is directly produced.

4,437,233
FASTENER SLIDER HOLDING DEVICE

Keiichi Yoshieda, and Yoshitaka Iimura, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 283,107
Claims priority, application Japan, Aug. 8, 1980, 55-112489
Int. Cl.³ A21H 37/06
U.S. Cl. 29—768 6 Claims

1. A fastener slider holding device comprising a fastener slider holder having a slider mount on an upper portion and a recess in a lower portion on one side thereof, a spring-loaded sliding member slidably mounted in said slider holder for upward and downward movement and normally biased downwardly, a slider holding lever rockably mounted in said slider holder and having an engaging pawl at the forward end thereof, an operation rod for moving said sliding member upwardly and downwardly and means associated with said sliding member for rocking said slider holding lever between a

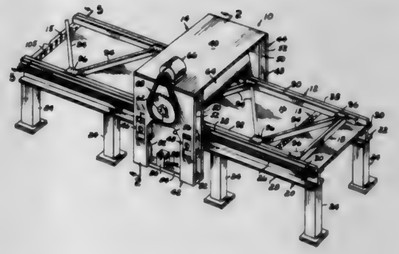


first position in which said engaging pawl completely disengages from a pull tab located on a slider when said slide holding lever moves upwardly and a second position in which said engaging pawl engages in the hole in said pull tab when said rocking member moves downwardly.

4,437,234
TRUSS ASSEMBLING GANTRY

Jack L. Thornton, P.O. Box 222400, Carmel, Calif. 93922

Filed Jan. 15, 1982, Ser. No. 339,534
Int. Cl.³ B23P 19/00, 11/00
U.S. Cl. 29—798 6 Claims



1. A truss joist assembling apparatus, comprising:
platform means including an elongated planar bed for supporting truss joist components when disposed thereon in a predetermined truss configuration, said platform means further including,
roller track means including flanged beams disposed at longitudinal sides of said bed defining horizontal vertically spaced confronting surfaces;
upstanding track means extending longitudinally of said bed adjacent its respective longitudinal sides for forming, in combination with said bed, lateral and vertical boundary limits of a truss joist;
gantry means including a drum overlying said upstanding tracks for movement longitudinally of said platform means, said gantry means further including,
vertical frame means disposed on opposing sides of said platform,
said drum having a shaft journalled by said vertical frame means; and,
a plurality of pressure roller means vertically movably supported by said vertical frames in contact with said roller track means for vertically moving said drum toward and away from said upstanding track means.

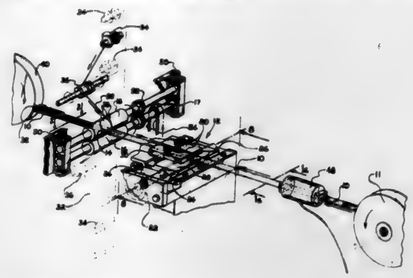
4,437,235
INTEGRATED CIRCUIT PACKAGE
Chandler H. Melver, Tempe, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.
Division of Ser. No. 221,103, Dec. 29, 1980, Pat. No. 4,363,076.
This application Aug. 23, 1982, Ser. No. 410,234
The portion of the term of this patent subsequent to May 3, 2000, has been disclaimed.
Int. Cl.³ H05K 3/34
U.S. Cl. 29—840 1 Claim



1. Method of mounting an integrated circuit chip having an active face having outer edges, a back face and a plurality of input/output terminals on the active face thereof with a plurality of flexibe beam leads, each of said leads having an inner and an outer lead site, with the inner lead site of each lead being bonded respectively to an input/output terminal of the integrated circuit chip, on a substrate having a top surface with a chip pad formed on the top surface and a plurality of outer lead pads associated with the chip pad comprising the steps of:
preheating the substrate to a first temperature range at which a given thermosetting plastic becomes tacky;
placing a preform comprised of a segment of the web coated with the thermosetting plastic which plastic is electrically insulating and thermally conductive on the chip pad to cause the preform to adhere to the pad, said preform substantially covering the chip pad;
placing the integrated circuit chip on the preform, active face down, and applying a force to the back of the chip to initiate encapsulation of the active face, and portions of the leads proximate the input/output terminals of the chip in the thermosetting plastic of the preform;
heating the substrate, chip and preform to a second temperature for a first predetermined period of time to partially cure the thermosetting plastic of the preform to cause the plastic to flow around the inner portions of the leads between the active face of the chip and the chip pad;
positioning the chip while the plastic is partially cured so that the outer lead bonding site of each beam lead substantially overlies the outer lead pad to which it to be bonded;
thermocompressively bonding the outer lead bonding sites of the leads to the outer lead pads to place the leads under compression; and
heating the thermoplastic material to a third temperature for a second predetermined period of time to substantially cure the thermosetting plastic.

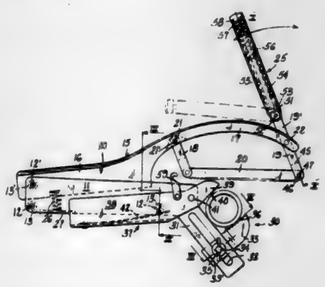
4,437,236
SOLDER BONDING PROCESS
Joseph A. Oswald, Jr., Mechanicsburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 25, 1982, Ser. No. 342,715
Int. Cl.³ H01R 43/02
U.S. Cl. 29—879 8 Claims

1. Process for producing an electrical terminal from flat metal stock coated with a thin layer of solder, tin, gold, gold alloys, palladium or palladium alloys comprising
a. feeding the coating metal stock into a nip of at least one pair of pressure rollers from a strip guide means, said strip guide means controlling the position of the metal stock between the rollers,
b. cold rolling solder wire onto the metal stock at ambient temperature without the presence of a flux on the metal stock as it is fed between the pressure rollers, the nip between the rollers having a gap slightly larger than the thickness of the metal stock, and



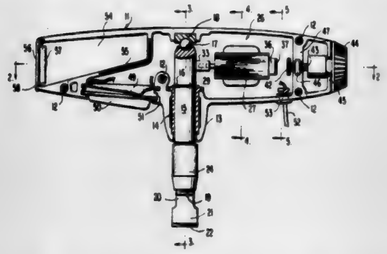
c. thereafter stamping and forming the metal stock to produce an electrical terminal with a thickened solder layer in a predetermined location on the terminal.

4,437,237
SWING SAW FOR CUTTING METAL CONDUIT
Lucien C. Ducret, 28 Lockwood Dr., Old Greenwich, Conn. 06870
Filed Aug. 6, 1982, Ser. No. 406,104
Int. Cl.³ B27B 19/14
U.S. Cl. 30—90.2 10 Claims



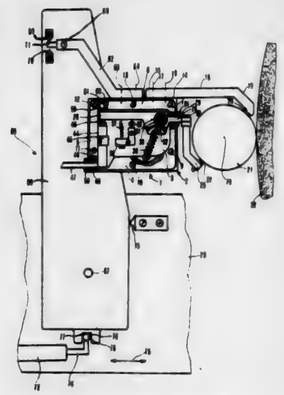
1. A hand tool for cutting elongated materials comprising,
an elongated body portion having a forward end, a rear end and a clamping jaw supporting extension,
an elongated saw blade supporting element having a handle portion and being pivotally mounted on the body portion adjacent the rear end of said portion, for movement of said blade supporting element in a plane perpendicular to its pivoting axis,
an elongated saw blade,
means connecting said blade to the blade supporting element,
means for effecting cutting motion of the blade in said perpendicular plane relative to the blade supporting element,
a first clamping jaw adjustably mounted on said jaw supporting extension,
a clamping lever comprising an elongated handle portion and at least one forwardly positioned second clamping jaw means, and
means pivotally mounting said lever on the body portion adjacent the forward end thereof,
the body portion, the handle portion of the blade supporting element and the handle portion of the clamping lever being so juxtaposed that they can be grasped by one hand of a tool operator for simultaneously clamping the work and biasing the saw blade toward said work in a cutting plane perpendicular to the pivoting axis of the blade supporting element.

4,437,238
TOOL FOR SEVERING LEAD CANING
John P. Coleman, 5920 Georgia Ave., N.W., Washington, D.C. 20010
Filed Feb. 24, 1982, Ser. No. 352,055
Int. Cl.³ B26B 7/00
U.S. Cl. 30—272 A 11 Claims



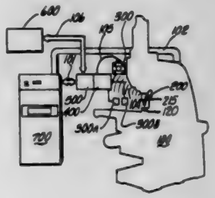
1. A tool for severing lead canning and the like comprising a body portion forming a handle, a shaft journaled on the body portion and projecting therefrom substantially normal to the axis of said body portion, power means operatively coupled with the shaft causing it to oscillate rapidly around the longitudinal axis of the shaft, and a blade fixed to the leading end of the shaft and having a leading cutting edge extending at right angles to and on opposite sides across the axis of oscillation of the shaft, whereby downward pressure on said handle is transmitted axially along the longitudinal axis of said shaft and axially to said leading cutting edge during the cutting operation.

4,437,239
GAUGE FOR THE DIMENSIONAL CHECKING OF A MECHANICAL PIECE
Mario Possati, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy
Filed Dec. 23, 1981, Ser. No. 333,935
Claims priority, application Italy, Dec. 23, 1980, 3599 A/80
Int. Cl.³ G01B 7/12
U.S. Cl. 33—143 L 14 Claims



1. A gauge for the dimensional checking of a mechanical piece, comprising an enclosed support, a gauging arm movable with respect to the support, a feeler element connected to the arm to touch the piece to be checked, connection means including a first element fixed to the arm, a second element fixed to the support, and resilient means, the first and the second element allowing limited rotatory gauging displacements of the arm with respect to the support, said resilient means being coupled to the arm and the support for maintaining in firm contact the first and the second elements, in order to define a geometrical axis of rotation for the arm, that is stationary with respect to the support, and detection means associated with the arm and the support, wherein the first element of the connection means defines a portion of a substantially cylindrical surface and the second element includes two edges adapted to remain in contact with two generating lines of the portion of the cylindrical surface, said geometrical axis being defined by the intersection of two geometrical planes passing through said generating lines and being perpendicular to the portion of the cylindrical surface.

4,437,240
TELEMETRY GAGE SYSTEM
Richard O. Juengel, Romeo; John D. Begin, Warren, and John Khalaf, Livonia, all of Mich., assignors to The Valeron Corporation, Troy, Mich.
Continuation of Ser. No. 182,226, Aug. 28, 1980, Pat. No. 4,320,623. This application Nov. 9, 1981, Ser. No. 319,129
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.
Int. Cl.³ G01B 7/02
U.S. Cl. 33—172 E 3 Claims

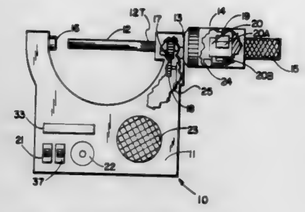


1. In a system having at least one movable member operative to perform various tasks upon a workpiece using various components selected from a component storage device, at least one of the components comprising gaging means for performing gaging of the workpiece as preselected ones of the various tasks, the gaging means being wirelessly associated with and having a housing body shaped so as to be held by the movable member during gaging of the workpiece and held by the storage device when not being used for gaging, the gaging means including transducer means mounted in the housing body operative for generating an electrical signal related to a dimensional characteristic of the workpiece whenever the housing body is moved by the member to a predetermined position relative to the workpiece, the improvement comprising:
converter means in the housing body comprising switching means having a control input coupled to the transducer mean for receipt of the electrical signal and a plurality of light emitting diodes coupled to the switching means and mounted about a peripheral portion of the housing body, the switching means operative upon receipt of the electrical signal to cause the plurality of light emitting diodes to emit an optical signal substantially in a 360 degree pattern from the housing body; and
receiver means separate from the housing means, positioned at any point intersected by the 360 degree pattern of optical signal emission for remote reception of the optical signal and for converting the optical signal to an output signal indicative of the dimensional characteristic.

4,437,241
MEASURING INSTRUMENT AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 68,609, Aug. 22, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,630
Int. Cl.³ G01B 3/18
U.S. Cl. 33—166 18 Claims

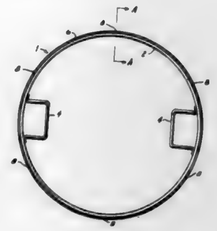


1. A measuring instrument comprising:
a support,
first and second work surface contacting means supported by said support,
means for moving said first surface contacting means with respect to said support and an article positioned between said first and second surface contacting means to cause said first surface contacting means to engage a first portion of the surface of said article while an opposite portion of said article is engaged by said second surface contacting means,
means for sensing movement of said first surface contacting means and generating an electrical analog signal which varies in accordance with the movement of said first surface contacting means,
analog-to-digital conversion means for receiving and digitizing said electrical analog signal and generating digital signals indicative of the degree of movement of said first surface contacting means with respect to said support,
microminiature electronic circuit synthetic speech signal generating means operable for generating speech signals of words of numbers including the numbers "0" to "9", and
first control signal generating means connected between said analog-to-digital conversion means and said microminiature electronic speech signal generating means for receiving digital signals generated on the output of said analog-to-digital conversion means and operable to output control signals for controlling the operation of said microminiature electronic circuit synthetic speech signal generating means to cause the latter to generate a chain of synthetic speech signals defining a sequence of numbers which are indicative of measurements made by said device,
force sensing means connected to said first surface contacting means and operable to generate a measurement indicating control signal upon sensing a force applied between said first surface contacting means and a workpiece, and
means for applying said measurement indicating control signal to said first control signal generating means to cause the latter to control the operation of said microminiature electronic circuit synthetic speech signal generating means to generate a plurality of synthetic speech signals which are indicative of the distance between said first and second surface contacting means when a workpiece is disposed therebetween and said first and second surface contacting means are in contact with opposite surfaces of said workpiece and when said first surface contacting means engages one surface of said workpiece with a predetermined, and
means for receiving and transducing said synthetic speech signals to sounds of words defining a sequence of numbers which indicate the measurement made by said measuring instrument.

4,437,242
FLEXIBLE GAUGE FOR INSIDE DIMENSIONS

Billy J. Battle, Birmingham, Ala., assignor to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Aug. 30, 1982, Ser. No. 412,427
Int. Cl.³ G01B 3/50
U.S. Cl. 33—178 B 3 Claims

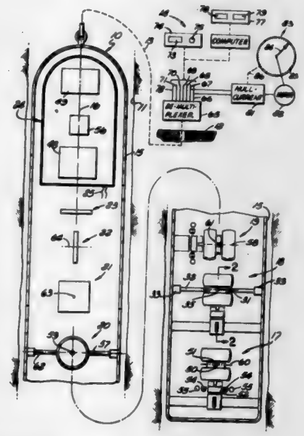


1. A gauge for determining the acceptance or rejection of a cylinder having a predetermined opening, said predetermined opening of said cylinder having a permissable tolerance variation from a predetermined minimum inner diameter thereof, said gauge comprising a first flexible cylindrical sleeve and a second flexible cylindrical sleeve, said first flexible cylinder forming a partial interior liner for said second flexible cylindrical sleeve and being attached to said second flexible cylinder in an underlying relationship, said first flexible cylindrical sleeve having an outer diameter equal to the minimum permissible inner diameter of said opening in said cylinder and said second flexible cylindrical sleeve having a thickness equal to one-half the permissible tolerance variation of said opening in said cylinder.

4,437,243
GYROSCOPIC INSTRUMENT

Robert L. Brown, Buena Park, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Feb. 20, 1981, Ser. No. 235,931
Int. Cl.³ G01C 19/38, 19/28, 19/26
U.S. Cl. 33—302 21 Claims

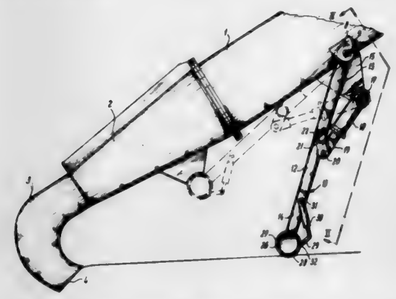


1. The combination comprising:
a body;
a gyroscopic rotor carried by said body and driven rotatively relative thereto about a spin axis;
a connection mounting said rotor to said body in a relation transmitting pivotal movement about a sensing axis through the body to the rotor and enabling precessing movement of the rotor relative to the body about an axis of precession in response to said pivotal movement about the sensing axis;
a caging means for retaining said rotor against precessing movement from an initial position and releasable to free the rotor for precessing movement;
means for timing the interval during which said rotor precesses from said initial position to another position, and
means for deriving an indication of the rate of precession from the time required for said precession.

4,437,244
METHOD FOR SUCKING UP SOIL OR SLUDGE BY MEANS OF A SUCTION HOPPER DREDGE AS WELL AS A SUCTION DREDGE FOR APPLYING THE METHOD

Pieter Verboom, Alblasserdam, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

Filed Sep. 16, 1982, Ser. No. 418,673
Claims priority, application Netherlands, Sep. 17, 1981, 8104293
Int. Cl.³ E02F 3/88
U.S. Cl. 37—63 3 Claims



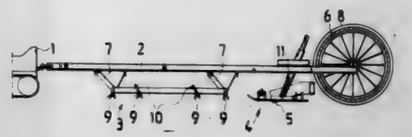
1. In a suction dredge having a suction pipe and drag head and provided with loosening means for loosening soil or sludge positioned in front of the inlet opening of the drag head seen in the dragging direction; the improvement in which said loosening means are disposed at such a distance from the inlet opening of the drag head that the gases liberated by the loosening operation remain substantially out of the suction action of the drag head, said loosening means being secured to a frame which extends downwardly from the suction pipe a substantial distance from the inlet opening of the suction pipe, said loosening means comprising a plurality of injection nozzles, and means acting between said frame and said pipe for swinging said frame upwardly to a raised inoperative position and downwardly to a lowered operative position about a horizontal pivot by which said frame is secured to said pipe.

4,437,245
MEANS FOR MAKING A SKI TRAIL

Tapio Nigmela, Linnatie 10D5, Kittila, Finland 99100

Filed Nov. 19, 1982, Ser. No. 443,162
Claims priority, application Finland, Dec. 3, 1981, 813868
Int. Cl.³ E01H 4/00
U.S. Cl. 37—222 3 Claims

1. A ski trail making apparatus comprising a frame, adapted for attachment e.g. behind a snowmobile, a drag for levelling out old ski trails and tracks, linkage arms pivotally attached to the frame for suspending the drag therefrom, said drag being adjustable in the vertical direction and free to rise upwardly if an obstacle is encountered, a trail planer having trail making blades located side-by-side on said frame disposed behind said drag, means for resiliently mounting said trail planer on said frame, and a cylindrical levelling roll having projecting trail

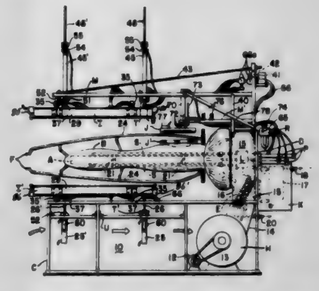


groove depressor rims thereon disposed behind said trail planer for supporting said apparatus.

4,437,246
PRESSING AND CREASING APPARATUS

John R. Sanko, Altoona, Pa., assignor to Paris Manufacturing Company, Inc., Brockway, Pa.

Filed Oct. 7, 1981, Ser. No. 309,242
Int. Cl.³ D06F 71/40; D06C 5/00
U.S. Cl. 38—25 11 Claims



1. In a finishing machine for a pants-like garment having a support base, a longitudinal-horizontally extending permeable bag carried by said support base for receiving and positioning a garment therealong, means for applying hot steam and air through said bag to the inside of the garment to expand it, means carried by said support base for internally engaging and then folding-over material of the expanded garment to form preliminary creases therealong, means for thereafter applying heat and externally applying pressing force to the preliminary creases for forming final creases along the material of the garment, and said means for folding-over material of the expanded garment having means for moving it out of engagement with the material before pressing force is externally applied to the preliminary creases by said second-mentioned means.

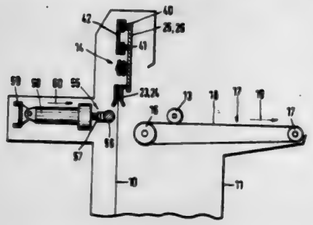
4,437,247
APPARATUS FOR FEEDING LAUNDRY TO AN IRONING MACHINE

Wilhelm Wiebelek, Vlotho, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH & Co., Voltho, Fed. Rep. of Germany

Filed Apr. 27, 1982, Ser. No. 372,350
Claims priority, application Fed. Rep. of Germany, May 16, 1981, 3119600
Int. Cl.³ D06F 67/04
U.S. Cl. 38—143 12 Claims

1. Apparatus for feeding laundry articles to an ironing machine or the like, wherein the laundry articles are suspended on two grippers of a conveyor device disposed transversely in front of and offset in height in relation to a feed conveyor leading to the ironing machine and, starting from an operating station (A) situated at the side of the working width of the feed conveyor, are conveyed by the conveyor device to a position

centrally in front of the loading position of the feed conveyor, and wherein the two grippers of the conveyor device are disposed on a rope drive capable of controlled driving and can be moved in such a manner that the leading gripper, in the conveying direction, pulls the rear gripper in tow behind it via the laundry article, while at the same time pulling the latter taut, characterised in that the drive device used for the rope drive (14) is a geared polechanging motor (15) having two speeds and a smooth speed range transition, that the towing conveying of the laundry article (10) begins when the geared



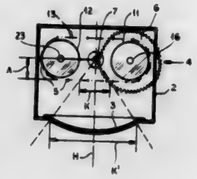
motor (15) is smoothly changed up to the high speed, that switch means (51, 52, 53) changes the geared motor (15) down to its low speed at a moment of time in the course of the towing conveying, and that after the complete tensioning and centering of the laundry article (10), which are effected at low speed, the geared motor (15) remains switched on at a predetermined torque adjusted to the transioning or tautening force acceptable for the laundry article (10) and at zero rotational speed, for the purpose of maintaining the tensioning, until the laundry article is transferred to a feed conveyor (12).

4,437,248

VIEWER SIMULATING TELEVISION RECEIVER

Hubertus Ramme, Graf-Adolfstrasse 25, 5758 Fröndenberg, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,466
Int. Cl.³ G03B *1/00*
U.S. Cl. 40—364 **11 Claims**



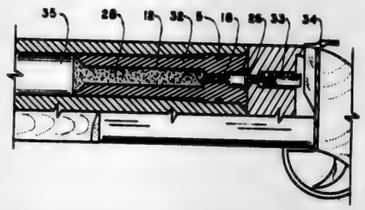
1. A viewer simulating a television receiver, comprising:
a housing;
a substantially punctiform light source in said housing;
a light-diffusing screen in a wall of said housing centered on an axis, said light source being located on said axis at a distance from said screen;
a supply of operating current connectable to said light source; and
transport means in said housing for supporting a coherent transparent carrier of positive images in an area between said screen and said light source for translumination by divergent rays from the latter and enlarged direct projection upon said screen, said transport means including an actuator accessible from outside said housing for advancing said carrier along a path crossing said axis at an intersection separated from said light source by less than half of said distance, said housing being devoid of any focusing lens, said carrier being the only element traversed by said rays between said light source and said screen.

4,437,249

CONVERSION OF MODERN SHOTGUNS INTO MUZZLELOADING SHOTGUNS

James R. Brown, 9181 Tarbutton Rd., South Vienna, Ohio 45369, and Karlis A. Sirons, 2482 Fox Hollow Rd., Springfield, Ohio 45502

Filed Mar. 18, 1982, Ser. No. 359,272
Int. Cl.³ F41C *21/10*
U.S. Cl. 42—51 **1 Claim**



1. A conversion plug for removable insertion into a standard, unmodified shotgun having a conventional chamber and barrel for converting the shotgun into a muzzleloading firearm, said plug comprising: a cylindrical rear portion conforming to the shape of the shotgun chamber and having a tapered rear shoulder for engaging a cartridge rim receiving portion of the chamber; a reduced diameter forward portion extending forwardly from the plug rear portion into close fitting engagement with the bore of the shotgun barrel; said plug forward portion having a main bore with an outward flare at the front end thereof for receiving black powder when the firearm is loaded as a muzzleloader; said plug rear portion having a tapered bore therein for receiving a primer and a passageway connecting said primer bore with the main bore in said plug forward portion; said tapered rear shoulder of said plug rear portion having a circumferential cut-out therein allowing an ejector mechanism of said shotgun to bypass said plug, thereby avoiding ejection of said plug by the ejector mechanism; said plug rear portion having a circumferentially oriented groove therein and an annular sealing means in said groove; and said plug rear portion having a tapered slot in the rear end thereof intersecting said primer bore for aiding in the removal of a primer positioned in said primer bore.

4,437,250

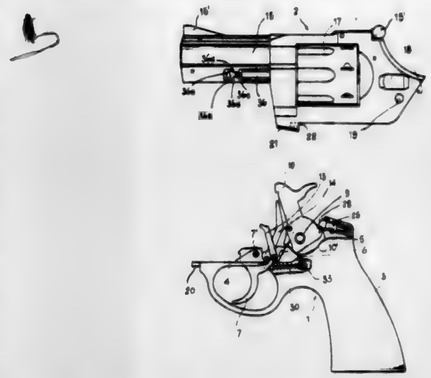
REVOLVER

Pier C. Beretta, Brescia, Italy, assignor to Fabbrica d'Armi P Beretta S.p.A., Italy

Filed Jul. 16, 1981, Ser. No. 283,819
Claims priority, application Italy, Jul. 18, 1980, 5187 A/80
Int. Cl.³ F41C *1/00*
U.S. Cl. 42—59 **13 Claims**

1. A revolver of the type having an opening for the lateral displacement of a rotatable drum and comprising a body including first and second main members that are removably connected to each other, said first member comprising a handle and an underguard and a snap-firing mechanism defined by at least a trigger and a hammer, said second member comprising a stem, a barrel, sighting means, a firing pin and a rotatable drum with means for blocking and unblocking thereof, characterized in that at the extremity of said underguard of said first member there is provided a tongue for mortise-like engagement in a seat provided in a shoulder arranged at the base of said second member, an upper part of said handle and a rear terminal of said second member being provided with corresponding and mating inclined surfaces, said handle and said second member have coaxial transverse openings for the acceptance of an arresting spine for the mutual blocking of said first and second members, and means for eliminating play between said second member and said handle, said transverse openings for said arresting spine coinciding with an axis of

rotation of said hammer, said axis being defined by a sleeve pin transversely mounted between two ears provided in the upper



part of said handle, said openings provided in said second member being coaxial with said sleeve pin.

4,437,251

FULL GAIN TWIST RATCHET RIFLING

Richard M. Gorman, 3420 W. Danbury St., Apt. C-106, Phoenix, Ariz. 85023

Continuation-in-part of Ser. No. 130,383, Mar. 14, 1980, Pat. No. 4,308,681. This application Dec. 21, 1981, Ser. No. 332,801
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ F41C *21/00*
U.S. Cl. 42—78 **10 Claims**



9. In a rifled barrel with means for seating a projectile therein, said rifled barrel having minor and major-radius portions measured from the bore-axis, and having therebetween spin-imparting edges on the rifling, in combination: improved ratchet rifling with a full gain twist in the form of a bore portion having a smooth bore for initially receiving and holding a projectile without marring the projectile followed by a gradually emerging ratchet rifling contour with each spin-imparting edge being progressively deepened by said minor-radius portions "falling" inward toward said bore axis and producing a projectile-seating increasing in predetermined proportion to twist along the barrel.

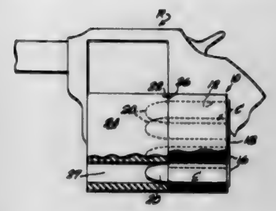
4,437,252

RAPID LOADING DEVICE FOR A REVOLVER

Carlos E. Castellanos Manero, Miami, Fla., assignor to Aida Castellanos Kwasnisk, Miami, Fla.

Filed Jan. 16, 1981, Ser. No. 225,629
Int. Cl.³ F42B *39/04*
U.S. Cl. 42—89 **5 Claims**

1. A rapid loading device for a revolver comprising, a generally cylindrical member formed of a conventional synthetic cellular foam material having a very great compressibility quality, said cylindrical member including a plurality of longitudinally extending through holes therein, to coincide with the



chambers in a revolver cylinder, for the reception of an ammunition cartridge in each of said chambers.

4,437,253

FISHERMAN'S HAND TOWEL AND METHOD

Duane W. Kinnear, R.D. 1,, East Springfield, Pa. 16411

Filed Apr. 4, 1983, Ser. No. 481,918
Int. Cl.³ A01K *97/04*
U.S. Cl. 43—1 **8 Claims**

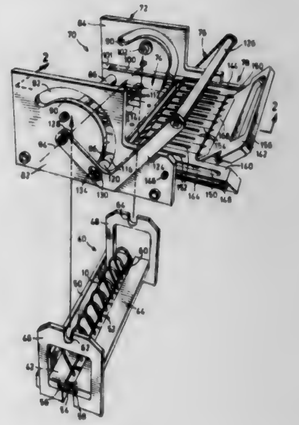
1. A fisherman's towel for wiping hands at a fishing site immediately before handling bait in the process of each baiting of a line to prevent the bait from acquiring human odors from such handling, said towel consisting essentially of a piece of damp toweling impregnated with an amount of anise odor containing substance which leaves a residual anise odor on the fisherman's hands which is in part picked up by the bait in amount sufficient to mask any of said human odor acquired by the bait from said handing.

4,437,254

LONGLINE BAITING

Everett G. Fancey; John V. Peters, and Russell E. Tucker, all of St. John's, Canada, assignors to Nordco Limited, St. John's, Canada

Filed Jun. 26, 1981, Ser. No. 277,912
Int. Cl.³ A01K *79/00, 83/00, 91/00*
U.S. Cl. 43—4 **20 Claims**

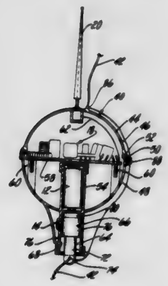


1. A fish hook baiter comprising,
(a) a hook support means having a hook supporting portion of its length adapted to support a gang of hooks in a side-by-side spaced relationship which is fixed for baiting with their hook ends free for baiting,
(b) bait support means adapted to support bait during hooking of the bait, said bait support means being disposed

laterally opposite and co-extensive with at least a portion of said hook supporting portion of said hook support means,

(c) guide means engaging said bait support means and adapted to guide the bait support means along a baiting path whereby bait supported on the bait support means is applied substantially simultaneously to a plurality of the hooks in the gang of hooks.

4,437,255
FISH DETECTING SYSTEM
Dorian Reed, 13231 Northfield Blvd., Oak Park, Mich. 48237
Filed Apr. 23, 1982, Ser. No. 371,466
Int. Cl.³ A01K *93/00*
U.S. Cl. 43—17 **10 Claims**



1. A fish detecting system for use with fishing tackle, comprising: signal sending and signal receiving means, said signal sending means including a spherical, bouyant housing containing a radio transmitter, a battery disposed in a lower portion of said housing and forming a source of power for said transmitter, a normally open switch disposed in a circuit between said battery and said transmitter, a plunger movable radially of said sphere between first and second positions in a path passing in proximity to said switch, said plunger including a magnet operable to move said switch to a closed position to actuate said transmitter when said magnet moves into proximity of said switch and to hold said plunger in a first position when said switch is in said normal position and fastening means including an attaching portion on said plunger to receive a fishing line forming part of said tackle, said signal receiving means including a radio receiver operable at a point remote from said signal sending means to receive a signal from said transmitter and activate an alarm upon movement of said plunger from said first towards a second position upon pull on said fishing line.

4,437,256
UNIVERSAL FLOAT LURE
Walter Kulak, 98 Oakdale Village, North Brunswick, N.J. 08902
Filed Apr. 30, 1981, Ser. No. 258,959
Int. Cl.³ A01K *85/01, 93/00*
U.S. Cl. 43—17.5 **12 Claims**

1. A float-lure kit comprising

a. an elongated main body section having at least two hollow areas therein and access means to said hollow areas from outside said main body section,

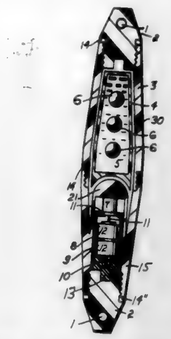
b. a self-contained lure cylinder insertable through one of said access means into one of said hollow areas, said cylinder comprising therein

i. oil,

ii. one or more metal balls and

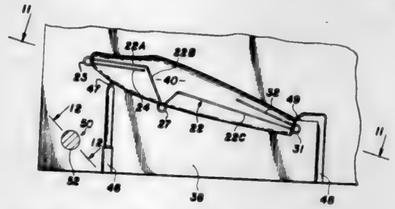
iii. metallic reflecting particles,

said balls and said particles suspended in said oil, and



c. a light emitting diode containing cartridge insertable through one of said access means in one of said hollow areas.

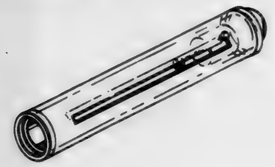
4,437,257
FOAMED PLASTIC FISHING LURE BODY HAVING A CONTROLLED DENSITY AND A ONE-PIECE WIRE AND A METHOD FOR ITS MANUFACTURE
Douglas J. Kluge, 7979 Jonellen La., Golden Valley, Minn. 55427
Filed May 15, 1981, Ser. No. 263,897
Int. Cl.³ B29D *27/00*
U.S. Cl. 43—42.45 **13 Claims**



1. A method of making a foamed plastic fishing lure body having a controlled density and a one-piece wire located along the vertical central longitudinal plane of the body, with a mold assembly having a first plate and a second plate and groove means for accommodating portions of the wire adapted to be located in face-to-face relationship relative to each other, said first and second plates each having at least one cavity and groove means for accommodating portions of the wire, said cavities forming a body cavity having the outline shape of the lure body when the first and second plates are located in face-to-face relationship comprising: positioning the one-piece wire on the first plate by placing portions of the wire in the groove means of the first plate to locate the wire over the cavity in the first plate, closing the mold assembly by mounting the second plate on the first plate to locate the cavity of the second plate in registration with the cavity of the first plate and locate the wire in the groove means of the second plate thereby locating the wire along the vertical central longitudinal plane of the body cavity, holding the mold assembly in its closed position, introducing plastic materials into the body cavity, through a passageway in the mold assembly said plastic materials reacting to form a foamed plastic filling the body cavity and surrounding the wire extended through said body cavity, allowing gas to exhaust from the body cavity through vent means in the mold assembly during the reaction of the plastic materials and filling of the body cavity with foamed plastic, terminating the exhaust of gas from the body cavity and continuing the reaction of the plastic materials to increase the density of the foamed plastic in the body cavity, opening the mold assembly by separating the first plate from the second plate, and removing the foamed plastic body and wire from the mold assembly.

4. A fishing lure body made according to the method of claim 1, said lure body having a plastic body, said body having a nose and tail, a one-piece wire located along the vertical central plane of the body, said wire having a first loop projected from the nose, a second loop projected downwardly from a mid-section of the body, and a third loop projected from the tail.

4,437,258
FISHING LEADER HOLDER
Gilbert Allard, 11 McLean, Aylmer, Quebec, Canada J9H 6A4
Filed Jan. 11, 1982, Ser. No. 338,735
Claims priority, application Canada, Nov. 18, 1981, 390330
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—57.1 **5 Claims**



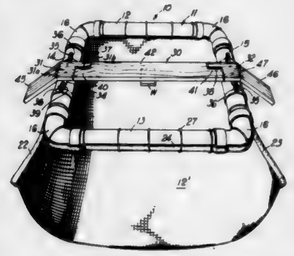
1. A fishing leader holder consisting of:

an outer cylindrical tube,

an inner cylindrical tube rotatable within the outer tube, and

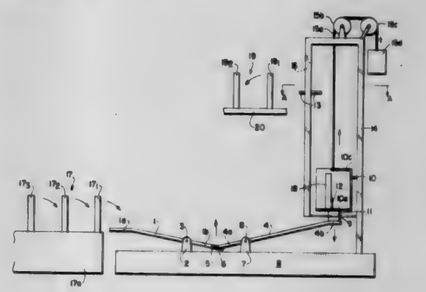
a cylindrical securement part slidable within the inner tube, the inner and outer tubes having mutually alignable slots along their lengths, and the securement part having a radially disposed projection passing through both of the slots and means on the securement part for releasably securing fishing leaders such that when the securement part is slid into the inner tube the fishing leaders are retracted into the inner tube.

4,437,259
TURTLE TRAP AND PROCESS OF TRAPPING TURTLES
Hugh K. Holyoak, Rte. #1, Alapaha, Ga. 30130
Filed May 6, 1981, Ser. No. 261,014
Int. Cl.³ A01K *69/10*
U.S. Cl. 43—105 **3 Claims**



1. A turtle trap comprising: a cage having a porous submergible portion with an open top, means for supporting said cage with said porous portion submerged in water, a trip board disposed over said open top of said cage, means for moveably supporting said trip board for pivoting to release a turtle from said trip board through said open top and into said cage, said trip board being disposed in spaced relationship above the water level of the water in said cage, and a ramp disposed adjacent one end of said trip board and protruding at an incline into the water exteriorly of said cage for providing, with said trip board, a walkway for a turtle entering the trap; hinge means connected to opposite end portions of said trip board and platforms disposed over said means for supporting said cage, said hinge means being connected respectively to said platforms for permitting pivoting of said trip board.

4,437,260
DOMINO TOPPLING TOY
Takashi Yoshida, Tokyo, Japan, assignor to Yoshida Kogeisha, Tokyo, Japan
Filed Jun. 2, 1982, Ser. No. 384,394
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—1 R **5 Claims**



1. A domino toppling toy for toppling a plurality of domino pieces in domino trains located at different vertical elevations, comprising:

a carriage for transporting at least one intermediate domino piece and adapted to move up and down;

first means for applying an upward force to move said carriage upwardly;

second means for holding said carriage at a lower position against the upward force applied to the carriage by said first means;

third means for disabling said second means to hold said carriage at said lower position; and

fourth means for stopping the upward movement of said carriage after said third means disabled the operation of said second means, whereby said third means is actuated by the last domino piece in a lower domino train, and the first domino piece in an upper elevational domino train is toppled down in response to a toppling of said at least one intermediate domino piece which is caused by a shock exerted when said fourth means stops said upward movement.

4,437,261
YO-YO WITH TWIST-RESISTANT STRING
Patrick MacCarthy, 37 Mines Park, Golden, Colo. 80401
Continuation-in-part of Ser. No. 138,729, Apr. 9, 1980, Pat. No. 4,290,224. This application Aug. 18, 1981, Ser. No. 293,797
Int. Cl.³ A63H *1/30*
U.S. Cl. 46—61 **13 Claims**

1. A toy capable of combined rotational motion about a horizontal axis and translational motion in a vertical direction, comprising:

an axel;

a first disc connected at a center point to said axel;

a second disc connected at a center point to said axel;

a twist-resistant support connected at one end to said axel at a position between said first disc and said second disc;

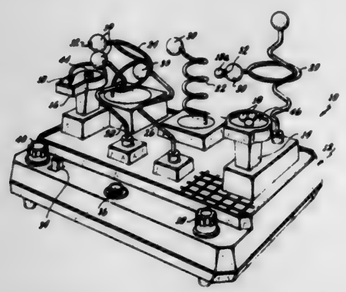
wherein said support has a twist-resistance such that a length

of said support of about 40 inches supporting a weight of about 30 grams will undergo no more than about 30 revo-



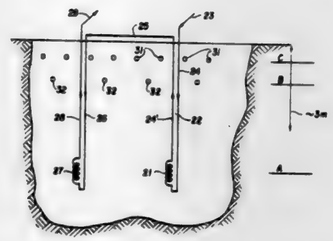
lutions of twisting when subjected to a torque of 0.5 gram inch.

4,437,262
MAGNETIC AMUSEMENT DEVICE
Takashi Kaga, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan
Filed Mar. 17, 1982, Ser. No. 359,160
Claims priority, application Japan, Mar. 18, 1981, 56-38852
Int. Cl.³ A63H 33/26
U.S. Cl. 46—242 12 Claims



1. An amusement device which comprises:
a housing;
a first magnetic member movably mounted on said housing, said first magnetic member capable of moving in a first cyclic pathway with respect to said housing;
a second magnetic member movably mounted on said housing, said second magnetic member capable of moving in a second cyclic pathway with respect to said housing;
motor means associated with said first magnetic member and said second magnetic member for continuous moving said members in their respective said pathways;
each of said first and second cyclic pathways are circular pathways and are located adjacent to one another on said housing;
the orbital speed of said first magnetic member in its pathway being greater than the orbital speed of said second magnetic member in its pathway;
said first and said second magnetic members capable of being located in association with each other at a point of association of their respective pathways;
an object formed of a ferromagnetic material so as to be attracted to and temporarily magnetically attachable to each of said magnetic members;
said object capable of being temporarily magnetically attached to one of said first or said second magnetic members as said one of said first or said second magnetic members moves in its cyclic pathway and when said first and said second magnetic members are located at said point of association said object further capable of becoming detached from said one of said first or said second magnetic members and becoming magnetically attached to the other of said first or said second magnetic member.

4,437,263
SYSTEM FOR HEAT STORAGE PARTICULARLY FOR USING IN AGRICULTURE
Aharon Nir, Rehovot; Abraham J. Amiel, Moshav Ramot Meir, and Jonathan M. Krant, Ness Ziona, all of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel
Filed Aug. 28, 1981, Ser. No. 297,363
Claims priority, application Israel, Sep. 4, 1980, 60969
Int. Cl.³ A01G 9/24, 13/06
U.S. Cl. 47—1 R 13 Claims



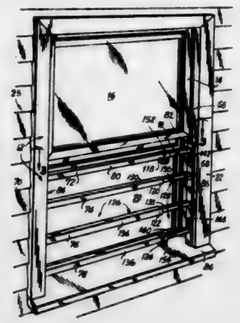
1. A system for use in agriculture for the underground storage of heat in soil and for the predetermined release of the stored heat in response to both daily and seasonal demands for the heat, comprising three stratified layers of fluid conduits located at shallow, intermediate and deepest depths below the surface of the soil, and means for circulating heated fluid through said conduits and between said conduits in said three layers.

4,437,264
HYDROPONIC APPARATUS AND METHOD
Richard S. Carlisle, P.O. Box 307, Rye, N.Y. 10580
Filed May 25, 1982, Ser. No. 368,398
Int. Cl.³ A01B 79/00; A01G 31/00
U.S. Cl. 47—58 4 Claims



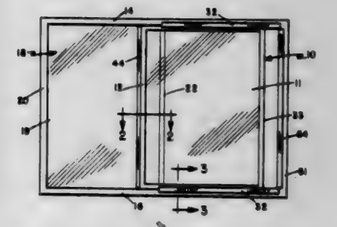
1. The method of supplying nutrient liquid to a plant growing system comprising a series of many planters that are essentially alike and that are disposed at a common level, the system including a supply line extending from a supply point to the planters in succession, including the steps of first supplying a first nutrient liquid to the supply line at the supply point under pressure so that the planters receive nutrient liquid to progressively lower levels in relation to their distances from the supply point due to attenuation of pressure along the supply line, interrupting the supply of liquid for equalizing the levels of liquid in the planters, thereafter supplying a second nutrient liquid different from the first at the supply point so that the planters receive such second nutrient liquid to progressively lower levels in relation to their distances from the supply point, and interrupting the supply of the second liquid for equalizing the levels of liquid in the planters, thereby to develop a range of different nutrient liquids in the successive planters.

4,437,265
SAFETY GUARD
Jerome Turro, 234 Spencer Pl., Riverdale, N.Y. 10471, and Peter Nelson, 2825 Schurz Ave., Bronx, N.Y. 10465
Filed Mar. 1, 1982, Ser. No. 353,283
Int. Cl.³ E06B 3/68
U.S. Cl. 49—57 1 Claim



1. A safety guard apparatus for installation into the frame of a window or the like, comprising:
first and second support elements, said elements having means for connecting said elements to said frame,
a plurality of bars having opposed ends, said ends being secured to said first and second support elements, said bars being disposed in spaced relationship and having means for adjusting said bars to a predetermined length, and
means for locking said bars to said predetermined length and preventing said length from being shortened, said means for unlocking including a means for unlocking, said means for locking being positioned on at least one of said bars,
whereby said means for locking maintains said plurality of bars at said predetermined length thus aiding in maintaining the integrity of the means for connecting said first and second support elements to said frame, said plurality of bars including
a first elongated member having one end secured to said first support element and having a receiving end, said first support element having an elongated central chamber open at said receiving end,
a second elongated member having one end joined to said second support element and having an opposed insertable end capable of being inserted into said chamber at said receiving end of said first member in sliding mating relationship, said second member being capable of being withdrawn from said first member,
whereby each of said bars may be adjusted to said predetermined length,
said first elongated member having a first cross-sectional area and said second elongated member having a second cross-sectional area, said first area being larger than said second area, said first member forming a shoulder with said first member at said receiving end, and
wherein said means for locking is mounted to said second member and positioned abutting said shoulder,
whereby said shoulder absorbs longitudinal pressure from said second member and said second member is prevented from passing farther into said chamber, and wherein said means for locking includes
a flexible sleeve portion mounted to said second member and positioned so as to abut said shoulder,
a flexible grip mounted around said sleeve portion, said grip having a longitudinal slot and two opposed flanges extending from said grip on either side of said slot, said flanges forming opposed bolt holes, one of said flanges forming a nut-gripping cavity around the bolt hole of said first flange, a nut capable of being held immobile in said cavity being positioned in said cavity, and a bolt having a threaded shaft, said shaft being positioned in said bolt holes and threaded to said nut, said bolt having a bolt head forming a keyway capable of receiving a key, said shaft being positioned in said bolt holes with said head positioned outside the flange opposite the flange holding said nut,
whereby when a key matching the keyway is inserted into the keyway and is turned in a bolt-tightening direction, the flanges of the grip are drawn together and the grip pressures the sleeve portion into pressured immobile relationship with said second member, and when the key is turned in an opposite direction, the sleeve portion is released.

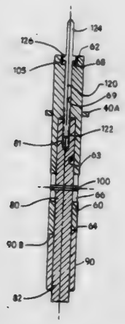
4,437,266
WEATHERSTRIPPING KIT FOR SLIDING WINDOWS
Wilbur L. Keller, 9320 Idyl Pl., Lakeside, Calif. 92040
Continuation of Ser. No. 132,694, Mar. 21, 1980, abandoned.
This application Jan. 12, 1982, Ser. No. 338,859
Int. Cl.³ E06B 7/16
U.S. Cl. 49—493 14 Claims



1. A weatherstripping kit for sliding windows that are installed within opposing window channels defined by side channel walls, for movement parallel to an adjacent stationary panel, comprising:
a first elongated weatherstripping holder for attachment to a said side channel wall for holding weatherstripping in contact with said sliding window for providing a seal between said channel wall and said window over the width of said window when said window is closed; and
a second elongated weatherstripping holder for attachment to said sliding window at the end of the window adjacent the stationary panel for holding weatherstripping in contact with said stationary panel for providing a seal between said window and said panel over the length of said window;
wherein the first elongated holder includes a flat attachment surface running the length of the first holder for engagement with said side channel wall;
wherein the first elongated holder is shaped to define a T-slot running the length of the first holder for holding weatherstripping, facing in the same direction as the flat attachment surface and extending beyond the attachment surface in said same direction for holding said weatherstripping in contact with said sliding window when the attachment surface is attached to the outside of said side channel wall;
wherein the second elongated holder includes an attachment wall having an elongated flat attachment surface on the front holder for engagement with said adjacent end of said sliding window; and
wherein the second elongated holder includes an extension wall running the length of the second holder and inclined rearwardly at an acute angle from the attachment wall; and wherein the second elongated holder is shaped at the extended end of the extension wall to define a T-slot running the length of the second holder for holding weatherstripping and facing in a direction that is ninety de-

grees from the direction faced by the attachment surface for holding said weatherstripping in contact with said stationary panel when the attachment surface is attached to the end surface of said adjacent end of said sliding window.

4,437,267
SINGLE PASS SIZING TOOL AND MACHINE INCLUDING WEAR COMPENSATION MEANS
William G. Corley, Dearborn Heights, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Feb. 24, 1982, Ser. No. 351,685
Int. Cl.³ B24B *33/00*
U.S. Cl. 51—34 R **8 Claims**



1. A single pass abrasive tool attachable to a hollow machine spindle means and useful for sizing a workpiece bore to a given diameter comprising:

a hollow tool body having a first open end adapted for insertion inside said machine spindle means and a second open end facing the workpiece bore, an arbor member slidable axially in the tool body and having a threaded end adjacent the first open end of said tool body and a tapered end adjacent said second end, abrading means carried by at least one of said tool body and arbor member having a fixed single pass cutting diameter selected to produce said given diameter during a single pass axial and rotary movement through the bore, said abrading means being radially movable with respect to the tool body in response to axial movement of the arbor member for wear compensation purposes, and a wear compensation shaft rotatable in said tool body, said shaft having a first threaded end extending into the first open end of said tool body into threaded engagement with said threaded arbor end inside said tool body and having a second driven end extending out of said first open end inside said machine spindle means for rotation therein by shaft drive means, whereby axial sliding movement can be imparted to said arbor member by rotating said wear compensation shaft to reset a worn diameter of said abrading means to the original single pass cutting diameter.

4,437,268
BEVELING APPARATUS
Gaetano Righetti, Pesaro, Italy, assignor to Hoyne Industries, Inc., Rolling Meadows, Ill.
Division of Ser. No. 167,207, Jul. 9, 1980, Pat. No. 4,375,141. This application Sep. 29, 1982, Ser. No. 428,108
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—327 **4 Claims**

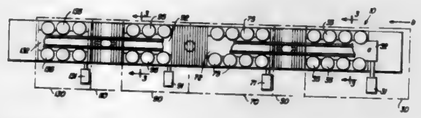
1. A method for grinding the edges of a workpiece having at least two pairs of parallel sides comprising:

conveying the workpiece through a series of sequential work stations;

grinding the edges of a first pair of parallel sides of the workpiece positioned parallel to the direction in which the workpiece is transported as the workpiece is conveyed through a work station;

lifting the workpiece from the means for conveying, rotating the workpiece to a position a second pair of parallel sides in a direction parallel to the direction in which the workpiece is transported, and lowering the workpiece back down to the means for conveying;

grinding the edges of the second pair of parallel sides of the workpiece positioned parallel to the direction in which



the workpiece is transported as the workpiece is conveyed through a work station;

polishing the edges of the second pair of parallel sides of the workpiece as it passes through a work station;

lifting the workpiece from the means for conveying, rotating the workpiece to position the first pair of parallel sides in a direction parallel to the direction in which the workpiece is transported, and lowering the workpiece back down to the means for conveying; and

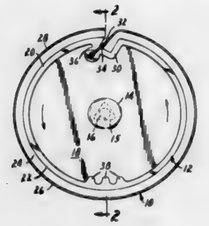
polishing the edges of the first pair of parallel sides of the workpiece as it passes through a work station.

4,437,269
ABRASIVE AND POLISHING SHEETS
George Shaw, Saffron Walden, England, assignor to S.I.A.C.O. Limited, Saffron Walden, England
Filed Aug. 5, 1980, Ser. No. 175,586
Claims priority, application United Kingdom, Aug. 17, 1979, 7928717; Jun. 16, 1980, 8018597
Int. Cl.³ B24D *11/02*
U.S. Cl. 51—358 **15 Claims**



8. An abrasive system including a pad adapted to be connected to a sanding tool, and an abrasive sheet arranged to be removably secured to the pad; the abrasive sheet comprising a backing layer carrying an abrasive on one side thereof with a textile material being adhered to an opposite side thereof, said textile material being made from woven or knitted yarn having filament loops or curls extending from its surface remote from the backing layer; and the pad having a woven fabric base layer which retains rows of spaced loop-engaging or curl-engaging members in the form of monofilament stalks having unhooked ends which extend in different inclined directions from the base layer for releasable securing engagement with the loops or curls of the textile material.

4,437,270
ABRADING TOOL
Warren L. Langstraat, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 123,448, Feb. 21, 1980, abandoned, which is a continuation of Ser. No. 914,197, Jun. 12, 1978, abandoned. This application Jun. 21, 1982, Ser. No. 390,748
Int. Cl.³ B24B *17/00*
U.S. Cl. 51—364 **5 Claims**



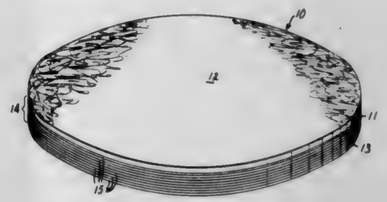
1. In combination, a length of finishing material coated with pressure-sensitive adhesive and having opposite terminal end portions, and an abrading tool, said tool comprising:

a wheel of a firm material having an axis, a rim having a cylindrical outer surface, surfaces fixed relative to said wheel defining an axially extending slot transverse of and opening through said rim, said slot including inner and outer portions with said inner portion being narrower than said outer portion and being defined by parallel opposed surfaces fixed relative to said wheel and spaced to closely receive one of said terminal end portions of said length of finishing material therebetween while affording movement of said terminal end portion into and out of said inner portion, said wheel including means adapted for engagement by a drive assembly to rotate said wheel about said axis in a first direction; and

a support strip of elastic, resilient cellular material having a thickness of over 0.3 centimeter, a compression-deflection reading of up to 90 kilopascals, first and second ends, a leading end portion including said first end, a major portion including said second end, a skin layer having a contact surface with a surface pattern adapted for releasable engagement with the pressure-sensitive adhesive on said length of finishing material, and a surface opposite said contact surface fixed to said wheel with said major portion extending around said cylindrical surface, said second end adjacent said slot, and said leading end portion in the outer portion of said slot; the contact surface on said leading end portion being disposed at an obtuse angle with respect to the adjacent contact surface on said major portion, being disposed at an angle with respect to a radius of said wheel of between 10 to 35 degrees, and being spaced from the adjacent surface of said wheel defining the outer portion of said slot to provide clearance for the end portion of a said length of finishing material;

said length of finishing material being adhered to said contact surface by said pressure-sensitive adhesive with one of said terminal end portions projecting into the inner portion of said slot, said inner portion of said slot being disposed at a greater angle with respect to the radius of the wheel than the contact surface on the leading end portion of said strip to direct and press the adhesive coating on the strip of finishing material into firm engagement with the contact surface on said leading end portion of said support strip, and adhesion of the pressure-sensitive adhesive on said finishing material to said contact surface and one of said opposed surfaces defining the inner portion of said slot providing the only means for attaching said length of finishing material to said tool.

4,437,271
SURFACE TREATING PAD HAVING A RENEWABLE SURFACE
Thomas R. McAvoy, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 14, 1979, Ser. No. 20,314
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—400 **6 Claims**

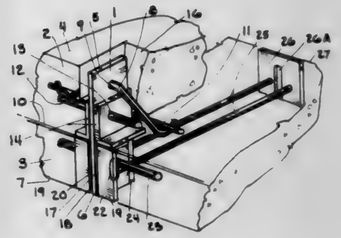


1. A layered surface treating pad having a plurality of renewable working surfaces comprising in combination:

(1) a base layer which is about 3 mm to about 13 mm thick and which has a top substantially flat face and a bottom substantially flat face; and

(2) a stack comprising a plurality of thin layers of lofty nonwoven abrasive material adhesively removably fastened to said bottom substantially flat face, each layer of said stack having a thickness in the range of about 0.5 mm to about 20 mm, said layers being adhesively removably fastened to each other in said stack such that a force required to delaminate said layers in use is on the order of 9 to 450 grams per 25 mm width, said base layer and said stack providing a unitary layered pad which is capable of maintaining such unity during use and which permits each thin layer to be easily separated therefrom to expose a fresh treating surface of the next layer, when desired, without damage to the remainder of the pad.

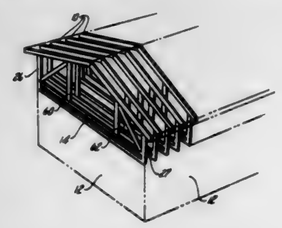
4,437,272
INSERT FOR FOLDABLE CONCRETE BUILDING CONSTRUCTION WITH PIVOT CONNECTIONS, INTEGRAL LIFTING BAR, AND BUILDING HEIGHT CONTROL BAR
Delp W. Johnson, 240 Oakview Dr., San Carlos, Calif. 94070
Filed Jan. 28, 1982, Ser. No. 343,438
Int. Cl.³ E04B *1/344, 1/35;* E04G *21/14*
U.S. Cl. 52—64 **9 Claims**



1. An insert device for hingeably connecting an overlying ceiling slab to an underlying wall slab in folding slab constructed buildings, which device, simultaneously with a lifting operation, articulates a supporting anchor located at the top edge of said wall, into position to receive a bearing anchor in said ceiling slab, and the portion of said device within the thickness of said ceiling slab, transfers the vertical loads from upper modules to lower modules in said building, said device comprising:

a flat bar extending vertically through said overlying ceiling slab, down into a clearance notch in the hinged edge of said underlying wall slab, said flat bar positioned perpendicular to and adjacent to said hinged edge; and in addition, a shaped bar extending through the upper portion of said flat bar, said shaped bar extending horizontally thru said flat bar, and thence downward from sides of said flat bar to a location near the lower surface of said overlying slab; and said shaped bar there terminating in a hook, and said hook engages reinforcing bars in said overlying slab; and in addition, a pivot bar embedded at the mid thickness of said underlying wall slab, extends thru a vertical slotted hole in said flat bar, and said slotted hole extending downward toward the bottom end of said flat bar, and the overall length of said slotted hole being at least enough to permit said pivot bar to move away from said overlying slab, the distance required to permit the said hinged edge of said underlying wall slab to rotate freely under the lower surface of said overlying slab when said overlying slab is elevated; and in addition, an access notch is formed in upper portion of said overlying slab, adjacent to said flat bar, and said access notch is of such size and position to provide access to attach a lifting connection to said shaped bar adjacent to said flat bar; and in addition, at least one support anchor within said underlying wall slab, said support anchor engaging said pivot bar with a slip fit hole, and said support anchor positioned flat against the side of said flat bar, and one edge of said support anchor being coplanar with the said hinged edge of said underlying wall slab; and said support anchor is secured to at least one reinforcing bar in said underlying wall slab; and in addition at least one bearing anchor within said overlying ceiling slab, said bearing anchor positioned flat against the side of said flat bar, and said bearing anchor being secured to said flat bar by at least one bar extending thru said flat bar and said bearing anchor; and one edge of said bearing anchor being coplanar with the lower surface of said overlying slab, and in an erected position, said bearing anchor resting on said support anchor.

4,437,273
TRUSS CONSTRUCTION
Robert Helfman, Brighton, Mich. 48116
Continuation-in-part of Ser. No. 254,535, Apr. 15, 1981. This application Jun. 29, 1981, Ser. No. 278,726
Int. Cl.³ E04B 7/02
U.S. Cl. 52—93 **4 Claims**



1. A truss system for constructing the frame for an upper level of a dwelling comprising:

a plurality of preassembled planar and rigid trusses, said trusses being spaced apart and lying in substantially parallel planes,

at least two adjacent trusses of said plurality of trusses being substantially identical to each other, said at least two adjacent trusses each comprising:

an elongated floor joist, said joist comprising a pair of elongated spaced and parallel floor studs and a plurality of cross braces extending between and secured to said floor studs,

a pair of elongated outer wall framing members, each outer wall framing member secured at one end to opposite ends of the floor framing members so that said outer wall framing members are spaced apart and parallel to each other, each outer wall framing member having a length equal to substantially one half of the height of a convential living space,

a peaked roof support extending between and secured to the other ends of the outer wall framing members

a horizontally extending ceiling stud secured to said roof support at a position intermediate the ends of the roof support and so that said ceiling stud is spaced upwardly from the floor joist by an amount equal to the height of a conventional living space, said ceiling stud forming a frame for a subsequent horizontal extending ceiling wall partition, and

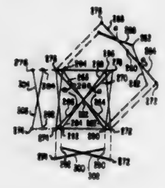
a first and second vertically extending inner wall studs, said inner wall studs having one end secured to said floor joist and their other ends secured to said roof support at a position spaced inwardly from one outer wall framing member so that said other end of said first inner wall stud intersects said roof support at a position closely adjacent to one end of said ceiling stud and so that said other end of said second inner wall stud intersects said roof support at a position closely adjacent to the other end of said ceiling stud, said inner wall studs forming a frame for subsequent vertically extending wall partitions, said inner wall studs, said ceiling stud and said floor joists together forming a substantially rectangular area having a height equal to the height of a conventional living space.

4,437,274
BUILDING PANEL
Donald H. Slocum, Villa Park; Albert W. Schairbaum, St. Charles, and William M. Curtis, Genoa, all of Ill., assignors to Masonite Corporation, Chicago, Ill.
Filed May 3, 1982, Ser. No. 374,166
Int. Cl.³ E04D 1/00
U.S. Cl. 52—105 **11 Claims**



1. A unitary building panel formed of composite wood fibrous material having generally parallel, inner and outer faces outlined by opposite ends and by upper and lower edges, said opposite ends of said panel adapted to closely face the end of an adjacent panel in the same course, said outer face having a large lower portion adapted for exposure to the weather with a substantially greater surface area than a narrow upper surface portion having a relatively smaller, substantially planar, surface area adapted to underlie a generally planar lower portion of the inner face of one or more of said panels laid up in a next higher course, said lower surface area of said outer face being deeply embossed to resemble a plurality of shingle-like elements laid up in a common course with each of said shingle like elements separated from an adjacent element by a groove tapered from a shallow depth adjacent an upper end adjacent said narrow upper surface portion toward a maximum depth opening into said lower edge of said panel, one of said opposite ends having a laterally outwardly projecting integral spacer adjacent an end of said smaller narrow upper surface portion extending laterally outwardly from said one of said opposite ends to provide an expansion space of a width generally similar to the width of said grooves between a lower portion of said one end and an adjacent end of an adjacent panel positioned in the same course.

4,437,275
COLLAPSIBLE SELF-SUPPORTING STRUCTURES
Theodore R. Zeigler, Oxon Hill, Md., assignor to Nomadic Structures, Inc., Alexandria, Va.
Division of Ser. No. 45,246, Jun. 4, 1979, Pat. No. 4,290,244, which is a continuation of Ser. No. 919,131, Jun. 26, 1978, abandoned, which is a continuation of Ser. No. 763,701, Jan. 28, 1977, abandoned, which is a division of Ser. No. 704,811, Jul. 13, 1976, Pat. No. 4,026,313. This application Aug. 7, 1981, Ser. No. 291,067
The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.
Int. Cl.³ E04H 12/18
U.S. Cl. 52—109 **18 Claims**



1. A plurality of assemblies of crossed rod elements for forming a self-supporting structure, said assembly comprising, in combination:

a first series of at least three rod elements pivotally connected at their inner ends to define a central inner apical point and lying substantially in a common plane;

a second series of at least three rod elements pivotally interconnected at their inner ends to define a central outer apical point which is in spaced registry with said central inner apical point;

the outer ends of said first series of rod elements defining further outer apical points and the outer ends of said second series of rod elements defining further inner apical points, said further outer apical points defining the corners of a polygon having a pair of opposite, parallel sides; and

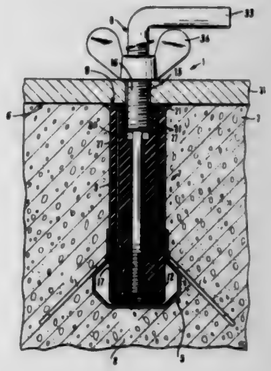
said first and second series of rod elements being disposed in crossed relations such that the two inner further apical points on each one of said pair of opposite, parallel sides are more closely spaced than the corresponding outer further apical points but with the inner further apical points on the remaining sides being spaced the same as the corresponding outer further apical points arranged in interconnected relation with alternate rows of said central outer apical points lying on the same side of the structure while the remainder of the rows of the central outer apical points lie on the opposite side of the structure, and with said opposite, parallel sides in parallel relation whereby to define a flat structure.

4,437,276
METHOD AND DEVICE FOR THE PERFORMANCE OF A SUPPORTING FUNCTION IN A PASSAGE
Jurgen Goldberg, Mittelweg 15, D-7801 Umkirch, Fed. Rep. of Germany
Filed Sep. 29, 1981, Ser. No. 307,082
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037177
Int. Cl.³ E04B 1/41
U.S. Cl. 52—125.5 **49 Claims**

1. A device for peforming a supporting function in a passage having an open end of predetermined cross-sectional area comprising:

(a) a plug which is expandable to said predetermined cross-sectional area and contractible to a lesser cross-sectional area, said plug having an outer end which is adapted to be located in the region of the open end of the passage and an inner end which is adapted to be located internally of the passage;

(b) an adjusting member for adjusting the cross-sectional area of said plug, said adjusting member engaging said plug in the regions of said outer and inner ends and being operative to lengthen and shorten said plug in axial direction thereof to thereby respectively reduce and increase the cross-sectional area of said plug, and said adjusting member having threaded portions in the regions of said outer and inner ends; and



(c) threaded sleeves arranged in the regions of said outer and inner ends and receiving respective ones of said threaded portions, said threaded portions and threaded sleeves being designed in such a manner that a predetermined rotation of said adjusting member causes said threaded portions to advance by different amounts, and the respective sets of threaded portions and threaded sleeves having different thread diameters.

4,437,277
Patent Not Issued For This Number

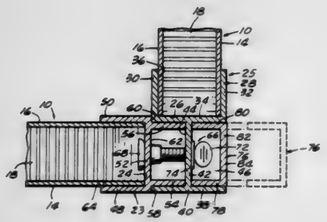
4,437,278
WALL PARTITION LOCKING SYSTEM
Donald K. Thomas, Jr., 1710 Laurel St., Pasadena, Calif. 91030
Filed Feb. 22, 1982, Ser. No. 350,821
Int. Cl.³ B21B 31/08; B21C 1/04, 1/12
U.S. Cl. 52—239 **7 Claims**

1. A locking system for uniting two modular wall partitions normal to each other wherein each partition includes vertical end portions two spaced panels each respectively forming outer and inner wall surfaces, spacer means to maintain said panels in spaced relationship, said locking system comprising:

an elongated first frame member generally H shaped in

cross-section having a coplaner wall partition receiving inner and outer channel formed by a pair of spaced parallel legs, said channels divided by a cross member extending between said legs and said legs of said outer channel extending around one of said end portions and engaging the outer and inner wall surfaces of a first wall partition;

an elongated second frame member which includes a generally U shaped portion in cross section forming a wall partition receiving channel for a second wall partition normal to said first wall partition, said U shaped portion formed by a pair of spaced parallel legs and including a base member, and said legs of said outer channel extending around one of said end portions and engaging the outer and inner wall surfaces of said second of said partitions,



said second frame member also includes a generally T shaped portion in cross section projecting from said base member forming a coplaner inner and outer channel between said base member and the top of said T with the plane of said channels running normal to the plane of said wall receiving channel of U shaped portion;

a portion of said elongated first frame member adapted to frictionally interfit within a portion of second frame member; and

removable locking means including a portion in said first elongated frame member and a portion in said second elongated frame member which when united will draw said frame member toward each other and maintain the first and second partitions in interlocked relationship one normal to the other.

4,437,279

THERMALLY INSULATED TANK STRUCTURE AND METHOD FOR FORMING THE SAME

John E. Macaleese, Watertown, N.Y., assignor to Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,246
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—247 **17 Claims**

16. A thermally insulated tank structure secured to a foundation comprising a tank sidewall secured to the foundation and defining an enclosed tank chamber, said tank sidewall including an outer layer formed from superimposed courses of elongated planks of urethane thermal insulating material, said courses of planks being joined together by adhesive and vertically disposed pins which extend into the planks in adjacent courses, the course of planks in contact with said foundation being joined end to end by adhesive and horizontally disposed pins extending into the ends of adjacent planks, the outer surface of said outer layer being coated with a layer of hard,



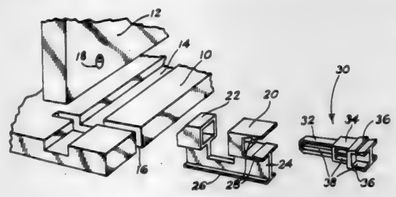
waterproof material formed of fiber filled mortar, an inner layer extending in substantially parallel spaced relationship to said outer layer, said inner layer being formed from blocks of refractory material, said refractory material being formed by ceramic tile joined by mortar joints, and a reinforced concrete core completely filling the space between said inner and outer layers and being adhered thereto.

4,437,280

CABINET PANEL CONNECTOR

David L. Collier, 255 NW. 96th Ave., Portland, Oreg. 97229

Filed Aug. 27, 1981, Ser. No. 296,891
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—285 **11 Claims**



1. In combination with a pair of panels to be connected together, one panel provided with a mounting slot extending inwardly from one side edge thereof and the second panel provided with a locking bore, a panel connector comprising:

(a) a body member,

(b) a base member connected integrally to and projecting from said body member, the base member configured to slidably enter said mounting slot from said one side edge, with the body member projecting from the surface of said one panel facing said second panel, the base member also configured to engage said one panel to secure the base member and body member against movement in the direction of the surface of said one panel facing said second panel,

(c) a locking pin associated with said body member arranged to intercept said bore in the second panel and thereby lockably interconnect said second panel and the body member secured to said one panel, and

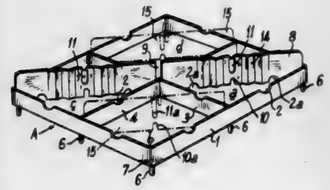
(d) second panel support means on the one panel arranged to engage the side of the second panel opposite said body member to prevent movement of the second panel away from the body member and disengagement from the locking pin.

4,437,281

WALL CONSTRUCTION PREFABRICATED FROM SELF-CONNECTABLE ELEMENTS

Jacques L. A. See, Neuilly-sur-Seine, and Sylvain V. L. Chevanne, Themericourt, both of France, assignors to Honeycomb Panels Patents Association Inc., Malibu, Calif.

Filed Feb. 2, 1982, Ser. No. 345,136
Claims priority, application France, Feb. 3, 1981, 81 02036
Int. Cl.³ E04C *1/00*
U.S. Cl. 52—309.1 **9 Claims**



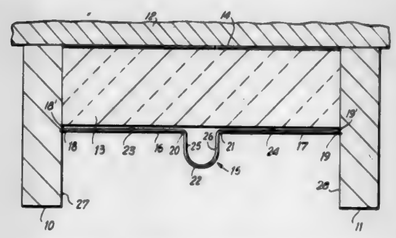
1. A wall construction prefabricated from self-connectable elements divided each into four compartments by cross-pieces and each comprising ribs forming diagonals, characterized by first and second hollow elements, the first hollow element comprising a square frame forming also cross-pieces and diagonal ribs, said hollow element having on one side protruding fingers for cooperating with a facing plate formed with holes corresponding to the protruding fingers, the diagonal ribs protruding on other side of the frame and being each formed with a least one notch complementary to that of the similar diagonal ribs carried by the second element, the second element being made in the same manner as the first element but closed on its side opposite to that from which protrude the diagonal ribs so that said second element forms a facing surface.

4,437,282

INSULATION SUPPORT HANGER

Michael B. O'Brien, 23 Shelburne Rd., Yonkers, N.Y. 10710

Filed Jun. 7, 1982, Ser. No. 386,190
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—407 **2 Claims**



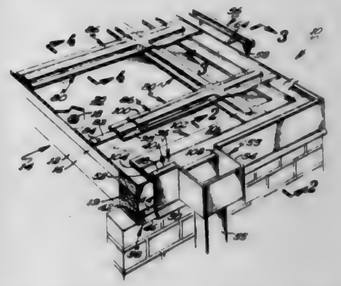
1. An insulation hanger device adapted to be applied by one-handed operation of an installer into mounted position between opposed parallel wooden surfaces, such as the surfaces of adjacent studs or joists, comprising an integral length of resilient metallic bar stock material, said material being bent to define a central bight or loop portion defining an expansion member generally U-shaped in plan and including spaced, generally parallel legs, the spacing between said legs being such as to permit the same to be squeezed toward each other by the hand of an installer, a linear rod member extending outwardly from the end of each said leg, said rod members being in co-axial alignment, the distal ends of said rod members defining sharpened points, the combination including retainer portions defined by metallic members affixed to said rod members in the area between said legs and points, said retainer portion metallic members being disposed perpendicular to the plane of said bight, the spacing of said distal end portions being variably responsive to compression and release to an expanded condition of said central expansion member.

4,437,283

SINGLE-PLY ROOFING SYSTEM

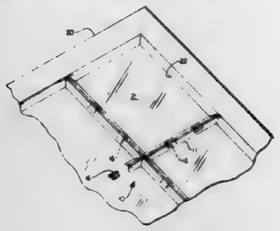
Louis J. Benoit, 1893 Highland Pkwy., St. Paul, Minn. 55116

Continuation-in-part of Ser. No. 358,175, Mar. 15, 1982. This application Sep. 30, 1982, Ser. No. 432,033
Int. Cl.³ E04B *5/00*
U.S. Cl. 52—410 **12 Claims**



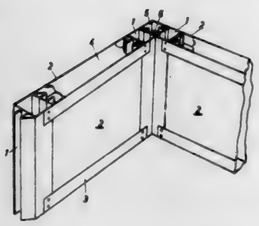
1. Roofing system sealing member for use in a roofing system having a roof covering sheet formed of a material and having a length and a width, comprising, in combination: a covering member formed from a material, with the material being sufficiently flexible to allow its application over irregular shapes and being able to withstand the expansion and contraction of the roof, with the covering member having a longitudinal length dimension and a first edge and a second edge defining a lateral width dimension therebetween, with the lateral width dimension being substantially less than the width of the roof covering sheet; a tape having sufficient flexibility to allow its application over irregular shapes and able to withstand the expansion and contraction of the roof and the roof sheet, with the tape having a longitudinal length dimension and a first edge and a second edge defining a lateral width dimension therebetween, with the width of the tape being larger than the width of the covering member and being substantially less than the width of the roof covering sheet, and with the tape having a first surface adhered to the covering member with the first edge of the covering member being located laterally inwardly of the first edge of the tape forming a first sealing edge and with the second edge of the covering member being located laterally inwardly of the second edge of the tape forming a second sealing edge, and with the tape having a second, exposed surface for adherence to the roof sheet; with the tape being fabricated with the covering member as a composite unit off the job site allowing its efficient manufacture and installation; wherein when a first composite roofing system sealing member intersects with a second composite roofing system sealing member to form troughs, the first and second sealing edges formed by the tape which extend beyond the covering member and the covering member of the first sealing member adhere to the roof sheet adhering surface of the tape of the second sealing member to act as seam sealers in the troughs created at the intersection of the roofing system sealing members.

4,437,284
SNAP-ON FALSE MUNTIN SYSTEM
James T. Cribben, Mechanicsburg, and William J. Ichter, Camp Hill, both of Pa., assignors to Capitol Products Corporation, Mechanicsburg, Pa.
Filed Aug. 4, 1980, Ser. No. 175,127
Int. Cl.³ E06B 3/70
U.S. Cl. 52—456 8 Claims



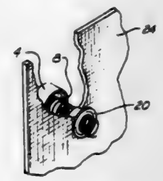
1. A false muntin assembly for a window having a peripheral sash, a glazing pane with a single light and a glazing bead holding said glazing pane in position in said sash comprising (a) an extruded false muntin bar having a central hole and channel extending into the hole from the back side of said bar and at its apex slightly narrower than the diameter of said central hole, said bar being shaped at its end to fit either the glazing bead or an intersection with another said bar, (b) a pin connector disposed in the central hole of the ends of said bar for connection of said bar with either the glazing bead or another said bar at an intersection, and (c) a metal clip having a head, two angularly spaced-apart legs projecting therefrom, each leg ending in a flange, said clip being adapted to snap-fit its head in the channel and central hole of said bar whereby said pin connector and clip can be snapped on in substantially the same manner so that when said clip is adhered to the glazing panel in proper alignment said false muntin assembly is releasably attached thereto and forms a multi-light effect.

4,437,285
BUILDING STRUCTURE
Inge Anderson, and Ronny Johansson, both of Pl. 3322 B, Åsklosters, Sweden 430 21
This PCT application filed Apr. 27, 1981, Ser. No. 336,358
Claims priority, application Sweden, Apr. 29, 1980, 8003222
PCT No. PCT/SE 81/00127, § 371 Date Dec. 22, 1981, § 102(e) Date Dec. 22, 1981, PCT Pub. No. WO 81/03194, PCT Pub. Date Nov. 12, 1981
Int. Cl.³ A47F 5/00; E04B 2/60
U.S. Cl. 52—481 6 Claims



1. A building structure incorporating a framework of vertical posts, interconnected by base members and head members and with separate wall panels fitted in the spaces between the posts, base members and headmembers, comprising each post has an approximately H-shaped cross-section having legs and a web between the legs forming oppositely disposed grooves, the outer face of each leg is inclined inwardly, each base member and head member is provided with a groove facing towards the center of the framework, the grooves between the legs of the posts facing toward said center, the outer faces of the portions of the base and head members adjacent the grooves are inclined to extend parallel to said inclined faces of said posts, and said wall panels are thin walled panel sections having inturned flanges along all edges inclined to correspond with the respective inclined surfaces of the posts, base members and head members, said flanges at their outer edges being provided with folded back lip portions which engage with a snap-fit in the grooves of the respective posts, base members and head members.

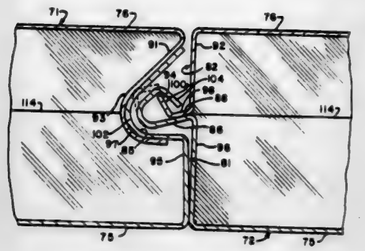
4,437,286
MODULAR WALL PANEL FASTENER ASSEMBLY
Paul R. Maguire, Los Angeles, Calif., assignor to Pleion Corporation, Santa Ana, Calif.
Filed Feb. 22, 1982, Ser. No. 351,181
Int. Cl.³ E04B 1/38
U.S. Cl. 52—506 17 Claims



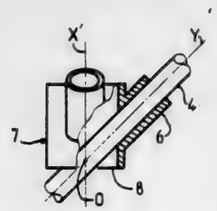
1. A modular wall panel fastener assembly for securing accessory items to a fibrous compressible panel member with a flexible cover comprising:
a mounting base having a cavity;
an open loop helical penetrating member secured at one end to, and extending from, the mounting base cavity to terminate in a relatively sharp tip for penetrating the flexible cover of the panel member with a minimum of damage, the loops of the helical member being embedded in the fibrous panel member; and
a grommet member having a base with an opening and a hollow tubular projecting member extending from the base to provide an opening extending through the grommet member, the projecting member is of a configuration that is capable of extending within the mounting base cavity depending on the thickness of the accessory item, the penetrating member being diametrically smaller than the tubular projecting member and rotatable relative therein for a guiding insertion through the grommet member opening into the panel member.

4,437,287
CEILING PANEL
Thomas C. Halfaker, Tupelo, Miss., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Feb. 25, 1982, Ser. No. 352,190
Int. Cl.³ E04B 1/82, 1/38, 1/74
U.S. Cl. 52—588 5 Claims

1. In a ceiling comprised of rectangular metal ceiling panels having a face panel and a back panel spaced from one another, the side and end margins of each said face and back panel being defined by the bend of a lip integral with said panel, the lips of said back and face panels being joined to form side and end walls connecting said face and back panels, the improvement comprising each end margin of said back panel's extending beyond the end margin of said face panel along the said end wall, the end lip of said back panel extending in a direction toward said face panel and the end lip of said face panel along said end margin being bent upwardly and then outboardly to form a channel bottom, thence toward said face panel at an obtuse angle with respect to said channel bottom to define an outboardly tending channel wall, thence toward said back panel to face-to-face engagement with said back panel end lip.



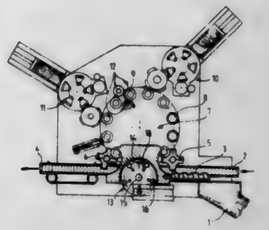
4,437,288
LATTICE-TYPE STRUCTURE, PARTICULARLY MAST SUPPORT OF ANTENNA
Yves Foissac, and Frederic N. B. Hung, both of Saint Amand les Eaux, France, assignors to Laborstoire d'Etudes et de Recherches Chimiques L.E.R.C., France
Filed Nov. 23, 1981, Ser. No. 323,674
Claims priority, application France, Dec. 1, 1980, 80 25454
Int. Cl.³ E04H 12/00
U.S. Cl. 52—637 7 Claims



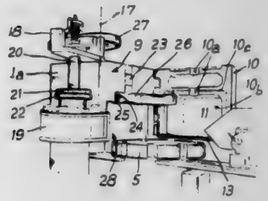
1. A lattice type structure, which comprises:
(a) a plurality of cylindrical, continuous uprights disposed in parallel like the parallel edges of a regular prism, and
(b) a plurality of rigid reinforcing panels connecting in two's said uprights,
(c) said panels comprising at least one pair of cylindrical sleeves having integral open socket means for holding reinforcing crosspieces, said sleeves having planar end faces with said uprights passing through said sleeves and said faces; the inner diameter of said sleeve being larger than the inner diameter of the socket means and the intersection of the axis of the socket means and the axis of said sleeve being at or near the intersection of one of said end faces with said sleeve axis, whereby reinforcing crosspieces may be inserted through said one end face, into said sleeve and thence into and through a said socket means; and reinforcing crosspieces engaged in said socket means for connecting said pair of sleeves together.

4,437,289
AUTOMATIC MACHINE FOR CAPPING AND LABELLING BOTTLES OR LIKE CONTAINERS
Jean Bodin, Bordeaux, France, assignor to Etablissements Larriendodin "La Girondine", Le Bouscat, France
Filed Nov. 2, 1981, Ser. No. 317,314
Claims priority, application France, Nov. 7, 1980, 80 23821
Int. Cl.³ B67B 5/00; B65B 7/28, 61/00
U.S. Cl. 53—64 5 Claims

1. Machine for automatically capping and labelling bottles or like containers comprising, a machine frame, labelling means mounted on the frame for applying labels to the bottle, capping means mounted on the frame for applying caps on the bottle, bottle support means mounted on the frame, bottle feeding means for feeding bottles successively onto said bottle support means and removing said bottles therefrom, means for conveying said bottle support means to a labelling position adjacent said labelling means and under said capping means, cap support means mounted on said frame, cap feeding means for successively feeding said caps to said cap support means, cap orienting means mounted on said frame for orienting said cap support means having caps thereon with respect to a predetermined position, cap holding means mounted on said frame for engaging and holding a cap in the oriented position and conveying it to a bottle on said support means and depositing the cap onto said bottle, and power drive means for synchronously driving the above said means.



4,437,290
MACHINE FOR CRIMPING IN A CONTROLLED ATMOSPHERE
Jean-Charles Marchadour, La Feuillerais, Kerbascol, St Jean Trolimon, France (29120 Pont l'Abbe)
Filed Oct. 16, 1981, Ser. No. 312,304
Claims priority, application France, Oct. 17, 1980, 80 22241
Int. Cl.³ B65B 31/02
U.S. Cl. 53—97 4 Claims



1. In a machine for crimping sub-assemblies in a controlled atmosphere, comprised of a frame forming support for a crimping head rotated about a vertical axis and for a device for supplying and evacuating the sub-assemblies to be assembled, moving in a plane substantially perpendicular to the said axis and partly beneath said head, said device and the frame cooperating to form an enclosure surrounding the crimping head and a source of vacuum or of neutral gas connected to said enclosure, the said enclosure being shaped at least for part in an element of the frame mobile with respect to the fixed remainder of the frame,
means for pivotally mounting said element on said frame about a lateral axis parallel to the axis of rotation of the crimping head forming a door to be closed in tight manner on a front surface of join arranged on said fixed frame, and
the said crimping head is mounted to rotate in a support, means for pivotally mounting said support to the frame to pivot out of the enclosure about a lateral axis parallel to

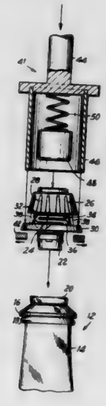
and transversely opposite the pivot axis of said door and on opposite side of said crimping head axis, said support comprising a bracket for supporting the crimping head for its positioning in or pivoting out of said enclosure.

4,437,291

METHOD AND APPARATUS FOR STOPPERING MODIFIED BOTTLES WITH A ONE-PIECE CORKING MEANS

Efim Zaitsman, Brooklyn, N.Y., assignor to Monarch Wine Co., Inc., Brooklyn, N.Y.

Division of Ser. No. 223,894, Jan. 9, 1981, abandoned. This application Apr. 16, 1982, Ser. No. 369,191
Int. Cl.³ B67B *1/04, 3/22, 7/20*
U.S. Cl. 53—319 **2 Claims**



1. An apparatus for stoppering a bottle having an elongated neck portion with a mouth and an annular flange thereon near the mouth, utilizing a molded one-piece elastomeric corking means having an elongated, generally circular cylindrical stopper, insertable with frictional engagement into the mouth of the bottle, a head connected to the stopper, an annular circumferential ring positioned and spaced below the head as molded and being concentric with the stopper, the internal diameter of said ring being slightly smaller than the external diameter of said annular flange on the bottle, a flexible elongated tether having one end connected to the ring and the other end connected to the head for joining said ring to said head, the tether being in a folded state as molded and having a length substantially greater than the distance between said one end and said other end in the folded state of the tether, the tether in its folded state not extending away from the axis of the stopper by a distance greater than the radius of the ring, the tether being long enough to permit the cork to be withdrawn from the mouth of the bottle while the tether is unfolded and while the ring is captive on the bottle and to move far enough away from said mouth to permit pouring of the liquid contents from the bottle, and at least one short frangible bridge connecting the folded tether to another element of the corking means, said stoppering apparatus comprising:

(a) means for holding the corking means in alignment and orientation above the mouth of an open bottle for stoppering of said bottle;

(b) means for driving the stopper into the mouth of the bottle and for lowering the ring toward but not over the flange on the bottle; and

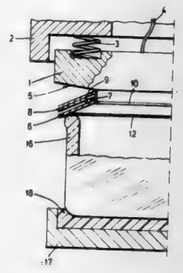
(c) means for thereafter forcing the ring downwardly over the annular flange causing the ring first to expand as it passes over the flange and then to constrict after it has passed the flange and causing at least one frangible bridge to break, thereby releasing the tether to permit the stopper to move away from the mouth of the bottle except for the connection of one end of the tether to the head and the other end of the tether to the ring.

4,437,292

APPARATUS FOR SEALING CONTAINERS

Hermann Buri, and Beat Karth, both of Kirchberg, Switzerland, assignors to Nyffeler, Corti AG, Berne, Switzerland

Filed May 11, 1981, Ser. No. 262,699
Claims priority, application Fed. Rep. of Germany, May 23, 1980, 8014020[U]
Int. Cl.³ B67B *7/28*
U.S. Cl. 53—357 **7 Claims**



1. Apparatus for sealing a thin cover coated with thermoplastic material to a rim of a container, of the type comprising a heatable sealing head and a resiliently yielding pressing member together adapted for transmitting pressure and heat to said cover, said pressing member including two or more superposed cup springs having radially inner portions fixed to said sealing head and radially outer portions, said cup springs having a relaxed state in which said springs are conically disposed with said radially outer portions being spaced axially outwardly of said sealing head, wherein the improvement comprises:

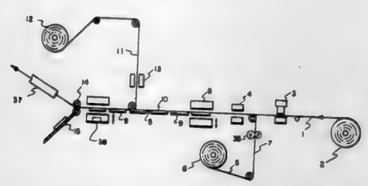
a spacer piece disposed between said radially inner portions of the one of said cup springs remotest from said sealing head and of at least another one of said cup springs, said spacer piece having a smaller outside diameter than said one of said cup springs, whereby a clearance space is created between said cup springs.

4,437,293

METHOD AND APPARATUS FOR MAKING A RECLOSABLE PACKAGE

Philip A. Sanborn, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Continuation-in-part of Ser. No. 65,300, Aug. 9, 1979, Pat. No. 4,240,241. This application Nov. 6, 1980, Ser. No. 204,440
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.³ B65B *31/02, 61/18*
U.S. Cl. 53—412 **2 Claims**



1. A method for making a reclosable package from thermoplastic materials comprising the steps of:

(a) providing a formable web, a covering web, and a closure strip;

(b) forming a cavity with a peripheral flange in said forming web so that said closure strip remains on a portion of said peripheral flange;

(c) advancing the forming web and closure strip towards each other;

(d) sealing the lower surface of the closure strip to the forming web longitudinally in the direction of travel of the forming web;

(e) indenting a portion of said closure strip by the application of heat and pressure at intervals spaced apart by approximately the desired length of the package;

(f) placing a product in said cavity;

(g) covering said product with said covering web;

(h) evacuating the space between said webs;

(i) sealing the webs together with longitudinal and transverse seals, one longitudinal seal being adjacent and parallel to but spaced apart from the closure strip with the closure strip within the periphery of the seals, and the transverse seals being made across the closure strip where a portion of the strip had been indented; and

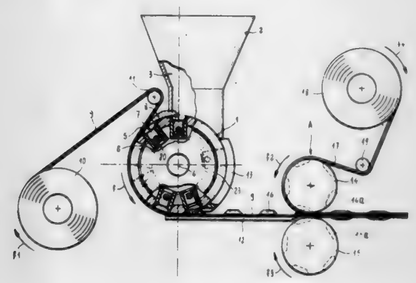
(j) sealing the upper surface of the closure strip to the covering web.

4,437,294

VOLUMETRIC BATCHING DEVICE FOR PROVIDING PREDETERMINED BATCHES OF A FLUENT MATERIAL

Andrea Romagnoli, San Lazzaro di Savena, Italy, assignor to I.M.A.-Industria Macchine Automatiche-S.p.A., Ozzano Emilia, Italy

Filed Apr. 8, 1981, Ser. No. 252,123
Claims priority, application Italy, Apr. 17, 1980, 3389 A/80
Int. Cl.³ B65B *9/02*
U.S. Cl. 53—553 **2 Claims**



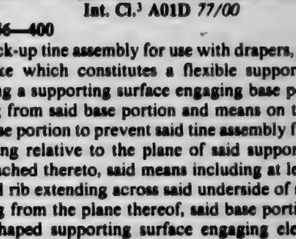
1. A volumetric batching device providing predetermined batches of a fluent material in a packaging machine, comprising: a cylindrical dispensing drum having a periphery and rotating about a horizontal axis, said drum having a plurality of radially outwardly open pockets and a plurality of radially movable pistons, each of said plurality of pistons being associated with and defining a respective one of said pockets; means for supplying the material to be dispensed into the pockets, said supplying means being arranged near said drum; a smoothing element positioned near a top dead center point of said drum; and means for guiding a filter paper strip around and in a direction of rotation of said drum from said smoothing element to a position at a bottom dead center point of said drum from which the predetermined batch of the material is forwarded to a packaging station; means for moving each piston between a first position of a maximum distance to the periphery of the drum in which first position the piston passes the top dead center point of said drum and is located below the supplying means for receiving the predetermined batch of the product and a second position of a minimum distance to the periphery of the drum in which second position the piston passes the bottom dead center point for discharging the predetermined batch of the material, each of said pistons having an inside hollow cylindrical space and an outer perforated portion facing the periphery of the drum and defining the respective pockets so as to provide ventilation of the pocket into the inner cylindrical space of each piston and thereby preventing adhering of the material to the outer portion of each piston.

4,437,295

AUTOMATIC HEADER HEIGHT CONTROL

Merlin A. Rock, Bettendorf, Iowa, assignor to International Harvester Co., Chicago, Ill.

Filed Apr. 8, 1981, Ser. No. 252,481
Int. Cl.³ A01D *75/28*
U.S. Cl. 56—10.2 **24 Claims**



7. An automatic header height control apparatus for use with a header of a farm implement, the height of which header can be adjusted relative to the ground therebeneath, said apparatus comprising: means for continuously sensing the height of the header above ground; means for selecting a desired height of the header above ground; and multifunction electrical circuit means, coupled to said sensing means and said selecting means (a) for continuously determining any difference error between the selected height and the sensed height, (b) for determining the direction of the difference error, up or down, (c) for continuously generating a train of electrical correction pulses at a predetermined constant frequency, each electrical correction pulse of said train of pulses having a constant amplitude and a duty cycle directly related to the amount of difference error, (d) for supplying said electrical correction pulses to solenoid operated valving means to cause same to supply and/or relieve a pulse of pressurized fluid to a mechanism for raising or lowering the header for each electrical correction pulse received and (e) for repeatedly determining the difference error and direction of the difference error, and cyclically generating correction pulses and supplying said correction pulses to the solenoid operated valving means to move the header in intermittent pulses toward the selected height, thereby automatically to control the height of the header above ground.

4,437,296

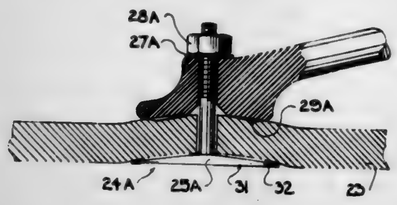
DRAPER PICK-UP TINE

Victor B. Erdman, Leathbridge, Canada, assignor to Victory Equipment Limited, Lethbridge, Canada

Continuation-in-part of Ser. No. 108,562, Dec. 31, 1979, abandoned. This application Jun. 9, 1981, Ser. No. 271,938
Int. Cl.³ A01D *77/00*
U.S. Cl. 56—400 **8 Claims**

1. A pick-up tine assembly for use with drapers, pick-up belts or the like which constitutes a flexible supporting surface; comprising a supporting surface engaging base portion, a tine extending from said base portion and means on the underside of said base portion to prevent said tine assembly from inadvertent turning relative to the plane of said supporting surface, when attached thereto, said means including at least one edge sharpened rib extending across said underside of said base and projecting from the plane thereof, said base portion including a dome-shaped supporting surface engaging element, a tine

attaching block formed upon the upper side of said element, said tine extending upwardly and outwardly from one end of said block, clamping means detachably securing said assembly to the supporting surface in any radial position relative to the plane of said supporting surface whereby said tine extends and is maintained in any desired radial direction relative to the plane of said supporting surface, said clamping means including a screw threaded bolt, a relatively large head on said bolt having a flat outer surface and a domed inner surface, said bolt extending through said supporting surface, with the domed



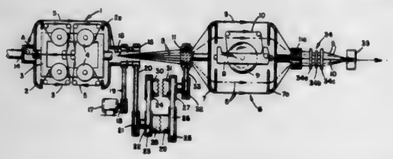
inner surface engaging one side of said supporting surface, said base portion of the tine assembly being concave, said tine assembly being situated on the other side of said supporting surface, said bolt engaging through said base portion, and screw threaded clamp means engaging the upper end of said bolt and clamping said tine assembly to said supporting surface and urging said supporting surface into said concave base whereby the flat outer surface of the bolt head is substantially flush with said one side of said supporting surface, and the said rib embeds within said supporting surface.

4,437,297

APPARATUS FOR PRODUCING METALLIC CORDS IN LAYERS

Alberto Vespasiani, Milan, Italy, assignor to Societa' Pneumatici Pirelli S.p.A., Milan, Italy

Filed Feb. 23, 1982, Ser. No. 351,367
Claims priority, application Italy, Feb. 26, 1981, 19994 A/81
Int. Cl.³ D07B *3/04, 3/12, 7/02*
U.S. Cl. 57—9 **10 Claims**



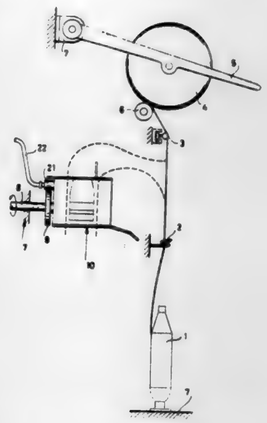
1. An apparatus for producing metallic cords for reinforcing elastomeric structures, comprising a central core and at least one crown layer, the wires of each crown layer being mutually helical and parallel and wound on the layer radially inwardly therefrom and on the central core, said apparatus comprising first and second double-twist type machines disposed in tandem, each of said machines consisting essentially of a cage rotatable around its own axis and of a cradle which is disposed in the cage and co-axial therewith, and freely rotatable around its own axis, the first cradle being adapted to support delivery bobbin or bobbins of a first group of wires for forming said crown layer, the second cradle being adapted to support delivery bobbin or bobbins of a second group of wires for forming a central core on which a crown layer of wires is to be wound, said apparatus comprising also a preforming device adapted to deform permanently be bending the wires of said first group and a device reciprocally coupling said first and second machine which is adapted to maintain during operation a constant ratio of 1:2 between the rotation velocities of the first and second cages, said apparatus being characterized by the fact that said coupling device allows variation of said ratio between the rotational velocity of the first and second cages from 1:1 during the transient starting to 1:2 during operation, guiding means being also provided on the second machine for the wires of said first group, disposed externally of the cage, on both its extremities, and fastened with the same and oriented coplanarly to the rotation axis of said second cage.

4,437,298

APPARATUS FOR JOINING TEXTILE THREADS WITH THE AID OF COMPRESSED AIR, FOR MOUNTING ON AN AUTOMATIC WINDING MACHINE

Ferdinando Truzzi, and Mauro Premi, both of Salo' , Italy, assignors to Mesdan S.p.A., Salo' , Italy

Filed Jun. 9, 1982, Ser. No. 386,681
Claims priority, application Italy, Jun. 11, 1981, 22268 A/81
Int. Cl.³ B65H *69/06*; D01H *15/00*; D02J *1/08*
U.S. Cl. 57—22 **12 Claims**



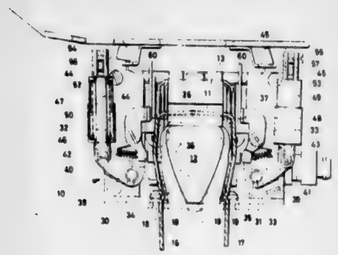
1. An apparatus for joining textile threads with the aid of compressed air, designed for mounting on an automatic winding machine provided with means for inserting both the yarns to be joined together from the same side of the apparatus, and with a power take-off for operating the apparatus, comprising a support structure with a block in which a laterally and frontally open mixing chamber substantially of V cross-section is formed, an aperture opening centrally at the base of said chamber and connected by way of a shut-off valve to a compressed air source, a cover carried by a support movably mounted in said structure so as to frontally close said chamber, means for controlling the movement of said cover from a rest position withdrawn from the chamber to a frontal closure position therefor, means synchronised with said cover movement control means for causing said shut-off valve to open for a predetermined time when the cover is in the position in which it closes the chamber, fixed guides for positioning the threads to be joined together, locking members for the threads constituted by fixed and mobile elements, members constituted by fixed and mobile blades for cutting the free ends of the threads, and means for controlling the mobile elements of the locking members and the mobile blades of the cutting members in synchronism with the movement of the cover, characterised in that said structure is provided with two opposing walls which are parallel to each other and to the longitudinal axis of the mixing chamber and disposed at a distance respectively in front of and behind the block comprising said chamber, the thread positioning guides being provided in said walls in aligned pairs to receive the threads to be joined together along parallel axes perpendicular to the axis of the chamber and passing to the side of this latter, the two guides provided in the wall disposed in front of the chamber being at different heights, on said wall disposed in front of the chamber there being mounted rocking means for crossing-over the threads in the region between said wall and the mixing chamber, the mobile and fixed elements of the members for locking the threads and of the mobile levers for adjusting the length of the free ends of the threads being mounted on the wall disposed behind the block comprising the mixing chamber in positions corresponding to the positioning guides provided in this wall, on the same wall there being mounted a member for operating the shut-off valve, the cutting members being disposed at the two sides of the mixing chamber with the mobile blades rigid with the support for the chamber closure cover, in said structure there being mounted a control drum which is rotatable about its axis, can be coupled to said power take-off of the winding machine, and is provided with a plurality of cam profiles for controlling the movements of the members for crossing-over the threads, the mobile elements of the members for locking the threads, the mobile levers for adjusting the length of the free ends of the threads, the operating member for the shut-off valve and the cover with the mobile blades of the members for cutting the threads.

4,437,299

APPARATUS FOR JOINING TEXTILE THREADS WITH THE AID OF COMPRESSED AIR

Ferdinando Truzzi, and Mauro Premi, both of Salo' , Italy, assignors to Mesdan S.p.A., Salo' , Italy

Filed Jun. 10, 1982, Ser. No. 387,147
Claims priority, application Italy, Jun. 16, 1981, 22356 A/81
Int. Cl.³ B65H *69/06*
U.S. Cl. 57—22 **8 Claims**



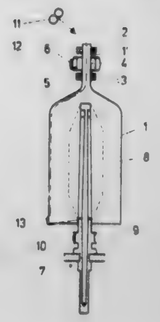
1. An apparatus for joining textile threads with the aid of compressed air, provided with a mixing chamber, means for feeding a burst of compressed air into said chamber for a predetermined time, and means which during the joining operation lock the threads to be joined at the points in which they enter the apparatus, characterised by incorporating a device for checking the tearing strength of the joint zone of the two threads comprising at least one mobile member arranged to act on the loop formed by the joined threads with a predetermined traction force at an intermediate point between the locking points at the apparatus inlet, control means for said mobile member which are operated so that they travel through a predetermined outward and return stroke, and a yieldable coupling disposed between said mobile member and said control means, said joint being set to yield when said predetermined traction force is exceeded.

4,437,300

DEVICE FOR THE CONTINUOUS SPINNING OF TEXTILE YARNS

Louis Vignon, Geneva, Switzerland, assignor to Heberlein Hispano SA, Versoix-Geneva, Switzerland

Filed Nov. 24, 1981, Ser. No. 324,943
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046180; Dec. 12, 1980, 3046932; Dec. 16, 1980, 3047278
Int. Cl.³ D01H *1/06, 1/20, 7/66*
U.S. Cl. 57—74 **10 Claims**



1. In a device for continuous spinning of textile yarn including a spindle, a member for providing twist in the yarn, said member defining a yarn guiding opening for guiding the yarn moving towards the spindle, means for mounting said member for rotation about the spindle axis independently of the spindle, spindle drive means for rotating the spindle, and drive means for rotating said member, the improvement comprising a free-wheel arranged between said member and said drive means for rotating the member, for allowing the member to rotate more rapidly than the member drive means.

4,437,301

METHOD OF MAKING YARN

Paul W. Eschenbach, Moore, and Andre M. Goineau, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 25, 1982, Ser. No. 361,558
Int. Cl.³ D02G *3/00, 3/04*
U.S. Cl. 57—289 **3 Claims**



1. The method of producing an entangled, composite, multi-

filament synthetic yarn comprising the steps of: supplying a multifilament, partially oriented, synthetic core yarn and a multifilament, partially oriented, synthetic effect yarn, heating both the core and effect yarns, drawing the core yarn after heating, drawing the effect yarn after heating at a draw ratio greater than the draw ratio of the core yarn, supplying the drawn effect yarn directly without texturing to an air jet at a first rate, supplying the drawn core yarn directly without texturing to the air jet at a second rate, entangling the untextured core and effect yarns in the air jet and taking up the commingled yarn from the air jet.

4,437,302

FALSE TWISTING AIR NOZZLE

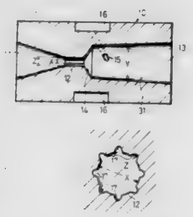
Meiji Anahara, Kariya, and Hiroshi Omori, Aichi, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jan. 19, 1983, Ser. No. 459,131

Claims priority, application Japan, Jan. 20, 1982, 57-7269; Dec. 4, 1982, 57-183824[U]; Dec. 6, 1982, 57-184579[U]; Dec. 11, 1982, 57-217566

Int. Cl.³ D01H *7/92*; D02G *1/04*

U.S. Cl. 57—333 **21 Claims**



1. A false twisting air nozzle comprising:

a fiber bundle passage for allowing a fiber bundle to pass therethrough, said fiber bundle passage including an inlet, a smaller-diameter hole portion, and a larger-diameter hole portion which are arranged in series;

at least one air injection hole having end opening tangentially and downstream in said larger-diameter hole portion; and

at least one air passage disposed adjacent to said smaller-diameter hole portion and in communication with said larger-diameter portion.

4,437,303

FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE

Hugh F. Cantwell, Littleover, England, assignor to Rolls-Royce Limited, London, England

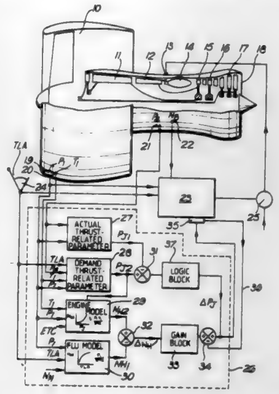
Filed Nov. 10, 1981, Ser. No. 320,126

Claims priority, application United Kingdom, Nov. 26, 1980, 8037966

Int. Cl.³ F02C *9/28*

U.S. Cl. 60—39.281 **5 Claims**

1. A fuel control system for a gas turbine engine comprising transducers for producing signals related to parameters of the engine, including at least one thrust-related parameter, a throttle lever on which a desired engine thrust may be set, a main steady-state fuel control unit which determines a value of a first said thrust-related parameter corresponding with the setting of the throttle lever and controls the fuel flow to the engine to maintain the actual value of the first thrust-related parameter determined from a transducer signal at least approximately equal to the value determined by the fuel control unit, and a trimmer device which provides a more accurate control of engine thrust by trimming the fuel flow demanded by the main fuel control unit, the trimmer incorporating a model of said main fuel control unit in which the predicted value of said first thrust-related parameter determined by said main fuel control unit in accordance with the setting of the throttle lever



is calculated and used to produce a first trim setting during non-steady state operation of the engine.

4,437,304

STRUCTURE FOR CONTROLLING OPERATIONS OF SECONDARY AIR SUPPLY MEANS AND THROTTLE OPENER IN INTERNAL COMBUSTION ENGINE FOR MOTORCYCLES

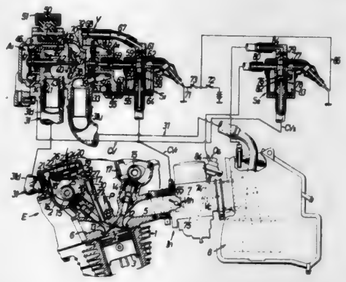
Yasuo Ikenoya, Kawagoe; Shuso Ueda, Asaka, and Masafumi Araki, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,334

Claims priority, application Japan, Dec. 24, 1981, 56-212713

Int. Cl.³ F01N *3/22*

U.S. Cl. 60—290 **1 Claim**



1. A structure for controlling operations of a secondary air supplying means and a throttle opener in an internal combustion engine for motorcycles in which an internal combustion engine is mounted on a main frame and includes suction and exhaust systems, an exhaust gas cleaning means for supplying secondary air to said exhaust system so as to clean an exhaust gas flowing therethrough, a carburetor provided in said suction system and including a throttle valve, and a throttle opener provided on said carburetor and adapted to open said throttle valve slightly while said internal combustion engine is rotated at a low speed, said structure comprising a secondary air supply passage communicated with said exhaust system, a control valve adapted to control a flow rate of the secondary air flowing through said secondary air supply passage, a first electromagnetic valve for opening and closing said secondary air control valve, a second electromagnetic valve for controlling an operation of said throttle opener, a power source circuit for connecting said first and second electromagnetic valves to a power source, and a switch used in common with said secondary air supply means and said throttle opener, provided in said power source circuit, and adapted to detect such a vehicle speed of said motorcycle that is not higher than a predetermined level and thereby shift the operations of said first and second electromagnetic valves, whereby said secondary air control valve is closed with the operation of said throttle opener rendered ineffective at the same time.

4,437,305

EXHAUST GAS CLEANING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yasuo Ikenoya; Masafumi Araki, both of Kawagoe, and Yozi Shimizu, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,330

Claims priority, application Japan, Dec. 17, 1981, 56-204302

Int. Cl.³ F01N *3/30*

U.S. Cl. 60—293 **1 Claim**



1. In an exhaust gas cleaning system for internal combustion engines which is provided with a secondary air feed system connected to an exhaust port of an internal combustion engine and a reed valve device mounted midway of the secondary air feed system and opened on an exhaust pulsation pressure arising in the exhaust port at the time of internal combustion engine operation to feed an exhaust gas cleaning secondary air to the exhaust port, the improvement characterized in that the secondary air feed system has an upstream side secondary air passage through to the atmosphere and a downstream side secondary air passage formed on a thick wall zone of the internal combustion engine proper and connected through to the exhaust port, the reed valve device has a valve casing installed on the circumference of the engine proper, an inflow port connected to the upstream side secondary air passage, and an efflux port connected to the downstream side secondary air passage, the valve casing is partitioned internally into an upstream chamber provided adjacently to the engine proper and connected through to the inflow port and a downstream chamber provided on a side away from the engine proper across the upstream chamber and connected through to the efflux port, a reed valve body to allow a secondary air to flow from the upstream chamber to the downstream chamber on an exhaust pulsation pressure in the exhaust port is arranged between both the upstream and downstream chambers.

4,437,306

EXHAUST GAS CLEANING DEVICE OF INTERNAL COMBUSTION ENGINE

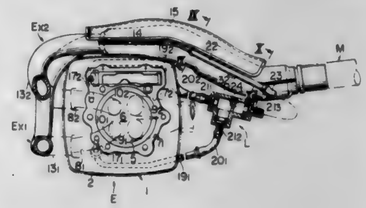
Yasuo Ikenoya, Kawagoe; Kanau Iwashita, Sakato, and Hikaru Kimura, Koganei, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 428,793

Claims priority, application Japan, Nov. 25, 1981, 56-188555; Dec. 9, 1981, 56-197888

Int. Cl.³ F01N *3/30*

U.S. Cl. 60—293 **6 Claims**



1. In an internal combustion engine having a plurality of exhaust systems which are made different in length from each other and comprise a plurality of exhaust ports formed in an engine main body and separately communicated with a combustion chamber above a single cylinder and exhaust pipes communicated with said plural exhaust ports respectively, an exhaust gas cleaning device wherein secondary-air supply pipes are communicated with said plural exhaust systems respectively and further connected with reed valve means adapted to open and close in response to the pulsation pressures of the exhaust gas in said plurality of exhaust systems communicated with said secondary-air supply pipes.

4,437,307

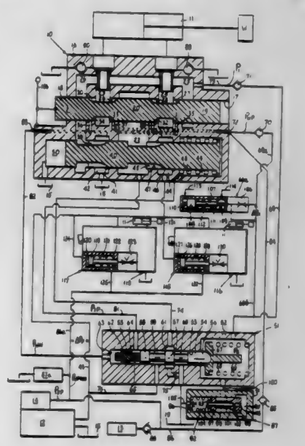
PRIORITY FLOW CONTROL SYSTEM

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Mar. 11, 1982, Ser. No. 357,035

Int. Cl.³ F15B *13/08*

U.S. Cl. 60—427 **18 Claims**



1. A priority flow control system supplied from a source of pressure fluid and connected to exhaust means said priority flow control system including a priority valve assembly opera-

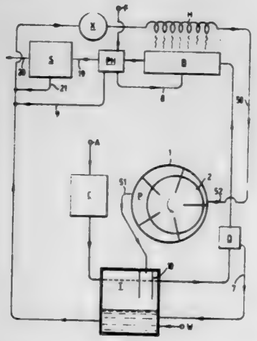
ble to control a load and at least one other valve assembly said other valve assembly having a housing connected to a fluid motor, control orifice means in said housing interposed between said source of pressure fluid and said fluid motor, fluid flow control means in said housing, first control means operable through said fluid flow control means to maintain a pressure differential across said control orifice means at a controlled constant level, and second control means having first means responsive to maximum fluid flow from said source of pressure fluid and second means operable through said fluid flow control means and said first control means to vary the level of said constant pressure differential whereby the level of said constant pressure differential can be progressively lowered by said second means once fluid flow from said source of pressure fluid will approach its maximum flow output and flow demand of said priority flow control system will exceed said maximum flow output.

4,437,308

ROTARY HEAT ENGINE

Victor H. Fischer, Artarmon, Australia, assignor to Thermal Systems Limited, Cayman Islands, British West Indies

Filed Dec. 12, 1980, Ser. No. 215,824
Claims priority, application Australia, Aug. 18, 1980, PE5095
Int. Cl.³ F01K 7/36
U.S. Cl. 60—514 29 Claims



1. A method of operating a rotary external combustion engine having a stator therein defining a working space, wherein energy is supplied to the working space by means of a vaporizable heat-transfer medium, which comprises

(1) in a compression cycle wherein the working space volume decreases, compressing gaseous heat-transfer medium present in the working space;

(2) generating externally of the working space heated heat-transfer medium under a pressure such as to maintain the medium in the liquid state;

(3) injecting into the compressed gaseous medium in the working space said heated pressurized liquid medium, whereby part of the liquid medium spontaneously vaporizes, the remainder remaining as liquid, and raises the internal energy of the working space;

(4) in an expansion cycle, allowing the volume of the working space to increase thereby driving the rotor, and causing some recondensation of the vaporized medium to occur;

(5) exhausting a mixture of liquid and gaseous heat-transfer medium from the working space and leaving in the working space residual heat-transfer medium;

(6) receiving said exhausted mixture of liquid and gaseous heat-transfer medium in a trap; and

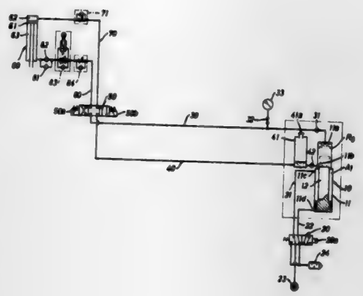
(7) recycling heat-transfer medium in the liquid state from the trap to step (2) for the generation of further pressurized heated liquid heat-transfer medium.

4,437,309

PNEUMATIC-HYDRAULIC SYSTEM FOR HYDRAULIC ACTUATOR

Osamu Suzaki, Toyohashi; Kunio Yamaguchi, Okazaki, and Meguru Yamamoto, Toyokawa, all of Japan, assignors to Toyooko Kogyo Kabushiki Kaisha, Japan

Filed Apr. 10, 1981, Ser. No. 253,151
Claims priority, application Japan, Apr. 22, 1980, 55-53959
Int. Cl.³ B60T 13/00
U.S. Cl. 60—547.1 4 Claims



1. A pneumatic-hydraulic system for driving a hydraulic actuator under control of hydraulic pressure converted from pneumatic pressure, said system comprising:

a single pneumatic-hydraulic converter which includes a cylinder casing provided with inlet and outlet ports, and a plunger reciprocably disposed within said casing to subdivide the interior of said casing into a hydraulic chamber in open communication with said inlet and outlet ports and a pneumatic chamber for connection to a pneumatic pressure source, said hydraulic chamber having a displacement capacity for storing a predetermined amount of hydraulic fluid necessary for producing at least one reciprocating motion of said hydraulic actuator during forward movement of said plunger into said hydraulic chamber;

a supply passage connected with said outlet port for supplying the pressurized hydraulic fluid from said hydraulic chamber to said actuator, and a return passage connected with said inlet port for returning the hydraulic fluid discharged from said actuator to said hydraulic chamber;

first change-over valve means arranged in its first position to connect said pneumatic chamber to the pneumatic pressure source for effecting the forward movement of said plunger and arranged in its second position to connect said pneumatic chamber to atmospheric pressure for effecting backward movement of said plunger;

second change-over valve means for switching over the hydraulic connections of said supply and return passages to and from said actuator when said first change-over valve means is maintained in its first position;

a hydraulic fluid reservoir disposed at its lower portion within said return passage to store the discharged hydraulic fluid therein and being provided at its upper portion with an air breather, the capacity of said reservoir being substantially the same as or larger than the displacement capacity of said hydraulic chamber; and

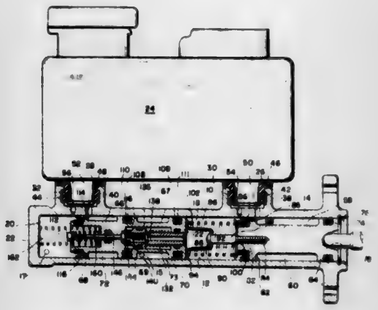
check valve means disposed within said return passage between said inlet port and said reservoir for permitting the flow of hydraulic fluid from said reservoir into said hydraulic chamber and for interrupting the reverse flow of hydraulic fluid from said hydraulic chamber.

4,437,310

TANDEM MASTER CYLINDER WITH A PRESSURE REGULATING VALVE FOR AN AUTOMOTIVE VEHICLE BRAKE SYSTEM

Katuhiro Morita, Yokohama, and Hitoshi Kubota, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 22, 1981, Ser. No. 256,487
Claims priority, application Japan, Apr. 24, 1980, 55-55199[U]
Int. Cl.³ B60T 11/20
U.S. Cl. 60—562 18 Claims



1. A tandem master cylinder in a hydraulic brake system for an automotive vehicle comprising:

a cylinder housing having an axially extending bore therein;

primary and secondary pistons axially aligned within said cylinder housing bore in tandem relationship with each other for movement in response to application of a braking force;

primary and secondary pressure chambers defined within said bore by said primary and secondary pistons, said primary chamber being located between said primary and secondary pistons, and said secondary chamber being defined by an end of the cylinder housing bore and said secondary piston and communicating with respective front wheel cylinders via a single secondary port;

a fluid reservoir communicating with said primary and secondary pressure chambers for supplying working fluid thereto; and

a single pressure control valve assembly provided in said secondary piston, said valve assembly including a bore formed in said secondary piston and extending along the longitudinal axis thereof, a thrustable cylinder having an axially extending opening therein and an annular projecting portion defining first and second chambers between the outer periphery of said thrusting cylinder and internal periphery of said secondary piston bore, a valve member and a valve seat incorporated with said thrusting cylinder for motion therewith, said first chamber communicating with said primary pressure chamber via said opening and a space between said valve member and said valve seat, said thrusting cylinder being movable between a first initial position wherein said valve seat is spaced from said valve member to permit fluid flow therethrough to establish fluid communication between said primary pressure chamber and said first chamber and a second position wherein said valve seat abuts said valve member for blocking fluid communication between said primary pressure chamber and said first chamber, said thrusting cylinder being responsive to the pressure difference between said first chamber and said primary pressure chamber for alternating the valve position between said first and second position; and

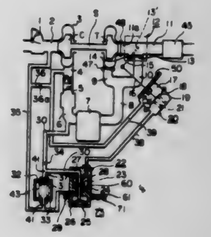
a single primary port communicating with rear wheel cylinders, said primary port communicating with said first chamber through a radial passage formed in said secondary piston.

4,437,311

APPARATUS FOR CONTROLLING THE FLOW OF EXHAUST GAS IN AN INTERNAL COMBUSTION ENGINE WITH A TURBOCHARGER AND A CATALYTIC CONVERTER

Kenzi Iwamoto, Nishio, and Katsuhiro Omata, Souwamachi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 4, 1982, Ser. No. 374,894
Claims priority, application Japan, May 7, 1981, 56-065031
Int. Cl.³ F01N 5/04; F02B 37/00
U.S. Cl. 60—602 8 Claims



1. An apparatus for controlling the flow of the exhaust gas in an internal combustion engine including a turbocharger having a compressor in an intake duct and having an exhaust gas driven turbine in an exhaust duct connected to the compressor, a catalytic converter arranged in the exhaust duct downstream of the turbine, and a throttle valve arranged in the intake duct between the engine and the compressor to control the engine output, said apparatus comprising a bypass passage which bypasses the turbine and which extends between the upstream and downstream sides of the turbine, a waste gate valve unit which controls the amount of the exhaust gas passing through the waste gate valve unit, an actuator for actuating the waste gate valve unit, which has first and second pressure chambers separated by a spring biased diaphragm, and a thermal switching valve unit which selectively connects one of the pressure chambers of the actuator with the atmosphere or the intake duct downstream of the throttle valve, the other pressure chamber of the actuator being connected to the intake duct downstream of the compressor and upstream the throttle valve by means of a conduit which is connected to an atmospheric pressure area via a restriction.

4,437,312

RECOVERY OF POWER FROM VAPORIZATION OF LIQUEFIED NATURAL GAS

Charles L. Newton, Bethlehem, and Dennis L. Faizl, Schnecksville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 6, 1981, Ser. No. 241,183
Int. Cl.³ F01K 17/00
U.S. Cl. 60—648 5 Claims

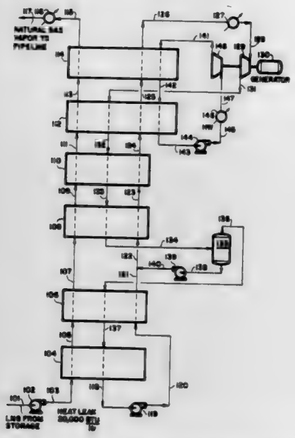
1. A method for recovering net power from the vaporization of liquefied natural gas against multicomponent streams, which method comprises the steps of:

(a) at least partially liquefying a first multicomponent stream with said liquefied natural gas as the liquefied gas is vaporized.

(b) phase separating said first multicomponent stream of step (a) into a vapor phase, which is further cooled to liquefaction against vaporizing liquefied natural gas, and a liquid phase, which is pumped to an elevated pressure.

(c) pumping said liquefied vapor phase multicomponent

stream of step (b) to an elevated pressure and combining the same with the liquid phase from the phase separation,
(d) warming and at least partially vaporizing said first multicomponent stream by cooling and at least partially liquefying a second multicomponent stream,
(e) heating and fully vaporizing said first multicomponent stream,
(f) expanding said heated and vaporized first multicomponent stream through a first expander,
(g) recovering power from said first expander,
(h) recycling said expanded first multicomponent stream to be at least partially liquefied.



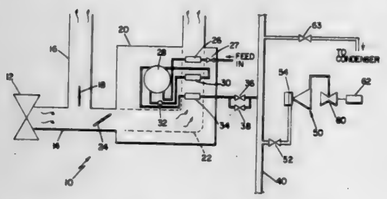
(i) pumping said at least partially liquefied second multicomponent stream to an elevated pressure,
(j) heating and vaporizing said second multicomponent stream,
(k) expanding said second multicomponent stream through a second expander.
(l) recovering power from said second expander, and
(m) recycling said expanded second multicomponent stream to be at least partially liquefied by heat exchange with said first multicomponent stream.

4,437,313

HRSG DAMPER CONTROL

Bruce D. Taber, Boxford, and James B. Wagner, Malden, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Nov. 9, 1981, Ser. No. 319,436
Int. Cl.³ F01K *13/02, 23/06*
U.S. Cl. 60—665 **10 Claims**



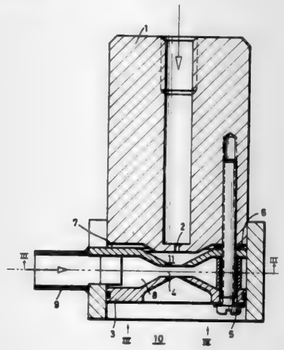
1. An apparatus for controlling the operation of a steam turbine system for a combined cycle power plant comprising:
a damper control,
a temperature rate controller, and
a drum level controller,
said damper control comprising means for receiving a first signal from said temperature rate controller and a second signal from said drum level controller, and means for producing a control signal based on either said first or second signal,
said control signal being fed to damper positioner means which adjusts the angle of a damper control system including an isolation damper and a bypass damper for an HRSG based on the value of said control signal.

4,437,314

ATOMIZER NOZZLE FOR CONTINUOUS FUEL INJECTION

Karl-Heinz Collin, Wehrheim, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,518
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026832
Int. Cl.³ F02C *7/18*
U.S. Cl. 60—738 **2 Claims**



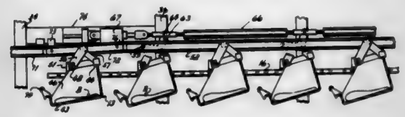
1. An atomizer nozzle arrangement specifically used for continuously injecting fuel into a combustion chamber of a gas turbine engine, wherein the nozzle atomizes the fuel without utilizing moving parts and with minimum utilization of intake air, the nozzle arrangement comprising in combination:
an air intake communicating with the combustion chamber;
a vaporizor tube within the combustion chamber;
a nozzle body positioned within the vaporizor tube in spaced relating therewith to define a space therebetween through which space a portion of the intake air passes; the nozzle body having a bore therethrough for delivering fuel therethrough, the bore having a fuel outlet of a smaller diameter than the bore, from which outlet a spray of fuel is ejected;
a circular chamber in the nozzle body and positioned downstream from the outlet, through which chamber the spray of fuel passes, the chamber having a back wall through which the outlet of the bore passes;
an annular body having a hollow interior and disposed in the circular chamber in spaced relation to the back wall of the chamber to define a space between the back wall of the chamber and annular body; the hollow annular body having an axial opening coincident with the axis thereof which opening is aligned with but spaced from the outlet of the bore and through which the spray of fuel and air from said hollow annular body pass; the hollow annular body having a front wall and a rear wall each of which have concave portions adjacent the axial opening;
an opening communicating the space between the back wall of the chamber and the annular body with the space between the vaporizor tube and nozzle body for pressure equalization;
an air supply conduit connected radially with the interior of the hollow annular body for supplying pressurized air thereto, and
means for interrupting air flow through the air supply conduit so that the air supply can be stopped when the temperature of the combustion chamber reaches operating temperature.

4,437,315

FLEXIBLE BAG COOLING ARRANGEMENT

Albert F. Rica, Stockton; Lloyd F. Hay, Oakdale; John R. Heron, Danville; John R. Webber, and Steven A. Rechtsteiner, both of Stockton, all of Calif., assignors to FranRica Mfg. Inc., Stockton, Calif.

Division of Ser. No. 286,065, Jul. 23, 1981, Pat. No. 4,384,463. This application Dec. 20, 1982, Ser. No. 451,722
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 **5 Claims**



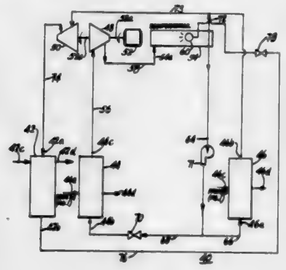
1. A method for cooling a heated flowable material in a flexible bag comprising the steps of:
(a) moving the bag in a carrier through a cooling area;
(b) dispensing a cooling medium about the bag as it is moved through the cooling area;
(c) tilting the carrier in a first direction to lower a first portion of the bag relative to a second portion of the bag, altering the shape of the bag and increasing the amount of material in said first bag portion; and
(d) tilting the carrier in a second direction to lower said second bag portion relative to said first bag portion, altering the shape of the bag and increasing the amount of material in said second bag portion.

4,437,316

METHOD AND APPARATUS FOR RECOVERING WASTE ENERGY

David Dyer, Auburn, Ala., and James L. Wise, Depere, Wis., assignors to Technology Marketing Inc., Newport, R.I.

Filed Jan. 23, 1981, Ser. No. 227,774
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—79 **55 Claims**



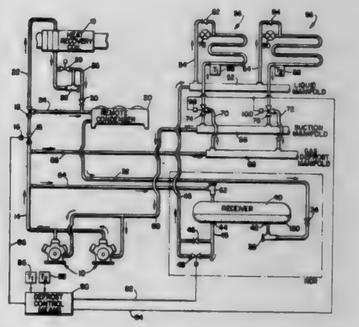
1. A method for waste heat recovery comprising the steps of:
separating a common supply of working fluid into first and second branches;
evaporating the working fluid in said first and second branches by means of first and second independent waste heat sources to increase the energy of the evaporated working fluids in each of said branches;
compressing the evaporated working fluid in said first branch;
desuperheating the compressed working fluid;
merging the working fluid evaporated in said second branch with the desuperheated working fluid;
compressing the merged working fluids; and
condensing the last-mentioned compressed working fluid by transferring the energy to a second working fluid whose energy is significantly increased.

4,437,317

HEAD PRESSURE MAINTENANCE FOR GAS DEFROST

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed Feb. 26, 1982, Ser. No. 352,473
Int. Cl.³ F25B *41/00*; F25D *21/06*
U.S. Cl. 62—81 **49 Claims**



1. In a refrigeration system having a compressor means for compressing refrigerant fluid, a compressor discharge conduit for conducting compressed refrigerant gas to a condenser means in which the compressed refrigerant gas is condensed to a liquid; and an evaporator means connected between said condenser means and said compressor means to provide refrigeration by evaporating liquid refrigerant from said condenser means and for returning the refrigerant gas formed to the intake of said compressor means; the improvement comprising:
defrost conduit means for selectively conducting gaseous refrigerant during a defrost cycle from said compressor discharge conduit to said evaporator means for defrosting said evaporator means;
a selectively controllable valve means connected in said compressor discharge conduit downstream from the connection of said defrost conduit means to said discharge conduit and upstream from said condenser means, said controllable valve means operably maintained in substantially opened position during a refrigeration cycle; and
an operator associated with said selectively controllable valve means for closing said valve means at the start of a defrost cycle for immediately increasing the pressure of the refrigerant gas within said defrost conduit means up to a predetermined level at the start of a defrost cycle, and said controllable valve means operable thereafter for substantially maintaining by modulation an increased pressure in said defrost conduit means throughout said defrost cycle.

4,437,318

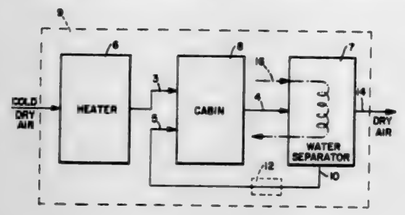
ENVIRONMENTAL CONTROL SYSTEM AND METHOD

Bertil R. L. Werjefelt, 277 Kaha St., Kailua, Hi. 96734

Filed Sep. 10, 1979, Ser. No. 73,612
Int. Cl.³ F25D *17/06*
U.S. Cl. 62—93 **12 Claims**

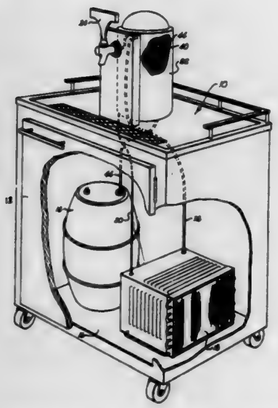
1. An aircraft cabin humidification system for humidifying a fresh air mass entering the cabin, said system comprising:

(a) removal means for at least partially removing moisture from an air mass;
(b) replacement means for at least partially replacing said air mass with fresh air, said replacement means including means for exhausting said air mass from said cabin and said



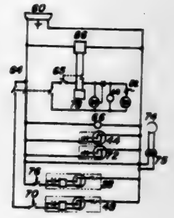
aircraft and for maintaining said moisture on said aircraft; and
(c) humidification means for humidifying said fresh air by adding at least a portion of said removed moisture to said fresh air.

4,437,319
BEVERAGE DISPENSING DEVICE
Frank M. Iannelli, Spartanburg, S.C., assignor to Tannetics, Inc., Erie, Pa.
Continuation of Ser. No. 316,873, Oct. 30, 1981, abandoned.
This application May 26, 1983, Ser. No. 497,437
Int. Cl.³ F25C *1/00*; F25D *3/00*
U.S. Cl. 62—138 2 Claims



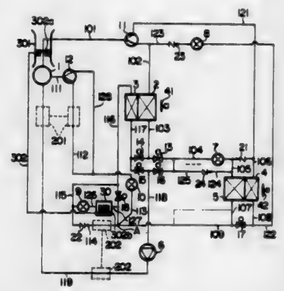
1. A refrigeration system for cooling a beverage as said beverage is drawn from a keg comprising:
a container having a vertically extending wall and a top and bottom;
an evaporator coil carried adjacent the wall of said container extending vertically from adjacent the bottom of said container to adjacent the top of said container;
refrigeration condensing means circulating a refrigerant through said evaporator coil cooling said container;
a beverage dispensing coil centrally carried within said container extending vertically from adjacent the bottom of said container to adjacent the top of said container;
water carried within said container;
a temperature sensor immersed in said water and being operably connected to said refrigeration condensing means for maintaining said water at a predetermined temperature;
said beverage dispensing coil having a predetermined outside diameter so as to provide a space between said inside wall of said container and said beverage dispensing coil for allowing a bank of ice to build up on said inside wall;
said elongated temperature sensor extending vertically downwardly in a space between said ice bank and said beverage dispensing coil from adjacent the top of said container to adjacent the bottom thereof for activating said refrigeration condensing means responsive to predetermined changes in the temperature of said water;
said elongated vertically extending temperature sensor permitting the thickness of said ice bank to build up substantially for handling peak load use of said system while ensuring that said ice bank does not touch said beverage dispensing coil;
a manually operated tap carried adjacent the top of said container connected to one end of said beverage dispensing coil;
tubular means connecting said keg to said other end of said beverage dispensing coil so that upon opening said tap, beverage from said keg flows through said dispensing coil for being cooled prior to flowing out said top, and
a power driven propeller means carried within said beverage dispensing coil for moving said water carried in said container in a circular motion for wiping said ice bank for melting said ice bank for cooling said water and said beverage dispensing coil, said flow path being substantially unimpeded between the output of said propellor and said ice bank.

4,437,320
TRANSPORTER AIR CHILLER
Claes E. Eklund, 1347 W. Trenton Ave., Orange, Calif. 92667
Filed May 11, 1982, Ser. No. 377,079
Int. Cl.³ F25B *27/00*
U.S. Cl. 62—236 7 Claims



1. A transporter air chiller for cooling foodstuffs in airborne storage and serving carts comprising:
(a) a unitized vapor cycle refrigeration apparatus having a pair of refrigeration systems within a single frame and a common air flow arrangement for providing product cooling by removing heat through a refrigerant cooling agent;
(b) an alternating circuit electrical power circuit integral with said first refrigeration system for activating cooling and providing air flow by electromotive means;
(c) an alternating current and a direct current electrical power system integral with said second refrigeration system for cooling, storing and providing air flow of said common arrangement;
(d) an air damper within said air flow arrangement rotatably attached on one side to said frame for isolating air flow from said first and second refrigeration systems allowing cooling effect from either circuit not in concert; and,
(e) an insulated compartment in said chiller for housing the high pressure side of said refrigeration systems providing thermal isolation from the balance of said apparatus due to inherent low heat transfer characteristics while allowing ambient air to circulate through said refrigeration systems.

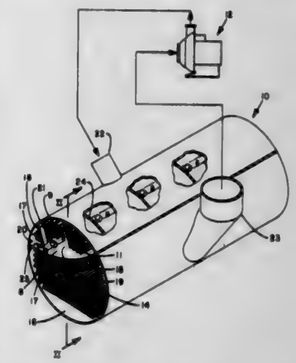
4,437,321
ABSORPTION COOLING AND HEATING SYSTEM
Setsuro Asai, Shimizu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 8, 1982, Ser. No. 416,042
Claims priority, application Japan, Sep. 11, 1981, 56-142309
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—324.2 8 Claims



1. In an absorption cooling and heating system comprising:
a generator;
two outdoor heat exchangers;
an expansion valve for cooling;
an expansion valve for heating;
an expansion valve for defrosting;
two indoor heat exchangers;
a pressure reducing valve for solutions;
a solution pump; and
a plurality of valves for switching between channels;
wherein the first of said two outdoor heat exchangers functions as a condenser, said two indoor heat exchangers function as evaporators and the second outdoor heat exchanger functions as an absorber in a cooling mode, wherein said first indoor heat exchanger functions as a condenser, said two outdoor heat exchangers function as evaporators and said second indoor heat exchanger functions as an absorber in a heating mode, and wherein said two outdoor heat exchangers function as condensers and said second indoor heat exchanger functions as an absorber in a defrosting mode; the improvement comprising:
a heat accumulator located downstream of the expansion valve for defrosting and serving as a channel for a refrigerant; and
heat pipe means having a heat releasing end inserted in said heat accumulator and a heat source end inserted in a waste heat flue of a burner for heating said generator, whereby in a defrosting mode a refrigerant flowing from the condensers and having its pressure reduced by the expansion valve absorbs the waste heat of the burner for heating the generator through said heat accumulator, to be heated thereby and vaporize.

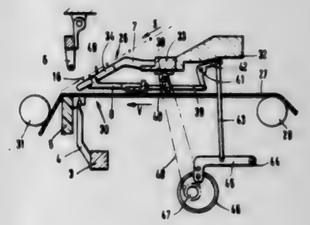
4,437,322
HEAT EXCHANGER ASSEMBLY FOR A REFRIGERATION SYSTEM
Richard E. Ertinger, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 3, 1982, Ser. No. 373,953
Int. Cl.³ F25B *39/02*
U.S. Cl. 62—504 15 Claims

1. A heat exchanger assembly comprising
a shell enclosing a heat transfer tube bundle to form a shell and tube type heat exchanger;
a partition means inside the shell for dividing the tube bundle into at least a condenser section and a flash subcooler section with each section having a number of tubes passing therethrough to provide sufficient cooling for condensing gaseous refrigerant directly in each section;
an inlet means into the condenser section for providing a passageway for flow of refrigerant into the shell side of the condenser section;
at least one orifice means in the partition means for providing a passageway for the flow of the refrigerant from the condenser section to the flash subcooler section, said orifice means sized and positioned to regulate refrigerant flow between the condenser section and the flash sub-



cooler section to provide a selected pressure difference between the condenser section and the flash subcooler section which is sufficient to ensure that a portion of any liquid refrigerant normally flowing from the condenser section through the orifice means to the flash subcooler section is flashed in the subcooler section to absorb heat from the remaining liquid refrigerant which flows into the flash subcooler section; and
an outlet means from the flash subcooler section for providing a passageway for the flow of the refrigerant out of the flash subcooler section.

4,437,323
WARP KNITTING MACHINE WITH WEFT INSERTION MAGAZINE AND SUBSTRATE PROVISION ARRANGEMENT
Gerhard Hittal, Rodgau; Hubertus Mühl, Hosenstamm; Franz Eigl, Obertshausen, and Werner Langer, Hosenstamm, all of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinen fabrik GmbH, Obertshausen, Fed. Rep. of Germany
Filed Sep. 29, 1982, Ser. No. 427,125
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1981, 3140480
Int. Cl.³ D04B *23/06*
U.S. Cl. 66—84 A 11 Claims



1. A warp knitting machine for delivering weft threads and a substrate at a relative acute angle along a weft path and a separate, substrate path to a needle bed having a needle bar, said machine comprising:

a weft thread magazine for transversely laying said weft threads across the breadth of said machine in parallel on said weft path, upstream of said needle bed, said weft path and needle bar being on opposite sides of said substrate path;

a substrate providing means for delivering said substrate along said substrate path;

a holding means, having at least one barrier aperture, for limiting the mobility along at least one of said paths, said holding means and needle bar being on opposite sides of said substrate path; and

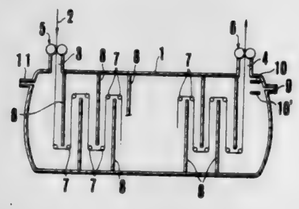
at least one forwarding means for protruding through said barrier aperture into said weft path and separating a leading one of said weft threads and bringing it to the downstream side of said needle bed.

4,437,324

APPARATUS FOR TREATING A CLOTH CONTINUOUSLY WITH THE USE OF LOW-TEMPERATURE PLASMA

Yoshikazu Sando, Wakayama; Tokuju Goto, Nara; Itsuo Tanaka, Osaka; Hiroshi Ishidoshiro, and Matsuo Minakata, both of Wakayama, all of Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Dec. 27, 1982, Ser. No. 452,786
Claims priority, application Japan, Jan. 6, 1982, 57-818
Int. Cl.³ D06B *3/12, 23/00*
U.S. Cl. 68—5 E **2 Claims**



1. An apparatus for treating a cloth continuously with the use of low-temperature plasma, comprising a reactor provided with seal mechanisms which can allow continuous taking in and out of a cloth to be treated through the reactor while maintaining the interior of the reactor under a reduced pressure, a plurality of cloth guide rolls provided up and down in the reactor for transporting the cloth zigzag forming snaky undulations, a plurality of partition walls provided up and down alternately in the reactor for forming zigzag cloth passages to transport the cloth therebetween forming snaky undulations, a gas supply opening provided in the vicinity of the cloth outlet of the reactor for jetting a gas to the zigzag cloth passages, a pair of electrode plates provided adjacent to the gas supply opening for producing low-temperature plasma with combined use of high frequency electric wave applied thereto and the gas jetted from the gas supply opening, and a vacuum duct provided in the vicinity of the cloth inlet of the reactor.

4,437,325

LAUNDRY MACHINE

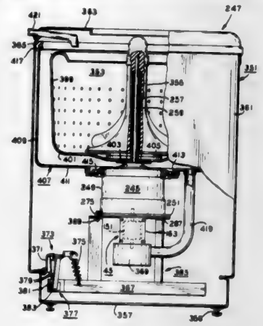
Doran D. Hershberger, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 304,536, Sep. 22, 1981, which is a division of Ser. No. 77,784, Sep. 21, 1979, Pat. No. 4,327,302. This application Apr. 22, 1983, Ser. No. 487,922
Int. Cl.³ D06F *23/04, 37/40*
U.S. Cl. 68—23.7 **23 Claims**

12. A laundry machine adapted for operation in at least a wash mode and a spin mode comprising:

means for agitating water and fabrics to be laundered thereby to wash the fabrics during the wash mode and for thereafter spinning the fabrics to effect centrifugal displacement of water from the fabrics during the spin mode;

an electronically commutated motor for driving said agitating and spinning means, said electronically commutated motor comprising a stator, a multi-stage winding arrangement associated with said stator and including a plurality of winding stages adapted to be electronically commutated in a plurality of preselected sequences, and rotatable means associated with said stator and adapted for selective magnetic coupling relation with said winding stages so as



to be rotatably driven thereby, said rotatable means being rotatably driven in one direction during the spin mode in response to the electronic commutation of at least some of said winding stages in one of the preselected sequences and being rotatably driven in the one direction and another direction opposite thereto during the wash mode in response to the electronic commutation of said winding stages in another of the preselected sequences; and

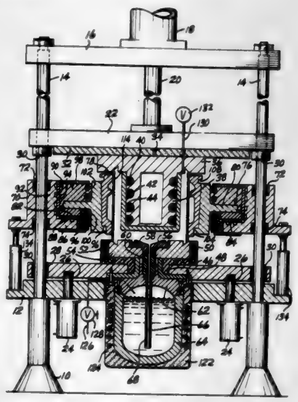
means for driving said agitating and spinning means from said rotatable means.

4,437,326

BULGE FORMING METHOD AND APPARATUS

Arne H. Carlson, 2202 "A" St., Tacoma, Wash. 98402

Filed Jun. 7, 1982, Ser. No. 385,838
Int. Cl.³ B21D *22/10*
U.S. Cl. 72—62 **31 Claims**



1. Bulge forming apparatus, comprising:

annular die means defining a central opening and presenting a radially inwardly directed annular die face;

support means for supporting an annular workpiece within said central opening, in close proximity to said annular die face including upper and lower support members for contacting upper and lower ends of the workpiece; and

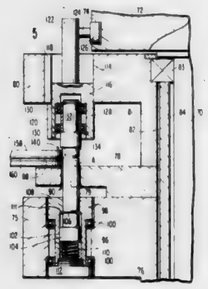
means for pressure feeding molten metal into the workpiece, for both heating the workpiece and pressing it radially outwardly into forming contact with the die face, to conform the workpiece to the shape of the die face.

4,437,327

METHOD AND APPARATUS FOR CIRCUMFERENTIALLY GROOVING THIN-WALLED CYLINDRICAL METAL OBJECTS

James A. Madden, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Jan. 5, 1982, Ser. No. 337,199
Int. Cl.³ B21D *17/04*
U.S. Cl. 72—94 **37 Claims**



1. An improved apparatus for progressively circumferentially grooving a thin-walled cylindrical object having a first axis and an open end, said apparatus comprising:

a source of said objects;

means for removing said objects from said source and delivering them along a circular path about a fixed second axis in spaced relation to each other, the rate of movement of said objects along said path being essentially constant;

means for supporting and for permitting rotation of each object about said first axis, as the object moves along said path;

rotating means rotating about a fixed third axis for engaging each object to progressively form a radially inwardly extending, circumferential groove in the wall thereof as the object rotates while moving along said path, said second fixed axis spaced apart from said third fixed axis, said object rotating about its first axis more than one revolution while in engagement with said rotating means thereby permitting said progressive forming; and

means for removing each object from said path following formation of said circumferential groove.

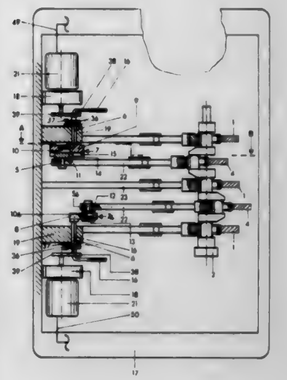
4,437,328

CRANKSHAFT GLAZE OR SMOOTH ROLLING MACHINE

Helmut Wittkopp, and Valentin Büschgens, both of Erkelenz, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Filed Feb. 19, 1982, Ser. No. 350,190
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108780
Int. Cl.³ B21H *7/00*
U.S. Cl. 72—110 **4 Claims**

1. A crankshaft rolling machine comprising a base, means on said base for mounting a crankshaft for rotation about a fixed axis, a least one rolling fixture movably mounted on said base, said fixture including rolling dies, a pair of crank assemblies each having a main pin mounted on said machine, said main pins being rotatable about parallel axis, said crank assemblies each including a crank pin offset from the axis of its said main pin, adjustable connecting means interposed between said crank pins and said main pins of each said crank assembly for variably offsetting said crank pins in a radial direction from the



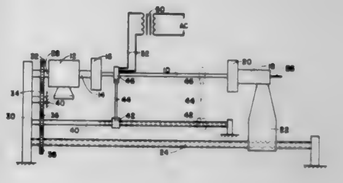
axis of said main pins, motion transmitting means coupling each said crank pin to said rolling fixture, and drive means connecting said crank assemblies for synchronously rotating said main pins about said parallel axis.

4,437,329

METHOD OF MANUFACTURING TWISTED TUBES

Elmo W. Geppelt, and William H. Poore, both of Tulsa, Okla., assignors to Delta Limited, Tulsa, Okla.

Filed Aug. 21, 1981, Ser. No. 295,143
Int. Cl.³ B21D *7/00, 11/14*
U.S. Cl. 72—299 **3 Claims**



1. A method of manufacturing a spiraled tube comprising:

(a) positioning an elongated cylindrical mandrel within a tube;

(b) grasping the tube adjacent the first end with a motor driven headstock;

(c) grasping the tube adjacent the second end with a non rotating tailstock;

(d) forming at least one point of reduced resistance to torsional force on the wall of the tube, which step may be accomplished before or after steps (a) and (b);

(e) rotating the headstock by means of said headstock motor to initiate and extend the formation of at least one spiral groove in the tube, the mandrel defining the minimum interior diameter of the spiraled tube so formed;

(f) driving a first and a second lead screw by means of said headstock drive motor;

(g) advancing said tailstock towards said head stock by

coupling said first lead screw to said tail stock to compensate for the reduction in length of the tube as the spiral groove is formed;

(h) supporting a heating element adjacent the tube;

(i) advancing said heating element towards said headstock by means of said second lead screw whereby said heating element is positioned adjacent the area of the tube wherein spiral groove is formed as the tube is rotated to raise the area of formation of the spiral groove to a temperature above ambient and below the melting point of the tube material.

4,437,330

METHOD OF MAKING A THIN-WALLED BEARING BUSHING

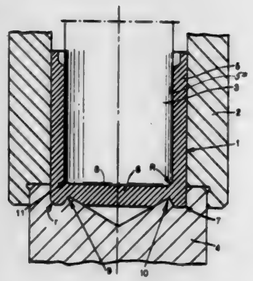
Armin Olschewski, Schweinfurt; Hermann Hetterich, Heidenfeld, and Peter Horling, Mainberg, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Division of Ser. No. 218,520, Dec. 22, 1980, Pat. No. 4,377,313. This application Sep. 24, 1982, Ser. No. 423,129

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952092

Int. Cl.³ B21D 22/00

U.S. Cl. 72—358 2 Claims



1. A deep drawing method for making a thin-walled bearing bushing from a flat circular member comprising a cylindrical sleeve section and a bottom section closing one end of the sleeve section having an outer peripheral rim at the juncture of the sleeve and bottom sections of small cross sectional radius consisting of the steps of cold pressing the bottom section and deep drawing the sleeve section in a single press stroke in the bore of a generally cylindrical die by a drawing ram engaging in the bore of the die and a cooperating counter ram positioned at the open end of the die confronting the bottom section, and simultaneously impressing an annular groove in one face of the bottom section closely adjacent the junction of the bottom and sleeve sections to effect radial outward displacement of the material in the bottom section into the area of the peripheral rim and uniform compression thereof in this area.

4,437,331

UNIVERSAL TRANSMISSION COUPLING AND A PROCESS FOR MANUFACTURING SUCH A COUPLING

Jacques Dore, Colombes, France, assignor to Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed Dec. 29, 1981, Ser. No. 335,577

Claims priority, application France, Jan. 2, 1981, 81 00025

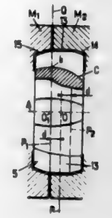
Int. Cl.³ B21K 1/76

U.S. Cl. 72—360 3 Claims

1. A process for manufacturing an inner element of a universal coupling having an outer element integral with a first shaft having a spherical cavity inside which are formed grooves; said inner element integral with a second shaft and having an external surface in which grooves are also formed, equal in number to those of the outer element, the section of the bottoms of the grooves of the inner element through a plane passing through the axis of this element being formed by an arc of a curve, said inner element being placed inside the outer element; and rolling means, such as balls, being disposed in the housings formed by the pairs of grooves of the outer element and of the inner element, these rolling means being retained in windows of a cage disposed between the inner element and the outer element;

said process comprising the step of:

forging said inner element by a single precise forging operation, particularly cold or semi-hot forging, by forming said



inner element with two dies having an imprint corresponding to the shape complementary to that of the parts of the inner element to be formed and having a single joint plane orthogonal to the axial direction of the inner element and located so as to contain the points of the bottoms of the grooves of the inner element the furthest away from the axis, said inner element being forged with a cylindrical surface portion extending from said joint plane and continued on each side by spherical surface portions for mating with the corresponding spherical inner surfaces of the cage.

4,437,332

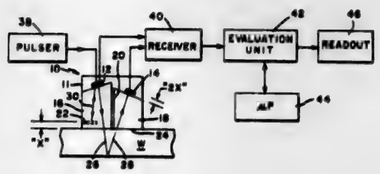
ULTRASONIC THICKNESS MEASURING INSTRUMENT

Richard J. Pittaro, West Redding, Conn., assignor to Krautkramer-Branson, Inc., Lewistown, Pa.

Filed Sep. 30, 1982, Ser. No. 429,127

Int. Cl.³ G01N 29/00

U.S. Cl. 73—1 DV 12 Claims



1. A dual-element ultrasonic probe comprising in combination a pair of elongated plastic coupling means arranged in substantially parallel juxtaposition in slightly spaced acoustically isolated relation, each of said coupling means acting as a delay line for ultrasonic signals passing therethrough between respective oppositely disposed end surfaces, each such coupling means having a respective electroacoustic transducer element coupled to a respective first end surface and the opposite second end surfaces of both coupling means adapted to be coupled for simultaneous acoustic contact with a workpiece, the improvement comprising:

one of said coupling means characterized by length L having a reflector disposed at a longitudinal distance X from its second end surface for partially reflecting ultrasonic signals transmitted from its respective first end surface disposed transducer element, and

the other coupling means characterized by length equal to L−2X.

4,437,333

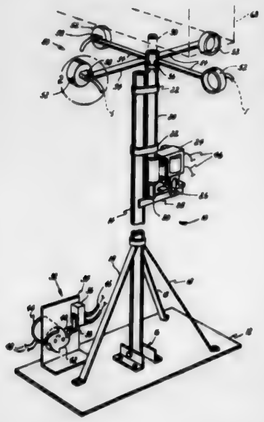
APPARATUS AND METHOD FOR ASBESTOS FIBER RELEASE POTENTIAL

David Hands, Southfield, Mich., assignor to Clayton Environmental Consultants, Inc., Southfield, Mich.

Filed Jun. 1, 1982, Ser. No. 383,689

Int. Cl.³ G01N 3/38

U.S. Cl. 73—12 18 Claims



1. Portable test apparatus for in situ testing of the asbestos fiber release potential to ambient air of an asbestos containing composition comprising an impact member adapted to impact the exterior surface of the composition, means for operating said impact member so as to cause it to repeatedly impact a selected area of the exterior surface of the composition over a given time interval and cause a release of asbestos fibers to ambient air representative of the asbestos fiber release potential of the composition, and a collector system comprising one or more filters disposed adjacent the area of impact each having an open collection face exposed to ambient air for collecting released asbestos fibers in ambient air.

4,437,334

METHOD AND APPARATUS FOR DETECTING KNOCKING COMBUSTION

Werner Laureus, Aachen, Fed. Rep. of Germany, assignor to Franz Plochinger, Aachen, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,260

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105245

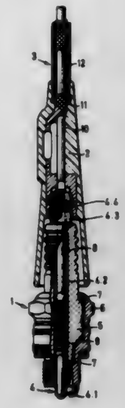
Int. Cl.³ G01L 23/22

U.S. Cl. 73—35 22 Claims

1. A method of detecting knocking combustion during the operation of an externally auto-ignited internal combustion engine, said method comprising the steps of:

detecting the radiation emitted by the combustion chamber gases, which radiation changes during knocking combustion;

conveying said radiation to a processing device; and



ascertaining from the detected radiation the knock-signal energies for each cycle.

4,437,335

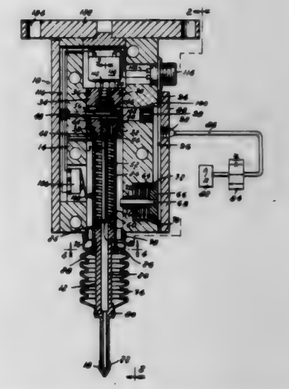
GAUGE AND METHOD OF DETERMINING THE EXISTENCE OF IRREGULARITIES IN A SURFACE OF AN ARTICLE

Donald C. Gates, Troy, Mich., assignor to Antares Engineering, Inc., Troy, Mich.

Filed Dec. 2, 1981, Ser. No. 326,728

Int. Cl.³ G01B 5/28

U.S. Cl. 73—37.9 26 Claims



19. A gauge for determining the existence of irregularities in a surface of an article comprising;

a housing;

a probe means having a fluid outlet for the passage of fluid under pressure therethrough;

means mounting said probe means within said housing for movement between a neutral position and a sensing position;

a sensor means for detecting the pressure of the fluid in said sensing position of said probe means;

a thrust rod being reciprocally movable and engageable with said probe means for selectively urging said probe means towards said sensing position;

said fluid outlet of said probe means being closely parallel to the movement of and opening away from said thrust rod;
said mounting means including a pivot joint for allowing said probe means to pivot between said neutral position and said sensing position;
said pivot joint comprising a female pivot means fixedly secured with said housing and a male pivot means;
said probe means being operatively connected to said male pivot means;
said female pivot means including a radially inwardly extending first flange, said male pivot means including a second flange extending outwardly and radially therefrom, said second flange being seated upon said first flange and within said female pivot means whereby said second flange of said male pivot means rocks within said female pivot means so as to pivot said probe means between said neutral position and said sensing position; and a micro switch disposed within said housing for sensing when said probe means is pivoted beyond said sensing position.

4,437,336
DEVICE OF INTEGRATING A SMALL AMOUNT OF FLOW OF FLUID FOR LEAK DETECTION

Takeshi Abe, Yokohama, Japan, assignor to Ricoh Co. Ltd., Japan

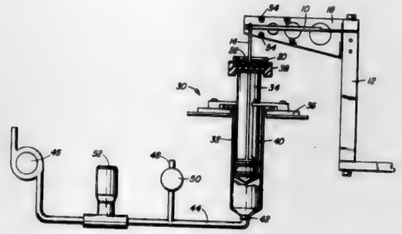
Filed Nov. 19, 1980, Ser. No. 208,318
Claims priority, application Japan, Nov. 20, 1979, 54-150456; Aug. 14, 1980, 55-111991
Int. Cl.³ G01M *3/28*; G08B *21/00*
U.S. Cl. 73—40.5 R
4 Claims

1. A device for integrating a small amount of flow of fluid comprising:
(a) flow measuring means capable of generating a series of pulses, a space between the pulses being varied in inverse proportion to the measured flow rate of fluid;
(b) a timer (51) arranged to generate periodic timing signals for a deciding unit time interval for taking a measurement;
(c) first integrating means (61) connected to receive and count the series of pulses from said flow measuring means and to be reset by the respective timing signals from said timer, said first integration means producing corresponding values of the measured flow rate to which the counted number of pulses per unit time interval pertains;
(d) a leakage decision unit (50-1) for comparing the corresponding value of the measured flow rate from said first integrating means with a predetermined reference value corresponding to a normal lower limit for the rate of flow usually consumed and providing a leakage detection signal at a time when the corresponding value of the measured flow rate is less than the reference value; and
(e) second integrating means (62, 63) for integrating the corresponding value of the measured flow rate from said first integrating means in response to the leakage detection signals from said leakage decision unit.

4,437,337
VISCOELASTOMETER

Walter J. Fenrick, Medicine Hat, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Oct. 6, 1981, Ser. No. 309,164
Claims priority, application Canada, Aug. 31, 1981, 384906
Int. Cl.³ G01N *11/10, 13/02*
U.S. Cl. 73—54
8 Claims

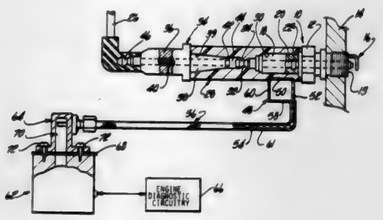


1. Apparatus for measuring and displaying a viscoelastic effect in a liquid as a reproducible force/time signature which can be related to the viscosity and elasticity of the liquid, said apparatus comprising a resilient, deflectable cantilever extending from a rigid support, a rigid rod extending downwardly from the cantilever, a sample cup adapted to contain a liquid sample, means for moving the sample cup at a selected rate between an upper position at which the rigid rod is immersed to a predetermined depth in a liquid contained in the sample cup and a lower position at or before which occurs relaxation and separation of a filament of the liquid which forms between the rigid rod and the surface of the liquid during movement of the sample cup from the upper position toward the lower position, strain sensing means associated with a portion of the cantilever intermediate the rigid rod and the rigid support for sensing the strain which occurs during the formation and subsequent relaxation and separation of the filament, and display means associated with the strain sensing means for displaying the sensed strain as a function of time to provide a reproducible force/time signature which can be related to the viscosity and elasticity of the liquid.

4,437,338
SPARK PLUG MICROWAVE ADAPTER

Scott E. Wilson, Ann Arbor, Mich., assignor to Jodon Engineering Associates, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 192,728, Oct. 1, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,205
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116
14 Claims

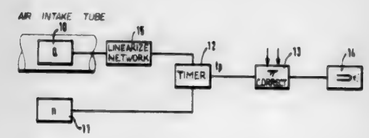


1. An adapter for coupling microwave energy into a combustion chamber of an internal combustion engine through a spark plug of the type which includes an insulator housing and a spark conduction path, said adapter comprising means shaped so as to be adapted to be removably and snugly received over the spark plug insulator housing, and a microwave antenna mounted on said means and adapted to be coupled to a source of microwave energy for transmitting said microwave energy through said means and through the spark plug insulator housing into the engine chamber in a waveguide transmission mode.

4,437,339
LINEARIZING AND CONTROL CIRCUIT FOR AIR FLOW RATE METER

Ulrich Drews, Vaihingen; Peter Rapps, Karlsruhe, and Peter Werner, Wiernsheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,090
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038498
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118
5 Claims

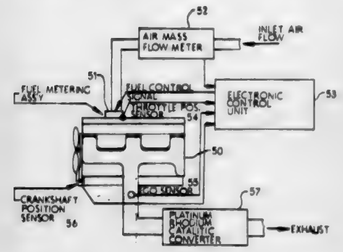


1. An electronically controlled circuit for air flow measurement comprising:
an air intake tube
an air flow rate meter device in the air intake tube and producing an output, and
a linearizing circuit layout responsive to the output of the device, the linearizing circuit layout functioning to produce an output in accordance with different voltage dividers determining point-slope values selected by the output of the device for voltage-to-current conversion, whereby a total current is formed from the sum of individual currents dependent on the respective voltage dividers.

4,437,340
ADAPTIVE AIR FLOW METER OFFSET CONTROL

Csaba Csere, Ypsilanti, and William C. Follmer, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 23, 1981, Ser. No. 324,287
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118
14 Claims

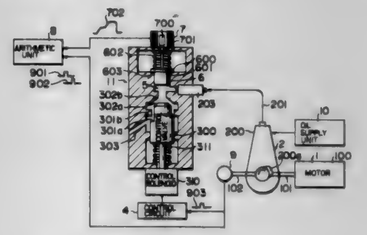


5. A method for calibrating an air flow meter for an internal combustion engine capable of operating in a closed-loop mode and an open-loop mode comprising:
operating the internal combustion engine in a closed loop mode so as to achieve a desired air fuel ratio;
sensing the exhaust gas to determine the actual air fuel ratio;
determining any difference between the actual and desired air fuel ratio, the leakage of air downstream of the air flow meter being a function of said difference; and
adjusting the fuel supply so that the air fuel ratio is adjusted toward the desired air fuel ratio thereby compensating for any leakage of air downstream of the airflow meter.

4,437,341
APPARATUS FOR MEASURING AN INJECTION AMOUNT

Shinzo Ito, Aichi; Tateshi Kato, Anjo; Takumi Noma, Okazaki; Soichiro Sugimoto, Okazaki, and Seigi Toiyama, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 19, 1982, Ser. No. 369,427
Claims priority, application Japan, Apr. 21, 1981, 56-60414
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A
1 Claim



1. An apparatus for measuring an injection amount comprising:
an injection chamber to be charged with liquid injected from an injection device under measurement;
a prime mover for driving the injection device;
a liquid injection regulator operable in response to the rotation angle of a shaft of the prime mover, said liquid injection regulator having two seal sections for sealing said injection chamber and a liquid discharge port, respectively, and a control valve, said control valve having portions thereof which constitute parts of the two seal portions, wherein when discharging the liquid, said control valve departs from said injection chamber to release said two seal sections to thereby connect the injection chamber to the discharge port and after completion of the discharge of liquid, returns to said liquid injection chamber while sealing said liquid discharge port to thereby raise pressure in said injection chamber;
a displacement member which displaces in accordance with a change in the volume of said injection chamber;
a displacement detector which converts a displacement of the displacement member into an electrical signal; and
an arithmetic unit which arithmetically processes the electrical signal from the displacement detector to display an injection amount of the liquid injected from the injection device under measurement.

4,437,342
DIAGNOSTIC SYSTEM FOR DETECTING FAULT IN FUEL SYSTEM OF ENGINE HAVING ELECTRONIC FUEL INJECTION SYSTEM

Akio Hosaka; Akito Yamamoto, and Katsunori Oshiage, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 15, 1982, Ser. No. 388,606
Claims priority, application Japan, Jul. 8, 1981, 56-105677
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A
6 Claims

1. A fault diagnostic system for detecting faults in a fuel system of an engine with an electronic fuel injection system, comprising:
means for determining the injection quantity of fuel injected

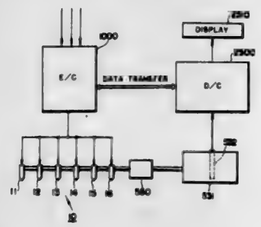
by injector means by summing the length of the injector opening time of each injection,

means for measuring the residual quantity of fuel remaining in a fuel tank for the engine,

means for calculating the consumption quantity of fuel removed from the fuel tank by calculating the amount of a decrease of the residual fuel quantity measured by said residual quantity measuring means,

checking means which receives information on the fuel injection quantity from said fuel injection quantity determining means and information on the fuel consumption quantity from said fuel consumption quantity calculating means, calculates the difference between the fuel injection quantity of a predetermined time interval and the fuel consumption quantity of the same time interval, checks if the difference is within a predetermined permissible range, and produces an abnormal signal when the difference is outside the range,

indicating means for producing a fault signal indicative of the existence of a fault in response to said abnormal signal.

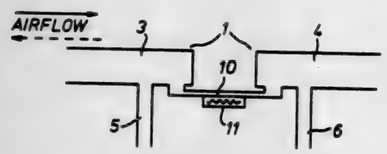


4,437,343

AIRSPEED SENSING SYSTEMS

James M. Dixon, Lymington, and Geoffrey R. Witt, Dorset, both of England, assignors to Penny & Giles Transducers Limited, United Kingdom

Filed Mar. 19, 1982, Ser. No. 359,800
Claims priority, application United Kingdom, Mar. 24, 1981, 8109242
Int. Cl.³ G01C 21/10
U.S. Cl. 73—182
4 Claims



1. An airspeed sensing system comprising:

a tube arrangement which in use is exposed to airflow, said tube arrangement including a first tube and a second tube aligned with one another, said first tube having a first open-ended portion to face substantially directly into said airflow and said second tube having a second open-ended portion to face in substantially the opposite direction;

a restricted passage connecting said first and second portions, the diameter of said passage being small relative to the diameters of said first and second portions;

a resistive element disposed within said restricted passage for the purpose of deriving a temperature measurement; and

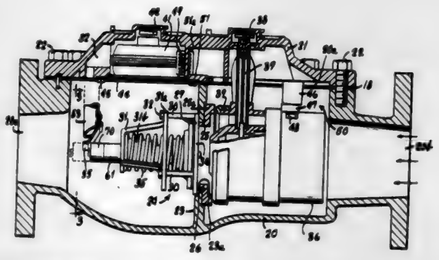
means for obtaining an airspeed indication in dependence on pressures in said first and second portions, respectively.

4,437,344

COMPOUND LIQUID FLOW METER WITH FAST CROSSOVER CHARACTERISTIC

William G. Karjalainen, Tallassee, Ala., assignor to Neptune Water Meter Company, Tallassee, Ala.

Filed Jan. 25, 1982, Ser. No. 342,132
Int. Cl.³ G01F 7/00
U.S. Cl. 73—197
5 Claims



1. A compound liquid flow meter, comprising:

a. a first flow path between an inlet and an outlet, including a first meter accurate over a first range of flow rates above a predetermined flow rate;

b. a second flow path between the inlet and the outlet, including a second meter accurate over a second range of flow rates below and overlapping said first range;

c. first valve means controlling the flow through said first meter and biased toward closed position, said valve means being subject to the pressure difference between the inlet and the outlet, said pressure difference being effective to open the valve means against its bias when the pressure difference exceeds a predetermined value corresponding to a flow rate in the overlapping portion of said ranges;

d. second valve means controlling the flow through the second meter, said second valve means being movable between a minimum flow position and an open position and being moved toward said open position by the flow through said second meter;

wherein the improvement comprises:

e. means mounted on the first valve means and movable with respect thereto in response to the pressure difference between the inlet and the outlet, said last-named means being effective when the pressure difference exceeds a value slightly smaller than said predetermined value to initiate movement of the second valve means toward its minimum flow position, said initial movement of said second valve means being effective to increase the pressure difference to said predetermined value even though the flow rate remains constant, so that opening movement of the first valve means is initiated and movement of both the first and second valve means continues until the first valve means reaches its open position and the second valve means reaches its minimum flow position.

4,437,345

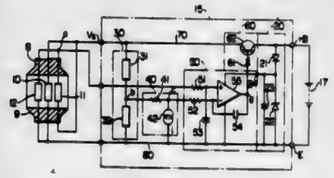
GAS FLOW MEASURING DEVICE

Tsuneyuki Egami, Aichi; Hisasi Kawai, Toyohashi; Tokio Kohama, Nishio, and Hideki Obayashi, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 30, 1982, Ser. No. 363,450
Claims priority, application Japan, Apr. 1, 1981, 56-49803
Int. Cl.³ G01F 1/68
U.S. Cl. 73—204
6 Claims

1. A gas flow measuring device comprising an electric heater installed in a pipe through which a gas to be measured flows, a first temperature dependent resistor installed at the downstream side of the electric heater within said pipe, a second temperature dependent resistor installed at a position substantially free from heat produced from said electric heater within said pipe, and a measuring circuit for measuring the flow of a gas to be measured by using output signals of said electric heater and first and second temperature dependent resistors,

wherein said measuring circuit includes a reference resistor circuit for forming a bridge having diametrical nodes together with said first and second temperature dependent resistors, a constant voltage adding circuit having a resistor and a constant current source connected in parallel with the reference resistor circuit to provide a constant current thereto for applying a constant voltage to one of said diametrical nodes of the bridge, a differential amplifier circuit having two inputs for amplifying the differential voltage between the other of the diametrical nodes of said bridge and the output of said constant voltage adding circuit at said one of said nodes, the resistor of said constant voltage adding circuit being connected between one of said nodes and one of said inputs, and an electrical amplifier circuit for amplifying the output voltage of said differential amplifier circuit and for controlling the voltage to be applied to said electric heater and said bridge.

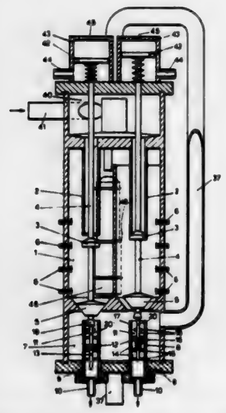


4,437,346

MILKMETER MEASURING THE WEIGHT OF THE QUANTITY OF MILK ISSUED BY A COW, AND DEVICE FOR TAKING SAMPLES ADAPTED FOR USE WITH SAID MILKMETER

Jan Kummer, Oostergrachtswal 91-95, 8921 AB, Leeuwarden, Netherlands

Filed Nov. 9, 1981, Ser. No. 319,612
Claims priority, application Netherlands, Nov. 14, 1980, 8006246; May 13, 1981, 8102359
Int. Cl.³ G01F 11/00
U.S. Cl. 73—221
12 Claims



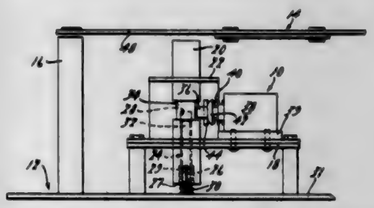
1. A milkmeter for intermittantly determining the weight of a quantity of milk issued by a cow during milking, comprising a measuring container, a supply valve and a discharge valve for supplying and discharging the milk to and from the container respectively, an elongated float movable freely in a vertical direction in said measuring container, in response to the level of milk therein, the upper end of said float being provided with a means which cooperates with switch means mounted in a stationary position in opposition to said float over the upper end of the measuring container, said switch acting to close the milk supply valve and to open the milk discharge valve when contacted by the upper end of the float, the distance between the lower end of said float and the maximum milk level in said measuring container when said float is contacted with the switch, being large relative to the spacing of the lower end of said float from the bottom of said measuring container.

4,437,347

SHUT-OFF ACTUATING DEVICE

Robert J. Bronsky, New Baltimore; Dennis B. Clark, Flat Rock; Jeffrey A. McKeen, Detroit, and William A. Przybylski, Dearborn, all of Mich., assignors to Michigan Consolidated Gas Company, Detroit, Mich.

Filed Jan. 18, 1982, Ser. No. 340,377
Int. Cl.³ G01F 15/00
U.S. Cl. 73—272 R
23 Claims



1. In a fluid flow device having a flow-sensing apparatus including linkage means operable in response to said fluid flow, said apparatus being adapted to prevent said fluid flow through said device when said linkage means is inoperative, the improvement comprising shut-off means for rendering said linkage means inoperative and actuating means for selectively actuating said shut-off means, thereby preventing said fluid flow through said device, said shut-off means further including a stop member interferingly engageable with said linkage means and biasing means biasing said stop member into said interfering engagement with said linkage means, said actuating means including an actuating arm engageable with said stop member to hold said stop member out of said interfering engagement with said linkage means, said actuating arm being selectively moveable out of said engagement with said stop member, thereby allowing said biasing means to urge said stop member into said interfering engagement with said linkage means.

4,437,348

ULTRASONIC IMAGING APPARATUS

Hiroshi Sasaki, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 7, 1982, Ser. No. 386,081
Claims priority, application Japan, Jun. 8, 1981, 56-86902
Int. Cl.³ G01N 29/00
U.S. Cl. 73—625
13 Claims

1. An ultrasonic imaging apparatus comprising:

an ultrasonic transducer comprised of a plurality of ultrasonic transducer elements;

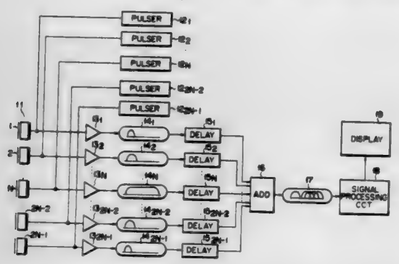
drive means for supplying drive pulses to the transducer elements of the ultrasonic transducer to cause ultrasonic beams to be emitted from the transducer elements;

prestage filtering means connected to the transducer elements to receive from the transducer elements echo signals corresponding to echo waves and filter the echo signals respectively in accordance with its different frequency characteristics;

composing means for composing filtered echo signals from

the prestage filtering means to obtain a composite echo signal;

variable band pass filtering means connected to the composing means to filter the composite echo signal therefrom in accordance with its varying filtering characteristics, thereby to sequentially extract echo signal components corresponding to said different frequency characteristics;



signal processing means connected to the variable band pass filtering means to convert the echo signal components therefrom into a tomographic signal; and

display means connected to the signal processing means to display the tomographic signal therefrom as a tomographic image.

4,437,349

VORTEX FLOW METER FREQUENCY ADJUSTMENT

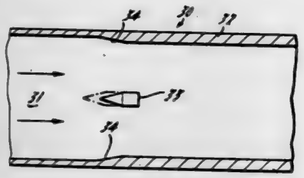
Robert D. Joy, Cedar Rapids, Iowa, assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01265, § 371 Date Sep. 16, 1982, § 102(e) Date Sep. 16, 1982

PCT Filed Sep. 16, 1982, Ser. No. 434,141

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.22 **8 Claims**



1. A device for generating vortices in a bounded fluid stream comprising:

a fluid flow duct means for passing a fluid stream;

a generator means for generating vortices positioned in said duct in the fluid stream;

an adjustment means for varying the cross sectional area of the fluid flow adjacent said generator means; and wherein said generator means and said adjustment means include:

an elongated plate member having a rotationally movable axis of elongation with respect to the direction of flow of the fluid, so that a different cross section can be presented to the fluid flow.

4,437,350

VORTEX FLOW METERING APPARATUS

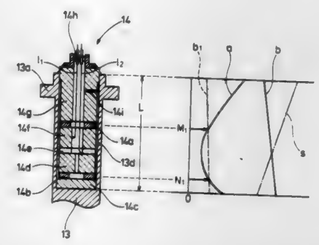
Hisashi Tamura; Ichizo Ito; Masashi Hirayama, and Tetsuo Ando, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,078

Claims priority, application Japan, Oct. 6, 1981, 56-159060

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.24 **6 Claims**



1. A vortex flow metering apparatus, comprising converter means, said converter means comprising

a first conversion amplifier having an input and an output,

a second conversion amplifier having an input and an output,

an operator circuit having an input and an output, and means for connecting said outputs of said first conversion amplifier and of said second conversion amplifier to said input of said operator circuit;

detector means, said detector means comprising

a vortex generator having an axis and defining a concavity,

a first piezoelectric sensor disposed within said concavity,

a second piezoelectric sensor disposed within said concavity,

means for connecting said first piezoelectric sensor to said input of said first conversion amplifier, and

means for connecting said second piezoelectric sensor to said input of said second conversion amplifier; and

wherein said first piezoelectric sensor and said second piezoelectric sensor are selectively arranged at to points along said axis of said vortex generator whereat ratio of noise component due to vibration of said vortex generator according to disturbance vibration and ratio of noise component due to duct strain according to disturbance vibration are substantially equal, and ratio of signal component due to vortex dynamic lift and ratio of signal component due to disturbance vibration are different from each other, whereby signals from said first and second piezoelectric sensors are applied to said inputs of said first and second amplifiers, and after processing thereat, supplied to said input of said operator circuit, thereby to remove noise components caused by disturbance vibrations.

4,437,351

CONTROL STICK FORCE TRANSDUCER

Harold J. McGrann; John F. Orn, and Matthew C. Pallaver, all of Phoenix, Ariz., assignors to Sperry Corporation, NY, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,415

Int. Cl.³ G01L *5/16*; B64C *13/04*

U.S. Cl. 73—862.05 **9 Claims**

1. A zero-moment force transducer apparatus adapted for use with an aircraft manual control member and disposed between a grip handle portion and lower portion of a control member and disposed along a normally vertical axis, comprising:

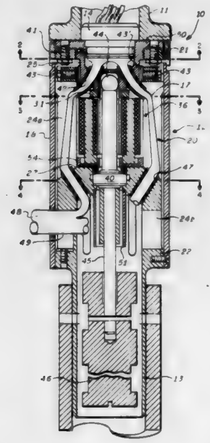
a first plate connected with said grip handle portion;

a second plate spaced apart from said first plate and connected with said lower control portion; said first and second plates being disposed in normally parallel horizontal planes and normally aligned along said vertical axis;

at least three elongated laterally compliant columns connecting said first plate with said second plate and which together therewith define at least three parallelogram configurations disposed in planes parallel with said vertical axis and each column having compliances such that one of said plates may be reflected relative to the other in all lateral directions upon corresponding forces being applied to said one plate;

a platform disposed intermediately of said first and second plates;

a common inductive pick-off means having a first part connected with said first plate and a second part mounted on



said platform and connected with said platform for providing output signals representative of said relative lateral deflection of said plates in response to lateral forces applied to said grip handle portion, said pick-off further being substantially non-respective to moments about said vertical axis, and

an acceleration responsive mass and pivoted rod means connected with said mass, said rod means coupled with said first plate for inducing forces on said first plate to compensate for corresponding acceleration forces acting on said grip handle portion.

4,437,352

APPARATUS FOR MEASURING BELT TENSION

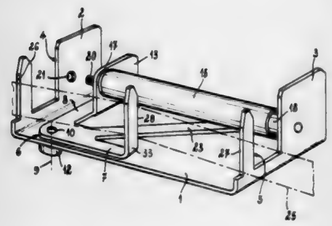
Albert H. Deborde, and Michel F. Volland, both of Bourgoin Jallieu, France, assignors to Saurer-Diederichs (Societe Anonyme), Bourgoin Jallieu, France

Filed Jan. 22, 1982, Ser. No. 341,828

Claims priority, application France, Jan. 30, 1981, 81 02186

Int. Cl.³ G01L *5/06*

U.S. Cl. 73—862.47 **16 Claims**



8. An apparatus for measuring the tension in a straight strand such as a belt, said apparatus comprising:

an elongated housing having a pair of opposite longitudinal ends formed with respective generally parallel end plates having structure edges facing transversely in the same direction and generally defining a plane, one of said end plates having a face;

a two-arm lever pivoted on said housing between said ends and having an abutment arm extending transversely between said ends and a measuring arm extending generally longitudinally of said housing and having an arm edge lying between said structure edges and facing transversely opposite to said structure edges;

pivot means supporting said lever on said housing for angular motion about an axis transverse to said housing between two end positions with said one arm edge lying on opposite sides of said plane;

spring means braced between said abutment arm and said face of said one end plate for urging said lever into the end position with said arm edge between said plane and said housing; and

means including a pointer and indicia on said lever and housing for indicating the angular position of said lever.

4,437,353

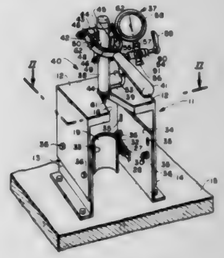
PRESSURIZED CONTAINER TESTING APPARATUS

R. Dean Hamerlinck, 620 Pope St., St. Helena, Calif. 94574

Filed May 7, 1982, Ser. No. 375,999

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—863.81 **11 Claims**



1. Apparatus for piercing a cork sealing off the neck of a bottle adapted to contain a liquid therein comprising:

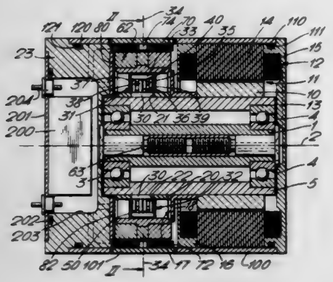
a housing having guide means thereon for receiving a bottle and aligning said bottle so that said bottle is disposed in an upright position with the cork sealing off the neck of said bottle having its upper surface exposed to the atmosphere wherein said guide means includes a top wall on said housing having a tapered slot therein for receiving the neck of a bottle;

a cylinder having an internal movable piston therein disposed on said housing above said guide means, said piston carrying a downwardly extending hollow cork piercing needle having an eye at the lower end fluidly communicating with a longitudinally extending opening therein and its longitudinal axis aligned with substantially the center of said cork upper surface, said piston being movable from a first position whereby the point of said needle is disposed above the upper surface of said cork to a second position whereby said needle pierces said cork and the eye thereof enters said bottle below the lower surface of said cork; and including a handle pivotally connected to said cylinder having linkage means interconnecting said handle to said piston whereby said piston is movable between its first and second positions by pivotal movement of said handle.

4,437,354
TORQUER ASSEMBLIES FOR GYROSCOPE APPARATUS

Nicholas R. Capaldi, Cheltenham, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Jul. 20, 1981, Ser. No. 285,193
Claims priority, application United Kingdom, Jul. 29, 1980, 8024746
Int. Cl.³ G01C 19/30
U.S. Cl. 74—5.46
11 Claims

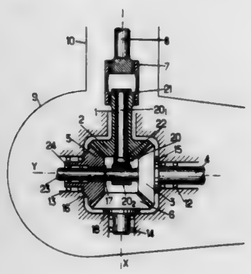


1. A torquer assembly for producing a restoring force on a rotatable member of gyroscope apparatus, about an axis substantially at right angles to the axis of rotation of the rotatable member, wherein the torquer assembly comprises: a permanent magnet assembly; means mounting said permanent magnet assembly with said rotatable member so as to produce a magnetic field directed substantially radially of the axis of rotation of said rotatable member; an electric coil assembly including an annular member of magnetic material fixedly mounted with said gyroscope apparatus radially outwards of said permanent magnet assembly, and a plurality of coils mounted on the inner surface of said annular member within the field of said permanent magnet assembly, a part of the magnetic field produced by said coils being directed through said annular member.

4,437,355
BEVEL GEAR POWER TRANSMITTING GEAR TRAINS

Andre Bordat, Rueil Malmaison, France, assignor to Constructions Mecaniques de Normandie, Paris, France

Filed Apr. 27, 1981, Ser. No. 257,609
Claims priority, application France, Apr. 29, 1980, 80 09702
Int. Cl.³ F16H 35/00, 35/06, 57/00, 1/14
U.S. Cl. 74—385
5 Claims

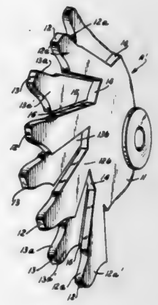


1. Bevel gear power transmitting gear train comprising a first bevel gear coupled to a driving shaft, a second bevel gear coupled to a driven shaft with axis perpendicular to that of the driving shaft and engaging with the first one, a third loose bevel gear coaxial with the second one and engaging with the first one and a fourth loose bevel gear coaxial with the first one and engaging with the second and with the third, one of the first two gears being mounted slightly "floating", characterized in that the "floating" gear (2) is pivotably mounted for rotation about its axis X, but without freedom for axial movement, on a rigid body (20) itself pivotably mounted about the common axis Y, perpendicular to X, of the two gears (3, 5) with which the floating gear (2) is in engagement, with freedom for axial movement along this axis Y.

4,437,356
GEAR

Mikiharu Imazaike, 26-1 Nishi, 2-chome, Tezukayama, Sumiyoshi-ku, Osaka, Japan

Filed Mar. 4, 1981, Ser. No. 240,358
Claims priority, application Japan, Mar. 22, 1980, 55-37585; Mar. 22, 1980, 55-37586
Int. Cl.³ F16H 57/00, 55/14
U.S. Cl. 74—411
12 Claims



1. A one-piece, integrally molded plastic gear for precision apparatus such as timepieces and acoustic devices and having elastically deformable teeth to provide cushioning properties to reduce noise and vibration during use, comprising a main body, two circumferential rows of teeth extending from said main body, said rows of teeth being axially offset with the teeth in one row being circumferentially offset relative to the teeth in the other row, each of said teeth having a terminating end portion and a longitudinally extending leg portion, each of said leg portions extending at an acute angle greater than zero degrees relative to a radial line of said gear, each of said terminating end portions defining a complete and integrally formed gear tooth, said leg portions of each of said teeth in each of said rows being circumferentially spaced from one another a distance which is greater than the circumferential width of each of said leg portions such that adjacent offset leg portions are circumferentially spaced from one another, whereby said teeth are elastically deformable in a circumferential direction to thereby reduce noise and vibration without inpairing the precision of the gear for use in precision apparatus.

4,437,357
DOUBLE LEVER ASSEMBLY FOR BICYCLE SPEED CONTROL

Nobuo Ozaki, and Mikio Hosokawa, both of Osaka, Japan, assignors to Maeda Industries, Ltd., Osaka, Japan

Filed Nov. 27, 1981, Ser. No. 325,125
Claims priority, application Japan, Nov. 28, 1980, 55-168393
Int. Cl.³ B62K 23/06; G05G 9/00; F16H 7/22
U.S. Cl. 74—475
3 Claims

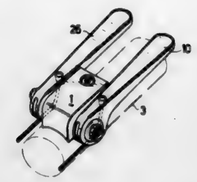
1. A double lever assembly for bicycle speed control comprising

a first shaft supported by a mounting block,

a first or rear derailleur operating lever mounted on said first shaft,

a second shaft supported by said mounting block,

a second or front derailleur operating lever mounted on said second shaft, and

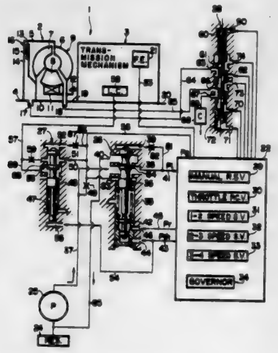


said second shaft being inter-connected with said first shaft through motion converting mechanism so that said second lever is reciprocated within a limited range in synchronism with pivotal movement of said first lever.

4,437,358
TRANSMISSION WITH TORQUE CONVERTER AND LOCK UP CLUTCH WITH LUBRICATION AND PRESSURIZATION SYSTEM

Seitoku Kubo, Toyota; Koujiro Kuramochi, Okazaki, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 29, 1981, Ser. No. 278,351
Claims priority, application Japan, Jul. 4, 1980, 55-91379
Int. Cl.³ B60K 41/02
U.S. Cl. 74—867
2 Claims



1. An automatic transmission for an automotive vehicle, comprising:

(a) a gear transmission mechanism which comprises a lubricating system and which can provide a plurality of speed stages according to a selective supply of actuating hydraulic fluid pressure thereto;

(b) a hydraulic fluid pump which provides a supply of pressurized hydraulic fluid;

(c) a torque converter, which has two ports, the interior of which is filled with hydraulic fluid supplied from a selected one of said two ports, and which incorporates a lock up clutch which is selectively engaged or disengaged according to changing over of supply of hydraulic fluid pressure thereto between said two ports;

(d) a hydraulic fluid pressure control system which controls said gear transmission mechanism so as, according to operational parameters of said vehicle, to set said gear transmission mechanism to one or another of said plurality of speed stages;

(e) a line hydraulic fluid pressure control valve which receives a supply of pressurized hydraulic fluid from said hydraulic fluid from said hydraulic fluid pump and which provides a supply thereof, regulated to a line hydraulic fluid pressure level, to said hydraulic fluid pressure control system as a source of line pressure;

(f) a first throttle element;

(g) a torque converter hydraulic fluid pressure control valve which:

(g1) receives a supply of pressurized hydraulic fluid from said hydraulic fluid pump in parallel to said line hydraulic fluid pressure control valve via said first throttle element; and

(g2) provides a supply thereof to said torque converter as a source of torque converter hydraulic fluid pressure for filling the interior of said torque converter with hydraulic fluid and for selectively either engaging or disengaging said lock up clutch, said supply of torque converter hydraulic fluid pressure being regulated to a torque converter hydraulic fluid pressure level by said torque converter hydraulic fluid pressure control valve performing the action of, when said supply thereto of hydraulic fluid from said hydraulic fluid pump is pentiful, diverting therefrom a release flow of hydraulic fluid; and

(h) a second throttle element;

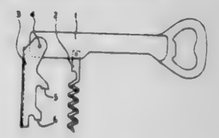
(i) said release flow of hydraulic fluid, when available, being supplied to said lubricating system of said gear transmission mechanism, and also said torque converter hydraulic fluid pressure being supplied to said lubricating system of said gear transmission mechanism via said second throttle element;

(j) whereby said torque converter hydraulic fluid pressure is always maintained at a level proportionally reduced as compared with said line hydraulic fluid pressure level, and, when said hydraulic fluid pump is producing a plentiful amount of flow of hydraulic fluid, and said torque converter hydraulic fluid pressure control valve is thus releasing a fairly large release flow of hydraulic fluid as diverted from said plentiful supply of hydraulic fluid from said pump, said lubricating system of said gear transmission mechanism is thus receiving an ample flow of lubricating hydraulic fluid, this ample flow being made up both of said release flow of hydraulic fluid, and also of said flow of hydraulic fluid from said torque converter hydraulic fluid pressure as provided through said second throttle element; but, when said hydraulic fluid pump is producing rather a small flow of hydraulic fluid, and said torque converter hydraulic fluid pressure control valve is not releasing any substantial release flow of hydraulic fluid as diverted from said supply of hydraulic fluid from said pump, said lubricating system of said gear transmission mechanism is still receiving a certain definite small amount of lubricating hydraulic fluid, from said torque converter hydraulic fluid pressure as provided via said second throttle element.

4,437,359
WINE WAITER'S CORKSCREWS

Andre Dejoux, 15, rue Lakanal, 75015 Paris, and Bruno Desnoulez, 76 Boulevard Koenig, 92200 Neuilly, both of France

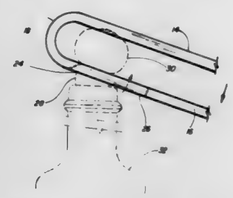
Filed May 27, 1981, Ser. No. 267,454
Claims priority, application France, May 23, 1980, 80 11499
Int. Cl.³ B67B 7/04
U.S. Cl. 81—3.38 A
4 Claims



1. A corkscrew for removing a cork from the mouth of a bottle comprising a flat elongated handle having first and second ends, auger means positioned between said first and second ends and pivotally attached to said handle, and extrac-

tion lever means secured to said handle about pivot means located at one of said first or second ends, said extraction lever means comprising first and second levers, each secured at one end thereof to said handle at said pivot means, said first lever including a first notch and said second lever including a second notch, and said first and second notches being located at first and second unequal distances away from said pivot means, whereby after screwing said auger into said cork, upon positioning the notch least distant from said pivot means against said bottle mouth, said handle is pivoted about said pivot means causing a first partial extraction of said cork from said bottle mouth, with subsequent complete removal of said cork from said bottle mouth being facilitated by thereafter positioning the other notch most distant from said pivot means against said bottle mouth and pivoting said handle about said pivot means, causing a second total extraction of said cork, via said auger pivoting about said pivot means, out of said bottle mouth in a two-step removal operation.

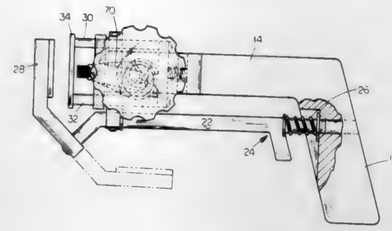
4,437,360
APPARATUS FOR CONTROLLED STOPPER EXTRACTION FROM AND REINSERTION IN SPARKLING WINE BOTTLES
Hal C. Becker, 4104 Sumter Sq., Fort Collins, Colo. 80525
Filed Feb. 23, 1983, Ser. No. 469,198
Int. Cl.³ B67B *7/06, 7/44*
U.S. Cl. 81—3.44 **2 Claims**



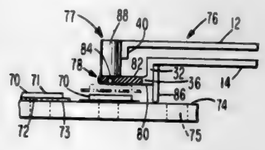
1. Apparatus for controlled stopper extraction from and reinsertion in sparkling wine bottles comprising:
(a) bifurcated tensile engaging means, having two parallel member means spaced apart by a closed curved end, and having oppositely disposed free handle ends for tensilely increasing and decreasing said spacing;
(b) one said member means defines a compound hole means of two contiguous holes, one hole for passing a stopper head and the other for slidably engaging said stopper body and stopper head lower edges;
(c) a second said member means defining a hollow opposing said other contiguous hole for simultaneously engaging said stopper top as said one said member means other hole slidably engages said stopper body.

4,437,361
TATTOOING GUN
Lester M. Steckel, Box 235, Taylor, Nebr. 68879, and Valeria J. Thomsen, P.O. Box 457, Burwell, Nebr. 68823
Filed Jan. 7, 1982, Ser. No. 337,776
Int. Cl.³ B43K *5/00*; A61D *1/00*
U.S. Cl. 81—9.22 **2 Claims**

1. An animal tattooing gun comprising,
a frame means having rearward and forward ends,
a plurality of tattooing needles selectively movably mounted at the forward end of said frame means,
said needles being movable between a rearward non-tattooing position to a forward tattooing position,
resilient means operatively connected to said needles for selectively rapidly moving said needles from their said non-tattooing position to their said tattooing position whereby said needles will penetrate a portion of the animal to create tattoo openings therein,
selective locking means for maintaining said needles in their said non-tattooing position,
and means at the forward end of said frame means for engagement with the animal and operatively connected to said locking means whereby sufficient pressure thereon will disengage said locking means to cause said needles to move to their said tattooing position.

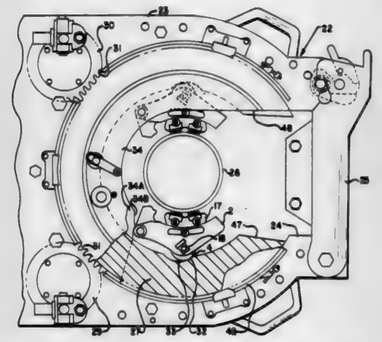


4,437,362
TOOLS FOR HANDLING MAGNETIC ARTICLES
Jerry C. Hurst, Reading, Pa., assignor to Western Electric Co., Inc., New York, N.Y.
Filed Oct. 26, 1981, Ser. No. 314,942
Int. Cl.³ B25B *9/02, 11/00*
U.S. Cl. 81—43 **5 Claims**



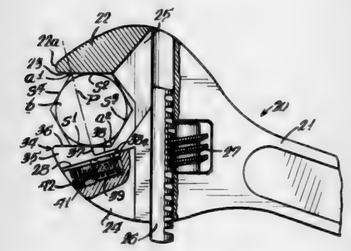
1. A tweezer tool for handling a magnetic article, comprising:
first and second elongated tweezer members, joined at one end and biased apart and tapered to substantially free ends where at least a portion of said first member is movable toward and away from a corresponding portion of said second member;
a substantially non-magnetizable and planar means for holding an article, said means having an aperture to pass flux therethrough and being associated with the free end of the second member whereat said means is interposed between the first member and contact with a surface of the article for releasably holding the same in cooperation with a magnetic field, said article being movable laterally along said holding means; and a substantially permanent magnet having a major and a minor portion and being
affixed to the free end of the first member, said magnet having only the minor portion formed and aligned to enter the aperture in the holding means, said magnet being of sufficient strength and being removably applied by operation of the first member in stages to:
pick up an article by establishing the magnetic field of sufficient strength relative to the weight and material of the article and to any opposing external forces acting thereupon that said article is preferentially attracted to the holding means when the tool is applied to pick up the article, and
to release an article from the tool by withdrawing the magnet and the field, the article being restrained by the holding means until gravity and any other opposing external forces overcome the attraction of the withdrawing field and said article separates from the tool.

4,437,363
DUAL CAMMING ACTION JAW ASSEMBLY AND POWER TONG
Charles W. Haynes, Spring, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Jun. 29, 1981, Ser. No. 278,293
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.18 **25 Claims**



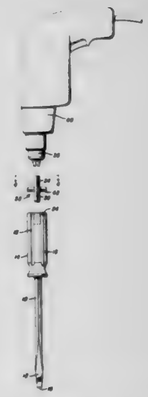
1. A jaw assembly for use in a power tong for axially rotating an axially elongated body which comprises:
a jaw frame carried by the power tong for movement into and out of engagement with said axially elongated body;
a cam follower means connected to said jaw frame and adapted to cooperate with a cam surface portion of said power tong to impart a primary camming action of the jaw frame into and out of engagement with said axially elongated body, and;
a die assembly slidably mounted to said jaw frame allowing relative motion between itself and said jaw frame in at least two directions along a camming surface of contact with said jaw frame and cooperating with said jaw frame providing a second camming action which radially increases the force of said die assembly against the axially elongated body independently of the primary camming action of the jaw frame upon engagement with said body and said relative motion in either of said at least two directions.

4,437,364
NUT WRENCH
Werner W. Martinmaas, 3461 Cashill Blvd., Reno, Nev. 89509
Filed Feb. 17, 1981, Ser. No. 235,027
Int. Cl.³ B25B *13/12*
U.S. Cl. 81—179 **20 Claims**



1. In a wrench for rotating a fastener having angularly related flat surfaces surrounding an axis of rotation, said wrench having a handle, a first jaw member with a first gripping face and a second jaw member with a second gripping face effectively parallel to said first gripping face, and said faces defining a forwardly open jaw to slidably engage extensive parts of opposite flat surfaces of a fastener to turn said fastener during forward rotation of the wrench, and improvement which permits the wrench to be reverse rotated without turning the fastener, said improvement comprising:
the second jaw member provides a slideway which diverges from the first jaw member toward the front of the jaw;
a slide member mounted for fore-and-aft movement along said slideway, said slide member having said second gripping face thereon which engages a substantial part but less than the entirety of one of said flat surfaces of a fastener, and said second gripping face terminating at a rear face that extends toward the slideway at an angle to the second gripping face, said rear face defining the front of a recess which also has a lower defining surface, the dimensions of said recess being great enough and the relationship between said rear face and said lower defining surface being such that during reverse rotation of the wrench an apex of a fastener may be received in said recess free of contact with either defining surface thereof;
and spring means on the wrench lightly biasing said slide member rearwardly to a normal position;
the angle of divergence of the slideway, the length of the second gripping face, and the forward travel of the slide member being such that reverse rotation of the wrench while engaged with opposite flat surfaces of a fastener causes one of said flat surfaces to pivot about the slide member apex between said second gripping face and said rear face while the fastener apex that defines the rear of said one of said flat surfaces is received in said recess free of contact with the slide member and thus cam the slide member forwardly against the bias of the spring means a sufficient distance that the jaw members span said fastener apex and the directly opposite fastener apex during said reverse rotation, whereby the jaw members override said opposite apices and the spring means returns the slide member to its normal position with the second gripping face in engagement with the next flat surface of the fastener.

4,437,365
SCREWDRIVER
Yigal Y. Yaari, 42 Kirkwood Rd., Brighton, Mass. 02135
Filed Mar. 8, 1982, Ser. No. 356,203
Int. Cl.³ B25G *1/00*
U.S. Cl. 81—436 **2 Claims**



1. A screwdriver capable of being operated manually or automatically comprising:
a shank, a tip formed at the free end of the shank adapted to engage the head of a screw,

a handle permanently fixed on the other end of the shank by which the screwdriver may be operated manually,

said handle having a well, non-circular in cross section, extending axially in the handle from the handle end remote from the shank,

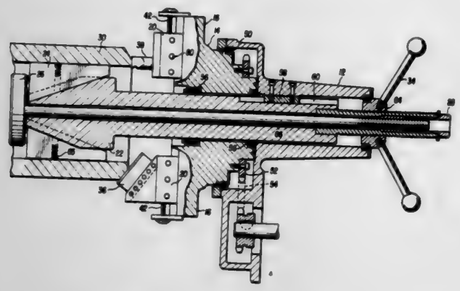
and a coupling having one end with a cross-sectional shape that conforms to the cross-section of the well and fitting snugly into the well but removable therefrom so that the screwdriver may be operated manually without interference from the coupling, said coupling having a second end that is adapted to be engaged by the chuck of a power drill so that the screwdriver may be powered by a power drill when the coupling is connected both to the power drill chuck and the handle.

4,437,366

TOOL CARRIER FOR PORTABLE LATHE

William H. Astle, Rancho Cordova, Calif., assignor to Tri Tool, Inc., Rancho Cordova, Calif.

Filed Apr. 3, 1981, Ser. No. 250,680
Int. Cl.³ B23B 3/22, 29/00
U.S. Cl. 82—4 C 4 Claims



1. In a portable lathe for preparing pipe ends for welding including a hollow tool carrier rotatable about a longitudinal cutting axis of symmetry; a mandrel shaft extending axially through the tool carrier; a pipe engaging mandrel on the distal end of said mandrel shaft; means for expanding the mandrel into a pipe engaging position to secure the lathe in an adjustably set location relative to a pipe end; said tool carrier rotatable relative to said mandrel shaft and moveable towards and away from the distal end of the mandrel; the improvement comprising:

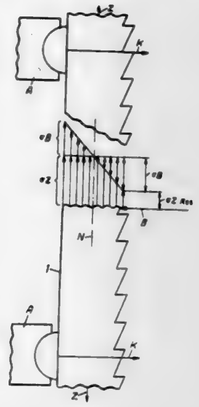
said tool carrier comprising three radially extending circumferentially spaced arms each including a flat tool slide facing towards a pipe end position; each tool slide including a tool holder slide surface; a clamp means for releasably securing a tool holder to the slide surface; each tool slide including parallel opposed female bevel gibs extending along the side edges of the tool slide to form a dovetail tool slide; each tool holder connected to a respective tool slide including upstanding side edges extending normal to the respective tool slide surface parallel to the side edges of the tool slide, and a tool slide engaging bottom surface; each tool holder including female bevel gibs in its upstanding side edges extending parallel to the gibs in the sides of a respective associated tool slide; each clamp means comprising a pair of gibs brackets removably secured to the opposite side edges of a respective tool holder and including male bevel gibs at its opposite edges, said brackets each spanning the distance between respective female gibs in a tool slide and associated tool holder; said gibs all including a bevel surface inclined from the center line of a respective tool slide and tool carrier extending toward the outer edges of the slide and carrier towards the abutting tool holder and tool slide surfaces; said male gibs being complementary in form to the female gibs and arranged to engage the female gibs in camming relationship along the bevel surfaces to thereby cause clamping together of a respective tool holder bottom surface and an associated tool slide when they are in assembled position; each tool holder including a first aperture extending parallel to its respective tool slide and parallel to the tool holder side edges, and means therein for engaging the threads of a threaded shaft; a rotatable threaded shaft extending through each said aperture, each shaft being retained in fixed axial position relative to a tool slide to which it is connected; and means for rotating each shaft to move each tool holder relative to and parallel with its respective tool slide when at least a single gib bracket associated therewith is loosened from its clamping position; at least one of said tool slides including an elongated undercut slot area in its slide surface extending along its length; the respective tool holder associated with said tool slide including the slot area including a second aperture extending normal to said first aperture and terminating at its bottom surface opposite said undercut slot area, said second aperture being adapted to receive an elongated cutting tool; whereby said undercut area prevents interference between said tool slide and a cutting tool that is positioned in said second aperture so as to extend beyond the bottom surface of the respective tool holder.

4,437,367

PROCESS AND APPARATUS FOR CONTROLLING THE CUTTING FEED OF BAND SAW MACHINES

Karl Hauser, Rebstrasse 10, 8302 Augwil, Switzerland

Filed Mar. 26, 1981, Ser. No. 247,985
Claims priority, application Switzerland, Mar. 27, 1980, 2402/80
Int. Cl.³ B23D 53/00
U.S. Cl. 83—13 21 Claims



1. A method for controlling the cutting feed speed of band saw machines equipped with a toothed saw band to attain an optimum feed velocity with substantial constant safety against straying, comprising the steps of empirically determining under predetermined conditions an acceptable optimum cutting force representing a desired cutting force value, calculating from said acceptable optimum cutting force the corresponding residual tensile stress in the saw band, and continuously maintaining the saw band under said residual tensile stress within the critical zone of the teeth by measuring the actual value of the cutting force, comparing the actual cutting force value with the desired cutting force value, and adjusting the actual cutting force in case of differences between the actual and desired cutting force value to thereby maintain an at least approximately constant value of said residual tensile stress

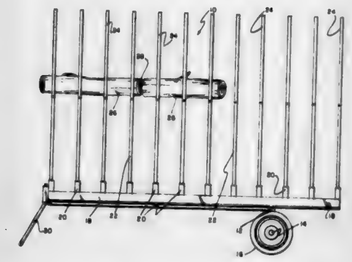
and therewith obtain substantially optimum feed velocity during cutting of the workpiece.

4,437,368

APPARATUS AND METHOD OF REDUCING TREES TO FIREWOOD

Nicholas L. Bennett, Rte. #3, Abilene, Kans. 67410

Filed May 24, 1982, Ser. No. 381,556
Int. Cl.³ B27B 1/00
U.S. Cl. 83—13 3 Claims



3. A process for reducing trees to firewood comprising the steps of:

(a) placing at least one tree log upon a plurality of detachable upright yoke support means having a U-shaped top and spacedly positioned along an angle iron frame means to elevate the tree log above the ground;

(b) cutting the tree log between a predetermined pair of contiguous yoke support means, depending on the length of firewood desired, by a chain saw means;

(c) cutting additionally the tree log between at least one more predetermined pair of contiguous yoke support means by the chain saw means;

(d) removing the cut tree log of step (b) from a portion of the plurality of yoke support means;

(e) detaching the upright yoke support means which were holding the cut tree log of step (d) in order to have easier access to the additionally cut tree log of step (c); and

(f) removing the additionally cut tree log of step (c) from a remaining portion of the plurality of yoke support means.

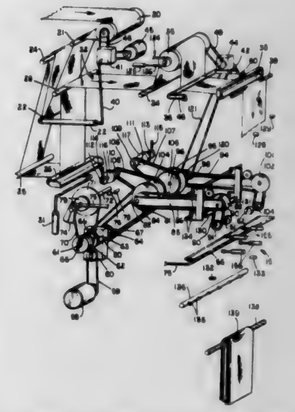
4,437,369

SHEET MATERIAL CUTTING METHOD AND APPARATUS

Charles E. Brocklehurst, and Bruce H. Cooper, both of Fountain Inn, S.C., assignors to Opelika Manufacturing Corporation, Chicago, Ill.

Filed Jul. 19, 1982, Ser. No. 399,709
Int. Cl.³ D06H 7/02
U.S. Cl. 83—18 15 Claims

1. A method of cutting sheet material across its length, the sheet material having bands of varying thickness extending across its length comprising the steps of advancing the material from a supply along its length through a predetermined path toward a cutting station; detecting variances in the thickness of the sheet material at opposite edge portions of the sheet material at predetermined positions ahead of the cutting station; stopping each edge portion of the sheet material independently of the other edge portion at the cutting station in response to detecting a variance in the thickness at an edge portion; pulling the sheet material at the cutting station taut across its length;



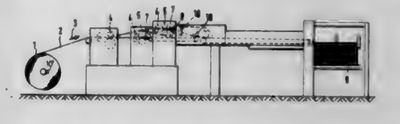
cutting across the sheet material at the cutting station while the sheet material is pulled taut.

4,437,370

METHOD FOR THE OPERATION OF A CROSS-CUTTING APPARATUS

Helmut Philipp, and Wilfried Kurth, both of Dusseldorf, Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,613
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039983
Int. Cl.³ B26D 7/00
U.S. Cl. 83—23 3 Claims



1. In the cutting of a continuous web such as paper or cardboard into sheets employing a cross-cutting apparatus comprising conveyor rolls, a pair of parallel cross-knives and a sheet outfeeder, the improvement in the start-up or restarting of the apparatus which comprises moving the cross-knives to a position not interfering with the free passage of the web, starting the apparatus up by setting the conveyor rolls in rotation, and bringing the cross-knives into the cutting position only after the leading end of the web has been introduced in full web width into the sheet outfeeder.

4,437,371

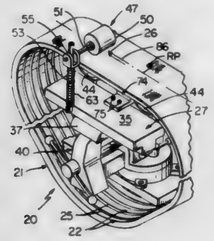
METHOD FOR CUTTING POLYMERIC BELT BODY

Anderson W. Howerton, Nixa, and Mark P. Foley, Springfield, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 210,991, Nov. 26, 1980, Pat. No. 4,368,656.
This application Sep. 20, 1982, Ser. No. 420,536
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.
Int. Cl.³ B26D 3/00
U.S. Cl. 83—54 4 Claims

1. In a method of cutting a polymeric endless power transmission belt body which has a plurality of endless V-belt elements fastened in spaced side-by-side relation by an endless structure to define alternating projections and grooves in said belt body, said grooves having side walls defined by facing surfaces of an immediately adjacent pair of belt elements, said method comprising the step of cutting said endless structure with a cutting knife to define a plurality of endless belts each

having at least one belt element; the improvement comprising the steps of, disposing a support in a stationary position, fastening said knife at a fixed position on said support, providing a pair of freely rotatable wheels disposed substantially in a rectilinear path with said knife and aligned therewith for supporting and guiding said belt body during cutting, disposing said knife and the outer portions of said wheels against said facing sur-



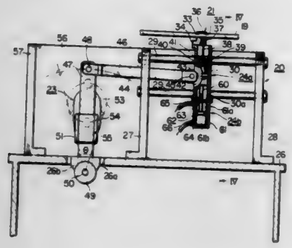
faces of a particular groove during said cutting step, utilizing said outer portions of said wheels as the sole means to engage said belt body to provide said supporting and guiding, rotatably supporting said wheels on said support, and moving said belt body relative to said knife in cutting engagement with said structure, said knife cooperating with said wheels during said moving step to provide precise cutting through said structure at the base of said particular groove.

4,437,372

SHEARING MACHINE

Hideo Ishigami, Kawasaki, and Nobuo Tohei, Mishima, both of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,327
Claims priority, application Japan, Dec. 20, 1980, 55-181080
Int. Cl.³ B23D *25/06*; B26D *1/60*
U.S. Cl. 83—320 **4 Claims**



1. A shearing machine having a movable cutter and a fixed cutter coacting to cut off a continuously fed material into given lengths, comprising:

(a) an adjustable-speed motor, having a drive shaft, for driving the shearing machine,

(b) at least one guide rod mounted on frame means to guide the movable and fixed cutters in a direction generally parallel to the feed path of said continuously fed material;

(c) a traveling assembly reciprocable along said guide rod, said travelling assembly including:

a travelling case;

a fixed-cutter holder secured to an end of said case fixedly supporting the fixed cutter thereon;

a movable-cutter holder supporting the movable cutter on the case;

a movable axle supporting said movable-cutter holder, said movable axle being movable within said travelling case in a direction substantially perpendicular to the feed path of said material; and

a piston rod connected to said movable axle;

(d) a double-acting hydraulic cylinder connected to said piston rod to move said movable cutter in the perpendicular direction;

(e) a reciprocating mechanism for moving said travelling assembly along said guide rods at substantially the same speed as said material, said reciprocating mechanism including:

a crank lever affixed at one end to said drive shaft;

a flying slide rotatably supported at the other end of said crank lever by an axle;

a slide link slidably fitted to said flying slide, one end of said link being pivotably supported on the shearing machine; and

a connecting link rotatably connecting the other end of said slide link to said travelling assembly, rotation of said crank lever causing said slide link to oscillate and said connecting link to reciprocate to drive said travelling assembly; and

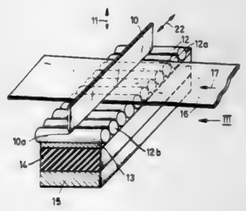
(f) a two-way rotary valve to charge or discharge a working fluid into or from said double-acting hydraulic cylinder, said two-way rotary valve being opened or closed by said adjustable-speed motor in coordination with and at substantially the same cyclical period as movement of said reciprocating mechanism.

4,437,373

ARRANGEMENT FOR PERFORATING OR CUTTING FOILS

Leonard Van Der Meulen, 17, Rue M^dBayram V, Tuni. el Menzah V, Tunisia

Filed Jul. 23, 1982, Ser. No. 401,327
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130090
Int. Cl.³ B26F *1/18*
U.S. Cl. 83—346 **21 Claims**



1. An arrangement for perforating foils, particularly of synthetic plastic material, comprising

an elongated cutter; and

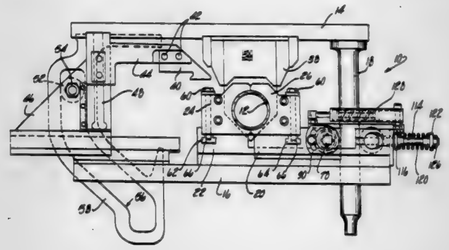
a counter element, said elongated cutter and said counter element being movable relative to one another in a direction of elongation of said cutter and also toward one another, said cutter being provided over its entire length with an uninterrupted cutting edge, and said counter element being composed of a plurality of rollers movable about their axes and located adjacent to one another, so as to provide for selective perforating or cutting.

4,437,374

TUBE CUTTING APPARATUS

John J. Borzym, 4820 Schoolbell La., Birmingham, Mich. 48010

Division of Ser. No. 270,298, Jun. 4, 1981, Pat. No. 4,392,644, which is a continuation of Ser. No. 119,241, Feb. 7, 1980, Pat. No. 4,294,147. This application Jan. 28, 1983, Ser. No. 461,850
Int. Cl.³ B23D *21/00, 25/04*
U.S. Cl. 83—454 **7 Claims**



1. Apparatus for severing an elongate workpiece, comprising:

a blade for severing said workpiece;

a pair of opposed jaws for clamping said workpiece therebetween;

first and second means for respectively mounting said die jaws for reciprocating movement toward and away from each other between an open release position and a closed clamping position;

cam means coupled with said mounting means for applying a preselected value of force to said first and second mounting means whereby to cause said jaws and said mounting means to shift to said closed position thereof; and

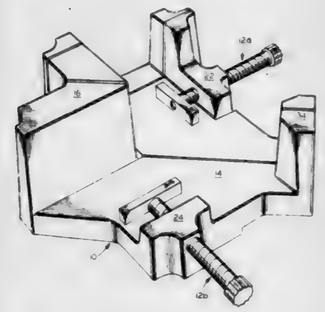
means coupled with said cam means for limiting the magnitude of force applied by said cam means to said first and second mounting means to said preselected value thereof.

4,437,375

MOLDED FRAME MAKER MITRE BOX WITH CLAMPS

James Elmore, Simsbury, and Robert F. West, West Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Oct. 21, 1981, Ser. No. 313,477
Int. Cl.³ B27G *5/02*
U.S. Cl. 83—762 **12 Claims**



1. A mitre box especially adapted for making frame pieces comprising:

A. a support member integrally formed from synthetic resin and including a platform portion providing a generally planar upper surface, a corner post extending upwardly therefrom and having right angularly disposed vertical faces bordering said upper surface of said platform portion, clamp posts spaced to the opposite sides of said upper surface of said platform portion from said vertical faces of said corner post and extending upwardly from said platform portion, and a saw guide post extending upwardly from said upper surface of said platform portion between said clamp posts on the side thereof opposite from said corner post, said corner post having a channel therein extending transversely therethrough and downwardly thereinto from its top surface, said channel bisecting the 90° angle defined by the cooperating vertical faces of said corner post, said saw guide post having a channel extending transversely therethrough and downwardly thereinto from its top surface, said saw guide post channel being aligned with said corner post channel so that a saw blade may be guided by said channels to cut the end of a workpiece extending parallel to and abutting either one of said corner post vertical faces at substantially a 45° angle, said corner post having a second vertical channel therein spaced from said first mentioned channel and extending transversely therethrough and downwardly thereinto along a line perpendicular to one of said right angularly disposed vertical faces of said corner post, the clamp post cooperating with said one vertical face having a channel therein aligned with said second channel of each corner post, said channel of said clamp post extending transversely therethrough and downwardly thereinto from the top surfaces thereof, whereby a saw blade may be guided by said second channel of said corner post and said channel of said clamp post to cut the end of an associated workpiece extending parallel to said one vertical face at substantially a 90° angle;

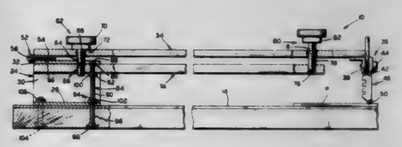
B. clamp assemblies adjustably mounted in said clamp posts, each said clamp including an elongated member having its longitudinal axis extending perpendicularly to the cooperating face of said corner post and threadably engaged in its post for adjustable movement towards and away from the cooperating vertical face of said corner post, the end of said elongated member adjacent said corner post having a clamping face for engagement with the associated workpiece to hold it against the cooperating face of said corner post.

4,437,376

APPARATUS FOR CONTROLLING AND RELEASING PRESSURE OF A TOOL ON A WORKPIECE

David L. Flint, 4430 Asbury Dr., Toledo, Ohio 43612

Filed May 19, 1982, Ser. No. 379,651
Int. Cl.³ C03B *33/12*
U.S. Cl. 83—886 **20 Claims**



1. Mounting apparatus for holding a tool for forming a mark on a workpiece manipulated by hand under the tool, said apparatus comprising means forming a flat supporting surface for the workpiece, a mounting stand affixed to said surface-forming means, a release arm extending from said stand over said surface, a tool-supporting arm extending from said stand over said surface in the same direction as said release arm, tool holding means carried by said supporting arm, pressure means engagable with said supporting arm and said stand to urge the outer end of said supporting arm toward said surface, and means engagable with one of said release arm and said supporting arm and extending between said release arm and said supporting arm to enable said supporting arm to be manually moved away from said surface when it is desired to remove the

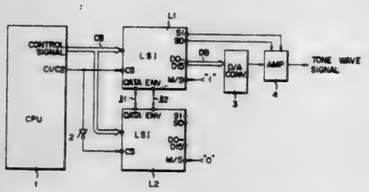
workpiece from contact with the tool held by said tool holding means of said supporting arm.

4,437,377

DIGITAL ELECTRONIC MUSICAL INSTRUMENT

Tsuyoshi Mitarai, Yokohama, and Kunio Sato, Tokyo, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,068
Claims priority, application Japan, Apr. 30, 1981, 56-66220; Apr. 30, 1981, 56-66221
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 10 Claims



1. A digital electronic musical instrument comprising:
a plurality of musical tone generating means, each musical tone generating means generating digitized musical tone data representing a plurality of musical tones;
composing means for digitally composing said digitized musical tone data generated from all of said plurality of musical tone generating means;
operating means coupled to said composing means for selectively compressing or expanding the composed musical tone data in accordance with the composed musical tone data from all of said musical tone generating means; and
output means including digital to analog converting means coupled to said operating means for converting the composed expanded or compressed musical tone data into an analog signal corresponding to a musical sound.

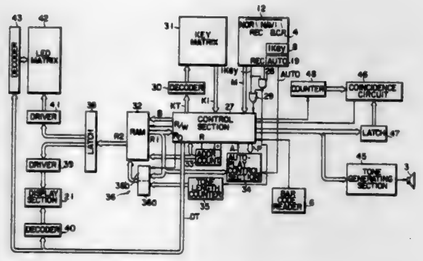
5. A digital electronic musical instrument comprising:
a plurality of musical tone generating means, each musical tone generating means including means for generating digitized musical tone data and digital envelope data, the digitized musical tone data being envelope-controlled in accordance with said digital envelope data;
first composing means for digitally composing said digitized musical tone data generated from all of said plurality of musical tone generating means;
second composing means for digitally composing said digital envelope data generated from all of said plurality of musical tone generating means;
setting means for setting compressing or expanding levels in accordance with the composed envelope data produced from said second composing means;
operating means for compressing or expanding the composed musical tone data from said first composing means in accordance with said compressing or expanding level set by said setting means;
digital to analog converting means;
means for supplying the compressed or expanded digitized musical tone data output from said operating means to said digital to analog converting means; and
amplifying means for amplifying an output signal from said digital to analog converting means as a function of said compressing or expanding level set by said setting means to thereby effect compression or expansion of said output signal.

4,437,378

ELECTRONIC MUSICAL INSTRUMENT

Hideaki Ishida, Tokyo; Tomohisa Ishikawa, Kawagoe; Koji Yamana, and Takehiko Kayahara, both of Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1982, Ser. No. 361,474
Claims priority, application Japan, Mar. 30, 1981, 56-45631; Mar. 30, 1981, 56-45632; Mar. 30, 1981, 56-45633
Int. Cl.³ G10H *3/06*
U.S. Cl. 84—1.18 5 Claims



1. An electronic musical instrument comprising:
a plurality of performance keys,
a bar code reader for reading bar code data from a recording medium on which predetermined tone data including at least pitch data and duration data are printed in the form of bar codes,
memory means for digitally storing pitch data corresponding at least to the bar code data read out by said bar code reader,
selection means for specifying first and second performance modes,
first control means which operates when said first performance mode is specified by said selection means, said first control means comprising a plurality of display members each arranged to indicate a different one of the performance keys,
first read out means responsive to operation of the performance key indicated by the associated display member, for reading out from said memory means pitch information corresponding to the next pitch to be played,
display control means operative to discriminate from other display members, the display member of that performance key which corresponds to the pitch information read out by said first read out means and to activate said display member,
second control means which operates when said second performance mode is specified by said selecting means, said second control means comprising second read out means which sequentially reads out the pitch data stored in said memory means in intervals following the duration data corresponding to the pitch data, and
sound generating means which generates a sound in accordance with the pitch data and the duration data read out by said second read out means.

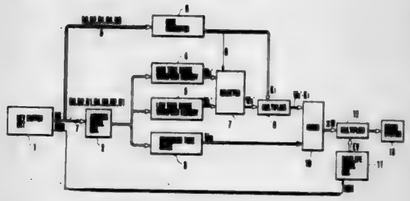
4,437,379

ELECTRONIC MUSICAL INSTRUMENT OF WAVEFORM MEMORY READOUT TYPE

Takatoshi Okumura, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 26, 1981, Ser. No. 315,110
Claims priority, application Japan, Nov. 29, 1980, 55-168442
Int. Cl.³ G10H *1/06*
U.S. Cl. 84—1.22 3 Claims

1. An electronic musical instrument comprising:
keyboard means having a plurality of keys which are divided into a plurality of tone ranges, each of said tone ranges including one or more adjacent keys respectively;
memory means for storing at least two waveforms of a number smaller than the number of said tone ranges, one of said stored waveforms being a reference waveform which is a musical tone waveform corresponding to a specific one among said tone ranges and a second of said at least two stored waveforms being a difference waveform whose waveshape is the difference between said reference waveform and a waveform which is a musical tone waveform corresponding to a highest tone range among said tone ranges divided by a factor proportional to the numerical difference between said specific one tone range and said highest tone range;



address signal generating means for generating an address signal having a repetition period corresponding to a tone pitch of a depressed key and for supplying said address signal to said memory means so that said reference waveform and said difference waveform respectively having the periods equal to said repetition period are read out from said memory means;
coefficient generator means for producing a coefficient having a value proportional to the numerical difference between said specific one tone range and the tone range corresponding to said depressed key;
multiplier means for multiplying said difference waveform by said coefficient to generate a modified waveform; and
means for adding said modified waveform to said reference waveform to produce a musical tone waveform corresponding to said depressed key.

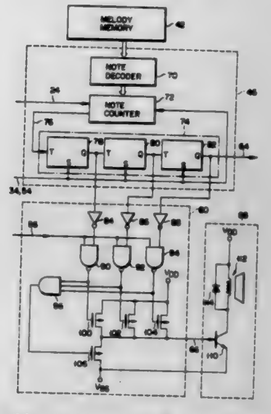
4,437,380

MUSICAL ENVELOPE-PRODUCING DEVICE

Tetsuo Yamaguchi, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 15, 1981, Ser. No. 331,077
Claims priority, application Japan, Dec. 17, 1980, 55-178424
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.26 10 Claims

1. A musical envelope-producing device comprising:
(a) memory means for storing a plurality of note data including first musical performance data repreaenting note pitch and second musical performance data representing note duration;
(b) read-out means for selecting and reading out the note data from said memory means;
(c) first processing means, connected to said memory means, for receiving the first musical performance data and generating a tone signal according to the first musical performance data;
(d) second processing means, connected to said memory means, for receiving the second musical performance data and dividing the note duration represented by the second musical performance data into a plurality of time components represented by division signals, said division signals comprising a plurality of signals of different periods; and
(e) envelope circuit means, responsive to said tone signal and said division signals, for producing a stepped, sound pressure signal representing a stepped musical envelope waveform whose level attenuates during note duration in a stepped manner in response to said division signals,



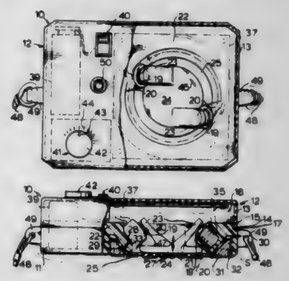
whereby said sound pressure signal and said tone signal are used to generate a sound signal.

4,437,381

METRONOMIC SIGNALLING DEVICES AND METHOD OF TEMPO SIGNALLING

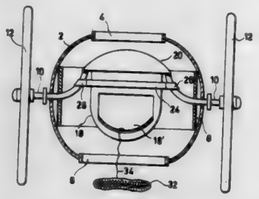
Shin H. Chen, 1725 N. LeClaire Ave., Chicago, Ill. 60639

Filed Jul. 21, 1982, Ser. No. 400,378
Int. Cl.³ G10B *15/00*
U.S. Cl. 84—484 15 Claims



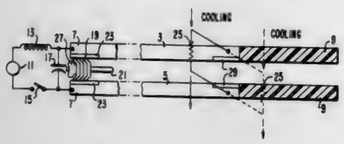
1. A silent metronomic pulsing device, comprising:
a housing having an opening;
a soundproof relatively soft, yieldably movable transmission pad fixed across said opening and having a texture accentuated face projecting outwardly from said housing for tempo-signal-imparting engagement with a user, and a surface of substantial area facing inwardly into said housing;
transducer means comprising a disk-like member fixed to and movable with said inwardly facing surface of the soundproof pad and covering a major portion of said area;
dynamoelectric means carried in part fixedly on said member and in part fixedly on said housing and operable for pulsing said member and thereby actuating said pad for tempo signal transmission to the user without acoustical interference;
and electrical means for operating said pulsing means and including means for selectively controlling the pulsing tempo of the pulsing means.

4,437,382
BOMB DISPOSAL DEVICE
Yaakov Yerushalmi, Rechov Hapartisanim 3, Petach Tikva, Israel
Filed Sep. 9, 1981, Ser. No. 300,897
Claims priority, application Israel, Sep. 14, 1980, 61035
Int. Cl.³ F42D *5/04*; F24B *33/06*; E06B *9/00*
U.S. Cl. 86—1 B 10 Claims



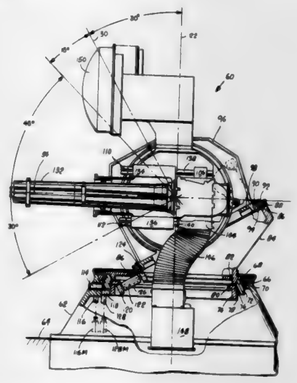
1. A bomb disposal device, comprising:
a high-strength outer housing formed with a first opening and a second opening on opposite sides thereof, both leading into its interior;
pivotal mounting means for said outer housing to permit pivoting same about a horizontal axis from an upright position wherein said first and second openings are in substantial vertical alignment, to a horizontal position wherein they are in substantial horizontal alignment;
an inner, open-ended container within said housing and fixed with respect to said mounting means such that the container's open end is disposed upwardly and underlies said housing first opening in the upright position of the housing;
and a cover within said housing and fixed with respect to said mounting means to overlie the open end of the container;
said cover being of larger dimensions than said housing first opening such that in the event of explosion of a bomb within said container while the outer housing is in its upright position, the cover will be blown against said housing first opening to close same and thereafter to direct the force of the explosion vertically downwardly through the housing second opening.

4,437,383
MUZZLE ARC SUPPRESSOR FOR ELECTROMAGNETIC PROJECTILE LAUNCHER
Daniel W. Deis, Churchill Borough, and George A. Kemeny, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 8, 1981, Ser. No. 309,861
Int. Cl.³ F41F *1/00*
U.S. Cl. 89—8 17 Claims



1. An electromagnetic projectile launcher comprising:
a pair of generally parallel conductors having a breech and a muzzle end;
means for conducting current between said conductors and for accelerating said projectile;
a source of high current connected to said conductors;
a first impedance disposed across said conductors adjacent the muzzle end thereof;
a second impedance disposed in at least one of said conductors on the muzzle side of where said first impedance is connected across said conductors;
whereby current is commutated to said first impedance to suppress muzzle arcing.

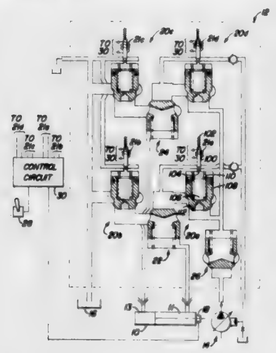
4,437,384
GUN MOUNT
Douglas P. Tassie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.
Filed Aug. 17, 1981, Ser. No. 293,716
Int. Cl.³ F41F *21/04*
U.S. Cl. 89—37 A 7 Claims



1. A mount, for an apparatus having a longitudinal axis, having three axes of rotation with respect to a reference plane comprising:
a zenith axis which is perpendicular to said reference plane,
a train axis which is perpendicular to a tilted plane which is at an angle to said reference plane,
an elevation axis which is parallel to said tilted plane,
said mount including:
a support which is parallel to said reference plane;
a base which is journaled to said support for rotation about said zenith axis;
a train ring which is journaled to said base in a plane which is parallel to said tilted plane for rotation about said train axis;
an elevation ring which is journaled to said train ring in a plane which is perpendicular to said tilted plane for rotation about said elevation axis;
first drive means fixed to said support and coupled to said base for orienting said base about said zenith axis; and
second drive means fixed to said support and coupled to said train ring for orienting said train ring about said train axis;
said first and second drive means being independently and concurrently operable to independently and concurrently drive said base and said train ring respectively.

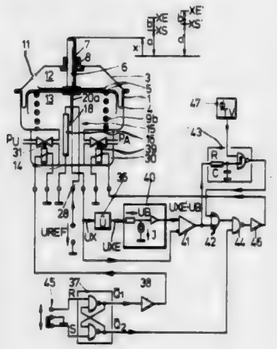
4,437,385
ELECTROHYDRAULIC VALVE SYSTEM
Kenneth D. Kramer, and Edward H. Fletcher, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Apr. 1, 1982, Ser. No. 364,373
Int. Cl.³ F15B *13/16*
U.S. Cl. 91—361 20 Claims

1. A system for controlling a double-acting hydraulic cylinder having extension and retraction chambers separated by a piston in the cylinder, comprising:
a valve assembly comprising a first pilot-operated proportional-type poppet valve for controlling fluid communication between pump and the retraction chamber, a second pilot-operated proportional-type poppet valve for controlling fluid communication between the retraction chamber and a reservoir, a third pilot-operated proportional-type poppet valve for controlling fluid communication between the extension chamber and the reservoir and a fourth pilot-operated proportional-type poppet valve for controlling fluid communication between the pump and the extension chamber;
a plurality of solenoid-operated pilot valves, each pilot valve operating one of the poppet valves;



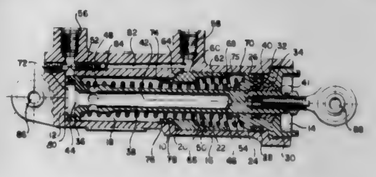
position-sensing means for sensing the position of the cylinder and for generating a feedback signal indicative thereof;
operator-controlled means for generating a command signal representing a desired position of the piston relative to the cylinder; and
control circuit means for generating an error signal derived from the feedback and command signals and for energizing selected ones of the pilot valves to operate corresponding ones of the poppet valves to move the cylinder and reduce the magnitude of the error signal.

4,437,386
PNEUMATICALLY OPERATED SERVO-MOTOR AND CONTROL METHOD THEREFOR
Hans Baumgartner, Viersen, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co., KG, Neuss, Fed. Rep. of Germany
Filed Jun. 29, 1982, Ser. No. 393,301
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1981, 3128486
Int. Cl.³ F15B *9/03*
U.S. Cl. 91—363 R 11 Claims



1. A method of controlling a pneumatically operated servomotor having an operating rod with a substantially linear stroke and a pneumatic chamber for actuating said operating rod according the pressure in said chamber, said method comprising the steps of continuously monitoring the actual position of said operating rod during each stroke thereof, recording a limit position reached by said operating rod in each stroke, and modifying the speed at which said operating rod travels towards said limit position of said stroke during each stroke when said operating rod reaches a position which lies a predetermined amount in front of said limit position reached during the preceding stroke.

4,437,387
INTEGRAL ACTUATOR AND SEQUENCING VALVE
Robert L. R. Beck, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jan. 15, 1981, Ser. No. 225,252
Int. Cl.³ F15B *15/22*
U.S. Cl. 91—401 7 Claims



1. An integral actuator and sequencing valve, comprising:
an elongated housing including first and second end walls and sidewall means defining a chamber within said housing having a first diameter portion which extends axially inwardly of the housing from the first end wall to a mid-portion of the chamber, a second and larger diameter portion extending axially inwardly of the housing from the second end wall of the chamber to such mid-portion of the chamber, and a shoulder at the mid-portion of the chamber where the two different diameter portions of the chamber meet;
a piston within said chamber having a piston head adapted to slide within the first diameter portion of said chamber, a piston rod connected to the piston head and extending therefrom through the chamber and out through an opening in the second end of the housing, and passageway means in the piston communicating one side of the piston head with the other;
an inlet port communicating with said chamber closely adjacent the first end wall of the housing and a radial outlet port communicating with the chamber at a location axially between said shoulder and the second end wall of the housing;
passageway means communicating a portion of the outlet port that is located outside of the chamber with a portion of the inlet port which is located outside of such chamber, said passageway means including check valve means permitting flow from the outlet port to the inlet port and preventing flow through said passageway means from the inlet port to the outlet port, and said passageway means extending generally axially through the sidewall means of the housing;
a sleeve slidably received within the larger diameter portion of the chamber, said sleeve including a shoulder contacting inner end portion and a sidewall closure portion which extends across and blocks the outlet port when the sleeve is against the shoulder, and an inner end portion which is in the travel path of the piston head;
a sleeve biasing spring positioned to bias the sleeve towards and into contact with the shoulder; and
a piston return spring positioned to bias the piston into a retracted position adjacent the first end wall;
wherein the piston head, the closure sleeve, and the chamber are dimensioned such that when the piston is retracted and

pressure fluid is introduced into the chamber through the inlet port, such fluid will move the piston through the chamber until the piston head makes contact with the portion of the sleeve which is in the travel path of the piston head, and then further introduction of fluid will move both the piston and the sleeve together, until the piston has reached the end of its stroke and is fully extended; and

wherein the closure portion of the sleeve is positioned away from the outlet port when the piston is fully extended and the outlet port is in fluid receiving communication with the piston rod side of the piston head, whereby fluid communication is established through the chamber, from the inlet port to the outlet port.

4,437,388

DUAL INPUT PRESSURE COMPENSATED FLUID CONTROL VALVE

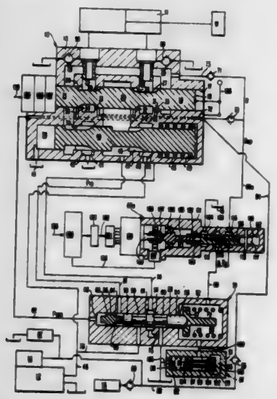
Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Aug. 20, 1981, Ser. No. 294,605

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.³ F15B *13/04*

U.S. Cl. 91—446 **16 Claims**



13. A dual input valve assembly operable to control fluid flow to and from a fluid motor subjected to an opposing or aiding load, said valve assembly having first valve means operable to provide first and second control orifice means to meter fluid flow to and from said fluid motor, throttling control means operable to selectively throttle fluid flow to and from said fluid motor, single pilot means having means responsive to pressure differential across said first and said second orifice means and operable through said throttling control means to maintain a relatively constant pressure differential at a preselected constant level across said single pilot valve means and to maintain a constant pressure differential across said first and said second control orifice means during control of said opposing or said aiding load, first pressure signal transmitting means operable to transmit control pressure signal from down stream of said first control orifice means to controller means, second pressure signal transmitting means operable to transmit control pressure signal from down stream of said second control orifice means to said controller means, said controller means having means responsive to an electrical pulse type signal and means operable to modify said pressure signal transmitted from said first and said second signal transmitting means, whereby the level of said constant pressure differential acting across said first and second control orifice means can be varied with respect to said electrical pulse type signal while said pressure differential across said single pilot valve means remains constant at said constant predetermined level.

4,437,389

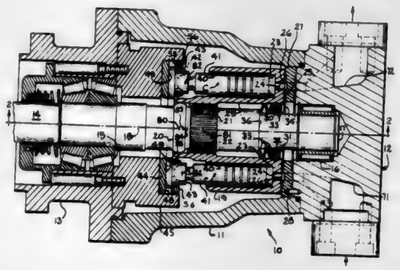
AXIAL PISTON PUMP HAVING BARREL BIASING MEANS

William L. Kline, Galena, Ohio, assignor to The Kline Manufacturing Company, Galena, Ohio

Filed Feb. 10, 1982, Ser. No. 347,511

Int. Cl.³ F01B *13/00*

U.S. Cl. 91—499 **9 Claims**



1. A fluid energy translating device including a housing having inlet and outlet passages, a port plate mounted in said housing and having inlet and outlet ports communicating with said inlet and outlet passages in said housing, a rotatable cylinder barrel abutting said port plate, having an axis of rotation perpendicular to said port plate and defining a centrally disposed through bore and a plurality of cylinders arranged about such axis of rotation, each cylinder having an axis spaced from and parallel to such axis of rotation, a piston in each cylinder, cam means for reciprocating said pistons as said barrel rotates, a drive shaft extending coaxially through said barrel and rotatably supported in said housing, means for rotatably coupling said barrel and said drive shaft, compression spring means operably disposed between said barrel and said drive shaft for providing a substantially constant force biasing said barrel against said port plate notwithstanding axial movement of said barrel over a limited distance and means for adjusting such biasing force.

4,437,390

POWER-SERVO BOOSTER

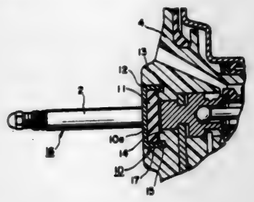
Ryuji Ohta, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,438

Claims priority, application Japan, Jul. 25, 1980, 55-105316[U]

Int. Cl.³ F16J *1/10*; F15B *9/10*

U.S. Cl. 92—84 **4 Claims**



1. In a power-servo booster wherein a fitting member provided at the end of a push rod is slidably fitted in a connection hole in a power piston and reaction force which acts on the push rod is transmitted to an input shaft via a reaction disk, the improvement wherein:

said fitting member is made cylindrical and cup-shaped and has a closed disk-shaped bottom over an entire cross-section of said fitting member in a plane extending through a central axis of said fitting member;

said reaction disk is disposed within said cylindrical fitting member;

an entire outer cylindrical surface of said reaction disk is completely surrounded by an inner cylindrical surface of said fitting member;

an annular groove is formed in an outer periphery at the bottom of said connection hole in said power piston;

a portion of said power piston within said annular groove projects toward said push rod;

said fitting member in which said reaction disk is disposed is fitted into said connection hole so that said reaction disk can contact with an end surface of the projecting portion of said power piston and a peripheral end of said fitting member can fit into said annular groove; and

an annular gap is formed between said fitting member and the bottom of said annular groove to allow for deformation of said reaction disk.

4,437,391

AIR CONDITION CONTROL APPARATUS WITH INDOOR AND OUTDOOR AIR SELECTION MODES FOR AUTOMOBILES

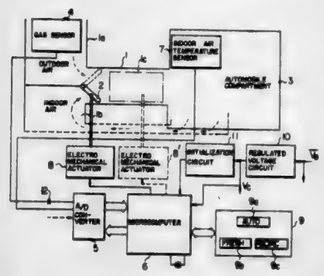
Osamu Eguchi, Anjo, and Tomonori Fukui, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 1, 1981, Ser. No. 326,414

Claims priority, application Japan, Dec. 2, 1980, 55-170716

Int. Cl.³ B60H *1/00, 3/00*

U.S. Cl. 98—2.01 **5 Claims**



1. An air-condition control apparatus for an automobile including an air conditioning unit in which the upstream side is selectively communicated to the outside or inside of the automobile compartment and the downstream side is communicated to the inside of the automobile compartment, an actuator for selectively taking in air from the outside of the compartment and from the inside of the compartment in said air conditioning unit, and a detector for generating an analog electrical signal in accordance with impurity components of air taken in from the outside of the compartment, wherein said air condition unit further comprises a control means for controlling said actuator in accordance with the electrical signal generated from said detector, said control means for producing a reference level from the minimum value of the detector output during the period of time when the detector is energized to the time when the detector is deenergized and comparing an output of said detector with said reference level, thereby fixing said actuator to a state of intaking air from the inside of the compartment when the compared differential value exceeds a first predetermined value and returning the actuator to a state of intaking air from the outside of the compartment when the compared differential value becomes smaller than a second predetemined value, the second predetermined value being set to be smaller than the first predetermined value.

4,437,392

SWEEPING AIR STREAM APPARATUS AND METHOD

Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

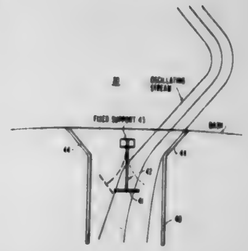
PCT No. PCT/US80/00368, § 371 Date Dec. 17, 1980, § 102(e) Date Dec. 15, 1980, PCT Pub. No. WO80/02262, PCT Pub. Date Oct. 30, 1980

PCT Filed Apr. 9, 1980, Ser. No. 220,068

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ B60H *1/24*

U.S. Cl. 98—2.08 **22 Claims**



1. In an air flow system having a source of air under pressure flowing through a channel coupled to an outlet element and the air is issued to the ambient environment in a sweeping air stream pattern, the improvement comprising an air powered oscillatory member, said oscillatory member being a vane having a longitudinal axis normally aligned with the direction of air flow through said channel, and means securing the downstream end only of said oscillatory member in fixed relation to said outlet element with the upstream end of said oscillatory member being free and oscillatable, solely by air flow, between a pair of extreme positions to each side of said longitudinal axis, said extreme positions being short of contacting said outlet and said channel and causing the air to issue in a sweeping air stream pattern from said outlet element.

4,437,393

ASSEMBLY COMPARTMENT ARRANGED BETWEEN AN ENGINE COMPARTMENT OR TRUNK AND A SPLASH PANEL OF A MOTOR VEHICLE

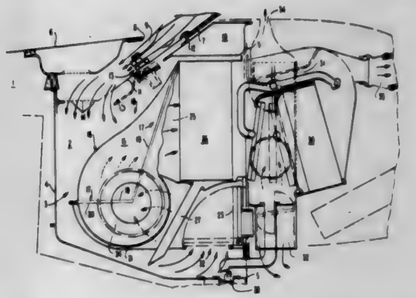
Albert Stolz, Tübingen, and Manfred Mordau, Sindelfingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 16, 1981, Ser. No. 274,178

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023236

Int. Cl.³ B60H *1/28*

U.S. Cl. 98—2.17 **17 Claims**



1. An assembly compartment for a heating/ventilating and-

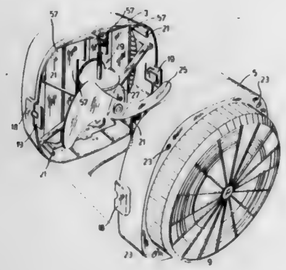
/or air conditioning system arranged between an engine compartment or trunk and a splash panel of a motor vehicle comprising an air inlet slot means for enabling a supply of fresh air into the compartment; aggregate means accommodated in the compartment for affecting air deflecting and air distributing of the supply of fresh air into an interior space of the vehicle; jacket means accommodating at least a portion of the aggregate means are provided for enhancing separation, deflection, and conducting of water extracted from the fresh air; means are arranged on an underside of the aggregate means for directing a flow of the supply of fresh air from the assembly compartment to the interior space of the vehicle in an upwardly oriented direction; an area forward of the splash panel for at least one of a filter means and an evaporator for an air conditioning means; duct means in said area for feeding water accumulated therein to a lower end of the assembly compartment; water drainage means at a lowest point of the assembly compartment for enabling a drainage of water separated and drained by the jacket means and duct means; the jacket means having a divided construction and including a lid means removable so as to define an installation opening for the jacket means to permit access to said filter means and/or said evaporator for an air conditioning means whereby water is extracted from the supply of fresh air and access to said area of the jacket means from the exterior of the motor vehicle is facilitated.

4,437,394

DIRECTIONAL AIR FLOW FAN

Arthur K. Tateishi, 25 Warrender, Apt. 202, Toronto, Ontario, Canada

Filed Aug. 3, 1981, Ser. No. 289,778
Int. Cl.³ F24F *13/16*
U.S. Cl. 98—40 V **18 Claims**



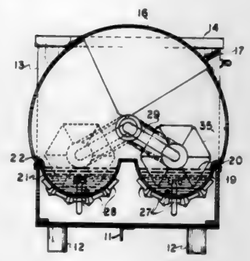
1. A fan structure having a housing, a fan blade rotatable within said housing, a plurality of vanes adapted to oscillate relative to said housing, oscillation means for oscillating said vanes, a drive system for driving said oscillation means, a motor for operating said drive system and said fan blade, a motor control switch and a control mechanism independent of said motor control switch for connecting and disconnecting said oscillation means with said motor through said drive system to turn on and to turn off oscillation of said vanes, said drive system comprising a rotating drive wheel, a longitudinally fixed drive shaft adapted to reciprocate said oscillation means, and a pickup wheel rotationally coupled to said drive shaft and moveable therealong to and away from a drive pickup position with respect to said drive wheel, said control mechanism comprising spring means for sliding said pickup wheel along said drive shaft to the drive pickup position to rotate said drive shaft and to connect said oscillation means with said motor for turning on the oscillation of said vanes, an adjustable control member for sliding said pickup wheel along said drive shaft away from said drive pickup position to discontinue further rotation of said drive shaft and disconnect said oscillation means from said motor for turning off the oscillation of said vanes, and a lock position for releasably locking said pickup wheel away from said drive pickup position.

4,437,395

SPAGHETTI AND FOOD COOKER

Richard L. Speaker, 113 E. Brentwood Rd., Greensboro, N.C. 27403

Filed Apr. 2, 1982, Ser. No. 364,900
Int. Cl.³ A47J *27/10*
U.S. Cl. 99—355 **10 Claims**



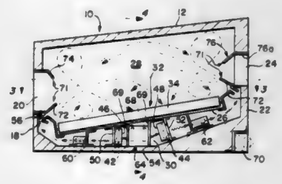
1. A spaghetti and food cooker comprising; a first chamber and a second chamber in side by side juxtaposition to each other for retaining a fluid in each chamber, means for controlled heating the fluid in each chamber, and an elongated perforated food-retaining compartment having means for loading and unloading spaghetti or food into and out of said compartment, a pair of brackets longitudinally spaced from each other and pivotally mounted above said chambers, said brackets each having distal ends, said distal ends of said brackets having compartment-retaining means thereon for securing said food-retaining compartment thereon, means for pivoting said pair of brackets with said food-retaining compartment secured thereon into and out of each of said chambers by oscillatory movement of said brackets, and means associated with at least one of said brackets for rotating said compartment while retained in said chambers.

4,437,396

AIR HEATED SANDWICH BIN

Robert F. Plattner, Spring Lake; Raymond J. Arend, and John A. VerBerkmoes, both of Grand Haven, all of Mich., assignors to Bastian Blessing Co., Inc., Grand Haven, Mich.

Filed Sep. 28, 1982, Ser. No. 425,430
Int. Cl.³ A23B *4/04*; B65G *55/00*
U.S. Cl. 99—475 **20 Claims**



1. A heated, moist air sandwich bin for maintaining sandwiches therewithin sufficiently moist and at pre-selected elevated temperatures comprising:

a housing, said housing including a front wall, a rear wall, a top, a pair of opposite side walls and a floor, said front wall defining an open front service opening substantially across the width of the bin through which sandwiches may be inserted and withdrawn;

sandwich support means for storing sandwiches within said bin above said floor and below said service opening for easy access to the sandwiches through said service opening, said floor dividing said bin into an upper sandwich storage compartment and a lower compartment and defining with said side walls air flow passages for permitting heated, moist air in said upper compartment to flow into said lower compartment;

blower means in said lower compartment, air humidifier means in said lower compartment upstream of said blower means, air discharge nozzle means extending substantially across the width of and below said service opening for discharging a humidified air stream across said service opening into said upper compartment, duct means communicating said blower means with said air discharge nozzle means and air heater means in said duct means for heating the air to be discharged through said nozzle means, whereby said blower means forces air in said lower compartment through said duct means, across said air heater means and through said nozzle means into said upper compartment; and

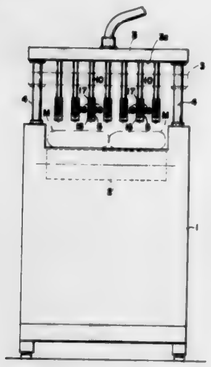
air directing means for creating a dome of moist heated air over the sandwiches in the bin positioned at said service opening and including air deflecting means located downstream of said air discharge nozzle means and extending into said upper compartment to intercept air discharging from said discharge nozzle means and to direct the flow of heated air discharging said nozzle means away from said service opening and into the housing to create and maintain said dome of heated moist air over the sandwiches in the bin while further creating turbulent zones of heated, moist air outside the dome for minimizing heated, moist air escape through said service opening.

4,437,397

AUTOMATIC PICKLE INJECTING APPARATUS

Kelichi Kawai, Amagasakishi, Japan, assignor to Futaba Denki Kogyo Kabushiki Kaisha, Osakashi, Japan

Filed Apr. 2, 1982, Ser. No. 365,087
Claims priority, application Japan, Apr. 2, 1981, 56-50195; Jan. 25, 1982, 57-10491
Int. Cl.³ A23B *4/02*
U.S. Cl. 99—533 **10 Claims**



1. An automatic pickle injecting apparatus for supplying meat with a pickle, the apparatus comprising:

a vertically movable tank adapted to contain said pickle;

said tank being transversely disposed with respect to a feeding path of said meat;

a plurality of needle means for enabling an injection of said pickle into the meat, each of said needle means having a first end adapted to be connected to the tank, a terminating end, and a passageway opening into the tank for permitting said pickle in said tank to pass therethrough, said passageway communicating with at least one opening provided at the terminating end of each of said needle means;

a plurality of sleeve means mounted on said tank and respectively surrounding at least a portion of an axial length of the respective needle means for enabling a suspension of the needle means from the bottom of the tank;

a cylindrical guide means displacably mounted on each of said sleeve means for guiding the respective needle means into the meat, said cylindrical guide means including a first end portion and a free end portion;

a valve means disposed at the free end portion of said guide means, said valve means being movable along the axial length of the respective needle means between an upper and lower position so as to close and open said at least one opening such that when said valve means is at a lowermost position, it closes said at least one opening, thereby permitting no pickle to be discharged therethrough; and

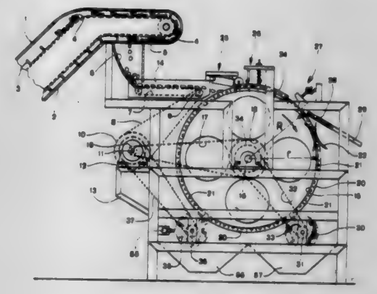
a valve holding means for urging said valve means to stay at the valve closing position.

4,437,398

ROTATING-DRUM MACHINE FOR PEELING TOMATOES

Antonio Savi, Parma, Italy, assignor to Officine Meccaniche Savi Antonio S.p.A., Parma, Italy

Filed Jul. 8, 1982, Ser. No. 396,453
Claims priority, application Italy, Sep. 18, 1981, 29073/81[U]
Int. Cl.³ A23N *7/00*
U.S. Cl. 99—587 **6 Claims**



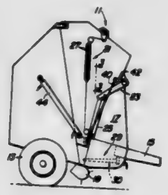
1. A rotating-drum machine for peeling tomatoes or the like, comprising: a rotating drum including twin-cheeked channels defined by a movable cheek and a fixed cheek disposed peripherally about said drum; means for conveying unpeeled tomatoes into the channels; a cutter device having a revolving serrated tracer-wheel mounted to perforate skins of said tomatoes; cam means for gradually drawing said cheeks together to gently and gradually squeeze and separate pulp from the perforated skin, the cam means working in opposition to a magnet means for holding the cheeks apart, the magnet means being located between an outer surface of said drum and an outer surface of the movable channel-cheek, wherein said movable channel-cheek is mounted to oscillate during contact with the cam means and includes a roller on an outer face thereof; a deflector device mounted to contact the roller subsequent to ejection of the peeled tomato from the channels and discharge thereof down an exit-chute, said deflector fixedly located to move said roller from a position concurrent with one circumference imposed by radius R to a position concurrent with that imposed by smaller radius r, thereby opening the movable channel-cheek; the magnet means affixed to the outer surface of said rotating drum for retaining the movable cheek in open position.

4,437,399

TWINE-WRAPPING MECHANISM FOR MECHANISM FOR A LARGE ROUND BALER

Richard W. Koenig, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 28, 1982, Ser. No. 382,890
Int. Cl.³ B30B *13/18*
U.S. Cl. 100—4 7 Claims



1. In an automatic twine wrapping mechanism for a cylindrical baler having a bale forming chamber, said mechanism comprising:

a twine-dispensing mechanism for dispensing twine into the bale forming chamber of said baler for wrapping around a bale being formed therein, said dispensing mechanism including a twine arm movable back and forth in front of the bale forming chamber between first and second positions,

hydraulic drive means for cycling said twine arm back and forth in front of said bale forming chamber, said drive means including a double acting cylinder, a hydraulic pump connected to said cylinder, and pump drive means for selectively driving said pump, and a control valve interconnected between said cylinder and said pump, said valve having a valve control arm movable between a first valve control arm position permitting said twine arm to be driven from the first to said second twine arm position and a second valve control arm position permitting said twine arm to be driven from said second to said first twine arm position, and

a control means (1) for initiating a twine wrapping cycle by automatically actuating said pump drive means and by positioning said valve control arm in said first valve control arm position responsive to the formation of bale of a predetermined diameter in said chamber, and (2) for deactivating said hydraulic drive means following wrapping of twine around said bale, said control means including (1) a drive control linkage having an engaged position for engaging said pump drive and a disengaged position for disengaging said pump drive, (2) means for biasing said drive control linkage into said engaged position, (3) a latch for locking said drive control linkage in said disengaged position, and (4) a bale size linkage movable responsive to the change in diameter of a bale in said chamber between a first position corresponding to when the bale chamber is empty or when a bale has a diameter less than a predetermined value and second position corresponding to when a bale in the chamber has a diameter greater than a predetermined value;

the improvement comprising:

said control means including a latch control linkage connecting said bale size linkage and said latch and having a plurality of settings for determining the bale diameter, in excess of said predetermined value, at which said latch is unlocked, and

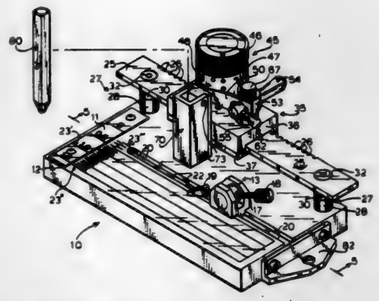
a manual control linkage remotely actuable from operator's station for said baler and connected to said latch for unlocking said latch and for positioning said value control arm in said first value control arm position.

4,437,400

STAMPING DEVICE

Charles W. Ellis, 2371 Beach St., Bellmore, N.Y. 11710

Continuation of Ser. No. 219,019, Dec. 22, 1980, abandoned. This application Nov. 26, 1982, Ser. No. 444,737
Int. Cl.³ B41J *1/02, 3/40, 19/18*
U.S. Cl. 101—18 11 Claims



1. A stamping device for a workpiece, the combination comprising:

a baseplate having a top surface;

a slide rigidly coupled to said baseplate top surface and space therefrom, said slide having a ratchet-like edge;

a carriage slidably coupled to said slide and supporting a punch holder, said punch holder having a longitudinal axis substantially perpendicular to said top surface and adapted to receive a punch therein for stamping the workpiece;

indexing means, coupled to said carriage and slide, for moving said carriage in predetermined increments longitudinally relative to said slide and baseplate to selectively position said punch holder over the workpiece, said indexing means including a manually-operated, rotatable knob coupled to a drive gear which is in turn coupled to said slide ratchet-like edge, and

means for coupling said slide to said baseplate in first and second positions, said first position locating said punch holder over said baseplate and said second position locating said punch holder past an edge of said baseplate.

4,437,401

SEPARATOR PLATE FOR TYPE BAND PRINTER

Horst Heinrich, Stuttgart; Günter R. Herrmann, Sindelfingen, and Manfred Schmidt, Deckenpfronn, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 362,424, Mar. 26, 1982, abandoned. This application Aug. 11, 1983, Ser. No. 522,249
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116127
Int. Cl.³ B41J *1/20*
U.S. Cl. 101—93.14 3 Claims

1. A type band printer for printing characters on a print line comprising:

an endless type band;

a platen contiguous with said endless type band for guiding said endless band;

a plurality of type elements affixed to said endless type band and lying in the same plane as said print line;

means for moving said endless type band in a direction parallel to the print line;

print paper;

means for feeding said print paper;

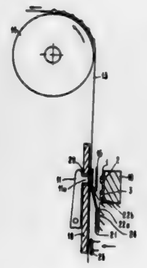
an inked ribbon located between said paper and said endless type band in the same plane as said plurality of type elements;

means for feeding said inked ribbon parallel to said endless type band;

a hammer plate, located on the opposite side of said inked ribbon from said endless type band and said platen, having an opening therein located in the same plane as said plurality of type elements;

a print hammer head capable of being thrust through said opening in said hammer plate so as to drive said print paper and said ribbon onto one of said plurality of type elements; and

an elastic separator plate, composed of polyester foil between 0.2 mm and 0.5 mm thick, located between said print paper and said inked ribbon for preventing said inked ribbon from contacting said print paper during those times when either the inked ribbon or the print paper is being fed, by exerting a force caused by its inherent elasticity on said print paper in a direction away from said inked ribbon



and said platen, and toward said hammer plate, said elastic separator plate comprising,

a longitudinal fold line substantially coextensive with the bottom of said print line for maintaining said print paper against said hammer plate across the entire width of said print paper,

an upper edge substantially coextensive with the bottom of said print line,

side arms located at the ends of said upper edge, said side arms interposed between said print paper and said ribbon for preventing said print paper

from contacting said ribbon in the areas of said side arms, and

an opening located between said side arms and bounded by said upper edge, whereby said print hammer head is thrust through said opening in said elastic separator plate.

4,437,402

ROTARY PRINTING MACHINE SYSTEM WITH OPTIONAL CONTINUOUS WEB PRINTING

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,883
Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117663
Int. Cl.³ B41F *5/16*
U.S. Cl. 101—181 14 Claims

1. Rotary web printing machine system, for printing on a substrate web (40) having

first and second plate cylinders (3, 4; 50; 51; 94–102–104; 95–103–105; 121–124; 129–132),

in which the second plate cylinder is located downstream—in the direction of movement of the web through the machine system—of the first plate cylinder,

each plate cylinder having a clamping groove (5, 6) parallel to the axis of rotation of the plate cylinder to receive a printing plate thereon, the printing plate in a zone adjacent the groove defining a beginning, or starting printing line (41, 42),

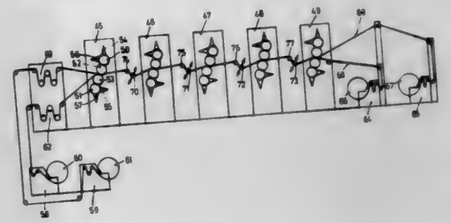
printing by the plate on the respective cylinder being interrupted at the groove resulting in gaps of printed subject matter, parallel to the axis of rotation of the plate cylinder, and being printed by the respective plate;

an inker (13, 14; 54, 55; 96, 97) associated with each cylinder to provide ink thereto;

said system comprising

means for selectively printing on a substrate either continuously, e.g. in a single color, or in two colors with a gap, or interruption in the region of the groove for at least the width of the groove defining said gap comprising

means (30; 70–73; 81; 111, 113; 125–127; 137–139) for selectively locating the circumferential position of the first and second printing cylinders with respect to the web to place, selectively,



(a), for printing continuous subject matter without a gap, the printing line (41) defined by the plate on the first cylinder and the printing line (42) defined by the plate on the second cylinder at longitudinally shifted locations by at least the distance of the width of the gap (43) between succeeding printing lines (41) defined by the plate on the first cylinder to effect, in mode (a) continous printing of subject matter on the web (40) without interruption of subject matter due to the presence of the clamping groove; or

(b), to permit multi-color printing with unprinted gaps on the substrate web (40),

the printing line (41) defined by the plate on the first cylinder and the printing line (42) defined by the plate on the second cylinder in registration to effect printing in mode (b) by the two printing cylinders with a gap (43) of printed subject matter on the web at the location of the clamping groove.

4,437,403

SYSTEM FOR ADJUSTING PRINTING PLATES MOUNTED ON PLATE CYLINDERS

Harry M. Greiner, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 418,094
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136704
Int. Cl.³ B41F *13/24*
U.S. Cl. 101—248 10 Claims

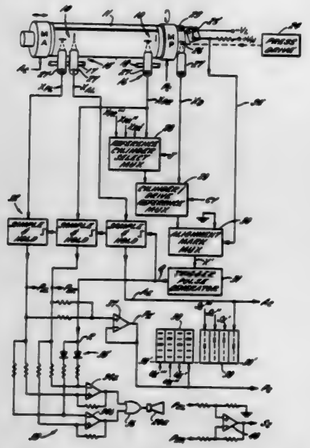
1. An automatic control system for adjusting the printing plates mounted on the plate cylinders of a printing press having a plurality of plate cylinders comprising, in combination,

automatic means for adjusting the plate cylinders in response to at least one register control signal for aligning the printing plates in register with another for the combined printing operation,

means for automatically measuring the positions of the individual printing plates with respect to the press frame to obtain relative position signals,

means for automatically comparing the relative position signal for at least one of the printing plates to at least one corresponding predetermined reference position signal to

generate at least one said register control signal, the reference position signal being preselected as a relative position signal for which the printing plates are substantially in register with one another for the combined printing operation, so that the means for adjusting tends to bring the printing plates in register with one another for the combined printing operation, and



means for selecting a particular printing plate to define the corresponding reference position signal so that the corresponding register control signal for the selected printing plate is substantially zero,

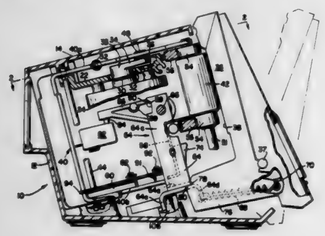
wherein the means for selecting has means for comparing the relative position signals and wherein the means for selecting selects the printing plate having a minimum relative position signal.

4,437,404

ELECTRIC DATA RECORDER

William P. Barbour, Columbia, Md., assignor to DBS, Inc., Randolph, Mass.

Filed Sep. 24, 1982, Ser. No. 423,017
Int. Cl.³ B41F *3/04*
U.S. Cl. 101—269 **7 Claims**



1. In a data recorder of the type comprising an upstanding main frame, a roller platen carried on the frame, a fork pivoted on the frame arranged to sweep the platen from a home position horizontally through a substantially erect plane printing path and return, a gate including a bed for carrying a form to receive a printing impression, said gate pivotally mounted to swing between an open loading position and a closed printing position, means biasing the gate towards open position, electric motor means for driving said form to sweep the platen through said printing path including a crank engageable in a slot in the fork for driving the same, and switch means for controlling the energization of said motor, the improvement comprising:

means to cause imprinting of said form by said motor means solely during the printing stroke and to then interrupt the said driving connection between the fork and the motor means;

spring means acting on the fork to restore the same to a location placing the platen in home position once the driving connection is interrupted; and

means to effect reestablishment of the driving connection in readiness for a subsequent cycle of operation.

4,437,405

APPARATUS FOR TRANSFERRING INK TO THE INK PLATE OF A METERING MACHINE

Werner Haug, Langnau, Switzerland, assignor to Frama AG, Switzerland

Filed Apr. 7, 1982, Ser. No. 366,179
Claims priority, application Switzerland, Apr. 30, 1981, 2838/81
Int. Cl.³ B41F *31/00*
U.S. Cl. 101—349 **3 Claims**

1. An apparatus for transferring ink to a metering head of a metering machine having a casing substantially surrounding the metering head, comprising:

the casing having a side wall with a side wall opening therein;

a fixed bearing bolt connected to the machine and extending in the casing;

an interchangeable roller support having a hollow shaft portion engaged through said side wall opening and coaxially onto said bearing bolt, said support having a handle portion and an end portion;

a protective sleeve having an inside diameter large enough to permit passage of said ink storage roller, connected to the casing side wall and extending into the machine from said casing side wall opening;

an ink storage roller rotatably mounted to said hollow shaft portion, said side wall opening being large enough to permit passage of said ink storage roller, said ink storage roller having an axial opening therethrough forming a bearing sleeve therein rotatably mounted on said hollow shaft portion;

at least one ink transfer roller mounted on a frame which is pivotable about an axle which is coaxial with said bearing bolt and being engaged with said ink storage roller, said protective sleeve extending over said ink storage roller and having a lateral opening for permitting contact between said ink storage roller and said ink transfer roller; and

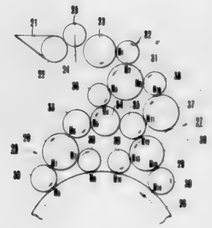
locking means connected between said casing and said interchangeable roller portion for locking said interchangeable roller support with ink storage roller thereon in said side wall opening.

4,437,406

INKING APPARATUS FOR AN OFFSET PRESS

Kokichi Hasegawa, and Tsugio Tokita, both of Ibaragi, Japan, assignors to Komori Printing Machinery Co., Ltd., Japan

Filed Jun. 18, 1982, Ser. No. 389,831
Claims priority, application Japan, Sep. 12, 1981, 56-144339
Int. Cl.³ B41F *31/00*
U.S. Cl. 101—350 **2 Claims**



1. An inking apparatus for an offset press, comprising:

a fountain roller having ink thereon;

a first vibrator roller disposed adjacent said fountain roller and spaced apart therfrom;

a ductor roller interposed said fountain roller and said first vibrator roller, said ductor roller being reciprocably movable between said fountain roller and said first vibrator roller for intermittently transferring ink from said fountain roller to said first vibrator roller;

a plate cylinder rotatable in a predetermined direction;

a first roller group and a second roller group, each of said first and second roller groups comprising a plurality of ink form rollers held in contact with said plate cylinder, each of said first and second roller groups further comprising a second vibrator roller held in contact with said plurality of ink form rollers; said first roller group being located upstream of said second roller group with respect to said predetermined direction;

a third vibrator roller;

a first distributor roller interposed said first vibrator roller and said third vibrator roller, said first distributor roller being held in contact with said first vibrator roller and with said third vibrator roller;

three second distributor rollers one of said three second distributor rollers being held in contact with said second vibrator of said first roller group, an other of said three second distributor rollers being held in contact with said second vibrator of said second roller group, and an intermediate one of said three second distributor rollers being interposed said one and said other of said three second distributor rollers, said intermediate one of said three second distributor rollers being held in contact with said one and said other of said three second distributor rollers;

a third distributor roller held in contact with said intermediate one of said three second distributor rollers and with said third vibrator roller;

a fourth vibrator roller held in contact with said other of said three second distributor rollers and

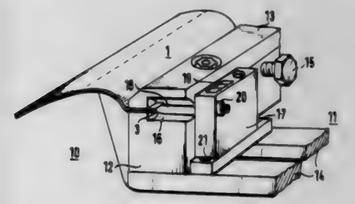
a fourth distributor roller interposed said third vibrator roller and said fourth vibrator roller, said fourth distributor roller being held in contact with said third vibrator roller and with said fourth vibrator roller.

4,437,407

DEVICE FOR CONTROLLING THE CLAMPING OF PRINTING PLATES IN CORRECT REGISTER ON THE PLATE CYLINDER OF AN OFFSET PRINTING MACHINE

Burkhardt Wirz, and Alfred Preuss, both of Munich, Fed. Rep. of Germany, assignors to Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,236
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138865
Int. Cl.³ B41F *1/30*
U.S. Cl. 101—409 **7 Claims**



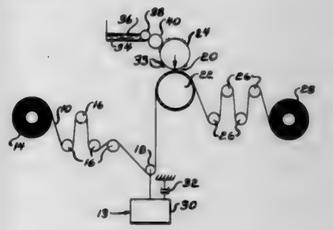
1. Device for controlling the clamping of printing plates in correct register on the plate cylinder of an offset printing machine by means of clamping bars which are arranged in the cylinder channel and on which one end in each case of a printing plate can be held by gripping strips and which are movable in the peripheral direction of the cylinder by means of tightening screws which are screwed into the clamping bars and are supported on either wall of the channel, in which the displacement of the clamping bar holding the front edge of the plate is controllable with respect to the plate cylinder by means of electrical indicator arrangements having a feeler extending in the direction of movement, characterised in that the electrical indicator arrangements (17, 24) with the feeler (18) are fastened to the plate cylinder (10) in the cylinder channel (11), the sensing tip of the feeler (18) lines up with a specific region of the front edge of the printing plate (1), and the positions of the images (4) on the printing plate (1) have a fixed relationship to the specific region (3) of the front edge of the printing plate.

4,437,408

DEVICE FOR APPLYING INDICIA TO AN ELASTIC WEB

Edward J. Arkans, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jun. 16, 1980, Ser. No. 159,707
Int. Cl.³ B41C *1/02*
U.S. Cl. 101—426 **1 Claim**



1. A method of determining the amount of tension in an elastic web, by applying indicia in a first, repetitive, geometric form along the lengths of elastic webs stretched into an elongated shape, such that in stretching use of the webs after printing, said indicia in said first form represent a predetermined amount of tension being applied to the webs regardless of the

degree of stretch variation of different webs when each is stretched to attain said predetermined amount of tension, comprising the steps of:

predetermining the amount of tension the indicia in said first form will indicate after printing;

longitudinally stretching an elastic web to said predetermined amount of tension, irrespective of the length of stretch required to be imparted to the web to attain said predetermined amount of tension by suspending the web between a feed means and a retaining roll, the retaining roll having high friction characteristics on the outer surface thereof, the elastic web being formed into a loop between the feed means and the retaining roll;

maintaining said predetermined amount of tension in the web completely and entirely independently of elongation in the web, or variations in the elongation of the web, or speed of travel of the web from the feed means over the retaining roll, or rotational speed of the retaining roll, consisting solely of the steps of locating a floating roll on the loop, applying a downward bias to the floating roll equal to said predetermined amount of tension by attaching a weight to the floating roll, and dampening the floating roll to mitigate fluctuations in the floating roll caused by passage of the elastic web loop around the floating roll, whereby a portion of the web on the retaining roll having high friction characteristics is stretched to a degree equaling said predetermined degree of tension regardless of the degree of elongation imparted to the web to attain the degree of stretch equaling said predetermined degree of tension; and

printing said indicia in said first geometric form while the web is stretch to said predetermined amount of tension by passing the web through a nip defined by the retaining roll and a print roll and while the web is stretched as aforesaid on the retaining roll, said indicia, after the web is relaxed and allowed to return to an unstretched condition, assuming a second geometric form which is other than said first geometric form, said first and second geometric forms, when compared, being readily visually perceived as being different.

4,437,409

SPIN-STABILIZED SABOT PROJECTILE FOR OVERCOMING A HETEROGENEOUS RESISTANCE

Pierre Freymond, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Continuation of Ser. No. 36,768, May 7, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,664

Claims priority, application Switzerland, May 30, 1978, 5870/78

Int. Cl.³ F42B *11/24, 13/16*

U.S. Cl. 102—364 **5 Claims**

1. A spin-stabilized sabot projectile for overcoming a heterogeneous resistance, comprising:

sabot means;

a projectile body carried by said sabot means;

said projectile body having an axial channel means for obtaining an increased radial effect of splinters or the like from the projectile body upon fragmentation thereof after penetration of said heterogeneous resistance;

said axial channel means containing an incendiary charge;

said projectile body having a specific weight of at least 17 gr/cm^3;

said axial channel means having a forward end region and an intermediate region;

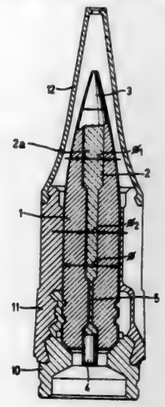
said forward end region of said axial channel means having a larger diameter than said intermediate region;

said projectile body having a front region;

a ballistic hood means for closing said front region of said projectile body;

said axial channel means possesses at said forward end region a diameter amounting to approximately 40% of the diameter of the projectile body, such that the projectile body continuously crumbles away at the region of said axial channel means upon penetration of the projectile body at the heterogeneous resistance;

said axial channel means possessing at said intermediate



region a diameter amounting to approximately 20% of the diameter of said projectile body; and

said axial channel means being filled with said incendiary charge such that the penetration depth of the projectile is conformed to the radial effect of said projectile.

4,437,410

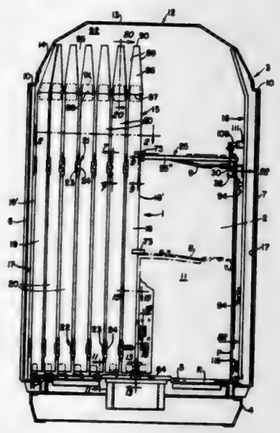
PIVOTAL SLIDABLE VEHICLE END ENCLOSURE

David A. Stoller, Sr., Dunwoody, Ga.; James C. Robertson, Ypsilanti, and Tibor Matyas, Northville, both of Mich., assignors to Portec, Inc., Oak Brook, Ill.

Filed Oct. 9, 1981, Ser. No. 310,307

Int. Cl.³ B61D *3/02*; B60J *5/10*

U.S. Cl. 105—378 **15 Claims**



1. An end enclosure for a transport vehicle having a floor and two side walls defining a vehicle interior therebetween terminating in an end opening, at least one elevated deck spaced above said floor and having lateral edges spaced inwardly from said side walls and a front edge juxtaposed said end opening, said enclosure comprising a pair of door assemblies adapted to be displaced between a closed position overlying said end opening and an opened position spaced outwardly

of a respective one of said deck lateral edges and disposed fully within said vehicle interior, said door assemblies each including a plurality of vertically disposed adjacent panels bounded by an inner and outer panel, hinge means intermediate and pivotally joining adjacent ones of said panels, an elongated support member disposed within said vehicle interior in a horizontal plane, said support member having an end portion disposed outwardly beyond said deck front edge and joined in a continuous curved manner with side portions respectively disposed above and outwardly of said deck lateral edges, means fixedly mounting said support member relative said deck, means suspending said door assemblies from and outwardly of said support member, said suspension means including a plurality of hanger assemblies attached to said panel hinge means, said hinge means including male and female hinge elements joined by a hinge pin, said hanger assemblies each provided with a pair of opposed horizontal offset elements projecting outwardly toward each said door assembly and engaging opposite ends of said hinge pins to captively support said door assemblies, said hanger assemblies each provided with a tracking element disposed within said support member, and panel guide means carried by the bottom of said door assemblies cooperating with guide means adjacent said vehicle floor, said guide means adjacent said vehicle floor including an upstanding rail extending substantially continously throughout the extent of displacement of said two door assemblies, said panel guide means including a plurality of individual spaced-apart guide pins projecting downwardly from said panels and straddling said rail, forward and rearward bumpers projecting inwardly from said inner and outer panels respectively, forward and rearward stops mounted inwardly of said vehicle side walls adjacent said floor guide means and respectively engaged by said forward and rearward bumpers when each said door assembly is fully disposed in said opened position, said forward stop mounted at a position selected to engage said rearward bumper when each said door assembly is fully disposed in said closed position wherby, lateral force applied to any one of said panels concurrently displaces all said panels of its respective said door assembly between said closed and opened positions.

4,437,411

MULTI-POSITION STUDENT TABLE

Ronald M. Maxwell, Leland, Mich., assignor to General Equipment Manufacturers, Jackson, Miss.

Filed Apr. 20, 1981, Ser. No. 255,807

Int. Cl.³ A47F *5/12*

U.S. Cl. 108—1 **13 Claims**



1. Apparatus for rigidly positioning a top panel at a first or a second height comprising: a base; first engagement members secured to said base; a top panel providing a work surface adapted to be positioned at one of said heights relative to said base; first and second side supports hingedly mounted to said base in spaced relation and movable between a first storage position in which said supports lie flat within said base and said top panel is supported by said base, and a second position in which said supports are raised and said top panel is supported by said first and second support means at a height above said first position; brace means for rigidly securing said first and second support means in said raised position; and manual latch means comprising a reciprocable latch member slidably carried on the under surface of said top panel and manually moveable between a latch position and a release position for rigidly securing said top panel to said base at said first height by coupling to said first engagement members when said side supports are placed in said storage position and for rigidly securing said top panel to said side supports when the same are placed in said second position and said latch member is in said latch position.

4,437,412

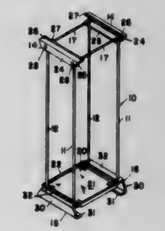
FOLDING PALLET

Jerrold A. Trautsch, New Lisbon, Wis., assignor to Leer Manufacturing Company, Inc., New Lisbon, Wis.

Filed Jan. 8, 1982, Ser. No. 386,236

Int. Cl.³ B65D *19/12*; A47B *43/00*; F16D *1/12*

U.S. Cl. 108—56.1 **13 Claims**



1. A folding pallet comprising:

(a) a pair of base members disposed in parallel relation;

(b) a pair of top side members disposed in parallel relation above the base members;

(c) a pair of front vertical posts rotatably mounted at their ends to the base members and top side members, one front post extending from one base member to the top side member above it and the other front post extending from the other base member to the other top side member above it, the posts being tubular, having a cylindrical exterior surface and a cylindrical interior surface;

(d) a pair of back vertical posts rotatably mounted at their ends to the base members and to the top side members, one back post extending from one base member to the top side member above it and the other back post extending from the other base member to the other top side member above it, the posts being tubular, having a cylindrical exterior surface and a cylindrical interior surface;

(e) a pair of top cross rods, one cross rod attached to and between the front posts near the top ends thereof and the other top cross rod attached to and between the back posts near the top ends thereof;

(f) a pair of bottom cross rods, one cross rod attached to and between the front posts near the bottom ends thereof and the other cross rod attached to and between the back posts near the bottom ends thereof;

(g) a bottom tray pivotally mounted to a bottom cross rod for rotation from a horizontal position in which the tray covers a substantial portion of the area at the bottom of the pallet between the front and back posts and a vertical position in which the tray is substantially parallel to the back posts, whereby the pallet may be folded from an erected position in which the posts, base members, top side members, and cross rods generally define the shape of a rectangular parallelepiped to a folded position by raising the tray from its horizontal to its vertical position and drawing either pair of diagonally opposite back posts and front posts toward each other until the pallet collapses to a substantially flat configuration;

wherein the top side members are formed as U-shaped channels, having a vertical web section and a horizontal lower flange and a horizontal upper flange extending therefrom, and each top side member including, for each vertical post

rotatably mounted to the top side member, an opening in the lower horizontal flange which is slightly larger than the outside diameter of the post, through which the post passes, a ferrule on the lower flange extending upwardly from the opening and having a cylindrical interior with a diameter slightly larger than the outside diameter of the post, and another ferrule on the upper flange extending downwardly concentric with the lower ferrule and having an outside diameter which is slightly less than the inside diameter of the post, whereby each post will be held between the two ferrules with which it is engaged so that it cannot be moved laterally but can rotate about its own axis, and

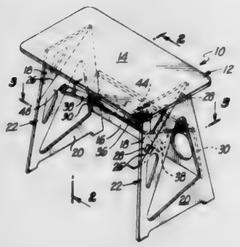
wherein the base members are formed as U-shaped channels having a central vertical web section and a horizontal lower flange and a horizontal upper flange extending therefrom, and each base member including, for each vertical post which is rotatably mounted to the base member, an opening in the upper flange of the base member which is slightly larger in diameter than the outside diameter of the post, through which the post passes, a ferrule on the upper flange extending downwardly from the opening and having a cylindrical interior with a diameter slightly larger than the outside diameter of the post, and a ferrule on the lower flange extending upwardly concentric with the ferrule on the upper flange and having a cylindrical exterior with a diameter slightly less than the inside diameter of the post, whereby each post will be held between the two ferrules with which it is engaged so that it cannot be moved laterally but can rotate about its own axis.

4,437,413

FOLDING STRUCTURE EMPLOYING A SARRUS LINKAGE

Edward D. O'Brian, 2125 W. Falmouth, Anaheim, Calif. 92801, and Charles Phelan, Tustin, Calif., assignors to Edward D. O'Brian, Anaheim, Calif.

Filed Sep. 8, 1981, Ser. No. 300,060
Int. Cl.³ A47B *3/00*
U.S. Cl. 108—111 **13 Claims**



1. A folding structure including a six member Sarrus linkage having two opposed links and two sets of connecting links, each of said sets including two separate links, the connecting links of each of said sets having adjacent edges hingedly connected to one another, a first connecting link of each of said sets being hingedly connected to a first of said opposed links, the second connecting link of each of said sets being hingedly connected to the second of said opposed links, said sets of connecting links being spaced from one another, in which the improvement comprises:

a control link means pivotally connected to said second of said opposed links,

a motion transmitting link means pivotally connected to said control link means and to a connecting link of one of said sets of connecting links,

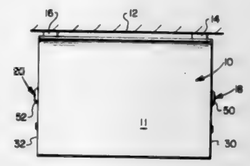
said control link means and said motion transmitting link means being connected to one another and to said Sarrus linkage so that said control link means may be pivoted relative to said one of said opposed links and so that such motion of said control link means will be transmitted in order to cause relative movement between said opposed links so as to move said opposed links toward one another as said structure is being folded and so as to move said opposed links away from one another as said structure is being unfolded.

4,437,414

FOLDING TABLE FOR WALL MOUNTING

Tony Brescia, Liverpool, and Ross Deacon, Syracuse, both of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,137
Int. Cl.³ A47B *5/04*
U.S. Cl. 108—134 **10 Claims**



1. A wall mountable folding table adapted for positioning substantially flush against a vertical wall in a first position and generally orthogonal thereto in a second, rotated position, said table comprising:

a generally planar table surface having top and bottom surfaces and side frame members on opposite sides thereof defining a space therebetween and under said table surface;

at least one wall mountable support bracket adapted to be secured against a generally vertical wall and pivotally connected to said table for the support thereof and being constructed of a size affording its receipt substantially within the area of the side frame members in said space therebetween;

first and second support arms pivotally connected to said side frame members at one end and to said support bracket at an opposite end, each of said support arms having an intermediate pivot connecting upper and lower portions of said support arm for permitting relative rotation therebetween and relative to said table surface and said support bracket;

said upper portion of said support arm being received against said botom table surface when said top table surface is oriented generally orthogonal to said support bracket in said second position;

said side frame members of said folding table including latching means for locking said arms in a supporting position relative to said table surface when said table surface is oriented generally orthogonal to said support bracket in said second position;

said latching means including a slot formed in at least one of said side frame members and a sliding member mounted therein for rectilinear movement relative to said adjacent support arms for the engagement thereof;

at least one of said adjacent support arms including a slot formed therein for receiving said slide member of said latching means mounted upon said side frame member for the locking of said support arm by the rectilinear movement of said latching means and wherein said latching means is positioned adjacent said intermediate pivot of said adjacent support arm when said upper support arm is received against said bottom table surface;

said lower portion of said support arm depending from said intermediate pivot in direct structural relationship between said bottom table surface and said support bracket when said top table surface is oriented generally orthogonal to said support bracket in said second position; and

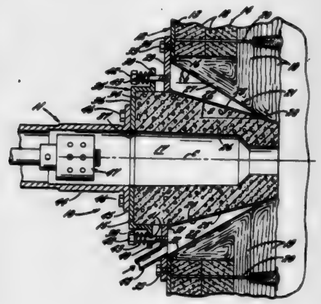
said support arms being constructed of a width substantially no greater than the width of said table side frame members for the foldable receipt of said support arms adjacent said side frame members in said space therebetween when said table is pivoted into said first position against said vertical wall.

4,437,415

BURNER BLOCK ASSEMBLY FOR INDUSTRIAL FURNACES

Lyle S. Spielman, Rockford, Ill., assignor to Eclipse, Inc., Rockford, Ill.

Filed Jul. 28, 1982, Ser. No. 402,758
Int. Cl.³ F23L *5/00*
U.S. Cl. 110—182.5 **4 Claims**



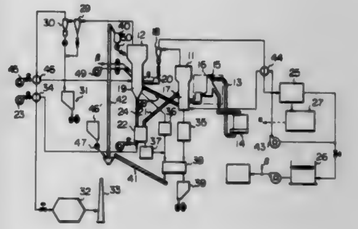
1. For use with a furnace having a metal shell and a refractory lining on the inner side of the shell, a burner block assembly having, in combination, a hollow annular member closed at both ends to define an annular cooling chamber and adapted to project through a hole in the shell and into the lining with one end of the member disposed adjacent the shell, said member having a predetermined rate of thermal expansion and haing an inner wall which defines a central opening with the opening being conical and becoming smaller in cross section from said one end to the other end, said member also including a radial flange overlapping the shell around the entire periphery of the hole and adapted to be attached to the shell, a burner block made of refractory material and having an inner portion projecting into said opening, the cross sectional shape of said inner end portion being conical and complemental to the cross sectional shape of said opening whereby the end portion is seated against said inner wall, said burner block having a rate of thermal expansion significantly different from said predetermined rate, and means mounting said block on said annular member and including resilient means urging said inner end portion axially inwardly and firmly against said inner wall while permitting relative axial movement caused by the different rates of thermal expansion, said annular member having at least one inlet port and at least one outlet port to permit a cooling fluid to be circulated through said chamber thereby to remove heat from said annular member.

4,437,416

APPARATUS FOR PYROLYZING

Yoshiaki Ishii; Tsutomu Kume; Naoyoshi Ando, and Shosaku Fujinami, all of Kanagawa, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Division of Ser. No. 199,543, Oct. 22, 1980, Pat. No. 4,344,373.
This application May 26, 1982, Ser. No. 382,350
Claims priority, application Japan, Oct. 30, 1979, 54-139271; Oct. 30, 1979, 54-139272
Int. Cl.³ F23D *1/00*; F23G *5/00*
U.S. Cl. 110—245 **7 Claims**



1. An apparatus for effecting pyrolyzation in a two-bed fluidized pyrolysis system, said apparatus comprising:

a pyrolysis reactor of the fluidized bed type with sand as the fluidized medium;

a combustion reactor of the fluidized bed type including a lower portion for receiving sand from said pyrolysis reactor and an upper portion where combustion is effected and into which sand is lifted from said lower portion;

coupling conduit means for coupling an upper part of said pyrolysis reactor with said lower portion of said combustion reactor, and for coupling said upper portion of said combustion reactor with a lower part of said pyrolysis reactor;

means for sensing physical factors concerning the state of fluidization and including:

means for sensing the pressure difference between the free boards of said two reactors;

means for sensing the pressure difference between said upper and lower portions of said combustion reactor; and

means for determining the levels of fluidized beds of said two reactors by measuring the pressure difference between the upper and lower portions of the respective said fluidized bed of each said reactor;

control means for regulating the values of said physical factors; and

sand lifting means for lifting sand upwardly from said lower portion of said combustion reactor into said upper portion of said combustion reactor and including:

a lifting conduit coupling said lower portion and said upper portion;

nozzle means for injecting pressurized gas into a lower end of said lifting conduit;

a ring gap means surrounding said nozzle through which air is blown around the nozzle;

means for regulating flow rate of gas injected through said nozzle; and

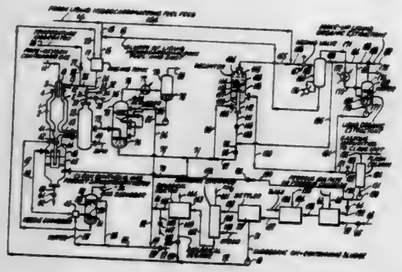
regulating means for regulating flow rate of air blown from said ring gap means.

4,437,417

ENVIRONMENTALLY SAFE PROCESS FOR DISPOSING OF TOXIC INORGANIC CN-CONTAINING SLUDGE

Roy D. Roberts, Chino, Calif., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,470
Int. Cl.³ F23G 7/04
U.S. Cl. 110—346 16 Claims



1. A pollution abatement process for a toxic inorganic CN-containing sludge comprising

(1) mixing together the toxic CN-containing sludge from (6) and a liquid hydrocarbonaceous fuel to produce a fuel mixture;

(2) reacting the fuel mixture from (1) by partial oxidation with a free-oxygen containing gas and a temperature moderator in the reaction zone of a free-flow partial oxidation gas generator at an autogenous temperature in the range of about 1700° to 3000° F. and a pressure in the range of about 10 to 200 atmospheres to produce an effluent gas stream substantially comprising H_2, CO, CO_2, at least one gas from the group consisting of H_2O, CH_4, H_2S, COS, N_2, and Ar, and containing particulate carbon, ash and trace amounts of HCN, HCL and NH_3;

(3) introducing the effluent gas stream from (2) into a gas quench cooling and/or scrubbing zone, and producing a carbon-water dispersion containing dissolved formic acid and a separate stream of raw synthesis gas, reducing gas or fuel gas;

(4) resolving said carbon-water dispersion in a decanting zone to produce a carbon-liquid hydrocarbonaceous fuel slurry and water containing free and combined cyanides; halides of ammonium or a metal selected from the group sodium, calcium, iron, nickel, and mixtures thereof; formates; sulfides, thiocyanates; ammonia; and metal constituents selected from the group consisting of nickel, vanadium, iron, and mixtures thereof;

(5) mixing at least a portion of the water from (4) at a temperature in the range of about 125° to 200° F., and a pH in the range of about 7 to 9 with a ferrous salt thereby converting a substantial portion of said cyanides to iron cyanides, adding a base to increase the pH to a value in the range of about 9–11, and precipitating said toxic inorganic CN-containing sludge in said water; and

(6) separating the suspended CN-containing sludge from the water in a separating zone.

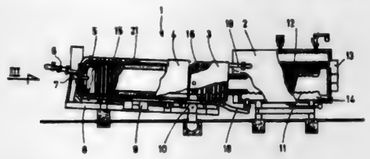
4,437,418

METHODS OF AND APPARATUS FOR TREATING WASTE PRODUCTS

Paul Guillaume, Ivry-sur-Seine, and Pierre Karinthi, Grenoble, both of France, assignors to L'air Liquide, Societe Anonyme Pour L'etude et L'exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 20, 1981, Ser. No. 323,251
Claims priority, application France, Dec. 5, 1980, 80 25901
Int. Cl.³ F23G 5/06
U.S. Cl. 110—246 7 Claims

1. In apparatus for treating waste products of the type comprising an incinerator furnace including at least one rotary section having a peripheral wall for the combustion and/or pyrolysis of the waste products and a stationary section between said rotary section and a recuperator and having a peripheral wall for guiding exhaust fumes generated in said furnace from the rotary section; said recuperator including means for causing the exhaust fumes to flow in a state of heat exchange with a heat-carrier fluid for exploitation of the heat thus recovered; the improvement which comprises a circuit for recovery of the heat of the furnace, said circuit conducting a flow of heat-carrier fluid in the direction extending from said recuperator toward the peripheral wall of one or both of said



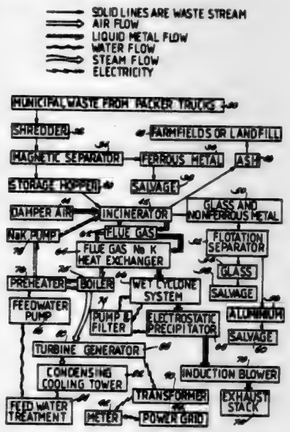
stationary section and said rotary section of said furnace and in the direction returning from said peripheral wall toward said recuperator to preheat the fluid in said recuperator, wherein said circuit comprises juxtaposed tubes connected in parallel between a distributor duct and a collector duct, which ducts are arranged opposite and parallel to one another longitudinally with respect to said furnace, wherein said tubes, with sheet metal elements welded therebetween, form a casing delimiting the volume occupied by the fumes within said furnace, and wherein some of said tubes at least partially form a stationary front closing off said furnace at an extremity thereof remote from said recuperator.

4,437,419

INCINERATOR

Karl R. Hertel, Delafield, Wis., assignor to Pyro-Gen Corp., Waukesha, Wis.

Filed Sep. 22, 1982, Ser. No. 421,608
Int. Cl.³ F23G 3/00, 5/00, 7/00
U.S. Cl. 110—259 35 Claims



1. A waste incinerating and resource reclaiming device, comprising:

A. a substantially closed flue chamber having walls, a draft air inlet, a waste inlet, a flue gas outlet, and a combustion zone between said draft air inlet and said flue gas outlet;

B. support means for receiving and maintaining unburned waste in said combustion zone;

C. burned waste conveying means for feeding burned waste from said combustion zone to a position above said draft air inlet, so that air drawn through said draft air inlet separates said burned waste into heavy and light fractions as said waste drops from said position; and

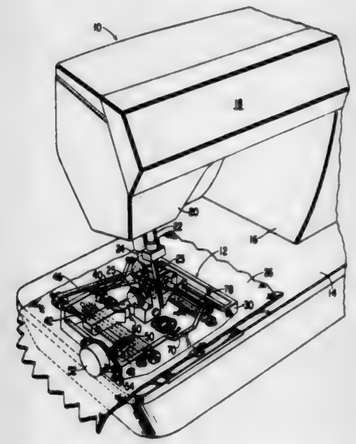
D. first and second conveyor means, respectively disposed in the paths of said heavy and light fractions, for separately conveying said heavy and light fractions from said flue chamber.

4,437,420

DRIVE ROLL MONOGRAMMER

Kenneth M. Johnson, Westfield, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 7, 1981, Ser. No. 327,861
Int. Cl.³ D05C 1/02
U.S. Cl. 112—103 4 Claims



1. A work manipulating mechanism for use with a sewing machine having a frame including a work supporting bed, said frame supporting a presser bar, a needle bar, a sewing needle supported on the end of said needle bar, means for supporting said needle bar for endwise reciprocation in the formation of stitches, and actuating means for implementing endwise reciprocation of said needle bar, said work manipulating mechanism comprising:

a pair of spaced apart rollers;

means for rotatably supporting said rollers in contact with work material supported on said work supporting bed, said supporting means including a substantially rectilinear peripheral frame;

a first shaft rotatably supported by said peripheral frame paralleling said rollers;

means for connecting said shaft to said rollers to transmit rotation of one to the other;

a first drive means carried by said peripheral frame and operatively connected to said first shaft for transmitting selected rotation to said rollers;

a second shaft supported by said peripheral frame parallel to said first shaft;

a bridge extending above said rollers and slidably supported by said first and said second shafts;

means on said bridge for connecting said bridge to said presser bar for support thereof;

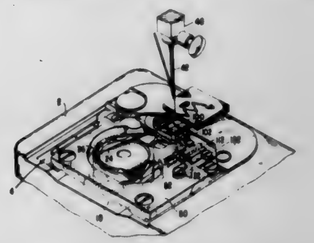
and a second drive means supported by said bridge and operatively connected to said peripheral frame for selectively moving said peripheral frame relative to said bridge.

4,437,421

VARIABLE PULL OFF FOR BOBBIN THREAD

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, Stamford, Conn.

Continuation of Ser. No. 204,426, Nov. 6, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,556
Int. Cl.³ D05B 3/02, 27/22, 27
U.S. Cl. 112—158 R 5 Claims



1. In a sewing machine having a bed and stitch forming instrumentalities including a thread carrying needle, said needle having an endwise reciprocating motion imparted thereto so that said needle will penetrate a work piece supported by said bed, a feed dog for effecting movement of the work piece in cooperation with said needle, said needle being capable of having a jogging motion imparted thereto which is lateral to the direction of said movement of the work piece to produce zig zag stitches, a loop taker adapted to operate in cooperation with said needle in the formation of lockstitches and having a bobbin accommodating cavity, a thread carrying bobbin disposed in said cavity, a bobbin thread tensioning device associated with said bobbin for tensioning bobbin thread as it is pulled from said thread carrying bobbin, said bobbin thread following thread paths of varying length between said thread tensioning device and the different laterally jogged positions of said needle penetration; an arrangement for pulling thread from said thread carrying bobbin to effect uniform zig zag stitches comprising: (a.)

a movable bobbin thread pull-off member having a thread engaging surface transverse to said thread paths, said thread engaging surface having different portions arranged for engagement with said bobbin thread in each of the different laterally jogged positions of needle reciprocation; (b.)

means for effecting movement of said bobbin thread pull-off member in a fixed path cyclically and in timed relation with said stitch forming instrumentalities, and with said different portions of the thread engaging surface each partaking of an extent of movement different from other portions while in engagement with said bobbin thread; (c.)

whereby said bobbin thread pull-off member is effective to pull from said bobbin an amount of bobbin thread subsequent to each different laterally jogged position of said needle penetration which amount of bobbin thread pull-off is substantially proportional to the extent of movement of said thread engaging portion in engagement with said bobbin thread.

4,437,422

STOP CONTROL MECHANISM FOR FEEDING A MATERIAL TO A WORK PERFORMING MACHINE

Julio B. Torres, 981 Arapahoe St., Los Angeles, Calif. 90006

Filed Feb. 22, 1982, Ser. No. 350,979
Int. Cl.³ B65H 63/02, 63/06, 25/00; D05B 69/36
U.S. Cl. 112—272 7 Claims

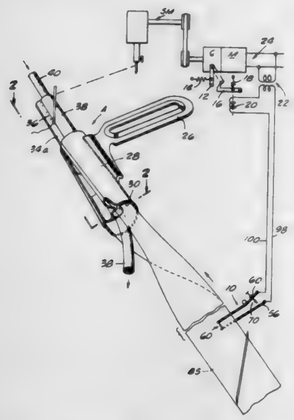
1. As an article of manufacture, a control switch for interrupting the operation of a power driven sewing machine in which a fabric bias binding strip-material is fed to a work performing attachment operatively associated with said machine, and wherein the operation of said control switch is

responsive to the presence of one or more predetermined abnormal conditions of said binding strip-material, said switch comprising:

a supporting bracket frame structure;

an elongate fixed switch member mounted on said bracket;

an elongate rocker arm switch member hingedly mounted between its ends on said bracket, and axially extending generally along the fixed switch member;



a first set of operatively associated contacts respectively mounted on said switch members on one side of the hinge mounting;

a second set of operatively associated contacts mounted on said switch members on the other side of the hinge mounting; and

said sets of contacts being so arranged that when the contacts of one of said sets is closed, the contacts of the other set will be open.

4,437,423

THREAD TRIMMING DEVICE FOR A SEWING MACHINE

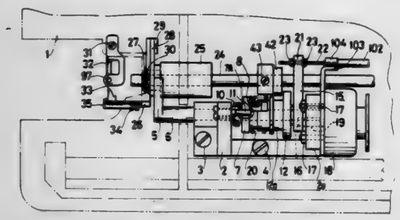
Masayuki Yamazawa, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Feb. 22, 1982, Ser. No. 351,210

Claims priority, application Japan, Feb. 26, 1981, 56-28149

Int. Cl.³ D05B *65/02*

U.S. Cl. 112—292 **2 Claims**



1. A thread trimming device for a sewing machine, said device comprising:

(a) a first shaft rotably driven by the main shaft of the sewing machine;

(b) a first ratchet means disposed on said first shaft and rotable therewith, said first ratchet means comprising a first partial gear having:

(i) a first peripheral segment having teeth thereon;

(ii) a second peripheral segment having a first cam surface formed thereon adjacent to said first peripheral segment on one side thereof;

(iii) a third peripheral segment having a first radial projection formed thereon; and

(iv) fourth and fifth peripheral segments having blank surfaces thereon disposed between said second and third peripheral segments and between said first and third peripheral segments, respectively;

(c) a stationary blade means fixably secured to the framework of the sewing machine;

(d) a second shaft disposed parallel to said first shaft;

(e) pivotably movable blade means operably connected to said second shaft;

(f) a second rachet means disposed on said second shaft and axially movable relative thereto so as to selectable engage said first rachet means, said second rachet means comprising a second partial gear having:

(i) a first peripheral segment having teeth thereon;

(ii) a second peripheral segment having a second radial projection formed thereon; and

(iii) a third peripheral segment having a second cam surface formed thereon disposed between said first and second peripheral segments; and

(g) electrically operable means for moving said second rachet means along said second shaft so as to engage said first rachet means,

whereby:

(h) upon actuation of said electrically operable means, said teeth on said first and second partial gears engage each other to rotate said movable blade means to an operable position relative to said stationary blade means;

(i) thereafter, said first cam surface comes into sliding contact with a tooth on said first partial gear to slowly rotate said movable blade means to cooperate with said stationary blade means to perform the thread trimming operation; and

(j) thereafter, said first radial projection comes into sliding contact with said second radial projection and said second cam surface to rotate said second rachet means in the direction opposite the direction in which it rotated during the thread trimming operation.

4,437,424

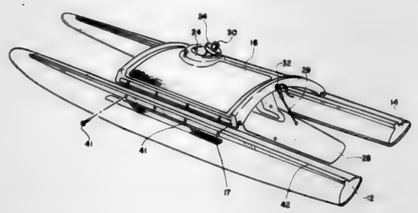
PARTIALLY RESTRAINED ARRANGEMENT FOR THE MAST AND SAIL OF A CRAFT POSSESSING INHERENT STABILITY

Douglas W. Lord, Orlando, Fla., assignor to Julian C. Renfro, Winter Park, Fla.

Continuation-in-part of Ser. No. 269,486, Jun. 2, 1981, abandoned. This application Jun. 24, 1983, Ser. No. 507,459

Int. Cl.³ B63B *15/00*

U.S. Cl. 114—91 **21 Claims**



1. In a wind propelled boat of the sailboard type, a generally cone-shaped sail mounting member secured on the deck of the boat, a portion of said generally cone-shaped member being designed to receive the base of a mast such that it will be movable only for a limited angular extent around interior portions of said generally cone-shaped member, means for securing a lower part of the mast in the apex of said generally cone-shaped member, the front interior of said generally cone-shaped member being relatively straight across, with said front interior merging by the use of rounded contours with interior portions to each side of said front portion, thereby to define preestablished locations therein, such that the mast can be moved to a preestablished location that is forward and to the left, or to a preestablished location that is forward and to the right, the interior of said generally cone-shaped member also presenting a rounded location in the aft center such that the mast can be supported and restrained by an interior surface of said generally cone-shaped member when the mast has been moved into any of a plurality of selected positions.

4,437,425

AIR FLOW DIRECTION INDICATOR

Nils H. Unden, Essingekroken 8, S-11265 Stockholm, Sweden

Filed Dec. 8, 1981, Ser. No. 328,642

Claims priority, application Sweden, Dec. 16, 1980, 8008835

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—102 **5 Claims**



1. An airflow direction indicator for sailboards having a mast mounted to be tiltable in all directions relative to the sailboard and provided with a sail having its front edge formed to a tunnel which is slipped onto the mast and is turnable relative thereto to suit the sail curvature, characterized by a fitting supporting a wind vane rotatably mounted on a mounting shaft forming an acute angle with the main longitudinal direction of the fitting and tunnel, respectively, the fitting being adapted to be secured to the forward portion of the tunnel to follow the movements of the tunnel relative to the mast, and said wind vane having its main longitudinal direction provided substantially parallel with the longitudinal direction of the fitting and being biased to return to a substantially vertical, neutral position adjacent the fitting, whereby the vane will indicate changes in the direction of the flow of air around the forward edge of the sail, the angle of the mounting shaft to the longitudinal direction of the fitting and tunnel, respectively, being about 20° to 60°, the main portion of the wind vane being situated above the mounting shaft in the neutral position of the vane, the vane being counterbalanced to be biased to return to its neutral position, the wind vane having the shape of a wing with a substantially straight backward edge which is substantially parallel to the longitudinal direction of the fitting and tunnel, respectively, when the vane is in its neutral position.

4,437,426

WING TYPE AIR FOIL ASSEMBLY

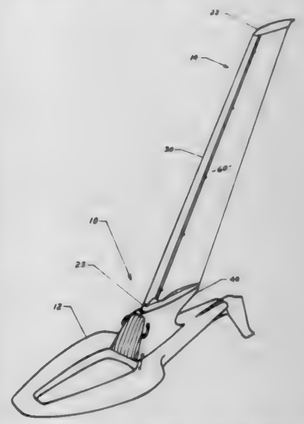
Ronald D. Latham, Apex, N.C., assignor to Fiberglass Unlimited, Inc., Durham, N.C.

Filed Dec. 21, 1981, Ser. No. 333,025

Int. Cl.³ B63H *9/04*; B64C *9/24*

U.S. Cl. 114—103 **9 Claims**

1. A relatively simple and effective wing type air foil for a vessel that utilizes wind to drive the same, comprising: a wing type air foil assembly including an elongated spar; a tip member secured about a top portion of said spar; a root member secured to a lower portion of said spar and spaced from said tip member; flexible line member means secured to and between said root member and said tip member for supporting and stabilizing said spar, said flexible line member means including opposite and counteracting forward and rear runs with said forward run being spaced forwardly of said spar and the rear run spaced rearwardly of said spar and wherein said forward and rear runs extend between said tip and root member and cooperate to structurally support and stabilize said spar such that opposite and counteracting forces provided by the forward and rear runs relative to the spar maintains the spar erect and prevents the spar from significantly bending or from developing and "S" curve shape; a skin covering operatively interconnected between said spar and said rear run of said flexible line member means and including first and second opposite sides that effectively form a variable camber wing air foil with leading and trailing edges; a slat disposed externally of and adjacent to the leading edge of said variable camber wing air foil and movably mounted on the forward run of said flexible line member means, said slat having a trailing edge normally spaced from said spar for defining slot means therebetween for effectively increasing the lift and consequently the thrust of said wing type air foil assembly, said slot means



functioning to direct a relatively high speed flow of air through said slot means for meeting and joining a system of air passing over the upper surface of the variable camber wing air foil for effectively increasing the speed of the flow of air passing over the upper surface of said variable camber wing air foil resulting in the air flow passing across the upper surface of the variable camber wing air foil remaining in contact therewith over a greater portion of the upper surface of the variable camber wing air foil whereby by delaying the time that the passing air separates from contact with the upper surface of said variable camber wing air foil results in the wing type air foil assembly experiencing greater lift and thrust; mounting means for movably mounting said spar and the wing type air foil assembly to said vessel; and control means operatively connected to said wing type air foil assembly for enabling the same to be moved relative to said vessel for enabling the wing type air foil assembly to be selectively oriented with respect to the directions of the wind.

4,437,427

BREAK BOLLARD

Johannes J. Mampaeij, 98 Abeelstraat, 3329 AG Dordrecht, Netherlands

Filed Feb. 17, 1982, Ser. No. 349,522

Claims priority, application Netherlands, Feb. 20, 1981, 8100866

Int. Cl.³ B63B *21/06*; E02B *3/22*

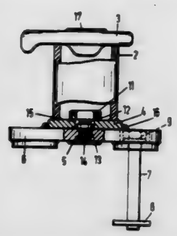
U.S. Cl. 114—218 **3 Claims**

1. An improved break bollard including

a base plate having a central threaded bore and being adapted to be anchored to a stationary support,

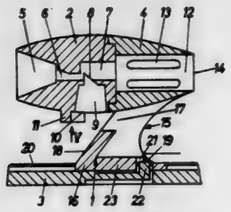
a central post having a removable enlarged cap on one end and a sole plate on an opposite end, and

threaded bolt means for securing said central post and said sole plate to said base plate
wherein the improvement comprises:
an aperture in said sole plate aligned with the central threaded bore in said base plate;
a threaded portion along one end of said bolt means engaged in said central threaded bore;
a first head portion on said bolt means terminating said threaded portion;
a second head portion at the other end of said bolt means, said second head portion being of larger diameter than



said first head portion and adapted to engage the sole plate around the periphery of said aperture;
a weakened region of incipient fracture on said bolt means between said first and second head portions; and
said threaded bolt means being tightened into said base plate for retaining the sole plate on said base plate; and
said weakened region of incipient fracture being fractured in response to excessive force on the central post whereby the first head portion on said bolt means and its attached threaded portion in said base plate may be removed by rotation of said first head portion which is located beneath the weakened region of incipient fracture.

4,437,428
DEVICE FOR GENERATING SOUND WAVES AT RELATIVELY HIGH FREQUENCIES
Volkwin Hoffelner, Grilligasse 11, A-1110 Wien, Austria
Filed Mar. 19, 1982, Ser. No. 359,910
Claims priority, application Austria, Mar. 20, 1981, 1338/81
Int. Cl.³ B06B *1/00*; G08B *3/00*
U.S. Cl. 116—137 R **9 Claims**

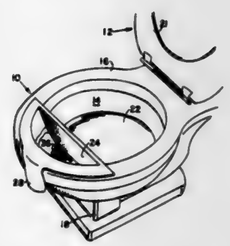


1. A device for generating sound waves for use with a motor vehicle, said device comprising:
a frustoconical body;
means for mounting said body on said motor vehicle; and
a flue pipe within said body adapted for channelling an air stream to generate sound waves, said flue pipe comprising:
an inlet funnel for initially receiving said air stream;
a blowing passage for receiving air from said inlet funnel;
a resonant chamber for receiving air from said blowing passage;
a sharp edge in said resonant chamber for interrupting the flow of said air stream;
a horn for receiving air from said resonant chamber for producing sound waves; and
a passage for receiving air from said resonant chamber, said passage being larger in cross-section than said resonant chamber.

4,437,429
ANIMAL LITTER
Joel Goldstein, Ambler, and Albert Abrevaya, Chalfont, both of Pa., assignors to Aquarium Pharmaceuticals, Inc., Perkasie, Pa.
Filed Aug. 4, 1981, Ser. No. 289,864
Int. Cl.³ A01K *1/015*
U.S. Cl. 119—1 **18 Claims**

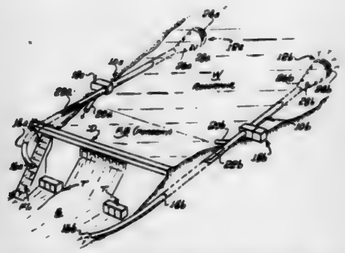
1. A method for reducing ammonia odor from sorptive, non-colloidal granular aluminosilicate containing animal litter which comprises adding uncalcined hydrated zeolite to said litter in an amount effective to reduce the ammonia odor.

4,437,430
METHOD AND APPARATUS FOR TRAINING CATS TO USE A TOILET BOWL
Martha G. DeBardeleben, 219 Mercer St., Princeton, N.J. 08540
Filed Apr. 26, 1982, Ser. No. 371,559
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—1 **1 Claim**



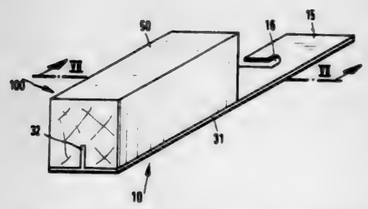
1. A toilet apparatus for training cats to use a toilet bowl comprising:
a unitary plastic receptacle means for holding cat litter material, including a substantially vertical back wall and a sloping floor;
a substantially flat flange attached to said receptacle means, said sloping floor extending from the bottom of said back wall upwards towards said flange;
aperture means in said receptacle means for draining said receptacle means, said aperture means being sufficiently large enough to drain said receptacle means of liquid, but small enough to prevent any substantial portion of said cat litter material from passing therethrough, said aperture means comprising holes in said sloping floor; and,
attachment means for attaching said receptacle means to a standard commode so that said receptacle means sits substantially inside of said commode, said attachment means being attached to said substantially flat flange and including an overlapping tab means for engaging the front exterior portion of said commode bowl, said tab means comprising a single wide overlapping tab,
wherein said receptacle means takes up no more than approximately one-sixth of the open area of the top of said bowl and is located towards the front of said bowl so that said commode may be used by human beings without necessitating removal of said apparatus.

4,437,431
METHOD AND APPARATUS FOR DIVERSION OF DOWNSTREAM MIGRATING ANADROMOUS FISH
David L. Koch, 2520 Saggitarius Dr., Reno, Nev. 89509
Filed Nov. 6, 1981, Ser. No. 318,992
Int. Cl.³ E02B *8/08*
U.S. Cl. 119—3 **20 Claims**



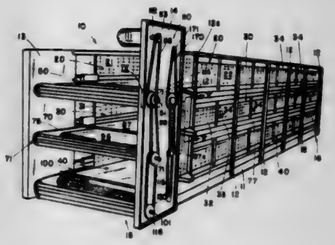
11. An apparatus for transporting downstream migrating fish past hydroelectric generating facilities comprising; an artificial stream current creating means including conduit means and water jets located in the reservoir of a hydroelectric facility water storage dam; a water transporting means extending over or around said generating facilities; means for directing and attracting downwardly migrating fish into said conduit means; diverting means for diverting said artificial stream into said conduit means; said water transporting means bypassing said dam to a terminating point at the tailrace located in the stream below said generating facility.

4,437,432
BIRD-FEEDING MEMBER
Fritz H. Immeyer, Hamburg, and Michael Weeche, Reinbek, both of Fed. Rep. of Germany, assignors to Dr. Immeyer GmbH, Hamburg, Fed. Rep. of Germany
Filed Sep. 15, 1981, Ser. No. 302,385
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034875; Aug. 25, 1981, 8124828[U]
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—18 **6 Claims**



1. A bird-feeding member comprising a supporting and retaining member and a quantity of birdseed which is retained thereon and held together by a bonding agent, means for attaching said bird-feeding member into the bars of a birdcage wherein the bird-feeding member comprises a supporting and retaining member of an elongated strip-shaped blank with a first end and a second end spaced apart in the elongated direction thereof with said first end being T-shaped, said blank having a first folding line extending between the first and second ends and dividing said blank into co-extensive elongated first and second parts, said second part having a second folding line extending from said second end toward and spaced from said first end, said second folding line dividing said second part into elongated co-extensive first and second sub-parts with said first sub-part extending between said first and second folding lines and said second sub-part spaced from said first folding line by said first sub-part, said first sub-part is folded over along said first folding line into contact with said first part and said second sub-part is folded along said second folding line so that it extends perpendicularly to said first sub-part and said first part forming a web extending in the elongated direction of said blank and spaced inwardly from the edges of said first part extending in the elongated direction thereof, a block-like birdseed member being retained on a contact surface formed by said first part and said first sub-part of said supporting and retaining member by means of the bonding agent holding the seeds together with said web formed by said second sub-part extending into said birdseed member, said block-like birdseed member having a first surface in contact with said supporting and retaining member, a second surface opposite said first surface and facing outwardly from said supporting and retaining member, and side surfaces extending between said first and second surfaces, said web formed by said second sub-part extending outwardly from said first sub-part for a dimension equal approximately to half the dimension of said birdseed member between said first and second surfaces thereof, at least one web reinforcing and support strap secured to said web formed by said second sub-part along said second folding line and with said web extending perpendicularly to said first part said web reinforcing and support strap extends from said web into contact with said first part of said supporting and retaining member, and said block-like birdseed member has a first end spaced in the elongated direction of said blank from the first end thereof and a second end adjacent the second end of said blank so that each of said first and second parts of said blank has a portion extending in the elongated direction of said blank between said birdseed member and said first end of said blank which is free of said birdseed member, said means for attaching comprises each of said first and second parts having a separate slot-shaping latching eyelet which is formed by a first slot-shaped portion extending at an oblique angle to said first and second folding lines and toward said first end of said blank from the lateral edge of the corresponding one of said first and second parts extending in the elongated direction thereof and a second slot-shaped portion extending from said first slot-shaped portion in the corresponding one of said first and second parts toward the first end of said blank with said second slot-shaped portion centreed in the corresponding one of said first and second parts and disposed in generally parallel relation with the elongated direction of said blank, and the end of said second slot-shaped portion spaced from said first slot-shaped portion being spaced from the first end of said blank.

4,437,433
POULTRY BROILER CAGE
W. A. J. Nijhof, Hattem, Netherlands, assignor to U. S. Industries, Inc., Stamford, Conn.
Filed Jan. 26, 1982, Ser. No. 342,889
Int. Cl.³ A01K *31/00, 31/04*
U.S. Cl. 119—18 **24 Claims**



1. A confinement area for rearing poultry including opposed sides and a floor movable longitudinally with respect to said

confinement area to load poultry into and unload poultry out of said confinement area, wherein the improvement comprises:

first and second generally horizontal support rails secured generally opposite one another to said opposed sides of said confinement area;

first and second tension pulling means extending along said first and second rails, respectively;

means for moving said first and second tension means longitudinally with respect to said rails;

means for guiding said tension pulling means on a path along said rails, said guide means including a plurality of support bars each extending between and secured to said first and second tension pulling means; and

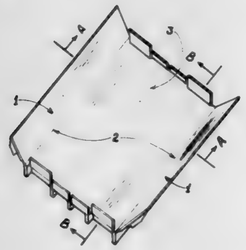
a flexible poultry-supporting floor material supported in trampoline-like fashion between at least one of said support bars and said tension pulling means, whereby movement of said tension pulling means moves the floor material and further whereby longitudinal pulling forces are borne by said tension pulling means rather than said flexible floor.

4,437,434

REMOVABLE POULTRY NEST BOTTOMS OF VARIABLE WIDTHS

Walter G. Davis, Hall County, Ga., assignor to NesTier Corporation, Cincinnati, Ohio

Filed May 11, 1983, Ser. No. 493,652
Int. Cl.³ A01K *31/16*
U.S. Cl. 119—45 R **6 Claims**



1. A removable poultry nest bottom of variable width, to be selectively placed within poultry nests of various sizes comprising:

said nest bottom consisting entirely of synthetic resin molded in one piece;

a rigid bottom portion of rectangular shape having two opposite sides and two opposite ends;

at least two rigid side portions;

integral sheet material hinge means respectively connecting said side portions to said sides of said bottom portion so that said bottom portion and side portions lie in a common plane in the normal unstressed condition of said hinges, with said side portions being on opposite sides of said bottom portion;

said bottom portion and side portions being constructed of planar sheets having a thickness substantially greater than the thickness of said hinge means, and further having coplanar flat top surfaces in the unstressed normal position;

a plurality of rib means extending downwardly from the bottom surface of said side portions and said bottom portion for reinforcing said sheets and spacing said sheets away from the support surfaces of the nest;

said hinge means being sufficiently thin and flexible to permit resilient movement of said side portions between the normal position and a position extending upwardly at right angles to said bottom portion selectively without material fatigue; and

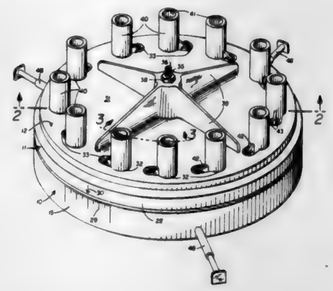
said hinges being continuous throughout the length of said side portions and bottom portion.

4,437,435

AUTOMATIC ANIMAL FEEDER

Sheldon D. Schule, 1313 Boston, Clarkston, Wash. 99403

Filed Feb. 28, 1983, Ser. No. 470,210
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51.13 **4 Claims**



1. An automatic device to periodically feed animals without human intervention, comprising, in combination:

A base having a planar circular bottom structurally carrying an upstanding side wall about its periphery and having means to support a storage disc thereabove and a disbursement slot defined therethrough inwardly adjacent its periphery;

a medial adjustment element, having an annular body with external diameter slightly less than the internal diameter of the vertical side wall of the body, pivotably carried on the bottom of the base and defining a disbursement slot therethrough inwardly adjacent the periphery of the annular body, said disbursement slot being no larger than the disbursement slot defined in the base and pivotable thereover;

means cooperatively communicating between the base and the medial adjustment element to limit the pivotable motion therebetween to substantially the arcuate distance between two sucessive feed reservoirs;

a flat, circular storage disc, supported on the body and carried a spaced distance above the medial adjustment element, having a plurality of spaced storage reservoirs arcuately arrayed inwardly adjacent its periphery and communicating through the storage disc, each reservoir having associated normally closed gravity activated valving means openable when the reservoir passes over the disbursement orifice in the medial adjustment element; and

motor means carried by the base rotate the storage disc relative thereto at predetermined speed.

4,437,436

ANTIKNOCK ADDITIVE COMPOSITIONS AND UNLEADED GASOLINE CONTAINING SAME

L. B. Graiff, Houston, Tex., and John L. Laity, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 4, 1982, Ser. No. 432,587
Int. Cl.³ F02B *47/04*
U.S. Cl. 123—1 A **5 Claims**

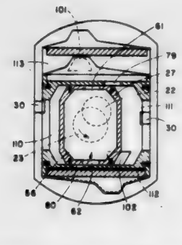
1. An improved method of operating a spark ignition internal combustion engine which comprises burning in said engine an unleaded gasoline which has been transported to the engine through a gasoline distribution system which includes rusted steel lines and/or has been stored in an automobile fuel tank which includes a terneplate internal surface coating, said unleaded gasoline containing as a primary antiknock compound from about 0.005 to about 0.1 gram manganese per gallon as methylcyclopentadienyl manganese tricarbonyl (MMT) and containing as a co-antiknock compound which is unreactive with rusted steel or terneplate from 5 to about 60 moles of benzoylacetone or methyl benzoylacetone per mole of manganese and optionally a suitable corrosion inhibitor.

4,437,437

DUAL-EXPANSION INTERNAL COMBUSTION CYCLE AND ENGINE

Frederick L. Erickson, 2610 Bosworth Dr., Fort Wayne, Ind. 46805

Division of Ser. No. 180,135, Aug. 21, 1980, Pat. No. 4,325,331, and a continuation-in-part of Ser. No. 959,795, Nov. 13, 1978, abandoned. This application Mar. 22, 1982, Ser. No. 360,221
Int. Cl.³ F02B *59/00*
U.S. Cl. 123—42 **53 Claims**



1. An internal combustion engine, comprising in combination

(a) a central power block defining between forward and after end plates and fluid-tight engine volume;

(b) a main crankshaft arranged to deliver mechanical power;

(c) first chamber defining means movable within said engine volume to define opposed second and fourth chambers of variable and complementary volumes;

(d) second chamber defining means reciprocally movable within said first chamber defining means to define opposed first and third chambers of variable and complementary volumes, said second chamber defining means being connected to said main crankshaft wherein motion of said second chamber defining means is orbital with respect to said main crankshaft and providing in its motion consequent motion of said first chamber defining means;

(e) first porting means providing fluid communication between said first and second chambers, the flow of fluid through said first porting means being controlled by the movement of said second chamber defining means;

(f) second porting means providing fluid communication between said second chamber and the atmosphere, the flow of fluid through said second porting means being controlled at least in part by the movement of said second chamber defining means;

(g) fuel/air mixture supply means to provide a fuel/air mixture to said first chamber;

(h) induction porting means to control the flow of said fuel/air mixture from said supply means into said first chamber, said induction porting means having a configuration and location in said after engine plate such that it is open by the motion of said first chamber defining means and closed by the motion of said second chamber defining means; and

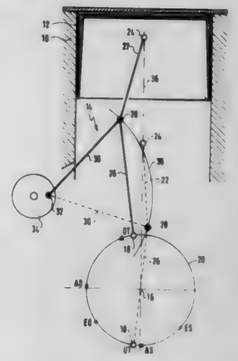
(i) ignition means arranged to ignite said fuel/air mixture in said first chamber.

4,437,438

RECIPROCATING PISTON ENGINE

Gerhard Mederer, Kellerstrasse 7, Allersberg/BDR, Fed. Rep. of Germany

Filed Aug. 10, 1981, Ser. No. 291,292
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030615
Int. Cl.³ F02B *75/32*
U.S. Cl. 123—48 B **11 Claims**



1. A reciprocating piston engine comprising at least one cylinder and a piston movable back and forth therein along a cylinder axis, which piston is connected to a crank shaft, rotatable about a crank shaft axis, through a linkage including a first connecting rod pivotally connected to said piston by a piston-sided connecting rod bearing, and a second connecting rod pivotally connected to said crank shaft by a crank shaft-sided connecting rod bearing wherein said second connecting rod is longer in length than said first connecting rod, and a swinging lever pivotally support at one end for movement about a pivot axis essentially parallel to said crank shaft axis and at its other end hingedly connected to both of said connecting rods through a common joint, said two connecting rods having a total length being larger than a distance between said piston-sided connecting rod bearing and a path of said crank shaft-sided connecting rod bearing when said piston is in its top dead center position, and said pivot axis having a location and said swinging lever having a length being so chosen that at the top dead center position of said piston said common joint is displaced a substantial distance from said cylinder axis and is located on a side of said cylinder axis same as said pivot axis of said swinging lever and so that during initial portion of movement of said piston away from its top dead center position said common joint approaches said cylinder axis and so that during a subsequent portion of the movement of said piston away from its top dead center position said common joint crosses said cylinder axis so as to then be located on the opposite side of said cylinder axis from said pivot axis of said swinging lever.

4,437,439

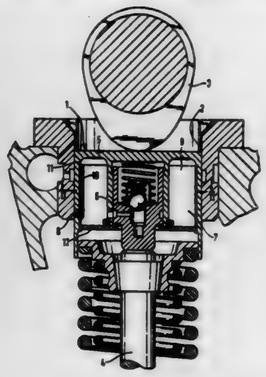
VALVE TAPPET

Walter Spell, Ingolstadt, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Division of Ser. No. 228,176, Jan. 26, 1981. This application Jun. 22, 1982, Ser. No. 390,813
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006644
Int. Cl.³ F01L *1/24*
U.S. Cl. 123—90.56 **11 Claims**

1. A valve tappet for internal combustion engines with an overhead cam shaft moveably mounted in a sliding guide directly between a cam and a valve stem and which is designed as an automatic play compensating element comprising an outer part and an inner part guided in one another for longitu-

dinal displacement and enclosing between them a pressure chamber connected by a non-return valve to an oil storage chamber with an inner surface charged with oil from a lubricating system of an engine, the outer part cooperates with the sliding guide and the cam and the inner part cooperates with the valve stem, the oil stroage chamber with an upper portion and a lower portion being arranged inside the outer part so that it extends exclusively in the radial direction around the inner



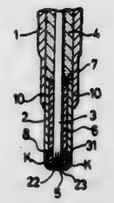
part and having in its lower portion an oil feed bore and at least one oil transfer bore to the pressure chamber, an oil carrying passage adjoining the oil feed bore inside the oil storage chamber opening freely into the oil storage chamber in the upper portion thereof, the oil carrying passage being formed by the inner surface of an outer wall of the oil storage chamber and by a sheet metal element corresponding with the said inner surface.

4,437,440

AUXILIARY COMBUSTION CHAMBER PREHEATING DEVICE

Shin Suzuki, and Toshihiko Sato, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jun. 20, 1979, Ser. No. 50,410
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—145 A **7 Claims**



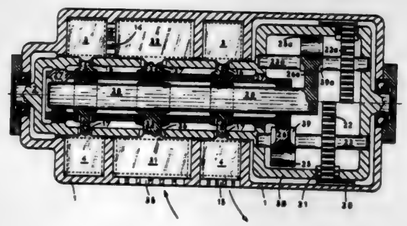
1. An auxiliary combustion chamber preheating device having a glow plug for a diesel engine, comprising:
- a metal shell threadedly mountable on the engine;
- a center electrode having a rod-like configuration;
- a tubular heat generating element having an open end and a closed end, said element made of nonmetallic resistance material and inserted into and connected to the metal shell at the open end thereof;
- electrical connecting means for electrically connecting a lower end surface of the center electrode and an inner wall portion of the closed end portion of the heat generating element;
- an electrical conductive layer on an outer wall portion of the heat generating element contacting said metal shell;
- said electrical connecting means includes carbon powders and a space defined by the center electrode and said connecting means within the tubular heat generating element is filled with non-oxidizing electrical insulative material selected from the group consisting of silicon nitride (Si_3N_4), boron nitride (BN) or aluminum nitride (AlN); and
- said electrical connecting means further includes a ceramic sleeve member disposed on the bottom wall of the closed end of the heat generating element.

4,437,441

ROTARY ALTERNATING PISTON GAS GENERATOR

Claude C. F. Menioux, Nogent sur Marne, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed Feb. 3, 1981, Ser. No. 231,105
Claims priority, application France, Feb. 6, 1980, 80 02540
Int. Cl.³ F02B *53/08*
U.S. Cl. 123—213 **7 Claims**



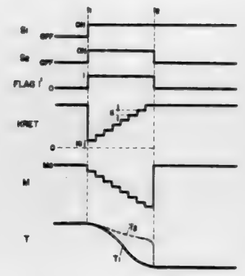
1. A variable volume gas generator for charging a self-contained power turbine having heat engines for generating hot compressed gases comprising:
- a first and second module each forming a heat motor for the production of the hot compressed gases;
- a third module connected to said first and second modules and which forms an air compressor to charge the heat engines, said modules comprising a fixed housing delimiting an annular space;
- a plurality of pistons which rotate in the same direction in said annular space, wherein said pistons are mounted in each module;
- first and second rods diametrically connecting said pistons in pairs;
- a first and second shaft which are coaxial wherein the first rod of each module is mounted on the first shaft and the second rod of each module is mounted on the second shaft and wherein the air compressor module operates on a two stroke cycle and the first and second gas generator modules, which are charged with compressed air from the compressor, operate on a four stroke cycle; and
- a rotary crown having a plurality of ports through which the rods are disposed, wherein in each module the annular space in which the pistons move is delimited by the housing and the rotary crown, and which provide the angle of clearance for the rods for the pistons to advance and recede, and a transmission mechanism wherein said crown is attached by said transmission mechanism to the shafts and wherein the shafts are in integral part of the piston rods.

4,437,442

AUTOMOTIVE VEHICLE ENGINE CONTROL SYSTEM

Hiroshi Yamaguchi, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 13, 1981, Ser. No. 234,582
Claims priority, application Japan, Feb. 15, 1980, 55-16610
Int. Cl.³ F02D *37/02*
U.S. Cl. 123—417 **5 Claims**



1. An automotive engine control system for controlling fuel supply and ignition spark timing of an engine having a means for cutting off the fuel supply during engine operation, comprising:
- (a) a throttle valve position detecting means for detecting the position of a throttle valve and operative to indicate a closed state of said throttle valve;
- (b) an engine speed detecting means for detecting engine speed;
- (c) an engine cooling water temperature detecting means for detecting engine cooling water temperature;
- (d) a spark advance angle calculating means for calculating an optimum spark advance angle of said ignition spark timing with respect to a top dead center position of each piston of said engine from said engine speed detecting means while said throttle valve position detecting means detects the closed state of the throttle valve;
- (e) a fuel supply cutoff delay decision means for deciding to delay actual fuel supply cutoff when (a) said speed detecting means detects the engine speed exceeds a first predetermined engine speed characteristic based upon the cooling water temperature detected by said temperature detecting means, and (b) said position detecting means detects a change in the throttle valve position from an open state to a closed state, said first predetermined engine speed characteristic being higher than a second predetermined engine speed characteristic wherein the fuel supply is resumed;
- (f) a delay executing means responsive to said delay decision means for providing a predetermined delay prior to actual fuel cutoff; and
- (g) a spark advance angle retarding means operative to retard the optimum spark advance angle calculated by said calculating means while said delay executing means executes the predetermined delay of the actual fuel cutoff.

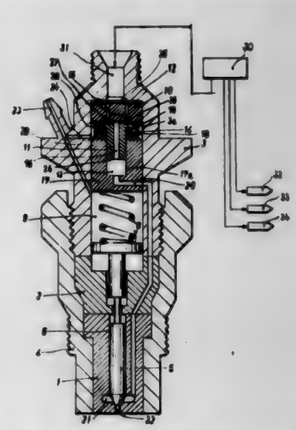
4,437,443

FUEL INJECTION DEVICE

Peter Hofbauer, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,884
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048347
Int. Cl.³ F02M *39/00, 47/02*
U.S. Cl. 123—446 **9 Claims**

1. In a fuel injection system including at least one injection pump delivering fuel at a medium delivery pressure, at least one fuel injection valve associated with a respective engine cylinder and having a fuel injection opening for injecting fuel into its associated cylinder and a conduit leading to the injection opening, and pressure booster means associated with said valve and connected between said conduit and the pump for boosting the pressure at the opening from the medium pressure produced by the pump to a higher pressure required for fuel injection via the opening, the pressure booster means associated with said valve being composed of a stepped piston having oppositely oriented end faces of unlike effective area, a housing in which the piston is slidably mounted and presenting a first working chamber associated with the larger end face of the piston and communicating with the pump, and a second



working chamber associated with the smaller end face of the piston and communicating with the associated conduit, and spring means biasing the piston in one direction in the housing, the improvement wherein: said piston comprises a first piston segment presenting the larger piston end face and a second piston segment separate from said first segment and presenting the smaller piston end face; said second segment comprises valve means for selectively blocking communication between said conduit and the pump; and said spring means comprise two springs each acting separately on a respective one of said segments.

4,437,444

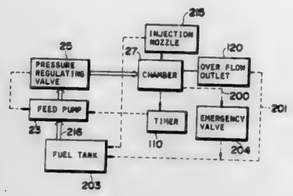
FUEL INJECTION PUMP FOR A DIESEL ENGINE

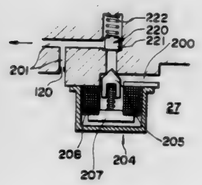
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company Ltd., Kanagawa, Japan

Filed Dec. 16, 1981, Ser. No. 331,328
Claims priority, application Japan, Dec. 19, 1980, 55-180008; Mar. 5, 1981, 56-31680; Mar. 5, 1981, 56-31681
Int. Cl.³ F02M *59/00*
U.S. Cl. 123—458 **6 Claims**

1. A fuel injection pump for a diesel engine, comprising:
- (a) a fuel tank for containing fuel;
- (b) a housing defining a chamber;
- (c) a fuel passage interconnecting the fuel tank and the chamber;
- (d) a feed pump located along the fuel passage for driving fuel from the fuel tank toward the chamber;
- (e) a plunger pump connected to the chamber for supplying fuel from the chamber to the engine;
- (f) an overflow passage having one end connected to the chamber and the other end connected to the fuel tank for returning a part of fuel from the chamber to the fuel tank;
- (g) a fuel return passage having one end connected to the chamber and the other end connected to the fuel tank for returning a part of fuel from the chamber to the fuel tank; and

(h) an emergency valve interposed in the fuel return passage for selectively closing and opening the fuel return passage





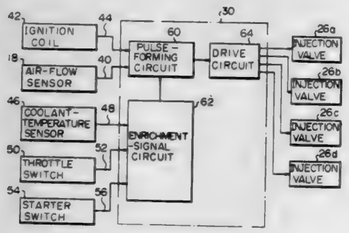
to reduce the rate of fuel supply to the engine when the emergency valve opens the fuel return passage.

4,437,445

METHOD AND APPARATUS FOR CONTROLLING THE FUEL FEEDING RATE OF AN INTERNAL COMBUSTION ENGINE

Hiroshi Takahashi; Yukio Suzuki; Masashi Matsuo; Hironobu Ono, all of Toyota; Shuzo Yoshida, Anjo; Kazuo Ueda, Kariya, and Motoharu Sueishi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Aug. 12, 1982, Ser. No. 407,562
Claims priority, application Japan, Aug. 13, 1981, 56-125984
Int. Cl.³ F02D 5/00
U.S. Cl. 123—491 **9 Claims**



1. A method for controlling the fuel-feeding rate of an internal combustion engine having a throttle valve, comprising the steps of:

detecting the warm-up condition of the engine to generate a first electrical signal which indicates the detected warm-up condition;

detecting whether the engine is starting or is not starting to generate a second electrical signal which indicates the detected result;

detecting whether the throttle valve is in the idle position or is not in the idle position to generate a third electrical signal which indicates the detected results;

calculating, in response to said first electrical signal, a first additional increment of the fuel-feeding rate of the engine, said first additional increment being determined depending upon the detected warm-up condition;

calculating, in response to said second and third electrical signals, a second additional increment of the fuel-feeding rate of the engine, said second additional increment, after starting of the engine, being decreased to zero with the lapse of time at a controllable speed of decrease, and said speed of decrease of the second additional increment being changed depending upon the third electrical signal; and

correcting the fuel-feeding rate of the engine in accordance with said calculated first and second additional increments.

4,437,446

ELECTRONICALLY CONTROLLED FUEL INJECTION SYSTEM

Shigenori Isomura; Akio Kobayashi; Katsushi Kato, all of Kariya; Ichiro Kowada, and Sachio Nishii, both of Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 155,385, Jun. 2, 1980, abandoned. This application Mar. 17, 1982, Ser. No. 358,923
Claims priority, application Japan, Jun. 27, 1979, 54-81663
Int. Cl.³ F02B 3/00
U.S. Cl. 123—492 **3 Claims**

1. An electronically controlled fuel injection system for internal combustion engines comprising:

an air flow sensor including a potentiometer for detecting an amount of air flow to an engine at a position upstream of a throttle valve disposed in an intake pipe of said engine and generating a corresponding output voltage;

control means including a controller having fuel injection amount compensating means responsive to said output voltage of said sensor to generate a pulse signal; and fuel injection valve means responsive to said pulse signal from said controller to inject said engine with an amount of fuel corresponding to a pulse width of said pulse signal; and

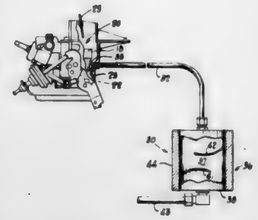
a fuel enrichment circuit responsive to said output signal of said air flow sensor for feeding, when said amount of air flow changes in a direction to decrease, a signal commanding an increase in fuel amount which is proportional to the rate of said change to said compensating means, said fuel enrichment circuit including a delay circuit comprising a resistor and a capacitor for generating an output voltage indicative of a change in said sensor output voltage with a predetermined delay, a buffer amplifier for delivery said delay circuit output voltage, and a differential amplifier circuit for receiving and differentially amplifying said air flow sensor output voltage and buffer amplifier output voltage, whereby the rate of increase in said fuel injection amount is proportional to said difference between the sensor output voltage and the buffer amplifier output voltage.

4,437,447

EXHAUST RECYCLE TO CARBURETOR OF AN INTERNAL COMBUSTION ENGINE

Charles R. Johnson, 543 Robinhood Dr., Aurora, Ohio 44202

Filed Sep. 23, 1982, Ser. No. 421,896
Int. Cl.³ F02M 25/06
U.S. Cl. 123—568 **6 Claims**



1. In an internal combustion engine having an exhaust manifold, and a float-controlled down-draft carburetor including a booster venturi means for injecting gasoline into the carburetor wherein said booster venturi is positioned above the throttle plate of the carburetor, the improvement comprising,

(a) an attenuator means which places said exhaust manifold in unvalved but restricted open fluid communication with said exhaust manifold, said attenuator means comprising,

(i) an attenuator chamber, and

(ii) baffle means within said chamber to attenuate the velocity and lower the pressure of exhaust gases in said exhaust manifold,

(b) intake conduit means of predetermined diameter to place said chamber in open fluid communication with said exhaust manifold, and,

(c) supply conduit means of predetermined diameter placing said chamber in open fluid communication with said carburetor, the outlet of said supply conduit being positioned directly laterally opposite from said booster venturi so as to heat it by directly impinging recycled exhaust gases thereupon, the amount of said recycled gases to the carburetor being greater than 2 percent but less than 10 percent by volume of exhaust gases generated by said engine.

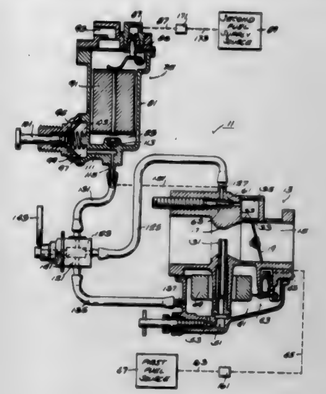
4,437,448

DUAL FUEL SUPPLY SYSTEM

Henry C. Billingsley, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 175,348, Aug. 4, 1980, Pat. No. 4,375,795. This application Dec. 20, 1982, Ser. No. 450,901
Int. Cl.³ F02B 7/02
U.S. Cl. 123—577 **5 Claims**

1. A fuel supply system comprising a carburetor including an air/fuel induction passage including a main supply jet and a secondary orifice, a first fuel supply including an auxiliary outlet, communicating with said main jet, communicable with a source of a first fuel, and operable to supply the first fuel to said main jet and to said auxiliary outlet, a second fuel supply communicable with a source of a second fuel, and including an outlet, and a control valve including a valve chamber which is closed to the atmosphere and which is connected to said secondary orifice, to said auxiliary outlet of said first fuel supply, and to said outlet of said second fuel supply, said control valve also including a valve member movable between a first position communicating said secondary orifice with said outlet and disconnecting said secondary orifice from said auxiliary outlet and a second position communicating said secondary orifice



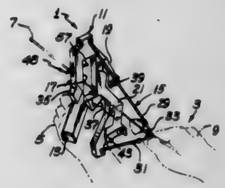
with said auxiliary outlet and disconnecting said secondary orifice from said outlet.

4,437,449

ARROW PROJECTING HANDBOW

Michael P. Attanasio, 1156 Glenwood Blvd., Schenectady, N.Y. 12308

Filed Jul. 8, 1981, Ser. No. 281,462
Int. Cl.³ F41B 7/00
U.S. Cl. 124—22 **12 Claims**



1. An improved handbow comprising:

(a) a frame;

(b) a handle extending laterally from the frame when the frame is in an upright position;

(c) an opening in the frame through which an arrow may be supported and shot;

(d) an elastic bowstring secured at its opposite ends to the frame;

(e) a pair of spaced stops extending rearwardly of the frame for terminating the forward movement of the bowstring to provide a uniform application of force to an arrow upon its release from the bowstring the stops being disposed substantially vertical when the frame is in the upright position; and

(f) one of the stops including means for engaging the arm of an archer to stabilize the handbow during shooting.

4,437,450

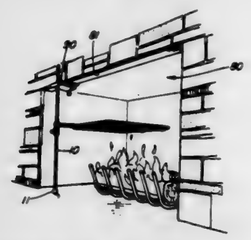
PORTABLE COOKING GRILL

William L. Connelly, 463 Kenwood Ave., Ottawa, Ontario, Canada K2A 0K8

Filed Sep. 7, 1982, Ser. No. 415,326
Int. Cl.³ F24B 3/00
U.S. Cl. 126—30 **2 Claims**

1. A portable cooking stand for use in an open fireplace comprising:

(a) a post;
(b) at least one grill assembly swingably and slidably mounted on said post and projecting laterally therefrom;
(c) adjustably movable means for supporting the grill assembly at any position longitudinally along the post; and
(d) post anchoring means for securing the cooking stand adjacent the front open wall of a fireplace, when the lower end of the post rests on the fireplace hearth, said anchoring means comprising a pair of plates each having an



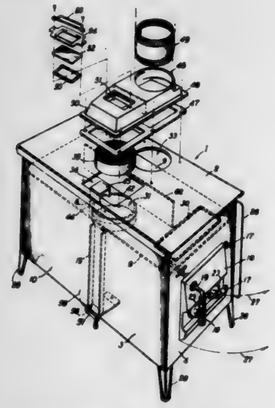
aperture therein adjacent one end thereof slidably to receive the post, an uppermost one of said plates having a hooked end portion curving around a corresponding end portion of the lowermost plate and bolt means threaded through the lowermost plate and abutting the lower surface of the uppermost plate for pressing the uppermost plate against the undersurface of the lintel extending across the fireplace opening at the upper portion thereof to thereby anchor the cooking stand in position.

4,437,451

STOVE WITH CATALYTIC COMBUSTOR AND BYPASS

Charles F. Wysong, Birmingham, Ala., assignor to Atlanta Stove Works, Inc., Atlanta, Ga.

Filed Aug. 17, 1981, Ser. No. 293,253
Int. Cl.³ F24C 1/14
U.S. Cl. 126—77 **3 Claims**



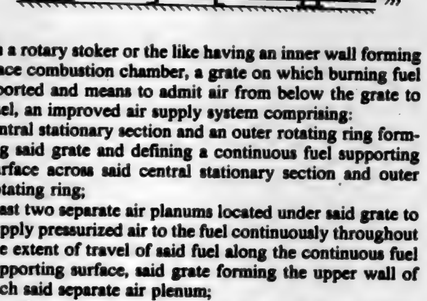
3. A stove comprising:
(a) a firebox forming a combustion chamber and having first and second openings to the exterior of the firebox;
(b) a second chamber having an opening for connection to a flue and communicating with the combustion chamber through:
(i) a smoke relief opening located proximate to the first opening;
(ii) a sleeve; and
(iii) a bypass communicating with regions at each end of the sleeve;
(c) A monolithic ceramic substrate catalytic combustor mounted in a sleeve;
(d) a loading door on the firebox moveable between open and closed positions relative to the first opening in the firebox and having openings to provide a primary supply of air to the combustion chamber;
(e) a smoke relief door coupled to the loading door for closing the smoke relief opening when the loading door is closed;
(f) a means for supplying secondary air to the combustion chamber near the catalytic combustor, comprising a first tube and a second tube, the first tube communicating between the exterior of the firebox and the combustion chamber within the second tube, the second tube being substantially vertical and open to the combustion chamber at the top and bottom ends thereof, the top end being near the catalytic combustor; and
(g) a turret mounted on the stove having an opening covered by a sight glass disposed above and in registration with the catalytic combustor and spaced apart from the second chamber.

4,437,452

ROTARY CONTINUOUS ASH DISCHARGE STOKER

David C. Reschly, Monroe, Mich., assignor to Detroit Stoker Company, Monroe, Mich.

Continuation of Ser. No. 62,327, Jul. 31, 1979, abandoned. This application Apr. 11, 1983, Ser. No. 482,015
Int. Cl.³ F23H 9/00
U.S. Cl. 126—182 **34 Claims**



1. In a rotary stoker or the like having an inner wall forming a furnace combustion chamber, a grate on which burning fuel is supported and means to admit air from below the grate to said fuel, an improved air supply system comprising:
a central stationary section and an outer rotating ring forming said grate and defining a continuous fuel supporting surface across said central stationary section and outer rotating ring;
at least two separate air planums located under said grate to supply pressurized air to the fuel continuously throughout the extent of travel of said fuel along the continuous fuel supporting surface, said grate forming the upper wall of each said separate air plenum;
air supply means to supply pressurized air to said plenums;
means to separately control the air pressure supplied to each air plenum; and
means for sealing the outer periphery of said grate along said inner wall.

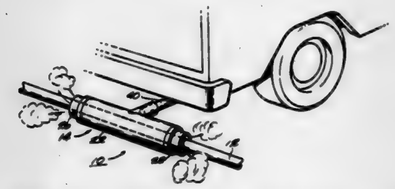
4,437,453

PLASTIC PIPE HEATER

Eugene A. Temple, 1492 Glencoe Ave., Highland Park, Ill. 60035, and Norman F. Pestlin, 6870 W. 176th Pl., Tinley Park, Ill. 60477

Filed Dec. 27, 1982, Ser. No. 453,485
Int. Cl.³ F23C 5/00
U.S. Cl. 126—271.2 R **7 Claims**

1. A device for heating plastic pipe comprising
an outer tubular member;
an inner tubular member mounted inside and spaced from said outer tubular member, said inner tubular member having a plurality of perforations therein and forming an opening which extends completely through the device for inserting therethrough the plastic pipe to be heated;
end cap means to connect the ends of said inner and outer tubular members to thereby provide a closed annular



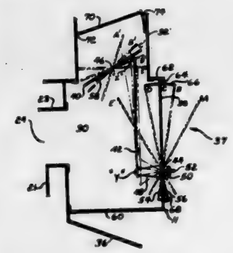
chamber between said inner and outer tubular members; and
inlet conduit means adapted for connection to a source of heated air, said inlet conduit means communicating with said closed annular chamber between said inner and outer tubular members.

4,437,454

MECHANICAL DRAFT CONTROLLER WITH VENT DAMPER

Thomas E. Hayes, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Mar. 22, 1982, Ser. No. 360,166
Int. Cl.³ F23N 3/06
U.S. Cl. 126—293 **16 Claims**



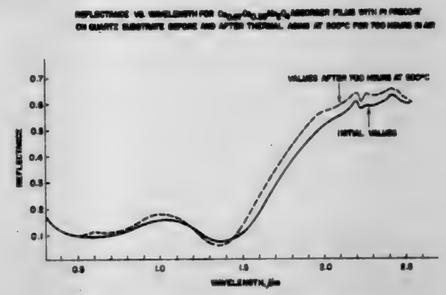
14. In a fuel burning heating appliance having a firebox, a flue and a draft hood coupling said firebox to said flue and having an aperture in a wall thereof, a method for maintaining an optimum draft value in said draft hood for supporting combustion in said firebox while reducing draft hood heat loss, said method comprising: closing said aperture over a predetermined range of normal operating draft values, said range defined by lower and upper draft value limits, and thereby preventing the introduction of ambient air into said draft hood; opening said aperture when said draft value is outside of said predetermined range; substantially opening said flue when said draft value is less than said lower draft value limit or substantially closing said flue when said draft value exceeds said upper draft value limit; and selectively opening and closing said flue downstream from said aperture over the predetermined range of normal operating draft values in response to changes therein, wherein said flue is more open when said heating appliance is operating at said lower draft value limit than when operating at said upper draft value limit.

4,437,455

STABILIZATION OF SOLAR FILMS AGAINST HI TEMPERATURE DEACTIVATION

Clinton F. Jefferson, Millburn, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed May 3, 1982, Ser. No. 374,448
Int. Cl.³ B32B 5/16
U.S. Cl. 126—417 **16 Claims**



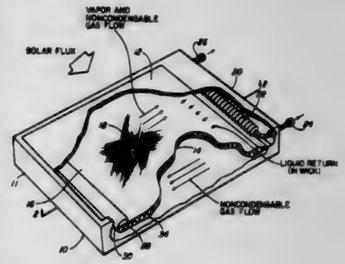
1. A solar energy collector comprising, in combination
(a) a substrate component selected from the group consisting of quartz, silicate glass, and a stainless steel;
(b) a solar absorptive layer consisting essentially of an oxide mixture of copper, cobalt and manganese; over
(c) an interlayer comprising platinum in contact with said solar absorptive layer and said substrate.

4,437,456

HEAT COLLECTOR

Michael A. Merrigan, Santa Cruz, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

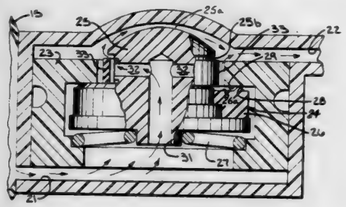
Filed Jun. 29, 1981, Ser. No. 278,288
Int. Cl.³ F24J 3/02
U.S. Cl. 126—433 **13 Claims**



10. A method of collecting heat energy comprising:
(a) allowing heat energy to evaporate a first liquid from a wick means located within a sealed housing in the presence of a noncondensable gas, the density of said noncondensable gas being greater than the density of a mixture of vapor of said first liquid and said noncondensable gas so that said mixture rises;
(b) condensing said vapor on a condenser means so as to recover said first liquid on said wick means and so as to provide heat to a second liquid located within said condenser means;
(c) allowing said noncondensable gas to continue its motion along a path which is separate from substantially all of said first liquid; and
(d) allowing said noncondensable gas to merge with vapor of said first liquid in the space adjacent to said wick means.

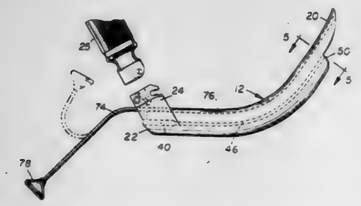
11. A method according to claim 10 wherein said heat energy is solar energy and including also the step of recovering heat from said second liquid.

4,437,457
ARTIFICIAL SPHINCTER WITH IMPROVED PRESSURE CONTROL VALVE
Robert E. Trick, and Vaughan B. Weeks, both of Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.
Filed Apr. 27, 1982, Ser. No. 372,436
Int. Cl.³ A61B 19/00
U.S. Cl. 128—1 R **6 Claims**



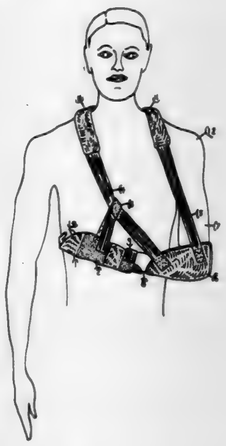
5. An artificial sphincter comprising an inflatable balloon for closing a body passage, a pump for transferring inflating fluid to the balloon to pressurize and inflate it to collapse the body passage, and a pressure control valve for controlling the pressure in the balloon, said pressure control valve comprising:
(a) a valve jacket having an inlet and an outlet, said inlet communicating with the pump, and the outlet communicating with the inflatable balloon;
(b) a valve housing positioned in said jacket, said housing having an open top and bottom and an inwardly directed shoulder partially closing said top;
(c) a poppet mounted in said housing between the inlet and the outlet; said poppet having an upwardly extending stem and a base with a sealing edge mounted on the top of said base, said poppet also having an internal passage extending from an inlet through the base and to an outlet in the side wall of the stem;
(d) an elastic band circumferentially positioned about the stem and removably closing the outlet of the passage; and
(e) yieldable means exerting a force upon said poppet urging it toward the open top of the housing so that the sealing edge will be in sealing contract with the underside of the shoulder closing said valve.

4,437,458
LARYNGOSCOPE
Michael S. Upsher, 2957 Adeline Dr., Burlingame, Calif. 94010
Filed Nov. 25, 1981, Ser. No. 324,887
Claims priority, application European Pat. Off., Nov. 27, 1980, 80 107427.9
Int. Cl.³ A61B 1/06
U.S. Cl. 128—11 **13 Claims**



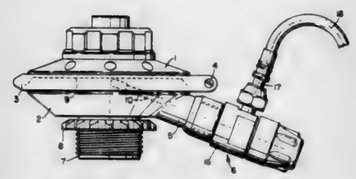
1. A laryngoscope having a handle including an electrical power source, a blade having a forwardmost end and a rearwardmost end, the latter defining a mounting base; and means forming part of said handle and part of said mounting base for disengagably connecting said base with said handle, the improvement comprising: a light source carried by said handle; a light guide carried by said blade and extending from its base to its forwardmost end; and a cooperating arrangement forming part of said handle and part of said base for causing said power source to energize said light source when said blade is disengagably connected with said handle, said cooperating arrangement including a passage in said handle, electrical connection means for coupling said light source with said power source, said electrical connection means being disposed within said passage so as not to extend outwardly of said passage, said arrangement also including a projecting member carried by the base of said blade for engaging said electrical connection means when said blade is disengagably connected with said handle in order to cause said power source to energize said light source, said blade including said projection being one type of laryngoscope blade and said handle including an arrangement separate from said last-mentioned arrangement for cooperating with a second, different type of blade which carries its own light source such that said second blade is disengagably connectable with said handle such that said second arrangement causes the power source in said handle to actuate the light source carried by said second blade while not causing said power source to actuate the light source carried by said handle.

4,437,459
HEMI-SLING
Deborah Slavetskas, 5 Laine Ct., Appalachin, N.Y. 13732
Filed Sep. 29, 1982, Ser. No. 428,181
Int. Cl.³ A61F 5/40, 13/00
U.S. Cl. 128—94 **9 Claims**



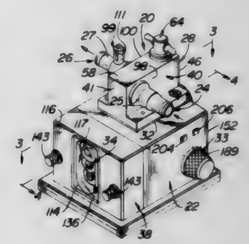
1. A sling for supporting the hand, shoulder, elbow and upper and lower arm of a patient comprising:
(a) elbow containing means for enclosing the elbow of the arm to be supported, made of flexible material;
(b) first strap means having first and second ends and a flexible middle portion therebetween, attached at both ends to the elbow containing means;
(c) second strap means, having first and second ends and a flexible middle portion therebetween, attached at the first end to the elbow containing means;
(d) third strap means, having two ends and a flexible middle portion therebetween, the middle portion being attached to the middle portion of the first strap means at a point along the length of the middle portion of the first strap means, the point of attachment being chosen to fall in mid-chest of the patient;
(e) The length of the first strap means being chosen such that the first strap means can comfortably pass from its first end at the elbow containing means with the patient's elbow therein, across approximately the middle of the patient's chest, around the patient's neck and shoulder on the side opposite the arm to be supported, and down across the patient's shoulder blades and back to the second end at the elbow containing means;
(f) The second end of the second strap means attaching to the middle portion of the first strap means at a point located on the center line of the patient's back;
(g) The length of the second strap means being chosen such that the second strap means passes from the elbow supporting means over the patient's shoulder to the first strap means, and the patient's arm is supported by the elbow containing means, holding the upper arm in a natural position without strain on the shoulder joint;
(h) hand supporting means comprising: a body adapted to enclosing the back of the patient's hand made of flexible material, adjustable wrist strap means for securing the body at one end to the patient's wrist, palm strap means for securing the body to the patient's hand, crossing the palm of the hand across the base of the fingers; and fastening means for attaching the body to the ends of the third strap means;
(i) the ends of the third strap means being adapted to adjustably mate with the fastening means of the hand supporting means, whereby the patient's hand is supported in a natural functional position in supination, with the hand in an adjustable position higher than the elbow.

4,437,460
BREATHING APPARATUS
Michael H. Glynn, Basingstoke, England, assignor to Sabre Safety Limited, England
Filed Oct. 6, 1981, Ser. No. 308,993
Claims priority, application United Kingdom, Oct. 17, 1980, 8033674
Int. Cl.³ A62B 7/04
U.S. Cl. 128—204.26 **4 Claims**



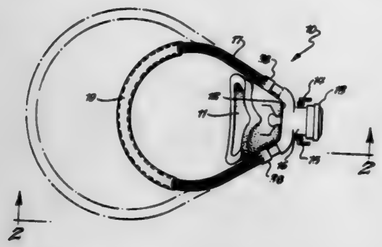
1. In a single stage breathing apparatus, a demand valve comprising a valve body having a diaphragm chamber, an outlet means from said chamber for connection to a face mask, a diaphragm clamped within said chamber and being displaceable by pressure changes therein, and an inlet portion connected to said chamber comprising a plurality of body parts providing an inlet for admission of compressed breathable gas, a valve seating, a valve member urged into engagement with the valve seating, means for moving the valve member away from the seating when suction is applied to the outlet means to enable the breathable gas to pass from the inlet to the outlet means, and by-pass means enabling the breathable gas to by-pass the valve member and seating and thereby reach the outlet means to provide an emergency supply of breathable gas in the event of the valve member becoming lodged in the closed position, the by-pass means including a flow passage sized to allow a predetermined volumetric flow rate of breathable gas at a pressure within a predetermined range, a first chamber communicating with the sized flow passage and an orifice leading from the inlet to said first chamber, and a constant pressure reduction valve comprising a piston, one end of which is adapted to close said orifice leading from the inlet to said first chamber, biasing means urging the piston in a direction to open said orifice, means normally restraining the piston from movement by the biasing means but operable in an emergency to permit movement of the piston to open said orifice, another end of the piston forming a wall of a second chamber having a greater cross-sectional area than the cross-sectional area of the first chamber, and the piston having a bore therethrough communicating said first and second chambers enabling breathable gas under pressure to pass between said first and second chambers to control the pressure of breathable gas in the first chamber within the predetermined range when the constant pressure reduction valve is open.

4,437,461
VALVE RESPIRATOR DEVICE
Mitchell H. Greenberg, 796 Sport Hill Rd., Easton, Conn. 06612
Filed Apr. 16, 1982, Ser. No. 368,934
Int. Cl.³ A61M 16/00
U.S. Cl. 128—205.24 **24 Claims**



1. A valve respirator device comprising a housing having a bore extending therein, said housing also having first, second and third passage means each having one portion communicating with said bore and a second portion communicating with a first, a second and a third port, respectively, wherein said first port is adapted to be in fluid communication with a source of gas, said second port is open to the ambient atmosphere and said third port is adapted to be in fluid communication with a patient's respiratory system, movable means in the form of a readily replacable rotatable cylinder mounted in said bore having a first recess in alignment with said first and third passage means; and a second recess in alignment with said second and third passage means, both recesses being located in the cylinder's periphery and isolated from each other, for alternately establishing fluid communication, first between said first port and said third port during a portion of a rotational cycle of said cylinder when said first recess is in fluid communication with both said first passage means and said third passage means and then between said second port and said third port during a second portion of said rotational cycle during which time said second recess is in fluid communication with both said second passage means and said third passage means, such that when said first port is in fluid communication with said third port, said patient inhales the gas passing through said first port and when said second port is in fluid communication with said third port, said patient is able to exhale gas therethrough to the atmosphere, means for controlling the amount of gas passing through each of said ports, with said means for controlling the passage of gas through said second port comprising adjustable valve means, capable of being adjusted while the device is in operation to control the patient's rate of exhalation and means for regulating the rotation of said cylinder and thereby the time intervals during which said first port and said second port, respectively, are in fluid communication with said third port.

4,437,462
PNEUMATIC HEAD HARNESS
Robert E. Piljay, Alden, and Loyal G. Netteland, Holland, both of N.Y., assignors to Figgie International Inc., Willoughby, Ohio
Filed Nov. 19, 1981, Ser. No. 322,775
Int. Cl.³ A67B 18/08
U.S. Cl. 128—207 16 Claims



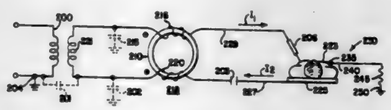
1. An inflatable head harness for holding a device in position on the head of a user, said harness comprising:
(a) at least one extensible tubular member in the form of a loop, said extensible tubular member including a longitudinally elastically extensible outer tube and an inflatable inner tube positioned within said outer tube, said inner tube being substantially inelastic in comparison with said outer tube; and
(b) means connectable to a source of pressurized fluid to permit the admission to and discharge from said tubular member of pressurized fluid to selectively increase and decrease the diameter of said loop.

4,437,463
SECURING DEVICE FOR TUBE INSERTABLE IN BODY CAVITY
Bernard Ackerman, Metuchen, N.J., assignor to Ackrad Laboratories, Inc., Garwood, N.J.
Filed Nov. 16, 1981, Ser. No. 321,611
Int. Cl.³ A61M 25/02
U.S. Cl. 128—207.17 10 Claims



1. A device for securing a tube extending from a body, said device comprising:
a thin-walled tubing of elastomeric material;
a ring formed of a rigid tubular section;
a noose formed by the passage of said tubing through said ring, said noose being adapted for encircling said tube without occluding same; said tubing being of such a size that when pulled to a snug fit flattens out against the wall of said tube, thereby increasing the surface contact area and thus the total frictional force between said tube and said tubing resulting in a secure slip-proof grip of said noose about said tube extending from said body;
the ends of said tubing being flexibly extendable about a portion of said body for engagement with each other by means secured to at least one end of said tubing so as to secure said tube to said body; and
said ring being made of an elastomeric material having a durometer in the range of 75–85.

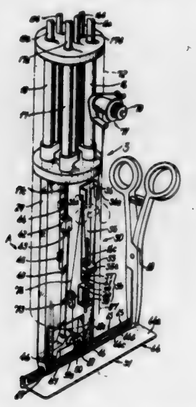
4,437,464
ELECTROSURGICAL GENERATOR SAFETY APPARATUS
James J. Crow, Englewood, Colo., assignor to C.R. Bard, Inc., Murray Hill, N.J.
Filed Nov. 9, 1981, Ser. No. 319,423
Int. Cl.³ A61B 17/39
U.S. Cl. 128—303.14 10 Claims



1. In an electrosurgical system having an electrosurgical generator for providing electrosurgical power at an operating frequency, an active electrode for applying said electrosurgical power to a patient, active electrical circuit means for connecting in a first electrical circuit said active electrode and said generator for supplying current from said generator to said active electrode and return electrical circuit means for returning said current in a second electrical current from said patient to said generator, the improvement comprising,
safety apparatus for preventing patient burns, comprising,
means responsive to the current flowing in said first circuit and responsive to the current flowing in said second circuit, for inserting an electrical impedance in series with said first circuit and said second circuit when said current flowing in said first circuit is not substantially equal to the current flowing in said second circuit, said impedance having a magnitude sufficient to reduce the current flowing in said first circuit and said second circuit to a value low enough to prevent patient burns.

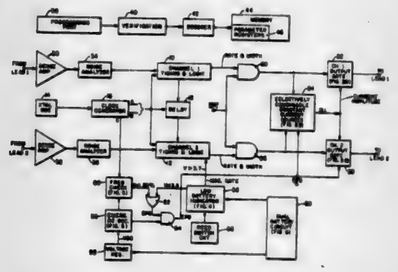
4,437,465
MEDICAL TREATMENT SEWING MACHINE
Reishi Nomoto, Kanagawa; Masahiro Akimoto, Hino, and Masayoshi Takahashi, Sagamihara, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 148,595, May 12, 1980, abandoned.
This application Feb. 1, 1982, Ser. No. 344,774
Claims priority, application Japan, May 17, 1979, 54-60642
Int. Cl.³ A61B 17/06
U.S. Cl. 128—340 6 Claims

1. A suturing machine for surgical operations, comprising a suturing instrument; a control device; means for clamping the edges of the human parts to be sewn up, said suturing instrument having a needle carrying a thread, said clamping means including guide means for guiding the suturing instrument thereon along the parts to be sewn up, said suturing instrument including a base, a needle holder turnably mounted on said base, the needle being secured to the needle holder, a loop taker having a hook and turnably mounted on the base and operative for catching a thread loop formed on the needle, means to supply a predetermined amount of the thread to the needle, first transmission means adapted for reciprocating movement relative to the human parts to be sewn up and connected to the needle holder, second transmission means adapted for reciprocating movement relative to the human parts to be sewn up and connected to said loop taker, and third transmission means adapted for reciprocating movement relative to the human parts to be sewn up and connected to said supply means; said base of the suturing instrument being formed with groove means which are adaped to engage with the guide means of the clamping means so as to move the suturing instrument along the human parts clamped in the clamping means during the suturing operation; said control device including a fluid source, switching means operatively connected thereto and electric circuit means controlling said switching means; a plurality of hydraulic cylinders connected to said fluid switching means and each having a rod reciprocable in a respective cylinder, each respective rod being connected to the first transmission means, second transmission means and third transmission means, respectively; and a manually operated switch for activating said electric circuit means



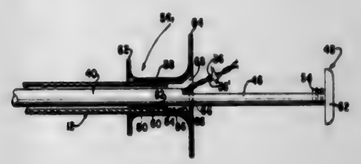
which sequentually operate said switching means which cause the sequential movement of the respective rods relative to the assigned cylinders to sequentially operate said first, second and third transmission means which respectively operate the needle so that it penetrates the human parts clamped in said clamping means, the loop taker catching the thread loop from the needle and the thread supply means supplying the thread to the needle to form up a suturing seam in the human parts to be sewn up while the suturing instrument is guided on the guide means along the human parts clamped in the clamping means.

4,437,466
CARDIAC PACER WITH IMPROVED BATTERY SYSTEM, OUTPUT CIRCUITRY, AND EMERGENCY OPERATION
Stanley H. Saulson, Miami; Edward A. Schroeppel, Miramar, and Peter P. Tarjan, Miami, all of Fla., assignors to Cordis Corporation, Miami, Fla.
Filed Mar. 2, 1981, Ser. No. 239,467
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PS 2 Claims



1. A battery powered implantable tissue stimulator of the type having stimulating logic means and output means for producing output stimulation pulses on a lead at a given rate, pulse width and amplitude determined by said stimulating logic, wherein the improvement in the battery circuit comprises
a main battery with a terminal,
an emergency battery,
means interconnected between said batteries for steering current to said battery terminal from both said batteries when the voltage level of said main battery drops below a predetermined level,
a first capacitive element connected to said terminal in parallel with said main battery,
a diode, and
a second capacitive element connected via said diode to said terminal in parallel with said main battery, said terminal being connected to power said output means, and the junction of said diode and said second capacitive element being simultaneously connected to power said stimulating logic means at the same time as said output means, whereby said stimulating logic power supply is isolated from the output power supply to minimize the effect of an output stimulation pulse on the voltage powering said stimulating logic means.

4,437,467
APPARATUS FOR MONITORING FETAL HEARTBEAT AND THE LIKE
Joel N. Helfer, Cheshire, and Phillip W. King, Wallingford, both of Conn., assignors to American Home Products Corporation, New York, N.Y.
Filed Dec. 11, 1981, Ser. No. 329,799
Int. Cl.³ A61B 5/04
U.S. Cl. 128—642 6 Claims

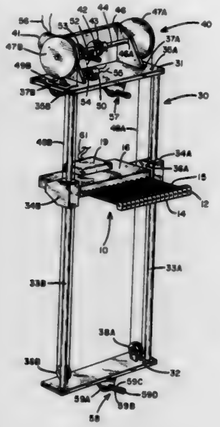


1. An apparatus for use in monitoring fetal heartbeat and the like, comprising:
a tubular member having a distal end adapted to be inserted through the vagina and cervix of a women in labor;
an electrode assembly movably mounted in the tubular member, the assembly having a coil being adapted to be rotatably introduced into the skin of a fetus for attachment thereto to permit the electrode assembly to detect a biosignal from a fetus;
means for transmitting a signal detected by the electrode assembly;
means for applying a rotary force to turn the coil in response to a linear force applied by a user to the applying means for introducing the coil into the fetal skin; and
means for yieldably resisting the linear force applied by the user for enabling the user to sense resistance to the turning of the coil whereby the user may detect that the coil has penetrated the fetal skin.

4,437,468
ULTRASOUND SCANNING SYSTEM WITH SEMI-INDEPENDENT TRANSDUCER ARRAY
Paul D. Sorenson, Blaine, and Dale A. Dickson, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Sep. 3, 1982, Ser. No. 414,704
Int. Cl.³ A61B 10/00
U.S. Cl. 128—660 7 Claims

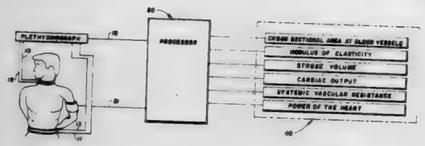
1. An ultrasound scanning system for scanning the human back comprising:
a housing;

means for mounting the housing relative to a human back for movement in a movement plane generally parallel to a plane of the back;
a linear array of transducer shoes;
each transducer shoe being mounted on a plunger;
the plungers being slidably mounted in the housing for movement generally perpendicular to the movement plane, while each shoe moves along a respective movement line;



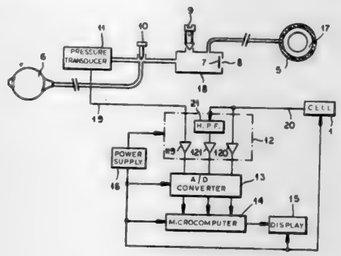
each transducer shoe having a transducer for ultrasound scanning of the back; and
bias means mounted in the housing for urging each plunger toward the back for maintaining transducer contact with the back, each plunger moving independently of the others and independent of the position of the housing, which remains out of contact with the back.

4,437,469
SYSTEM FOR DETERMINING CHARACTERISTICS OF BLOOD FLOW
Ljubomir Djordjevich, Chicago, and Max S. Sadove, River Forest, both of Ill., assignors to Rush-Presbyterian-St. Luke's Medical Center, Chicago, Ill.
Filed Sep. 29, 1980, Ser. No. 191,387
Int. Cl.³ A61B 5/02
U.S. Cl. 128—672 **28 Claims**



1. A method for measuring a blood circulation characteristic comprising measuring electrical impedance across a section of a living body having an unobstructed blood flow, simultaneously with said measurement of electrical impedance measuring blood pressure in said body, and passing the values of impedance measurement and also the values of blood pressure measurement, each in the form of an electrical signal, through a processor and determining from the electrical impedance and blood pressure signals electrical signals representing said blood circulation characteristic.

4,437,470
PROCESS AND APPARATUS FOR MEASURING BLOOD PRESSURE
Jean-Louis Prost, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland
Continuation-in-part of Ser. No. 181,620, Aug. 26, 1980, abandoned. This application May 14, 1982, Ser. No. 378,254
Claims priority, application Switzerland, Aug. 28, 1979, 7785/79
Int. Cl.³ A61B 5/02
U.S. Cl. 128—679 **10 Claims**



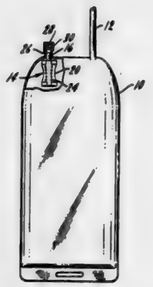
1. A process for measuring a person's blood pressure, comprising the steps of:
(a) temporarily blocking the flow of blood on an extremity of such person's body by the application of astringent pressure;
(b) applying a photosensitive element to an illuminated skin area of said extremity, downstream of the flow-blocking location, with a contact pressure ranging between substantially 50 and 150 g/cm²;
(c) continuously measuring an output signal of said photosensitive element, representative of the instantaneous transparency of said skin area, during a period of progressive relaxation of said astringent pressure;
(d) averaging said output signal to obtain a mean-transparency curve plotted against time;
(e) measuring several values of said astringent pressure at instants corresponding to respective points of said mean-transparency curve; and
(f) calculating a predetermined fraction of the sum of said several values as an indication of systolic blood pressure.

4,437,471
IMPLEMENT FOR MEASURING SKIN TEMPERATURES
Jeffrey Nelson, 20 Allison Rd., Newport News, Va. 23602
Filed Jan. 13, 1982, Ser. No. 339,061
Int. Cl.³ A61B 10/00; G01N 11/12
U.S. Cl. 128—736 **5 Claims**



1. A device for indicating the state of relaxation or tension of an individual with respect to a particular optimum predetermined temperature of the individual as measured by the individual's fingertip skin temperature comprising:
a thermally conductive planar surface;
two temperature sensitive liquid crystal indicators located on said planar surface, one indicator only becoming visible when the individual's fingertip skin temperature is less than the predetermined temperature, and the second indicator only becoming visible when the individual's skin temperature is greater than the predetermined temperature; and
a plurality of temperature sensitive liquid crystal relaxation cues located on said planar surface, said relaxation cues becoming visible only when the skin temperature of the individual is less than that of the predetermined temperature of the individual, wherein said temperature sensitive liquid crystal indicators indicate the proximity of the individual's fingertip skin temperature to that of the predetermined temperature and said temperature sensitive relaxation cues assist the individual in attaining the predetermined temperature by allowing the individual to recall certain learned relaxation techniques.

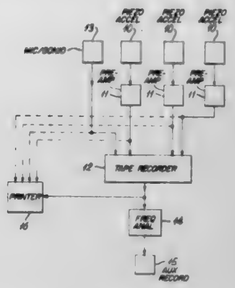
4,437,472
APPARATUS FOR COLLECTING FLUIDS
Henry Naftulin, 8341 N. Kenton Ave., Skokie, Ill. 60076
Continuation-in-part of Ser. No. 275,498, Jun. 19, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 428,143
Int. Cl.³ A61B 5/00; B65D 33/00, 81/00
U.S. Cl. 128—767 **7 Claims**



1. In combination with a flexible container used to collect and defibrinate blood therein, an insitu fibrin filter means positioned within said container and in communication with the outlet port of said container for collecting fibrin prior to its entry into said outlet port, comprising: a perforated inner tube member having an upper end extending into said outlet port, and a lower end extending into said container; and reticulated foam insert secured around said inner tube member, said inner tube member being sealed at its other end so as to preclude the entry of blood thereinto.

4,437,473
ORTHOPEDIC DIAGNOSTIC PROCEDURES AND APPARATUS THEREFOR
Raymond A. B. Mollan, Holywood, Ireland, assignor to National Research Development Corporation, London, England
Filed Mar. 26, 1982, Ser. No. 362,516
Claims priority, application United Kingdom, Apr. 3, 1981, 8110528
Int. Cl.³ A61B 5/12
U.S. Cl. 128—773 **6 Claims**

1. An orthopaedic diagnostic procedure comprising the steps of:
detecting vibrations emitted from a moving joint in at least the subsonic frequency range, and



analyzing the detected emissions to determine whether or not a predetermined pathological condition exists.

4,437,474
METHOD FOR MAKING MULTICONDUCTOR COIL AND THE COIL MADE THEREBY
Charles A. Peers-Trevarton, Coral Springs, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Jul. 16, 1982, Ser. No. 399,063
Int. Cl.³ A61N 1/04
U.S. Cl. 128—784 **5 Claims**

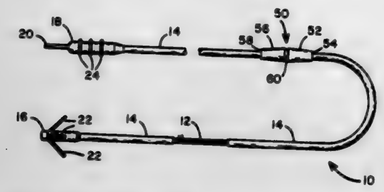


1. A method for making a multiconductor coil having an outer diameter equal to the diameter of a winding mandrel plus the diameter of wires being coiled with homogeneity of the insulating coating and the insulation between the wires peserved, said method comprising the steps of: winding a first uninsulated wire conductor on a winding mandrel with a predetermined spacing between adjacent turns of the coil of wire conductor, coating the uninsulated coil of wire conductor with an insulating coating, repeating the above two steps for each additional wjre conductor to be included in the multiconductor coil, and after the insulating coating on each wire conductor coil has dried and/or solidified, screwing each additional coil into the first coil to form a multiconductor coil having the desired homogeneity of the insulating coating and of the insulation between adjacent turns in the multiconductor coil.

4,437,475
TRANSVENOUS CARDIOVASCULAR INTEGRATED LEAD ANCHORING SLEEVE, PROTECTOR, AND PERMANENT LEAD INTRODUCER STOP GAP
David L. White, Wyoming, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Aug. 28, 1981, Ser. No. 297,469
Int. Cl.³ A61N 1/04
U.S. Cl. 128—785 **4 Claims**

1. A body implantable lead comprising:
a conductor having a proximal end and a distal end;
an insulating sheath of body compatible material having an outside diameter, covering said conductor;
an electrode having an outside diameter greater than the outside diameter of said insulating sheath, coupled to said distal end of said conductor;
an electrical connector having an outside diameter greater than the outside diameter of said insulating sheath, coupled to said proximal end of said conductor; and

an anchoring sleeve fabricated of a pliant, compressible material, having a proximal end, a distal end, a circumferential suture groove completely encircling said anchoring sleeve and a lumen with an inside diameter greater than the outside diameter of said insulating sheath, through



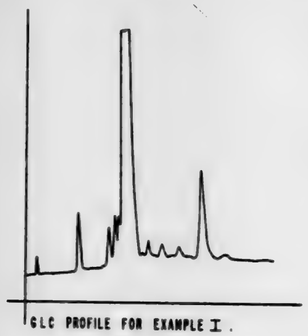
which said insulating sheath passes, said electrode and said electrical connector each having an outside diameter greater than the inside diameter of the lumen of said anchoring sleeve whereby said anchoring sleeve is permanently attached and slideably mounted about said insulating sheath.

4,437,476

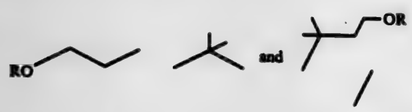
PRINS REACTION PRODUCTS OF DIISOBUTYLENE, DERIVATIVES THEREOF, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING SAME

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 280,683, Jul. 6, 1981. This application Jun. 24, 1982, Ser. No. 391,594
Int. Cl.³ A24B *3/12*
U.S. Cl. 131—276 1 Claim



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco or smoking tobacco article component comprising the step of adding to a smoking tobacco composition or smoking article component an aroma or taste augmenting or enhancing quantity of at least one prins reaction product or a derivative thereof defined according to a structure selected from the group consisting of the structures:



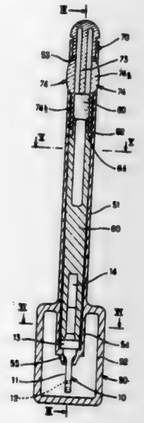
wherein one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond and "R" represents hydrogen or acetyl.

4,437,477

MAKE OF UNIT COMPRISING A CONTAINER AND AN APPLICATOR CLOSING THE CONTAINER

Jean-Louis H. Gueret, Paris, France, assignor to "L'Oreal", Paris, France

Filed May 11, 1982, Ser. No. 377,172
Claims priority, application France, Jun. 1, 1981, 81 10785
Int. Cl.³ A45D *40/30*
U.S. Cl. 132—88.5 11 Claims



1. In a make-up unit comprising:
(a) container means for liquid make-up;
(b) a neck to said container means;
(c) means defining a withdrawal opening of said container means;
(d) detachable applicator means adapted to enter said neck;
(e) make-up applying means adapted to draw off liquid make-up from said container means, to transport it, and to spread it on a surface to be made up, said make-up applying means including means stoppering said withdrawal opening of the said container means in a substantially leakproof manner when the container is closed by means of the applicator means; and
(f) wiper lip means bounding said withdrawal opening and arranged to grip the make-up applying means, the said make-up applying means and said withdrawal opening each having a non-circular cross section which prevents rotation of said make-up applying means relative to said wiper lip means when gripped thereby, the improvement wherein said applicator means comprises;
(g) first and second elements fitted one within the other;
(h) means interconnecting said first and second elements so that one thereof is capable of relative motion with respect to the other, said first element carrying said make-up applying means; and
(i) means on said second element for releasably engaging said neck of the container.

4,437,478

COIN COUNTING AND DISPENSING APPARATUS

Hiroshi Abe, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,426
Claims priority, application Japan, Jul. 8, 1980, 55-92280
Int. Cl.³ G07D *5/02, 9/04*
U.S. Cl. 133—5 R 3 Claims

1. A coin dispensing apparatus comprising a hopper for holding a supply of coins, a rotary disc in said hopper that is inclined to the horizontal and has coin engaging means on an upper face thereof, said rotary disc being rotatable in one direction to carry coins upward from near the bottom of the hopper, a delivery knife near the top of the disc to which coins are delivered by the rotary disc for guidance to a delivery chute and which has a substantially upwardly facing surface that the coins engage edgewise, a counter roller having a periphery edgewise engageable by coins, mounting means whereby the counter roller is carried for free rotation about its axis and for bodily motion transversely to its axis downwardly towards and upwardly away from a defined position in which the counter roller is spaced from said surface by a distance less than the diameter of a coin of predetermined denomination, said counter roller being biased downwardly to be moved upward from said position by passage along said surface of a coin of said denomination, and electrical switch means responsive to movement of said counter roller out of said position for counting each coin that passes the counter roller, said coin dispensing apparatus being characterized by:



(A) said switch means comprising a pair of elements between which there is a slot that opens in a pair of opposite directions and which cooperate to produce an output upon entry into said slot of an actuating member; and
(B) an actuating member connected with said mounting means to be moved in one of said opposite directions by upward movement of the counter roller and in the other of said opposite directions by downward movement of the counter roller, said actuating member being arranged to enter said slot upon movement of the counter roller out of said position and to move freely in said slot in said one direction so that the counter roller can be passed by coins substantially larger in diameter than said coin of predetermined denomination.

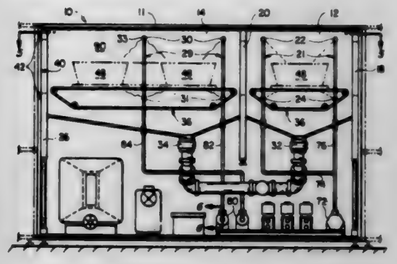
4,437,479

DECONTAMINATION APPARATUS FOR SEMICONDUCTOR WAFER HANDLING EQUIPMENT

Juan Bardina, Menlo Park, and Mikel Gonzalez, San Jose, both of Calif., assignors to Atcor, Mountain View, Calif.

Filed Dec. 30, 1981, Ser. No. 335,765
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—68 8 Claims

1. A device for decontaminating semiconductor wafer handling equipment, comprising:
a first chamber adapted to receive semiconductor wafer handling equipment, the first chamber including,
an activatible means for applying decontamination liquid to handling equipment in the first chamber;
means for restricting contaminants from handling equipment to the first chamber, which means includes a generally leakproof first door covering an opening into said chamber; and
means for draining decontamination liquid from the first chamber; means for opening said first door to allow handling equipment to be loaded and unloaded into said first chamber; and



a second chamber adapted for receiving handling equipment from said first chamber, the second chamber including means for directing a drying fluid to handling equipment therein.

4,437,480

MECHANISM FOR TIGHTENING AND REINFORCING THE JOINT OF A FOLDING STRUCTURE

Emmett O. Husa, 1614 N.W. 85th, Seattle, Wash. 98117

Filed Jul. 8, 1982, Ser. No. 396,155
Int. Cl.³ A61H *3/02*; F16C *11/10*
U.S. Cl. 135—74 3 Claims



2. In a folding crutch structure, comprising:
first and second sections of a load carrying stile, each including an end portion, wherein at least the end portion of the second section is tubular;
connector means for connecting the two sections together in a manner permitting said sections to be moved between a first position in which the two sections are generally aligned with each other and a folded position in which each section is adjacent the other section, said connector means comprising a first end piece connected to the end portion of the first section, a second end piece which is telescopically received within the tubular end portion of the second section, a link position between said first and second end pieces, pivot pin means connecting the ends of the link to said end pieces in a manner permitting said end pieces, and the first and second sections connected thereto, to be pivotally moved between a first position in which they are axially aligned with the link and a second position in which they are both substantially perpendicular to the link and adjacent one another, stop means for preventing telescopic movement of the second end piece completely outfrom the tubular end portion of the second section, and releasable lock means carried by said second end piece and engagable with the tubular end portion of the second section for locking the two sections together in said use position, said lock means including a depressible lock button; and
a joint tightening and reinforcing mechanism, comprising a collet member attached to the end portion of the first section and including a plurality of collet jaws which extend axially endwise beyond the end of the end portion

of said first section, and external threads on the collet member axially inwardly of the collet jaws, and a cam ring which is slidably mounted on the tubular end portion of the second section, and which includes an internally threaded end portion, adapted for mating engagement with the external threads on the collet member, and a cam portion spaced axially inwardly of the threaded portion, whereby when the two sections are telescopically together and axially aligned, and the cam ring is screwed onto the collet member, its cam section exerts a radially inwardly directed squeezing force on the collet jaws, bringing them into tight frictional engagement with the tubular end portion of the upper section, so as to, in that manner, structurally reinforce and tighten the joint between the two sections.

4,437,481

SELF-ACTUATING DRIP VALVE

John M. Chamberlin, 2800 Dunsinane Rd., Pensacola, Fla. 32503, and John R. Chamberlin, 1767 Ensenada Dos, Pensacola Beach, Fla. 32561

Filed May 20, 1982, Ser. No. 380,315
Int. Cl.³ E03B 7/12
U.S. Cl. 137—60 **26 Claims**



1. A self-actuating drip valve for attachment to a standard faucet to prevent freezing of exposed water pipes comprising:
a housing defining a normally closed chamber removably attachable to said faucet;
valve seat means, said valve seat means being adjacent said faucet and a portion of said housing when said housing is secured to said faucet;
a double-walled bellows fillable with a liquid between said walls having a proximal end attached to said housing and a distal end remote from said housing;
valve means extending substantially coaxially within said bellows in all positions of said valve means and having a proximal end for mating with said valve seat means and a distal end attached to said distal end of said bellows whereby said valve is moved away from said seat when said liquid in said bellows freezes.

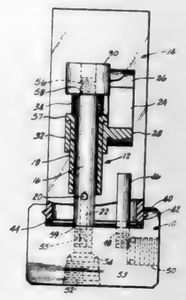
4,437,482

WATER-SENSITIVE PROBE VALVE FOR USE WITH A GAS LEAK DETECTOR

Loren C. Harrison, 8607 Danby Ave., Whittier, Calif. 90606

Filed Sep. 22, 1982, Ser. No. 421,146
Int. Cl.³ F16K 13/04
U.S. Cl. 137—67 **15 Claims**

1. A cutoff valve for water-sensitive instruments comprising:
(a) a base having an inlet and an outlet;
(b) a case, removably secured to the base;
(c) a post secured to the base and extending into the case, the post having an exit port in communication with the outlet and opening in the case;
(d) a shuttle received on the post for translation along it to close the exit port in a closed position and to open the exit port in an open position;
(e) water-soluble band means;
(f) a first band support finger secured to the post and adapted to receive the water-soluble band;



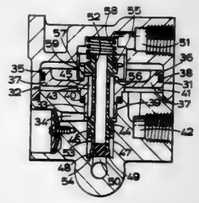
(g) a second band support finger secured to the shuttle and adapted to receive another end of the band; and
(h) biasing means between the post and the shuttle urging the shuttle to the closed position, the band opposing the spring means and keeping the shuttle in the open position until the band breaks in response to water.

4,437,483

FLUID-PRESSURE-OPERABLE RELAY VALVES

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 17, 1981, Ser. No. 274,401
Claims priority, application United Kingdom, Jun. 18, 1980, 8019956
Int. Cl.³ F16K 11/14
U.S. Cl. 137—85 **12 Claims**



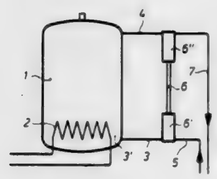
1. A fluid-pressure-operable valve comprising a housing having an inlet port, an outlet port, and an exhaust port, an inlet valve for controlling communication between said inlet port and said outlet port, an exhaust valve for controlling communication between said outlet port and said exhaust port, a control member in the housing for controlling sequential operation of said valves in response to a control force on said control member, said inlet valve comprising an inlet valve member and an inlet seating which surrounds said inlet port, said inlet valve member being engageable with said inlet seating, and a spring for urging said inlet valve member towards said inlet seating in opposition to the effect of fluid pressure at said inlet port, said exhaust valve comprising an exhaust valve member and an exhaust seating provided on said control member, said exhaust valve member having an exhaust valve face which is engageable with said exhaust seating, said exhaust valve member being relatively movable with respect to said control member, and said inlet and exhaust valve members comprising a single integral valve component.

4,437,484

UTILITY WATER SYSTEM WITH A PRESSURELESS STORAGE CONTAINER, PARTICULARLY FOR SOLAR INSTALLATIONS

Karsten Laing, Kaiserallee 51, 7500 Karlsruhe; Oliver Laing, Weissdornweg 14, 7400 Tubingen; Nikolaus Laing, Hofener Weg 35-37, 7148 Remseck 2, all of Fed. Rep. of Germany, and Ludwig Ludin, Kesselackerweg, 5611 Anglikon, Switzerland

Filed Mar. 16, 1982, Ser. No. 358,883
Claims priority, application Switzerland, Mar. 16, 1981, 1755/81
Int. Cl.³ F04B 17/00
U.S. Cl. 137—99 **5 Claims**



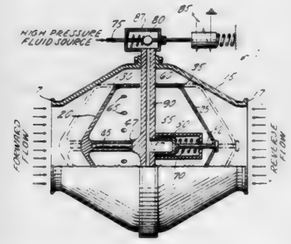
1. A warm water storage system for supplying warm water under pressure to a network including a warm water storage tank where the pressure above the water level in the tank is equal to ambient pressure, a pressurized cold water supply connecting with a cold water region of the tank, and a warm water takeoff region of the tank connecting with said network, characterized in having a warm water booster pump positioned between said warm water takeoff region and said network, and in having a positive displacement cold water motor connected to said booster pump and positioned between the cold water supply and the cold water region such that the pressure of said cold water supply will drive the motor to in turn drive the booster pump such that pressure in the cold water supply is transferred to said network.

4,437,485

CHECK VALVE

Robert B. Goodman, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 219,753, Dec. 23, 1980, abandoned. This application Nov. 15, 1982, Ser. No. 441,895
Int. Cl.³ F16K 17/30
U.S. Cl. 137—220 **7 Claims**



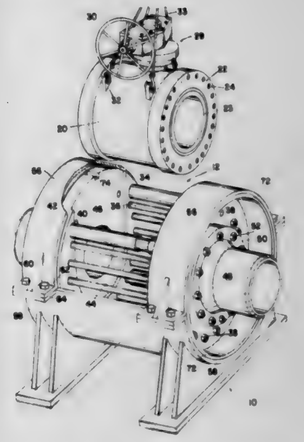
1. A valve for checking reverse flow and excessive forward flow therethrough, said valve including a housing defining a flow conduit therethrough, and first and second valve elements disposed in said housing and characterized by said flow conduit being defined substantially by said first and second valve elements and said housing, each of said first and second valve elements including means interiorly thereof which support said valve elements for independent reciprocation thereof within said housing by the impingement of fluid flow thereagainst, said first and second valve elements having oppositely facing convex, outer surfaces substantially unobstructed to forward and reverse flows, respectively, through said valve, said first valve element being maintained in an unseated condition by impingement of forward fluid flow against said outer surface thereof and being seated in part by reverse flow through said conduit, past said outer surface, thereof, thereby creating a low pressure area adjacent thereto, said second valve element being unseated by impingement of reverse flow against said outer surface thereof and seated by excessive forward flow through said conduit, past said outer surface thereof, thereby creating a low pressure area over said second valve element outer surface.

4,437,486

LINE REMOVABLE VALVE STRUCTURE WITH PIPELINE SUPPORT MEANS

Giuseppe Bianchi, Cava Manara, Italy, assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Apr. 8, 1982, Ser. No. 366,682
Claims priority, application European Pat. Off., Jan. 28, 1982, 82830018
Int. Cl.³ F16K 51/00
U.S. Cl. 137—315 **6 Claims**



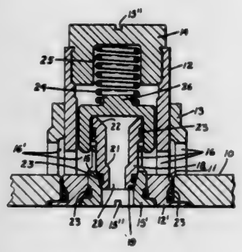
1. A line-removable valve structure comprising:
a pipeline-supporting cage and a valve cartridge; said cage comprising:
a pair of parallel, thick steel end plates with flow passages therethrough;
a series of studs interconnecting said end plates;
a nut threaded onto at least one end of each of said studs;
hub members carried on the outboard sides of said end plates around said flow passages for installing said cage into a pipeline; and
linear, hydraulic ram force-applying members connected between said end plates for selected limited separation thereof upon loosening of said threaded nuts;
said valve cartridge comprising:
a valve body with flow passages therethrough and a movable valve closure member for blocking and unblocking said flow passages;
said valve body being receivable between said thick end steel plates; and
seals rings for sealing between the ends of said valve body and said end plates around said flow passages; and
said valve structure including:
separate telescoping, cylindrical guide means axially extending between said end plates so as to enable limited relative axial movement of said end plates and preventing relative radial movement thereof.

4,437,487

LIGHTNING PROTECTED CHECK-TYPE DRAIN VALVE

Frank E. Marmoe, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Aug. 31, 1981, Ser. No. 297,712
Int. Cl.³ F16K 43/00
U.S. Cl. 137—322 6 Claims



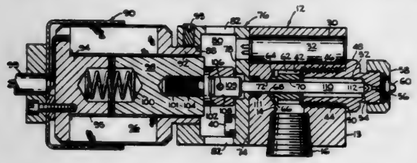
1. A drain valve assembly for a fuel tank comprising:
a housing secured to a wall of said tank and disposed internally of said tank;
an opening in a wall of said housing for the flow of liquid in said tank therethrough;
a cylinder slidably mounted in said housing and under a force normally tending to position it whereby it overlies and blocks said housing opening; and
a piston slidably mounted in said cylinder, said piston being defined at its end inwardly of said tank by a surface having an area substantially greater than the area of the surface at its outer end and located between said cylinder and said housing to resist said normal force and to overlie and block said housing opening, said piston having a longitudinal passage extending therethrough allowing pressure externally of said tank to act on and against the interior of said cylinder and said greater area piston surface to maintain said cylinder out of the overlying and blocking position, and simultaneously to move said piston to the overlying and blocking position and an overpowering force on the outer end of said piston is required to move it relative to said cylinder so as to maintain said cylinder and said piston out of its position of overlying and blocking said housing opening as aforesaid.

4,437,488

SOLENOID VALVE FOR HOT MELT MATERIAL

Thomas D. Taggart, Pacific Grove, and Robert E. Taggart, Carmel, both of Calif., assignors to Lockwood Technical Inc., Monterey, Calif.

Filed May 24, 1982, Ser. No. 381,040
Int. Cl.³ F16K 49/00; B05B 1/30
U.S. Cl. 137—334 9 Claims



1. A valve for hot melt material comprising a rigid body formed of thermally conductive material and having an external front surface, said body defining a bore having a cylindric portion bounded by a concave cylindric wall and being disposed inward of and in spaced apart relation to said front surface surface, said bore having a passage communicating between said cylindric portion and said front surface, an insert disposed in said cylindric portion, said passage having an inside dimension sufficiently large to afford introduction of said insert therethrough, said insert having an outer surface sized and shaped for disposition in said cylindric portion in heat conducting relation to said cylindric wall, said insert defining a central cylindric passage concentric with said outer surface and with said passage, means mounted in said passage adjacent said front surface and spaced from said insert for defining a valve seat in axial alignment with said central cylindric passage in said insert, a valve member having a cylindric stem extending through said central cylindric passage and a tip engagable with said seat for arresting flow through said seat, said stem having an outer diameter less than the inner diameter of said central cylindric passage so as to form a substantially annular channel between said stem and said central cylindric passage, said annular channel having a radial extent sufficiently large to afford free movement of said stem relative said central cylindric passage and sufficiently small so that hot melt material in said annular channel has insufficient thickness to cause significant impedance to heat energy flow therethrough, said body defining a conduit for delivering hot melt material to said annular channel at the end thereof remote from said valve seat, means for supplying heat energy to said body, and means for selectively reciprocating said valve body from an arrest position at which said tip is engaged with said seat and a flow position at which said tip is spaced from said seat.

6. A solenoid valve for controlling fluid flow comprising a body defining a bore, means disposed in said bore for forming a fluid discharge passage, said passage forming means having a seat surrounding said discharge passage, an elongate valve stem having a tip for cooperating with said seat to arrest fluid flow through said discharge passage, said stem having a portion remote from said tip that extends exteriorly of said body, a magnetic core part fixed to said portion, a coil circumscribing said core part such that energization of said coil moves said valve tip away from said seat to afford fluid flow through said discharge passage, a coil support member rigid with said coil and having a first threaded part concentrically circumscribing said stem, a second threaded part rigid with said body and complementally engagable with said first threaded part so that rotation of said coil support member relative said body moves said coil toward or away from said seat, means for selectively locking the relative rotational position of said first and second threaded parts, means rigid with said coil for limiting movement of said core part in response to energization of said coil, and means for resiliently biasing said stem away from said limiting means and into engagement with said seat.

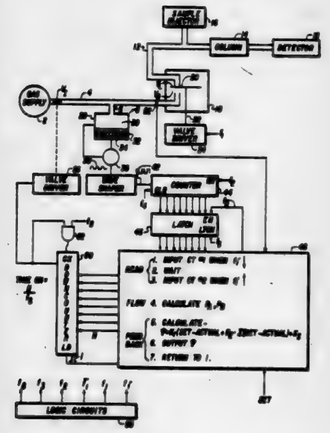
4,437,489

GAS FLOW CONTROLLER

Michael A. Casale, Newark, Del., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 24, 1981, Ser. No. 334,417
Int. Cl.³ F16K 31/02
U.S. Cl. 137—487.5 4 Claims

1. Apparatus for controlling the flow of a gas so as to maintain a constant mass flow to a load, comprising
a first valve having an input to which gas under pressure may be applied and an output,
means defining a volume V having an inlet port coupled to the output of said first valve and an outlet port,
pressure signal producing means including a transducer for producing, when activated, an electrical signal representing the pressure in said volume V,
means for placing said first valve in an open position during a first portion of each of a plurality of successive cycles and for placing it in a closed position during the remainder of each cycle, each cycle having a duration Δt,
means defining a reference volume R_V,
a second valve having an input coupled to the outlet port of said volume V and an output coupled to said reference volume R_V,
means placing said second valve in a closed position during the said first portion of each cycle, for a second portion occurring immediately thereafter, and during the last portion of each cycle and placing said second valve in an open position between the second and last portions of each cycle,
a third valve having an input coupled to said reference volume R_V and an output to which a load can be coupled,
means for placing said third valve in an open position when said second valve is closed and placing said third valve in a closed position when said second valve is open,
means activating said pressure signal producing means during the second portion of each cycle so as to produce a signal representing the pressure P_A in said volume V when said first and second valves are closed,



means activating said pressure signal producing means during the last portion of each cycle so as to produce a signal representing the pressure P_B in said volume V when said first and second valves are closed,
means responsive to the signals P_A and P_B for deriving a control signal representing the mass flow m through the volume V equal to

$$(P_A - P_B)/\Delta t \cdot V/RT$$

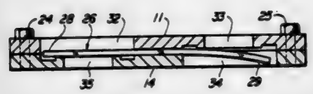
wherein R is the universal gas constant and T is the temperature of the gas in the volume V, and
control means responsive to said control signal for controlling the flow of gas through said first valve so as to maintain the mass flow m at a predetermined set value.

4,437,490

REED VALVE ASSEMBLY

Robert J. Demers, and Rick Schilbe, both of London, Canada, assignors to Webster Air Equipment Ltd., London, Canada

Filed Sep. 30, 1981, Ser. No. 306,947
Claims priority, application Canada, Jul. 6, 1981, 381132
Int. Cl.³ F16K 15/14
U.S. Cl. 137—512.4 2 Claims



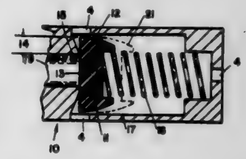
1. A reed valve assembly comprising, in combination:
(a) a first base member having an exterior surface and an interior face;
(b) a second base member having an exterior surface and an interior face;
(c) mounting means for securing said first and second base members together with their respective interior faces abutting each other;
(d) at least one elongated reed having a flat intermediate portion disposed between a first free portion and a second free portion;
(e) a central depression in the exterior face of at least one of said first and second base members for receiving said flat intermediate portion of said reed and clamping said intermediate portion between the interior faces of the first and second base members;
(f) said first base member having a first recess complementary with the contour of said first free end portion of the reed to allow free flexure thereof into and out of the first recess and to allow the passage of a fluid through the first recess when the first free end portion is flexed into same and having a first inlet passage overlapped by said second free end portion of the reed;
(g) said second base member having a second recess complementary with the contour of said second free end portion of the reed to allow flexure thereof into and out of the second recess and to allow the passage of a fluid through the second recess when the second free end portion is flexed into same and having a second inlet passage overlapped by said first free end portion of the reed;
(h) each of said first and second recesses communicate respectively with a first outlet opening means and second outlet opening means, whereby each associated recess and outlet opening means form a passage through the respective base members;
(i) each of said first and second inlet passages of each of the first and second base members is disposed in the bottom of an associated depression having a depth greater than that of said central depression, and
(j) a valve seat projecting from the bottom of each of the inlet passage depressions and having a distal seating surface against which the associated first and second free end portion of the reed abuts to prevent flow of fluid through the associated first and second inlet passages.

4,437,491

VALVE PISTON

David E. Brown, 236 W. 17th St., Erie, Pa. 16512

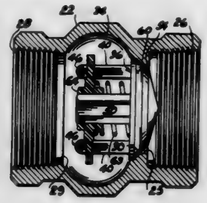
Filed Apr. 21, 1982, Ser. No. 370,358
Int. Cl.³ F16K 15/00
U.S. Cl. 137—540 6 Claims



1. A valve having a body with a generally cylindrical cavity having an inlet and an outlet adapted to be connected in a fluid line,
a valve seat in said cavity around said outlet,
a valve plunger in said cavity said plunger having a generally flat generally circular end adapted to rest on said valve seat,
said plunger having an outside contoured surface joining said flat end,
said outside surface being contoured so that an arc follows said contour when said arc has a center of curvature at any point on the outer periphery of said flat end and said arc has a radius passing through a plane extending perpen-

dicular to said flat end and containing the central axis of said plunger.

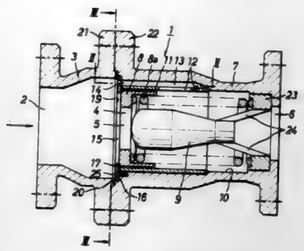
4,437,492
POPPET CHECK VALVE
Julian S. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73108
Filed Feb. 25, 1982, Ser. No. 352,287
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—543.13 **4 Claims**



1. A check valve, comprising:
a housing having a fluid passageway therethrough and having a valve seat normal to the axis of the passageway;
poppet valve means for closing the passageway in response to fluid flow in one direction,
said poppet valve means including a poppet valve having a head provided with a seat for sealing with the housing valve seat,
said poppet valve having a coaxial polygonal-shaped shank projecting downstream from its head;
poppet valve guide means for maintaining said poppet valve in axial alignment with the passageway and preventing angular rotation of the poppet valve relative to the housing,
said poppet valve guide means including a plurality of webs projecting into the fluid passageway from the inner wall surface of said housing for maintaining said poppet valve head coaxial with the housing valve seat, said webs each having an inwardly projecting lug at its end portion opposite the housing valve seat;
a shank guide supported by said webs coaxial with the fluid passageway on the upstream side of said web lugs,
said shank guide having a bore complemental with the periphery of said shank permitting longitudinal sliding movement of said shank relative to said shank guide;
resilient means interposed between said shank guide and said poppet valve head for biasing said poppet valve toward said housing valve seat; and,
means preventing angular rotation of said shank guide relative to said housing.

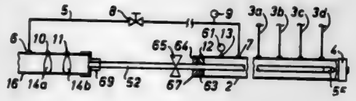
4,437,493
CONSTANT FLOW CONTROL VALVE
Kuniteru Okuda, and Jun Morita, both of c/o Oval Engineering Company Limited, 10-8, Kamiochiai 3-chome, Shinjuku-ku, Tokyo, Japan
Filed Aug. 18, 1982, Ser. No. 409,342
Claims priority, application Japan, Aug. 19, 1981, 56-128808
Int. Cl.³ F15D *1/02*
U.S. Cl. 138—45 **2 Claims**

1. A constant flow control valve, which comprises:
a valve body formed with a chamber;
a cylindrically-shaped sleeve member disposed in said chamber and defining a by-pass passage therebetween, said sleeve member being provided with at least one aperature in fluid communication with said by-pass passage;
a needle rod co-axially disposed within said sleeve member to define a main flow passage;
a cylindrically-shaped piston-type body including a main flow orifice slidably disposed within said sleeve member;
a spring member disposed within said chamber of said control valve and acting on said piston-type body for balancing fluid dynamic pressure thereon; and



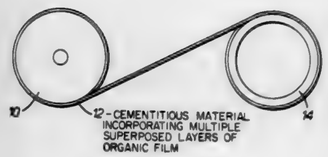
a selectively removable regulator plate means laterally-disposed within said chamber on said sleeve member and over said by-pass passage to permit adjustment of said control valve to a given constant flow rate.

4,437,494
MAINS INSERTION
Douglas C. Soper, Dorchester, and Brian Gould, Hoddlesdon, Darwen, both of England, assignors to British Gas Corporation, London, England
Filed Jun. 18, 1982, Ser. No. 390,080
Claims priority, application United Kingdom, Jun. 19, 1981, 8118965
Int. Cl.³ F16L *55/18*
U.S. Cl. 138—97 **9 Claims**



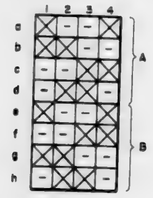
1. In a method for replacing a section of an existing fluid transportation main without disrupting fluid flow to individual service lines connected to the section until such time as an individual service line is to be disconnected from the section and re-connected to a replacement main, the steps of:
initially removing a portion of the existing main adjacent one end of the section to be replaced to thereby present a free end on the section;
maintaining fluid flow between the existing main and the section to be replaced by means of a bypass line during the removal of said portion;
inserting a length of a smaller replacement main into the section to be replaced through the free end of the latter, the internal end of the replacement main being open to flow of fluid whereby the section to be replaced and the inserted replacement main are in fluid communication;
interconnecting the replacement main and the existing main for fluid flow; and thereafter
removing said bypass line and allowing fluid to flow from the existing main and into the section to be replaced solely through said internal end of the replacement main whereby individual service lines may subsequently be isolated and connected directly to the replacement main without disrupting fluid flow to other service lines.

4,437,495
PIPES AND PIPE COATINGS
Johannes J. Zonsveld, Woking, England, assignor to University of Surrey, Guildford, England
Filed Sep. 15, 1981, Ser. No. 302,373
Claims priority, application United Kingdom, Sep. 20, 1980, 8030460
Int. Cl.³ F16L *9/16*
U.S. Cl. 138—144 **5 Claims**



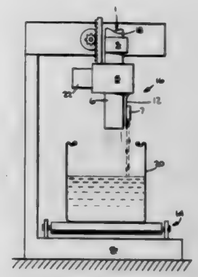
1. In a pipe length,
an innermost cylindrical layer in the form of a steel pipe which defines the passage of the pipe length,
a layer adjacent to and concentric with the steel pipe in the form of a helical winding of a cementitious material incorporating multiple, superposed, layers of network reinforcement of fibrillated organic film, said helically-wound layer being in a post-cracked condition and exhibiting multiple fine cracks in one surface when incorporated in the pipe length, and
a cylindrical weight-coating of concrete bonded to, and surrounding the helically-wound layer, bonding to the helically-wound layer being enhanced by the penetration of components of the concrete into the said multiple fine cracks of the cementitious material of the said layer.

4,437,496
PAPERMAKERS FABRICS HAVING EQUALIZED WARP SEW-UP
Charles E. Thompson, Raleigh, N.C., assignor to Huyck Corporation, Wake Forest, N.C.
Filed Mar. 17, 1982, Ser. No. 359,095
Int. Cl.³ D03D *15/00*; D21F *1/10*
U.S. Cl. 139—383 A **5 Claims**



1. An endless loop monoplanar papermakers' fabric formed of warp and weft yarns interwoven in a repeating sequence of first and second adjacent balanced weave patterns which patterns, alternate in the direction of the warp yarns, wherein said first weave pattern is characterized by the presence of warp yarns having, in a first sequence, differing numbers of interlacings and wherein said second weave pattern is characterized by said warp yarns being woven in a second sequence of numbers of interlacings, said second sequence of numbers of interlacings being the reverse of said first sequence so that the total number of interlacings in the combined first and second weave pattens is equal for all warp yarns.

4,437,497
ULTRASONIC CONTROL OF FILLING A CONTAINER
Frederick A. Enander, 28 Sycamore La., Fair Haven, N.J. 07701
Filed Sep. 23, 1981, Ser. No. 305,002
Int. Cl.³ B65B *1/30, 3/22*
U.S. Cl. 141—1 **23 Claims**



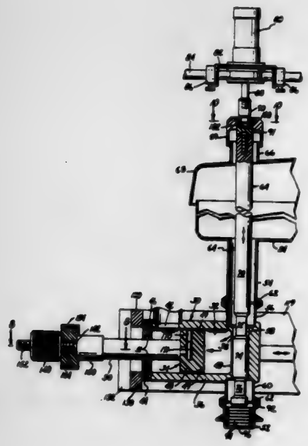
6. Apparatus for filling a container or the like with flowable material to a predetermined level using ultrasonic energy comprising:
means for holding the container in position to receive the material;
means for initiating a flow of material into the container;
source means disposed adjacent to the container for directing bursts of ultrasonic energy toward the container to be filled, the bursts being spaced apart at intervals;
echo sensing means disposed adjacent to the container;
a gate which opens at a predetermined delay with respect to a burst of ultrasonic energy, the delay corresponding to the time required for the burst to travel to the predetermined level and for its echo to return to the echo sensing means;
means for sensing the passage of an echo of a burst through the gate when the gate is open, the sensing of the echo being at the time the flowable material has attained the predetermined level; and
means for terminating the flow of material into the container in response to the sensing of the echo of a burst of ultrasonic energy at the predetermined delay.

19. A method for filling a container or the like with flowable material to a predetermined level using ultrasonic energy comprising the steps of:
initiating a flow of material into the container;
directing bursts of ultrasonic energy toward the container to be filled, the bursts being spaced apart at intervals;
sensing an echo at a predetermined delay with respect to a burst of ultrasonic energy when the predetermined level is reached;
terminating the flow of material into the container in response to the sensing of the echo of a burst of ultrasonic energy at the predetermined delay; and
directing a jet of gaseous fluid against the surface of the material being flowed into the container to displace bubbles, foam and the like on the surface of the material in the container to insure that a true surface is presented to the bursts of ultrasonic energy.

4,437,498
CARTON FILLING APPARATUS
Lawrence A. Pankratz, St. Paul, and Donald G. Cornies, Inver Grove Heights, both of Minn., assignors to Liquipak International, Inc., St. Paul, Minn.
Filed Nov. 9, 1981, Ser. No. 319,691
Int. Cl.³ B67C *3/02*
U.S. Cl. 141—89 **23 Claims**

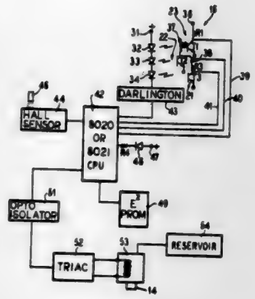
1. A container filling apparatus for filling an open top container with a predetermined quantity of a liquid food product, the container filling apparatus comprising:

a fill tank for holding the liquid;
a vertical passage having an inlet at an upper end communicating with the fill tank and having an outlet at a lower end from which the liquid is dispensed into the container;
a pumping chamber connected to the vertical passage by an inlet port and an outlet port for drawing liquid from the fill tank through the vertical passage and the inlet port into the pumping chamber and for pumping the liquid from the pumping chamber through the outlet port and the vertical passage to the outlet;
a vertically oriented, linearly movable valve member extending along a vertical axis downward through the fill tank and the vertical passage, the valve member having a portion which permits liquid flow from the fill tank through the vertical passage and to the inlet port to the pumping chamber when the valve member is in a first position along the vertical axis and which blocks liquid flow from the fill tank through the vertical passage and to the inlet port to the pumping chamber when the valve member is in a second position along the vertical axis, and



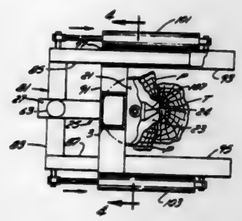
the valve member having a portion which blocks liquid flow from the pumping chamber through the outlet port and the vertical passage to the outlet when the valve member is in the first position and which permits liquid flow from the pumping chamber through the outlet port and the vertical passage to the outlet when the valve member is in the second position;
drive means for driving the pumping chamber to cause the pumping chamber to draw liquid into the pumping chamber through the inlet port and to pump liquid from the pumping chamber through the outlet port to the outlet; and
valve actuator means for moving the valve member along the vertical axis, the valve actutor means being coordinated with the drive means to cause the valve member to be in its first position when the drive means causes the pumping chamber means to draw liquid into the pumping chamber means and to cause the valve member to be in its second position when the drive means causes the pumping chamber means to pump liquid from the pumping chamber means to the outlet.

4,437,499
COMPUTER CONTROLLED SENSOR FOR BEVERAGE DISPENSER
Donald Devale, Sycamore, Ill., assignor to Everpure, Inc., Westmont, Ill.
Filed May 11, 1981, Ser. No. 262,129
Int. Cl.³ B65B 1/42
U.S. Cl. 141—95 **1 Claim**



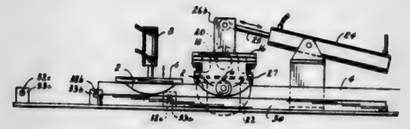
1. An automatic dispenser for small, medium and large cups including, a stand on which the cups can be placed, small, medium and large sensors mounted on the stand to sense small, medium and large cups, a micro-processor electrically connected to said small, medium and large sensors to receive electrical signals therefrom, and a dispensing valve mounted so as to dispense beverage into said cups connected to said microprocessor and controlled thereby, including an electrical erasable memory connected to said microprocessor for storing information as to the time required to fill the small, medium and large cups, including means for establishing the time to respectively fill the small, medium and large cups connected to said micro-processor, and said means for establishing the time to fill comprises a Hall sensor connected to said micro-processor and responsive to a magnet.

4,437,500
TREE CUTTING MECHANISM IN A TREE HARVESTER
Andre Larose, Macamic, Canada, assignor to Boreal Hydraulic Equipment, Macamic, Canada
Filed Sep. 30, 1982, Ser. No. 429,204
Int. Cl.³ A01G 23/08
U.S. Cl. 144—34 R **12 Claims**



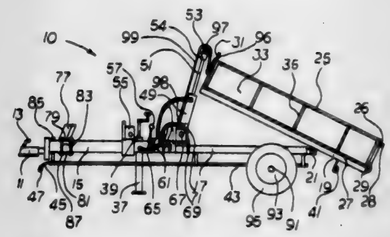
7. A felling head for use in a tree harvester comprising: a main frame; means on the main frame for gripping a tree to be harvested; first and second rotary cutting devices mounted on the main frame beneath the gripping means, the first cutting device overlying the second cutting device and spaced a short distance therefrom; means for rotating the cutting devices; means for moving said cutting devices relative to the frame to cut through a tree held by the gripping means; and means for removing the cut portion of the tree located between the cutting devices in a manner to permit continued movement of the cutting devices through the tree.

4,437,501
CONTOURED DUNNAGE CUTTER
James W. Canada, Bessemer, and James W. Layton, Fultondale, both of Ala., assignors to United States Pipe and Foundry Company, Birmingham, Ala.
Filed May 26, 1982, Ser. No. 382,014
Int. Cl.³ B27C 5/00
U.S. Cl. 144—136 R **4 Claims**



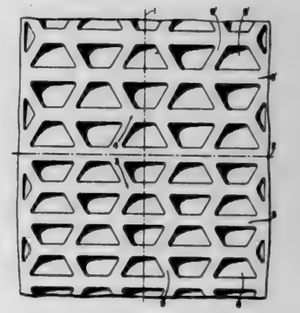
1. A contoured dunnage cutter for forming at least one arcuate concave cut at a predetermined location on at least one plane surface of a work piece; said dunnage cutter comprising a shaft mounted cutter head, a drive motor coupled to the shaft of said cutter head, said drive motor and said cutter head being mounted on a support plate, one edge of said support plate being pivotally mounted to a base, means to rotate said plate, motor and cutter head through a predetermined arc of about 120° with a reciprocal movement in and against the direction of the longitudinal axis of said work piece, and means for positioning one surface of said work piece in the arcuate path of said cutter head, said means for positioning including means for guiding said work piece, means for stopping said work piece at a predetermined location and means for holding down said work piece, whereby said cutter head is driven by means of said drive motor to form said arcuate concave cut in said work piece.

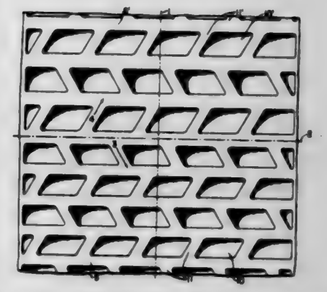
4,437,502
TRAILER MOUNTED LOG SPLITTER
Paul L. Staver, Box 74, Meriden, Iowa 51037
Filed Jan. 3, 1983, Ser. No. 455,216
Int. Cl.³ B27L 7/00; A47J 49/02
U.S. Cl. 144—193 A **17 Claims**



1. A trailer mounted log splitter comprising:
trailer means;
log-splitting means attached to the tongue portion of said trailer means;
trailer box means pivotally attached to said trailer means; and
means for operatively connecting said log-splitting means to said trailer box means for pivoting said trailer box means between raised and lowered positions.

4,437,503
TREAD CONFIGURATION FOR PNEUMATIC VEHICLE TIRES
Hans Seitz, Langenhagen; Heinz-Dieter Rach, Garbsen; Henner Pieper, and Udo Frerichs, both of Langenhagen, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany
Filed Sep. 17, 1982, Ser. No. 419,414
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139256
The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.
Int. Cl.³ B60C 11/06, 11/08
U.S. Cl. 152—209 R **8 Claims**





1. A tread configuration for the radially outwardly located peripheral surface of a pneumatic vehicle tire used as a spare tire to replace a regular tire that went flat, for example, said tread configuration comprising in combination:
transverse ribs respectively extending transverse to the circumferential direction of said tire; and
circumferential ribs at least some of which respectively extend at an angle to the circumferential direction of said tire, said circumferential ribs interconnecting said transverse ribs in such a way as to define a plurality of separate recesses therewith, with at least one boundary line of each of said recesses being formed by an edge of one of said transverse ribs; with the narrower dimension of each of said transverse and circumferential ribs being approximately ¼ to ½ of the circumferential dimension of an adjacent recess; the number of said transverse and circumferential ribs being such that, when viewed in the circumferential direction of said tire, several recesses are disposed next to one another, and a plurality of recesses are disposed one after the other; said peripheral surface of said tire being divided into at least two segments; within a given segment, the circumferential dimension of said recesses is constant, and the circumferential dimension of

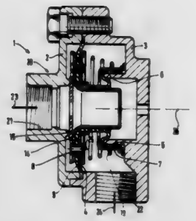
said transverse ribs is constant, while the circumferential dimension of said recesses, and the circumferential dimension of said transverse ribs, of a given segment differ from those of a successive segment to obtain a high noise delivery, and especially to obtain a number of tones which very penetratingly affect the ears of the driver, such that said transverse ribs which are separated from each other by adjacent recesses are indispensible in the tread configuration in a need to cooperate and interact with each other accordingly.

4,437,504

TIRE-PRESSURE REGULATING SYSTEM

Werner Stumpe, Kornwestheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,580
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 8106194[U]; Dec. 9, 1981, 3148729
Int. Cl.³ B60C *29/00*
U.S. Cl. 152—427 **12 Claims**



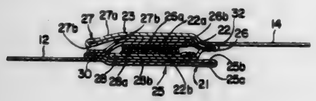
1. A housed tire-pressure regulating system for varying the tire pressure of motor vehicles, said system having a tire-pressure control valve which is normally closed disposed on the vehicle wheel to be monitored said control valve being operated by a vehicle operator to control tire-pressure variation, characterized in that said tire-pressure control valve includes a seat valve controlled by work surfaces via a piston member having a closing body, said control valve further including a throttle valve means, said throttle valve means arranged to modify a pressure difference of said tire pressure which flows through said control valve, said difference being utilized for pressure-actuation of said seat valve.

4,437,505

DRAPERY CLOSURE

Patricia Rodgers, 17291 Buttonwood, Fountain Valley, Calif. 92708

Filed Aug. 23, 1982, Ser. No. 410,380
Int. Cl.³ A47H *23/01*
U.S. Cl. 160—126 **4 Claims**



1. A drapery or curtain structure in combination with a securing means, comprising:

a drapery or curtain structure having at least two panels, thus defining a first and second panel positioned adjacent each other to provide adjoining vertical edges;

a first pleat formed along the adjoining edge of said first panel, said first pleat being defined by first and second parallel pleat sections integrally formed as part of said first panel, said first pleat section being formed by a first pair of folded members, and said second pleat section being formed by a second pair of folded members;

a second pleat formed along the adjoining edge of said second panel, said second pleat being defined by first and second parallel pleat sections integrally formed as part of said second panel, said first pleat section being formed by a first pair of folded members, and said second pleat section being formed by a second pair of folded members;

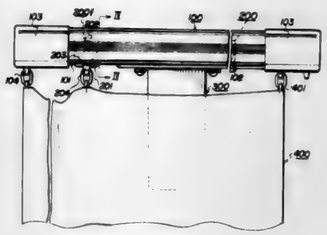
securing means comprising at least one male fastening member and at least one corresponding female fastening member, wherein one fastening member is mounted to said second pleat section of said first pleat and the other fastening member is mounted to said second pleat section of said second pleat, whereby said securing means is interposed within said pleats, wherein said second pleat section of said first pleat is interposed between said first and second pleat sections of said second pleat, and said second pleat section of said second pleat is interposed between said first and second pleat sections of said first pleat, whereby said adjacent vertical edges of said panels are joined substantially throughout their length.

4,437,506

CURTAIN DRAWER ARRANGEMENT

Koichi Ogita, Tokorozawa, Japan, assignor to Yokota Co., Ltd., Japan

Filed Aug. 6, 1981, Ser. No. 290,736
Claims priority, application Japan, Jul. 2, 1981, 56-102225
Int. Cl.³ A47H *1/00, 5/00*
U.S. Cl. 160—331 **6 Claims**



1. A curtain drawer arrangement comprising:

(a) a rail of generally inverted U-shape in vertical cross-section having a pair of tracks on the sides of a longitudinal opening, said U-shaped rail having therein a plurality of spaced, linearly extending conductors,

(b) a motor-driven mechanism comprising:

(i) a motor beneath said rail and having an output shaft,

(ii) a travelling portion in said rail having driven wheels engaging said pair of tracks, having resiliently urged means engaging said rail above said tracks for urging said wheels against said tracks, and having brushes engaging sad conductors in said rail,

(iii) means connecting said motor to said travelling portion, and

(iv) power transmission means including gears for transmitting power from said motor output shaft to said driven wheels.

4,437,507

MOLDING MACHINE

Robert J. Seeley, P.O. Box 4065, Elmira, N.Y. 14904

Filed Aug. 11, 1981, Ser. No. 292,034
Int. Cl.³ B22C *15/08, 25/00*
U.S. Cl. 164—173 **7 Claims**

1. A molding machine for producing molds, said machine comprising:

a frame;

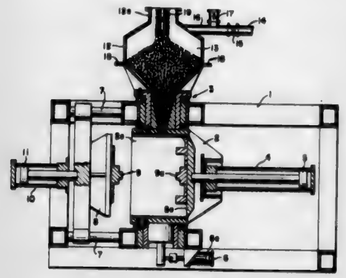
a squeeze chamber assembly rotatably mounted in said frame, said squeeze chamber assembly including a squeeze chamber flask in which respective molds are produced;

a first pattern mounting block associated with said squeeze chamber assembly and movable relative thereto and to said flask, said first pattern mounting block forming a first movable wall of said flask;

a first pattern mounted on said first pattern mounting block and facing said flask;

means associated with said squeeze chamber assembly for moving said first pattern and said first pattern mounting block relative to said flask and to said squeeze chamber assembly;

means associated with said frame for rotating said squeeze chamber assembly, said first pattern mounting block, said first pattern, and said means for moving same relative to said frame;



a second pattern mounting block operatively connected to said frame and movable relative thereto and into and out of said flask so as to form a second movable wall of said flask remote from said first movable wall or first pattern mounting block;

a second pattern mounted on said second pattern mounting block and facing said flask;

means associated with said frame and said second pattern mounting block for moving said second pattern and said second pattern mounting block relative to said frame and to said flask; and

a sand blow chamber assembly which is permanently connected with the squeeze chamber assembly, and has a blow chamber which is in communication with a source of sand and is in constant communication with said flask for supplying sand thereto.

4,437,508

CONTINUOUS LUBRICATION CASTING MOLDS

Michael J. Pryor, Woodbridge, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 84,768, Oct. 15, 1979, Pat. No. 4,363,352. This application Jul. 6, 1982, Ser. No. 395,163
The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.
Int. Cl.³ B22D *11/07*
U.S. Cl. 164—418 **13 Claims**

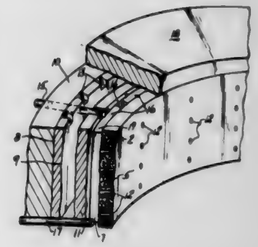
1. A casting apparatus for continuously casting molten metals or alloys comprising:

a continuous lubrication casting mold, said casting mold including a permeable casting mold section defining an inner casting surface and an outer lubricant receiving surface extending over substantially the entire length of said casting mold section;

said permeable casting mold section comprising a porous body having a continuous open pore fraction associated therewith for establishing passages for said lubricant;

said casting mold section further including a plurality of discrete, parallel-sided feed holes extending between said inner and outer surfaces for establishing additional passages for said lubricant; and

means for supplying said lubricant to said outer lubricant receiving surface comprising at least one chamber extending along substantially the entire length of said outer lubricant receiving surface;



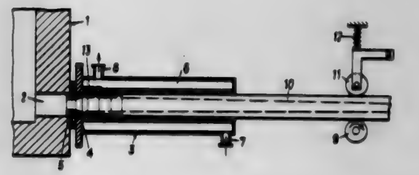
whereby said lubricant continuously transfers from said passages onto said inner casting surface along substantially the entire length thereof.

4,437,509

METHOD FOR CONTROL OF BILLET STRIPPING

Max Ahrens, Irvine, Calif., and Manfred Haissig, Meerbusch, Fed. Rep. of Germany, assignors to Boehler Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 303,787
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3037048
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—454 **10 Claims**



1. A process for the control of the withdrawal of a casting from a cooled, horizontal, continuous casting mold composed of a material of elevated heat conductivity, which includes the steps of delivering metallic melt to the mold discontinuously, withdrawing the casting from the mold in a series of steps following formation of a casting skin, and, after each withdrawal step, pushing the casting back by a partial step, wherein the improvement comprises the steps of measuring the expansion or contraction of a wall of the mold in contact with the casting skin and controlling the withdrawal of the casting in response to the measured expansion or contraction.

4,437,510

HEAT PIPE CONTROL APPARATUS

Richard T. Martorana, Reading, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1982, Ser. No. 363,168
Int. Cl.³ F28D *15/00*; F28F *13/08*
U.S. Cl. 165—32 **1 Claim**

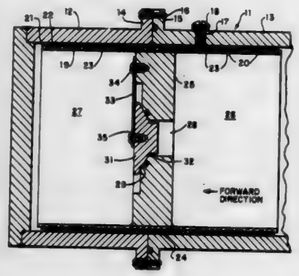
1. A heat pipe contro apparatus comprising:

an outer casing,

an inner casing inside of and spaced apart from said outer casing,

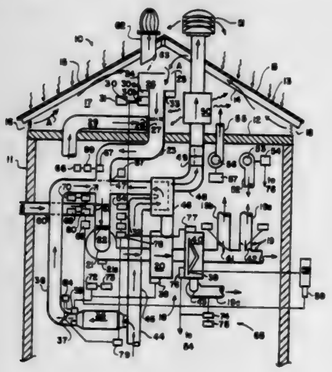
wick means positioned between said inner and outer casings,

a plurality of holes in the periphery of said inner casing,
a separator in said inner casing dividing said inner casing into a heat input section and heat sink section,
an aperture in said separator,
a heat source,
a condensable fluid in said heat pipe and movable upon vaporization by said heat source from said heat input section through said aperture to said heat sink section wherein said fluid is condensed and absorbed by said wick means,



closure means for preventing vapor flow from said heat sink section through said aperture to said heat input section, said closure means comprising a stopper attached by a leaf spring to the side of said wall within said heat sink section whereby vapor flow from said heat input section through said aperture moves said stopper to open said aperture, and
said outer casing and said inner casing having means defining a capillary restriction seal in the space therebetween, said capillary restriction seal being located approximately midway between the ends of said inner casing.

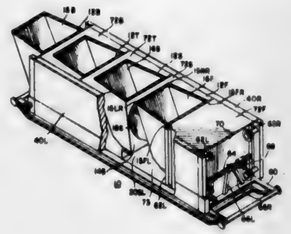
4,437,511
SOLAR ENERGY ABSORPTION AND DISTRIBUTION SYSTEM WITH FULL SOLAR, SOLAR ASSIST, AND FIREPLACE HEAT EXCHANGER MODES
John P. Sheridan, 5008 N. 35th St., Arlington, Va. 22207
Filed Dec. 23, 1980, Ser. No. 220,237
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—485 **3 Claims**

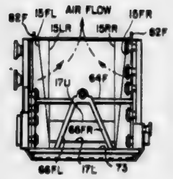


1. A system for controlling the environment in a building via a combination of air pre-heating and pre-cooling means automatically controlled and programmed by energy sensing devices integrated into a single system, said building having a roof exposed to solar radiation and forming the upper surface of a chamber containing a body of air which is heated by solar energy impinging on the roof, said roof and chamber configured to define an upper region of the chamber to which the solar heated air in the chamber rises, said system comprising:
a conventional heating and air conditioning system in the building, including a furnace with an evaporator, blower means, and air distribution and air return ducting leading to and from enclosed areas of the building;
an elongate collector duct in the upper region of the chamber extending lengthwise of the chamber and having a longitudinally extending slot therein for entry of the solar pre-heated air from the chamber into the collector duct;
a supply duct having an inlet connected with the collector duct for supplying solar pre-heated air to the air return ducting of the conventional heating system for distribution of the heated air to the enclosed areas;
said slot in the collector duct having a cross-section greater than the cross-section of the inlet to the supply duct to insure that all of the highest temperature air in the chamber is induced into the collector duct and thus the supply duct;
a blower in the ducting for drawing air from the chamber and through the collector duct and supply duct and forcing the air through the distribution ducting;
damper means at the juncture of the supply duct and conventional return ducting for selectively closing off flow from one of the supply duct and return ducting and opening the other to the blower; and
thermostatically controlled means in the chamber and in the enclosed areas to (a) automatically operate the damper means to admit solar heated air from the chamber to the distribution ducting and to deenergize the furnace when the temperature of the solar heated air in the chamber is above a first predetermined value, (b) admit air from the conventional air return ducting while precluding flow of air from the collector duct and to energize the furnace when the temperature is below a second predetermined value, and (c) admit solar heated air from the chamber through the air return ducting directly to the furnace and to energize the furnace when the temperature of the solar heated air in the chamber is between said predetermined values.

4,437,512
HEAT EXCHANGER ASSEMBLY
Robert F. DeVore, Dallas, Tex., assignor to Harsco Corporation, Camp Hill, Pa.
Filed Nov. 24, 1982, Ser. No. 444,341
Int. Cl.³ F24F *13/08*
U.S. Cl. 165—122 **18 Claims**

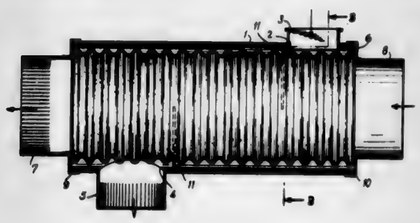
1. A heat exchanger assembly for air-cooled heat exchanging and having a top, a bottom, a front end, a back end, a right side and a left side:
(a) a plurality of air flow units arranged and supported in a longitudinal end-to-end assembly, each air flow unit including the following associated components:
(i) a substantially vertical fan mounting wall having a hole therein;
(ii) a fan mounted for rotation in said hole,
(iii) a venting wall operative to direct air blown backwardly by said fan up and out said top, said venting wall situated in back of said fan mounting wall and including right and left portions and an inclined portion extending from adjacent the bottom of said fan mounting wall to the top of said heat exchanger,
(iv) right and left air inlets situated in front of said fan mounting wall,
(v) an air inlet zone between said right and left air inlets from which air is drawn to said fan, through said hole, and into a venting zone defined by said venting walls, and
(vi) a bottom wall portion closing off the bottom of said air inlet zone,
(b) right and left heat exchangers extending lengthwise along said heat exchanger assembly and respectively covering said right and left air inlets of said air flow units and respectively covering said right and left portions of said venting wall of at least one of said air flow units,
(c) a support supporting said air flow units and said heat exchangers, and





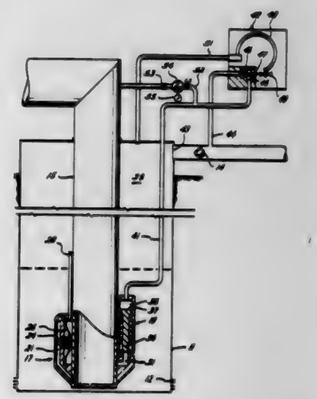
(d) coupling means for coupling said fans together for rotation in unison and in parallel and wherein said fans are adapted to cause air flow through said right and left heat exchangers into said air inlet zones by way of said right and left air inlets, through said holes into said vent zones and out the top of said vent zones and wherein said right and left portions of the venting walls of more than one of said air flow units are tapered inwardly and backwardly.

4,437,513
HEAT RECOVERY APPARATUS
Joseph Castiglioni, 80 Stavola Rd., and Paul Rosenthal, 143 Woodgate Rd., both of Middletown, N.J. 07748
Continuation of Ser. No. 911,975, Jun. 2, 1978, abandoned. This application Jan. 20, 1982, Ser. No. 341,139
Int. Cl.³ F28D *5/00*; F28F *1/42*
U.S. Cl. 165—154 **8 Claims**



1. A combustion discharge system wherein: A heat recovery apparatus for flue gas is connected at an end section thereof to a gas furnace at the discharge pipe of the gas furnace and is connected at the opposite end section thereof to a section of flue apparatus, said heat recovery apparatus comprising:
(a) An encapsulating galvanized outer wrapping having
(i) an opening which receives an air supply blowing device near the end section connected to the discharge pipe of the gas furnace and
(ii) an air discharge opening 180° apart from said opening which receives the air supply blowing device and near the opposite end section connected to the section of flue apparatus;
(b) An inner corrugated galvanized sheet metal flue core wherein
(i) the corrugated section of said flue core is encapsulated with means to effect closure with said outer wrapping and said flue core which is substantially free from direct contact along substantially its entire longitudinal extent with the inside surface of said outer wrapping and
(ii) said inner core has non-corrugated end sections protruding beyond each end of said encapsulating outer wrapping, one of said non-corrugated end sections being said end section connected to the discharge pipe of the gas furnace and the other non-corrugated end section being said end section connected to the section of flue apparatus, thereby fitting said heat recovery apparatus into said combustion discharge system; and
(c) at least a pair of semicircular baffles mounted in valleys of the corrugations of said inner core,
each spaced one from the other along the axial length of the corrugations and each being on the opposite side from one another,
the peaks of said baffles being in contact with the inner surface of said outer wrapping and substantially parallel to the openings in said outer wrapping to thereby permit unidirectional flow of air over the entire corrugated surface,
said at least one pair of baffles being respectively positioned near the opening which receives the air supply blowing device and the air discharge opening.

4,437,514
DEWATERING APPARATUS
Carlos R. Canalizo, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Jun. 17, 1982, Ser. No. 389,289
Int. Cl.³ E21B *34/16, 43/12*
U.S. Cl. 166—53 **5 Claims**



1. A system for controlling operation of a fluid operated gas lift valve having a pressure dome for lifting liquids in a tubing located in a cased gas well producing through the casing-tubing annulus and through a gas outlet at the wellhead comprising:
a controller having a cooperable valve and valve seat therein controlling flow from the gas outlet of the well to the pressure dome of the gas lift valve;
means in said controller responsive to casing-tubing annulus pressure for opening said valve in response to annulus pressure reducing to a selected value and closing said

valve in response to annulus pressure rising to a selected value;

regulator means controlling pressure in said pressure dome when said controller valve is closed;

choke means in series arrangement with said regulator means and positioned downstream thereof limiting flow through the regulator means when open;

means connecting said choke means with said tubing; and

check valve means in the gas outlet preventing back flow of production gas into the annulus.

2. A dewatering system for a cased gas well having a tubing located therein and producing through the casing-tubing annulus and through a gas outlet at the wellhead comprising:

a diverter valve for diverting liquids from the well into the tubing comprising,

a housing having a flowway therethrough with its outlet communicating with said tubing,

a cooperable valve member and valve seat controlling flow through the flowway,

a pressure responsive member exposed on one side to pressure exterior of the housing and controlling operation of said valve member in response to changes in pressure exterior of the housing, and

means effective on the other side of and urging said pressure responsive member towards valve closed position with a constant force sufficient to maintain the valve member closed when the liquid exterior of the tubing drops below a selected level to prevent lifting gas passing through the diverter valve;

a fluid operated gas lift valve having a pressure dome and having its outlet connected to the tubing for gas lifting liquids diverted to said tubing by said diverter valve; and

a control system comprising;

a controller having a cooperable valve and valve seat therein controlling flow from the gas outlet from the well to the pressure dome to the gas lift valve,

means in said controller responsive to casing-tubing annulus pressure for opening said valve in response to annulus pressure reducing to a selected value and closing said valve in response to annulus pressure rising to a selected value,

regulator means controlling pressure in said pressure dome when said controller valve is closed,

choke means in series arrangement with said regulator means and positioned downstream thereof limiting flow through the regulator means when open,

means connecting said choke means with said tubing, and

check valve means in the gas outlet preventing back flow of production gas into the annulus.

4,437,515

POSITIONING OF WELL PIPE JACK IN A RIG

George I. Boyadjieff, Anaheim, and Andrew B. Campbell, San Marino, both of Calif., assignors to Varco International, Inc., Orange, Calif.

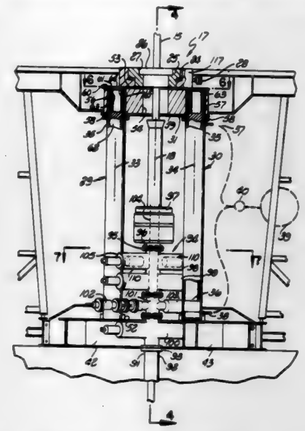
Filed Dec. 21, 1981, Ser. No. 333,111
Int. Cl.³ E21B 7/20
U.S. Cl. 166—77 15 Claims

10. In a rig for drilling a well along a predetermined axis, the combination comprising:

a rig floor;

a tubular mousehole extending downwardly beneath the level of the rig floor and generally parallel to said axis at a location offset in a predetermined horizontal direction therefrom and adapted to receive and hold a section of pipe which is to be added to or has been removed from a drill string;

jacking mechanism for moving a well casing along said axis and including first and second pipe supporting units at least one of which is accessible above the rig floor and a plurality of structures extending downwardly beneath the level of said rig floor at different sides of said axis, said structures including power operated piston and cylinder mechanisms for moving one of said pipe supporting units upwardly and downwardly relative to the other in a relation jacking a well casing downwardly along said axis; and at least one blowout preventer beneath said rig floor operable to close off unwanted upward flow of well fluid from



the well and having a portion which projects laterally outwardly away from said axis at a location circularly between said mousehole and one of said structures of the jacking mechanism.

4,437,516

COMBINATION RELEASE MECHANISM FOR DOWNHOLE WELL APPARATUS

Darryl W. Cockrell, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Jun. 3, 1981, Ser. No. 270,085
Int. Cl.³ E21B 33/12, 23/00
U.S. Cl. 166—120 18 Claims

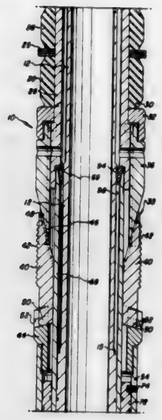
1. Apparatus for insertion in a well conduit to form a seal between said conduit and a member disposed in said conduit, said apparatus comprising:

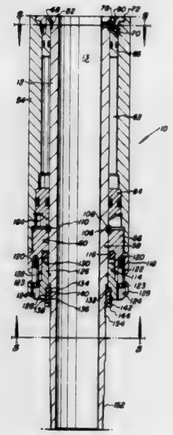
an elongated tubular mandrel, and first and second spaced apart seal urging means disposed therearound;

resilient seal means disposed around said mandrel between said seal urging means;

at least one of said seal urging means being axially movable with respect to said mandrel and said other seal uring means to force said seal means radially outwardly into forcible engagement with said conduit; and

means interconnecting said mandrel with said seal urging means, said interconnecting means including release means responsive to selective application of an axial force on said mandrel or rotation of said mandrel to effect relative movement of said mandrel to release said seal means from forcible engagement with said conduit, said release means being movable relative to said mandrel and said seal





urging means to adjust the amount of axial force or rotation for effecting release of said seal means.

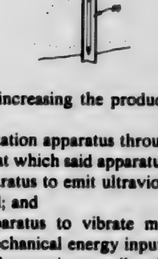
4,437,517

SLIP MECHANISM FOR SUBTERREANEAN WELLS

David C. Bianchi, Conroe, and Talmadge L. Crowe, Houston, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Oct. 2, 1981, Ser. No. 307,972
Int. Cl.³ E21B 33/128; E21B 33/129
U.S. Cl. 166—120 17 Claims

3. A tool operatively connected to an inner conduit received within an outer conduit in a subterranean well having means for anchoring said tool to said outer conduit to prevent axial movement in both directions, said tool comprising: a set of peripherally spaced, radially expandable first slip elements for engaging the outer conduit to prevent movement in a first direction and a set of peripherally spaced, radially expandable second slip elements for engaging the outer conduit to prevent movement in a second opposite direction; first and second housing elements movable relatively towards each other; means for urging said first and second slip members radially outward into engagement with said outer conduit upon movement of said first and second housing elements relatively towards each other; a member in abutting relationship with said first housing element to urge said first housing element in a first direction toward said second housing element; means for preventing axial movement of said member relative to said second housing element in a second opposite direction; and means for attaching said first slip elements to said second



housing element so that said first slip elements upon engagement with the outer conduit prevent said second housing element from moving in said first direction with said member when said member moves in said first direction whereby said second slip elements will not be dislodged from engagement with said outer conduit.

4,437,518

APPARATUS AND METHOD FOR IMPROVING THE PRODUCTIVITY OF AN OIL WELL

Albert V. Williams, Los Angeles, Calif., assignor to Norman Gottlieb and Aileen Williams, both of Long Beach, Calif.

Filed Dec. 19, 1980, Ser. No. 218,294
Int. Cl.³ E21B 43/24, 43/25
U.S. Cl. 166—248 14 Claims



1. A method of increasing the productivity of an oil well comprising:

lowering an excitation apparatus through the casing of said well to a level at which said apparatus is submerged in oil;

causing said apparatus to emit ultraviolet radiation into the surrounding oil; and

causing said apparatus to vibrate mechanically, thereby providing a mechanical energy input to said oil.

9. An apparatus for treating an oil well to increase its productivity comprising:

resonator means for producing mechanical vibrations in response to one or more input signals of selected frequen-

cies and thereby providing a mechanical energy input to surrounding oil; and

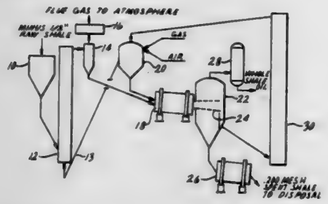
radiation means including a gas discharge tub for emitting radiation into the surrounding oil.

4,437,519

REDUCTION OF SHALE OIL POUR POINT

Chang Y. Cha, and Harry E. McCarthy, both of Golden, Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 3, 1981, Ser. No. 269,987
Int. Cl.³ E21B *43/247, 43/34*; C10G *1/02*
U.S. Cl. 166—259 **14 Claims**



2. A method for lowering the pour point of shale oil produced from a Tosco II retorting process, the method comprising:

blending with such a Tosco II process-produced shale oil a crude shale oil recovered from in situ retorting of oil shale in a subterranean in situ oil shale retort containing a fragmented permeable mass of particles containing oil shale by advancing a combustion zone through the fragmented mass by introducing an oxygen-supplying gas to the fragmented mass on the trailing side of the combustion zone and withdrawing an off gas from the fragmented mass on the advancing side of the combustion zone, whereby gas flowing through the combustion zone tranfers heat of combustion to a retorting zone in the fragmented mass on the advancing side of the combustion zone and wherein kerogen in oil shale in the retorting zone is decomposed to produce gaseous and liquid products including crude shale oil, the ratio of the Tosco II process-produced shale oil to the in situ process-produced shale oil being no greater than 1:1.

4. A blended shale oil composition comprising in admixture a crude shale oil recovered from an in situ oil shale retort and a crude shale oil recovered from a Tosco II retorting process wherein the crude shale oil recovered from an in situ oil shale retort is present in an amount sufficient for forming a blended shale oil composition having a pour point less than the pour point of the crude shale oil recovered from the in situ oil shale retort.

4,437,520

METHOD FOR MINIMIZING SUBSIDENCE EFFECTS DURING PRODUCTION OF COAL IN SITU

Xerxes T. Stoddard, Denver; Vesper A. Vaseen, Wheat Ridge, and Ruel C. Terry, Denver, all of Colo., assignors to In Situ Technology, Inc., Golden, Colo.

Filed Jun. 15, 1981, Ser. No. 273,378
Int. Cl.³ E21B *33/138, 43/247*
U.S. Cl. 166—261 **4 Claims**

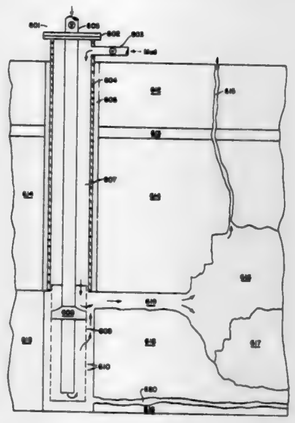
1. In production of coal in situ wherein at least a pair of wells has been drilled from the surface of the earth into an underground coal seam and a first linkage channel has been established through the coal thus connecting the wells; and wherein the coal has been set afire with combustion sustained by injecting an oxidizer into a first well of the pair and removing the products of reactions through the second well of the pair; wherein as combustion proceeds and the georeactor grows in lateral extent resulting in roof fall and subsidence; and wherein during the course of production the burn preferentially moved to a second linkage channel at the top of the coal seam:

a method of sealing the georeactor comprising the steps of establishing a mud injection pipe at the surface of the earth into the casing of the first well,

affixing a mud deflector to a string of tubing,

affixing a mud screen to the mud deflector, the mud screen being of lesser diameter than the casing,

lowering the tubing into the first well wherein the mud deflector is positioned adjacent to the second linkage



channel and the mud screen is positioned from a point adjacent to the bottom of the tubing and extending upward to a position overlapping with the casing,

injecting sealant mud into the mud injection pipe,

injecting gas into the tubing, the gas being under a pressure less than that of the column of mud in the annulus between the tubing and the casing,

continuing injection of gas with the resultant gas drive forcing the mud into the second linkage channel and into the connected void space created by subsidence.

4,437,521

SUBSEA WELLHEAD CONNECTION ASSEMBLY AND METHODS OF INSTALLATION

Emmett M. Richardson, Duncanville; Angelos T. Chatas, Dallas, and Joseph R. Padilla, Houston, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,901
Int. Cl.³ E21B *43/01*
U.S. Cl. 166—341 **17 Claims**

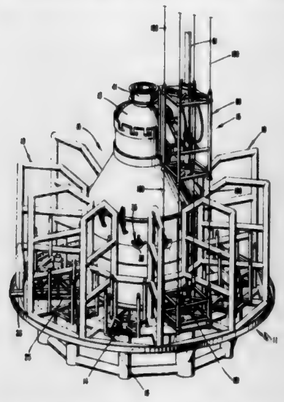
1. A subsea wellhead connection assembly for establishing fluid communication and production capability between a manifold system situated within a subsea work enclosure and an adjacent subsea wellhead located in a generally wedge-shaped well bay, comprising:

conduit means for fluidly connecting the wellhead and the manifold system, the conduit means having one end extending substantially horizontally and the other end extending downwardly;

wellhead connector means fluidly connected to the downwardly directed end of the conduit means for releasably connecting the conduit means to the wellhead upon downward movement of the assembly to establish fluid communication therebetween;

manifold system connector means fluidly connected to the horizontal end of the conduit means for releasably connecting the conduit means to the manifold system upon lateral movement of the manifold system connector means to establish fluid communication therebetween; and

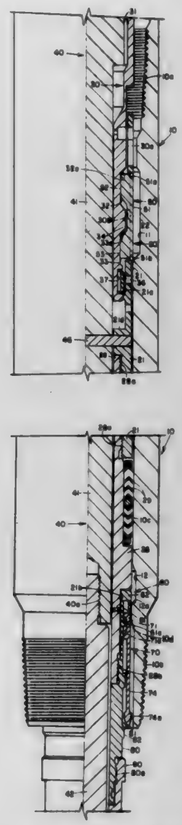
a guide frame rigidly secured to the wellhead connector means for supporting the manifold system connector means and the conduit means, and for vertically orienting the wellhead connector means over the wellhead and horizontally aligning the manifold system connector means with the manifold system, wherein the wedge-shaped well bay is defined by rigid vertical dividers supported on the marine floor, the vertical dividers extending along radially aligned planes so as to define opposite sides



of a radially inwardly tapered well bay, and wherein the wedge-shaped sides of the guide frame are tapered similarly to the tapered well bay sides and said sides of the guide frame are sufficiently spaced apart and extend for a sufficient length and height to provide alignment of the guide frame as it is moved laterally during installation for orientation of the wellhead connection assembly over the wellhead.

---

camming means for outwardly urging said radially expandable locking dogs, said camming means being shiftable in said first



direction relative to said annular housing upon engagement of said collapsible means with said nipple.

4,437,522

SELECTIVE LOCK FOR ANCHORING WELL TOOLS

William F. Krause, Jr., Spring, and Mark E. Hopmann, Houston, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Feb. 8, 1982, Ser. No. 346,674
Int. Cl.³ E21B *23/02*
U.S. Cl. 166—382 **22 Claims**

1. A lock for securing a well tool in a selected one of a plurality of identical landing nipples in a well conduit, said lock comprising: an annular housing having means thereon for supporting said well tool; a plurality of radially expandable locking dogs for engaging said nipple to secure said well tool thereto when subjected to axial loads in either direction; an outwardly urged inwardly collapsible means engagable with said nipple upon outward expansion to prevent movement of said annular housing in a first axial direction relative to said nipple; an axially shiftable member movable in said first axial direction relative to said annular housing from a position initially in compressive engagement to hold said collapsible means in an inwardly retracted position and having means for engaging said nipple during movement of said lock in a second opposite axial direction to release said collapsible means; and

---

4,437,523

LAWN EDGING DEVICE

Joe A. Isbell, 837 Argus, Milan, Tenn. 38358

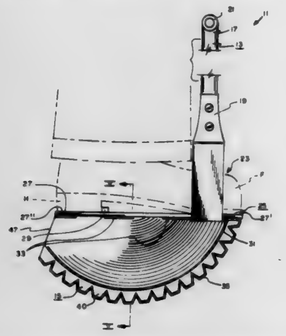
Filed Mar. 30, 1982, Ser. No. 363,653
Int. Cl.³ A01B *1/24*
U.S. Cl. 172—13 **1 Claim**

1. A device for edging lawns around concrete walkways, said device comprising:

(a) An elongated handle member having a first end and a second end, said first end including a grip portion for allowing the operator of said device to securely grip said handle member, said second end having an aperture therethrough for allowing the operator of said device to extend his foot therethrough;

(b) an anvil means attached to said second end of said handle member for receiving the foot of the operator of said device, said anvil means including a generally flat upper surface having a forward end and a rearward end and shaped so as to receive the entire bottom of the foot of the operator of said device, said upper surface of said anvil means having a longitudinal axis, said anvil means having a raised, transverse member attached to said upper surface substantially adjacent the rearward end thereof for engaging the heel of the foot of the operator of said device; and

(c) a blade member having an upper edge for being attached to said anvil means substantially in line with said longitudinal axis of said upper surface of said anvil means and having a curved lower edge for being forced downward and rotated forward through the lawn adjacent the concrete walkway, said blade member having a first side for being directed toward the concrete walkway as said lower edge is forced downward and rotated forward through the lawn and having a second side for being directed against the lawn as said lower edge is forced downward



and rotated forward through the lawn, said blade member including a cutting edge on said first side adjacent said lower edge for cutting through the lawn as said blade member is forced downward and rotated forward through the lawn, said first side of said blade member being concaved and said second side of said blade member being convexed for causing said cutting edge of said blade member to be urged against the concrete walkway as said blade member is forced downward and rotated forward through the lawn, thus causing a slicing scirrors action, said lower edge of said blade member being serrated.

4,437,524

WELL DRILLING APPARATUS

George I. Boyadjieff, Anaheim, and Joseph A. R. Picard, Fountain Valley, both of Calif., assignors to Varco International, Inc., Orange, Calif.

Continuation of Ser. No. 167,758, Jul. 14, 1980, abandoned. This application Feb. 18, 1982, Ser. No. 350,081

Int. Cl.³ E21C *11/00*

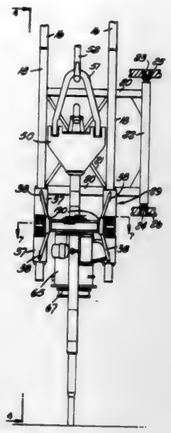
U.S. Cl. 173—43 22 Claims

9. Well drilling apparatus comprising:

a drilling unit including an element adapted to be connected to the end of a drill string for rotation therewith about the axis of the string, and a motor operable to drive said element and the connected string rotatively about said axis; and

means movably mounting said drilling unit and including an elongated guide structure which extends essentially parallel to said axis and which in a predetermined drilling position of the unit guides it for movement along said axis relative to said guide structure;

said mounting means including a connection mounting a first portion of said elongated guide structure, carrying said drilling unit, for movement with the drilling unit relative to a second portion of the guide structure in a relation shifting said drilling unit between said drilling position



and a laterally offset position in which said drilling unit is shifted to a side of said axis.

4,437,525

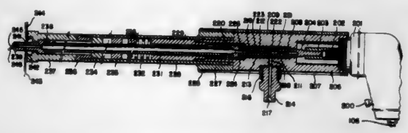
HAND HELD WATER DRILLING APPARATUS

Tom A. O'Hanlon, Tacoma; Peter L. Madonna, Redmond, and Gearld F. Wallace, Federal Way, all of Wash., assignors to Flow Industries, Inc., Kent, Wash.

Filed Jul. 6, 1981, Ser. No. 280,797

Int. Cl.³ E21B *7/18*

U.S. Cl. 175—218 9 Claims



1. A drill for drilling hard materials comprising:

an inlet connectable to a source of high pressure fluid; and,

a high pressure swivel connected to said inlet for allowing rotation relative to said inlet; and,

a nozzle for forming high pressure cutting jets when supplied with high pressure fluid; and,

a supply tube connecting said high pressure swivel and said nozzle for supplying said nozzle with high pressure fluid; and,

motor means for rotating said nozzle; and

flushing means for removing chips from any hole bored by said drill; and,

means connecting said flushing means to the outside of said supply tube.

4,437,526

MILLING TOOL FOR FORMING RECESSES IN MASONRY, CONCRETE AND SIMILAR MATERIAL STRUCTURES

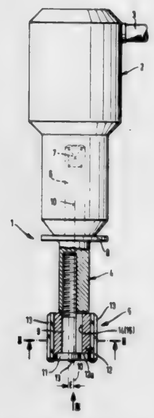
Peter Gloor, Zollikerberg, Switzerland, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Dec. 3, 1981, Ser. No. 327,045

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046190

Int. Cl.³ E21B *9/24*

U.S. Cl. 175—346 8 Claims



1. Milling tool for forming a recess, such as an undercut in a borehole, in structures made of masonry, concrete and similar materials, comprising an axially elongated tool shaft, a milling head mounted on said tool shaft, said milling head having cutting edge members located on the outside surface thereof, wherein the improvement comprises an axially elongated bearing pin extending axially outwardly from said tool shaft with the axis thereof disposed parallel to and offset laterally from the axis of said tool shaft, said milling head is mounted on an extends around said bearing pin outwardly from said tool shaft and said milling head is freely rotatable about said bearing pin, said milling head has a bore formed therein into which said bearing pin fits, the diameter of the bore in said milling head being greater than the outside diameter of said bearing pin, and the point on said bearing pin spaced most remote from the axis of said tool shaft defining, during rotation of said tool shaft, an envelope curve which projects beyond the cross-section of the bore within said milling head at least at one location, the dimension of the eccentricity of the axis of said bearing pin relative to the axis of said tool shaft is in the range of 5 to 25% of the working diameter of said milling head defined by the outside diameter of the cutting edge members on said milling head.

4,437,527

COMBINATION WEIGHING MACHINE

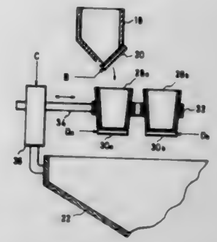
Michinobu Omae, Akashi, and Takashi Hirano, Kobe, both of Japan, assignors to Yamato Scale Company, Ltd., Hyogo, Japan

Filed Jul. 19, 1982, Ser. No. 399,326

Int. Cl.³ G01G *19/32*

U.S. Cl. 177—25 3 Claims

1. A combination weighing machine comprising a plurality of weighing units each weighing a plurality of articles and producing weight signals indicative of the weights thereof respectively, a common collecting chute, and a combination selecting circuit for receiving said weight signals, summing them in accordance with predetermined mathematical combinations and electing a specific combination providing a sum which satisfies a predetermined condition, each of said weighing units including a single weighing cradle, at least two holding hoppers, memories corresponding to said holding hoppers respectively, means for distributing the content of said cradle to each of said hoppers, and means for writing the weight signal corresponding to the content of said cradle into each of said memories before said content is distributed to said hopper, said combination selecting circuit including a circuit for producing a set of output signals which specify said memories which have provided those weight signals constituting said combination satisfying said predetermined conditions, and said machine further including first gating means for responding to said output signals to discharge the contents of said holding hoppers corresponding to said specified memories into said collecting chute.



4,437,528

VEHICLE WITH VARIABLE UNDERCARRIAGE GEOMETRY

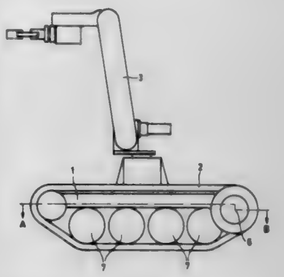
Wolfgang Koehler, Karlsruhe; Hans-Joachim Blocher, Metzingen, and Eberhard Weiss, Pfullingen, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 387,971

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146661

Int. Cl.³ B62D *55/00*

U.S. Cl. 180—9.5 4 Claims



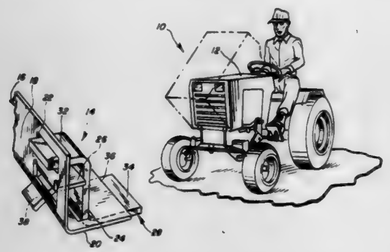
1. A vehicle with variable undercarriage geometry, comprising: a vehicle body, at least two elongated undercarriage support beams pivotally linked to said body, each having propulsion means associated therewith, a pivot motor mounted on said vehicle body and extending into said undercarriage coaxially with the pivoting axis of the associated support beam and being operatively connected to the associated support beam for pivoting said support beam, and a drive motor mounted on said support beam and having an output operatively associated with said propulsion means for operating said propulsion means to propel said vehicle, both pivot and drive motors being disposed essentially within the outline of said undercarriages.

4,437,529

DETACHABLE HINGE ASSEMBLY

Mark R. Fralish, Berlin, Wis., assignor to Ingersoll Equipment Co., Inc., Winneconne, Wis.

Filed May 3, 1982, Ser. No. 373,870
Int. Cl.³ B62D *25/10*
U.S. Cl. 180—69 C **8 Claims**



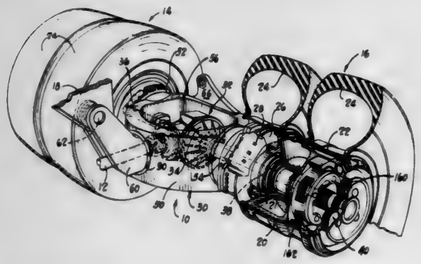
5. A detachable hinge assembly for mounting a hood relative to the frame of a tractor comprising a first, generally L-shaped member secured to the hood, a second, generally Z-shaped member secured to the frame of the tractor, said L-shaped member defining an opening in its vertical leg portion and a second opening in its horizontally extending leg portion, said Z-shaped member comprising a first leg extending into the opening of said upwardly extending leg portion of the first member and a second leg disposed through the opening in said second leg portion of the first member, the openings in said L-shaped member and the corresponding leg portions in said Z-shaped member being defined so that the movement of the hood is restricted in the upper and sidewise directions relative to the frame member of the tractor.

4,437,530

VEHICLE AXLE ASSEMBLY

Simon A. De Young, Lyndhurst, and Charles C. Gray, Chardon, both of Ohio, assignors to Euclid, Inc., Cleveland, Ohio

PCT No. PCT/US81/00094, § 371 Date Jul. 16, 1982, § 102(e) Date Jul. 16, 1982
PCT Filed Jan. 26, 1981, Ser. No. 417,764
Int. Cl.³ B60B *35/16*; F16H *35/00*
U.S. Cl. 180—75 **17 Claims**



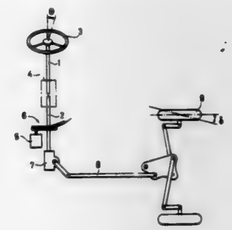
8. A driving axle assembly comprising:
(a) a differential mechanism;
(b) first and second axle shafts driven from said differential mechanism and projecting therefrom;
(c) first and second spindle assemblies surrounding and supporting respective projecting portions of said first and second axle shafts;
(d) a housing frame disposed between and fixed to said spindle assemblies, said housing frame defining a differential mechanism receiving opening within which said differential mechanism is disposed, said opening oriented in a direction transverse to the directions of extent of said axle shafts and support structure for supporting said differential mechanism on said housing frame; and,
(e) connecting means for detachably securing said differential mechanism to said housing frame.

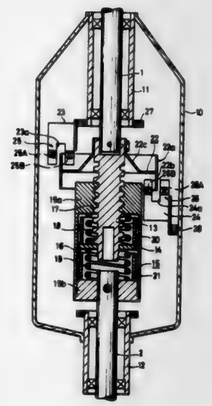
4,437,531

ELECTRICAL POWER STEERING SYSTEM

Sumio Urabe, Shiga, Japan, assignor to Toyo Umpanki Co., Ltd., Osaka, Japan

Filed Mar. 29, 1982, Ser. No. 362,793
Claims priority, application Japan, Sep. 25, 1981, 56-152407
Int. Cl.³ B62D *5/04*
U.S. Cl. 180—79.1 **11 Claims**





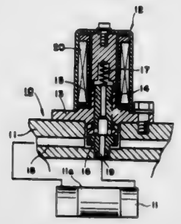
1. An electrical power steering system comprising:
a steering wheel;
a first shaft having an axis and coupled to said steering wheel for rotation therewith;
a second shaft axially aligned with said first shaft;
coupling means for coupling said first and second shafts for at least limited relative rotation from a neutral position with respect to one another;
linearly movable means for moving linearly in response to relative rotation of said first and second shafts from said neutral position;
detection means for detecting the amount of linear movement of said linearly movable means and providing a detection signal proportional to the amount of said linear movement; and
servo means responsive to said detection signal for rotating said second shaft until said neutral position is obtained.

4,437,532

STEERING FORCE CONTROLLER FOR A POWER STEERING DEVICE

Keiichi Nakamura, Kariya; Kyosuke Haga, Anjo, and Yutaka Mori, Toyokawa, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 29, 1982, Ser. No. 393,350
Claims priority, application Japan, Jul. 13, 1981, 56-109644
Int. Cl.³ B62D *5/06*
U.S. Cl. 180—142 **8 Claims**



1. A steering force controller for a power steering device having a fluid control system, comprising:
a linear solenoid valve provided in said fluid control system of said power steering device for controlling an output torque relative to an input torque;
an input torque sensor for detecting a value of said input torque applied to said power steering device;
an output torque sensor for detecting a value of said output torque generated by said power steering device;
auxiliary input sensing means for detecting a value of at least one auxiliary control input;
control circuit means connected to said input torque sensor, said output torque sensor and said auxiliary input sensing means for obtaining an objective output torque value based upon said input torque value and said at least one auxiliary control input value and further, for calculating a control output value based upon said objective output torque value and said detected output torque value; and
solenoid drive means connected to said control circuit means and said linear solenoid valve for controlling said linear solenoid valve in response to said control output value applied from said circuit means, whereby said output torque generated by said power steering device is controlled to follow said objective output torque value.

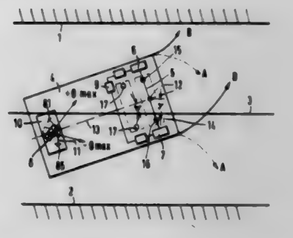
4,437,533

SYSTEM FOR MONITORING THE COURSE AND FOR CONTROLLING THE BRAKING OF A FREELY MOVABLE VEHICLE, PARTICULARLY AN INDUCTIVELY STEERED VEHICLE, AND VEHICLE WITH SUCH A SYSTEM

Hartwig Bierkarre, Hamburg; Gottfried Klinger, Bad Bramstedt; Jürgen Radeloff, Norderstedt, and Bernd-Hendrik Rust, Kayhude, all of Fed. Rep. of Germany, assignors to Firma Jungheinrich Unternehmensverwaltung KG, Hamburg, Fed. Rep. of Germany

Filed Jan. 12, 1982, Ser. No. 338,904
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110499
Int. Cl.³ B62D *1/24*
U.S. Cl. 180—168 **22 Claims**

1. In a circuit arrangement for initiating an emergency braking operation of a vehicle traveling along a guideline which extends at the center of a path defined by obstacles on at least one side, which vehicle comprises a steerable driven wheel, means defining a maximum steering angle for said driven wheel, travel drive means for driving said driven wheel, braking means arranged to effect an emergency braking of said vehicle within a predetermined maximum emergency stopping distance in response to the delivery of an emergency braking signal to said braking means, and a sensor which has first and second sensor output terminals and is operable to deliver at said first sensor output terminal an angular misalignment signal representing the angle between the longitudinal axis of the vehicle and said guideline and to deliver at said second sensor output terminal an actual departure signal representing the actual lateral departure of a predetermined point of the longitudinal center line of the vehicle from said guideline,
the improvement residing in that said circuit arrangement comprises
a processor having a first input terminal adapted to be connected to said first sensor output terminal, a second input terminal adapted to be connected to said second sensor output terminal, a third input terminal, and a constant-defining circuit defining a constant which depends on the contour of said vehicle in plan view and on said maximum emergency stopping distance,



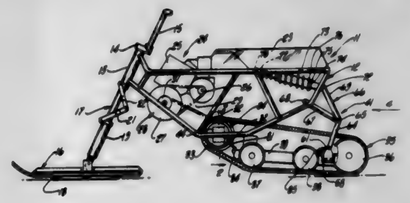
a maximum departure signal generator connected to said third input terminal and operable to deliver to said third input terminal a maximum departure signal representing a maximum lateral departure of a predetermined point on said longitudinal center line from said guideline in dependence on said maximum steering angle and the width of said path of travel
said processor being operable to compute a maximum permissible lateral departure of said predetermined point of said longitudinal center line from said guideline in dependence on said actual lateral departure signal, said maximum departure signal, said angular misalignment signal, and said constant, and to deliver to said braking means said emergency signal when said maximum permissible lateral departure exceeds said actual lateral departure by less than a predetermined value.

4,437,534

SNOW VEHICLE

James E. Grinde, Anoka, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 8, 1982, Ser. No. 346,946
Int. Cl.³ B62M *27/02*
U.S. Cl. 180—190 **36 Claims**



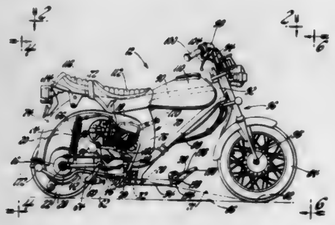
1. A small, lightweight vehicle having frame means, a front ski supported for steering movement by said frame means, an endless driving belt, power means, carried by said frame means for driving said driving belt, said driving belt having a drive

portion thereof positioned for engaging the terrain over which said vehicle is operated for driving said vehicle therealong, the improvement comprising suspension means for supporting said drive belt and said frame means for relative pivotal movement about an axis that extends generally longitudinally of said frame means so that an operator may lean said frame means relative to said driving belt without changing the area of engagement between said driving belt and the terrain, said axis being defined by a pair of spaced pivot points that lie within the area encompassed by said drive belt.

4,437,535
THREE-TRACK MOTORCYCLE WITH CAMBERING MAIN FRAME

Frank J. Winchell, Orange Lake, and Klaus O. Winkelmann, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 182,751, Aug. 29, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 402,220
Int. Cl.³ B62D *61/08*
U.S. Cl. 180—215 **7 Claims**



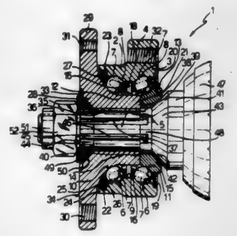
1. A three-wheel cambering vehicle comprising a front steering fork assembly rotatable about an inclined steering axis, a steerable front road wheel mounted on the lower extremity of said fork assembly for rotation about an axis transverse to said steering axis, manual steering means fixed to an upper portion of said fork assembly, a cambering main frame having a forward support mounting said steering fork assembly for pivotal movement about said steering axis, a rear carriage, forward and rearward pivots pivotally supporting said cambering main frame for left and right cambering movement with respect to said rear carriage about a centralized roll axis, a pair of laterally spaced road wheels operatively supporting said rear carriage, vehicle engine means for driving said rear wheels and rigidly secured to and extending forwardly from said rear carriage to form a forward portion thereof, said forward pivot supported by and extending forwardly of said engine means, said cambering frame having a forward portion pivotally mounted on said forward pivot, said cambering frame extending upwardly and rearwardly from said forward pivot over said engine and rear carriage into connection with said rearward pivot, a seat on said cambering main frame for supporting a vehicle operator and laterally spaced footrest means secured to said rear carriage for receiving the feet of said operator when seated on said seat to permit said operator to directly use said engine means and rear carriage as a ground and instinctively balance said main frame when cambered.

4,437,536
SUPPORT ASSEMBLY FOR VEHICLE WHEELS

Franco Colanzi, and Vittorio Donn, both of Turin, Italy, assignors to RIV-SKF Officine, Turin, Italy

Filed Apr. 29, 1982, Ser. No. 372,962
Claims priority, application Italy, May 18, 1981, 67655 A/81
Int. Cl.³ B60B *37/00*; B60K *17/22*
U.S. Cl. 180—254 **15 Claims**

1. A support assembly (1) for a wheel of a vehicle, particularly for a driving wheel of a road vehicle, comprising at least one inner ring (5) provided with a flange (29) for fixing to the said wheel, an outer ring (2) provided with a fixing flange (4) for fixing to a wheel suspension strut, and a pair of rings (6) of rolling elements (7) interposed between said rings (2,5) and able to roll on tracks (8,10,11) on said rings (2,5), said inner ring (5) being rigidly mounted on a shaft (38) provided with a shoulder (41) for axially fixing said inner ring (5), wherein said inner ring (5) has at its opposite ends a first (42) and a second (35) conical surface respectively, these surfaces being coaxial and directed in opposite directions, said first conical surface (42) being engageable with a complementary third conical surface (43) formed on said shoulder (41) coaxially with re-



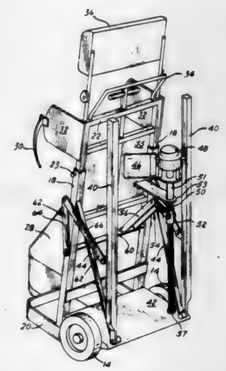
spect to a cylindrical surface (44) coaxial to said shaft (38) including at one end (45) of the said shaft (38), a centering ring (49) mounted coaxially with respect to said cylindrical surface (44) and being provided with a complementary fourth conical surface (50) engageable with said second conical surface (35), axial thrust means (51) for pressing against and holding said centering ring (49) in position on said shaft (38).

5. A support assembly (1) according to claim 1, wherein said shaft (38) is integrally formed with a ball joint (47) operable to transmit a couple from a half-shaft of said vehicle to said shaft (38).

4,437,537
VEHICLE FOR SUPPORTING HANDICAPPED OCCUPANTS

Donald L. Ausmus, 14131 E. 39th Ter., Independence, Mo. 64055

Filed Jan. 25, 1982, Ser. No. 342,353
Int. Cl.³ B62D *61/06*; A61G *5/04*
U.S. Cl. 180—313 **16 Claims**



1. An occupant operated motor driven vehicle for supporting a handicapped occupant, such as, a paraplegic, comprising in combination:

(a) a vehicle comprising a frame supported on at least one front wheel and at least one rear wheel and including

structure for supporting a handicapped occupant in said vehicle;

(b) at least one support foot rotatably attached to said vehicle adapted to swing forwardly of said vehicle and contact the vehicle support surface for supporting said vehicle in a forward tilt when said foot is locked in stationary position;

(c) support foot positioning means connected between said foot and said frame operative to position said foot at various angles to said vehicle;

(d) occupant operated driving means for operating said support foot positioning means to position said foot at various angles to said vehicle, and

(e) means for locking said foot in a desired angular position to support said vehicle and occupant in a forward angular position.

4,437,538
EAR-CAP

Ingemar Ohlsson, Katarinavägen 18, Stockholm, Sweden S-116 45, and Sten J. L. Wolf, Dånviksvägen 1, Rönninge, Sweden S-144 00

Filed Mar. 30, 1982, Ser. No. 363,460
Int. Cl.³ A61F *11/02*; H04R *25/00*
U.S. Cl. 181—129 **9 Claims**



1. Ear protecting means for protecting the auditory canal of the ear from sound vibrations within a predetermined frequency range comprising:

an earcap including sound absorbing means for absorbing sound of said predetermined frequency and sound transmitting means for transmitting ambiant sount vibrations to said auditory canal and to said sound absorbing means,

a housing for said earcap having a recessed portion therewithin,

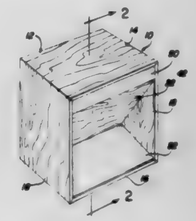
said sound absorbing means comprising a sound-damping cavity within said earcap for damping sound of said predetermined frequency, said cavity being defined by the recessed portion of said housing and a perforated disc element having perforations adapted for admitting sound of said predetermined frequency to said cavity for damping therewithin; and

said sound transmitting means comprising an ear cushion of sound-transmitting material having an inner surface adapted to bear on the outer auditory canal of the ear and an outer surface disposed against the perforated portion of said perforated disc element so that sound vibrations entering the auditory canal must first pass through said cushion of sound transmitting material and so that sound vibrations of said predetermined frequency passing through said cushion also pass through said perforated disc element into said cavity for damping therewithin.

4,437,539
SPEAKER ENCLOSURE

Lawrence M. Festa, 238 Cajon St., Laguna Beach, Calif. 92651

Filed Sep. 30, 1982, Ser. No. 429,540
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—145 **7 Claims**



1. A speaker enclosure adapted for use with a speaker system including a bass speaker, a mid-range speaker, and a tweeter, said speaker enclosure comprising:

a housing having oppositely disposed side walls, top and bottom walls, a rear wall, and a front wall;

said front wall being formed having a plurality of sections, including at least an upper section and a lower section, which are angularly disposed relative to each other;

a bass-reflex port formed in said lower section;

a mid-range port formed in said upper section;

an intermediate partition positioned within said housing;

said intermediate partition defining a rear bass-reflex chamber in which said bass speaker is mounted, whereby low bass-frequency tones from said bass speaker are transmitted through said bass-reflex port which communicates with said bass-reflex chamber; and

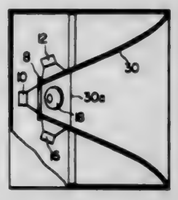
a forward mid-range chamber, said mid-range speaker being mounted to said intermediate partition, whereby mid-range-frequency tones are transmitted into said mid-range chamber and through said communicating mid-range port;

said tweeter being mounted to said front wall so as to emit high-frequency tones outwardly from said enclosure.

4,437,540
LOUD-SPEAKER

Naoyuki Murakami, and Hiroshi Zyo, both of Tokyo, Japan, assignors to Naoyuki Murakami, Tokyo, Japan

Division of Ser. No. 192,187, Sep. 30, 1980, Pat. No. 4,391,346. This application Mar. 7, 1983, Ser. No. 472,958
Claims priority, application Japan, Oct. 4, 1979, 54-127325; Aug. 30, 1980, 55-120187
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—147 **2 Claims**



1. A loudspeaker, comprising:

(a) a casing for accommodating therein speaker units, said casing being enclosed, except for an open front part, by four side walls and a back wall;

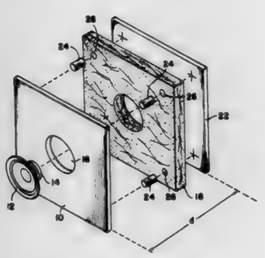
(b) a sounding horn provided in the open front part of said casing, said sounding horn having a throat opening lying

in a plane substantially parallel to said back side wall and being symmetrical about a line perpendicular to said back side wall;

(c) a plurality of speaker fitting panels mounted around and behind said throat at an angle to the plane of said throat diverging in the direction of said throat, the forward edges of said fitting panels defining a plane coincident with the plane of the throat opening, and a back fitting panel mounted on said speaker fitting panels, parallel to said back side wall, behind said throat; and

(d) a plurality of speaker units intensively mounted on said speaker fitting panels around and behind said throat opening, and a back speaker unit mounted on the said back fitting panel, the total area of the entire diaphragms of said speaker units being substantially equal to, or larger than, the area of said throat opening, the sound wave radiating direction of said speaker units mounted on said speaker fitting panels' being concentrated on a single imaginary point behind the plane of said throat opening, hence within the ambit of the space defined by said speaker fitting panels and on the said line perpendicular to the back about which the said throat opening is symmetrical, and the sound wave radiation direction of said back speaker unit being along said line.

4,437,541
CONTROLLED DISPERSION SPEAKER CONFIGURATION
Skip D. L. Cross, P.O. Box 2410, Alexandria, Va.
Filed Apr. 29, 1982, Ser. No. 373,101
Int. Cl.³ H05K 5/00
U.S. Cl. 181—151 **6 Claims**



1. A speaker comprising:
an enclosure formed by first and second parallel, spaced-apart, planar baffles, said enclosure being acoustically open on at least two sides;
first speaker means mounted to said first baffle;
acoustically absorptive material secured between said first and second baffles; and
the spacing between said first and second spaced-apart baffles is less than one-fourth of the wavelength of the highest frequency to be reproduced by said speaker system.

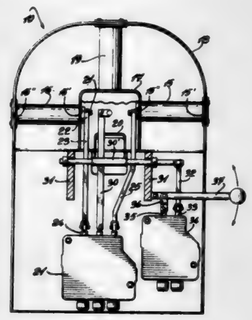
4,437,542
ACOUSTICAL WALL PANEL AND MOUNTING SYSTEM
Raymond W. Yeager, Pataskala, and Mark R. Weitzman, Toledo, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Aug. 23, 1982, Ser. No. 410,797
Int. Cl.³ E04B 1/82
U.S. Cl. 181—290 **19 Claims**

1. An acoustical treatment for a wall comprising an elongated generally H-shaped spline mounted on the wall in parallel relationship thereto and a pair of elongated generally rectangular sound absorbent panels mounted on the wall in cooperative engagement with said spline respectively on opposite sides thereof and in abutting relationship with each other at front longitudinal edge portions thereof, the longitudinal edge portions of said panels being provided with kerfs for respectively receiving portions of said spline, each of said panels having a fabric adhered to a front face thereof and cut flush with the longitudinal edge portions thereof but nevertheless concealing the joint between the abutting front longitudinal



edge portions, the fabric being formed of non-woven staple fibers needle-punched in a first needle-punching operation, the fabric having linear ribs formed in another needle-punching operation, and the ribs extending longitudinally of the mounted panels.

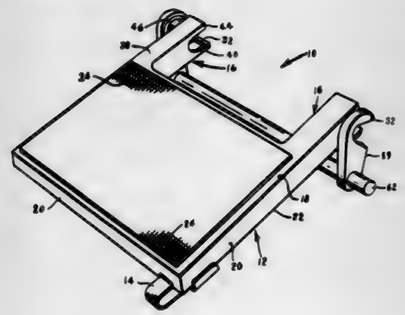
4,437,543
CONTROL SYSTEM FOR CAGE SUPPORTED BY ARTICULATED BOOM
Paul Fortin, Loretteville; Paul Michaud, Ancienne-Lorette, and Martin Pernicka, Loretteville, all of Canada, assignors to Poudrier Frere Ltee, Quebec, Canada
Filed Aug. 10, 1981, Ser. No. 291,516
Int. Cl.³ B66F 11/04
U.S. Cl. 182—2 **9 Claims**



1. A control system for a personnel carrier attached to a boom which is displaceable by pressure fluid, said control system comprising three hand operable control handles axially rotatable in a limited clockwise or counter-clockwise direction to cause said boom to be elevated or lowered respectively, a control valve associated with each of said control valve associated with each of said control handles and having at least one adjustable pressure fluid control component therein to control the displacement of said boom, a movable linkage secured at one end to each of said control handles and at an opposed end to said fluid control component whereby rotation of said control handles causes displacement of said control component to regulate said pressure fluid which in turn controls the displacement of said boom, said boom being a two-section articulated boom, two of said handles being horizontally mounted for an operator's right and left hand, each of said two handles controlling the displacement of a respective one of said boom sections, and a third of said control handles being vertically

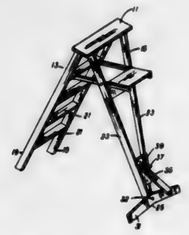
mounted and controlling the rotational displacement of a turret base onto which said boom is secured whereby to displace said boom along an arc of a circle.

4,437,544
SERVICE PLATFORM FOR A LADDER
Harold R. Anderson, Winchester, and Roland M. Hamilton, Groton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 22, 1983, Ser. No. 468,628
Int. Cl.³ E06C 7/16, 7/14
U.S. Cl. 182—120 **9 Claims**



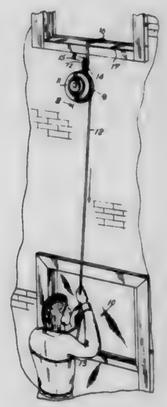
1. A service platform for a ladder comprising:
a frame upon which a user stands;
a pair of extended arms fixedly attached to said frame, said extended arms having rung slots therein for receiving a ladder rung;
a bearing attached to each of said extended arms, said bearing having a slot therein for receiving said ladder rung;
a support lever attached to each of said bearings, said support levers having a rung slot therein for receiving said ladder rung and bore means therethrough; and
a support bar attached to said support levers through said bores means.

4,437,545
STEP LADDER
Ernest Pardee, Newport, N.Y., assignor to Charles Mankouski, Middleville, N.Y.
Filed Nov. 30, 1981, Ser. No. 325,983
Int. Cl.³ E06C 7/44
U.S. Cl. 182—171 **2 Claims**



1. A step ladder for use on an uneven surface, comprising:
a top platform including a generally rectangularly-shaped member with an underside surface;
a step frame including two step side members and a plurality of cross members located between the two side members and being rigidly affixed thereto, each cross member being located substantially parallel to one another and to the top platform, both side members being pivotably connected to the underside surface of said top platform;
a support frame including two support side members joined together at one end in a V-shaped configuration with an apex at one end and two separated members at the other end, the two separated members being pivotably mounted to the underside of said top platform, said support frame further including a V-shaped block rigidly mounted between the two support side members at the apex;
a leveling bar including an elongated member with an arcuate shape, said leveling bar being pivotably mounted at its center point on the apex of the support frame with the ends of the leveling bar extending beyond the apex;
a raised platform rigidly mounted on the outside of the two support members above the V-shaped block;
an adjustment bar including an elogated bar with a slot along its centerline located toward one end of the adjustment bar said adjustment bar being pivotably mounted at its other end on the leveling bar approximately midway between the one end of said leveling bar and the center point of the leveling bar;
a bolt means rigidly mounted in said raised platform and slidably mounted in the slot of the adjustment bar; and
a nut means threadably engaging said bolt means for securing said adjustment bar in a fixed position.

4,437,546
FIRE ESCAPE DEVICE
Gerald P. Marinoff, 8 Rockford Dr., West Nyack, N.Y. 10994, and W. Dorwin Teague, Nyack, N.Y., assignors to Gerald P. Marinoff, West Nyack, N.Y.
Filed Oct. 26, 1981, Ser. No. 314,882
Int. Cl.³ A62B 1/12
U.S. Cl. 182—233 **9 Claims**



1. A fire escape device comprising a housing, a reel journalled for rotational movement within said housing, a cable fixed at one end thereof to said reel being wound upon said reel with the other end thereof extending through an opening in said housing, means carried by said housing for connecting said device to a fixed position on an elevated structure, harness means carried at the free end of said cable for supporting a human body, a sump reservoir within said housing, positive displacement fluid pump means carried by said housing for pumping fluid from said sump reservoir through an orifice, said pump means having a rotor, means coupling the rotor of said pump with said reel for retarding and impeding free rotational movement of said reel and at a controlled rate of speed in direct proportion to the amount of fluid being pumped through said orifice, said means coupling the rotor of said pump with said reel comprises a ring gear carried by said reel for rotation therewith, a shaft journalled for rotation within said housing

and coupled with the rotor of said pump for driving said rotor when said shaft is rotated in a first direction, and a planetary gear system coupled between said ring gear and said shaft for causing rotation of said shaft in said first direction when said reel is rotated in a direction for unwinding of said cable, free wheeling bearing means journalling said shaft so that when said shaft is rotated in a second direction opposite to said first direction, said rotor will not be driven, and a cover plate mounted over the exit port of said pump, said orifice being formed in said cover plate, and wherein said orifice is dimensioned so as to control the rate of flow of fluid therethrough and thereby the rate or retardation of said reel, whereby the rate of retardation of said reel is independent of the viscosity of said fluid.

4,437,547

FRICTION LINING WEAR INDICATORS FOR SHOE-DRUM BRAKES

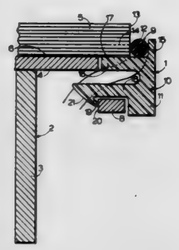
George A. Harmer, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Division of Ser. No. 116,668, Jan. 29, 1980, Pat. No. 4,344,509. This application Apr. 29, 1982, Ser. No. 373,276

Claims priority, application United Kingdom, Feb. 15, 1979, 7905321

Int. Cl.³ F16D *66/02*

U.S. Cl. 188—1.11 **12 Claims**



1. A friction lining wear indicator for a brake shoe of a shoe-drum brake, said brake shoe including a platform and a friction lining carried by said platform for engagement with a rotatable drum, said platform having axial edges and a depression formed in one of said axial edges by displacement of a portion of said one edge in a radial direction away from said friction lining, said friction lining having a first face for engagement with said platform and a second face for engagement with said drum, a portion of said first face of said friction lining in the region of said displaced portion of said edge being unmodified, said friction lining wear indicator comprising a sensor mounted on said brake shoe, an indicating means adapted to be actuated when the thickness of said friction lining is less than a predetermined value, mounting means for mounting said sensor on said shoe, said mounting means being located in said depression, and retaining means associated with said mounting means for co-operating with said shoe to retain said sensor in a position of use adjacent said lining.

4,437,548

SHOCK ABSORBER

Masahiro Ashiba, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 240,791, Mar. 5, 1981, abandoned. This application Jun. 16, 1983, Ser. No. 503,650

Claims priority, application Japan, Mar. 12, 1980, 55-32192[U]

Int. Cl.³ F16F *9/342*

U.S. Cl. 188—289 **21 Claims**

1. A shock absorber, comprising:

a hollow outer cylinder having an open and a closed end;

a hollow inner cylinder having an open and a closed end, the open end thereof being inserted into the open end of the outer cylinder;

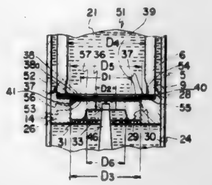
a guide member for guiding the inner cylinder slidably in the outer cylinder in the axial direction of the cylinders;

a first annular plate having a first annular surface and an opposing second annular surface, said first annular plate being abutted against the open end of said inner cylinder at the first surface thereof;

a shearable stop plate in the form of an annulus, said stop plate having a first annular surface and an opposing second annular surface, and being abutted against an inner periphery of the second surface of the first annular plate at an outer periphery of the first surface thereof;

a second annular plate having a first annular surface and an opposing second annular surface, said second annular plate having a slightly smaller outer diameter than the inner diameter of said first annular plate, and being abutted against an inner periphery of the second surface of the stop plate at an outer periphery of the first surface thereof;

a cylindrical damping force generating member for generating a damping force, said damping force generating member having a first end face abutted against the second surface of said second annular plate, a second end face opposing the first end face, and an axially penetrating orifice at a radially central portion thereof so as to throttle the flow of hydraulic fluid from a chamber in the outer cylinder to a chamber in the inner cylinder, the penetrating orifice of the damping force generating member being smaller than apertures of said first and second annular plates and of said stop plate; and



a tubular supporting member fixed to the inner cylinder near the open end thereof, said supporting member presenting an axial bore penetrating said supporting member and adapted for receiving said damping force generating member and said second annular plate therewithin, such that said damping force generating member and said second annular plate may be axially guided toward said stop plate, and said supporting member having an annular end face at its inner periphery abutted against the outer periphery of the second surface of said stop plate so as to hold an outer periphery of said stop plate in cooperation with said first annular plate, such that the stop plate is adapted in such a manner that, when an impact shock given to the shock absorber to contract it is not greater than a predetermined magnitude, the stop plate retains the damping force generating member in the axial bore of the supporting member at the inner periphery of the second surface of said stop plate against a force not greater than a predetermined magnitude axially exerted to the damping force generating member in response to the shock, and that, when an impact shock given to the shock absorber to contract it is greater than the predetermined magnitude, the stop plate is sheared off in a generally circular shape at a portion between the held outer periphery which is supported by said first annular plate at the first face of the stop plate and an inner periphery by a force greater than the predetermined magnitude axially exerted on the inner periphery of the second surface of said stop plate from the damping force generating member through said second annular plate in response to the shock, such that the damping force generating member is detached from the axial bore of the

supporting member and moved into the inner cylinder permitting the hydraulic fluid in the chamber of the outer cylinder to flow substantially freely into the chamber of the inner cylinder through the penetrating bore of the supporting member.

4,437,549

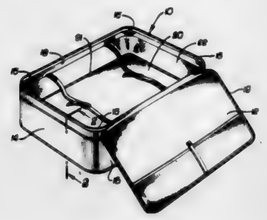
SUITCASE

Richard B. Gibbs, 11548 Thurston Cir., Los Angeles, Calif. 90049

Filed Mar. 10, 1980, Ser. No. 128,635

Int. Cl.³ A45C *7/00*

U.S. Cl. 190—109 **1 Claim**



1. A suitcase for supporting and carrying personal belongings comprising:

(a) coextensive spaced-apart first and second panel means;

(b) means circumscribing said first and second panel means to define an interior region;

(c) a generally firm pad means disposed within said interior region between the spaced-apart first and second panel means;

(d) a textile non-elastic skirt having an interior border joined to the border of the pad means and an exterior border fastened to the interior wall of said means circumscribing the panel means at a location closer to said first panel means than to said second panel means, said pad means and skirt dividing said interior region into first and second compartments, said skirt having a width between its interior and exterior borders greater than the normal distance from the border of said pad means to said interior wall such that when said first panel means is uppermost, said pad means is suspended by said skirt in a first position approximately midway between said first and second panel means so that said first and second compartments have comparable volumes, said pad means being movable upwardly from said first position to a second position against said first panel means to be substantially flush therewith thus providing said second compartment with almost the entire volume of both compartments; and

(e) means for providing access to each compartment, whereby when said pad means is in said first position, clothing and articles can be packed in said first compartment and held by said pad means and skirt in the upper half of said interior region whether or not said second compartment is empty or full, and whereby when said pad means is in said second position, identical although smaller suitcases can be received in said second compartment in nesting relationship.

4,437,550

INDUSTRIAL VEHICLE DRIVING APPARATUS

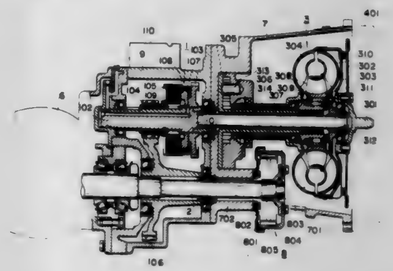
Koji Nozawa, Higashikurume, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 27, 1981, Ser. No. 296,820

Claims priority, application Japan, Sep. 12, 1980, 55-126809

Int. Cl.³ B60K *41/24, 41/28*

U.S. Cl. 192—324 **4 Claims**



1. A driving apparatus for an industrial vehicle comprising:

(a) a torque converter;

(b) a transmission;

(c) a torque converter housing for protecting said torque converter, said torque converter housing defining a space therein;

(d) a transmission housing for protecting said transmission, said transmission housing being connected in series with said torque converter housing;

(e) an output shaft of said transmission, one end of said output shaft being disposed within the space defined by said torque converter housing; and

(f) a center brake device for applying a braking force to said output shaft, said center brake device being disposed at the end of said output shaft housed within the space defined by said torque converter housing.

4,437,551

HYDRODYNAMIC TORQUE CONVERTER

Joachim Gimmler, Dittelbrunn, and Bernd Schöder, Münnerstadt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 285,985

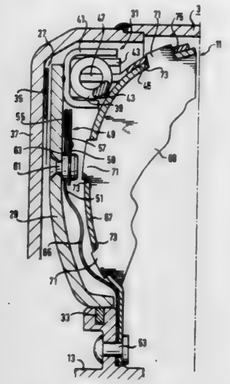
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029860

Int. Cl.³ F16H *45/02*

U.S. Cl. 192—3.28 **6 Claims**

1. Hydrodynamic torque converter comprising a converter housing, a pump wheel, a turbine wheel and a guide wheel located within said housing, said pump wheel, turbine wheel and guide wheel interact in a fluid cycle and are rotatable relative to one another, said pump wheel and said turbine wheel have a torque transmission path between them, a controllable bridging clutch arranged between said pump wheel and said turbine wheel and disposed in parallel relation to the torque transmission path therebetween, a torsional vibration spring damper located in the torque transmission path of said bridging clutch, wherein the improvement comprises a friction damper connected in parallel to said torsional vibration spring damper, said pump wheel is fixed to said converter housing, said converter housing having an end face forming a clutch countersurface, said bridging clutch includes a clutch disc coaxial with and axially slidable relative to said turbine wheel, said clutch disc is rotatable over a limited angle of rotation relative to said turbine wheel, said clutch disc is positioned between said turbine wheel and said end face of said converter housing, said torsional vibration spring damper includes several springs distributed over the periphery of said clutch disc, stops on said turbine wheel and on said clutch disc projecting

toward one another, said springs positioned between said stops, said friction damper includes an axially elastic disc having a radially inner region fixed to said turbine wheel, said



radially outer region having friction facings thereon, and said axially elastic disc prestresses said clutch disc and is torsion-resistant in the circumferential direction.

4,437,552

SPRING CLUTCH DEVICE

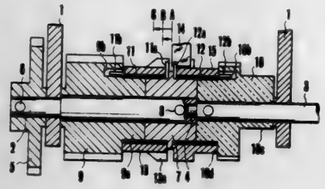
Masamichi Toyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Oct. 16, 1981, Ser. No. 312,321

Claims priority, application Japan, Oct. 24, 1980, 55-149657; Dec. 17, 1980, 55-178604

Int. Cl.³ F16D *21/04, 13/08;* G03B *3/10*

U.S. Cl. 192—26 **2 Claims**



1. A spring clutch device comprising:

a driving shaft connected to a drive source and arranged to be rotatable;

a first driven member rotatably supported around said driving shaft;

a second driven member supported to be concentrically rotatable on the extension of said driving shaft;

a first wrapped spring wound into a coil like shape around the outer circumference of said driving shaft, said spring having one end thereof connected to said first driven member and being arranged to transmit the rotation of said driving shaft to said first driven member, said spring being provided with a projection formed at the other end thereof;

a second wrapped spring wound into a coil like shape around the outer circumference of said driving shaft, said spring having one end thereof connected to said second driven member and being arranged to transmit the rotation of said driving shaft to said second driven member, said spring being provided with a projection formed at the other end thereof;

said first and second wrapped springs being wound in directions opposite to each other and being spaced at a predetermined distance with their projections arranged close to each other;

a change-over member capable of entering into and retracting from the turning paths of said two springs, said change-over member being shiftable between a position in which it engages said projection of said first spring, a position in which it engages said projection of said second spring and another position in which it engages said projections of both springs, said change-over member being arranged to cut off transmission of rotation of said driving shaft to said driven members when the change-over member is in each of said engaging positions;

a ring member connected to said projection of said first spring, said ring member being provided with a plurality of engaging parts for engagement with said change-over member, said engaging parts being arranged on the outer circumference of said ring member;

spring means for urging said change-over member in the direction of engaging said second wrapped spring; and

a retaining ring which is arranged to be coupled with said projection of said second wrapped spring to rotate together with said spring, said ring being provided with a slit which is arranged to engage said change-over member and with an end face for keeping said change-over member in a position engaging said projection of said first wrapped spring against said spring means until said change-over member comes to engage said slit.

4,437,553

FREEWHEELING CLUTCH ASSEMBLY

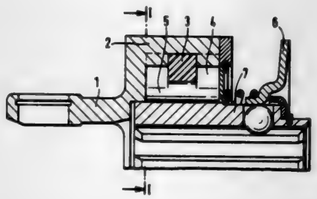
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Dec. 15, 1981, Ser. No. 330,792

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047891

Int. Cl.³ F16D *41/06, 41/12*

U.S. Cl. 192—46 **14 Claims**



1. A freewheeling clutch assembly comprising a driving member, a driven member, clutch engaging means operatively interposed between said driving and driven members to effect driving engagement therebetween and to disengage said members for free-wheeling operation when said driven member overruns said driving member, and re-engagement means for urging said clutch engagement means into driving engagement between said driving and driven members, said clutch engagement means comprising pawl means pivotally mounted on one of said driving and driven members and ratchet means on the other of said members adapted to be engaged and disengaged by said pawl means, said re-engagement means comprising resilient means affixed to said other of said driving and driven members for pivoting said pawl means into driving engagement with said ratchet means when said driving member commences to overrun said driven member.

4,437,554

FLUID SHEAR COUPLING APPARATUS

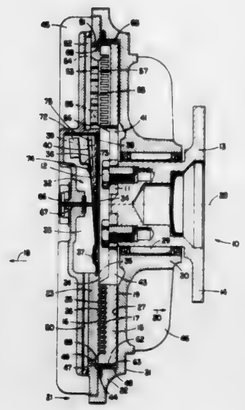
Paul J. Haeck, Indianapolis, Ind., assignor to Household Manufacturing Inc., Prospect Heights, Ill.

Filed Jun. 19, 1981, Ser. No. 275,211

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.³ F16D *35/00, 43/25*

U.S. Cl. 192—58 B **19 Claims**



1. A fluid shear coupling apparatus which comprises:

a driving member including a disc-shaped portion having a front side and a rear side, the front side including a first shear surface;

a driven member defining a working chamber within which said driving member is received, said driven member including a first shear surface configured and positioned complementary to the first shear surface of said driving member to define a fluid shear chamber therebetween and cooperable with shear fluid in the fluid shear chamber to transmit torque between said driving member and said driven member;

mounting means for mounting said driven member to said driving member and rotatable about a common axis;

a shear fluid reservoir;

first flow means for providing flow of shear fluid between said reservoir and the working chamber;

second flow means, separate from the working chamber and said reservoir, for providing flow of shear fluid from a first, radially-outward location of the working chamber directly to a second, radially-inward location of the working chamber when shear fluid is contained within the working chamber, the second, radially-inward location being radially within the fluid shear chamber; and

control means for providing at least a first condition during which shear fluid moves through said first flow means from said reservoir to the working chamber to cause coupling of said driving member and driven member and a second condition limiting shear fluid in the working chamber to cause reduced coupling.

4,437,555

MULTIPLE DISK CLUTCH WITH SPRING CONTROL LIFT

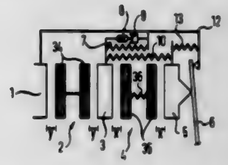
Dagwin Tomm, Schweinfurt, and Erich Scheer, Eschendorf, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 23, 1981, Ser. No. 314,741

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041341

Int. Cl.³ F16D *13/56, 13/75*

U.S. Cl. 192—70.21 **11 Claims**



1. Multiple disk clutch, such as a double disk clutch, includes a housing, a flywheel acting as a counter-pressure plate, an intermediate plate spaced from said flywheel, a first clutch disk positioned between said flywheel and intermediate plate, a spring-loaded pressure plate spaced from said intermediate plate on the opposite side thereof from said first clutch disk, a second clutch disk positioned between said intermediate plate and said pressure plate, said first and second clutch disks arranged to be mounted on a shaft so that said disks rotate with the shaft and are axially movable relative to the shaft, spring means connected to said intermediate plate for lifting said intermediate plate, said spring means including a lifting distance limitation device and an automatic readjustment device functioning in accordance with the wear on said first clutch disk, wherein the improvement comprises that said spring means includes a spring member acting on said intermediate plate in the direction of the engagement of the clutch while the clutch is being engaged, a lifting spring for lifting said intermediate plate, said lifting distance limitation device and readjustment device located one behind the other and disposed in parallel with said lifting spring, and said spring member having at least one spring disposed parallel to said lifting spring and connected to said pressure plate.

4,437,556

THROW-OUT BEARING FOR CLUTCHES, ESPECIALLY FOR MOTOR VEHICLES

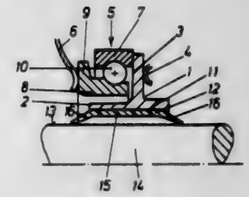
Manfred Brandenstein, Eussenheim, and Leo Müller, Eschleben, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,337

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3014056

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 **15 Claims**



1. In a throw-out bearing for clutches comprised of a guide element held to a clutch or drive housing, a movable part having a bore within which the guide element extends, the

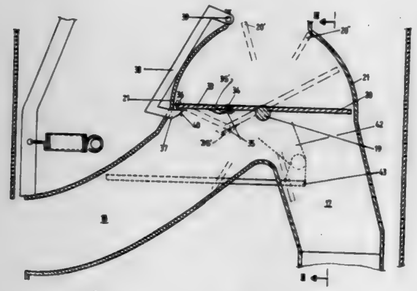
bore having a diameter greater than that of the guide element, the movable part being supported on the guide element by flexible means, the improvement wherein said flexible means comprises conical annular projection means extending from at least one end of said movable part radially inwardly to the guide element for supporting said movable part on the guide element, said projection means being shaped to wipe said guide element on relative axial movement between the movable part and guide element.

4,437,557

COIN COLLECTION FOR VENDING MACHINES

Richard Kölbl, and Bernd Mehlan, both of Herrieden, Fed. Rep. of Germany, assignors to Sielaff GmbH & Co., Fed. Rep. of Germany

Filed Sep. 30, 1981, Ser. No. 307,294
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037996
Int. Cl.³ G07F 9/00
U.S. Cl. 194—1 D **10 Claims**



1. A coin collector for a vending machine having a credit indicator with a reset member movable to reset the credit indicator and a coin return bolt movable through a full stroke, comprising:

means defining a coin return channel having an inlet for receiving at least one coin;

a swivel plate pivotally mounted over said inlet having a rest position obstructing a passage of the coins to said return channel and a coin release position for opening said inlet;

means connecting said swivel plate to the return bolt for transmitting motion of the return bolt to said swivel plate;

means connecting said swivel plate to the reset member for moving the reset member with movement of said swivel plate out of its rest position;

position control means associated with said swivel plate for obstructing said inlet during a first portion of the full stroke of movement of the return bolt as said swivel plate is moved out of its rest position to move the reset member to reset the credit indicator and for orienting said swivel plate into its coin release position with movement of the return bolt through a remaining portion of its full stroke;

said means defining a coin return channel comprising a wall defining an arcuate upper space above said swivel plate, said swivel plate connected to a shaft rotatably mounted to said wall, said swivel plate having opposite edges each movable adjacent and along said wall in said arcuate space;

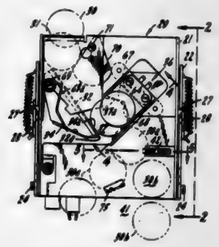
said swivel plate including a hinged portion rotatably mounted to a remainder of said swivel plate over said coin return channel inlet and spaced from said shaft, a support element connected to a bottom surface of said swivel plate to support said hinged portion, a stop lever rotatably mounted to said wall having a stop surface engaged with said hinged portion during said first portion of the full stroke of the bolt and released from said stop face during said remainder of the full stroke, said stop lever having a lower inclined surface engageable by said hinged portion during movement of said swivel plate from its coin release position back to its rest position.

4,437,558

COIN DETECTOR APPARATUS

Raymond Nicholson, 817 Industrial Dr., Elmhurst, Ill. 60126, and Donald O. Parker, 1331 Phillips St., SW., Grand Rapids, Mich. 49507

Continuation-in-part of Ser. No. 387,820, Jun. 14, 1982. This application Jun. 8, 1983, Ser. No. 502,290
Int. Cl.³ G07F 3/02
U.S. Cl. 194—97 R **7 Claims**



1. In a coin tester for comparing a test coin to a sample coin, including coil assembly means for creating a magnetic field, means for locating the sample coin within the magnetic field, means for passing the test coin through the magnetic field, and means for evaluating the quality of the null created by the test coin as it passes through the magnetic field, the improvement comprising, single coin nolder locating means for establishing a position for a portion of the periphery of the sample coin, means associated with the locating means and the coil assembly for relatively moving the holder and coil assembly to insert a sample coin and hold the sample coin in a predetermined position, the sample holder means having a ramp surface for guiding the test coin through the magnetic field, the angle of the ramp surface being the same as for the sample coin, thereby to cause the test coin to enter the magnetic field to the same extent as the sample coin.

4,437,559

METHOD AND APPARATUS FOR REMOVING NON-RECTIFIED CAPSULES FROM A CAPSULE RECTIFICATION AND TRANSPORT DEVICE

Charles E. Ackley, Sr., Oreland, and Charles E. Ackley, Jr., Philadelphia, both of Pa., assignors to R. W. Hartnett Company, Philadelphia, Pa.

Filed Sep. 1, 1978, Ser. No. 939,066
Int. Cl.³ B65G 47/24
U.S. Cl. 198—397 **22 Claims**

1. In a capsule rectification apparatus adapted to rectify capsules having body portions and having cap portions which are of greater diameter than said body portions, and wherein an introduction means is provided from which a multiplicity of capsules may be introduced into said rectification apparatus, and wherein a rectification means is disposed for rectifying said capsules in dispositions in which the said cap portions, are oriented toward one side of a predetermined path and in which said body portions are oriented toward another side of the predetermined path as said capsules are moved along said predetermined path and wherein occasional capsules are sometimes improperly positioned in a non-rectified manner with their cap and body positions reversed, the combination which comprises:

(a) means positioned adjacent said predetermined path for contacting said improperly positioned capsules as they are carried along said predetermined path; said means (a) comprising pick-off means located adjacent said predetermined path and engagement means for grasping said improperly positioned capsules, said engagement means being shaped in such manner so as to grasp only improperly positioned capsules while not being capable of grasping properly positioned capsules and said engagement means comprises cap portions grasping means carried by said pick-off means for grasping cap portions of non-rectified capsules, wherein said cap portion grasping means comprises a plurality of cut-out grasping elements spaced apart from each other around the periphery of said pick off means, said grasping elements being shaped and dimensioned to firmly grasp a cap portion therein, but being dimensioned such as to be incapable of grasping a body portion therein, and wherein said pick-off means is positioned alongside a portion of said predetermined path where the body portions of properly rectified capsules are to be located, whereby said cap portions grasping means is adapted to grasp any non-rectified capsule having its cap portion disposed into the same direction as the body portions of said properly rectified capsules and

(b) means for removing said improperly positioned capsules from said path, said removing means including a stripping means for stripping capsules from said engagement means.

11. A method for transporting and rectifying capsules of the type having body portions and having cap portions of greater transverse dimension than said body portions, wherein said capsules are arranged in a plurality of adjacent rows which extend in a transport direction and wherein said capsules are rectified in dispositions in which the cap portions of a row of capsules face a predetermined direction and in which the body portions of said capsules face in substantially opposite direction, and wherein capsules are sometimes improperly positioned in non-rectified manner with their cap and body portions reversed,

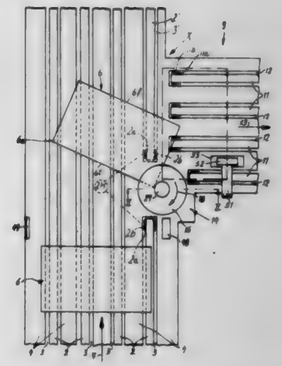
the steps which comprise providing a capsule engagement means, shaping said capsule engagement means in such manner so as to grasp only non-rectified capsules while being incapable of grasping said properly rectified capsules, grasping said non-rectified capsules with said engagement means and the grasped non-rectified capsules from the array while allowing the properly rectified capsules to continue in said array.

4,437,560

APPARATUS FOR CHANGING THE DIRECTION OF TRANSPORT OF PAPER STACKS OR THE LIKE

Wolfram Wolf, Bilsen, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,282
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111445
Int. Cl.³ B65G 47/26
U.S. Cl. 198—457 **25 Claims**



1. Apparatus for changing the direction of transport of at least some of a series of successive commodities, comprising a first conveyor arranged to advance the commodities of said series along a first path; a second conveyor arranged to advance commodities along a second path which is at least substantially coplanar with and is inclined with reference to said first path; and means for transferring commodities from said first path into said second path, including openable and closable tongs rotatable about an axis which is adjacent to and inclined relative to said paths, said tongs extending into portions of said first and second paths, means for rotating said tongs about said axis, and operating means for opening and closing said tongs so that a commodity advancing along said first path can enter said tongs before the tongs closes to transfer the thus engaged commodity into said second path as a result of rotation about said axis, said tongs comprising a first jaw and a second jaw disposed at a level above said first jaw, said first jaw having a surface arranged to engage a commodity to be transferred and coplanar with said paths and said operating means comprising means for moving said second jaw relative to said first jaw, said rotating means comprising a rotary shaft whose axis coincides with said axis and which is connected with said second jaw, said first jaw having an axial passage with an outline complementary to the cross-section of and axially movably receiving said shaft, said shaft and said first jaw having means for transmitting torque from said shaft to said first jaw and vice versa in each axial position of said shaft.

4,437,561

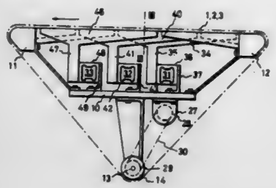
AUTOMATIC CONTINUOUS WEIGHING MACHINE

Eiichi Hasegawa, Kobe, and Shoji Yamano, Akashi, both of Japan, assignors to Yamato Scale Company, Ltd., Hyogo, Japan

Filed Feb. 24, 1982, Ser. No. 351,864
Claims priority, application Japan, Mar. 3, 1981, 56-30891
Int. Cl.³ G01G 11/00
U.S. Cl. 198—504 **3 Claims**

1. An automatic continuous weighing machine, comprising a plurality of endless conveyers driven at the same speed, and a plurality of weighing units, each weighing unit operatively

coupled to one of said conveyers, respectively, for sensing weights of articles carried on said conveyers, each of said conveyers including a plurality of endless circulating members arranged in parallel, characterized in that said endless circulating members of the respective conveyers are arranged in mutually parallel intervening fashion, whereby said conveyers each have a common article transporting path, each of said endless



circulating members having a plurality of article supporting subsections arranged at predetermined intervals in the lengthwise direction, said article supporting subsections belonging to each conveyer being aligned laterally to form article supporting sections of said conveyer, said article supporting sections of the respective conveyers being arranged sequentially in series along said article transporting path to allow themselves to move at least vertically, independently of each other.

4,437,562

CHAIN BUCKET CONVEYOR

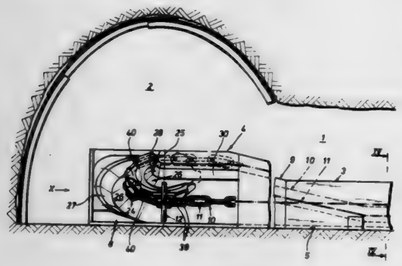
Manfred Koppers, Duisburg; Karlheinz Bohnes, Bochum, and Heinz Kunzer, Herne, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhütte GmbH & Co. KG, Bochum, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,716

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043431

Int. Cl.³ B65G *19/08*

U.S. Cl. 198—733 **17 Claims**



1. A central chain flight conveyor for an underground excavation, comprising a substantially U-shaped forward conveyor part at the side of a sole and open toward a roof; a return conveyor part at the side of backfilling and closed in a substantially channel-like manner, said return conveyor part being normal to said forward conveyor part; an endless chain movable in said conveyor parts and including a flight chain member and a plurality of flights mounted thereon so that said chain member extends centrally of said flights and said flights move in one of said conveyor parts in a substantially horizontal position and in the other of said conveyor parts in a substantially vertical position; means for transporting said chain from one to the other of said conveyor parts with turning of said flights from one to the other of said positions and including actuating stations, a rotary chain wheel having chain pockets and arranged at said actuating stations rotatable about an inclined axis which ascends toward the roof and backfilling and is located in a vertical plane transverse to the longitudinal direction of the conveyor, and a conical surface narrowing toward the roof and having an axis coinciding with the axis of rotation of said chain wheel.

4,437,563

INSTALLATION FOR MONITORING AN ENDLESS CLOTH CONVEYOR BELT

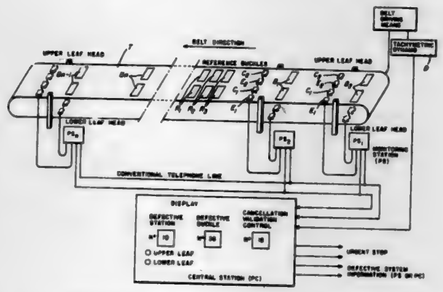
Marcel Oriol, 85 Bd Jean Jaures, 92100 Boulogne, France

Filed Jul. 30, 1981, Ser. No. 288,328

Claims priority, application France, Jul. 30, 1980, 80 16836

Int. Cl.³ B65G *15/00*

U.S. Cl. 198—810 **5 Claims**



1. An installation for monitoring the state of an endless conveyor belt driven by belt driving means, said installation comprising:

a plurality of closed conductive control buckles transversely disposed on said belt and distributed at spaced-apart locations along the path of said belt;

a plurality of fixed monitoring stations distributed at spaced-apart locations along the path of said belt and each of said monitoring stations being coupled with at least a detector assembly having at least a transmitter and a corresponding pick-up for detecting the passsage of said control buckles at each said monitoring station;

a central station to which each said monitoring station is connected for transmitting signals comprising information pertaining to the state of said control buckles and pertaining to the state of each said monitoring station, said central station comprising:

a central unit for receiving said signals;

programmed counters for counting the total numbers of impulses received between pairs of successive signals corresponding to successive control buckles and received by said central unit from each of said monitoring stations, and for comparing said total numbers to reference total numbers so as to deliver, in case of any discrepancy, signals corresponding to defective control buckles;

belt stop control means connected with said said central unit and for ordering said conveyor belt to stop when said central unit has received signals corresponding to defective buckles or monitoring stations;

display means connected with said central unit and for indicating the state of said control buckles and monitoring stations;

manual control means for inhibiting, when actuated, at least a signal corresponding to a defective control buckle or monitoring station;

automatic means for authorizing the continuation of the operation of said belt when said central unit receives signals corresponding to defective control buckles or monitoring stations after inhibition of said signals by said manual control means;

and wherein:

said control buckles are arranged in spaced apart pairs of control buckles, with the control buckles of each pair are being mounted cross-wise on said belt;

each said detector assembly having a pair of transmitter and pick-up couples, each said transmitter and pick-up couple being arranged on the path of one control buckles of each said pair of control buckles, so as to generate a detection signal when an uncut control buckle passes opposite one of said pair of transmitter and pick-up couples;

said installation further comprising a plurality of pairs of closed conductive reference buckles, which are mounted at close spaced-apart locations lengthwise on a portion of said belt and the buckles of each said pair of reference buckles being mounted cross-wise on said belt portion, for giving a reference number to each said monitoring station and to each pair of said control buckles passing successively opposite each said detector assembly coupled to each monitoring station;

each said monitoring station comprising a buffer memory for storing information on the state of the buckles of a detected pair of control buckles, and a coding circuit for generating said coded detection signals, in coded form, each of said coded detection signals comprising said reference number of the corresponding monitoring station and said information on the state of the corresponding detected pair of control buckles;

all monitoring stations being connected to said central station by a single common conventional telephone line;

said central unit of said central station comprising a programmable memory emitting at regular intervals coded scanning signals for scanning successively, through said telephone line, said monitoring stations and receiving successively in response, through said telephone line, said coded detection signals from said monitoring stations, the buffer memory of each of which is emptied in response to the first coded scanning signal received after storage of information corresponding to the state of a detected pair of control buckles;

said central station further comprising a central control block connected to said central unit and comprising an active memory for storing, at the starting of said installation, information relating to said reference numbers of said pairs of control buckles and said monitoring stations and information relating to said reference total numbers which correspond to the total numbers of coded scanning signals transmitted to each of said monitoring stations between two successive coded detection signals corresponding to two successive pairs of control buckles and received by said central unit from the corresponding monitoring station;

said informations corresponding to said reference numbers and stored in said active memory being compared in said central station to said informations comprised in said coded detection signals received by said central unit so that said display means, which is common to all said pairs of control buckles and to all said monitoring stations, indicates in succession the reference numbers and states of said pairs of control buckles and in succession the reference numbers and states of said monitoring stations;

said information corresponding to said reference total numbers and stored in said active memory being compared to said total numbers of impulses, each of which corresponding to a coded scanning signal, and which are counted in said counters between the reception of two successive coded detection signals corresponding to two successive detected pairs of control buckles, so that said display means indicates, in case of any discrepancy, the number of the monitoring station that has not detected any passage of a pair of control buckles, the two buckles of which being defective; and

said central control block is connected to said manual control means for inhibiting any comparison of information comprised in a coded detection signal and corresponding to a reference number of a pair of control buckles or of a monitoring station the state of which has been displayed as defective, when said manual control means are actuated.

4,437,564

CONVEYOR DRIVE FRAME

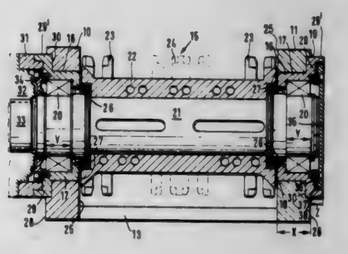
Manfred Redder, Bergkamen-Oberaden; Horst Linke; Dieter Gründken, both of Lunen, and Helmut Temme, Waltrop, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Continuation of Ser. No. 198,081, Oct. 17, 1980, abandoned. This application Nov. 22, 1982, Ser. No. 443,834

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942916

Int. Cl.³ B65G *23/02*

U.S. Cl. 198—834 **9 Claims**



1. A drive frame for a scraper-chain conveyor, comprising:

a pair of generally parallel side plates;

a chain drum and a drive shaft therefor;

a pair of aligned bearing bushes rotatably supporting said drive shaft of said chain drum, said bearing bushes being mounted in apertures in said side plates and being welded to said side plates, respectively, an inner axial end face of each bearing bush being substantially coplanar with an inner surface of said respective side plate and having a radially outwardly extending collar at an outer axial end thereof, an axial dimension of each of said bearing bushes being slightly greater than a wall thickness of said respective side plate, each of said side plates having an outer surface with a recess which surrounds said aperture in that side plate, each of said recesses engaging said collar of said associated bearing bush, each of said bearing bushes having an axially outwardly extending flange at a peripheral edge of its collar; and

a pair of roller bearings for said bearing bushes, a width of said roller bearings being less than said wall thickness of said respective side plates.

4,437,565

CONVEYOR CHAIN

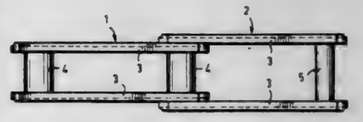
Aulis Vatja, Eura, Finland, assignor to Lonnstrom Oy, Koylio, Finland

Filed Dec. 8, 1981, Ser. No. 328,480

Claims priority, application Finland, Dec. 22, 1980, 804001

Int. Cl.³ B65G *17/38*

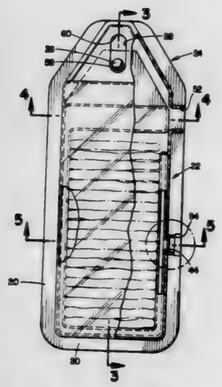
U.S. Cl. 198—851 **2 Claims**



1. A conveyor chain formed of a plurality of inner and outer links, each link comprising a pair of substantially rectangular planar side plates, one of said pair of links having a pair of

spaced sleeves and the other of said links having a pair of spaced trunnions, said sleeves and trunnions being seated adjacent their ends respectively in said side plates, said sleeves and trunnions being welded to one surface of the respective side plates, and said side plates having a pair of flanges projecting from the surface of said plates to which said sleeves and trunnions are welded, said flange projecting along the longitudinal edges of said plates a distance at least equal to the extension created by said welds.

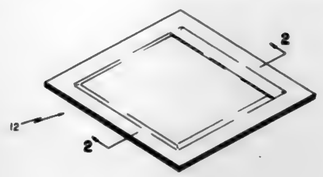
4,437,566
CHILD PROOF CONTAINER
David J. Szahler, Parma Heights, Ohio, assignor to A Packaging Service Company, Inc., Valley View, Ohio
Filed Jul. 30, 1982, Ser. No. 403,859
Int. Cl.³ B65D *83/00, 5/38, 85/00*
U.S. Cl. 206—1.5 9 Claims



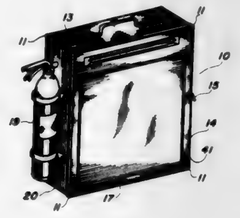
1. A container resistant to accidental opening comprising:
an outer housing, an inner tray, actuator means for selectively positioning said inner tray to a first position and a second position; and locking means for locking said tray in said first position;
said locking means including a protruding locking member included in said inner tray disposed generally contiguous to a locking member receiving port of said outer housing comprising an extended sleeve having an extent greater than said protruding locking member to inhibit accidental deflection of said locking member from said sleeve, said locking member being resiliently urged towards said receiving port for close locking reception in said port at said first position.

4,437,567
STERILE PACKAGE AND METHOD OF MAKING
David K. H. Jeng, Lake Zurich, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Jan. 27, 1982, Ser. No. 343,320
Int. Cl.³ B65D *81/28;* A61L *2/18*
U.S. Cl. 206—210 6 Claims

1. The method of sterilizing a product which comprises placing the product incorporating in the package a first sterilization medium comprising a solution containing 0.01 to 0.1% by weight of hydrogen peroxide in an inert liquid solvent in the absence of a second sterilizing medium, hermetically sealing said package, and allowing said package to stand at a temperature at least as high as room temperature for a time sufficient to provide complete sterilization of the contents of said package.

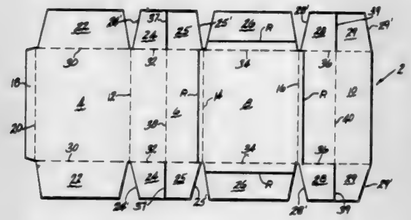


4,437,568
EMERGENCY FIRE AND SMOKE SAFETY KIT
Andrew Hamblin, 17450 Olive Tree Cir., Yorba Linda, Calif. 92686
Filed Aug. 14, 1981, Ser. No. 292,785
Int. Cl.³ B65D *69/00*
U.S. Cl. 206—223 4 Claims



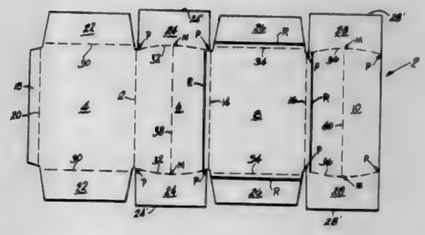
1. A rectangular emergency kit for use in fire, flame or smoke situations comprizing in combination:
a rectangular metal box with an earring handle;
a front on said box;
a hinged lid means, all corners on said box are given a radii;
two hasps for closure attached by locking means to the lid means and right side, first aid instructions are attached or printed on the inside and outside of said lid means;
a smoke and fire alarm and self-contained batteries are accomodated in the top space;
next is a three inch space defined by a shelf extending from back to the lid means;
stored on the shelf are:
two rolls of two inch tape,
an air horn,
a can of flourescent red paint,
two heavy duty sponges,
a glass cutter,
a flashlight,
a second space four inches in width defined by a back to lid means shelf;
on the second shelf are:
two respirator masks,
two folded florescent red triangles preprinted with the signal and word "help",
two pair of flame resistant goggles,
a first aid kit,
a third space defined by the bottom of the box to accomodate:
two pair of fire resistant pants,
two pair of fire resistant gloves,
two pair of flame resistant jackets,
two pair of water and flame resistant boots,
two rods to hold the above items, and
a fire extinguisher attached by fastening means to the left exterior of the box.

4,437,569
SHIPPING CARTON WITH CASE KNIFE PROTECTION FOR INNER CARTONS
John F. Sorenson, St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 398,678, Jul. 13, 1982. This application Sep. 27, 1982, Ser. No. 424,000
Int. Cl.³ B65D *65/26*
U.S. Cl. 206—601 1 Claim



1. A package comprising in combination:
(a) a corrugated paperboard shipping carton comprising:
(i) a plurality of side walls interconnected at corner fold lines to form a tubular container;
(ii) a pair of inner end closure flaps foldably connected to each end of a first opposed pair of said side walls along first fold lines;
(iii) a medial fold line extending across each one of said first opposed pair of said side walls, said medial fold lines being parallel to said corner fold lines and extending between said first fold lines;
(iv) outer end closure flaps foldably connected to each end of a second opposed pair of said side walls along second fold lines;
(v) said inner end closure flaps being folded to a carton closing position wherein ones of each pair of said inner end closure flaps diverge away from each other to cause inward bowing of each one of said first opposed pair of said side walls along said medial fold lines; and
(vi) said outer end closure flaps being folded to a carton closing position overlying said inner end closure flaps, and means for securing said outer end closure flaps to said inner end closure flaps to close said carton and to hold said inner end closure flaps in said diverging positions whereby the inward bowing of said first opposed pair of side walls is retained; and
(b) a plurality of rectangular containers disposed in said shipping carton, said containers being arranged serially in face-to-face contact with each other within said shipping carton with endmost ones of said containers being engaged by the inner surfaces of said medial fold lines, said containers further having end walls engaging the inner surfaces of said second opposed pair of side walls on said shipping carton, and there being interior voids within said shipping carton adjacent each of said corner fold lines of said shipping carton which voids are created and maintained by reason of said medial fold lines retaining said endmost containers spaced apart from said corner fold lines, said voids being sized so as to allow knife blade cutting of said shipping carton adjacent said corner fold lines without damaging said containers.

4,437,570
SHIPPING CARTON WITH CASE KNIFE PROTECTION FOR INNER CARTONS
John F. Sorenson, St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.
Filed Jul. 15, 1982, Ser. No. 398,678
Int. Cl.³ B65D *65/26*
U.S. Cl. 206—601 6 Claims



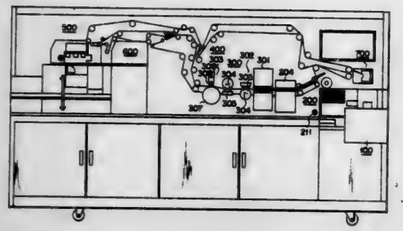
1. A package comprising in combination a corrugated paperboard shipping carton containing a plurality of product cartons, said shipping carton comprising:
(a) a series of side walls connected together along corner fold lines to form a tubular container;
(b) pairs of inner end closure flaps foldably connected to opposite ends of a first opposed pair of said side walls;
(c) pairs of outer end closure flaps overlapping said inner end closure flaps and foldably connected to opposite ends of a second opposed pair of said side walls along straight fold lines;
(d) said inner end closure flaps each being connected to each of said first opposed pair of side walls along bowed fold lines with a medial portion of each bowed fold line being closer to an outer free edge of the respective inner end closure flap than end portions of said bowed fold line;
(e) a medial fold line on each of one of said first opposed pair of side walls extending between said medial portions of said bowed fold lines; and
(f) each of said first opposed pair of side walls being bowed inwardly of said container along said medial fold lines, and each of said inner end closure flaps being bowed outwardly of said container whereby side edges of said inner end closure flaps are inwardly offset from said straight fold lines when said end closure flaps are folded to a container-closing position said bowing of said first opposed pair of side walls and said inner end closure flaps being operable to offset said product cartons disposed in said container from the corner fold lines defining side edges of said first opposed pair of side walls and from said straight fold lines wherein the container can be cut proximate the corner fold lines and proximate said straight fold lines without risking damage to said product cartons.

4,437,571
THIN SHEET SORTING APPARATUS
Hideo Ohmura, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Oct. 8, 1981, Ser. No. 309,846
Claims priority, application Japan, Oct. 13, 1980, 55-14193
Int. Cl.³ B07C *5/344*
U.S. Cl. 209—551 9 Claims

1. A thin sheet sorting apparatus comprising:
sheet transfer means for transfering a first group of sheets including a given number of sheets one by one from a reservoir of unsorted sheets to a sheet transport path;
sheet inspection means, disposed along said sheet transport path, for inspecting the sheets transferred from said sheet transfer means, and discriminating among three classes of sheets including effective sheets, countable unidentifiable sheets, and uncountable unidentifiable sheets;

sheet allotting means, disposed along said sheet transport path and through said sheet inspection means, for allotting the effective sheets and a group of sheets including both of the countable and uncountable unidentifiable sheets, which were discriminated by said sheet inspection means, to an effective sheet section and a rejected sheet section, respectively;

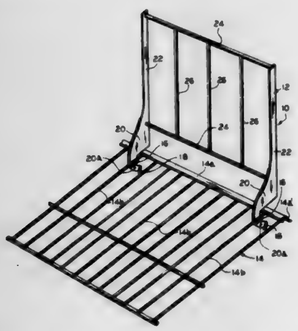
counting means, connected to said inspection means for detecting whether there are no uncountable unidentifiable sheets and in response to such a determination, producing a no-uncountable sheet signal;



collation means, connected to said detecting means and said counting means, for collating the sum of the number of the effective sheets and the number of the countable unidentifiable sheets with a set number in response to a no-uncountable sheet signal from said detecting means and producing in response thereto a collation signal indicative of completion of the sorting of said first group of sheets from said reservoir; and

sheet supplying means, connected to said collation means, for supplying a second group of sheets having said given number from said reservoir to said sheet transfer means in response to the collation signal from said collation means.

4,437,572
SHELF RETAINER
Howard O. Hoffman, Elmhurst, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Jun. 8, 1981, Ser. No. 271,493
Int. Cl.³ A47F 5/00
U.S. Cl. 211—86 **8 Claims**



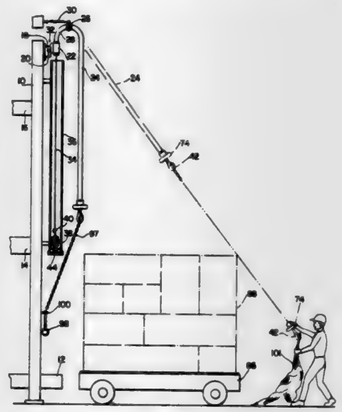
1. A unitary retainer for linear and angular adjustable installation on a shelf having longitudinally extending openings defined by spaced apart longitudinally extending shelf members, comprising:

barrier means adapted to be positioned along an edge of said shelf, said barrier means including a pair of base portions supporting said barrier means on said edge of said shelf, said barrier means serving to retain articles on said shelf; and

means for releasably securing said barrier means to said shelf, said releasable securing means being associated with said base portions of said barrier means and including means for engaging said longitudinally extending shelf members in at least two positions, said positions including an article retaining position and an article access position;

said barrier means also including a pair of end members joined by a planar barrier, one of said base portions being integral with each of said end members such that at least a part of said base portions is adapted to extend downwardly between longitudinally extending shelf members, said engaging means being integrally associated with said downwardly extending part of said base portions.

4,437,573
BOOM RACK FOR HANDLING AND POSITIONING CARGO TIE DOWN EQUIPMENT
Frank Garoffolo, Westport, Conn., assignor to Aviatec, Inc., Westport, Conn.
Filed Dec. 31, 1981, Ser. No. 336,225
Int. Cl.³ B66C 23/20
U.S. Cl. 212—263 **11 Claims**



1. A boom rack of the type adapted for handling and positioning cargo tie down equipment, comprising:

A. A base fulcrum mount;

B. A tube coupling pivoted to said base fulcrum mount upon a horizontal axis;

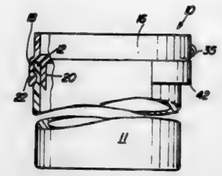
C. An inverted J-shaped tube secured within said tube coupling at its foreshortened end and extending upwardly, outwardly and downwardly with respect to said tube coupling; and

D. A counter-weighted cable having its free end extending through said inverted J-shaped tube, so as to engage and support a cargo net hook outwardly thereof.

4,437,574
TAMPER-RESISTANT BOTTLE CAP
William Ruklic, 549 Chestnut La., Beecher, Ill. 60401
Filed Oct. 14, 1981, Ser. No. 311,307
Int. Cl.³ B65D 41/46
U.S. Cl. 215—247 **25 Claims**

1. A tamper resistant closure cap for a cylindrical receptacle open at one end and having a peripheral outwardly-projecting catch at the open end, said cap having a top wall comprising:

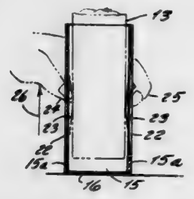
(a) an annular platform having a pair of radially-spaced, peripherally-extending collars depending from its bottom surface, the inner of said depending collars having an outer diameter substantially the same as the inside diameter of said receptacle but gauged for engagement with the inner surface of the receptacle, and the outer one of said depending collars being gauged to fit the open end of the receptacle and having latch means on its inner surface gauged for snap-fit engagement with the catch means of said receptacle;



(b) means for removing the outer one of said depending collars of said closure cap; and

(c) the top wall having an annular filler opening therein, and a closure plug being provided for said opening.

4,437,575
COUNTERTOP MINI-GARBAGE CAN
Geraldine L. Hahn, 351 189th St., Miami Beach, Fla. 33160
Filed Feb. 7, 1983, Ser. No. 464,685
Int. Cl.³ B65D 25/14
U.S. Cl. 220—1 T **1 Claim**



1. A countertop mini-garbage can, comprising, in combination, a container and a pivoted cover upon a top of said container for selectively closing a top opening of said container, said container comprising four vertically elongated side walls and a horizontal bottom wall, said container being of a size and shape for receiving a conventional paper milk carton, amd means for grasping and upwardly lifting said carton outward of said container, said means comprising a vertically elongated opening made through a pair of opposite said side walls, a thin, stretchable rubber film adhered all around an edge of each said openings for sealing an interior space of said container, and in use being stretchable in a vertical direction; a receptacle on an underside of said cover, said receptacle containing a replaceable deodorant; and said cover having a projecting tab on a front edge thereof.

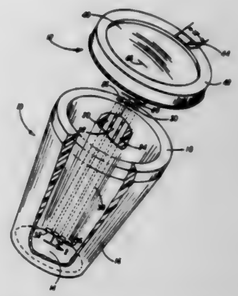
4,437,576
DRINKING VESSEL WITH SELF-CONTAINED STRAWS
Richard L. Barniak, Morgan Gulf Rd., Turin, N.Y. 13473
Filed Sep. 30, 1982, Ser. No. 429,385
Int. Cl.³ B65D 41/26, 25/38, 8/02
U.S. Cl. 220—90.4 **5 Claims**

1. A drinking vessel comprising, in combination:

(a) liquid container means having a bottom wall and a side wall extending from said bottom wall to an open end defined by a circular lip having a constant, symmetrical width about its entire periphery;

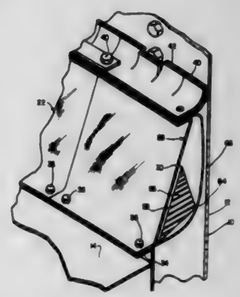
(b) conduit means extending through said side wall between an open lower end communicating with the interior of said container means in the area of said bottom wall and an open upper end in the area of said lip; and

(c) cover means having a circular, symmetrical flange portion adapted for frictional, releasable sealing engagement with said lip about the peripheral extent thereof, and a second portion covering said container open end, said cover means including an opening in said flange portion extending a predetermined portion of the periphery thereof, said flange portion being selectively engageable



with said lip in any desired relative rotational orientation, whereby said opening may be placed in or out of registration with said conduit means upper end, thereby permitting or blocking communication with the vessel contents through the conduit and cover means.

4,437,577
DOUBLE SECONDARY SEAL FOR FLOATING ROOF TANKS
James F. Myers, First & Curtis Ave., Thorofare, N.J. 08086, and Lloyd C. Thoemke, 3737 Chichester Ave., Boothwyn, Pa. 19061
Filed Sep. 3, 1982, Ser. No. 414,871
Int. Cl.³ B65D 87/207
U.S. Cl. 220—224 **19 Claims**



1. A secondary seal for a liquid storage tank having a cylindrical sidewall and a floating roof comprising

a weather shield means extending upwardly and outwardly from the floating roof to normally seal the peripheral junction between the roof and the sidewalls,

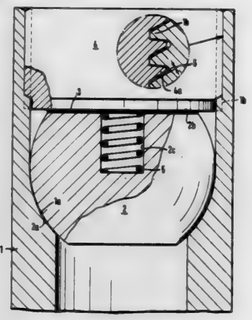
the weather shield means terminating upwardly in a flexible wiper which is normally in contact with tank sidewall;

a vapor barrier means extending about the weather shield means to prevent the passage of vapors through the weather shield means,

the vapor barrier means defining a log space outwardly of the weather shield means; and

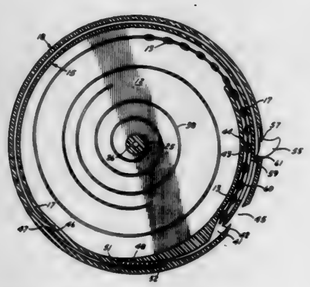
a resilient reserve seal means positioned within the log space to provide a reserve seal between the weather shield means and the tank sidewall when the flexible wipers do not contact the tank sidewall.

4,437,578
CONTAINER AND CLOSURE MEANS FOR STORAGE OF RADIOACTIVE MATERIAL
Heinz Bienek, Oberhausen; Rudolf Finkbeiner, Ratingen, and Wilhelm Wick, Essen, all of Fed. Rep. of Germany, assignors to Steag Kernenergie GmbH, Essen, Fed. Rep. of Germany
Filed Jun. 22, 1982, Ser. No. 390,956
Claims priority, application Fed Rep. of Germany, Feb. 9, 1982, 3204300
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—256 29 Claims



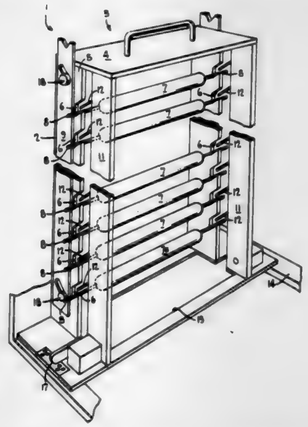
12. A storage device consisting of a container for the final storage of radioactive substances and a cover for the container, wherein one of the container and cover consists of a material selected from ceramic and metallic material, and wherein the container and cover are suitably ground on their seating areas which cooperate with each other, and a prestressing device is provided which is supported on the container and engages the cover, this prestressing device prestressing the cover against the seating area of the container.

4,437,579
DRUG DISPENSING APPARATUS AND REMOVAL TOOL
Donald R. Obland, 6750 S. Clermont St., Littleton, Colo. 80122
Filed Jan. 25, 1982, Ser. No. 342,196
Int. Cl.³ B65D *83/04*
U.S. Cl. 221—25 14 Claims



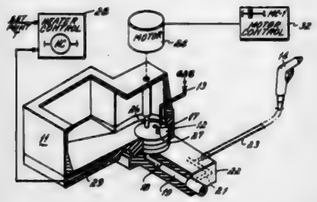
1. A child-proof dispenser for a strip of drugs and the like comprising:
a container having an inner compartment for enclosing a coiled strip of drugs, said container including separate, interfitting, inner and outer shells, said inner and outer shells having releasably interlocking central hub portions holding said shells together and supporting said outer shell to rotate relative to said inner shell, said inner shell having an inner dispensing opening and said outer shell having an outer dispensing opening, said inner shell having an inside guide section forming a guide passage leading to said inner dispensing opening and a cut-off blade defining one side of said inner dispensing opening;
biasing means between said shells to move said outer shell to an at-rest position with respect to said inner shell to cover said inner dispensing opening with said outer shell to prevent dispensing via said inner dispensing opening until said inner shell is held against movement and a turning force is applied to said outer shell to aline said inner and outer dispensing openings; and
ejecting means arranged to move relative to said shells to bear against a portion of said strip in said guide passage to advance said strip through said alined inner and outer dispensing openings and remove the dosage from the strip by cutting the strip on said cut-off blade.

4,437,580
DISPENSER FOR SKEWERED FOODS
Wayne Ferrin, Sanford, N.C., assignor to Frieda Boosalis, Fayetteville, N.C.
Filed May 21, 1982, Ser. No. 380,768
Int. Cl.³ B65H *29/34*
U.S. Cl. 221—75 11 Claims



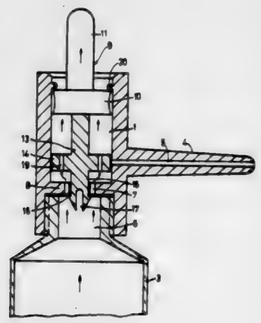
1. Dispensing apparatus for sequentially dispensing a plurality of articles comprising:
(a) a housing including discharge means for discharging said articles;
(b) at least one dispensing cartridge removably disposed within said housing adapted for storing said articles in superposed relationship with respect to one another, said cartridge including
(i) a frame having a pair of vertical side members;
(ii) a plurality of support means associated with said side members for supporting said articles in superposed relationship with respect to one another within said cartridge; and
(iii) guide means associated with said support means for guiding an article displaced from one support means to the next subjacent support means or from the last support means to the discharge means; and
(c) displacing means operatively associated with said dispensing cartridge for displacing said articles from said support means.

4,437,581
PUMP MOTOR MASTER CONTROL
William R. Coker, Lilburn, Ga., assignor to Nordson Corporation, Amherst, Ohio
Filed Nov. 27, 1981, Ser. No. 324,672
Int. Cl.³ B67D *5/08*
U.S. Cl. 222—54 5 Claims



1. In a hot melt adhesive dispensing arrangement having an adhesive tank, a heater for heating the tank, a pump for pumping molten adhesive from the tank, and a motor for driving the pump, a master control for preventing the operation of the motor until the adhesive has reached a dispensable molten state comprising:
a master control circuit having an input and having means for enabling the operation of the motor in response to the presence of a condition at the input for a finite delay interval equal to a predetermined period of time;
means for sensing the temperature of the tank;
a heater control coupled to the temperature sensing means and to the heater and operable to energize the heater when the temperature of the tank falls below a predetermined temperature; and
means for producing said condition at the input of the master control circuit when the heater is not energized, whereby, as the adhesive is heated by the tank and each period of time during which the heater is not energized increases in duration, said predetermined period of time is reached and the operation of the motor is enabled.

4,437,582
DEVICE FOR DISPENSING PASTE-LIKE SUBSTANCES
Florian Dörner, Düsseldorf, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Sep. 2, 1982, Ser. No. 414,225
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137760
Int. Cl.³ B05B *11/04*
U.S. Cl. 222—94 8 Claims



1. A device for dispensing paste-like substances from tubes comprising: a metering chamber having a base which is provided with inlet openings and side walls with an outlet opening and which has means screwable onto the tube, an axially displaceable plunger compriaing an externally operable pushrod is disposed in the metering chamber and a plate valve having bores for the passage of the product is mounted for axial displacement in the metering chamber, the plate valve being configured to close the outlet opening during filling of the metering chamber and the inlet openings during emptying of the metering chamber.

4,437,583
DRIBBLE RING
Rodney J. O'Connor, College Station, Tex., assignor to Romec Environmental Research & Development, Inc., College Station, Tex.
Filed Dec. 21, 1981, Ser. No. 332,547
Int. Cl.³ B67D *1/16*
U.S. Cl. 222—108 15 Claims



1. An apparatus for capturing liquid dripping down the sides of a liquid container, which comprises:
an absorbent material wrapped around the outside of a liquid container; and
said absorbent material being impregnated with a chemical agent selected to chemically neutralize the liquid dripping down the sides of the liquid container.

4,437,584
TOOTHPASTE DISPENSER
Stephen T. Connors, Sale, and Harvey, Kenneth, Wilmslow, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Aug. 28, 1981, Ser. No. 297,289
Int. Cl.³ B67D *5/52*
U.S. Cl. 222—137 6 Claims



1. A dispenser for delivering two products comprising
a container having a neck and a bottom closure,
a tube movably extending through said neck into the container and having a plunger and outlet outwardly of the container and a pipe within said tube and extending below said tube,

a first uni-directional movable semi-flexible plate disposed in said container,

first ratchet means connected to said tube and extending through said first plate for moving said first plate to displace a first product in said container towards said tube,

a second uni-directional movable semi-flexible plate in said container, and

second ratchet means on said pipe extending through said second plate for moving said second plate to displace a second product into said pipe.

4,437,585

DISPENSERS

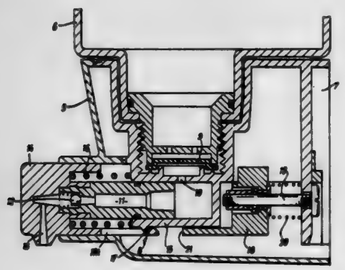
Stewart Banks, Derby, England, assignor to Appor Limited, Derby, England

Filed Mar. 12, 1981, Ser. No. 242,870

Claims priority, application United Kingdom, Mar. 15, 1980, 8008837

Int. Cl.³ B67D *5/06*

U.S. Cl. 222—181 **5 Claims**



1. A dispenser including a delivery mechanism for dispensing measured quantities of material contained in the dispenser, means for adjusting the measured quantity dispensed at each operation of the dispenser, and means mounting the adjustment to be accessible from externally of the dispenser at a rear location thereof, so that when the dispenser is mounted on a wall or other support the adjustment means is inaccessible to an operator until the dispenser is removed from the wall or other support, the dispenser including a separable mounting plate adapted to be secured to a supporting structure and having means for slidably receiving the dispenser so as to mount the same on the mounting plate, and releasable latch means being provided to enable disengagement of the dispenser from the mounting plate whereby to permit access to said adjustment means, said latch means comprising a resilient projection carried by said mounting plate and resiliently biased into a locking position in which it engages with a portion of the dispenser, the projection being resiliently deformable away from said locking position to a retracted release position by use of a special tool engageable with the latch member through an access opening formed in the dispenser or in the mounting plate.

4,437,586

MECHANICALLY ACTUATED PIPETTE DISPENSER

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,931

Int. Cl.³ B67D *5/06*; G01F *11/06*

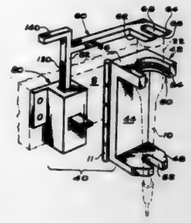
U.S. Cl. 222—181 **8 Claims**

1. In a dispenser including

a pipette comprising means at a first end for containing liquid for dispensing, a compression chamber in fluid communication with said first end, compressing means, including a piston, for providing fluid compression within said chamber, and means for venting said chamber to the atmosphere, and

actuating means including mounting means for receiving said pipette and for removably securing the compression chamber of said pipette in a fixed position and means for engaging and moving said compressing means by a predetermined distance to dispense a fixed amount of liquid;

the improvement wherein said actuating means includes moving and sealing means, operable during receipt of said pipette, for sequentially: (1) moving said piston with said



chamber in a vented condition, to a predetermined starting position relative to said mounting means while said actuating means is stationary with respect to said compression chamber, and (2) thereafter sealing said venting means,

whereby said piston is automatically initialized without dispensing any of the liquid contained by said pipette.

4,437,587

SQUEEZE BOTTLE FOR PRODUCING AN ARBITRARILY DIRECTED LIQUID STREAM

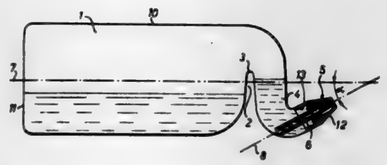
Walter Duering, Zurich, Switzerland, assignor to Duering AG, Daellikon, Switzerland

Filed Jun. 22, 1981, Ser. No. 275,963

Claims priority, application Switzerland, Jul. 3, 1980, 5117/80

Int. Cl.³ B65D *37/00*

U.S. Cl. 222—207 **11 Claims**



1. A squeeze bottle, comprising a bottle body having bottle body wall means (1) made of a material sufficiently flexible for squeezing, said bottle body enclosing a bottle volume having a first longitudinal central axis (7), separation means (2) forming an overflow edge (3) in said bottle for separating said bottle volume into a first larger chamber and into a second smaller bottle neck chamber (4), bottle content discharge means having a second longitudinal central axis (8) and including a bottle mouth (5) forming part of said second bottle neck chamber (4), said bottle mouth (5) extending away from said second bottle neck chamber (4) opposite said separation means (2), said discharge means further including nozzle means (6) operatively mounted in said bottle mouth (5) for discharging a quantity of liquid from said squeeze bottle, said second longitudinal central axis (8) crossing said first longitudinal central axis on the side of said nozzle means (6) outside said bottle body (1) and enclose an acute angle (α) smaller than 50°, whereby the bottle content may be squeezed out as a stream directed in substantially any desired direction, and wherein said separation means (2) forms a double walled restriction in said bottle body wall means, said restriction extending into said bottle body between said larger chamber and said smaller bottle neck chamber.

4,437,588

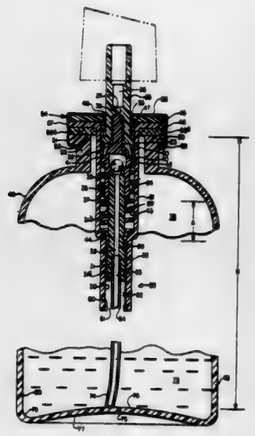
ACCUMULATIVE PRESSURE PUMP

Joseph J. Shay, Waterbury, Conn., assignor to Ethyl Products Company, Richmond, Va.

Filed Dec. 29, 1981, Ser. No. 335,368

Int. Cl.³ B65D *47/34*

U.S. Cl. 222—321 **15 Claims**



1. In a pump dispenser adapted to be attached to a container holding a liquid to be dispensed, the combination comprising:

(a) means defining a cylindrical pump body having a first section and a second section, said second section being of a smaller diameter than said first section;

(b) a first piston received in said first body section and having an attached first stem means having a fluid passage therein extending out of said body section;

(c) a second piston received in said second body section and having an attached second stem means having a fluid passage in its lower portion and a solid upper portion normally contacting said first stem means to close the fluid passage therein;

(d) a third seal piston attached to said second stem means between said first piston and said second piston, and having an outwardly flared skirt that makes a sealing engagement with the uppermost portion of the interior wall of said second body section when said third seal piston is moved to its lowermost position;

(e) a dip tube means having its upper portion passing through an opening of larger diameter than said dip tube that is provided in the lower end of said second body section, the dip tube upper end being coupled to said second piston and movable therewith; and,

(f) means provided on the wall of said second body section to cooperate with said second piston to permit air entrapped in said first and second body sections to be discharged through the opening in the lower end of said second body section into the air space of said container upon the priming of the pump.

4,437,589

DISPENSING CARTRIDGE

Charles Potter, Stow, Ohio, assignor to Go-Jo Industries, Inc., Cuyahoga Falls, Ohio

Continuation of Ser. No. 177,269, Aug. 11, 1980, abandoned. This application Jul. 23, 1982, Ser. No. 401,856

Int. Cl.³ B65D *88/54*

U.S. Cl. 222—327 **3 Claims**

1. A two-piece cartridge for storage and transportation of a fluid and use with a dispensing device of the type which includes a cartridge receiving body and a vacum inducing pump in fluid communication with the cartridge receiving body for drawing material from the cartridge, comprising:

(A) an elongate body having a side wall and first and second ends;

(B) an integral one-piece bottom wall detachably connected to said side wall by a peripherally extending reduced thickness web and normally closing off said first end;

(C) a top cap removably receivable on said second end and normally disposed in sealing relationship therewith;



(D) said second end being receivable on the cartridge receiving body of the dispenser when said top cap is removed;

(E) said bottom wall having a diameter less than the internal diameter of said body, freely resting on the fluid contents of said cartridge in spaced relationship with the sidewall of said body upon being detached from said first end of said wall; and

(F) said top cap being receivable on said first end in air permeable relationship thereto when said cartridge is received on the cartridge receiving body of the dispenser.

4,437,590

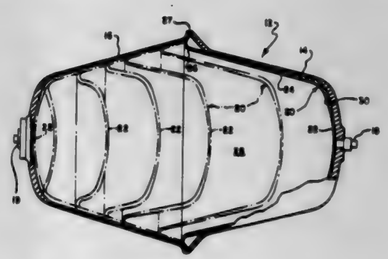
POSITIVE EXPULSION FLUID STORAGE TANKS

Anthony J. LaBruna, Clarence, N.Y., assignor to Textron Inc., Providence, R.I.

Filed Mar. 22, 1982, Ser. No. 360,458

Int. Cl.³ B67D *5/00*

U.S. Cl. 222—386.5 **6 Claims**



1. In a tank of the type which is adapted to be initially substantially filled with a supply of fluid to be expelled therefrom by means of fluid pressure forces acting against a diaphragm which has a side wall portion and convex crown portion shaped to initially lie snugly against an approximately one-half portion of the interior surface of said tank and a rim portion anchored to a mid-portion of said tank, whereby upon admission into said tank of said fluid pressure forces said supply fluid may be substantially completely expelled therefrom by way of an exit in response to rolling inversion of said diaphragm into a reverse shaped configuration fitting against the opposite one-half portion of the interior surface of said tank, the improvement comprising:

said side wall portion being of progressively increasing sectional thickness leading from said rim portion toward

said crown portion, said crown portion being of progressively decreasing sectional thickness leading radially inwardly from said side wall portion toward the center thereof, and said rolling inversion of said diaphragm commences adjacent said rim portion.

4,437,591

DISPENSER FOR, IN PARTICULAR, PASTY SUBSTANCES

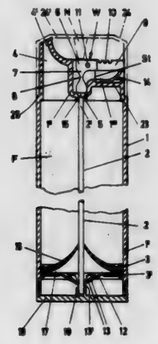
Alfred von Schuckmann, Kevelaer, Fed. Rep. of Germany, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,406

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007480

Int. Cl.³ G01F *11/00*

U.S. Cl. 222—391 **7 Claims**



1. A dispenser, particularly for pasty substances, which comprises a tubular housing with a dispensing mouthpiece at one end and a piston which is displaceable inside the housing towards the mouthpiece to force material out of the mouthpiece by means of an operating handle located at the mouthpiece end and a draw member linking the operating handle to the piston wherein the draw member is formed as a rod which is coupled with the piston via an unidirectionally-operating ratchet arrangement, the rod being coupled to one arm of a double-armed rocking lever mounted in the housing and whose other arm forms an operating pressure surface, and wherein the rocking lever is enclosed in the area of its shorter arm in a step whose hollow side walls are provided with bearing openings for snapping in of the rocking lever's journals and whose longer arm protrudes above the step in such a way that it overlaps a portion of surface of an upperfront wall of the housing on which a spring braces itself.

4,437,592

SELF-SEALING ACTUATING DEVICE FOR MOUNTING ON A DISCHARGE VALVE OF A PRESSURIZED CONTAINER

Luigi D. Bon, 141 Feldstrasse, 4663-Aarburg, Switzerland

Filed Dec. 19, 1980, Ser. No. 218,083

Claims priority, application Switzerland, Dec. 21, 1979, 11369/79; May 16, 1980, 3819/80

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—402.12 **15 Claims**

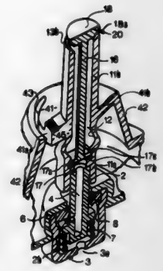
1. A self-sealing actuating device adapted for being mounted on the valve body, having an outlet channel, of a self-closing discharge valve of a pressurized container from which a liquid product is to be dispensed with the aid of a propellant in liquid, pasty or foamy condition, which actuating device opens automatically when an external part thereof is moved in a given direction, and comprises

(a) as said external part, a tubular actuating member having two open ends, a first one of which is destined to register with the said outlet channel, when said actuating device is mounted on said valve body, the other open end constituting a discharge orifice of said device; and a tubular passage connecting said two open ends;

(b) an obturating member lodged stationary in said tubular passage and having an obturating head for obturating said discharge orifice hermetically from the outside, when said tubular actuating member is in a closed position,

(c) anchoring means extending radially in said tubular passage in an anchoring zone thereof axially spaced from said other open end of said actuating member, and holding said obturating member and said actuating member in engagement with one another in said zone, and

(d) spring means associated with said tubular actuating member and adapted for biassing said actuating member toward said closed position when said actuating member is brought into an open position;



said actuating member being axially displaceable relative to said obturating member, between said anchoring zone and said other second open end thereof, between said open and said closed positions,

whereby, when said tubular actuating member is moved toward the open position, by an axial force directed away from said discharge orifice, against bias applied to said tubular member by said spring means being compressed, said obturating head protrudes out of said discharge orifice and frees said discharge orifice in the form of an annular gap.

4,437,593

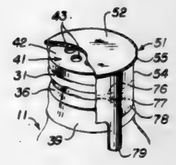
OVERCAP FOR SPICE CANISTER

Joseph J. Bullock, III, Atherton, Calif., assignor to Three Sisters Ranch Enterprises, San Carlos, Calif.

Filed Jul. 12, 1982, Ser. No. 397,609

Int. Cl.³ B65D *83/06*

U.S. Cl. 222—541 **4 Claims**



1. In combination, a cap having a central top first disc, a thin-walled substantially cylindrical first skirt depending from adjacent the periphery of said first disc, said first skirt being scored and weakened in a circumferential first line spaced downwardly from the top of said first skirt and in a second line joining said first line and extending down to the bottom edge of said first skirt, a tab attached to said first skirt adjacent said second line, an upper internal circumferential bead on said first skirt between said first line and said disc, a lower internal circumferential second bead on said first skirt below, but adjacent, said first line, a fitment having a second disc formed with sifter holes and a short peripheral depending second skirt, the exterior of said second skirt being cylindrical and of an outer radius to seal tightly against the inside of said first skirt immediately below said first disc, the interior of said second skirt terminating in an internal third bead, and a container having a neck, the exterior of said neck having a fourth bead near its top shaped to fit inside the top of said second skirt and a first groove below said fourth bead shaped to receive said third bead, a fifth bead and a sixth bead vertically spaced from said fifth bead, each of said fifth and sixth beads having shoulders on their lower edges, said first and second beads fitting under the shoulders of said fifth and sixth beads, respectively, said first skirt sealing the contents of said container from deterioration by exposure to air both when said first skirt is intact and also after the portion of said first skirt below said first line has been torn away, the maximum radii of said fifth and sixth beads being about equal to the outer radius of said second skirt whereby said first and second beads may slide over said second skirt.

4,437,594

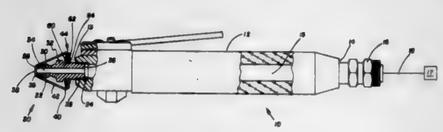
RETAINABLE CLOSURE

Clyde D. Sprague, Lilburn, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Dec. 10, 1981, Ser. No. 329,543

Int. Cl.³ B65D *47/00*

U.S. Cl. 222—544 **6 Claims**



1. A retainable closure for selectively atmospherically isolating a passageway in a fitting, the closure comprising:

a retainer;

an elastic cover secured to said retainer, said cover being selectively positionable between a first and a second position, when in said first position said cover sealingly contacts an orifice in which the passageway terminates so as to atmospherically isolate the passageway, and when in the second position said cover is retainable removed from the orifice so as to allow unimpeded passage past the orifice and wherein said retainer is connected to the fitting, said retainer comprises an eyelet, a washer and a grommet washer, and said cover being elongate and having opposite ends, one of said ends is sandwiched between said eyelet and said washer, and other of said ends of said cover is sandwiched between said washer and said grommet washer so that said cover is secured to said retainer so as to loop towards said orifice.

4,437,595

FEEDING APPARATUS FOR FISH AND OTHER ANIMALS

Perry Stevens, West Covina, and Robert E. Brown, Rosemead, both of Calif., assignors to A.F.C.S., Inc., City of Industry, Calif.

Filed Feb. 11, 1982, Ser. No. 347,895

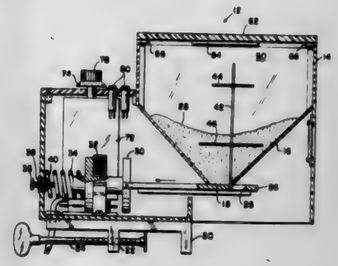
Int. Cl.³ A01K *5/02*

U.S. Cl. 222—642 **3 Claims**

1. Dispensing apparatus for dispensing an associated fluent material which comprises:

at least first and second housing means for receiving the fluent material, each housing means having a top and a bottom, said bottom having an opening therein;

a slide member having at least first and second openings therein, said slide member being mounted for movement adjacent to said bottoms of each of said first and second housing means between a first position wherein said openings of said first and second housig means and said first and second openings respectively of said slide member are in at least partially registered relationship to allow passage of the fluent material through said openings, and a second position wherein said openings are not in registered relationship and passage of a fluent material out of said holding means is prevented;



adjustable solenoid means for moving said slide member including throw adjusting means to allow control of said at least partially registered relationship of said openings;

first timing means connected to control said adjustable solenoid operating means to move said slide member from said second position to said first position and back to said second postion for a predetermined time period; and

second timing means connected to initiate operation of said first timing means at a chosen time of day.

4,437,596

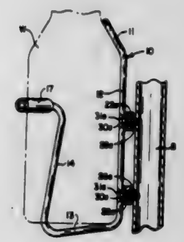
ASSEMBLY FOR MOUNTING A WATER BOTTLE CAGE ON A CYCLE FRAME

William B. Shook, Bremen, Ohio, assignor to Thurston, Inc., Columbus, Ohio

Filed Jul. 15, 1982, Ser. No. 398,663

Int. Cl.³ B62J *11/00*

U.S. Cl. 224—39 **8 Claims**



1. A wire cage for receiving a bottle or the like in combination with an assembly for mounting it on a support; said wire cage being formed with a socket into which the bottle is inserted and removed therefrom and including longitudinally-extending back wire sections along which the bottle slides during insert and removal; said mounting assembly including a cradling block for receiving the wire sections, and fastening means for fastening the block to the support and engaging the wire sections rearwardly of the forwardmost surfaces thereof so as to clamp the wire sections to the block in a manner not to interfere with the sliding movement of the bottle thereon; said back wire sections being disposed in laterally-spaced relationship, said fastening means of the mounting assembly comprising a screw which is passed between the back wire sections

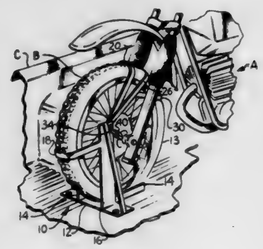
through the block and which has a clamping head for engaging the wire sections, said wire sections being provided with opposed notches to form a countersink socket for the screw head so it will be below the surfaces of the wire sections engaged by said bottle and will also preclude longitudinal and torsional movement of the wire sections relative to the cradling block.

4,437,597

MOUNTING APPARATUS FOR A DIRT BIKE

Richard H. Doyle, 901 S. 6th Ave., Sp 406, Hacienda Heights, Calif. 91745

Filed Jul. 6, 1981, Ser. No. 281,024
Int. Cl.³ B60R *9/10*
U.S. Cl. 224—42.45 R **16 Claims**



1. Mounting apparatus for a vehicle having a plurality of wheels having tires thereon which comprises:
support means,
a first generally U-shaped member for preventing movement of the vehicle in a first generally horizontal direction by engagement with one of said tires, said first generally U-shaped member being carried on said support member,
means for preventing movement in a second generally horizontal direction which is opposite to said first direction by engagement with the one tire,
said means for preventing movement in a second generally horizontal direction comprising at least a second generally U-shaped member which is pivotally mounted on said support means, said second generally U-shaped member having first and second legs disposed in spaced generally parallel relationship and having a pivot axis extending substantially in a plane defined by said first and second generally parallel legs thereof, said second generally U-shaped member having a mid-section disposed intermediate said first and second legs thereof, said second generally U-shaped member being dimensioned and configured for motion about said pivot axis between first and second positions, said second U-shaped member being disposed with said mid-section thereof disposed in contacting relationship with an associated tire of the associated vehicle in said first position and disposed away from said associated tire in said second position,
said means for preventing motion in a second generally horizontal direction further including a third generally U-shaped member, and
means for pivotally mounting said third generally U-shaped member.

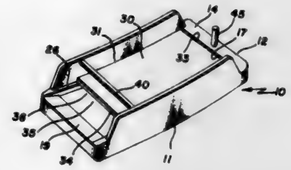
4,437,598

BELT BUCKLE

Evan B. Hull, 49 Pleasant St., Northboro, Mass. 01532

Filed Apr. 2, 1982, Ser. No. 365,036
Int. Cl.³ A45C *1/04*
U.S. Cl. 224—163 **6 Claims**

1. Buckle for use with a belt comprising:
(a) a main body portion having a front end, a back end, and a generally planar outer wall with an inner surface,
(b) a back wall extending inwardly from said inner surface at said back end,
(c) a pair of side walls extending inwardly from said inner surface at opposite sides of said main body portion between said front and back ends,
(d) a generally planar inner wall fixed to said back and side walls and spaced from said inner surface to define a compartment with said inner surface, back and side walls, said compartment having an opening at said front end for receiving currency and other valuable papers for storage in said compartment,



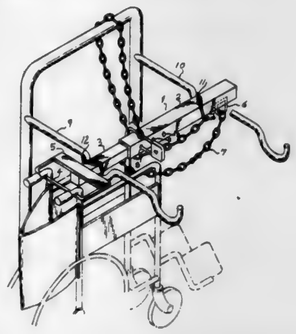
(e) a front wall extending inwardly from said inner surface at said front end, said front wall being substantially spaced from said opening,
(f) first attaching means for releasably securing one end of a belt to said back end, and
(g) second attaching means for more permanently securing the other end of the belt to said front end so that when the belt is attached to said first attaching means in its normal wearing position around a person's waist, a portion of the belt extends from said opening to said front wall to conceal and cover said opening.

4,437,599

BICYCLE/WHEELCHAIR CARRIER

Harold G. Jordening, 1541 E. LaPalma, Anaheim, Calif. 92804

Filed Feb. 22, 1982, Ser. No. 351,328
Int. Cl.³ B60R *9/00*; B62H *3/00*
U.S. Cl. 224—319 **2 Claims**



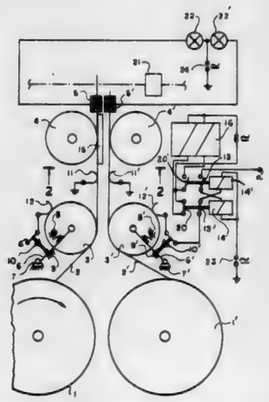
1. A device for adapting a vehicle-mountable bicycle carrier with its projecting horizontal support pieces on which there rests a bicycle cross bar, the adaptation permitting the carrying of a collapsed wheelchair having two rearwardly projecting horizontal hand grips wherein the adaptation includes an extensible member which lies horizontally on the projecting bicycle support pieces, the extensible member having larger and smaller telescoping pieces, the improvements comprising:
a cross-piece attached to the end of the smaller telescoping piece, a generally U-shaped member joined to the cross-piece at each end of each leg of said U-shaped member with the base of said U-shaped member with the base of said U-shaped member spaced from said cross-piece, said base serving as a support for the handgrips of a wheelchair said cross-piece functioning to prevent the hand grips from moving off said base transport of the wheelchair,
the larger piece of the extensible member having a ring attached to its bottom surface, the ring functioning to contain a loop of cable which supports the front end of the collapsed wheelchair, the ring further functioning as a projection to inhibit the horizontal extensible member from moving sideways off the bicycle support pieces.
2. On a bicycle carrier frame having two projecting pieces spaced apart which normally function to support the bicycle, attachments to the projecting pieces to allow the carrying of a collapsed wheelchair comprising:
a horizontal piece perpendicular to and connecting the projecting pieces, the horizontal piece functioning as a stiffener to the two projecting pieces of the bicycle carrier,
two "U" shaped configurations, a first "U" shaped hanger configuration, lying substantially in a vertical plane, being attached to the underside of one of the projecting pieces of the bicycle carrier and lying in said vertical plane which includes the projecting piece, the attachment points being the tops of the legs of the "U", the bottom of the first "U" shaped piece serving as a hanger support for the wheelchair hand grips; at each of the two corners of the first "U" there being attached a horizontal bar extending generally parallel to said stiffener toward the other projecting piece of the bicycle carrier and together forming the legs of the second "U" shaped piece, each bar formed at its end to provide for one pin to be threaded through the ends of each, a means for locking the pin in place, the pin being the base of said second "U", the pin functioning to prevent the wheelchair hand grips from jumping off the bottom of the first "U".

4,437,600

CONTINUOUS WIRE FEED ARRANGEMENT FOR STAPLING APPARATUS

Rudolf Störr, Karl-Marx-Stadt, German Democratic Rep., assignor to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 273,552, Jun. 15, 1981, abandoned. This application Jul. 8, 1981, Ser. No. 283,020
Claims priority, application German Democratic Rep., Jun. 17, 1980, 221882
Int. Cl.³ B65H *17/04*
U.S. Cl. 226—108 **8 Claims**



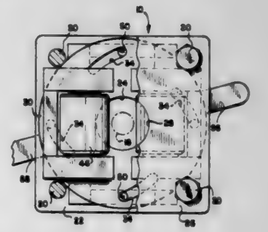
1. A continuous wire feed arrangement for feeding wire to a stapling apparatus or the like, comprising two wire supply means; two wire guide nozzles respectively arranged along paths leading from the respective wire supply means to a wire cutting and transmitting device; wire feed means positioned between said wire supply and said guide nozzles in said paths and operative for respectively transporting the wires from the wire supply means through and beyond the respective means; and electrical control circuit means including two guide rolls of electrically conductive material and insulated from the ground each arranged between the respective wire supply means and said wire feed means cooperating with said wire feed means so that, upon interruption of wire feed from one of said wire supply means to one of said nozzles, said control circuit means cause transport of wire from the other supply means to and beyond the other of said nozzles to thus produce a continuous wire feed.

4,437,601

ADJUSTABLE WIRE GUIDE

Frank W. Brooks, Dayton, Ohio, assignor to Flexiblast Company, Wilmington, Del.

Filed Nov. 9, 1981, Ser. No. 319,823
Int. Cl.³ B65H *57/00*
U.S. Cl. 226—199 **5 Claims**



1. A wire guide means, comprising:
a frame;
at least two pairs of rollers, each pair being mounted in said frame such that rotational axes of said rollers are parallel to each other and in a plane perpendicular to an intended centerline location of a wire to pass between said rollers of said pairs, said pairs of rollers being disposed in different planes such that said axes of each of said pairs are positioned at spaced angular locations with respect to said axes of others of said pairs about said intended centerline location;
each of said rollers including a rigid support member and a pin projecting from said support member; and
a camming plate mounted perpendicular to and for rotation about said intended centerline location, said camming plate having a central opening through which a wire may pass and which is substantially concentric with said intended centerline location, and a plurality of arcuate slots at equal angular and radially spaced locations about said intended centerline location, each of said slots receiving a different one of said pins such that rotation of said camming plate causes equal inward or outward axial translational movement of said rollers with respect to said intended centerline location whereby said rollers may be positioned to engage a wire to position a centerline thereof coincident with said intended centerline location.

4,437,602

NAIL DRIVING TOOL

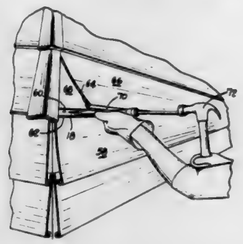
Jerome A. Kaczmarek, 9409 Grand Division Ave., Cleveland, Ohio 44125

Filed Aug. 4, 1978, Ser. No. 931,204
Int. Cl.³ B25C *1/02*
U.S. Cl. 227—147 **2 Claims**

1. A nail driving tool comprising:
(a) an elongated tubular guide member formed by a wall surrounding a nail receiving guideway, said guide member having a driving end forming an opening from which a

nail is driven and an opposite end, said guide member wall extending continuously about said opening and formed from a material which is transparent to electromagnetic radiation in the visible spectrum thus permitting a nail in said member to be observed from outside of the guide member, said guide member wall defining an internal nail guiding surface extending at least part way through said guideway from said opening toward said opposite end;

(b) an elongated driver member defining a rigid nail engaging surface at one end and a rigid anvil-like surface at its opposite end adapted to be struck with a hammer, said



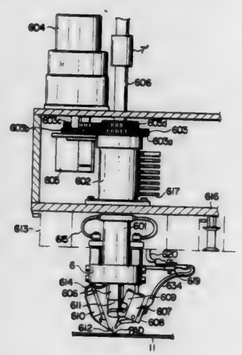
driver member defining a body extending into said opposite end of said guide member and shaped to generally conform to the shape of said guideway; and,

(c) positioning means frictionally engaged between said driver member and said guide member for limiting movement of said driver member relative to said guide member, said positioning means including an elastomeric cup-shaped element defining a bore for receiving one end of the guide member and an aperture, said driver member extending through said aperture and frictionally engaging said cup-shaped element.

4,437,603
AUTOMATIC WIRING MACHINE FOR PRINTED CIRCUIT BOARDS

Mamoru Kobayashi, Hadano; Kanji Ishige, Kanagawa; Hideaki Sasaki; Mitsukiyo Tani, both of Hadano, and Yashuhiko Kawakami, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 30, 1980, Ser. No. 221,458
Claims priority, application Japan, Jan. 7, 1980, 55-130
Int. Cl.³ H05K *13/06*
U.S. Cl. 228—4.5 **6 Claims**

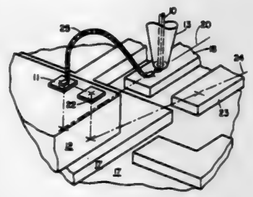


1. An automatic wiring machine for a printed circuit board comprising an X-Y table carrying the printed circuit board to be applied with wirings and movable in X and Y directions, and a head located above said X-Y table and rotatably supported by a main console of the machine to rotate about an axis perpendicular to the surface of said X-Y table, said head being mounted with a wire guide unit for guiding the feed of a wire for wiring to the surface of said printed circuit board, a bonding unit for bonding at a bonding point the wire fed from said wire guide unit to a conductor pattern on said printed circuit board by heating and depressing the fed wire, and a cutter unit for cutting away the wire at a site deviating from said bonding point to said wire guide unit, said wire guide, bonding and cutting units being mounted on said head for linear movement along lines which are inclined with respect to said axis, and the acting points of said wire guide, bonding and cutter units on the printed circuit board being substantially concentrated on said axis; further comprising a monitoring optical pipe for visual monitoring of the printed circuit board surface, said optical pipe passing along the rotation axis of said head.

4,437,604
METHOD OF MAKING FINE WIRE INTERCONNECTIONS

Ely Razon, Hatboro, and Dan Vilenski, Horsham, both of Pa., assignors to Kulicke & Soffa Industries, Inc., Horsham, Pa.

Filed Mar. 15, 1982, Ser. No. 358,336
Int. Cl.³ B23K *20/10, 20/00*
U.S. Cl. 228—179 **4 Claims**



1. A method of making uniform fine wire interconnections between conductive pads on a semiconductor device and conductive terminals on a substrate employing a capillary type bonding tool comprising:

providing a fine wire in the capillary wedge bonding tool of the type having an annular working face with the end of the fine wire bent under the working face,

making a first wire bond to attach said bent end of said fine wire to a first conductive pad on said semiconductor,

moving said bonding tool away from said first conductive pad while paying out said fine wire to make a first fine wire loop interconnection between said first conductive pad and a first conductive terminal,

clamping said fine wire relative to said bonding tool,

making a second wire bond by attaching said fine wire to said first conductive terminal to provide a first fine wire interconnection between said conductive pad and said conductive terminal.

determining the angular direction of said first fine wire interconnection,

releasing said clamped fine wire,

moving said capillary wedge bonding tool a short vertical and horizontal distance from said second bond to pay out a bent end of fine wire under the working face of said capillary wedge bonding tool,

clamping said fine wire to prevent relative movement of said fine wire in said capillary bonding tool,

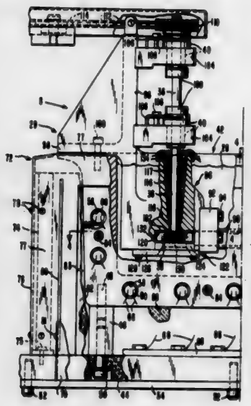
determining the angular direction between the next conductive pad on said semiconductor device and the next conductive terminal on said substrate to be interconnected by said fine wire, and wherein the included angle between said first wire interconnection and said second fine wire interconnection is between 15 degrees and 60 degrees, and

moving said capillary wedge bonding tool substantially horizontally away from said first and said second wire bonds along a path which is substantially equal to the determined angular direction between said next conductive pad and said next conductive terminal on said substrate to be interconnected by said fine wire to provide the end of said fine wire bent under said capillary bonding tool oriented in a proper angle direction for the next first wire bond on said next conductive pad.

4,437,605
METHODS OF AND APPARATUS FOR PUMPING SOLDER

John G. Tucker, Lexington, and Hugh A. Wells, Winston-Salem, both of N.C., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,835
Int. Cl.³ H05K *3/34*
U.S. Cl. 228—180 R **12 Claims**



1. A method of pumping solder in a soldering operation, which comprises:

supporting a rotatable shaft for rotation solely in support means located above an upper surface of a molten solder bath such that the solder in the solder bath does not contact the support means;

suspending the rotatable shaft and an impeller on the shaft from the support means and into a container for holding the molten solder bath;

rotating the shaft and the impeller to pump solder in the molten solder bath to a molten solder discharge position; and

precluding the solder at the upper surface of the molten solder bath from making any significant contact with the rotating shaft as the solder is pumped to the molten solder discharge position.

4,437,606
BEVERAGE PACKAGE AND PRODUCTION BLANK WITH IMPROVED LOCKING FEATURES

Earl J. Graser, Monroe, La., assignor to Manville Service Corp., Denver, Colo.

Filed Mar. 26, 1982, Ser. No. 362,213
Int. Cl.³ B65D *5/02, 71/00*
U.S. Cl. 229—40 **4 Claims**

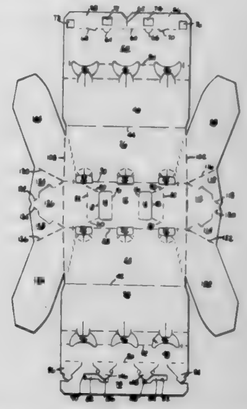
1. A wrap-around style beverage package for a plurality of cans or bottles of beverage, the package surrounding the cans or bottles and having locking means on overlapping first and second margins of the package, comprising:

(a) the first margin having a primary male adjustable locking portion comprising two oversized position tabs and two undersized position tabs; and

(i) the second margin having primary female adjustable locking portions of the first margin and comprising two oversized position slots positioned for engagement with the oversized position tabs on the first margin and two undersized position slots positioned for engagement with the undersized position tabs of the first margin;

(b) the second margin having secondary punch-style arrow-shaped male locking tabs; and

(i) the first margin having secondary punch-style, female locking openings engaged by the secondary punch-style male locking tabs; and;



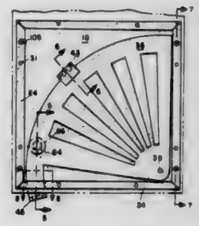
(c) the first margin having tertiary punch-style, arrow-shaped male locking tabs on each side of the primary male adjustable locking portion; and

(i) the second margin having tertiary punch-style female locking openings on each side of the primary female adjustable locking portions engaged by the tertiary punch-style male locking tabs.

4,437,607
MAIL BOX SIGNAL

Edward Negosta, 4803 Old Branch Ave., Camp Springs, Md. 20031

Filed Jan. 8, 1981, Ser. No. 223,287
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—35 **10 Claims**



1. A mail box having a door, bottom, and an end having a signal means;

a control means operative on said signal means responsive to door position;

the improvement comprising:

a first signal member (18) having a plurality of spaced signal areas:

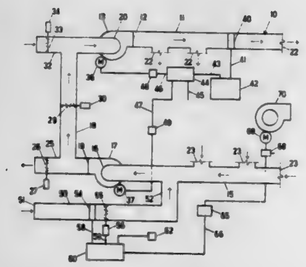
a second signal member (36) having alternate concealing and revealing areas movable to alternately register with said spaced signal areas of said first member in respective relative concealing or revealing positions of said first and second signal members to conceal or reveal said signal

areas; said revealing areas of said second signal member being slots therethrough and said concealing areas comprising areas intermediate adjacent slots;
said signal members being of the same color except for color contrast of said spaced signal areas.

4,437,608
VARIABLE AIR VOLUME BUILDING VENTILATION SYSTEM

Robert B. Smith, 4915 Monona Dr., P.O. Box 6141, Madison, Wis. 53716

Filed May 17, 1982, Ser. No. 379,111
Int. Cl.³ F24F *13/04*
U.S. Cl. 236—13 **9 Claims**

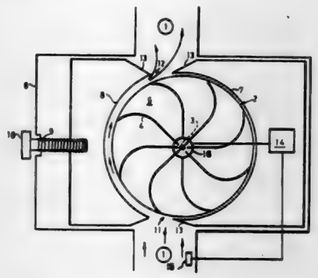


1. A ventilation system for a building comprising:
(a) a supply duct;
(b) a return duct;
(c) a supply fan, having an inlet and an outlet connected to the supply duct, which is driven by an AC electric motor;
(d) a return fan, having an inlet and an outlet connected to the return duct, which is driven by an AC electric motor;
(e) a connecting duct extending from the outlet of the return fan to the inlet of the supply fan;
(f) means responsive to a condition indicative of the ventilation demands of the building for providing electrical power to the motors driving the supply and return fans at a frequency varying in response to the condition sensed in the building to change the speed of the fans in a manner which tends to restore the condition to a pre-selected value;
(g) an outside air duct extending from an intake communicating with the atmosphere outside the building to connection to the return duct at a position ahead of the inlet of the return fan;
(h) a flow sensor positioned in the outside air duct to sense the air velocity therein and provide an output signal indicative thereof;
(i) damper means in the outside air duct responsive to a control signal for controlling the resistence to flow therethrough and thereby controlling the velocity of air flow in the outside air duct;
(j) outside air duct control means, receiving the output signal from the flow sensor and connected to provide a control signal to the damper means, for controlling the damper means in response to the rate of flow in the outside air duct to maintain a substantially constant flow velocity in the duct, whereby the flow rate through the outside air duct may be set to match the expected flow rate of air exhausted from the building being ventilated.

4,437,609
AUTOMATIC DAMPER DEVICE

Arne Johannson, Skövde, Sweden, assignor to Svensk Ideutveckling Handelsbolag, Skövde, Sweden

Filed Apr. 21, 1982, Ser. No. 370,162
Claims priority, application Sweden, May 15, 1981, 8103068
Int. Cl.³ F24F *13/10*
U.S. Cl. 236—49 **6 Claims**

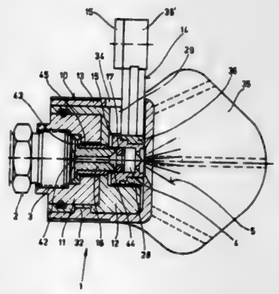


1. An automatic damper device for use in a ventilation duct (1) comprising,
a paddle wheel (2) positioned in said duct and including a shaft (3) attached to said paddle wheel for attachment to said duct for free rotation relative thereto, said shaft being at right angles to said duct axis;
means (16) coupled to said paddle wheel for controlling the rotation thereof;
a sensor (15) positioned within said duct upstream of said paddle wheel; and,
a thermostat (14) coupled to said sensor and said control means whereby said sensor and said thermostat actuate said control means, in response to changes in temperature in said duct.

4,437,610
REVERSIBLE QUICK CHANGE NOZZLE HOLDER FOR SPRAY GUNS

Willi Huber, and Manfred Metz, both of Altstätten, Switzerland, assignors to J. Wagner AG, Altstäten, Switzerland

Filed Dec. 4, 1981, Ser. No. 327,568
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046464
Int. Cl.³ B05B *15/02*
U.S. Cl. 239—119 **27 Claims**

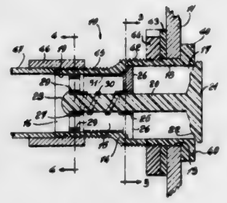


1. A nozzle assembly for spray guns comprising a cylindrical base body assembly having an internally threaded bore for attachment to the outlet end of a spray gun, the base body assembly having an axial recess therein at an end opposite the threaded bore and open thereto, a nozzle mount received in said recess, a nozzle received in said nozzle mount, a cover nut having an axial end wall with an outlet orifice therethrough, the outlet orifice having an opening larger than the maximum dimension of a spray stream from the nozzle when the cover nut is affixed to the base body assembly in operative position and said opening being less than the maximum dimension of the nozzle mount, the cover nut receivable on the base body assembly, a quick thread connection between the cover nut and base body assembly, the thread connection providing first and second rotational positions of the cover nut with respect to the base body assembly, the cover nut end wall enclamping the nozzle mount between the base body assembly and cover nut axial end when the cover nut is in the first position with respect to the base body assembly, the nozzle mount freely removable from the recess when the cover nut is in the second position with respect to the base body assembly, aligned radial openings on the base body assembly and cover nut communicating to said recess, a projection on said nozzle mount projecting through said openings and the opening on the cover nut having a circumferential dimension to allow rotation of the cover nut between the first and second positions without interference with the projection.

4,437,611
SELF PROTECTING SPRAY NOZZLE

Alfred A. Gilroy, Richmond, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Continuation of Ser. No. 181,408, Aug. 26, 1980, abandoned.
This application Aug. 23, 1982, Ser. No. 410,817
Claims priority, application United Kingdom, Oct. 10, 1979, 7935179
Int. Cl.³ B05B *1/32, 12/12, 13/06*
U.S. Cl. 239—453 **4 Claims**

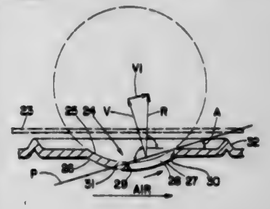


1. A spray nozzle for spraying a liquid inside of a conduit through which a corrosive or dirty fluid flows comprising a tubular body formed from heat resistant thermoplastic material with a central bore, an inlet at one end and an outlet orifice at the other end, a plunger formed from heat resistant thermoplastic material having a stem slidably mounted within the tubular body, the plunger having an enlarged head at one end of the stem located outside the tubular body and adjacent the outlet orifice so that the boundaries of the outlet orifice acts as a plunger seat, a bushing fixed within the tubular body to guide the plunger stem during its movement, an apertured disk fixed to the free end of the stem within the tubular body and slidable within the body, a sleeve positioned within the tubular body between the bushing and the disk, the sleeve limiting movement of the disk toward the bushing when opening the plunger to control the size of the outlet orifice opening in the nozzle, thermoplastic spring means including a coil spring made from a ribbon of polyester material loosely positioned about the stem between the bushing and the disk to normally bias the plunger stem in a direction toward the inlet to have the plunger head close the outlet orifice, the spring means capable of being overcome by water under pressure entering the inlet of the tubular body, and acting on the plunger head from within the tubular body to move the plunger head away from the tubular body to open the outlet orifice, and a mounting means on the nozzle for use in mounting the nozzle just inside a wall of the conduit so as to interrupt the flow of fluids therein as little as possible, said mounting means including a flange laterially projecting from the plunger seat which is located inside the wall and a threaded portion on the outer surface of the nozzle body adjacent the flange for receiving a nut which is located outside of the wall.

4,437,612
FLOTATION NOZZLE

Stephen Russ, Point Claire, and Don McAnespie, Montreal, both of Canada, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 28, 1981, Ser. No. 334,916
Int. Cl.³ B05B *1/14*
U.S. Cl. 239—556 **14 Claims**

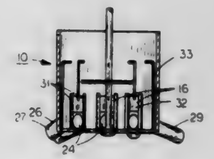


1. A nozzle for impinging fluid against a web traveling adjacent thereto, comprising a housing having a wall which helps define a chamber through which fluid is circulated, under pressure, and a plurality of orifices disposed in the wall and communicating with the chamber and through which fluid passes from the chamber for impingement against the traveling web, and characterized by means for directing fluid from the plurality of orifices in a desired direction, including means for positioning the plurality of orifices so that the resultant vector (R) of vectors (V, V1) representing velocities due to static and dynamic fluid pressure at the orifices, is in said direction, and an annular ridge surrounding each of said orifices and projecting from the wall of the housing in a direction opposite the chamber.

4,437,613
PARTICLE SPREADER APPARATUS

Floyd V. Olson, Rte. 2, Sherburn, Martin County, Minn. 56171

Filed Mar. 10, 1982, Ser. No. 356,886
Int. Cl.³ A01C *17/00*; A01F *25/18*
U.S. Cl. 239—688 **7 Claims**



1. A particle spreader apparatus for use in the equal distribution of particles, the apparatus comprising:
(a) particle holding means for receiving particles that are to be distributed;
(b) output means operably associated with said particle holding means for allowing particles in said particle holding means to exit therefrom;
(c) particle dispersal means for urging particles to exit from said particle holding means through said output means;
(d) dispersal guide means operably associated with said output means for supporting and guiding particles that have exited through said output means for a preselected distance from said output means before dispersing such particles;

(e) drain means operably associated with said particle holding means for allowing particles to exit from said particle holding means through said drain means when said particle dispersal means is not urging said particles to exit through said output means; and

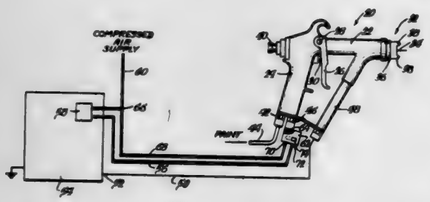
(f) deflection means for urging particles away from said drain means when said particle dispersal means is urging particles to exit through said output means.

4,437,614

ELECTROSTATIC AIR ATOMIZATION SPRAY COATING SYSTEM

Theodore Garcowski, Parma, Ohio, assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Sep. 28, 1982, Ser. No. 425,884
Int. Cl.³ B05B 5/02
U.S. Cl. 239—691 **8 Claims**



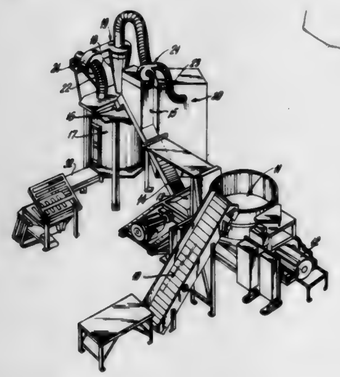
1. In an air atomization electrostatic spray coating system having a hand held spray gun, of the type wherein a flow of atomizing air to said gun is sensed by an air flow sensor for controlling energization of a high voltage power supply for a charging electrode on said gun, the arrangement being such that when the gun is triggered on and an air flow occurs the power supply is energized, and vice versa, the improvement comprising a bypass valve which is manually manipulatable to selectively bypass a flow of air to said gun around said air flow sensor to permit air atomization spraying with and without electrostatics.

4,437,615

PROCESS FOR PREPARING ANIMAL BEDDING

Patrick W. Whiteman, Reston, Va., assignor to Recycled Paper Bedding, Inc., Reston, Va.

Division of Ser. No. 291,482, Aug. 10, 1981, Pat. No. 4,378,756, which is a continuation of Ser. No. 74,238, Sep. 10, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 429,985
Int. Cl.³ B02C 18/286, 19/12
U.S. Cl. 241—24 **4 Claims**



1. A process for preparing animal bedding comprising subdivided newsprint consisting essentially of flat particles with irregularly shapes major surfaces of a maximum diameter not more than about three times the minimum diameter, said maximum diameter being less than about one-inch, said particles having a particle size distribution including at least about 15 wt. percent greater than one-quarter inch maximum diameter, at least about 40 wt. percent greater than 1/32 inch but less than one-quarter inch in maximum diameter and not more than about 30 wt. percent smaller than 1/32 inch in maximum diameter, which comprises

a. grinding the cellulosic material using a two-stage hammermill having screens in both stages containing a majority of smaller holes of about one-half inch diameter and a minority of larger, triangularly shaped holes approximating a triangle with sides of 1.3–1.7 inches, and

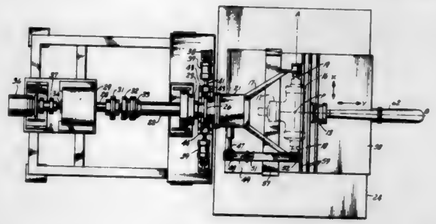
b. removing from the ground material sufficient dust and fine particles to reduce the percentage of product having a particle size below 1/32 inch to not more than about 30 wt. percent.

4,437,616

WINDING FIBER REINFORCED PIPE FITTINGS

Gerald M. Magarian, Cypress, and Ralph S. Friedrich, Hermosa Beach, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Filed Sep. 8, 1981, Ser. No. 300,292
Int. Cl.³ B65H 54/64, 81/08
U.S. Cl. 242—7.02 **53 Claims**



1. A method for winding a fiber reinforced plastic pipe fitting having a straight run and a lateral branch comprising:

holding a mandrel for the fitting so that the axis of the run passes through a point P;

positioning a delivery ring in an X-Y plane for translation in X and Y directions in the X-Y plane;

translating the delivery ring in the X-Y plane while alternately:

rotating the mandrel around an A axis through the point P and parallel to the X direction;

rotating the mandrel around a B axis through the point P and parallel to the X direction; and

delivering at least one fiber roving to the delivery ring; and

continually delivery at least one fiber roving from the delivery ring to the mandrel as the mandrel rotates alternately around the A and B axes.

4,437,617

WINDING APPARATUS FOR FILAMENTARY MATERIAL HAVING MEANS FOR WINDING A TRAILING END OF THE FILAMENTARY MATERIAL IN CLOSE ORDER UPON A PACKAGE

Max L. Cardell, Shelby, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

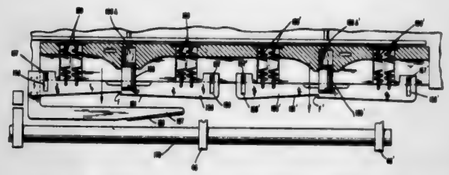
Continuation-in-part of Ser. No. 258,309, Apr. 28, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,911
Int. Cl.³ B65H 54/02, 54/22
U.S. Cl. 242—18 EW **12 Claims**

1. A winder for winding packages of filamentary material, comprising:

means for rotating a package about a longitudinal axis to wind-up filamentary material which is fed thereto,

traversing means for traversing the filamentary material along the package axis to produce a helical winding of the filamentary material, and

controlling means for engaging the filamentary material prior to the completion of a winding sequence to cause the trailing end of the filamentary material to be wound for a plurality of turns in non-helical, close-order relationship



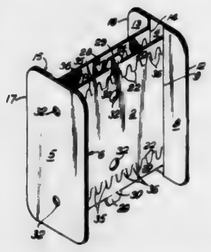
on the package to resist subsequent unraveling of the filamentary material, said controlling means comprising a movable arm including a contact edge oriented generally parallel to a plane defined by the traversing movement of the filamentary material, said arm being mounted for movement toward and away from such plane to contact the filamentary material and displace same out of said traversing means, said contact edge including a stop for constraining the filamentary material for winding in a non-helical, close-order relationship onto the package.

4,437,618

SPOOL DISPENSER

Daniel J. Boyle, Hartland, Wis., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 8, 1982, Ser. No. 396,164
Int. Cl.³ B65H 75/18, 75/14
U.S. Cl. 242—71.8 **21 Claims**



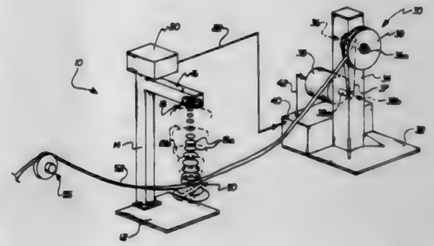
8. A spool dispenser comprising a front wall panel and a rear wall panel, a side flap extending from the outer edges of each front and rear wall panels and foldable relative thereto along a fold line and a side flap extending from each inner edge of the front and rear wall panels and foldable relative thereto along a fold line, a first side wall panel interposed between the inner side flaps extending from the front and rear wall panels and foldable relative thereto along a fold line, a second side wall panel extending from the outer side flap panel and foldable relative thereto along a fold line.

4,437,619

CATENARY CONTROLLER

Hall Cary, c/o 8074 Hubbard Valley Rd., Seville, Ohio 44273, and John F. Marquard, Strongsville, Ohio, assignors to Hall Cary, Seville, Ohio, a part interest

Filed May 6, 1981, Ser. No. 260,912
Int. Cl.³ B65H 23/20
U.S. Cl. 242—75.51 **14 Claims**



1. Apparatus for maintaining a catenary-like section of traveling material suspended between a support point and a rotating reel collecting or dispensing the material comprising:

a stepping motor for rotatably driving the reel in discrete angular motions of generally uniform magnitude;

a multifrequency ultrasonic transducer positionable in spaced relation from the catenary-like section and operable in the pulse/echo mode to sense the position of the section, the transducer providing an output signal indicative of the section position relative to the transducer, the said output signal being derived in part from a reflected portion of a radiated interrogation pulse generated by the transducer, the interrogation pulse comprising a sequence of ultrasonic signals of different frequencies, at least a portion of one of said ultrasonic signals being reflected by the catenary-like section back to the transducer to constitute said reflected portion from which said output signal is derived; and

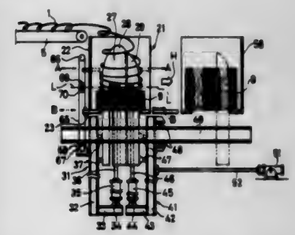
a control means responsive to the transducer output signal for regulating the frequency of discrete angular motions of the stepping motor driver reel to maintain the catenary-like section at a predetermined position relative to the transducer.

4,437,620

METHOD AND APPARATUS FOR GATHERING RINGS OR WIRE RODS INTO COILS

Masaichi Ozawa, Kimitsu, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 7, 1982, Ser. No. 366,420
Claims priority, application Japan, Apr. 13, 1981, 56-55223
Int. Cl.³ B21C 47/00
U.S. Cl. 242—83 **7 Claims**



1. A method of gathering together rings of wire rod into a coil comprising:

dropping continuously supplied rings of wire rod from the delivery end of a conveyor around a sail in a gathering tub positioned beneath the delivery end of the conveyor and having a lateral side open, the sail having a vertically extending main segment movable only up and down in said tub and a laterally movable vertically extending segment movable from an original position adjacent the main segment both up and down and laterally while maintaining its vertical orientation; and

after a given quantity of rod rings has been gathered on the sail to form the coil, lowering the main segment while keeping it vertically oriented to a level where the top thereof is below the coil, moving the laterally movable segment laterally through the lateral open side of the tub while maintaining its vertical orientation to a down-ender positioned adjacent the sail, moving the main segment up while maintaining its vertical orientation to the initial position for immediately starting to gather the continuously supplied rod rings into the next coil, lowering the laterally movable segment in the down-ender for removing it from the formed coil, and while in the lower position, moving it laterally to a position beneath the original position and then raising the laterally movable segment to the original position to make up the complete sail again, all the while maintaining the laterally movable segment in its vertical orientation, and while continuing to gather falling rod rings into the next coil.

2. An apparatus for gathering together rings of wire rod into coils, which comprises:

a gathering tub adapted to be positioned beneath the delivery end of a rod-ring conveying means and having one lateral side open;

a sail in said tub for receiving the rod rings therearound, said sail having a vertically extending main segment movable only up and down in said tub, and a vertically extending laterally movable segment movable both up and down and laterally while maintaining its vertical orientation from a position adjacent said main segment to a position spaced away from said main segment through the laterally open side of said tub;

means connected to said main segment for moving said main segment only up and down; and

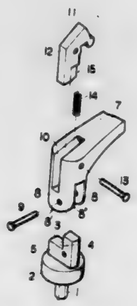
further means connected to said laterally movable segment for moving said laterally movable segment both up and down and laterally in both the raised and lowered positions of said laterally movable segment.

4,437,621

HANDLE FOLDING DEVICE FOR FISHING REEL

Akinori Sakumoto, Tokyo, Japan, assignor to Daiwa Seiko Inc., Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,812
Claims priority, application Japan, Jan. 27, 1981, 56-10449
Int. Cl.³ A01K *89/00*; G05G *1/00*
U.S. Cl. 242—84.1 J **4 Claims**



1. A trigger-actuated folding handle for fishing reel having a folded inoperative position and a non-folded operative position, comprising:

a reel shaft defining an axis of rotation:

a tenon formed on an end face of said shaft for rotation about said axis, said tenon including a notched step at its outer end including a first camming surface disposed generally parallel to said shaft axis;

a handle member including a groove, pivot means mounting said handle on said tenon for pivotal motion about a handle member axis disposed substantially normal to said tenon and said shaft axis, and further disposed to one side of said shaft axis;

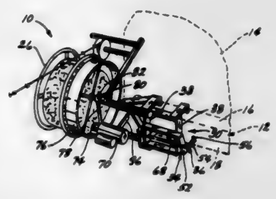
a trigger member mounted on pivot means on said handle member for pivotal motion in said groove about an axis disposed substantially normal to both said shaft axis and said handle member axis, said trigger member being formed with a second camming surface for coaction with said first camming surface so that said first camming surface exerts a force against said second camming surface when said folding handle is moved into the operative non-folded position, said trigger member being located substantially in a plane which includes said shaft axis in said non-folded position and having another surface positioned substantially opposite said first and second camming surfaces of said non-folded position, said handle member including surface means bearing against said another surface, for exerting a reactive force against said another surface when said folding handle is moved into said non-folded position to counteract said exerted force, the interaction of said first camming surface with said second camming surface and said another surface with said surface means causing said trigger member to be canted within said groove and firmly wedged between said tenon and said handle member, when said folding handle is moved into said non-folded position, thereby rendering said handle rigidly mounted on said tenon in said operative position.

4,437,622

WIRE ROLLER

Merle J. Helder, Humboldt, Iowa, assignor to Jet Co., Inc., Humboldt, Iowa

Filed Oct. 14, 1980, Ser. No. 196,657
Int. Cl.³ B65H *75/42*
U.S. Cl. 242—86.5 R **1 Claim**



1. A wire roller, comprising

a frame,

means for supporting said frame on a vehicle,

a wire receiving spool,

means for rotatably supporting said spool on said frame, and

power means for rotating said spool, said power means including an electric motor having an output shaft,

means for supporting said motor on said frame adjacent said spool, and

coacting drive means on said motor output shaft and spool, said coacting drive means being operative to rotate said spool in response to operation of said electric motor,

said means for supporting said frame on a vehicle including a

clamp assembly, comprising

an upper clamp jaw including a pair of upstanding laterally spaced apart upper leg members, means rigidly interconnecting said upper leg members, a pair of upper foot portions secured to and extended forwardly from upper portions of said upper leg members thereby to overlie the top of a vehicle bumper when said upper leg members are engaged against a rear wall of said bumper and a pair of depending flanges on the forward ends of said respective pair of upper foot portions for engagement with an upper front edge of said bumper,

said frame being rigidly connected to said upper clamp jaw,

a lower clamp jaw including an inverted generally U-shaped structure including a pair of generally upstanding lower leg members interconnected adjacent their upper ends and including a pair of forwardly extended lower foot portions at the lower ends thereof and upstanding flanges on forward ends of said lower foot portions for engagement with a lower front edge of said bumper,

means for pivotally connecting said leg members of said upper and lower clamp jaws together with said foot portions extending outwardly therefrom in vertically spaced apart relation for receiving a vehicle bumper therebetween, said means for pivotally connecting said leg members together comprising a plurality of vertically spaced apart holes in each of the upstanding upper leg members of the upper clamp jaw and a hole in each of the lower leg members of the lower clamp jaw registered with selected ones of the holes in the upper leg members and an elongated pivot pin inserted into and removably secured in said selected registered holes, said leg members thereby being constrained to relative pivotal movement about the longitudinal axis of said pivot pin and

torque application means comprising a screw means carried on the leg members of one of said clamp jaws and positioned for operative engagement with the leg members of the other clamp jaw thereby to pivot the lower leg members rearwardly and downwardly apart from the upper leg members and thereby urge the lower foot portions upwardly and rearwardly in clamping engagement on a vehicle bumper.

4,437,623

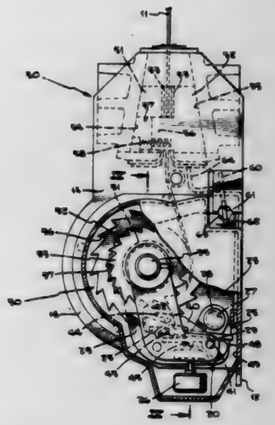
INTEGRATED WEBLOCKER WITH PROGRAM PAWL RETRACTOR

Manfred Wyder, Rowland Heights, Calif., assignor to American Safety Equipment Corporation, Troy, Mich.

Filed Sep. 21, 1982, Ser. No. 420,713
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.2 **10 Claims**

1. In an inertia-responsive safety belt locking retractor for a vehicle having a frame mounted to the vehicle, a reel rotatably mounted on the frame having a safety belt webbing wound thereon for protraction and retraction, a multiple toothed ratchet wheel fixedly mounted to said reel, a locking pawl means for engaging the ratchet wheel to prevent protractive rotation of the reel and protraction of the safety belt webbing in an emergency, and a weblocker including clamping means mounted on the frame and having the safety belt webbing passing operably therethrough for selectively clamping the safety belt webbing against further movement relative to the clamping means, the improvement comprising the provision of an improved safety belt webbing protractive force sensing and weblocker actuating means comprising:

a rotatably mounted pawl assembly for carrying said pawl means and having limited rotational movement relative to the retractor frame between deactivated and activated positions, said pawl assembly rotating to the activated position when said locking pawl means is engaged with said ratchet wheel and protractive force is exerted on the safety belt webbing in excess of a predetermined threshold amount, and



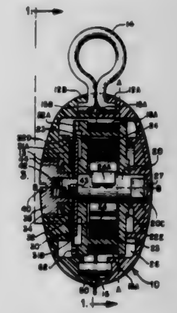
a weblocker actuator for actuating said weblocker to directly clamp the safety belt webbing passing therethrough against further protraction in response to said pawl assembly rotating to the activated position.

4,437,624

POSITIONING REEL

Irwin Rosenberg, Ann Arbor, Mich., assignor to Aero-Motive Mfg. Co., Kalamazoo, Mich.

Filed Feb. 1, 1982, Ser. No. 344,637
Int. Cl.³ B65H *75/48*
U.S. Cl. 242—107.3 **11 Claims**



1. A suspension positioning apparatus comprising: a housing; a non-rotating shaft variably positioned along the axis thereof within said housing; a spool rotationally mounted on said shaft and adapted to receive a suspension cord therein, said spool including at least one first engagable projection on a lateral surface thereof; first biasing means coupled to said spool for rotationally urging said spool in a first direction of rotation about said shaft, said first direction of rotation representing the direction of suspension cord take-up; a first disk rotationally positioned along said shaft and including a first surface in facing relation and in contact with the lateral surface of said spool, wherein said first surface includes at least one second engagable projection thereon for engaging said first projection when said spool rotates in a second direction representing the direction of suspension cord pay-out, and wherein said first disk is movable along the axis of said shaft in response to the displacement of said shaft; a second disk fixedly positioned in

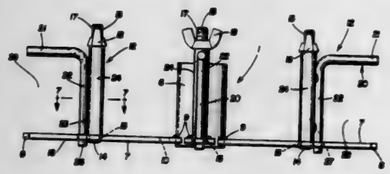
said housing along said shaft and adapted to contact and frictionally engage a second surface of said first disk in inhibiting the rotation thereof; and adjustable control means positioned on a side of said housing and coupled to said shaft for displacing said shaft along its axis in positioning said first disk in selective engagement with said second fixed disk for controlling the rotation of said spool in said second direction of rotation when said first and second projections are engaged.

4,437,625

COIL ADAPTER REEL

Eugene R. VanSickle, Rte. #3, Box 190, Dover, Tuscarawas County, Ohio 44622

Filed Sep. 27, 1982, Ser. No. 424,380
Int. Cl.³ B65H *49/00*
U.S. Cl. 242—129 **6 Claims**



1. An improved reel construction of the type adapted to be mounted on the hub of a machine for holding and dispensing a coil of wire, said construction including:
(a) hub means for mounting the improved reel on a machine hub;
(b) a plurality of spaced, radially outwardly extending base plates mounted on the hub means;
(c) an upstanding post mounted on each of the base plates and extending generally parallel to the axis of the hub means;
(d) a locking hole formed in each of the base plates adjacent the post;
(e) arm means mounted on each of the posts for removably holding a coil of wire, each of said arm means including a sleeve telescopically movably mounted on a respective post, and an inverted L-shaped rod attached to said sleeve; and
(f) each of said rods having an outwardly extending portion spaced from and parallel with the base plates providing a coil receiving zone therebetween when the arm means is in a coil holding position, and a lower portion engageable in the base plate hole to secure the arm means in the coil holding position.

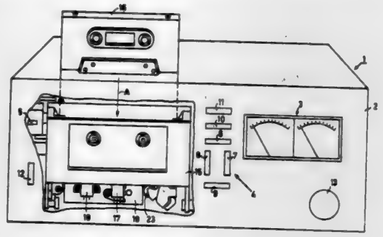
4,437,626

MECHANISM RESPONSIVE TO ROTATION STOPPAGE, AND TAPE RECORDER WITH SUCH MECHANISM

Ghislanus M. A. M. Aldenhoven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 20, 1982, Ser. No. 340,906
Claims priority, application Netherlands, Feb. 16, 1981, 8100731
Int. Cl.³ B65H *59/38*; G03B *1/04*; G11B *15/32*
U.S. Cl. 242—186 **25 Claims**

1. A recording and/or playback apparatus comprising a drive system for transporting a recording medium, a component which rotates in response to transport of the medium, and a device for changing over the drive system upon stopping of rotation of the component, said device comprising
a lever having an actuating portion,
an actuating element frictionally coupled to said component and arranged to exert a torque on the lever when the component rotates,
means for imparting reciprocating movement to the lever during operation of the drive system, said lever and means arranged such that during said movement said portion follows a first path when said torque is exerted, and follows a second path in the absence of said torque, said
a switching element for changing over said drive, arranged to be actuated by reciprocating movement of said lever portion along said second path,
characterized in that said actuating element comprises at



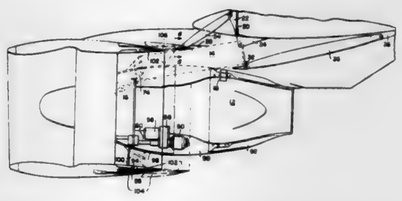
least one cam arranged to engage said lever as a result of pivoting of the actuating element responsive to rotation of the component, said lever sliding along said cam during reciprocation, and
the device includes a guide element for guiding said lever portion along said first and second paths during reciprocation.

4,437,627

INTEGRATED POWER PLANT INSTALLATION SYSTEM

James R. Moorehead, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 12, 1982, Ser. No. 357,746
Int. Cl.³ B64D *27/18, 33/00*
U.S. Cl. 244—54 **12 Claims**



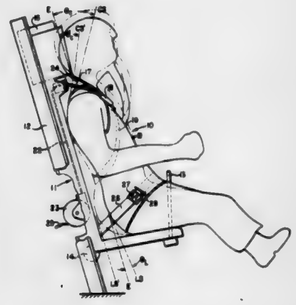
1. An underwing powerplant installation system comprising:
a powerplant;
strut means for securing said powerplant to the wing of said aircraft;
a plurality of aircraft wing bracket fittings including a first, forwardly extending fitting secured to a front wing spar, a pair of laterally spaced dependent fittings secured to said front wing spar, and a fourth dependent fitting secured to a rear wing spar;
first lug means including a pair of laterally spaced lugs secured to the upper rear edge portion of said strut means for aligned mating with said pair of laterally spaced dependent wing bracket fittings;
linkage means having one end thereof secured to the remainder of said plurality of aircraft wing bracket fittings; and
second lug means including a third lug secured to the upper surface of said strut means mid-way along the longitudinal extend thereof for engagement with a first one of said linkage means, and a fourth lug secured to the lower rear edge portion of said strut means for engagement with a second one of said linkage means.

4,437,628

POSITION AND RESTRAINT SYSTEM FOR AIRCREWMAN

Marcus Schwartz, Warminster, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1979, Ser. No. 53,465
Int. Cl.³ B64D *25/02, 25/06*
U.S. Cl. 244—122 AG **3 Claims**



1. A system for positioning and restraining an aircrewman in an aircraft ejection seat catapulted by a thrust motor comprising, in combination:
a torso harness suit including lap belt means formed to be releasably connected at one end to the seat, and shoulder strap means;
retracting means formed to be secured to the seat including restraint strap means releasably connected at the outer ends to said shoulder strap means;
inflatable vest means formed to be worn by the aircrewman and positioned beneath the front and shoulder portions of said suit adjacent to said lap belt means and said shoulder strap means for forcing upper and lower torso of the aircrewman against the back of the seat; and
control means operable by the aircrewman for emergency escape including first actuator means connected to said retracting means for concomittantly retracting said restraint strap means and inflating said vest means, and second actuator means formed to be connected to the thrust motor for initiating ejection a predetermine time after operation of said first actuating means;
whereby the aircrewman's spinal column is positioned as near as possible along the direction of seat ejection.

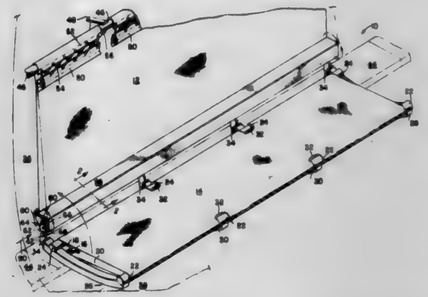
4,437,629

SEAT STRUCTURE HAVING AN ADJUSTABLE SEAT BACK AND SUPPORT SHELF ESPECIALLY FOR ACCOMMODATING PARACHUTE PACKS

Martin W. Roise, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 9, 1982, Ser. No. 406,520
Int. Cl.³ B64D *11/06*
U.S. Cl. 244—122 R **15 Claims**

1. Seat structure, comprising:
a seat bottom portion;
a seat back portion; and
means movable between first and second positions, and operatively connected to said seat back portion along the lower edge portion of said seat back portion, for serving as a support platform projecting forwardly of said seat back portion when said means is disposed in said first position and said seat back portion is disposed in its seat back mode, and disappearing behind said seat back portion



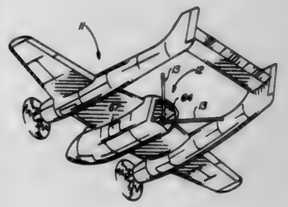
when said means is disposed in said second position and said seat back portion is disposed in its seat back mode.

4,437,630

SPRAY BOOM APPARATUS FOR APPLYING CHEMICAL DISPERSANTS TO OCEAN OIL SPILLS

James C. Jefferies, Chandler, Ariz., assignor to Biegert Aviation, Inc., Chandler, Ariz.

Filed Sep. 8, 1981, Ser. No. 300,260
Int. Cl.³ B64D *1/18*
U.S. Cl. 244—136 **1 Claim**



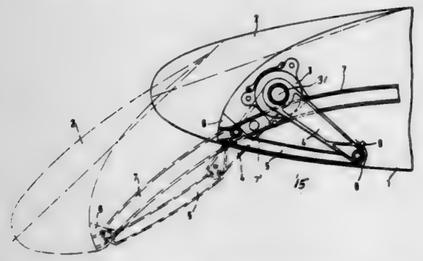
1. In combination with a transport aircraft, said aircraft including
a fuselage having an exterior aerodynamic surface,
wings attached to the fuselage,
a hold formed within the fuselage for receiving and carrying cargo during flight of said aircraft, and
an entranceway formed in the fuselage for loading and unloading cargo into and from the hold,
boom and nozzle spray apparatus for in-flight adaptation of the aircraft for aerial swath spraying, said boom and nozzle apparatus generally
permitting said aircraft to be modified for aerial spraying by extending a spray boom while in flight over a designated spraying area so that aerodynamic drag which would be caused by having the boom extended during flight to and from the designated spraying area is eliminated,
eliminating having to structurally modify the aircraft during installation of said boom and nozzle apparatus,
being quickly and conveniently installed in said cargo hold so the aircraft can be rapidly fitted with said apparatus and take flight,
being readily removed from the aircraft after installation therein and installed in a second transport aircraft, and
reducing corrosion of the wings and fuselage of the aircraft which occurs when corrosive chemicals are dispensed by said apparatus,
and including
(a) a support frame,

(b) an elongate substantially rigid spray boom carried by said support frame and having
(i) a fluid conduit,
(ii) a plurality of fluid dispensing apertures spaced along said spray boom in fluid communication with said conduit and each shaped, contoured and dimensioned to spray fluid into the air, and
(iii) an imaginary longitudinal axis,
(c) anchoring means for fixedly detachably securing said support frame in said cargo hold of the aircraft, said anchoring means generally being utilized in combination with cargo securing means normally provided with the aircraft in said cargo hold such that structural modification of the aircraft is avoided during installation of said boom and spray apparatus in said cargo hold,
(d) connector means for attaching a source of fluid carried on said aircraft to said conduit such that fluid from said source can flow into and through said conduit when desired and be discharged through said apertures in said spray boom,
(e) means carried by said frame for moving said spray boom between at least two operative positions after said frame anchoring means has been utilized in combination with said cargo securing means to make fast said frame in said cargo hold,
(i) a first operative position with said boom stored in said cargo hold, and
(ii) a second operative position with said boom positioned outside of and spaced away and laterally from said fuselage with said imaginary longitudinal axis of said boom at an angle with respect to the direction of travel of the aircraft when airborne such that spray dispensed through said apertures of said boom forms a generally elongate planar swath having an imaginary longitudinal axis generally parallel to said direction of travel of the aircraft, a portion of said frame extending from said hold through said entranceway to support said boom in said second operative position.

4,437,631
DRIVE FOR LEADING EDGE FLAPS OF AIRCRAFT WINGS

Wilhelm Martens, Delmenhorst, and Homayoun Dilmaghani, Gessel, both of Fed. Rep. of Germany, assignors to Vereinigte Flugtechnische Werke Fokker GmbH, Bremen, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,008
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916040
Int. Cl.³ B64C 3/50
U.S. Cl. 244—214 **2 Claims**

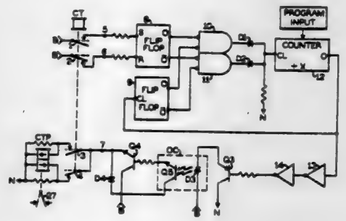


1. In a wing for an aircraft and having one or more leading edge slats, there being a common drive shaft for the slats, a drive and actuating mechanism comprising:
gear means, drivingly connected to the drive shaft;
a crank arm connected to be driven by the gear means;
a thrust rod linked with one end directly to the crank arm, the other end of the thrust rod being pivotally linked directly to the slat;
cover means on the thrust rod extending for its length and completing the wing surface when the slat is held in a retracted position;
an arc-shaped guide rail connected to the slat; and
a guide means running in engaging relation with the rail and being connected to the wing.

4,437,632
RESET APPARATUS FOR RAILROAD TRACK CIRCUITS

Robert D. Pascoe, Upper St. Clair Township, Allegheny County, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Feb. 25, 1982, Ser. No. 352,424
Int. Cl.³ B61L 21/00
U.S. Cl. 246—34 R **8 Claims**

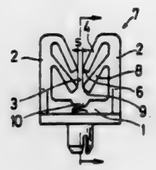


1. In a track circuit for a railroad track section, including an alternating current energy source coupled to the rails at one end of said section for normally supplying steady energy through said rails, a track relay connected to said rails at the other end of said section and responsive only to steady energy received through said rails for registering an unoccupied section, and a code transmitter means controlled by said track relay to be activated when a train occupies said section, reset apparatus comprising,
(a) a counting means operable for counting successive input clock pulses and responsive to a preselected total count for generating an output pulse of clock pulse duration and resetting to initiate a new count,
(b) a first switching means coupled to said counting means and operable for alternately producing continuous first or second gating signals in response to reception of successive output pulses from said counting means,
(c) a first and a second gate means controlled by said first switching means to be alternately enabled by said first and second gating signals, respectively,
(d) each gate means coupled for alternately receiving code pulses a the code rate of said code transmitter means, when active, and operable when enabled for applying corresponding clock pulses successively to said counting means,
(e) a repeater relay having two control windings and operable alternately between first and second positions only as said windings are alternately energized, and
(f) driver circuit means controlled by said counting means and coupled by said code transmitter means when active for normally alternately energizing said repeater relay windings and responsive to the reception of an output pulse from said counting means for inhibiting the energization of the repeater relay winding then coupled by said code transmitter means to hold said repeater relay in its existing position during that and the next subsequent clock pulse periods,
(g) said repeater relay further coupled when a train occupies said section for coding the energy supplied by said source to said section rails, said coded energy being periodically modified at the end of each preselected total count by a lengthened energy pulse to which said track relay responds when said section is unoccupied to restore the supply of steady energy to said rails.

4,437,633
ELASTIC FASTENING CLAMP FOR ROUND BARS OR CABLES OF VARIOUS DIAMETERS

Guy Andre, Seyssinet-Pariset, France, assignor to A. Raymond, Lorrach, Fed. Rep. of Germany

Filed Nov. 27, 1981, Ser. No. 325,190
Int. Cl.³ F16L 3/22
U.S. Cl. 248—68 R **4 Claims**



1. An elastic fastening clamp operable to secure round bars of various diameters onto a support plate, comprising two side walls joined together in U-shaped manner by a bottom plate, said side walls being provided at their free ends with a flexible holding tongue integral therewith and angled downwardly therefrom towards the center of a fastening space formed by the bottom plate and side walls, said tongues each being formed with a holding rim at the lower end thereof, each of said side walls being provided with a flexible support wall angled downwardly from the upper area of the side walls, said support walls having lower rims terminating approximately centrally between the holding rims of the tongues and the bottom plate, the adjacent holding rims of the tongues and the adjacent lower rims of the support walls being normally spaced apart from one another and defining a gap at the center of the holding space, said bottom plate having a relatively flat upper surface and provided with a groove at the center thereof parallel to the side walls, said groove being substantially less in width than the spacing between the side walls and wider than said gap and operable to laterally support a plurality of different sized round bars to be held in place in said clamp.

4,437,634
PLASTIC SACK HOLDER

Thomas P. Hambleton, Pine Bush, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Aug. 28, 1981, Ser. No. 296,945
Int. Cl.³ A63B 55/04
U.S. Cl. 248—97 **22 Claims**

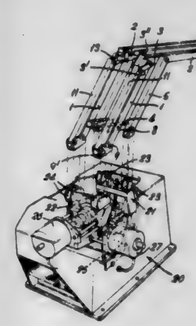


1. A device to hold open for loading a limp plastic sack having a pair of integral handles and a body portion terminating in a base portion, said device comprising:
(a) a base member;
(b) a pair of side wall members attached at their lower ends to said base member;
(c) a rear wall member attached to each of said side wall members;
(d) means to engage the handles of said plastic sack, said means comprising a pair of spaced apart knob-like protuberances attached to the outer side and near the upper edge of each of said side wall members; wherein the height of said side wall members is slightly less than the height of the plastic sack to be loaded therein and wherein the internal perimeter of said base member is at least equal to the perimeter of the base of said plastic sack when said sack is in an open position and ready for loading.

4,437,635
PANTOGRAPH LINKAGE SYSTEM

Duc T. Pham, Birmingham, England, assignor to National Research Development Corporation, London, England

Filed Jan. 25, 1982, Ser. No. 342,426
Claims priority, application United Kingdom, Jan. 26, 1981, 8102311
Int. Cl.³ F16L 3/00
U.S. Cl. 248—122 **4 Claims**



1. A manipulator comprising a pair of pantographs interconnected to serve as opposed links of a parallelogram linkage, the pantographs in turn having first and second arms each operative as a parallelogram linkage, means for maintaining interconnections of the parallelogram linkages in fixed relative relationships and means for imparting linear input movement in all three dimensions to the pantographs whereby three dimensional movement of a tool or the like suitably secured to the pantographs may be occasioned whilst maintaining its spatial orientation constant.

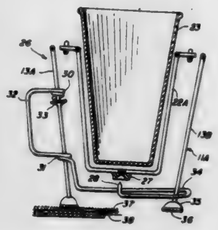
4,437,636
SELF-ORIENTATING FLUID CONTAINER DEVICE

Anthony Mazzurco, 7 Elsmere Pl., East Northport, N.Y. 11731, and Richard L. Miller, Dix Hills, N.Y., assignors to Anthony Mazzurco, East Northport, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,219
Int. Cl.³ A47F 5/12
U.S. Cl. 248—137 **4 Claims**

1. A self-orienting fluid container device, comprising in combination, a stationary base having an outer support ring, support legs depending from said outer support ring and a 1st pair of diametrically opposed notches formed in said outer support ring; an outer gimbal frame having an outer gimbal ring with a 1st pair of radially outwardly extending diametrically opposed spurs which pivotally seat in said 1st pair of opposed notches, and a second pair of diametrically opposed

notches formed in said outer gimbal ring spaced 90 degrees from said 1st pair of spurs; an inner gimbal frame having an inner gimbal ring with a second pair of radially outwardly extending diametrically opposed spurs which pivotally seat in said second pair of opposed notches, and a depending basket for removably supporting a fluid container; and a selective locking mechanism for automatically retaining the fluid container in a fixed orientation when grabbed for drinking, comprising an inverted receptacle positioned on the bottom of said basket, a handle slidably coupled to a support leg for lifting the



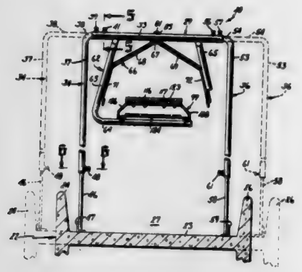
device to raise the fluid container for drinking, an arm extending from said handle, and an upwardly extending prong at the end of said arm, said prong engaging said receptacle with the lifting of the handle to prevent rotation of the container with respect to the device whenever it is desired to lift the container, and said prong disengaging from said receptacle upon lowering of said handle to replace the device, whereby the device will pivot in mutually orthogonal axes to maintain the container in a vertical orientation when placed down and the device will keep the container fixed when picked up.

4,437,637

SUPPORT STAND

Floyd E. Buschbom, Long Lake, and Glen D. Hansen, Maple Plain, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Division of Ser. No. 115,608, Jan. 28, 1980, Pat. No. 4,320,825.
This application Dec. 11, 1980, Ser. No. 215,318
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—163 A **7 Claims**



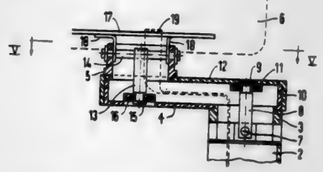
1. A stand for supporting an object above a location comprising: cross means extended generally horizontal across the object, said cross means having opposite end portions, each end portion having a passage, first leg means connected to said cross means, said first leg means having a first member extended into the passage in one end portion of the cross means, first lock means mounted on the cross means engageable with said first member to hold the first leg means in an adjusted position relative to the cross means, second leg means connected to said cross means, said second leg means having a second member extended in the passage in the other end portion of the cross means, second lock means mounted on the cross means engageable with said second member to hold the second leg means in an adjusted position relative to the cross means, said first and second lock means being releasable whereby the width of the stand can be adjusted, each of said first and second leg means being adapted to engage a support in the location, and arm means connected to the cross means adapted to be attached to the object to hold the object above the location, said arm means having a downwardly and outwardly directed first portion connected to one end portion of the cross means, and a generally horizontal second portion connected to the first portion, said second portion located below and extended generally parallel to the cross means, said first and second portions of the arm means being fixed in an upright plane extended along the length of the cross means, and means on the second portion to support an object between the cross means and second portion of the arm means.

4,437,638

ARRANGEMENT FOR FASTENING A MONITOR TO A TEXT STATION

Konrad Scheibenpflug, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,242
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014478
Int. Cl.³ B01D *27/02*
U.S. Cl. 248—282 **8 Claims**



1. Apparatus for fastening a screen monitor to a text printing machine having a housing, comprising an upright column positioned to one side of said machine housing, an extension arm extending laterally outward from the longitudinal axis of said column, a first bushing connecting means between one end of said extension arm and an upper end of said column such that said extension arm is swivelably disposed relative to said column, a second bushing connection means between the other end of said extension arm and said screen monitor such that said screen is mounted for swivelable movement relative to said extension arm other end, wherein said first bushing means comprises a bush disposed on said column, a pin shaft extending through said bush and securing said bush to said column, a pin connected at one end to said pin shaft and extending upward therefrom, a connector surface portion formed on said extension arm disposed over said bush, and a shoulder screw for clamping said connector surface portion onto said bush and being threadably received in an upper end of said pin.

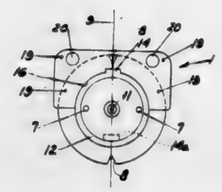
4,437,639

SELF-ADJUSTING SELF-LOCKING HANGER FOR PICTURES AND THE LIKE

Alvin W. Stein, 2237 Losantiville Ave., Cincinnati, Ohio 45237

Filed May 10, 1982, Ser. No. 376,377
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—558 **9 Claims**

1. A self-adjusting hanger for mounting pictures and the like to a vertical wall surface comprising a wall mount member having means to fixedly mount it to the wall surface and a picture mount member having means to fixedly mount it to the rear surface of the picture along the vertical center line thereof, each of said members having cooperating arcuate surfaces by which one of the members may pivotally rest on the other member and rotate with respect thereto to allow the picture to hang straight, said wall mount member including a mounting plate and circular rim forming one of said arcuate surfaces extending outwardly from one major surface of said plate, said rim being configured to abut the wall surface to space said plate therefrom, said picture mount member including a semi-circular cut-out forming said other surface, said rim mating within said cut-out, portion of said rim forming a key



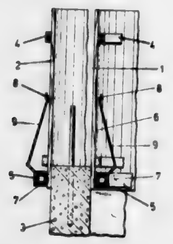
portion, said cut-out including a notch dimensioned to mate with said key portion to prevent relative rotation between said members, said mounting means further including means for attaching the wall mount member in first orientation where said key portion engages said notch to prevent relative rotation between said members and a second orientation wherein said key portion and said notch are unmated to permit relative rotational movement between said members.

4,437,640

BRACING UNIT FOR CONCRETE FORMWORK

Otto Heinzle, Götzis, Austria, assignor to Schalungsverleih Heinzle AG Attstatten CH-9450, Switzerland

Filed Nov. 17, 1981, Ser. No. 322,087
Claims priority, application Austria, Nov. 25, 1980, 5759/80
Int. Cl.³ B29H *5/02*
U.S. Cl. 249—20 **6 Claims**



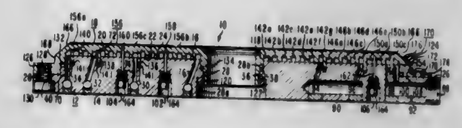
1. A bracing unit for securing formwork sections to a falsework structure supporting the formwork or to a previously poured section of a concrete structure, comprising a pressurized fluid inflatable and expandable hose positionable against the outside surface of the formwork section and a rigid abutment member supporting said hose and for securing said hose against the outside surface of the formwork structure whereby said hose and rigid abutment member are placed against the formwork sections with said hose in the deflated condition and then said hose is inflated and expanded for applying a uniform contact pressure against the formwork sections and pressing the formwork sections against the falsework structure or the previously poured section.

4,437,641

MOLD FOR RECORDED DISC

David Stavitsky, Plainsboro, and Ernest A. Beres, Robbinsville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,809
Int. Cl.³ B29D *17/00*
U.S. Cl. 249—79 **23 Claims**



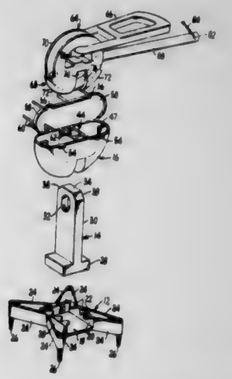
1. A mold for molding a recorded disc comprising:
a base plate having inner and outer surfaces,
a cap plate having inner and outer surfaces mounted on the base plate with the inner surface of said cap plate in opposed mating relation with the inner surface of the base plate, said cap plate having a mold cavity in its outer surface, and a plurality of separate sets of interconnected grooves in its inner surface, and
means in said base plate for providing a flow of temperature control medium to each of said sets of grooves including separate inlet and outlet passages to each set of grooves.

4,437,642

LIFT SYSTEM FOR TILT-UP WALLS

Neil L. Holt, Foster City, Calif., assignor to The Burke Company, San Mateo, Calif.

Division of Ser. No. 199,944, Oct. 23, 1980, Pat. No. 4,367,892.
This application Mar. 1, 1982, Ser. No. 353,575
Int. Cl.³ B28B *7/28*
U.S. Cl. 249—175 **2 Claims**



1. An apparatus for forming a recess about the upper end of an anchor embedded in a concrete slab, said apparatus comprising: a body shell of hollow configuration, said shell having a smooth convex side and an open concave side opposite said convex side; a receptacle formed in said body and opening through the convex side thereof, said receptacle extending inwardly into a mid-portion of the open concave side whereby voids are provided in said shell to either side of said receptacle, said receptacle being complemental in shape to the upper end of the anchor for receipt of the anchor and frictional engagement therewith, said receptacle having a distal end with shoulders adapted to be seated on the upper end of an anchor received therein and an opening affording visual access to the interior thereof to determined whether or not an anchor received therein is seated; and, a top engaged with the body shell to close the open concave side thereof, said top being releas-

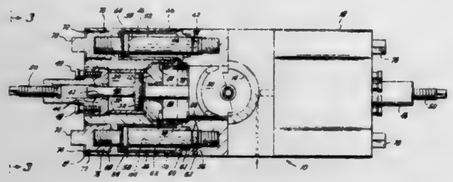
able from the shell to afford access to the opening in the receptacle and the voids to either side of the receptacle.

4,437,643

RAM-TYPE BLOWOUT PREVENTER

William L. Brakhage, Jr., and William M. Taylor, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 25, 1981, Ser. No. 277,231
Int. Cl.³ E21B 33/06
U.S. Cl. 251—1 A 5 Claims



1. A blowout preventer comprising
a body having a bore extending therethrough and aligned opposed ram guideways extending outwardly from said bore through said body,
a pair of bonnets positioned on opposite sides of said body in covering relationship to the outer openings of said ram guideways,
each bonnet having a central cylinder therein, a pair of side cylinders and a pair of openings at each end of said side cylinders, said side cylinders and openings extending through the bonnet in parallel relationship to said central cylinder, said central cylinder being axially aligned with its guideway,
a ram in each of said guideways,
a rod connected to each ram and extending through the ram guideway and terminating in a piston within the bonnet cylinder,
a pair of studs secured within the body spaced to the sides of each ram guideway and extending therefrom in parallel relationship to be received in the openings and side cylinders in the bonnet,
means responsive to pressure coacting with said studs in said side cylinders to move said bonnets toward and away from said body supported on said studs and to pretension said studs when the bonnet is held against said body,
a nut threaded on each stud to secure the bonnets to the body,
said pressure responsive means including
a flange extending radially outward from each of said studs in said side cylinders, and
means for supplying fluid under pressure to said side cylinders at opposite sides of said flange.

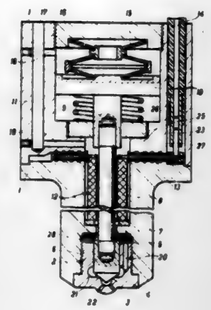
4,437,644

ELECTRICALLY OPERABLE VALVE

Gottlieb Wilmers, Neuenstadt, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,406
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1979, 2931874
Int. Cl.³ F16K 31/04
U.S. Cl. 251—11 3 Claims

1. An electrically operable valve comprising:
a housing having a damper chamber, a fluid inlet, a fluid outlet with a valve seat and a fluid path therebetween;
a movable valve body arranged for cooperation with said valve seat,
a damper piston slidable within said damper chamber,
a rod for connecting said valve body to said damper piston, the movement of said rod being damped by said damper piston, said rod being of the magnetostrictional type which changes its longitudinal dimension when an electromagnetic field is applied to it for lifting said valve body



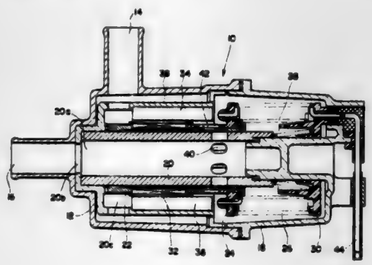
off said valve seat; a spring means for urging the valve body against the valve seat; and
a coil for applying said electromagnetic field to said device.

4,437,645

ELECTRICALLY DRIVEN FLOW CONTROL VALVE ASSEMBLY

Ishi Nomura, Aichi, and Motonobu Akagi, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 18, 1982, Ser. No. 349,976
Claims priority, application Japan, Feb. 20, 1981, 56-24769; Feb. 20, 1981, 56-24770
Int. Cl.³ F16K 31/08
U.S. Cl. 251—65 2 Claims



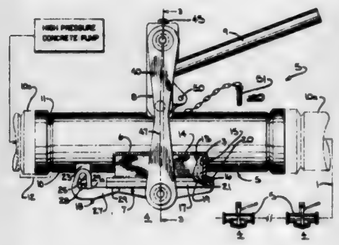
1. An electrically driven flow control valve assembly with comprises:
a body having an inlet port and an outlet port;
a hollow iron core, disposed coaxially within said body, having at least one communicating hole for communicating said inlet and outlet ports through the interior of said iron core;
a slide valve disposed on the outside of said iron core for sliding movement axially therealong, said slide valve having an electromagnetic coil wound thereon, and including at least one valve hole which overlaps said communicating hole to control the effective opening degree of said communicating hole as the slide valve slides for regulating the degree of communication between said inlet and outlet ports;
a pair of permanent magnets so arranged that the magnetic flux produced thereby passes through the windings of said electromagnetic coil at a right angle;
a ferromagnetic member for forming a magnetic circuit for the magnetic flux produced by said permanent magnets; and
a pair of springs for biasing said slide valve and for delivering an energizing current to said electromagnetic coil;
said slide valve being retained at a predetermined position by said springs when said electromagnetic coil is in the de-energized state, and being driven slidably along said iron core against the force of said springs in response to energization of said electromagnetic coil by the energizing current;
said valve hole being so formed in said slide valve as to deliver a predetermined initial flow quantity through the effective opening of said communication hole when said slide valve is retained at said predetermined position with said electromagnetic coil in the de-energized state, and to temporarily increase and then decrease the flow quantity through the effective opening of said communication hole as said slide valve is driven slidably along said iron core with an increase in the energizing current following excitation of said electromagnetic coil.

4,437,646

DISCHARGE VALVE FOR CONCRETE PUMPING APPARATUS

David E. Bigelow, Milwaukee, and Terry Timmerman, Grafton, both of Wis., assignors to Construction Forms, Inc., Cedarburg, Wis.

Filed Nov. 2, 1981, Ser. No. 317,245
Int. Cl.³ F16K 51/06; G05G 1/04
U.S. Cl. 251—145 12 Claims



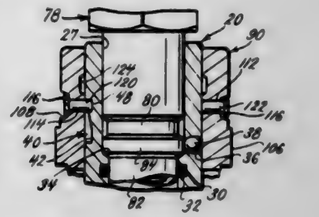
1. A valve apparatus adapted to be connected in a concrete pumping system comprising a tubular valve body having opposite ends adapted to be releasably secured in fluid tight connection within a high pressure pumping line, said valve body having a discharge opening in one side thereof, said discharge opening have a rectangular shape including a longitudinal length greater than the circumferential length,
a valve pipe secured to said opening and having a corresponding rectangular cross section corresponding to said opening and forming an extension of said opening, said valve pipe having an outer substantially planar sealing end surface,
a valve closure plate means having a substantially flat sealing surface adapted to abut said planar sealing end surface to seal said pipe,
a linkage means connected to said valve closure means and said valve body and including an operating member pivotally mounted for moving said valve closure means between a first closed position abutting said planar sealing end surface and a second open position spaced from the plane of the sealing end surface to fully open said discharge opening.

4,437,647

QUICK CONNECT-DISCONNECT COUPLING FOR FLUID LINES

Lee H. Cruse, Ozark, Mo., assignor to Foster Manufacturing Company, Springfield, Mo.

Continuation-in-part of Ser. No. 104,307, Dec. 17, 1982, abandoned. This application Jun. 7, 1982, Ser. No. 385,858
Int. Cl.³ C11D 7/00
U.S. Cl. 251—149.9 47 Claims



1. A connect-disconnect coupling which comprises a female member, a sleeve which encircles said female member, said female member and said sleeve being relatively movable, a plug which is dimensioned to telescope into one end of said female member, locking means on said female member and complementary locking means on said plug that selectively respond to telescoping movement of said plug into said one end of said female member and to relative movement of said sleeve and female member into plug-locking position to lock said plug in position within said one end of said female member and that respond to relative movement of said sleeve and female member to plug-unlocked position to release said plug for movement away from said female member, and interacting means on said sleeve and on said female member which require relative movement of said sleeve and said female member in a progressive but not necessarily continuous direction of movement between said plug-unlocked position and at least one of two predetermined plug-locked positions to cause said locking means on said female member to coact with said complementary locking means on said plug to lock said plug in position within said one end of said female member, said interacting means requiring relative movement in said progressive but not necessarily continuous direction of movement to occur in a predetermined sequence from said plug-unlocked position to a first predetermined plug-locked position and then to a further predetermined plug-locked position whenever said relative movement is to be from said plug-unlocked position to and through said two predetermined plug-locked positions and then back to said plug-unlocked position, said interacting means preventing accidental relative movement of said sleeve and said female member in the return direction of movement between said further predetermined plug-locked position and either said plug-unlocked position or said first predetermined plug-locked position.

4,437,648

BELT TENSIONING TOOL

E. R. Thorn, Farmington Hills, and Brent Thorn, Northville, both of Mich., assignors to Van F. Belknap Co., Wixom, Mich.

Filed May 28, 1981, Ser. No. 267,837
Int. Cl.³ B66F 3/24
U.S. Cl. 254—93 R 1 Claim

1. An endless belt tensioning tool for tensioning an endless belt that passes around a plurality of spaced apart pulley means with one of said pulley means being mounted for adjustable movement relative to the other pulley means, said belt tensioning tool comprising:
an actuator assembly including an extensible rod means;
a reaction assembly mounted to one end of said actuator assembly, said reaction asembly including a first adapter

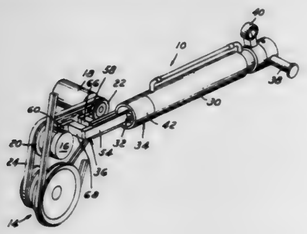
member which is engageable with one of said pulley means;

a slidable assembly mounted to said extensible rod means, said slidable assembly including a second adapter member which is engageable with another of said pulley means;

said first adapter member being releasably mounted on a reaction arm member and said second adapter member being releasably mounted on a slidable arm member, and said adapter members including pulley engaging ends which extend in opposite directions;

said reaction arm member and slidable arm member being parallel and said slidable arm member being slidably movable along a track in said reaction arm member;

said reaction assembly including an open generally cylindrical hub member mounted to said one end of said actuator assembly, said reaction arm member being mounted to the outer periphery of said hub member with the longtudinal axis of said reaction arm member being laterally offset from the longtudinal axis of said extensible rod means, said



reaction arm member extending in a cantilevered fashion away from said hub member and said one end of said actuator assembly, said slidable assembly including a mounting block mounted to said extensible rod means, said slidable arm member being mounted to the periphery of said mounting block with the longitudinal axis of said slidable arm member also being laterally offset from the longitudinal axis of said extensible rod means, said slidable arm member extending in a cantilevered fashion away from the mounting block and said one end of said actuator assembly and slidably engaging the track in said reaction arm member, and said mounting block being positioned within said open hub member when said rod means is fully retracted; and

said second adapter member being movable relative to said first adapter member in response to extension of said rod means for thereby causing selective movement of said adjustably mounted pulley means and tensioning of said belt.

4,437,649

EXOTHERMIC CUTTING ELECTRODE

Perry J. Rieppel, Worthington, and Paul E. Moore, Lancaster, both of Ohio, assignors to Arcair Company, Lancaster, Ohio

Continuation-in-part of Ser. No. 274,118, Jun. 26, 1981, Pat. No. 4,391,209. This application Apr. 27, 1983, Ser. No. 488,917

Int. Cl.³ B23K 35/02

U.S. Cl. 266—48 **5 Claims**



1. In an exothermic cutting electrode of the type comprising an inner tube around which is wrapped a continuous length of wire in a helical fashion covered by an outer tube, the improvement comprising a plurality of random indentations disposed around and in said outer tube to position said inner tube, coiled wire and outer tube in fixed position one to the other.

4,437,650

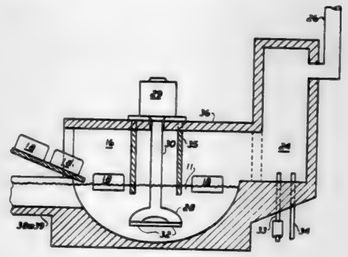
BRIQUETTE MELTING APPARATUS

Jan H. L. van Linden, Hampton Township, Allegheny County, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 28, 1983, Ser. No. 470,476

Int. Cl.³ F27B 3/18

U.S. Cl. 266—144 **7 Claims**



1. Apparatus for melting relatively large floating units of metal scrap in a molten melting media, the units having oxide films and solid and gaseous inclusions on and near the surfaces of the units as well as layers of freshly melted metal after the units enter the melting media, the apparatus comprising:

a bay for heating the molten media,

a bay for pumping the media from the heating bay to a circular charging bay,

a circular charging bay for receiving large floating units of metal scrap, and a rotor means located in said bay for moving the media therein at a velocity sufficient to remove the surface layers of the floating units such that new metal is continuously exposed to the melting media without the floating units being submerged in the media,

means for preventing the floating units from moving with the media in the charging bay,

a bay for collecting skim material,

inlet and outlet troughs extending tangentially to and from the circular charging bay for directing molten media respectively to the charging bay from the pumping bay, and from the charging bay to the skim collecting bay,

means for directing molten media from the skim collecting bay to the heating bay, and

a combustion chamber located adjacent the charging bay for burning organic material washed from the floating units by the molten media.

4,437,651

COOLING PLATE FOR BLAST-FURNACES

Jean Cordier, Dunkerque, and Pierre Rollot, Dunkerque Malo les Bains, both of France, assignors to Union Siderurgique du Nord et de l'Est de la France, Paris, France

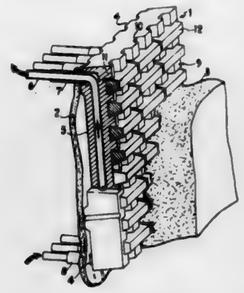
Filed Nov. 9, 1981, Ser. No. 319,281

Claims priority, application France, Nov. 7, 1980, 8023805

Int. Cl.³ C21B 7/10

U.S. Cl. 266—193 **5 Claims**

1. A cooling plate arrangement for use in a blast furnace, the plate being of cast iron and having a plurality of longitudinally arranged cooling tubes disposed within said plate and issuing from said plate on a common first side of said plate in the region of the upper and lower ends of said plate, said cooling plate arrangement further having a refractory lining afixed to a second side of said plate, said second side being opposite said first side, the improvement comprising means for adapting to horizontal and vertical deformations in said plate, said adapting means including a series of longitudinally and horizontally arranged grooves, in the surface of said second side, crossing at generally right angles to each other, with the areas between the grooves forming projections, so that the grooves facilitate



the bending without cracking of the plate in response to heat engendered deformations in the horizontal and vertical directions and simultaneously improve the afixing of said refractory lining to said second side of said plate.

4,437,652

VESSEL FOR THE TREATMENT OF MOLTEN METAL

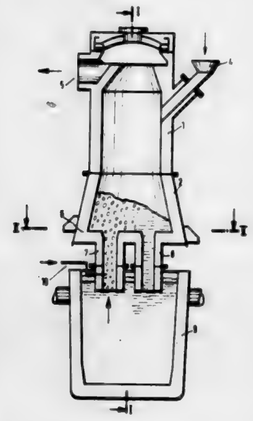
Richard A. Weber, Moers, and Carl-Heinz Schütz, Duisburg, both of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft Vorm.August Thyssen-Hutte, Duisburg, Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,207

Claims priority, application European Pat. Off., Jul. 27, 1981, 81 105 911.2

Int. Cl.³ C21C 7/10; C22B 9/04

U.S. Cl. 266—275 **4 Claims**



1. A vessel for the continuous treatment of molten metals under reduced pressure, according the circulation process, especially for degassing steel melts, this vessel being provided, in its bottom, with an inlet pipe which dips into the molten metal, and an outlet pipe for the molten metal which has been treated, this outlet pipe being located so that it is spatially separated from the inlet pipe and, in particular, dipping into the molten metal, wherein the lower portion (2) of the vessel is widened, from the upper portion (1) of the vessel, towards the vessel-bottom (6), in a manner such that the diameter of the vessel-bottom (6) running through the axes of the inlet and outlet pipes (7 and 8) exceeds the corresponding diameter of the upper portion (1) of the vessel, and exceeds the diameter of the vessel-bottom (6) running perpendicularly thereto, between the inlet pipe (7) and the outlet pipe (8) which is not greater than the corresponding diameter of the upper portion (1) of the vessel.

4,437,653

FLUID-FILLED ENGINE MOUNT DEVICE

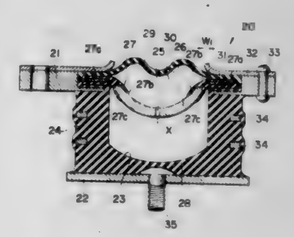
Toshihiko Kakimoto, Tokyo, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Feb. 16, 1982, Ser. No. 348,836

Claims priority, application Japan, Feb. 17, 1981, 56-21664

Int. Cl.³ F16F 5/00

U.S. Cl. 267—140.1 **8 Claims**



1. A fluid-filled engine mount device comprising:

first and second base plate members which are spaced from each other and connected to a power unit side and a vehicle body side, respectively;

a block made of elastic material, interposed between said first and second base plate members and being formed with a cavity;

a partition plate member located in the vicinity of and spaced from said first base plate member, said partition plate member defining a fluid chamber on the elastic block cavity side and an auxiliary chamber on the opposite side relative to said fluid chamber, said auxiliary chamber being defined by a diaphragm member connected to said first base plate member, said partition plate member being formed with an orifice through which said fluid chamber is in communication with said auxiliary chamber, said fluid chamber and at least a part of said auxiliary chamber being filled with a fluid; and

an elastic support member for connecting said partition plate member with said first base plate member, said elastic support member including a secured section through which said elastic support member is secured to said first base plate member, and a generally annular section located inside of the inner wall surface of said elastic block cavity and inside of said first base plate member in the radial direction, and located between said secured section and the peripheral section of said partition plate member.

4,437,654

VISE WITH INTERCHANGEABLE JAW MEMBERS

Pietro Chiappetti, 5341 Hawley Ave., Los Angeles, Calif. 90042

Continuation of Ser. No. 357,061, Mar. 11, 1982, abandoned. This application Jun. 21, 1983, Ser. No. 505,896

Int. Cl.³ B25B 1/24

U.S. Cl. 269—283 **6 Claims**

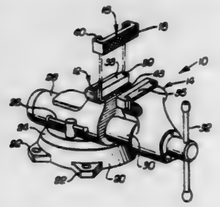
1. A vise for holding a workpiece in compression, comprising:

a vise body, said body including a base, a support housing mounted on said base, a fixed jaw on said support housing, a movable jaw, and a mechanism for moving said movable jaw in facing relation to said fixed jaw;

a pair of support blocks, one on said fixed jaw and one on said movable jaw, each of said support blocks having a pair of vertically extending ribs on the longitudinally opposed sides thereof and a longitudinally extending hori-

zontal ledge thereon, and having a generally flat front vertical surface extending between said pair of ribs, said ribs defining a corresponding pair of laterally outwardly open and vertically oriented slots disposed in positions spaced rearwardly from said front vertical surface by the thickness of said ribs; and

a pair of interchangeable jaw members, each of said interchangeable jaw members having a front working surface and a generally flat rear vertical surface, and a pair of generally L-shaped locking arms at longitudinally opposed sides of said rear vertical surface, said locking arms each having a first leg portion extending generally rearwardly from said rear vertical surface for a distance greater than the thickness of said ribs on said support blocks and a second leg portion extending generally later-



ally inwardly and having a size and shape relative to the size and shape of said slots on said support block for loose fitting locking reception of said locking arms of each of said jaw members with respect to said pair of vertically extending ribs on one of said support blocks, so that each of said interchangeable jaw members may be engaged to one of said support blocks to fit loosely thereon and moved downwardly by sliding until the sliding is stoppped by contact of said interchangeable jaw member with said longitudinally extending horizontal ledge, whereby said front vertical surface of said support block and said rear vertical surface of said jaw member are placed in a facing abutting relation when said front vertical surface of said jaw member is subjected to a rearwardly directed compressive force.

4,437,655

PROCESS AND APPARATUS FOR SEPARATING FLEXIBLE SHEETS FROM A STACK

Gaspar A. H. Bijttebier, Grote Heerweg 64, B-8749 Waregem-Beveren, and Jozef Vangheluwe, Roeselare, both of Belgium, assignors to Gaspar A. H. Bijttebier, Waregem-Beveren, Belgium

Filed May 6, 1981, Ser. No. 260,988
Claims priority, application Belgium, May 12, 1980, 1/9815
Int. Cl.³ B65H *3/22*
U.S. Cl. 271—3.1 **18 Claims**

1. An apparatus for separating flexible sheets individually from a stack of flexible sheets in successive separating cycles, comprising:

a first frame;

at least one vertically movable pick-up head in said first frame for successively separating said sheets individually from the top of a stack;

means for lowering said at least one pick-up head onto the top of a stack of flexible sheets;

means for removing each separated sheet out of said apparatus;

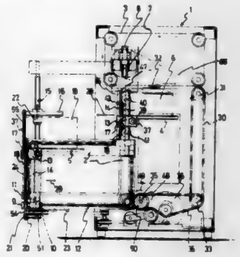
first and second vertically movable platforms each for supporting a stack;

at least one stack holder adapted to be fitted vertically through at least the entire thickness of a stack;

a second frame;

means in said second frame for piercing a stack with at least one stack holder in at least one place vertically through the entire thickness of the stack and through the top surface of the stack; and,

conveyor means circulating into and out of said first and second frames for alternately introducing one of said first and second support platforms with a full stack into said first frame and for subsequently removing the empty support platform out of said first frame;



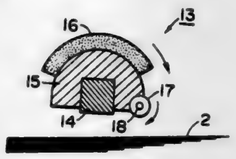
the other of said support platforms being positioned for cooperation with said piercing means in said second frame while the one of said first and second support platforms is positioned for cooperation with said at least one vertically movable pick-up head in said first frame.

4,437,656

SHEET FEEDING DEVICE

Shigeyoshi Onoda, Kawasaki, and Tateki Nagaoka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 64,896, Aug. 8, 1979, abandoned. This application Jun. 9, 1981, Ser. No. 271,856
Claims priority, application Japan, Aug. 29, 1978, 53-105150
Int. Cl.³ B65H *3/34*
U.S. Cl. 271—10 **30 Claims**



1. A sheet feeding device attachable to and detachable from a predetermined part of an image forming machine, comprising:

means for accommodating sheets;

a supporting member, provided in said sheet accomodating means, for supporting a stack of sheets to be fed therefrom, means for pivotally supporting said supporting member at a rear portion thereof with respect to the direction of the feed and means urging a front portion thereof upwardly;

a rotatable feed roller, at a fixed position, for feeding the sheets one by one, said feed roller having an incomplete circular cross-section with a segment thereof cut away, wherein the cut-away portion of the roller, when feeding is not taking place, is opposed to the topmost sheet of the stack of sheets, and upon feeding operation, the circular section of the roller is in contact with the topmost sheet to feed it;

a register roller for synchronizing the sheet fed out by said feed roller with an image to be formed therein; and

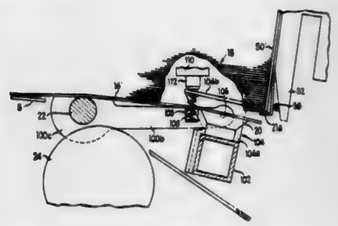
a displacing member, so disposed relatively to said circular section of the roller as to be downwardly movable with the rotation of the feed roller, and to displace the topmost sheet downwardly to a predetermined position before said feed roller is brought into contact with the topmost sheet, said displacing member maintaining, during non-feeding, a state of non-contact with the topmost sheet.

4,437,657

SUCTION CUP APPARATUS FOR FEEDING A SHEET FROM THE BOTTOM OF A STACK

Martin Selak, Des Plaines, Ill., assignor to Astro Machine Corp., Ill.

Filed Jun. 15, 1981, Ser. No. 273,573
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—100 **12 Claims**



1. In feeding apparatus for feeding sheet material one at a time from the bottom of the stack of the same, said apparatus including a horizontal support for a stack of sheets, stacking means for retaining on said horizontal support a vertical stack of sheet material, said horizontal support terminating short of the front end of the stack to provide a feed opening exposing the front end portion of the bottom sheet in the stack, support ledge-forming means confronting said feed opening for supporting the weight of the front end of the stack of sheets, means for withdrawing the bottommost sheet from the bottom of the stack through said feed opening and including suction cup means for engaging the bottom surface of the exposed end portion of the bottommost sheet in the stack and by force of suction therefrom and pulling the same downwardly from the stack through the feed opening, the improvement in movable support structure for said suction cup means and including carrier means bodily movable between an initial lowered position to a raised position where the suction cup means carried thereby initially contacts and then pushes upwardly against the exposed end portion of the bottommost sheet in the stack, mounting means upon which said suction cup means are directly supported, said mounting means being mounted for pivotal movement upon said carrier means so that the suction plane of the mouths of said suction cup means can be adjusted to different angles of inclination relative to said carrier means, and position control means for controlling the position and inclination of said mounting means on said carrier means by raising said carrier means to a position where the suction cup means on said mounting means initially engages the bottom surface of the bottommost sheet of the stack, with the suction plane thereof parallel to the sheet, and then raising the same a small distance further while tilting said mounting means on said carrier means in a direction away from the said support ledge-forming means and without any substantial horizontal movement thereof away from said support ledge-forming means, and following which said carrier means is lowered to pull the front end of the bottommost sheet past said support ledge-forming means with a wiping contact thereof to withdraw only the bottommost sheet from the stack.

4,437,658

BOTTOM SHEET FEED SYSTEM

Raymond E. Olson, Pompano Beach, Fla., assignor to Profold, Inc., Pompano Beach, Fla.

Filed Jul. 30, 1981, Ser. No. 288,486
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—125 **7 Claims**

1. A bottom sheet feed system for automatically feeding a stack of sheets, comprising:

a slanted feed surface slanted between 15° and 45° and having means for receiving the stack of sheets;

a first aperture in the feed surface at a location to be beneath the stack of sheets;

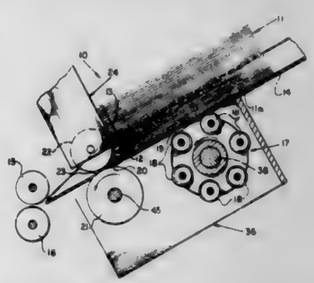
a rotatable agitator wheel formed of a plurality of evenly spaced freely rotating agitator rollers beneath the feed surface and partially projecting upwardly through said first aperture, the agitator rollers being evenly spaced from a central axis of the wheel and along a circle, the rollers being spaced from one another and being positioned beneath the feed surface such that when the rollers strike a bottom-most sheet, it is partially lifted from its rest position on the feed surface;

all of the rollers being of the same dimensions and of the same material having a coefficient of friction sufficiently low to prevent wrinkling or bending the bottom-most sheet;

a peripheral surface of the freely rotating rollers of the agitator wheel being slightly convex and formed of a fiberous material;

first drive means for rotating the agitator wheel in a direction of feed;

at an edge of the feed surface a feed nip means being posi-



tioned for permitting feed of a single bottom sheet from a leading edge of the stack of sheets;

said feed nip means comprising a rotatable feed wheel substantially beneath the feed surface and a stationary retard surface adjacent the feed wheel;

a spacing of the feed nip means being adjustable by providing an adjustment means for moving the retard surface relative to the feed wheel;

second drive means connected for driving the feed wheel in the feed direction;

the edge at which the feed nip means is located comprising a second aperture in the feed surface;

the stationary retard surface of the feed nip means comprising a stationary retard wheel mounted below and in a pocket portion of a support member having a perpendicular abutment surface against which uppermost sheets of the stack of sheets abut, and wherein lower-most sheets of the stack are fanned along the retard wheel, said retard wheel being dimensioned to contact no more than a $\frac{1}{8}$" thick stack of the bottom-most sheets; and

the sheet feed system being capable of handling at least 10,000 sheets per hour.

4,437,659

ROTARY DRUM FOR PROCESSING SHEET MATERIALS

Christopher D. Caron, Longmont, and Donald W. Schaefer, Lakewood, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 191,582, Sep. 29, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,722
Int. Cl.³ B65H *29/32*
U.S. Cl. 271—276 **7 Claims**

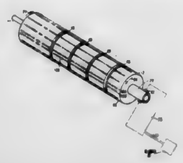
1. In a document transport system wherein flexible rectangular sheets are loaded in seriatim onto a transport mechanism for

transport through a processing station, and are unloaded from said transport mechanism, the improvement comprising:

a transport mechanism including a low inertia rotary vacuum drum;

said rotary vacuum drum having a cylindrical surface for supporting the sheets;

said cylindrical surface having a plurality of elongated slots with a plurality of communicating ports disposed in said



slots, said elongated slots being configured into groups with each group having a different population of communicating ports and operable to generate different pressure zones on said surface;

a low vacuum, high flow blower operable to evacuate the interior of said drum; and

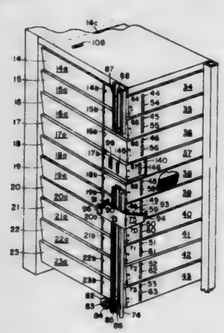
a motor coupled to said drum and operable to rotate the drum.

4,437,660

WORD PROCESSOR—CONTROLLED PRINTER OUTPUT SCANNER MECHANISM

Elliot N. Tompkins, and Sherman S. Kline, both of San Antonio, Tex., assignors to Datapoint Corporation, San Antonio, Tex.

Filed Nov. 16, 1981, Ser. No. 321,808
Int. Cl.³ B65H *43/08*
U.S. Cl. 271—290 **10 Claims**



1. A word processor-controlled printer output bin apparatus having a scanning means comprising:

a word processing bin module having a plurality of output bins for receiving printed documents from a word processor;

a scanning means for scanning the plurality of output bins, said scanning means having a signal generating means and a signal detector means to detect a signal from the signal generating means to determine from interruptions in the signal as each output bin is scanned the presence or absence of documents in an output bin to provide an indication to a word processor-controlled printer of the availability of the output bin for receipt of documents and the amount of documents it is capable of receiving.

4,437,661

FOOTBALL KICKING TRAINER TOY

John P. Chavez, 1522 S. Lamar St., Lakewood, Colo. 80226

Filed Apr. 21, 1981, Ser. No. 256,012
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—55 R **2 Claims**

1. An improved football kicking trainer employing a goal-post of the type having a base adapted to rest upon an underlying surface, a standard connected to the base and extending upwardly therefrom, a support arm extending laterally of the standard and connected to the standard near the upper end of the standard, a cross-bar connected centrally to the support arm and extending transversely to the standard and to the support arm in a substantially horizontal plane and offset laterally from the standard, and a pair of upright bars attached near opposite ends of the cross-bar and extending upwardly therefrom in substantially independent relationship to define in combination with the cross-bar a U shaped frame in a substantially vertical plane through the cross-bar; and employing a flexible impact damping means for receiving the force of a



light weight football when, in use, such a football is directed through the U shaped frame, wherein the improvement comprises: each upright having attached at its upper end a pivoted extension arm extendable upward and in a direction rearward of said goal post,

said impact damping means being suspended from each said extension arm substantially solely under force of gravity on the side of the U shaped frame opposite from the direction of lateral extension of the support arm from the standard such that the impact damping means is spaced apart from the cross-bar by at least the length of said support arm for creating a horizontal ball reception area between the cross-bar and impact damping means.

4,437,662

STRING LOAD APPORTIONED RACKET

Tsai C. Soong, 1839 Jackson Rd., Penfield, N.Y. 14526

Continuation-in-part of Ser. No. 228,577, Jan. 26, 1981, Pat. No. 4,333,650, which is a continuation-in-part of Ser. No. 136,907, Apr. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 120,160, Feb. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 68,572, Aug. 22, 1979, abandoned. This application May 10, 1982, Ser. No. 376,592
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ A63B *51/00*
U.S. Cl. 273—73 D **11 Claims**



1. A racket having a hand grip joined to a frame supporting a string network having transverse and longitudinal strings extending throughout a ball-hitting region spaced from said grip, said frame having a shank region extending from said grip and flaring outward in a throat region and a generally oval region extending around said ball-hitting region, said racket comprising:

a. at least a central plurality of said longitudinal strings having a strung length at least 30% longer than the longest transverse string in said network;

b. said central plurality of longer longitudinal strings including at least one-third of all the longitudinal strings in said ball-hitting region; and

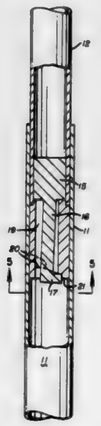
c. said longer longitudinal strings being strung with at least 30% more tension than said transverse strings.

4,437,663

GOLF CLUB

Clem C. Crisci, 1103 S. Croton Ave., New Castle, Pa. 16103

Filed Mar. 15, 1982, Ser. No. 358,274
Int. Cl.³ A63B *53/14*
U.S. Cl. 273—81.2 **5 Claims**



1. A two-part golf club comprising a lower portion and an upper portion, a hand grip on said upper portion and a club head on said lower portion, means for movably securing said upper and lower portions together wherein said means comprises a plug secured in the end of one of said club portions, an elongated pin extending from said plug, a sidewardly extending tab on the free end of said pin, a lock fitting having an opening therethrough, a slot in the side of said opening and said lock fitting secured in the end of other said club portions, the ends of said club portions having said plug and said lock fitting arranged for mutual engagement, a recessed area in said lock fitting comprising a ramp in the form of a partial spiral, an offcenter annular shoulder adjacent said ramp, said tab slidable on said ramp and against said annular shoulder to a locked position when said portion having said plug and pin is rotated.

4,437,664

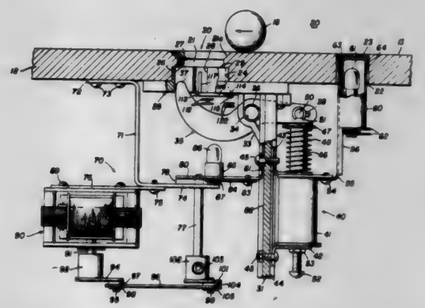
PIN BALL GAME WITH OSCILLATING SHOOTER

Max Wiczer, Skokie, and Albin Peters, Chicago, both of Ill., assignors to Wico Corporation, Niles, Ill.

Filed Nov. 30, 1981, Ser. No. 326,172
Int. Cl.³ A63F *7/02, 7/26*
U.S. Cl. 273—121 A **18 Claims**

1. Ball control apparatus for use in a pin ball game including a playfield board on which a pin ball rolls for engagement with one or more targets, said ball control apparatus comprising a frame mounted for rotational movement about a predetermined axis, receptacle means carried by said frame for rotation therewith and adapted for receiveing a ball coaxially with said axis, ball propelling means carried by said frame for rotation therewith and disposed for engagement with a ball disposed in said receptacle means, said ball propelling means being movable in a plane disposed substantially perpendicular to the playfield board for propelling the ball into rolling engagement with the playfield board along the intersection thereof with said plane, first drive means coupled to said frame for effecting continual rotational movement thereof through a predetermined range of movement thereby to vary the orientation of said plane and the direction in which the ball may be propelled along the playfield board, second drive means coupled to said ball propelling means for effecting propelling movement thereof in said plane, and control means coupled to said first





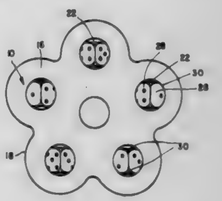
and second drive means and including the first and second actuating means, said first actuating means being responsive to reception of a ball in said receptacle means for actuating said first drive means and for enabling said second actuating means, said second actuating means being selectively operable after enablement thereof for actuating said second drive means, said control means including deactuating means responsive to propelling movement of said ball propelling means in said plane for deactuating said first drive means and disabling said second actuating means.

4,437,665

DICE BOX

Ora Coster, 7 Bet Horon St., Tel Baruch 69987, Israel

Filed Feb. 9, 1982, Ser. No. 347,358
Int. Cl.³ A63F *9/04*
U.S. Cl. 273—138 R **5 Claims**

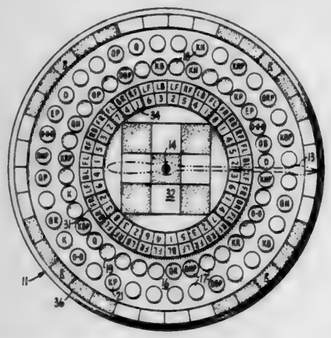


1. Pattern generating apparatus comprising:

a housing defining first and second parallel planar surfaces,

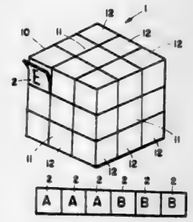
said surfaces being formed with apertures arranged in facing registration and defining a plurality of sockets; and a plurality of pattern bearing elements universally rotatably retained in said plurality of sockets, each element defining pairs of parallel opposite pattern bearing planar surfaces, said elements being arranged with respect to said sockets such that, when said housing is disposed adjacent a flat surface, each of said pattern bearing elements engages said surface and is universally rotatable thereby so that when one of said pattern bearing surfaces lies parallel to said first parallel planar surface the opposite parallel pattern bearing surface is caused to lie parallel to said second parallel planar surface whereby a clear pattern indication is displayed through said apertures.

4,437,666
MECHANICALLY PROGRAMMABLE CHESS PLAY INDICATOR
John J. Moylan, 658 Aipuni St., Honolulu, Hi. 96821
Filed Aug. 24, 1981, Ser. No. 295,380
Int. Cl.³ A63F *3/02*
U.S. Cl. 273—141 R **3 Claims**



1. A mechanically programmable chess play indicator, comprising:
a flattened supporting body,
an elongated pointer pivotally mounted on said supporting body for free spinning rotation sweeping a circular area thereof,
a plurality of objects colored to correspond to the white and black chessmen and arrayed in concentric circles surrounding the pivotal mounting of said pointer and in equally circumferentially spaced relation to each other, with the objects corresponding to the white chessmen being *interchangeable with each other* in one circle and the objects corresponding to the black chessmen being *interchangeable with each other* in the other circle, the positions for said objects in said circles exeeding the total number of chessmen represented by said objects in said circles whereby desired ones of said positions are unsupplied with said indicia corresponding with the conventional chessmen so that, when said pointer comes to rest not aligned with one of said objects having such indicia, said pointer may be indexed in the chosen direction of rotation until it reaches alignment with one of the said objects, the number of positions unsupplied with indicia before a particular indicium is reached determining the relative probability of that indicium becoming aligned with said pointer of each play,
a plurality of knight positions also being provided on said body *at positions individually alignable with said pointer,* each of such knight positions being occupied by an indicium indicating a possible knight move whereby, when the first spin of said pointer indicates a knight is to be moved, a second spin causes the pointer to become aligned with one of said knight positions and thus indicate the move to be made by such knight,
and wherein a plurality of move extent positions are also provided on said body *at positions individually alignable with said pointer,* each of which is occupied by a number indicating the number of consecutive squares on the chessboard which chosen queen and bishops and rooks are to move whereby, when the first spin of said pointer indicates a queen or bishop or rook or pawn is to be moved, another spin causes the pointer to become aligned with one of said move extent positions and thus indicate the number of squares the indicated piece is to move, and
wherein a checkerboard having nine alternating light and dark squares is provided on said body centered on the pivotal mounting of said pointer whereby, when the first spin of said pointer indicates a king or queen or bishop or rook or pawn is to be moved, another spin causes said pointer to indicate the direction the indicated piece is to move.

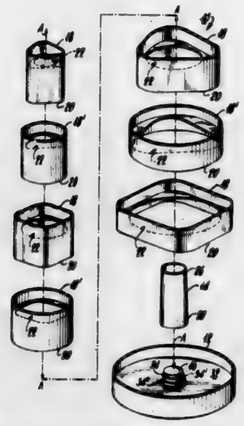
4,437,667
GEOMETRIC GAME
Ronald L. Miller, 7300 Cascade Rd., Grand Rapids, Mich. 49508
Filed Apr. 8, 1982, Ser. No. 366,607
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **11 Claims**



1. A game comprising:
a playing unit having a multi-faced geometric configuration, each face of said playing unit having a plurality of affixing facets, all of said faces having an identical number and arrangement of said facets, said playing unit having twisting means for maintaining said facets in a single unit and allowing any linear combination of said facets on any one of said faces to be twisted so as to be disposed on a different face and simultaneously changing the location of corresponding facets on corresponding faces;
a plurality of markers, each marker carrying one of a plurality of indicia, at least some of said indicia being orientatable, said plurality of indicia having more distinguishable indicia than the number of said faces of said playing unit;
affixing means for repeatedly removably affixing each of said individual markers to each of said facets, said markers being selected and affixed by a player to said facets of said playing unit to provide a recognizable pattern of indicia as a desired starting configuration, the playing unit being twisted by the player with said markers affixed thereto to disorganize said player selected configuration of said markers while said markers remain affixed to said unit, said playing unit being twisted by the player to return said markers to the player selected starting configuration;
whereby said markers can be affixed to said facets in any desired combination by a player and be removed from said playing unit when said player selected starting configuration is reproduced or to commence a new pattern of play

prior to termination of the previous pattern of play, and reaffixed to said facets in a different combination.

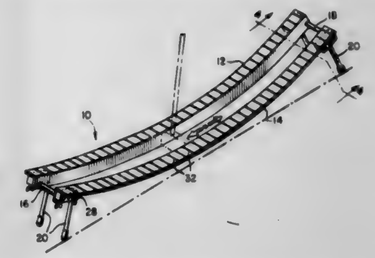
4,437,668
PUZZLE POST TOY
Danny E. Simpson, Baltimore, Md.; David M. Williams, New York, N.Y.; Richard A. Chase, Baltimore, and Lawrence B. Grubb, Monkton, both of Md., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Jun. 4, 1982, Ser. No. 385,146
Int. Cl.³ A63F *9/12*
U.S. Cl. 273—156 **16 Claims**



1. A puzzle toy comprising:
a generally planar base;
a post upstanding from said base;
a plurality of pieces, each having a planar aperture for fitting around said post and a bottom for resting on said base;
said pieces each having an axial direction perpendicular to said planar aperture and each piece projecting onto a plane perpendicular to said axial direction a closed geometric figure, said geometric figure having a long dimension;
each of said pieces projecting said geometric figure having a different long dimension;
at least one of said geometric figures being circular and at least one of said geometric figures being non-circular;
said aperture of each piece being large enough to accommodate each of the other pieces having a smaller long dimension and not large enough to accommodate any other piece having a larger long dimension;
whereby said pieces may be stacked onto said post in any order and, by sufficient manipulating without removal from said post, can be made to assume a stable configuration in size order about said post.

4,437,669
GOLF PRACTICE PUTTING TRACK
David T. Pelz, 25 Tamarisk Cir., Abilene, Tex. 79606
Filed Sep. 29, 1982, Ser. No. 428,337
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 C **4 Claims**

1. A golf putting practice apparatus for providing a visual, audible, and tactual indication of an improper stroke comprising a putting track formed of a pair of rails, L-shaped in cross section, spaced apart forming a channel and adapted to accommodate a putter head between them, said rails being arcuate in shape, having the lowermost portion at the center of each of said rails and the uppermost portions at each of the ends thereof, the radius of curvature of said arcuate rails approximating the path of a putter head during a normal putting stroke; said rails further including a series of indicia lines on the upper surface thereof and perpendicular to the longitudinal axes of said rails, said indicia lines being adapted to cooperate with a similar indicia line on a putter head to provide a visual indication of the position of said putter head with respect to said rails during the entire putting stroke whereby deviation of the putter head from a line perpendicular to the longitudinal axis of said rails will cause the said indicia line on said putter head to be at an angle with respect to said series of indicia lines



on said rails, said apparatus further including means for adjusting the position of said rails with respect to each other thereby varying the width of said channel within which said putter head is stroked so that diviations of said putter head from a straight line perpendicular to the longitudinal axis of said channel will cause said putter head to strike the side of said rails providing an audible and a tactual indication that said putter head has not followed a straight line defined by said rails.

4,437,670
CARD GAME
Lillian D. Simon, 2000 S. Eads St., Arlington, Va. 22202
Continuation of Ser. No. 268,578, May 29, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,794
Int. Cl.³ A63F *1/04*
U.S. Cl. 273—296 **2 Claims**



1. A card game for a plurality of players comprising
a first deck of cards including forty three cards,
a first decorative back surface on each of the first deck of cards,
a different playing surface on each of the first deck of cards,
an investment opportunity depicted on the playing surface of each of forty of said first deck of cards with a different opportunity shown on each card,
a second deck of cards having the same number of cards as the first deck of cards,
a second decorative back surface on each of the second deck of cards different from the first decorative back surface so that the first and second decks of cards are distinguishable from each other,

a different playing surface on each of the second deck of cards,

an investment opportunity depicted on the playing surface of each of forty said second deck of cards with a different opportunity shown on each card and being in one-to-one correspondence with the playing surface on each of the forty cards in said first deck of cards whereby the playing surfaces of the forty cards in said second deck of cards are identical to the playing surfaces of the forty cards in said first deck of cards,

three of the first deck of cards and a corresponding three of the second deck of cards are maverick cards with three different maverick opportunites depicted on the respective playing surfaces thereof,

a plurality of game tokens being of equal value and being equally distributed among the plurality of players,

a plurality of containers for holding game tokens,

a plurality of game winning cards randomly selected from said first deck of cards at an initial point in the game and being placed, with playing surfaces down, under the plurality of containers with one winning card for each container,

a broker selected from among the players, an auction session conducted by the broker to auction the forty-three cards in said second deck to the players in response to highest bids paid by the tokens of the player who made the highest bid, said paid tokens being randomly placed in the containers,

a selling session among the players wherein the cards of said second deck may be purchased for said tokens,

a trading session wherein the cards of said second deck may be traded among the players,

a recall session wherein the broker uses the first deck of cards from which the winning cards were initially removed to recall one by one the corresponding cards of the second deck until all of the second deck cards are surrendered except the winning cards, and

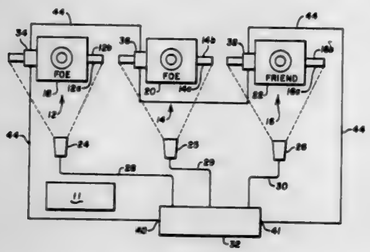
the winning cards under the token containers being exposed face up to be matched with corresponding cards held by the players who receive the tokens in such containers whereupon a game winner is indicated by the player amassing the most tokens.

4,437,671

DUELING INTERACTIVE TARGET SYSTEM

Theodore N. Busch, Minneapolis, Minn., assignor to Caswell International Corporation, Minneapolis, Minn.

Filed Feb. 8, 1982, Ser. No. 346,504
Int. Cl.³ F41J 5/00
U.S. Cl. 273—372 **7 Claims**



1. A hit indicating apparatus for a multiple target shooting range, comprising, in combination:

an electrical circuit, including;

power means;

indicator means;

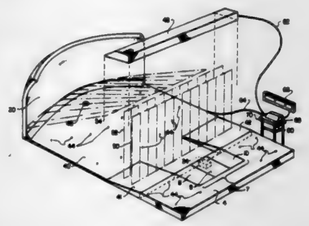
at least two target means, each of which includes hit sensor means, said sensor means including an input lead and an output lead, said sensor means joined in a series array so that the initial input and final output leads of said sensors of said series connect into said electrical circuit whereby when any target is struck a display indication is provided by said indicator means.

4,437,672

GOLF GAME SIMULATING APPARATUS

Robert J. Armantrout; George E. Gerpheide, both of Salt Lake City, Utah, and Robert F. Wilson, deceased, late of Salt Lake City, Utah (by Robert D. Wilson, personal representative), assignors to Robert D. Wilson, Salt Lake City, Utah, personal representative of Robert F. Wilson, deceased

Filed Dec. 1, 1980, Ser. No. 211,622
Int. Cl.³ A63B 69/36
U.S. Cl. 273—185 B **20 Claims**



1. Apparatus for simulating the playing of golf comprising:

a support defining a tee area from which a golf ball may be driven by a player utilizing a golf club;

a target screen disposed in front of the tee area for receiving balls driven from the tee area and from which balls will rebound;

first sensor means including means for calculating the speed of a ball and including means for detecting the direction of travel of said ball driven from the tee area toward the screen;

first computing means (response) responsive to said first sensor means for producing an estimate of the distance of travel and ultimate resting position the driven ball would have if allowed free flight;

a cup disposed in front of the tee area close to said target screen into which rebounded balls may fall, said cup having an upper rim that is generally flush with a floor surface placed between said target screen and tee area support;

second sensor means for detecting when a ball falls into said cup; and

logic means for indicating a holed-out condition when said second sensor means detects a ball in said cup and when the first computing means determines that the ultimate resting position of the driven ball is within a predetermined distance from a golf hole location, said golf hole location being representative of the location of a simulated golf hole towards which the player has driven the golf ball.

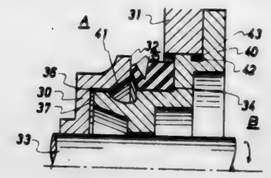
4,437,673

SEALING DEVICE

Yoshiaki Miyamoto, Fukushima, Japan, assignor to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1981, Ser. No. 310,404
Claims priority, application Japan, Oct. 21, 1980, 55-150340[U]
Int. Cl.³ F16J 15/16, 15/34
U.S. Cl. 277—65 **7 Claims**

1. A sealing device for sealing the gap between two relatively rotatable machine members such as a rotating shaft extending through a housing with a gap therebetween comprising: a first seal member mounted on the rotating shaft to be rotated thereby having a substantially axially extending body portion and a radial component formed integral with and extending radially outwardly from said body portion, said body portion forming an annular groove on the radially outer surface thereof; a second seal member mounted on said housing in cooperating sealing relationship with said first seal member comprising, a reinforcement member made of metal plate extending substantially radially in said gap, a seal lip made of resilient rubber provided at the radially inner end of said reinforcement member and extending radially outwardly at an



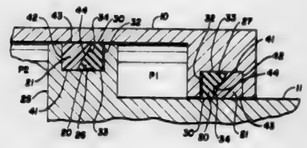
angle with respect to the shaft and in sliding contact with said radial component of said first member, and an axially extending radially inner circumferential surface on said radially inner end of said reinforcement member; and a cylindrical axial component extending axially from said body portion of said first sealing member and offset radially outwardly therefrom to form a narrow annular space between the radially outer circumferential surface of said cylindrical axial component and said inner circumferential surface of said reinforcement member.

4,437,674

FLUID SEALING DEVICES

George K. Fling, Dallas, Tex., assignor to Vought Corporation, Dallas, Tex.

Division of Ser. No. 189,548, Sep. 22, 1980, Pat. No. 4,380,342.
This application Sep. 3, 1982, Ser. No. 414,700
The portion of the term of this patent subsequent to Apr. 19, 1990, has been disclaimed.
Int. Cl.³ F16J 15/09
U.S. Cl. 277—188 A **6 Claims**



1. Apparatus for forming a fluid seal between mating surfaces of first and second members movable with respect to each other wherein said second member separates a first area containing a fluid at a first pressure and a second area containing a fluid at a second, lower pressure, said second member having a recess formed therein, said recess having a bottom wall and a side wall extending substantially perpendicularly from said bottom wall and forming a substantially right angle therewith, said apparatus comprising:

(a) an elastomeric sealing device contained within said recess in one of said mating surfaces and contacting the other of said mating surfaces;

(b) a resilient anti-extrusion device which is more rigid than said sealing device and which is substantially a right trapezoid in cross-section contained within said recess, the longer leg thereof confronting said elastomeric sealing device, the longer base thereof contacting said other of said mating surfaces, the shorter leg thereof confronting said recess sidewall, the shorter base thereof confronting said recess bottom wall, the right angle formed between said shorter base and said shorter leg mating with the substantially right angle formed between said recess sidewall and bottom wall;

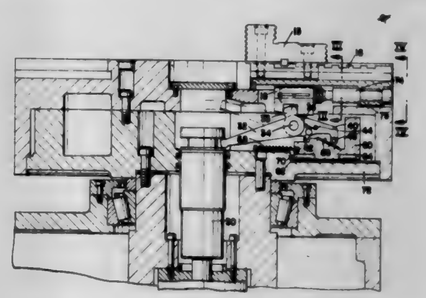
(c) Wherein said elastomeric sealing device is disposed between said resilient anti-extrusion device and said first area.

4,437,675

CHUCK WITH CENTRIFUGAL FORCE COMPENSATION

C. Fred Koenig, III, Montgomery, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Jul. 12, 1982, Ser. No. 397,622
Int. Cl.³ B23B 31/14
U.S. Cl. 279—1 C **10 Claims**



7. A chuck having a plurality of chuck jaws and a centrifugal counterbalance associated with each jaw, said centrifugal counterbalance comprises:

a first lever pivoted about an axis;

connecting means for connecting said first lever to an associated chuck jaw for moving said first lever and said chuck jaw in unison;

a second lever pivoted about the same axis as said first lever;

latch means movable between a latched position, locking said first and second levers for movement together in one direction, and an unlatched position, permitting independent movement of said first and second levers;

a counterweight movable from a stop position, engaging and moving said latch means to an unlatched position, to a position, not engaging said latch means and where said latch means is in a latched position, and movable outward under centrifugal force to apply force to said second lever which is transmitted thru said first lever to said chuck jaws providing centrifugal force compensation.

4,437,676

MOBILE TRAVEL TRUNK

John V. Kitrell, 4639 Holdrege, Lincoln, Nebr. 68503

Filed Sep. 23, 1982, Ser. No. 422,003
Int. Cl.³ B62D 61/00
U.S. Cl. 280—78 **8 Claims**

1. A mobile travel trunk, comprising,

a trunk means having rearward and forward ends, a top, a bottom and opposite side walls which define a compartment area,

means on the forward end of said trunk means for securing said trunk means to a vehicle,

a wheeled-suspension means operatively secured to said bottom of said trunk means,

said rearward end of said trunk means having a trapezoidal shaped opening formed therein defined by upper and lower edges and a pair of side edges,

said rearward end of said trunk means having a U-shaped lip at said upper edge and said side edges of said opening,

a trapezoidal shaped door pivotally mounted at the rearward end of said trunk means along the lower edge of said

opening and being movable between open and closed positions,

said door having upper and lower edges and a pair of side edges,

said door having a U-shaped lip at its upper edge and at its side edges which are adapted to be received by said U-shaped lip at the upper and side edges of said opening when said door is in its closed position,

hinge means pivotally securing said door to said trunk means,



said hinge means including a spring assembly whereby said door may be moved generally radially outwardly and upwardly with respect to said trunk means against the urging of said spring assembly to permit said U-shaped lip on said door to clear said U-shaped lip on the rearward end of said trunk means during opening and closing operations of said door, said spring assembly urging said door downwardly in the closed position thereof, and

a latch assembly having a latch member mounted adjacent the lower edge of said door and releasably engaging a latch plate connected to said bottom wall for preventing upward movement of said door in the closed position.

4,437,677

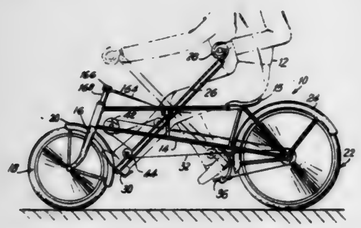
HAND AND/OR FOOT PROPELLED VEHICLE

Haig Ksayian, Box 52, Bear Tavern Rd., Titusville, N.J. 08560

Filed Feb. 9, 1982, Ser. No. 347,306

Int. Cl.³ B62M *1/12*

U.S. Cl. 280—234 **45 Claims**



1. A wheeled vehicle adapted to be propelled by a rider comprising:

a frame,

at least one front and rear wheel rotatably mounted on said frame;

a tiller tube, having a pair of handle bars at one end thereof and a pair of foot pedals at the other end thereof for oscillatory movement of said tiller tube about an axis;

drive means passing about a plurality of pulleys on said frame and at least one unidirectional clutch when driven by said drive means turns at least one of said pulleys;

said drive means including at least a length of cable, the ends of which are anchored to a sheave rotatably mounted to said tiller tube;

means for steering said vehicle in any position of the working cycle of said tiller tube;

means for moving said sheave along said tiller tube so as to go from a high-speed drive (level ride condition) to a low speed drive (hill climbing condition) and vice-versa; and

means for locking and unlocking said sheave in any position along said tiller tube.

4,437,678

VEHICULAR SUSPENSION

Barry J. Schultz, 738 Highbury Rd., Glen Waverley, Victoria 3150, Australia

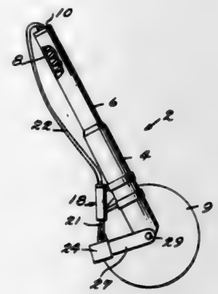
PCT No. PCT/AU81/00102, § 371 Date Mar. 31, 1982, § 102(e) Date Mar. 31, 1982, PCT Pub. No. WO82/00445, PCT Pub. Date Feb. 18, 1982

PCT Filed Jul. 31, 1981, Ser. No. 367,236

Claims priority, application Australia, Aug. 6, 1980, PE4905

Int. Cl.³ B62K *25/08*

U.S. Cl. 280—276 **11 Claims**



1. A vehicle comprising a chassis: at least one wheel; a suspension including a telescopic suspension strut having first and second members telescopically coupled together and a compression spring mounted to resiliently resist inwardly telescopic movement of said members, the first member being connected to the chassis and the second member having said wheel connected thereto for rotation relative thereto; disc brake means for applying braking torque to said wheel and comprising a disc mounted for rotation with said wheel and a disc brake caliper unit, said unit being mounted on an arm pivotally connected to the suspension strut at the axis of rotation of the wheel; and suspension adjustment means comprising a first hydraulic piston and cylinder unit coupled between the second member of the suspension strut and the caliper unit or arm and arranged to pressure hydraulic fluid in the first hydraulic piston and cylinder unit proportionately to the braking torque applied by said brake means to said wheel, said suspension adjustment means including a second hydraulic piston and cylinder unit which is operable to compress said spring only in response to increased pressure in said hydraulic fluid generated in response to braking torques being applied to said wheel, and wherein, when there is no braking torque applied by said brake means to said wheel, flexure of the suspension does not cause variations in the pressure of hydraulic fluid.

4,437,679

TUBE STRUCTURE FOR BICYCLE AND MOTORCYCLE FRAMES

Tullio Campagnolo, Via della Chimica, 36100 Vicenza, Italy

Filed Apr. 6, 1982, Ser. No. 365,910

Claims priority, application Italy, Apr. 15, 1981, 21177/81; Apr. 15, 1981, 21178/81; Jun. 19, 1981, 22435/81

Int. Cl.³ B62K *19/02*

U.S. Cl. 280—281 R **16 Claims**

1. Light and strong tube structure for frames of bicycles and motorcycles, said tube structure having a cross section having a variable wall thickness wall, said structure being comprised by at least two interconnected layers of different materials, at



least one said layer being metallic and at least another said layer having a preferential direction of tensile strength.

4,437,680

ADJUSTABLE TWO-BAR LINKAGE FOR A FOUR-WHEEL TRAILER

Leonard B. Della-Moretta, 1796 Russell Pl., Pomona, Calif. 91767

Division of Ser. No. 240,199, Mar. 3, 1981. This application Sep. 28, 1982, Ser. No. 425,566

Int. Cl.³ B62D *53/00*

U.S. Cl. 280—460 R **2 Claims**



1. A truck-trailer connection for connecting a four-wheel trailer having a center-pivoted front axle to a towing truck, including in combination:

a pair of generally coplanar links,

a first pair of spaced-apart swivel joints by moving them symmetrically inwardly or outwardly with respect to the truck's central fore-and-aft axis connecting said links to said trailer's front axle, said joints being equally spaced from the center pivot of that front axle, and

a second pair of spaced-apart swivel joints connecting said links to said truck, said second pair of joints being closer together than said first pair, and equidistant from the central fore-and-aft axis of said truck so that in a normal straight-ahead position of said truck and trailer, said links converge forwardly such that imaginary lines of extension of the links intersect a remote forward generally vertical instantaneous turning axis, and including

means associated with the swivel joints on the truck for adjusting the separation of those joints to provide selectively variable towing behavior and turning characteristics by control of the remote forward turning axis.

4,437,681

INFLATOR FOR A PROTECTIVE INFLATABLE CUSHION SYSTEM

Gary V. Adams, Brigham City, and Fred E. Schneiter, Ogden, both of Utah, assignors to Thiokol Corporation, Chicago, Ill.

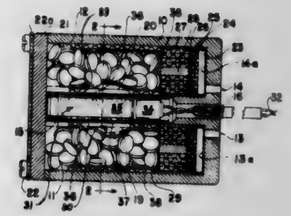
Continuation of Ser. No. 152,921, Jun. 3, 1980, abandoned. This application Jun. 25, 1982, Ser. No. 392,210

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—733 **7 Claims**

1. A gas generator located on a support strap of a safety harness of a vehicle restraint within a safety cushion thereof for inflating said safety cushion, said gas generator comprising:

a body having the form of a thin, flat rectangular package and including plural side-by-side, elongated combustion chambers having longitudinal axes which lie in a common plane and extend substantially parallel to the sides of said rectangular package having the longer dimensions, each of said combustion chambers being filled with gas generating material and including filtering, cooling and pH-adjusting screens, said generator body further including



an igniter having a longitudinal axis and being commonly located with respect to and in communicating relation with at least two of said chambers, each of said chambers having an outlet formed in said generator body, said outlet being in direct communication with the interior of said cushion for inflating said cushion; and

ignition means for said igniter.

4,437,682

OUTRIGGER FOR USE IN WHEEL-TYPE VEHICLE

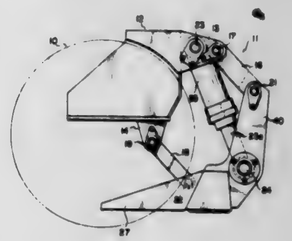
Masao Yokoyama; Masaharu Kon, and Hiroshi Ota, all of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,449

Claims priority, application Japan, Oct. 29, 1980, 55/153466

Int. Cl.³ E02F *3/75*

U.S. Cl. 280—764.1 **3 Claims**



1. An outrigger for use in a vehicle having wheels and an axle, comprising:

a support member fixedly secured to said axle;

a first link pivotally mounted at one end thereof to said support member;

a second link pivotally mounted at one end thereof to said support member, said first and second links being in parallel to each other;

an earth contacting member having a first section extending at right angles with the normal travelling direction of the vehicle just behind one of the wheels, a second section extending at right angles with said first section towards the front end of the vehicle along the inside of said one of the wheels and a third section projecting upwards from said first section;

the other end of said first link being pivotally connected to said earth contacting member at an upper end of said third section and the other end of said second link being pivotally connected to said earth contacing member; and

hydraulic cylinder means pivotally connected at one end

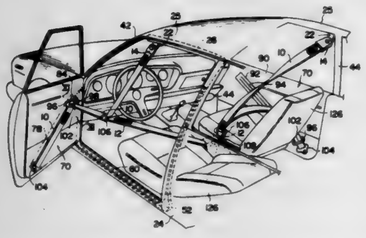
thereof to said support member and at the other end to said earth contactng member.

4,437,683

AUTOMATIC SEATBELT SYSTEM

Shigeru Moriya; Akio Yoshida, both of Toyota; Yoshihiro Hayashi, Kasugai; Tatsushi Kubota, Okazaki, and Hiroshi Tsuge, Chiryu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, both of Aichi, Japan

Filed Sep. 8, 1981, Ser. No. 300,069
Claims priority, application Japan, Sep. 9, 1980, 55-128214[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **6 Claims**



1. An automatic seatbelt system for automatically fastening shoulder and lap seatbelt webbings about an occupant in a motor vehicle, comprising:

a shoulder guide rail substantially extending in a longitudinal direction of the vehicle along a roof side portion of a vehicle body;

a shoulder guide member slidably coupled with said shoulder guide rail and guiding an end portion of the shoulder seatbelt webbing;

a lap guide rail substantially extending in the longitudinal direction of the vehicle along an inner surface of a vehicle door;

a lap guide member slidably coupled with said lap guide rail and guiding an end portion of the lap seatbelt webbing;

a reversibly rotatable sprocket wheel fixed to the vehicle body;

a flexible tape having a plurality of openings along the longitudinal direction thereof and meshed with said sprocket wheel, said flexible tape extending continuously along the vehicle body at least from said shoulder guide member to said sprocket wheel and connected with said shoulder guide member at one end portion thereof; and

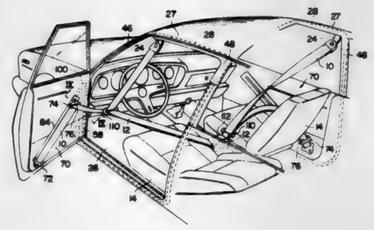
a flexible wire extending continuously along the vehicle body at least from an end of said flexible tape to said lap guide member and connected with the end of said flexible tape at one end thereof and said lap guide member at the other end thereof; said flexible wire being loosely connected with said flexible tape so that said flexible wire relatively moves with respect to said flexible tape for a predetermined distance.

4,437,684

AUTOMATIC SEATBELT SYSTEM

Shigeru Moriya; Akio Yoshida, both of Toyota; Muneharu Matsunami, Seto; Tatsushi Kubota, Okazaki; Hiroshi Tsuge, Chiryu, and Yuji Nishimura, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, both of Seisakusho, Japan

Filed Oct. 8, 1981, Ser. No. 309,687
Claims priority, application Japan, Oct. 17, 1980, 55-147940[U]
Int. Cl.³ A62B *35/02*
U.S. Cl. 280—804 **4 Claims**



2. An automatic seatbelt system for automatically fastening shoulder and lap seatbelt webbings about an occupant in a motor vehicle, comprising:

a shoulder seatbelt webbing defined by an upper portion having a single outer webbing extending from a roof side portion to a rear lower portion of a door of the vehicle and a lap seatbelt webbing defined by a lower portion of said outer webbing;

a shoulder guide rail substantially extending in a longitudinal direction of the vehicle along the roof side portion of a vehicle body;

a shoulder guide member slidably coupled with said shoulder guide rail and guiding an end portion of the shoulder seatbelt webbing;

a lap guide rail substantially extending in the longitudinal direction of the vehicle along an inner surface of the vehicle door;

a lap guide member slidably coupled with said lap guide rail and guiding an end portion of the lap seatbelt webbing;

a first sprocket wheel fixed to the vehicle body;

a second sprocket wheel fixed to the vehicle body;

a single driving means for rotating said first and second sprocket wheels;

a flexible shoulder tape having a plurality of openings along the longitudinal direction thereof, said shoulder tape being connected with said shoulder guide member and extending continuously along the vehicle body at least to said first sprocket wheel with which said shoulder tape is meshed; and

a flexible lap tape having a plurality of openings along the longitudinal direction thereof, said lap tape being connected with said lap guide member and extending continuously along the vehicle door and vehicle body at least to said second sprocket wheel with which said lap tape is meshed.

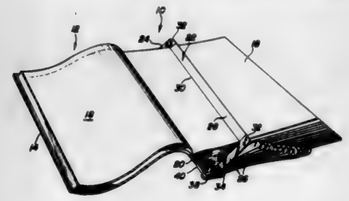
4,437,685

BOOK INDEX MARKERS

Jose Valencia, 3329 Amy St., Apt. #4, San Francisco, Calif. 94110

Filed Apr. 22, 1982, Ser. No. 371,000
Int. Cl.³ B42D *9/00*; B42F *21/00*
U.S. Cl. 281—42 **5 Claims**

1. An index marker in combination with a book, said book having categorized information compiled on the pages thereof in a known sequence, said index marker comprising a plurality of sheets of material interleaved with the pages of the book and having a peripheral portion projecting beyond the pages of the book, said projecting portions including indicia corresponding with the sequence of categories on the pages of the book, said projecting portions being oriented in shingled relation to enable observation of the indicia and access to the projecting portions to facilitate opening the book to the desired page, and means removably securing the plurality of sheets to the book to enable easy assembly of the index marker with the book and removal therefrom for use with another book without damage



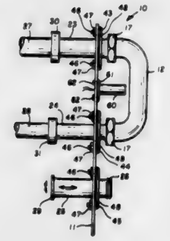
to the pages of the book or the index marker, said means securing the sheets and book in assembled relation including a fastener extending through projecting peripheral portions of the sheets adjacent each end of the spine of the book, and book spine engaging means connected with said fasteners, said spine engaging means including a right angle rigid member having one leg engaging the exterior of the spine of the book and the other leg including an eye engaging the fastener, each fastener including a telescopic screw threaded post assembly to rigidly clampingly engage the eye of the anchor.

4,437,686

ADJUSTABLE AND REPAIRABLE FLOW DIVERTER FOR FOOD PROCESSING EQUIPMENT

Clarence W. Wingate, Rochester, N.Y., assignor to Fluid Operations & Equipment, Inc., North Chill, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,496
Int. Cl.³ F16L *25/00*
U.S. Cl. 285—12 **7 Claims**



1. An adjustable and repairable flow diverter for food processing equipment, said diverter including a mounting plate, supporting junctions for variable interconnection of pipes leading to said plate and a movable jumper connectable between said junctions at said plate for variably interconnecting said pipes, said diverter comprising:

a. said junctions being formed as coupler tubes mounted on said plate;

b. said coupler tubes having means at one end for connecting to said pipes;

c. said coupler tubes having means at another end for connecting to said jumper;

d. said plate having tube holes arranged to receive said coupler tubes;

e. said tube holes being larger than the outside diameter of said coupler tubes and large enough to allow said coupler tubes to be axially removed from and replaced in said plate;

f. each of said coupler tubes having an encircling collar;

g. said collars having outside diameters substantially larger than said tube holes;

h. studs secured to said collars at equiangular spacing around said collars to be parallel with the axes of said coupler tubes;

i. said plate having stud holes arranged at equiangular positions around said tube holes for receiving said collar studs;

j. said stud holes and said tube holes being large enough relative to said coupler tubes and said collar studs to allow eccentric, axial, and inclination adjustment of said coupler tubes relative to said plate; and

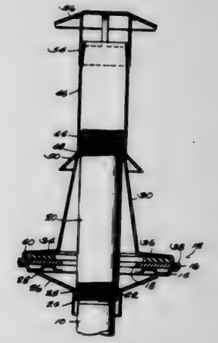
k. nuts on said studs securing said collars to said plates to hold said coupler tubes in an adjusted position for connection to said pipes and said jumper.

4,437,687

WATERPROOF ASSEMBLY OR SEALING AN APERTURE HOUSING A CONDUIT

James H. Wilson, 7225 W. Marine Dr., Milwaukee, Wis. 53223

Filed Nov. 24, 1980, Ser. No. 209,376
Int. Cl.³ E04B *5/48*
U.S. Cl. 285—42 **3 Claims**



2. Apparatus for providing an extension of an exhaust conduit of a building through an aperture in a roof of a building, the roof having upper and lower surfaces, and for providing a seal around the aperture and between the exhaust conduit and the upper surface of the roof to prevent access of moisture into the aperture, said apparatus comprising

an exhaust conduit extension having upper and lower ends, said upper and lower ends each including external threads, said conduit extension being comprised of sheet metal and being adapted to extend through the aperture, and said lower end of said conduit extension being adapted to be connected to said exhaust conduit of the building and for providing and extension of the exhaust conduit, through the aperture in the roof,

a restraining member threaded onto said lower end of said conduit extension, at least a portion of said restraining member engaging said lower surface of the roof,

a collar surrounding the upper end of said conduit extension, said collar including a peripheral edge,

a resilient seal adapted to surround said aperture and to be located between said peripheral edge of said collar and the upper surface of the roof, said resilient seal comprising a disc including a planar surface, and

means for forcing said peripheral edge of said collar against said planar surface of said resilient seal for providing a seal around said aperture, said means for forcing said collar against said resilient seal including a threaded member threadably supported on said upper end of said conduit extension and adapted to force said collar against said

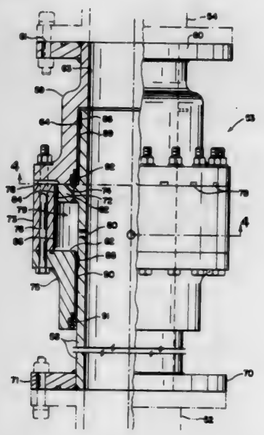
resilient seal and to force said resilient seal against the roof when said threaded member is threaded onto said upper end of said conduit extension.

4,437,688

RISER PIPE JOINT

James H. Kramer, Akron; Roy L. Orndorff, Jr., Kent, both of Ohio, and James M. Stephens, Grandview, Mo., assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Jan. 25, 1982, Ser. No. 342,447
Int. Cl.³ F16L *17/00, 27/12*
U.S. Cl. 285—95 2 Claims



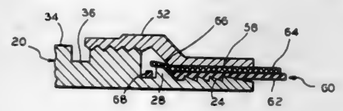
1. A universal joint for use in connecting a pair of axially spaced risers that are subjected to torsional twisting forces, each of said risers having a plurality of conduits, swivel means and slip joint means interconnecting conduits in one riser to conduits in an adjacent riser, said slip joint means being located off-center of said risers, each of said slip joint means having a longitudinally extending inner tubular member and a longitudinally extending outer tubular member, each of said tubular member having a flanged end for connection to adjacent conduits, an annular abutment on the intermediate portion of said longitudinally extending inner tubular member, said inner tubular member having a first circumferentially extending groove on the one end portion of said inner tubular member that is opposite said flanged end, a circumferential extending groove on the periphery of said annular abutment, said inner tubular member having a second circumferentially extending groove spaced between said abutment and said flanged end a distance from said abutment that is at least equal to the distance that said first groove is spaced from said abutment, an annular sealing member of elastically deformable material bonded to each of said grooves, each of said annular sealing members having an outer surface frictionally engaging an adjacent inner surface of said outer tubular member, said outer longitudinally extending tubular member having an enlarged intermediate portion that cooperates with said inner tubular member to define a chamber with axially spaced annular shoulders, said annular abutment of said inner tubular member received by said chamber and operative to selectively abuttingly engage said annular shoulders, the inner periphery of the end portion of said outer tubular member remote from said flanged end of said outer tubular member has a recessed portion to receive an annular seal that abuttingly and slidingly engages the outer periphery of said inner tubular member between said flanged end of the inner tubular member and said second circumferentially extending groove, said outer tubular member has a plurality of radially extending ports that interconnect said chamber with atmosphere via the external surface of said outer tubular member, and said inner tubular member having a plurality of circumferentially spaced radially extending ports between said abutment thereon and said second circumferentially extending grooves to interconnect said chamber with the internal bore of said inner tubular member.

4,437,689

REUSABLE END FITTING

Mark B. Goebel, Holyoke, and Kenneth E. Lefebvre, Hampden, both of Mass., assignors to Titeflex Corporation, Springfield, Mass.

Filed Apr. 3, 1981, Ser. No. 250,650
Int. Cl.³ F16L *33/22*
U.S. Cl. 285—246 13 Claims



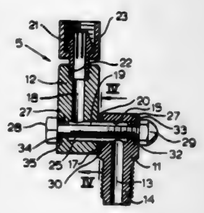
1. A two-piece end fitting comprising an elongated insert means having at least an annular barb on one end and a connector on the other end, said insert having a hose clamping barbed section between said barbed end and said connector end, said barbed section extending from the barbed end toward the connector end and terminating in an annular locking ridge with a shear surface, said locking ridge being followed by a first threaded section, collar means having a collar shell and a second threaded section with a sealing shoulder therebetween, said shoulder and said ridge cooperating to form an annular shearing edge when said first and second threaded sections are in a closed position, said barbed section having dimensions which receive and fit into a hose, said second threaded section having a length relative to the length of said barbed section such that when said first and second threaded sections mesh a hose fitted into said collar shell projects beyond said shell and over said shoulder whereby a pilot end section of said hose is formed, the relative dimensions of said insert means, collar means and hose being such that said collar shell pulls said pilot end over said barbed section as said first and second threaded sections are turned and close upon each other thereby shearing a tip ofsaid hose between said shoulder and said ridge which occurs responsive to the travel of said sections when said first and second threaded sections are turned upon each other, at which time said collar fits over and surrounds said barbed section with said end section of said hose therebetween.

4,437,690

HIGH PRESSURE HOSE SWIVEL CONNECTOR

Edwin H. Drath, 1218 S. Patton, Arlington Heights, Ill. 60005

Filed Sep. 23, 1981, Ser. No. 304,802
Int. Cl.³ F16L *27/00*
U.S. Cl. 285—272 3 Claims



1. A high pressure hose swivel connector, comprising:
a pair of body members, each of which has a first and a second end;

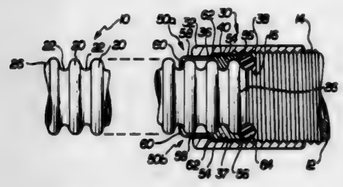
each of said members having a respective blind end passage bore opening through its first end;
one of said members having means at its first end for connecting its bore with a high pressure source;
the other of said members having means at its first end for connecting its bore with a high pressure hose;
each of said members having adjacent to its second end a blind end cross port communicating with the inner end of the passage bore of the member and opening from a side face of the member;
said side faces being flat and slidably engaged in a common flat interface plane joint and with said cross ports concentrically aligned, so that a continuous high pressure passageway is provided by way of said bores and ports;
one of said side faces having an annular rabbet groove which opens into the associated cross port and also opens toward the opposite side face;
an O-ring pressure sealing ring mounted in said groove;
the dimensions of said O-ring and the dimensions of said groove being predetermined and corelated to assure that the O-ring will be under sealing compression when said faces are in slidable engagement but the inside diameter of the O-ring will remain free from obstructing said passageway through said ports;
and a bolt having a shank of a smaller diameter than said ports and extending concentrically through said ports and through apertures through the blind ends of said ports, and said bolt acting to press said members together and said faces into swivelling sliding engagement and placing said O-ring under compression so as to maintain said interface plane joint free from pressure loss from said passage.

4,437,691

CONNECTOR FOR CORRUGATED TUBING

Ralph M. Laney, 6511 Marsol Rd. Bld.-6 Apt.-323, Mayfield Heights, Ohio 44124

Filed Jun. 1, 1981, Ser. No. 268,792
Int. Cl.³ F16L *17/00, 19/00, 19/08*
U.S. Cl. 285—353 6 Claims



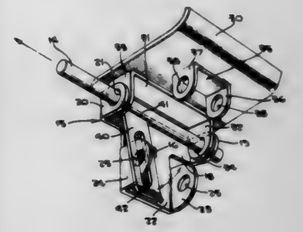
1. A connector for connecting a corrugated tube to a threaded object such as a pipe or a fitting without requiring modification of the ends of the tube, comprising:
a ferrule surrounding the tube at the endmost corrugations of the tube, the ferrule engaging the corrugations such that relative axial movement between the ferrule and the tube is not possible;
a nut disposed about the tube and having portions engageable with the ferrule, the ferrule being disposed intermediate the ferrule-engaging portions of the nut and the object to which the tube is to be secured; and
a sealing member disposed within the nut and adjacent the end of the tube, whereby the sealing member will be compressed in use between the end of the object and the ferrule to establish a fluid-tight seal.

4,437,692

PROTECTIVE HASP FOR PADLOCK

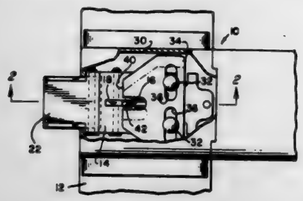
David Halopoff, Los Angeles, Calif., assignor to Holmes-Hally Industries, Los Angeles, Calif.

Continuation-in-part of Ser. No. 158,827, Jun. 12, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,240
Int. Cl.³ E05C *5/02*
U.S. Cl. 292—57 6 Claims



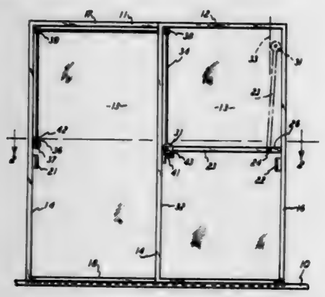
1. A protective hasp for a padlock and its shackle comprising a back plate having fastening means therein, a cover plate spaced from the back plate when in a closed position and forming a space therebetween, and a pair of laterally spaced pivot tabs having captive ends on adjacent faces of each plate mounted so that the tabs of one pair lie adjacent respective tabs of the other pair forming sets of adjacent pivot tabs on respective opposite sides of the hasp with free ends of pivot tabs on one plate in close proximity to the opposite plate and within said space between the plates, axially aligned pivot holes in the pivot tabs substantially midway between opposite ends of respective tabs, and a latch bolt slidably mounted in the pivot holes whereby to pivotally assemble said plates so that adjacent faces of the respective plates face each other in locked position, said latch bolt having a slidable locking thrust between extending locked position on one side of said hasp and a withdrawn position from said side of said hasp, a pair of spaced locking tabs of substantially the same height as the pivot tabs on the adjacent face of each plate mounted so that the locking tabs of one pair lie adjacent respective locking tabs of the other pair forming laterally spaced sets of adjacent locking tabs with shackle holes in each set of locking tabs in substantial alignment, each set of locking tabs being receptive of a padlock shackle at a location spaced inwardly from side edges of the cover plate, free ends of locking tabs on one plate being in close proximity to the opposite plate when the cover plate is in locked position, said shackle holes being substantially midway between opposite ends of the respective tabs, said cover plate having one edge portion extending beyond and covering said pivot tabs, that portion of said cover plate adjacent one of said edge portions extending beyond and covering said locking tabs and adapted to cover the padlock shackle and substantially cover the padlock body when said padlock is engaged with either set of locking tabs, a transverse projection on the latch bolt intermediate opposite ends and mounted within the space between said sets of pivot tabs, said projection in respective extended and withdrawn positions of the latch bolt having a position adjacent the respective set of pivot tabs, said projection having a slot therein for reception of the sets of adjacent locking tabs whereby upon reception of the padlock shackle the latch bolt is locked in either extended or withdrawn position with the projection beneath the padlock shackle and the cover plate is simultaneously locked to the back plate in a position of protection for said padlock.

4,437,693
THERMALLY RESPONSIVE LATCHING DEVICE AND METHOD OF MODIFYING A LATCHING DEVICE
Maksimilijan Godec, Indianapolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.
Filed May 13, 1981, Ser. No. 263,110
Int. Cl.³ E05C 1/02, 15/02; E05F 15/20
U.S. Cl. 292—191 11 Claims



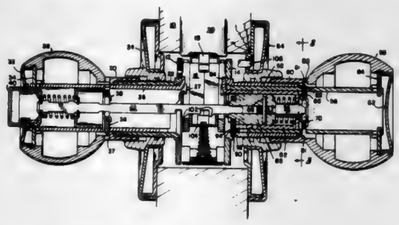
1. Thermally-responsive means for preventing unlatching of a latching and unlatching device for a door, bulkhead, latch or the like, in combination with such a device having a base, and latch means, coupled to said base and movable, relative to said base, along a pathway between a first, latching position, and a second, unlatching position, wherein said thermally-responsive means comprises:
a plate, slidably coupled to said base, in adjacency to said latch means, for free, slidable movement thereof, in first and second opposite directions, (a) gravitationally and obstructively into traverse of said pathway, for preventing movement of said latch means fully along said pathway, and (b) counter-gravitationally out of traverse of said pathway, for permitting movement of said latch means fully along said pathway; wherein
said plate has side edges on opposite sides thereof; and
retainer means, coupled to said base, (a) having surfaces which obstruct said side edges and, consequently, prevent movement of said plate, in either of said first and second opposite directions, into traverse of said pathway and, responsive to exposure of said retainer means to a given temperature, (b) for releasing said, plate whereby the latter is free to move gravitationally and obstructively, as aforesaid, into traverse of said pathway.

4,437,694
SLIDING DOOR WITH SECURITY APPARATUS
Renaldo C. Lillo, 4415 Wright Ave., Racine, Wis. 53405
Filed Mar. 1, 1982, Ser. No. 353,845
Int. Cl.³ E05C 3/04
U.S. Cl. 292—235 6 Claims



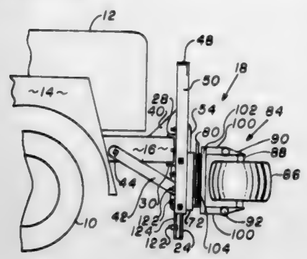
1. A sliding door with security apparatus, comprising a sliding door track, a sliding door panel slidably mounted on said track in the longitudinal plane of said track, an upright member spaced from said sliding panel and on said longitudinal plane, a security bar hingedly mounted on said upright member and extending toward said sliding panel and with the hinge axis being in the path of sliding movement of said sliding panel and being horizontal for swinging movement of said bar in said plane, a roller rotatably mounted on the extending end of said bar and being located in rolling contact with said sliding panel for rolling along said sliding panel when said sliding panel is moved toward and away from said security bar while said security bar is undergoing its swinging movement, and a stop mounted on said sliding panel in the path of movement of said roller and at an elevation relative to the elevation of said hinge axis to upwardly support said security bar in a downwardly swung and thereby secured position for restraining said sliding panel against said sliding movement.

4,437,695
KNOB RETAINER BLOCKER MECHANISM
William R. Foshee, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.
Filed Jan. 8, 1982, Ser. No. 338,091
Int. Cl.³ E05C 21/00
U.S. Cl. 292—352 13 Claims



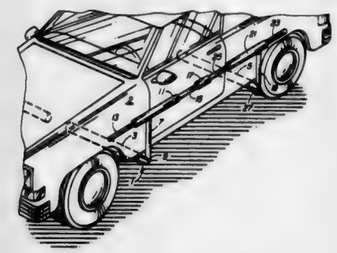
1. Knob retainer-blocking mechanism for a lock set having inside lock set mechanism and having an
outside knob mounted on a knob sleeve, comprising
an outside knob retainer movable transversely of the sleeve between a forward knob-retaining position and a rearward knob-release position,
said retainer being in the form of a plate mounted for diametrical sliding movement in said sleeve and having a central opening including a thrust-receiving forward border and side borders which define blocker-engaging surfaces at opposite sides of a central area of said opening,
a retainer biasing spring having a bight portion in thrust-transmitting engagement with said forward border and having side legs extending into stressed engagement with opposite portions of the knob sleeve and straddling said central area of the retainer plate opening,
a blocking plunger mounted for movement axially within the knob sleeve between a blocking position in which it extends through the central area of said retainer plate opening in blocking relation with said blocker engaging surfaces so as to block movement of the knob retainer from its knob-retaining position to its knob-release position and a non-blocking position in which it is withdrawn from said opening and permits such retainer movement, and
plunger control means for positioning said plunger in its blocking position when the lock set is installed in a door and is conditioned to prevent lock bolt retraction by the outside knob, said control means being inaccessible from the outside of the door when the door is closed, and said plunger being releasable to its non-blocking position in response to manipulation of the inside lock set mechanism.

4,437,696
MOVABLE TRUCK BUMPER
Gerald J. Straub, 6969 Madden Rd., Dexter, Mich. 48130
Filed Oct. 9, 1981, Ser. No. 309,929
Int. Cl.³ B60R 19/04
U.S. Cl. 293—118 11 Claims



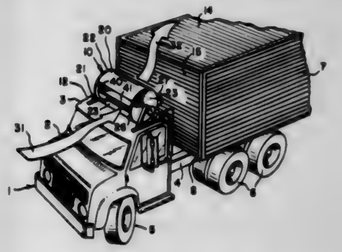
1. A vertically moveable bumper comprising a lift base rigidly attachable to a vehicle frame, said lift base substantially vertical in orientation,
a vertically moveable lift frame substantially vertical in orientation mounted on said lift base,
a first set of guide means providing fore and aft positioning of the lift frame relative to the lift base,
said first set of guide means compriaing pads located between said lift frame and said lift base to accept fore and aft compressive loading therebetween during pushing engagement of the bumper and to provide sliding frictional engagement in unloaded condition, and rollers to retain said lift frame and lift base in said sliding frictional engagement, said rollers being unloaded during compressive fore and aft loading of the pads,
a second set of guide means providing lateral positioning of the lift frame relative to the lift base,
energizable means connecting said lift base to said lift frame and adapted to raise said lift frame relative to said lift base, and,
remote control means operable to actuate said energizable means from within cab of said vehicle.

4,437,697
RETRACTABLE AUTOMOBILE SIDEGUARD
Paul R. Hinojos, 1302 W. Amelia, Phoenix, Ariz. 85009
Filed Aug. 19, 1982, Ser. No. 409,656
Int. Cl.³ B60R 19/00
U.S. Cl. 293—118 12 Claims



1. A retractable side guard assembly for use on an automobile to protect door panels or the like, said assembly comprising in combination:
a. a first assembly including a first tubular housing for rigid attachment to the bottom of a first automobile approximately perpendicularly to the plane of a side of said first automobile, said first tubular housing having an open outer end;
b. a first arm telescopically disposed in said first tubular housing, said first arm having a first and a second end;
c. first pivot means movably disposed in said first tubular housing for pivotally connecting said first end of said first arm to said first tubular housing and permitting said first arm to be extended out of said open outer end of said first tubular housing and then pivoted upward to an upright position;
d. first locking means for rigidly locking said first arm into said upright position relative to said first tubular housing; and
e. a second arm having a first end connected to said second end of said first arm for extending laterally along the side of said first automobile when said first arm is in said upright position.

4,437,698
FUEL SAVING DEVICE FOR INCREASING FUEL MILEAGE ON A MOVING VEHICLE
Anthony T. Tantalo, Apt. 4 43 Portland Pkwy., Rochester, N.Y. 14621
Filed Aug. 9, 1982, Ser. No. 406,489
Int. Cl.³ B62D 35/00
U.S. Cl. 296—1 S 10 Claims

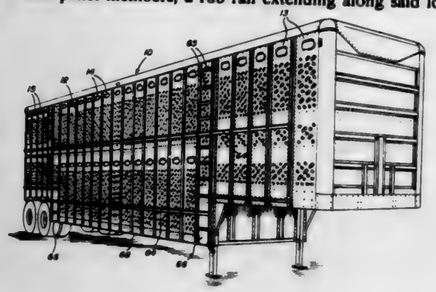


1. a fuel saving device for increasing fuel mileage on a moving vehicle comprising:
(a) a housing mounted on top of said moving vehicle,
(i) said housing having an air intake opening at the front of said housing and an exhaust opening at the rear of said housing for the flow of air therethrough,
(b) a motor driven rotor disposed within said housing and positioned in cooperative relationship with said air intake opening and exhaust opening of said housing so that said rotor rotates at various rotational speeds in response to a forward wind pressure generated when said vehicle is moving in a forward direction, and
(c) rotor drive means for rotating said rotor at a greater speed than said various rotational speeds to decrease said forward wind pressure at said intake opening of said housing.

4,437,699
MONOCOQUE TRAILER OR BODY SIDE CONSTRUCTION
Mack A. Lewis, Sioux City, Iowa, and Mike R. Spencer, Hubbard, Nebr., assignors to Wilson Trailer Co., Sioux City, Iowa
Filed Nov. 16, 1981, Ser. No. 321,554
Int. Cl.³ B62D 33/04
U.S. Cl. 296—181 9 Claims

1. A monocoque body wall having a horizontal length and a vertical height, said wall including a plurality of elongated upstanding panel members having upstanding opposite side marginal strips, said panel members being spaced along said wall and including adjacent laterally overlapping longitudinal side marginal strips, one side marginal strip of each pair of

overlapped side marginal strips being generally planar and the other marginal strip of each pair of overlapped side marginal strips being slightly laterally offset to one side of the corresponding panel member and including laterally spaced generally coplanar opposite longitudinal marginal border portions and a longitudinally extending central channel portion disposed between and formed integrally with said border portions, said channel portions opening toward said one marginal strip, and securing means securing at least longitudinally spaced portions of each of said border portions to corresponding portions of said one overlapped strip, said wall including a lower longitudinal marginal portion defined by the lower ends of said panel members, a rub rail extending along said lower



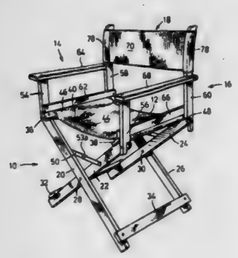
marginal portion including a vertical outer flange, a lower inwardly projecting horizontal flange carried by the lower marginal portion of said verticl outer flange, an upper inwardly projecting horizontal flange carried by said vertical flange a spaced distance below the upper marginal edge of said vertical flange, and an intermediate inwardly projecting horizontal flange carried by said vertical flange spaced intermediate said upper and lower flanges, said intermediate and lower flanges being adapted to receive corresponding ends of floor beams therebetween and the lower ends of said panel members being downwardly abutted against said upper flange and being secured to the inner surface of the upper portion of said vertical flange disposed above said intermediate flange.

4,437,700

COLLAPSIBLE OR FOLDING CHAIR

John T. Elaschuk, 39 Geoffrey St., Toronto, Ontario, Canada M6R 1P2

Filed Jul. 16, 1981, Ser. No. 284,131
Int. Cl.³ A47C 4/28
U.S. Cl. 297—45 7 Claims



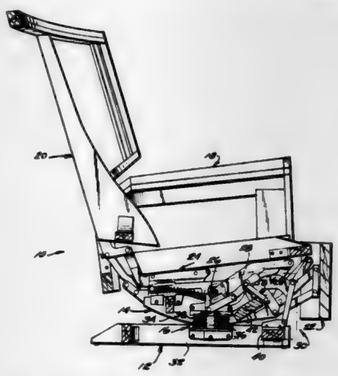
1. In a collapsible chair including a front pair and rear pair of crossed, pivotally interconnected legs having a common pivot axis extending from front to rear, a seat-supporting rail extending between said pairs of legs front to rear at each side with each such seat-supporting rails secured to the uppermost portion of each leg and inwardly thereof and in substantially parallel relation to one another for swinging movement with said legs about said pivot axis from a collapsed position in which said seat-supporting rails are in substantial side-by-side relation to an erect position in which said seat-supporting rails are spaced apart in chair-defining relation, and reversely, a unitary armrest and backrest supporting structure extending between said pairs of legs front to rear at each side, pivot means pivotally securing each said unitary supporting structure to the uppermost portion of each respective leg only, on an axis located outwardly of and below the uppermost extent of the adjacent inner seat-supporting rails for swinging movement upon said legs from said collapsed position wherein each said unitary supporting structure is separated from said adjacent inner seat-supporting rail to said erect position wherein each said unitary supporting structure is in substantial upstanding abutment therewith in chair-defining relation, and reversely, each said unitary supporting structure including a reinforcing member projecting inwardly thereof and therealong and so upwardly spaced from its said pivot axis as to move into and out of overlying engagement with the uppermost surface of said adjacent inner seat-supporting rail when swung from said collapsed position to said erect position and reversely.

4,437,701

ROCKER-BLOCKING DEVICE FOR ROCKING CHAIR HAVING PROJECTABLE/RECTRACTABLE FOOTREST

Ned W. Mizelle, High Point, N.C., assignor to The Lane Company, Altavista, Va.

Filed Oct. 13, 1981, Ser. No. 310,727
Int. Cl.³ A47C 1/02
U.S. Cl. 297—85 31 Claims



1. For use on a motion chair, which includes:
a base having longitudinal left and right side rails and a transverse front rail;
a rocking portion including:
a rocker cam unit having left and right rockers rockably supported on said side rails, and a transverse front rail fixedly mounted relative to said rockers;
a body-supporting portion for supporting a portion of the chair-user's body;
a motion chair mechanism mounting said body supporting portion upon said rocker cam unit for movement between two positions in which the character of support offered said portion of the chair-user's body differs substantially so as to provide a sense of greater control in one of said positions so that the ability of the rocking portion to rock is desired, and so as to provide a sense of lesser control in the other of said positions so that the ability of the rocking portion to rock is not desired; and
means associated with said motion chair mechanism for selectively moving said body-supporting portion to, from and between said positions of greater and lesser control by operating said motion chair mechanism, this selectively moving means including a transversally extending torque bar which is rotated about its own longitudinal axis clockwise and counterclockwise through an arc in order to operate said motion chair mechanism,
a rocker-blocking device, comprising:
a first generally longitudinally extending train of pivotally connected links having one end adapted to be pivotally secured to the rocker cam unit and another end adapted to be pivotally secured to said torque bar, so that as said torque bar is rotated in the angular sense which causes said body-supporting portion to be moved to said position of greater control said first train of pivotally connected links is toggled about said torque bar and as said torque bar is rotated in the angular sense which causes said body-supporting portion to be moved to said position of lesser control said first train of pivotally connected links is de-toggled from about said torque bar;
said first train of pivotally connected links including means defining a longitudinally elongated slot having an upper/-rear end and a lower/front end; and
a second generally longitudinally extending train of pivotally connected links, having one end adapted to be pivotally secured to said base and another end adapted to be pivotally secured to the rocker cam unit, relative to the rear of said one end of the first train of pivotally connected links, with the first and second trains of pivotally connected links crossing past one another between their respective ends;
said second train of pivotally connected links including means defining a longitudinally elongated wedge element which has upper and lower edges which converge toward one another rearwardly of said wedge element so that said wedge element is taller toward the front of the chair and shorter toward the rear of the chair;
said wedge element being disposed through said slot means so that a variably, located, longitudinally short band of said wedge element lies within said slot means;
the dimensions and spatial orientations of said wedge element and said slot being such that when said first train of links is toggled about said torque bar by operation of said selectively moving means, the band of said wedge element which lies within said slot means is located toward the rear of the chair and is so short and so centrally disposed relative to the length of the slot, that said rocking portion of the chair is free to be rocked on said base and when said first train of links is de-toggled from about said torque bar by operation of said selectively moving means, the band of said wedge element which lies within said slot means is located toward the front of the chair and is so tall that its upper and lower edges are in contact with the upper/rear and lower/front ends of the slot means, respectively, and said first and second trains of links, together, thus, constitute a substantially rigid, longitudinally aligned strut which is active both in tension and compression between the rocker cam unit and the base to prevent rocking of the rocking portion of the chair upon the base.

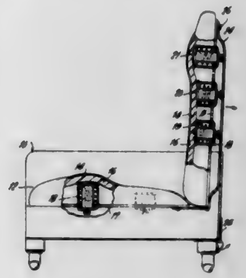
4,437,702

ADJUSTABLE PATIENT CORRECTIVE SUPPORT APPARATUS

A. Richard Agosta, 45-49 218th St., Bayside, N.Y. 11361

Filed Apr. 6, 1981, Ser. No. 251,280
Int. Cl.³ A47C 3/00
U.S. Cl. 297—284 7 Claims

1. An adjustable, patient corrective, support comprising:
(a) a resilient body receiving member;
(b) at least one rigid supporting panel spaced from said body receiving member;
(c) a plurality of spaced spring members secured at one end to the rigid panel and extending into the space between the rigid supporting panel and the body receiving member;
(d) at least one pair of opposed spaced elongated flexible straps extending over and coupled to the free ends of the spring members;
(e) slots in the rigid panel adjacent each of the spring members to receive the free ends of the flexible straps therethrough; and



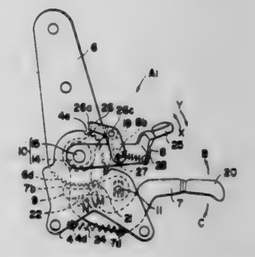
(f) fastening means, carried by the rigid panel to secure the four ends of said at least one pair of straps in any desired position along their length and individually dispose the free ends of the springs at any one of a wide number of angles with respect to the plane of the rigid panel.

4,437,703

SEAT BACK RECLINING MECHANISM

Tsutomu Nishikori, and Yasuo Yoshiki, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd. and Delta Kogyo Co., Ltd., both of Hiroshima, Japan

Filed Sep. 18, 1981, Ser. No. 303,513
Claims priority, application Japan, Sep. 20, 1980, 55-131379
Int. Cl.³ A47C 1/024; E05D 11/10
U.S. Cl. 297—362 9 Claims



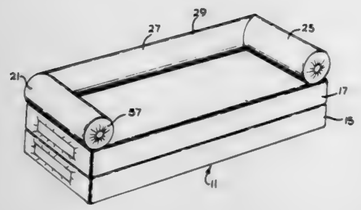
1. A seat back reclining mechanism for a car seat including a seat bottom and a seat back which is connected with the seat bottom for adjustment in an inclination angle with respect to the seat bottom, said reclining mechanism including stationary bracket means attached to said seat bottom, movable bracket means attached to said seat back and connected pivotably with said stationary bracket means, lock plate means movably connected with said stationary bracket means and having first gear teeth means, said movable bracket means having second gear teeth means, coarse, adjusting means for actuating said lock plate means so that said first gear teeth means is engaged with said second gear teeth means to thereby effect coarse adjustment of inclination angle of said movable bracket means, adjusting movement producing means for producing a seat back inclination angle changing movement, fine adjusting means for operating said adjusting movement producing means to effect fine adjustment of the inclination angle of said seat back, locking means for locking said adjusting movement producing means, interconnecting means for interconnecting the locking means with the fine adjusting means so that said locking means is actuated through said fine adjusting means to unlock said

adjusting movement producing means when said fine adjusting means is actuated in one direction to thereby allow movement of the adjusting movement producing means whereby the inclination angle of the seat back can be adjusted through operation of the fine adjusting means in said one direction.

4,437,704
MODULAR FURNITURE WITH REMOVABLE OUTER FABRIC

Vigen M. Hovsepians, Los Angeles, Calif., assignor to Vivar, Incorporated, Glendale, Calif.

Filed Jul. 17, 1981, Ser. No. 284,408
Int. Cl.³ A47C 4/02
U.S. Cl. 297—440 8 Claims

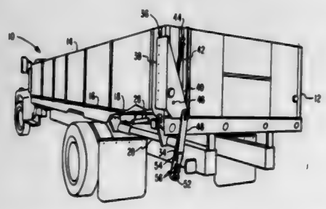


1. An item of furniture comprising:
(a) at least one integral, contoured interior element;
(b) an inner lining disposed in contacting relationship with and substantially covering said interior element, said inner lining comprised of a material, having a relatively low coefficient of friction and which, when under tension, is capable of stretching approximately twice in each of its length and width dimensions as when not under tension;
(c) a readily removable and replaceable outer material disposed in a slidable relationship with and substantially covering said inner lining;
(d) means for removably securing said outer material to said interior element,
whereby said inner and outer materials fit conformly with respect to the contours of said interior element and said outer material is able to slide easily over said inner lining, and is readily removable from and replaceable over said interior element.

4,437,705
SELF-LOCKING TRUCK SIDEBOARD LIFT AND DUMP MECHANISM

George J. Heberlein, 1701-33rd Ave., Greeley, Colo. 80632

Continuation-in-part of Ser. No. 66,939, Apr. 4, 1980, abandoned. This application Oct. 28, 1981, Ser. No. 315,613
Int. Cl.³ B60P 1/26
U.S. Cl. 298—1 R 2 Claims

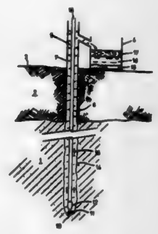


1. A self-locking truck sideboard lift and dump mechanism for use with a truck box having a bed portion, front and rear end members, and at least one sideboard pivotally mounted along a longitudinal edge thereof to the bed portion for movement between a raised or closed position and a depending or open position, said mechanism comprising:
a rotatable shaft mounted against said rear end member and inwardly of and longitudinally parallel to said longitudinal edge of said sideboard and beneath said bed portion of the truck box, a rear end of said rotatable shaft extending outside said rear end member of the truck box;
front and rear bell crank levers mounted to front and rear ends, respectively, of said rotatable shaft;
bracket means mounted adjacent a rear end of said sideboard and having a plate surface substantially parallel to said rear end member and extending inwardly of said longitudinal edge and outside said rear end member;
a linkage arm pivotally connected between a depending end of said rear bell crank lever and a point on said plate surface of said bracket means such that the longitudinal center line of said linkage arm lies outside the longitudinal axis of said rotatable shaft when said sideboard is in the raised or closed position; and
hydraulic cylinder means articulately mounted at an end thereof below said bed portion of the truck box and adjacent the front end of said rotatable shaft, said hydraulic cylinder means having a piston end articulately coupled to said front bell crank lever for imparting rotational motion to said rotational shaft;
said rear bell crank lever having stop means mounted thereon for stopping rotation of said rotatable shaft, in a sideboard closing direction, at a position wherein the longitudinal center line of said linkage arm lies outside the longitudinal axis of said rotatable shaft.

4,437,706
HYDRAULIC MINING OF TAR SANDS WITH SUBMERGED JET EROSION

Herbert S. Johnson, Oakville, Canada, assignor to Gulf Canada Limited, Toronto, Canada

Filed Aug. 3, 1981, Ser. No. 289,333
Int. Cl.³ E21C 41/10
U.S. Cl. 299—7 22 Claims

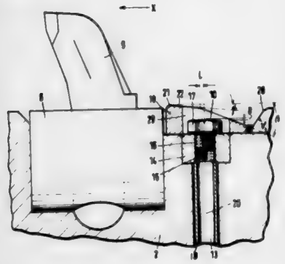


1. A method of recovering bitumen from unconsolidated bitumen-bearing formations including tar sands, comprising:
(a) introducing into said formation at least one nozzle projecting at least one jet of aqueous hydraulic mining fluid at high velocity through a liquid medium towards said formation, said jet having a forward component;
(b) bringing said nozzle into proximity with said formation, said jet impinging thereon with sufficient velocity to erode said formation and substantially separate said bitumen from other constituents of said formation;
(c) advancing said nozzle towards said formation as it erodes to separate further quantities of bitumen; and
(d) recovering said separated bitumen.

4,437,707
SPRAYING NOZZLE ARRANGEMENT

Gerd Best, Sprockhövel, and Günter Diagosch, Bönen, both of Fed. Rep. of Germany, assignors to Krampe & Co. Fertigung in Bergbaubedarf GmbH, Hamm, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,722
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128049
Int. Cl.³ E21C 35/22
U.S. Cl. 299—81 13 Claims



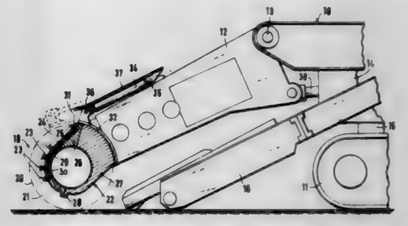
1. A spraying nozzle arrangement for a cutting roller for use in a mining machine and rotatable in a pre-determined direction, the cutting roller having at least one cutting member having a periphery and provided with at least one cutting bit, the arrangement being mounted on said cutting member in the vicinity of the associated cutting bit and comprising a spraying nozzle having a central axis; and a nozzle shield enclosing said spraying nozzle and mounted coaxially therewith and having an upper face facing outwardly of said nozzle, said upper face tapering in a direction opposite to said pre-determined direction starting from the periphery of the cutting member and extending to the region located below said upper face, said nozzle shield having in said predetermined direction a streamlike shape and defining said predetermined direction a front portion facing towards said cutting bit, said front portion being of a wedge-shape and terminated at its end facing said cutting bit with a rounded surface, wherein said upper face tapers in such a fashion that it forms a first portion sloping from said periphery at a first angle, and a second portion sloping from the end of said first portion at a second angle relatively larger than said first angle.

4,437,708
CUTTING DEVICES FOR MINING AND TUNNELLING MACHINES

Wilhelm Stoltefuss, Kamen-Heeren-Werve, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Aug. 3, 1982, Ser. No. 404,734
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133956
Int. Cl.³ E21C 35/22
U.S. Cl. 299—81 9 Claims

1. A cutting device comprising in combination, a rotatable roller equipped with cutters and a plurality of water spray nozzles carried by support means which does not rotate with

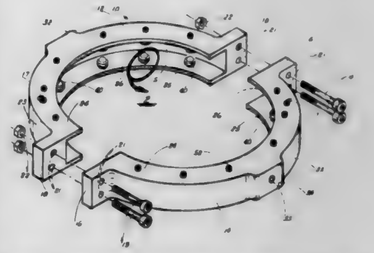


the roller, wherein the support means comprises at least one narrow plate-like component fitted into a groove in the roller.

4,437,709
YOKE APPARATUS

Noel Linderman, 227 S. Locust St., McComb, Miss. 39648

Filed Mar. 30, 1981, Ser. No. 248,943
Int. Cl.³ F16C 19/50, 19/10
U.S. Cl. 308—219 4 Claims



1. A yoke collar apparatus for use with splined couplings, comprising:
a. a substantially circular yoke body, having a first U-shaped half section and a second U-shaped half section, said first and second U-shaped half sections connectable to one another;
b. a pair of parallel edge portions integrally connected in perpendicular relationship to the back portion of each of said U-shaped sections, said pair of edge portions and said back portion defining an open ended continuous circular channel means within said yoke body;
c. a plurality of roller bearing means, each individually mounted in equally spaced openings on the inner surface in said edge portions and extending into said channel means for engaging a rotatable body within said channel, providing a substantially frictionless surface between said rotatable body and said bearing means, each bearing means of one edge portion being positioned opposite a bearing means of the second edge portion.

4,437,710
INFLATABLE, INERT GAS-PURGED, WELDING CHAMBER

James M. MacFarland, Frederica, and Bernard W. Kappe, Camden, both of Del., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 18, 1981, Ser. No. 264,930
Int. Cl.³ B23K 20/00, 35/38; A62B 15/00
U.S. Cl. 312—1 6 Claims

1. A welding chamber assembly for welding workpieces,

made of a metal which is susceptible to atmospheric contamination during welding, in an air-free, inert gas environment, said welding chamber assembly comprising:

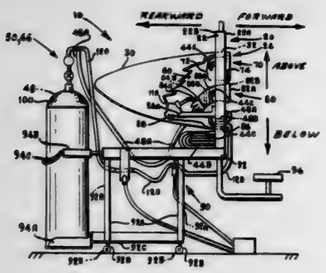
a. a wall subassembly which includes:

a rigid wall member made of metal;

means, associated with said wall member, for selectively permitting the passage of workpieces and other items through said wall member, wherein this means includes: an opening through said wall member; a door member attached to an external surface of said wall member and selectively movable to cover, and to uncover, said opening; and means for releasably holding said door member in a position covering said opening;

means, made of fluid-impervious material, for seeing through said wall member, with this means associated with said means for selectively permitting the passage of workpieces and other items through said wall member, wherein said means for seeing through said wall member includes an opening through said door member with a window and a welding lens in said opening;

means, associated with said wall member, for permitting manipulation and welding of said workpieces, wherein this means includes: at least two port holes in said wall member; a glove made of fluid-impervious material connected to each said port hole, with each glove selectively positionable forwardly of, or rearwardly of, said wall member; and a hole in said wall member for a lead of a welding torch, with said hole configurated, dimensioned, and sealed, such that it is fluid-tight when said lead is in said hole; and



means, associated with said wall member, for supporting said workpieces and other items passed through said wall member, wherein this support means includes a metal shelf which is attached to a rear surface of said wall member, which extends rearwardly therefrom, and which is disposed below said means for permitting the passage of workpieces and other items through said wall member;

b. a collapsible member, which comprises a translucent reusable bag made of fluid-impervious material, releasably attached to a flange located on the rear surface of said wall member, with said collapsible member and said wall subassembly defining a fluid-impervious welding chamber which houses said means for supporting said workpieces and other items passed through said wall member and which also houses said means for permitting manipulation and welding of said workpieces;

c. means, associated with said fluid-impervious welding chamber, wherein this means includes: means, including an air suction device, for attaining a partial vacuum in communication with said collapsible member, whereby said member is thereby collapsed; means for removably loading and releasably binding said collapsed member, wherein this means includes: padding disposed on, and selectively around, said collapsed member; a plurality of hooks fixedly attached to said wall member, and a cord releasably engaged to said hooks and disposed such as to criss-cross and be in contact with said padding and said collapsed member; and means for purging any air remaining in said partially air-evacuated, removably loaded, and releasably bound, collapsed member, wherein this air purging means includes a source of inert purging gas in communication with said collapsed member;

d. means, associated with said fluid-impervious welding chamber, for introducing inert gas into said chamber to replace said air evacuated from said chamber; and

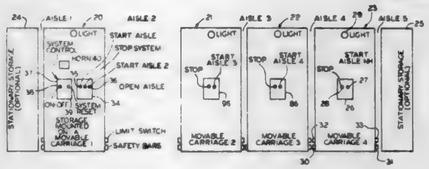
e. means for supporting said wall subassembly, said collapsed member, said means for introducing inert gas into said chamber, and a source of inert gas for use in welding.

4,437,711

MOVABLE STORAGE UNIT CONTROLS

Dean L. Dahnert, Fort Atkinson, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed May 28, 1982, Ser. No. 382,999
Int. Cl.³ A47B 53/00
U.S. Cl. 312—201 **11 Claims**



1. Storage apparatus comprising:

a series of storage units at least some of which have storage faces and some of which are selectively movable for creating an aisle between a pair of units for access to the faces of the separated storage units,

guide means for guiding said units in a direction normal to said storage faces,

reversible motor driven means mounted on respective units for driving the unit selectively in one direction or the other and a controller for each motor responsive to alternate control signals by energizing and determining the driving direction of the motor,

a plurality of structurally similar programmable control modules at least one of which is mounted on each movable storage unit and one of which acts as a system controller (SC) module, each of said modules including digital processor means,

at least one limit position sensing means on each storage unit which means is in an operated state when it is in proximity with any of an adjacent movable unit or a stationary unit and is in an unoperated state when spaced from any of said units,

at least one manual start switch mounted on each movable storage unit for selection of the desired access aisle,

first circuit means for transmitting resync pulses, generated by the processor means in said SC module with a constant interval between them, to the processor means in the other control modules simultaneously,

second circuit means interconnecting said modules for transmitting serial data bits out of said SC module and from one control module on a storage unit to the next one,

third circuit means interconnecting said control modules for transmitting serial data bits from module to module and into said SC module,

the processor means in each control module on a movable storage unit responding to receipt of a resync pulse by initiating definition of a sequence of time slots in each of which a bit can be transmitted,

the processor means in the control module of the storage unit whose start switch has been operated responding to operation by causing the bits for a digital code word corresponding to the numerical identification of the unit to be transmitted serially to said SC module in successive time slots while said start switch is being operated and the processor means responding to occurrence of valid identification by transmitting said identification code word to each of the control modules on the movable units for the processor means on the unit to compare said code word with its own identification code to determine the direction in which its storage unit should move,

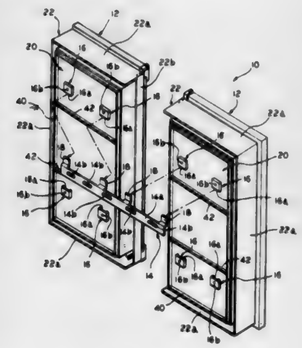
the processor means sensing that its limit position sensing means is unoperated responding by causing the one of said alternate control signals to be applied to said motor controller that causes said storage unit to be driven until the limit sensing means on said unit is operated.

4,437,712

CABINET SYSTEM

John W. Wissinger, 239 Mitchell Rd., New Castle, Pa. 16105

Filed Jul. 9, 1981, Ser. No. 281,543
Int. Cl.³ A47B 67/02
U.S. Cl. 312—246 **14 Claims**



1. A modular wall mounted cabinet system, comprising:

a mounting bracket adapted to be secured to a wall; and

at least two cabinet units adapted to be supported by said bracket;

said cabinet units and mounting bracket having complementarily engageable hanger means, said hanger means being adapted to support each of said cabinet units in either of two distinct orientations, said cabinet units being supported by said hanger means in side-by-side relation, said distinct orientations for said cabinet units being inverted positions, said hanger means including oppositely facing slot means on each of said cabinet units and tab means on said mounting bracket, said tab means being selectively engageable with said slot means to support each of said cabinet units in either of said inverted positions.

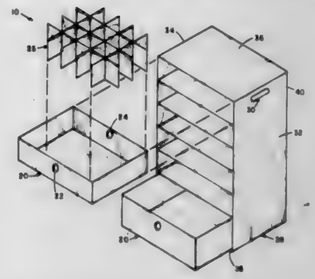
4,437,713

TREE ORNAMENT CONTAINER

Bobbie R. Roach, 621 Dunwich Way, Baltimore, Md. 21221

Filed Dec. 30, 1981, Ser. No. 335,704
Int. Cl.³ A47B 43/00; B65D 5/22
U.S. Cl. 312—259 **1 Claim**

1. In a Christmas tree ornament container of corrugated paper board having an opensided box with a plurality of shelves therein for holding drawers, and a plurality of said drawers having Christmas tree ornament separators therein, each said drawer having a plurality of tabs, fold-up sides and fold-up ends held by insertion of tabs in slots, each of said fold-up sides and fold-up ends being a double part, with a fold line between each of the double-parts of the sides and of the ends, a respective pair of locking flaps held between each of said double-part fold-up sides and fold-up ends, the improvement comprising: each said shelf being a fold-around rectangular tube with ends abutting and proportional for stacked fitting in said box with a said drawer in said fold-around rectangular tube, each of said drawers being symmetrical side-to-side and



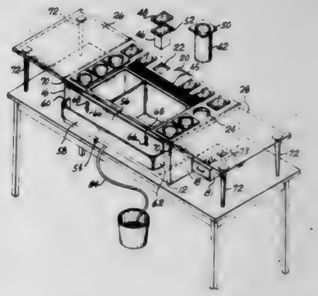
end-to-end, and each drawer being, when unfolded, generally in the shape of a broad cross.

4,437,714

PORTABLE BAR-CABINET

Gordon K. Struck, 11848 26th Ave. South, Seattle, Wash. 98168

Filed Dec. 21, 1981, Ser. No. 332,921
Int. Cl.³ A47B 57/00, 81/00
U.S. Cl. 312—281 **17 Claims**



1. A portable bar-cabinet comprising:

a top, bottom, two sidewalls and two endwalls, together defining a cabinet having an inner space;

said top including a major opening for receiving a removable ice tub having an upper boundary which is substantially flush with the upper surface of the top when the tub is in said major opening;

said top also including a plurality of minor openings offset outwardly from the tub opening for receiving removable holders;

said cabinets inner space including a tub receiving space below the major opening and a storage space outwardly adjacent the tub receiving space;

a pair of counter panels;

hinge means connecting the counter panels to the cabinet substantially where the endwalls intersect the top, for swinging movement between a folded position in which the counter panels extend over the cabinet top and a counter forming, in use position in which the counter panels project laterally outwardly like wings from opposite sides of the cabinet top;

support means for supporting said counter panels in their counter forming positions;

handle means carried by one of the sidwalls of the cabinet, enabling the cabinet to be picked up and carried like a suitcase when the counter panels are in their folded positions; and

means forming a pair of stiffener beams which extend later-

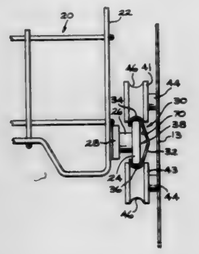
ally across the bar-cabinet where the endwalls of the cabinet intersect the bottom of the cabinet, said stiffener beams providing stiffness to both the endwalls and the sidewalls, and also presenting an upper support surface on which at least some of the removable containers rest, so that the weight of such containers and their contents are not carried by the top.

4,437,715

RACK SUPPORTING CHANNEL AND STOP

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jul. 10, 1981, Ser. No. 282,107
Int. Cl.³ A47B 88/00
U.S. Cl. 312—348 6 Claims



1. In a structure providing a chamber having a front opening and side walls, wherein there is an article-holding rack carried by rack-supporting members for inward and outward movement of the rack relative to the structure, a rack-supporting channel and stop arrangement comprising:

a rack-supporting elongated channel member mounted to the side wall of the chamber having a side wall portion and upper and lower curved wall portions converging toward each other to define an open-ended, elongated internal trackway of generally C-shaped cross section adapted to receive the rack-supporting members with one end of said trackway facing the front opening of the chamber; said channel member including retainer means formed near said front-facing end of said channel member rigidly extending into said trackway; and

a stop member extending into said front-facing end of said channel member to limit the outward travel of the rack-supporting members in said trackway, said stop member comprising:

a cap portion of enlarged cross section abuttingly engaging said front-facing end of said channel member;

a neck portion of reduced cross section extending from said cap portion into said trackway;

a rigid central body portion received in said trackway rigidly joined to said cap portion by said neck portion; said central body portion extending laterally toward said side wall portion of said channel member behind said retainer means, said retainer means extending between said central body portion and said cap portion thereby limiting outward movement of said stop member relative to said channel; and

a lateral positioning member extending from said central body portion and adapted to flex longitudinally relative to said central body portion and to rigidly oppose lateral motion relative to said central body portion; said positioning member being flexibly movable between a normal position and an assembly position and self-biased to its normal position, said positioning member when in its normal position being received in and substantially spanning said trackway between the uppermost and lowermost interior portions of said curved wall portions of said channel member thereby limiting lateral movement of said stop member relative to said channel member, and when in its assembly position being sufficiently remote from at least one of said curved portions of said channel member so as to permit lateral movement of said stop member relative to said channel member thereby facilitating the lateral insertion of said stop member in said trackway during assembly;

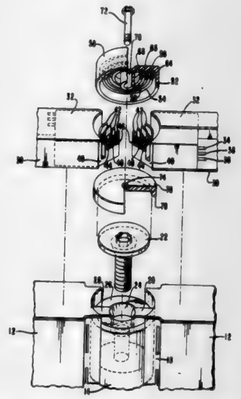
whereby longitudinal loads applied to said stop member by the rack-supporting members resulting from outward movement of the rack are opposed by the interaction of said rigid central body portion of said stop member and said retainer means of said channel member.

4,437,716

ELECTRIFIED WALL PANEL SYSTEM

Gordon J. Cooper, Alto, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 19, 1982, Ser. No. 350,525
Int. Cl.³ H01R 39/00
U.S. Cl. 339—4 7 Claims



1. A power distribution system for an electrified, open office, space dividing wall panel system, said power distribution system comprising:

at least two planar space dividing wall panels having substantially vertical side edges, each of said space dividing wall panels including a terminal block adjacent each upper corner thereof and a wireway adjacent the top edge of each of said panels interconnecting said terminal blocks;

an extension member extending outwardly of said panel from said terminal blocks having at least three arcuate electrical contacts thereon;

a support post mechanically interconnecting and supporting said at least two planar panels; and

a cylindrical conducting cap having at least three concentric ring contacts on the underside thereof constructed and arranged to coact with said at least three electrical contacts on adjacent extension members to transfer electrical power from one space dividing wall panel to an adjacent space dividing wall panel.

4,437,717

RACK MOUNTABLE PRIMARY POWER AC PLUG

James L. Korzik, Palm Harbor, and Thomas Wiesman, Largo, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

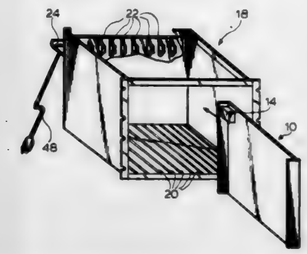
Filed Sep. 28, 1981, Ser. No. 306,543
Int. Cl.³ H05K 1/18
U.S. Cl. 339—17 LC 8 Claims

1. A device for use in combination with a rack mounted card cage to supply power to a printed circuit card when disposed in the rack mounted card cage, which includes:

a plug means coupled to lead means connectable to a source of primary power;

a printed circuit card having receiving means to provide a mating relationship with said plug means and to provide power to said card;

a back plane supported by said card and functionally separate from said receiving means;



an M-board supported by the card cage for coupling with said back plane when said card is disposed in said cage; and

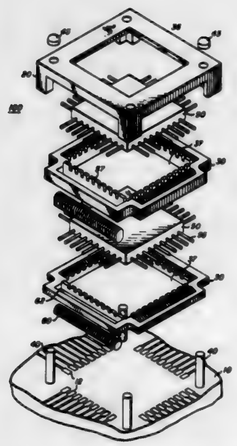
wherein said receiving means and said plug means function to provide primary power to said card separate from said M-board and back plane.

4,437,718

NON-HERMETICALLY SEALED STACKABLE CHIP CARRIER PACKAGE

George J. Selinko, Lighthouse Point, Fla., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 17, 1981, Ser. No. 331,498
Int. Cl.³ H01R 9/09
U.S. Cl. 339—61 M 5 Claims



1. An improved stackable chip carrier assembly for use in electronic apparatus which will accommodate a plurality of vertically stacked integrated circuit devices on and provide solderless electrical connection to a printed circuit board, including in combination:

a stacked array of interfitting spacer members of substantially equal size and dimension, each spacer member having a central cavity for accommodating a respective associated integrated circuit device therein, and a plurality of elongated slots positioned around the periphery of said spacer member and extending therethrough;

a plurality of elastomer conductive interconnecting bars captivated within said elongated slots of said spacer members for effecting electrical connection in solderless fashion directly between adjacent devices or between the associated devices and the printed circuit board;

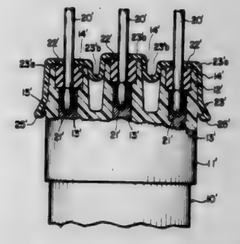
and a protective enclosure overfitting said spacer members for securing the same in said stacked array on the associated printed circuit board.

4,437,719

CONNECTOR FOR AUTOMOTIVE IGNITION DEVICES

Yoshimi Miyamoto, Toyota, Japan, assignor to Nippondenso Company Limited, Kariya, Japan

Continuation of Ser. No. 138,920, Apr. 10, 1980, abandoned.
This application Jun. 8, 1982, Ser. No. 386,399
Claims priority, application Japan, Jun. 13, 1979, 54-074354
Int. Cl.³ H01R 13/52
U.S. Cl. 339—91 R 10 Claims



1. A connector for an ignition device, comprising a housing which includes a base portion formed with a notch and secured to said ignition device and a cylindrical upstanding portion having an open end at the upper end thereof, a first terminal of a female type embedded in said base portion of the housing below the other end of said upstanding portion and electrically connected to said ignition device, a second terminal of a male type attached to an end of a conductor which extends through the interior of said upstanding portion of said housing to make an electrical connection with said female terminal, the inner diameter of said upstanding housing portion being greater than the inner diameter of said female terminal and the diameter of said male terminal being greater than the diameter of said conductor, an insulative sealing body of an elastic material axially extending from said open end to the other end of said upstanding portion and radially extending from the circumference of said conductor to the inner walls of said upstanding portion to fluid-tightly seal said conductor, and a cup-shaped member of an insulative material having a pawl for engaging the notch of said base portion to hold the cup-shaped member in pressure contact with said sealing body so that the sealing body maintains an intimate, fluid-tight contact with the surface of the conductor and the inner walls of said upstanding housing portion.

4,437,720

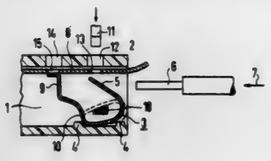
SCREWLESS TERMINAL

Werner Harbauer, Schwandorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,615
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044133
Int. Cl.³ H01R 4/48
U.S. Cl. 339—95 D 12 Claims

1. A screwless wiring or connecting terminal comprising a housing, a leaf-type clamping spring configured and secured in the housing so that a first end of the spring can be tensioned from an uncocked position into a releasable cocked position in which the first end of the spring extends toward an adjacent portion of the spring, and a detent disposed in the adjacent portion of the spring configured to releasably retain the first end of the spring in the cocked position, there being a predeter-

mined clearance between the first end of the spring and the interior of the housing in the cocked position of the spring such that a conductor can be inserted therebetween without having



to overcome any spring tension, the first end and the housing being adapted when in the uncocked position of the spring to engage a conductor inserted therebetween.

4,437,721

CONNECTION TERMINAL FOR ELECTRICAL CONDUCTORS

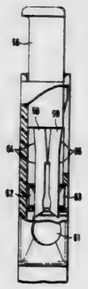
Hans-Josef Köllmann, Minden; Lothar Hennemann, Enger, and Wolfgang Hohorst, Minden, all of Fed. Rep. of Germany, assignors to Wago Verwaltungsgesellschaft mit beschrankter Haftung, Minden, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,447

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034570; Apr. 1, 1981, 3112969

Int. Cl.³ H01R *4/00*

U.S. Cl. 339—97 P **5 Claims**



1. A connection terminal for an electrical conductor comprising:

a. a body made of an electrical insulating material, said body having a seat formed therein for receiving said conductor;

b. a current strip in said body; and

c. a clamping spring movably mounted in said body, said clamping spring having a generally U-shaped portion which defines a pair of clamping arms, said clamping spring being movable in a plunger-like manner to an operative position wherein when said conductor is received in said seat the inner edges of said arms engage said conductor and the outer edges of said arms engage said strip to electrically connect said conductor to said strip through said arms.

4,437,722

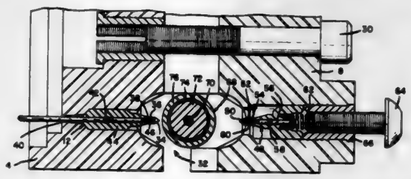
COAXIAL CABLE TAP

Edward A. Bianchi, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 139,035, Apr. 10, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,586

Int. Cl.³ H01R *13/38*

U.S. Cl. 339—97 P **9 Claims**



1. A coaxial cable connector for connection with a coaxial cable having a center conductor, insulation sheath surrounding the center conductor, an outer conductor extending along the insulation sheath and an outer insulating jacket covering the outer conductor, said coaxial cable connector comprising:

first and second matable housing means having channel means along which a section of the coaxial cable is to be disposed;

first probe means mounted in said first housing means and second probe means mounted in said second housing means;

said first and second probe means having conductive means secured in dielectric means defining cable-penetrating means, said conductive means having conical portion means, axial segment means, and base means contiguously joining said axial segment means and said conical portion means, said axial segment means having a diameter therealong less than said base means, said dielectric means secured on said axial segment means extending rearwardly from said base means and having first and second section means, said first section means having an outer diameter substantially the same as the diameter of said base means and said second section means having a tapered outer surface;

said first probe means stationarily mounted in an opening in said first housing means with said cable-penetrating means extending into the channel means thereof;

said second probe means movably mounted in an opening in said second housing means with cable-penetrating means normally disposed within the opening and out of the channel means;

first operating means connected between said first and second housing means to move said housing means together with the section of the cable in said channel means causing said cable-penetrating means of said first probe means to penetrate through the outer insulating jacket, the outer conductor, within the insulation sheath with the conical portion means electrically connected to the center conductor during the mating of said housing means together, said first section means of said dielectric means being disposed in the insulation sheath while the second section means engages the outer conductor and outer insulating jacket thereby insulating the conductive means of said first probe means in connection with the center conductor from the outer conductor; and

second operating means connected to said second probe means for moving said second probe means along the opening in said second housing means after the housing means have been mated together causing the cable-penetrating means of said second probe means to penetrate through the outer insulating jacket, the outer conductor, within the insulation sheath with the conical portion means engaging the center conductor, said first section means of said dielectric means being disposed in the insulation sheath while the second section means engages the outer conductor and outer insulating jacket thereby insulating the conductive means of the second probe means in connection with the center conductor from the outer conductor.

4,437,723

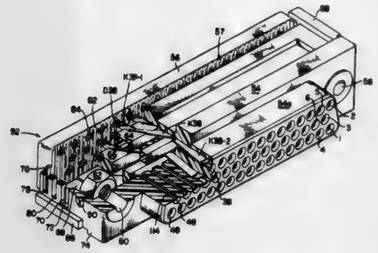
THREE-ROW CONNECTOR FOR MASS TERMINATING FLAT CABLE

Ronald S. Narozny, Panorama City, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 30, 1980, Ser. No. 221,396

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—99 R **24 Claims**



1. An electrical connector for insulation-piercing termination of flat multiconductor cable, said connector comprising an elongate housing supporting electrical contact elements in at least first, second and third laterally spaced parallel rows, each said contact element including a first end portion of insulation-piercing type and a second end portion, laterally opposite ones of said second end portions in said first and third rows being in corresponding first longitudinal positions, said second end portions in said second row being in second longitudinal positions different from said first positions, all of said first end portions being in non-corresponding longitudinal positions.

4,437,724

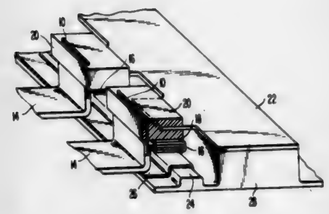
SYSTEM FOR SHIELDING MASS-TERMINATED FLAT RIBBON CABLE

Lubomir J. Volka, Holbrook, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 134,522, Mar. 27, 1980, Pat. No. 4,345,811. This application Feb. 1, 1982, Ser. No. 344,556

Int. Cl.³ H01R *4/66, 23/12, 23/38*

U.S. Cl. 339—143 R **14 Claims**



1. A shielding system for a flat ribbon cable, a shield layer of electrically conductive material being disposed in generally longitudinal relationship with one side of said flat ribbon cable, a readily severable jacket of flexible insulating material encompassing said flat ribbon cable and said shield layer, a section of said shield layer folded back, said shielding system comprising:

connector means for connecting said flat ribbon cable; and

an electrically conductive clip crimped upon said folded back section of said shield layer, said clip comprising a U-shaped channel having parallel sides, one of the parallel sides attached to a side of said connector means by an attaching means, the outer surface of the leg connecting the two parallel sides of said U-shaped channel projecting below the surface of the bottom of said connector means.

4,437,725

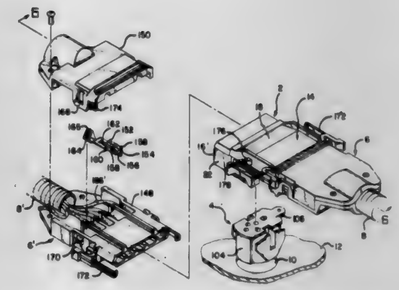
JUNCTION CONNECTIONS FOR MODULAR WIRING SYSTEMS

Daniel G. Eaby, Mt. Joy; William B. Long, Camp Hill, and John R. Shuey, Carlisle, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1981, Ser. No. 249,518

Int. Cl.³ H01R *13/514*

U.S. Cl. 339—156 R **15 Claims**



1. An electrical junction connector which is intended for use in a power distribution system of the type comprising distribution cables having cable conductors therein, cable connectors on the ends of said cables, junction connectors at the electrical junctions in said system, and tap connectors, said cable connectors and said tap connectors being coupled to said junction connectors, said junction connector comprising a junction connector housing having oppositely directed cable connector receiving faces and having a tap connector receiving face, said housing having cable connector terminals therein proximate to said cable connector receiving faces and having tap connector terminals therein proximate to said tap connector receiving face, said cable terminals being mateable with complementary cable terminals in said cable connectors, said tap terminals being mateable with complementary tap terminals in said tap connector, said tap terminals being selectively connected to said cable terminals to provide tap connections to said cable conductors, said junction connector being characterized in that:

said junction connector housing has a plurality of side-by-side parallel feed-through conductors therein extending between said cable connector receiving faces, said cable terminals being on the ends of said feed-through conductors,

said housing has a plurality of rigid tap conductors therein, each of said tap conductors having a first end which is connected to one of said feed through conductors, said tap conductors extending from said feed-through conductors to said tap connector receiving face and having said tap terminals on their ends,

at least one of said tap conductors having an intermediate portion which extends laterally of said first and second ends whereby said second end is parallel to, and offset from, said first end, and said second ends are arranged in a cluster at said tap connector receiving face.

4,437,726
FLEXIBLE PIN

Roger T. Lambert, Fridley, Minn., assignor to Omnetics, Inc., Minneapolis, Minn.

Filed Jun. 14, 1982, Ser. No. 387,969
Int. Cl.³ H01R 11/22
U.S. Cl. 339—252 P 12 Claims

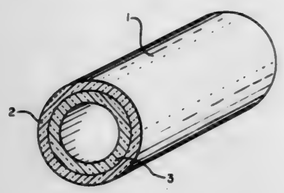


1. For use with a tubular receiving connector member, a flexible pin used in conjunction therewith, comprising:
(a) an elongated sheet metal member having first and second portions defining a longitudinal axis;
(b) said first portion having a barrel shape in which the lateral edges thereof are bent towards each other with a gap formed therebetween;
(c) said second portion cantilevered integrally from said first portion and extending away from said first portion generally in the direction of said longitudinal axis, said second portion having a pair of fingers disposed in confronting relationship, one of which is the mirror image of the other, each finger being bent towards the other about a first radius and upon each finger being formed to the tangent of a second and shorter radius, conforming said finger to said second radius until the tips of said fingers approach each other, the greatest transverse projection of said fingers being greater than the barrel diameter.

4,437,727
QUARTZ GLASS ENVELOPE TUBE

Norbert Treber, Kriftel, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Jun. 3, 1982, Ser. No. 384,467
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1981, 3128698
Int. Cl.³ G02B 5/14; C03C 25/02; F16L 9/14
U.S. Cl. 350—96.3 13 Claims



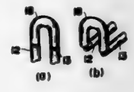
1. Quartz glass envelope tube for the production of a light guide fiber blank, in the form of a laminate, the internal layer consisting essentially of fused rock crystal or quartz sand and the external layer of synthetic quartz glass, the total tube wall thickness of said tube being not greater than 10 mm, the external layer being at least 0.2 mm thick and amounting to approximately 2 to 50% of the total tube wall thickness.

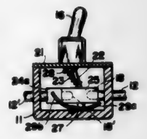
5. A rod for the formation a light guide fiber consisting essentially of:
(a) an internal quartz glass rod itself consisting essentially of
(1) a core
(2) a sheath disposed about said core; and
(b) a quartz glass envelope tube disposed about said internal quartz glass rod itself consisting essentially of
(1) an internal layer consisting essentially of fused rock crystal or quartz sand;
(2) an external layer consisting essentially of synthetic quartz glass, a total tube wall thickness of said tube being not greater than 10 mm, the external layer being at least 0.2 mm thick and amounting to approximately 2 to 50% of the total wall thickness of said envelope tube.

4,437,728
PHOTO-SWITCH

Shigeo Ohashi, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,761
Claims priority, application Japan, Sep. 30, 1980, 55-140408[U]
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 9 Claims





1. A photo-switch comprising: a switch case; a first and a second photo-transmissive body introduced into said switch case and having ends arranged in parallel with each other; a third photo-transmissive body which is bent to have parallel ends opposing said ends of said first and second photo-transmissive bodies; a shielding member adapted to shield the ends of said first and second photo-transmissive bodies from each other; and a switching means operable in accordance with the operation of a handle rockably mounted on said switch case, in such a manner that, when said ends of said third photo-transmissive body are brought to oppose said ends of said first and second photo-transmissive bodies with a small gap therebetween or into contact with the same, said shielding member is moved away from said ends of said first and second photo-transmissive bodies whereas, when said ends of said third photo-transmissive body are moved away from said ends of said first and second photo-transmissive bodies, said shielding member is brought into the space between the ends of the first and second photo-transmissive bodies to optically insulate them from each other, thereby to selectively interrupt the transmission of light between said first and second-photo-transmissive bodies.

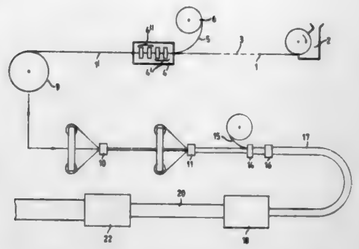
4,437,729
OPTICAL FIBRE CABLES

Colin S. Parfree, and Peter Worthington, both of Southampton, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,692
Claims priority, application United Kingdom, Jun. 26, 1980, 8021035
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.23 2 Claims

1. An optical fibre cable comprising in combination
an optical fibre,
a closed metallic tubular conductor surrounding said optical fibre, said closed tubular conductor being formed from a pre-sized C-section tube,
a tensile strength member surrounding said closed tubular conductor,

copper tape disposed on the outside of said tensile strength member,

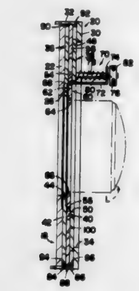


a dielectric layer surrounding said copper tape, and
a sheath disposed on the outside of said dielectric layer.

4,437,730
CAMERA ADAPTER

Trammell Pickett, 7053 Placida Rd., Englewood, Fla. 33533

Filed Oct. 15, 1981, Ser. No. 311,777
Int. Cl.³ G02B 7/02
U.S. Cl. 350—257 6 Claims

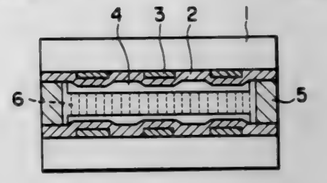


1. A lens mount configured to permit relative movement between the camera axis and lens axis while maintaining the image plane and focal plane in substantially parallel relation relative to each other: said lens mount comprising a housing to operatively retain an adjustment means in limited movable relation relative to a stop means, said adjustment means comprising an inner and outer movable disc held in a fixed spaced relation relative to each other by a movable disc spacer disposed therebetween, a movable lens mounting ring to operatively receive a lens thereon coupled to said outer movable disc, said inner and outer movable disc, said movable disc spacer and said movable lens mounting ring each including a centrally disposed aperture formed therein, each said central disposed aperture coaxially aligned relative to said other centrally disposed aperture, said stop means comprising an inner stop plate including a centrally disposed stop aperture formed therein affixed to said housing, said movable disc spacer being movably disposed within said stop aperture such that the outer periphery of said movable disc spacer is engagable with the periphery of said stop aperture as said adjustment means is moved relative to said housing and said inner stop plate to limit the lateral movement of said adjustment means relative to said housing.

4,437,731
LIQUID CRYSTAL DISPLAY DEVICE

Ryoichi Sudo, Yokosuka; Fusaji Shoji; Takashi Watanabe, both of Yokohama; Kenkichi Suzuki, Mobara, and Michio Oose, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,680
Claims priority, application Japan, Jun. 18, 1980, 55-81452; Nov. 7, 1980, 55-155784
Int. Cl.³ G02F 1/13
U.S. Cl. 350—340 11 Claims



1. A liquid crystal display device having a liquid crystal layer interposed between a pair of substrates with electrodes formed thereon, which comprises an alignment film being provided on each of opposing surfaces of the pair of substrates by mixing at least one compound selected from the following group A of organosilicon compounds represented by the general formulae (1) to (4) with at least one compound selected from the following group B of organometallic compound represented by general formula (5) in an atomic ratio of metallic atoms in organo-metallic compound to silicon atoms in organosilicon compounds of 1/10–8/1, dissolving the mixture in an organic solvent, applying the resulting solution to the substrate, and curing the solution;

Group A:

$$C_nH_{2n+1}Si(OR)_3 \quad (1)$$

$$C_nH_{2n+1}Si(OR)_2 \quad (2)$$
$$\quad\quad\quad

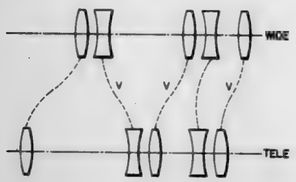
focal length, a third lens group having a positive focal length, a fourth lens group having a negative focal length and a fifth lens group having a positive focal length in the order from the object side, a wide magnification-variable range zoom lens system characterized in that over the entire range of focal length:

a partial lens system consisting of said first and second lens groups has a negative focal length and another partial lens system consisting of said third through fifth lens groups has a positive focal length;

when focal length of the entire zoom lens system is varied from the shortest to the longest length, said first lens group is moved toward the object side to accelerate increase of imaging magnification of said second lens group;

said second and third lens groups are moved in the direction to increase imaging magnification levels of their own;

said fourth lens group is moved to accelerate increase of the imaging magnification level of said partial lens system consisting of said third through fifth lens groups;



said fifth lens group is moved in the direction to increase the imaging magnification level of its own; and the airspaces reserved between the individual lens groups satisfy the following conditions:

$dT_{1,2}(f)/df>0$

$dT_{2,3}(f)/df<0$

$dT_{3,4}(f)/df>0$

$dT_{4,5}(f)/df<0$

wherein the reference symbols are defined as follows:

f: focal length of the entire zoom lens system

Tij(f): airspace reserved between the ith lens group and the jth lens group when the entire zoom lens system has a focal length f

dTij(f)/df: variation ratio of Tij(f) relative to f.

4,437,733

ZOOM LENS

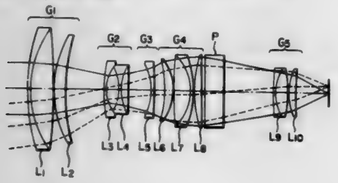
Tomowaki Takahashi, Kawasaki; Kunio Konno, Tokyo, and Toshihiro Sasaya, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 280,102

Claims priority, application Japan, Jul. 11, 1980, 55-93804

Int. Cl.³ G02B *15/16*

U.S. Cl. 350—427 **10 Claims**



1. A zoom lens which is compact and light in weight, which has a large aperture ratio of about 1:1.2 to 1:1.6, and which has a high zoom ratio of about 6 to 10, comprising, a magnification changing system including, in succession from the object side, a first lens means as a focusing portion having a positive refractive power, a second lens means as a variator portion having a negative refractive power and movable along the optical axis to thereby change chiefly the focal length, and a third lens means as a compensator portion having a negative refractive power and maintaining the image plane fluctuated by movement of said variator portion at a predetermined position, and a relay lens system succeeding said magnification changing system,

consisting essentially of a fourth lens means as a forward relay group having a positive refractive power and a fifth lens means as a rearward relay group having a positive refractive power,

said fourth lens means consisting of, in succession from the object side, a positive lens component having its surface of sharper curvature facing the image side, a biconvex cemented positive lens component having a cemented surface convex to the image side and a positive lens component having its surface of sharper curvature facing the object side, said fifth lens means consisting of a cemented positive lens component having a cemented surface convex to the object side and a positive lens component,

wherein said zoom lens satisfies the following conditions:

$$1.7 < \frac{|R_A|}{F_W} < 2.4 \quad (1)$$

$$0.5 < \frac{R_B}{F_W} < 2.0 \quad (2)$$

$$60 > \nu_{AP} - \nu_{AN} > 30 \quad (3)$$

$$60 > \nu_{BP} - \nu_{BN} > 20 \quad (4)$$

$$0.7 < \frac{D}{f_5} < 1.5 \quad (5)$$

$$1.0 < \frac{Rc}{Bf} < 5.0 \quad (6)$$

where R_A represents the radius of curvature of the cemented surface of the cemented lens component in said fourth lens means, ν_{AP} and ν_{AN} represent the Abbe numbers of a positive lens and a negative lens, respectively, forming said cemented lens component in said fourth lens means, R_B represents the radius of curvature of the cemented surface of the cemented lens component in said fifth lens means, ν_{BP} and ν_{BN} represent the Abbe numbers of a positive lens and a negative lens, respectively, forming said cemented lens component in said fifth lens means, F_W represents the focal length of the entire system at the wide angle end, f_5 represents the focal length of said fifth lens means, D represents the principal plane spacing between said fourth lens means and said fifth lens means, Rc represents the radius of curvature of the object side surface of the positive lens component in said fifth lens means, and Bf represents the back focal length.

4,437,734

LENSES CAPABLE OF CLOSE-UP PHOTOGRAPHY

Yutaka Iizuka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,524

Claims priority, application Japan, Aug. 27, 1980, 55-116923

Int. Cl.³ G02B *9/62, 13/02*

U.S. Cl. 350—454 **9 Claims**

1. A lens system capable of focusing continuously from infinite distance to close distance comprising, in the order from the object side,

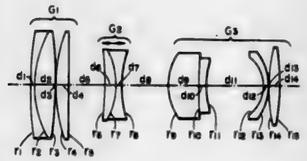
a converging first lens group disposed at a fixed distance from an image plane,

a diverging second lens group disposed movably along the optical axis thereof for focusing, and

a converging third lens group disposed at a fixed distance from the image plane,

said diverging second lens group maintaining paraxial rays exiting therefrom substantially parallel throughout all the range of focusing,

said first, second and third lens groups satisfying the following condition formulae:



$$1.0<|f_1/f_2|<1.4$$

$$1.6\leqq|f_3/f_2|\leqq 2.2$$

wherein, f_1, f_2 and f_3 are focal lengths of said converging first lens group, diverging second lens group and converging third lens group, respectively.

4,437,735

INVERTED TELEPHOTO TYPE WIDE ANGLE OBJECTIVE OF LARGE RELATIVE APERTURE

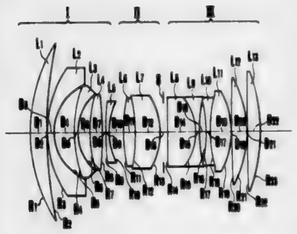
Kikuo Momiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,709

Claims priority, application Japan, Jan. 22, 1981, 56-7134

Int. Cl.³ G02B *9/64, 13/04*

U.S. Cl. 350—458 **5 Claims**



1. An inverted telephoto type wide angle objective of large relative aperture comprising:

three lens groups, from front to rear, the first lens group having a negative refractive power and having, front front to rear, a positive meniscus lens of convex curvature toward the front, a negative meniscus lens of convex curvature toward the front, a negative meniscus lens of convex curvature toward the front, a positive lens and a negative meniscus lens of convex curvature toward the front, the second lens group having a positive refractive power and having a cemented bi-convex lens, and the third lens group having a positive refractive power and having, from front to rear, a cemented lens of a positive lens and a negative lens, a cemented lens of a negative lens and a positive lens, and two positive lenses.

4,437,736

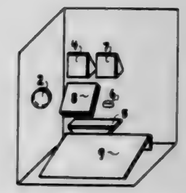
SUN VIEWING APPARATUS

Daniel R. Janoski, Sr., R.D. #1, Box 45-A, Hawley, Pa. 18428

Continuation-in-part of Ser. No. 107,336, Dec. 26, 1979, abandoned. This application Sep. 24, 1982, Ser. No. 423,164

Int. Cl.³ G02B *23/02, 23/16*

U.S. Cl. 350—538 **4 Claims**



1. A prefocused solar viewing apparatus self contained in a cubicle container comprising:

a. means for admitting solar rays comprising a first aperture in a first side of said cubicle

b. an objective lens

c. a first total reflecting prism in the plane of said first lens

d. a second reflecting prism

e. a magnifying field lens

f. a third reflecting prism in the plane of said field lens

g. means for reflecting light

h. a viewing surface

i. means to observe sun viewing surface which comprises a second aperture essentially larger than said first aperture in a second side of said cubical perpendicular to said first side,

j. a light shielding container wherein said elements are fixedly mounted whereby solar rays are admitted into said container through, a, by pointing said first aperture at the sun, said rays are admitted by, b, into a first plane and reflected by, c, into a second plane thereby striking said second prism, d, and reflected thereby into said magnifying field lens e causing said light rays to strike the third reflecting prism f and reflected thereby onto said reflecting means, g, and reflected thereby onto said viewing surface h visable from outside said container by means, i, without direct impingement of the solar rays upon the eye of the user.

4,437,737

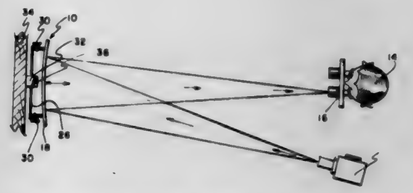
SCREEN AND METHOD OF EYE EXAMINATION USING SAME

Byron C. Rasmussen, 1035 N. Emporia, Wichita, Kans. 67214

Filed Mar. 11, 1981, Ser. No. 242,666

Int. Cl.³ A61B *3/02*

U.S. Cl. 351—237 **6 Claims**



1. A screen apparatus for having light and more contrasting, brighter and clearer indicia reflected from the screen from a light and indicia source in the examination of the direct visual acuity of a patient having a refraction apparatus mounted over the eyes as in the nature of eyeglasses on the patient comprising a frame; a screen constructed and adapted to reflect light

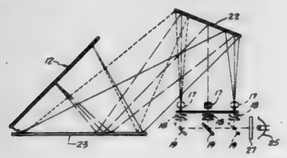
mounted on said frame, said combined frame-screen having a structure generally defining a parabola with respect to a cross section and essentially including a radius approximately equal to the distance the eyes of the patient are from the combined screen-frame; and a mounting means attached to said frame and capable of permitting positioning of the combined frame-screen about both a vertical and a horizontal axis to direct light to the eyes of the patient through the refraction apparatus, said mounting means comprises a cross member having a horizontal arm connected to a vertical arm said horizontal arm pivotally attaching to the frame such as to enable horizontal pivotation of the combined screen-frame member about the horizontal axis; a bracket member mounted to a stationary object and pivotally attached to the vertical arm allowing vertical pivotation of the combined screen-frame about the pivotation connecting points of the vertical arm and the bracket member, said distance of the eyes of the patient and said radius are between about 5 and 25 feet, and said distance of said light and indicia source from the screen is approximately equal to the distance the eyes of the patient are from the screen.

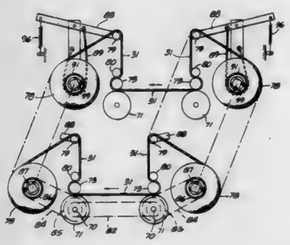
4,437,738

OPTICAL ROLLFICHE READER

James E. R. Headley, 2516 Canyon View La., Pasadena, Calif. 91107; William R. Limburg, Torrance, Calif.; Robert A. Nordmeyer, Woodland Hills, Calif., and Jay Smith, III, Santa Monica, Calif., assignors to Henry Frank Yoder, III; Donald Yoder, both of Tustin, Calif.; Arthur B. Willis, deceased, Los Angeles, Calif., Title Insurance and Trust Company, executor; Dean S. Butler; John A. Fusco, both of Whittier, Calif.; Peter K. Adler, Fairfax, Va. and James E. Headley, Monterey Park, Calif., a part interest

Continuation of Ser. No. 141,456, Apr. 18, 1980, abandoned. This application Apr. 16, 1981, Ser. No. 254,748
Int. Cl.³ G03B *23/12, 21/22*
U.S. Cl. 353—26 R
19 Claims





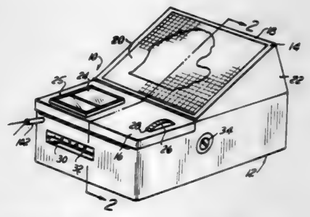
1. An apparatus for the viewing of microcopy recorded on photograph film or the like comprising:
(a) a pair of supply/takeup rollers spaced apart and providing a projection zone in that portion of the film which passes from one roller to the other,
(b) means in said projection zone for optically projecting and enlarging a selected area of said microcopy to project an enlarged image of said area,
(bb) screen means for viewing the enlarged projected microcopy image,
(c) film driving means on opposite sides of said projection zone for driving said film therethrough in either direction,
(d) tensioning means responsive to slack in the film positioned between said driving means and said supply/takeup rollers for tensioning said film to eliminate slack in said film to allow instantaneous reversal of driving said film without backlash,
(e) brake means operatively connected to the tensioning means for engaging said supply/takeup rollers when excessive tension is present in the film, and
(f) clutch means mounted on said supply/takeup rollers such that said brake means engages a supply/takeup roller only when such roller is used as a supply roller and film is being withdrawn therefrom.

4,437,739

PORTABLE MAP DISPLAY DEVICE

John R. Haskin, Lincoln Park, Mich., assignor to Larry L. Ball, Utica, Mich., a part interest

Filed Sep. 7, 1982, Ser. No. 415,165
Int. Cl.³ G03B *23/08*
U.S. Cl. 353—27 R
3 Claims



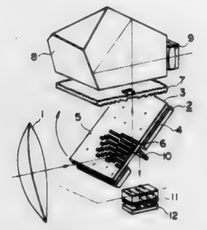
1. A portable display device comprising a rectangular box-like housing, a hinged lid on said housing in the form of a hinged frame supporting a rearview projection screen, a support rod member fixedly mounted in said housing, a hollow drum mounted rotatable around said support rod member and axially displaceable along said support rod member, said hollow drum having a peripheral cut-out portion with a microfilm fiche module insert removably and interchangeably disposed in said peripheral cut-out portion of the drum, said microfilm fiche module insert having a curvilinear frame supporting a microfilm transparency, said curvilinear frame of said microfilm fiche module insert and said peripheral cutout portion of said hollow drum being provided with interengageable attachment means, illuminating means fixedly mounted on said support rod within said drum for illuminating a portion of said microfilm transparency of said microfilm fiche module insert, lens means mounted in said housing proximate to said drum and optically aligned with said illuminating means for projecting on said rearview screen an image of said illuminated portion of said microfilm transparency, a pivotable sector knob edgewise projecting through a slot in said housing, a sleeve member rotatably disposed around said support rod member, said sleeve member having an end attached to said pivotable sector knob and another end attached to an end of said drum by sliding coupling means, a bifurcated member slidably engaging said drum at each end thereof, a manually actuated lever attached to said bifurcated member and having an end projecting through a second slot in said housing whereby said drum is longitudinally displaceable along its axis of rotation as a result of longitudinal displacement of said manually actuated lever, said drum is rotatable around said support rod member as a result of pivoting said second knob, and co-ordinate reference markings co-operate with said pivotable sector knob and said manually actuated lever for controllably indexing a predetermined portion of said microfilm transparency with said illuminating means and said lens means.

4,437,740

QUICK RETURN BEAM SPLITTER FOR A SINGLE LENS REFLEX CAMERA

Takashi Suzuki, Yokohama, and Susumu Ito, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,473
Claims priority, application Japan, Aug. 18, 1981, 56-29168
Int. Cl.³ G03B *7/099*
U.S. Cl. 354—476
5 Claims



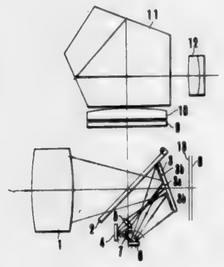
1. A quick return beam splitter for a single lens reflex camera comprising:
a transparent substrate member;
a metal reflecting film of relatively high reflection factor formed on a portion of the surface of said transparent substrate member; and
a reflecting film of relatively low reflection factor formed on that portion of the surface of said transparent substrate member on which said metal reflecting film is not formed.

4,437,741

LIGHT MEASURING DEVICE FOR A SINGLE LENS REFLEX CAMERA

Yasuhisa Sato, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1982, Ser. No. 400,080
Claims priority, application Japan, Jul. 28, 1981, 56-118889
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—479
5 Claims



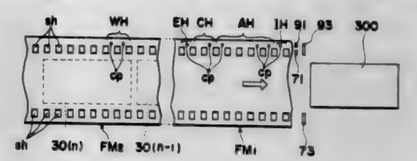
1. A light measuring device for a single lens reflex camera having a swinging mirror, comprising:
(a) light sensitive means;
(b) an auxiliary mirror positioned behind said swinging mirror to conduct a light beam passed through said swinging mirror to said light sensitive means, the reflection surface of said auxiliary mirror being divided into a plurality of regions and being shaped such that said light beam after reflection from the regions is divided into respective parts which go to different directions from each other; and
(c) light beam selecting means for conducting one of the light beams from said plurality of regions to said light sensitive means.

4,437,742

CAMERA CAPABLE OF AUTOMATICALLY RESPONDING TO DATA CODED ON FILM

Nobuyuki Taniguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1981, Ser. No. 304,957
Claims priority, application Japan, Oct. 9, 1980, 55-141302; Oct. 9, 1980, 55-141303; Oct. 29, 1980, 55-152579
Int. Cl.³ G03B *7/00*
U.S. Cl. 354—21
3 Claims



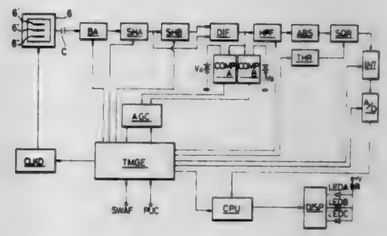
1. A camera capable of automatically responding to film speed data received from a film to be loaded in the camera comprising:
means for receiving digital data representative of the film speed from the film;
means for storing the digital film speed data received by said receiving means;
a digital calculating means, responsive to the digital data stored in said storing means, for calculating digital exposure information;
means for generating predetermined invariable digital data representative of a constant film speed capable of being substituted for the digital data to be stored in said storing means;
means for automatically adopting said invariable digital data to substitute it for the digital data from the film when said storing means is incapable of storing the digital data from the film;
means for digitally displaying the result of the calculation by said calculating means; and
means for controlling the exposure of the camera in accordance with the result of the calculation by said calculating means.

4,437,743

SIGNAL PROCESSING SYSTEM

Shinji Sakai; Nobuhiko Shinoda; Takao Kinoshita, all of Tokyo, and Kazuya Hosoe, Kunitachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

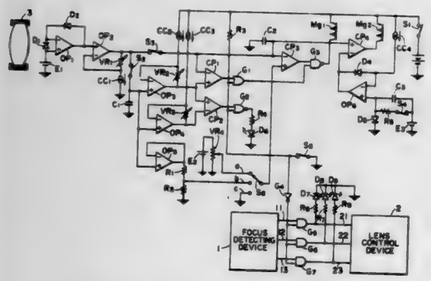
Filed Oct. 21, 1981, Ser. No. 313,599
Claims priority, application Japan, Oct. 23, 1980, 55-149074
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—402
9 Claims



1. A signal processing system comprising:
(A) signal integrating-type radiation-sensitive means for generating a signal corresponding to an integrated value of radiation during an integrating time;
(B) means for controlling said integrating time;

(C) processing means for processing an output signal from said sensitive means; and
(D) threshold level controlling means connected to said integrating time controlling means for controlling a threshold level of signal processing at least at a part of said processing means on the basis of said integrating time.

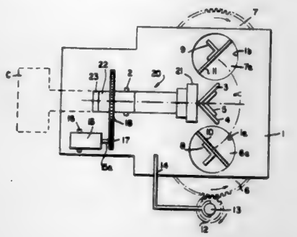
4,437,744
AUTOMATIC EXPOSURE CONTROL APPARATUS FOR CAMERA
Nobuhiko Terui, and Kenichi Magariyama, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Jan. 22, 1982, Ser. No. 341,809
Claims priority, application Japan, Jan. 30, 1981, 56-12306
Int. Cl.³ G03B 7/097
U.S. Cl. 354—442 **7 Claims**



7. An automatic exposure control apparatus for a camera provided with an automatic focusing apparatus with which the object distance is detected and the photographic lens is moved to a position in focus to the object by a driving system, said exposure control apparatus comprising:
(a) means for measuring the luminance value of the object;
(b) first setting means for setting the diaphragm value of the lens to a value in the range of the minimum diaphragm value to the maximum diaphragm value in response to said measuring means;
(c) second setting means for setting the diaphragm value of the lens to a value in the range of from a certain determined diaphragm value at which a determined depth of focus can be given to the lens to the maximum diaphragm value in response to said measuring means;
(d) operating means for enabling said automatic focusing apparatus to operate;
(e) means for selecting any one of the diaphragm value set by said first setting means and the diaphragm value set by said second setting means, said selecting means being disposed to select the diaphragm value set by said second setting means in response to the operation of said operating means;
(f) means for controlling the diaphragm in accordance with the selected diaphragm value; and
(g) means for determining an exposure time from said selected diaphragm value and said luminance value of the object.

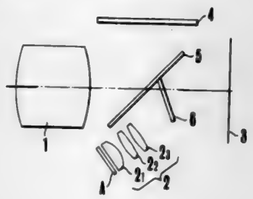
4,437,745
THREE DIMENSIONAL CAMERA SYSTEM
Stephen Hajnal, 5600 Riverdale Ave., Bronx, N.Y. 10471
Filed Sep. 30, 1982, Ser. No. 432,029
Int. Cl.³ G03B 35/10
U.S. Cl. 354—117 **8 Claims**

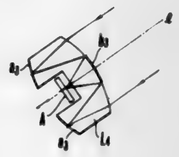
1. A stereo optics apparatus, comprising
(a) a zoom lens attachable to a camera body and having an operating element operable when moved in first and second directions to increase or decrease the focal length of said zoom lens;
(b) first and second spaced apart movable reflectors facing said zoom lens on either side of and transverse to the optical axis of said zoom lens, said first and second reflectors being movable to change the acute angle included therebetween;
(c) third and fourth reflectors facing said first and second reflectors, respectively, and said zoom lens;
(d) said reflectors being operable to divide the light entering said zoom lens into two separate beams;



(e) first electrical motor means for operating said operating element of said zoom lens;
(f) second electrical motor means for moving said first and second reflectors;
(g) said motors being operated in synchronism such that said included angle is increased or decreased by said second motor means as said focal length is decreased or increased, respectively, by said first motor means.

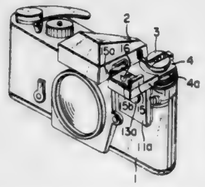
4,437,746
PHOTO METERING DEVICE FOR SINGLE LENS REFLEX CAMERA
Keiji Ikemori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 25, 1982, Ser. No. 361,838
Claims priority, application Japan, Apr. 9, 1981, 56-53592
Int. Cl.³ G03B 7/00
U.S. Cl. 354—479 **5 Claims**





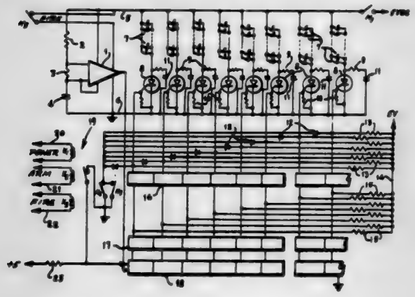
1. A photo metering device for a single lens reflex camera comprising:
(a) a photographic optical system for forming an object image on an image receiving means;
(b) a photo sensor for receiving light from the object;
(c) a biconvex condenser lens system arranged between said image receiving means and said photo sensor, and having a first spherical surface and a second spherical surface;
(d) first reflective means formed on the center zone of said first spherical surface; and
(e) second reflective means formed on the center zone of said second surface arranged so that light from the object image is reflected by said first reflective means and said second reflective means and directed to the photo sensor.

4,437,747
DEVICE FOR MOUNTING AN ELECTRONIC FLASH UNIT
Masato Ohno, Chiba, and Keiji Ohsawa, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Apr. 16, 1982, Ser. No. 369,005
Claims priority, application Japan, Apr. 21, 1981, 56-57655[U]
Int. Cl.³ G03B 15/05
U.S. Cl. 354—126 **8 Claims**



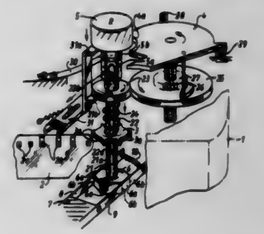
1. A device for mounting an electronic flash unit on a camera of the type having film-rewind operating means, accessory supporting means adjacent to said operating means, and a terminal for transmitting a signal to the flash unit, said device comprising a body having first means disposed to engage said accessory supporting means so as to support the body thereon and having second means for fixing the body to said camera, said body also having means for supporting said flash unit thereon at a position away from said film-rewind operating means and having means for electrically connecting said flash unit to said terminal when the flash unit is supported on said body.

4,437,748
HIGH ILLUMINATION FLASHBULB ARRAY WITH FIRING SEQUENCE CONTROL MEANS
Richard H. Kelly, Issaquah, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Dec. 21, 1981, Ser. No. 333,217
Int. Cl.³ G03B 15/03
U.S. Cl. 354—132 **1 Claim**



1. A high illumination flashbulb array with firing sequence control means comprising
a power bus,
a ground bus
an array of m strings of flashbulbs connected in parallel between said power bus and said ground bus, each string of flashbulbs comprising n flashbulbs connected in series, m and n being integers,
a switch means in series with each said string of flashbulbs, said switch means being comprised of silicon controlled rectifiers,
a pulse generator for generating a pulse train having a given PRF, said pulse generator comprising an IC timer having means for varying the PRF thereof,
an n stage shift register each successive stage thereof being outputted to control a discrete successive switch means in said array in response to said pulse train, said shift register being an IC serial to parallel converter, the output of each said shift register stage being connected to a discrete silicon controller rectifier gate,
amplification means comprised of an IC HEX inverter buffer/divider for amplifying the outputs of said shift register,
a control circuit controlling said pulse generator and said shift register to effect sequential firing of said strings of flashbulbs in response to off, power, arm and fire signals, and
an arm circuit, said arm circuit comprising a diode connected between each said silicon controlled rectifier gate and a grounded normally closed relay contact, said relay contact being opened in response to control circuit arm and fire operational sequences, said arm circuits applying a ground to the gate of said silicon controlled rectifier during off and power control circuit operative sequences and removing said ground during arm and fire operational sequences thereby preventing firing from spurious signals.

4,437,749
FILM TRANSPORTING ARRANGEMENT FOR CAMERAS
Gabriele Ehgartner, Pullach, and Gabriel Vondrovsky, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Aug. 5, 1982, Ser. No. 405,338
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133774
Int. Cl.³ G03B 1/24
U.S. Cl. 354—214 **16 Claims**



1. A film transporting arrangement of a camera, comprising
a film transporting handle;
a perforation wheel having a predetermined number of teeth and arranged to engage a perforated film in a film mouth of a cassette inserted or insertable in a camera and to move the film out of the cassette, said perforation wheel being rotatable in an open camera by hand;
a polygonal disk connected with said perforation wheel and having a plurality of surfaces and a number of corners corresponding to the number of teeth of said perforation wheel; and
two arresting arms pretensioned relative to one another, said arresting arms engaging the surfaces formed between two neighboring corners of said polygonal disk and corre-

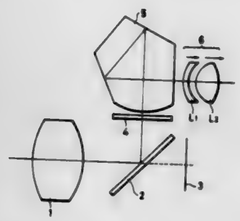
sponding to said surfaces between two neighboring corners so as to press said polygonal disk and thereby said perforation wheel to a respective angular position.

4,437,750

ADJUSTABLE DIOPTER TYPE FINDER OPTICAL SYSTEM

Kazuo Ikari, Hachiooji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,840
Claims priority, application Japan, Jun. 8, 1981, 56-87736
Int. Cl.³ G03B 19/12
U.S. Cl. 354—155 4 Claims



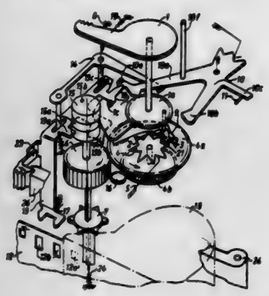
1. An adjustable diopter type finder optical system comprising an eyepiece comprising a first lens component having negative refractive power and a second lens component having positive refractive power, said finder optical system being arranged to make diopter adjustment by moving both of said first lens component and said second lens component in the same direction along the optical axis both with different amounts of movements.

4,437,751

FILM TRANSPORT ARRANGEMENT WITH PERFORATION WHEEL FOR CAMERA

Dieter Engelmann, Unterhaching; Hubert Hackenberg, Holzkirchen; Peter Lermann, Nering; Karl Wagner, and Siegfried Zobel, both of Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 4, 1982, Ser. No. 405,100
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133775
Int. Cl.³ G03B 1/24
U.S. Cl. 354—214 12 Claims



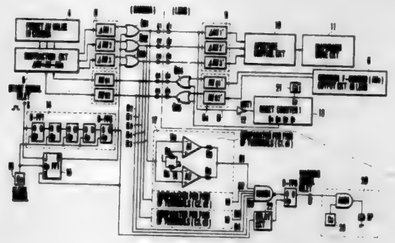
1. A film transport arrangement for a camera, comprising a film transport handle;
a perforation wheel having a plurality of teeth and arranged to engage a perforated film accommodated in a cassette having a film mouth and inserted or insertable in the camera, and to move the film from the cassette; and
means for adjusting said perforation wheel and arranged between said film transport handle and said perforation wheel so that said perforation wheel is always held or brought into such and angular position in which one of its teeth engages in a perforation hole of a film initial portion lying in the film mouth of a cassette insertable or inserted in the camera.

4,437,752

SAFETY DEVICE FOR CAMERA AND ACCESSORY

Akira Akashi; Makoto Katsuma; Masaharu Kawamura, all of Kanagawa; Shigeru Kamata, Tokyo, and Syuichiro Saito, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1982, Ser. No. 445,158
Claims priority, application Japan, Nov. 28, 1981, 56-191505; Dec. 2, 1981, 56-194183
Int. Cl.³ G03B 17/00
U.S. Cl. 354—289.12 7 Claims



1. A device for detecting the conductivity of camera and accessory signal terminals through which an electrical signal is given or received between electrical circuits in a camera and in an accessory attached thereto, comprising:
means for detecting the failure to establish adequate conductivity across said signal terminals and for producing a discrimination signal representing whether or not the conductivity is adequate when said camera and said accessory signal terminals are in contact with each other; and
annunciating means responsive to said discrimination signal for producing an annunciation signal.

4,437,753

APPARATUS FOR SUPPORTING A CAMERA AGAINST THE STERNUM OF THE PHOTOGRAPHER

Robert E. Dunn, P.O. Box 1579, Cupertino, Calif. 95015

Filed Oct. 9, 1981, Ser. No. 310,214
Int. Cl.³ G03B 17/00
U.S. Cl. 354—293 13 Claims



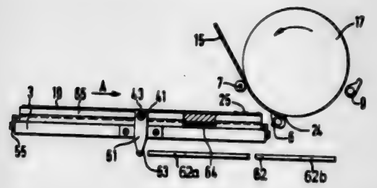
1. A camera support for stabilizing a camera against the body of a photographer, comprising:
a pedestal for mounting the camera, said pedestal having a portion thereof extending rearwardly of the camera;
a first arm adjustably joined to said pedestal;
shoulder support means for engaging the shoulder of the photographer, said shoulder support means being attached to the end of said first arm remote from said pedestal;
a second arm adjustably joined to said portion of said pedestal extending rearwardly of the camera; and
sternal support means for engaging the sternum of the photographer, said sternal support means being attached to the end of said second arm remote from said pedestal.

4,437,754

APPARATUS FOR TRANSFERRING TONER IMAGES

Hermann Idstein, Oestrich-Winkel, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,544
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136659
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 TR 17 Claims



1. Apparatus for transferring toner images from a moving photoconductor to an image carrier comprising:
(a) a cylinder mounted for rotation,
(b) means for securing at least a portion of said image carrier about the circumferential surface of said cylinder,
(c) a support table having an upper portion thereof supporting said photoconductor, said upper portion movable in a linear fashion adjacent said cylinder,
(d) means for mounting said cylinder and table for pressure contacting said image carrier and said photoconductor upon movement of said upper portion of said table, and
(e) means for synchronizing the linear speed of said upper portion of said table with the tangential speed of said image carrier secured to said cylinder.

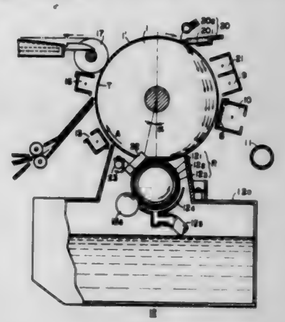
4,437,755

LIQUID HANDLING APPARATUS FOR AN ELECTROSTATIC COPIER

Junichi Sakurayama, and Tamotsu Magome, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 31,945, Apr. 20, 1979, abandoned. This application Jul. 21, 1981, Ser. No. 285,670
Claims priority, application Japan, Apr. 28, 1978, 53-51834; Aug. 31, 1978, 53-106716
Int. Cl.³ G03G 15/10, 21/00
U.S. Cl. 355—10 5 Claims

1. An image forming apparatus comprising:
a rotatably supported drum-shaped image-carrying member having a circumferential surface on which a latent image is formed and a generally continuous lateral end surface extending generally perpendicularly to the rotational axis of said image-carrying member and bounded only by an extreme of said circumferential surface, said rotational axis extending generally horizontally,
means for forming the latent image on the circumferential surface, said latent image forming means being located adjacent said image-carrying member in a region wherein said circumferential surface moves downwardly,
means for developing the latent image at a developing station with a developing liquid, said developing means being located below said rotation axis of said image-carrying member,
means for transferring the developed image onto a transfer material, said transferring means being located adjacent said image-carrying member in a region wherein said circumferential surface moves upwardly,
means, located above said rotational axis in the region of the uppermost portion of said circumferential surface of said image-carrying member, for cleaning the circumferential surface to remove excess developing liquid, for directing the excess developing liquid toward said extreme of said circumferential surface, and for discharging the excess developing liquid removed from said member onto said lateral end surface to cause the excess developing liquid to travel downwardly on said lateral end surface during rotation of said image-carrying member under the influence of gravity, and



liquid guide means including a rod-like member disposed in contact with or in close proximity to said image-carrying member in the region of a portion of said circumferential surface at said extreme thereof and of said lateral end surface bounded by said extreme, said rod-like member extending in the direction of movement of said image-carrying member in the region of said developing means and guiding the excess liquid away from said lateral end surface of said image-carrying member at a position adjacent said developing means, thereby preventing the excess liquid from contacting the circumferential surface of said image-carrying member downstream of the developing station with respect to the movement direction of said image-carrying member.

4,437,756

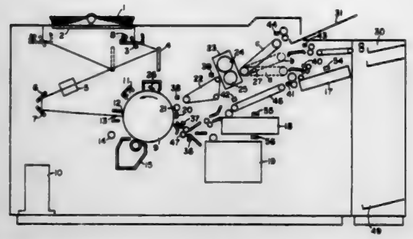
DOUBLE-SIDE IMAGE FORMING APPARATUS

Kazuo Kawakubo, Chigasaki; Katsushi Furuichi, Yokohama; Kiyokazu Namekata, Machida; Hidetoshi Tanaka, Musashino; Yashikuni Tokyama, Yokohama; Toshirou Kasamura; Tomohiro Aoki, both of Yokohama, and Toshio Houma, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 219,510, Dec. 23, 1980, abandoned. This application Jul. 28, 1982, Ser. No. 402,579
Claims priority, application Japan, Dec. 28, 1979, 54-171343; Dec. 28, 1979, 54-171344; Dec. 28, 1979, 54-171345; Dec. 28, 1979, 54-171346
Int. Cl.³ G03G 15/00
U.S. Cl. 355—14 R 17 Claims

1. A double-side image forming apparatus, comprising:
image forming means for effecting image formation on both faces of sheet-shaped image bearing members;
means for storing said image bearing members having an image on a first face thereof;
means for selecting the number of image bearing members to be subjected to said image formation; and
control means for effecting image formation by said image forming means in a first mode on the first face of each of said selected image bearing members, then temporarily storing said selected image bearing members in said stor-

age means, and for effecting image formation by said image forming means in a second mode on the second face of each of said selected image bearing members;

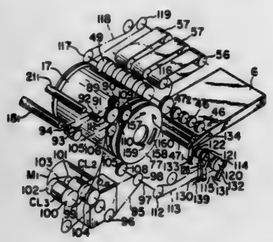


wherein said control means is adapted, in response to a particular signal received during said first mode and before the number of image formations reaches said selected number, to effect image formation in the second mode on the image bearing members stored in said storage means.

4,437,757
IMAGE FORMING APPARATUS WITH CLEANING MEANS

Shigehiro Komori; Hisashi Sakamaki, both of Yokohama; Hiroyuki Hattori, Mitaka; Toshihide Iida; Koichi Miyamoto, both of Tokyo, and Kazumi Umezawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 893,825, Apr. 5, 1978, Pat. No. 4,270,857, which is a division of Ser. No. 860,457, Dec. 14, 1977, which is a continuation of Ser. No. 588,228, Jun. 19, 1975, which is a division of Ser. No. 583,247, Jun. 3, 1975, Pat. No. 4,009,955, which is a continuation of Ser. No. 461,104, Apr. 15, 1974, which is a continuation of Ser. No. 258,820, Jun., 1972, Pat. No. 3,804,512. This application Jan. 22, 1981, Ser. No. 227,209
Claims priority, application Japan, Jun. 3, 1971, 46-38917[U]; Jun. 3, 1971, 46-38918[U]; Jun. 9, 1971, 46-48632[U]; Jun. 10, 1971, 46-41195; Jun. 10, 1971, 46-41196; Jun. 10, 1971, 46-41197; Jun. 21, 1971, 46-44611; Aug. 30, 1971, 46-66740
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **3 Claims**

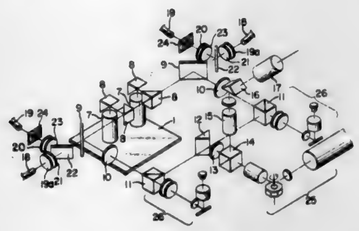


1. An image forming apparatus comprising:
a rotatable member;
means for forming a latent image on said rotatable member, said rotatable member having a portion which is not used for latent image formation;
developing means for applying a developer to the latent image on said rotatable member to form a toner image;
means for transferring the toner image onto a transfer material;
means for cleaning said rotatable member to permit reuse of said member for image formation; and
means for detecting a predetermined rotational position of said rotatable member and for stopping said rotatable member at the detected predetermined position where said non-image-forming portion of said rotatable member faces said cleaning means.

4,437,758
ALIGNMENT APPARATUS

Akiyoshi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 195,490, Oct. 9, 1980, abandoned. This application Feb. 23, 1982, Ser. No. 351,456
Claims priority, application Japan, Oct. 17, 1979, 54-134458
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—41 **4 Claims**



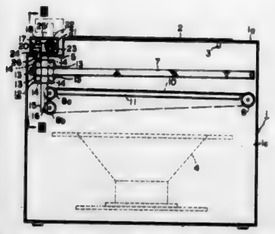
1. An apparatus for aligning a mask having a circuitpattern and an alignment mark thereon, and a sensitive member having an alignment mark thereon into a predetermined positional relation by using the two alignment marks, comprising:
a mask holder for supporting said mask;
a support member for supporting said sensitive member;
means for moving at least one of said mask holder and said support member relative to the other during an alignment operation to align a mask supported on said mask holder and a sensitive member supported on said support member;
an optical system in which during alignment operation said mask and said sensitive member are in a conjugate relation with each other with respect to non-sensitizing light and said mask and said sensitive member are in a defocused relation with each other with respect to sensitizing light;
means for detecting the relative positional relation between the alignment marks on said mask and said sensitive member using non-sensitizing light; and
means for selectively exposing the alignment mark on said sensitive member to sensitizing light during the alignment operation.

4,437,759
CONTACT PRINTER

Hidekatu Mizukami, Kyoto, and Yoshihiro Machida, Joyo, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 15, 1982, Ser. No. 418,379
Claims priority, application Japan, Sep. 17, 1981, 56-145625; Sep. 17, 1981, 56-145626
Int. Cl.³ G03B *27/20*
U.S. Cl. 355—91 **11 Claims**

1. A contact printer wherein a spring roller is adapted to rotate on its own axis and to roll over a transparent plate, and wherein a flexible airtight sheet is wound round the spring roller and the free end of the flexible airtight sheet is fixed to the front end of the transparent plate so that the flexible airtight sheet may be extended to cover the transparent plate by rolling the spring roller rearwards, the improvement in that the distance between the transparent plate and the spring roller is gradually reduced by guide means, as the flexible airtight sheet is extended or the spring roller rolls rearwards over the transparent plate, so that the distance between the transparent plate and the point of contact of the flexible airtight sheet to its own

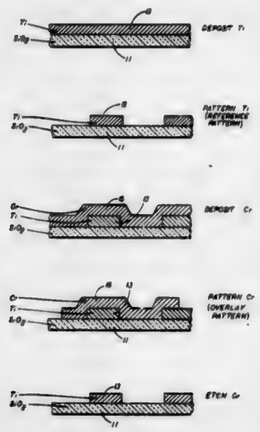


rolled part wound round the spring roller is maintained substantially to a fixed value.

4,437,760
REUSABLE ELECTRICAL OVERLAY MEASUREMENT CIRCUIT AND PROCESS

Christoper P. Ausschnitt, Southport, Conn., assignor to The Perkin-Elmer Corp., Norwalk, Conn.

Filed Dec. 7, 1981, Ser. No. 327,862
Int. Cl.³ G03B *27/32, 27/42*
U.S. Cl. 355—133 **15 Claims**

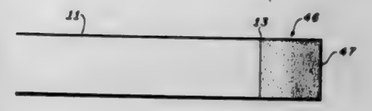


1. A reusable electric overlay measurement base pattern comprising:
(a) a pair of current pads forming first and second pads adapted to be contacted by point contacts;
(b) a first conductor of controlled width extending between said first and second pads;
(c) a pair of voltage pads forming third and fourth pads suitable for contacting by point contacts;
(d) two second conductors extending from said third and fourth pads to said first conductor, said second conductors contacting said first conductor at a predetermined spacing;
(e) a fifth pad disposed adjacent and spaced from said first conductor approximately at the midpoint between said two second conductors;
(f) a second level conductor extending between said fifth pad and said first conductor; the misalignment of said second level conductor being detected by measurements using said five pads;
(g) all of said four pads which are interconnected, along with said fifth pad, being made of a metal which is resistant to an etchant which can be used in conjunction with a second level conductive layer to remove the second conductive layer after use.

4,437,761
REFRACTIVE INDEX TEMPERATURE SENSOR

Harry Kroger, Sudbury, and Richard A. Soref, Newton Centre, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,614
Int. Cl.³ G01J *5/08, 5/58*
U.S. Cl. 356—44 **20 Claims**

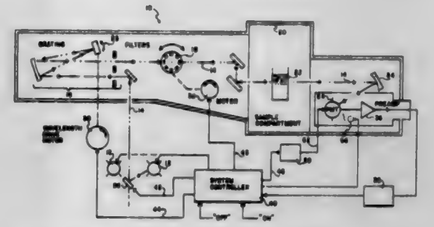


1. An apparatus for measuring temperature comprising:
means for guiding light having a first index of refraction n_1; and
sensor material having first and second surfaces, a temperature dependent index of refraction n_2, and a smoothly varying absorption characteristic to reduce reflections from said second surface, said first surface aligned with said light guiding means to form a dielectric interface therebetween whereby light incident to said interface is reflected therefrom with an intensity that varies with temperature.

4,437,762
CONTROL OF DETECTOR GAIN HYSTERESIS IN A SINGLE BEAM SPECTROPHOTOMETER

Thomas J. Glenn, Irvine, and Wilbur I. Kaye, Corona del Mar, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 334,806
Int. Cl.³ G01J *3/00*; H01J *40/00*
U.S. Cl. 356—326 **2 Claims**



1. A single beam spectrophotometer comprising:
a light source for illuminating a sample with light energy;
a photomultiplier detector for receiving light energy from the sample and generating an output signal proportional thereto, the photomultiplier including a photo-emissive cathode receiving incident light, a plurality of dynodes for multiplying electrons emitted by a cathode, and an anode at which the output current signal is derived;
means conditioning the single beam spectrophotometer during instrument "on" or "operating" intervals for measuring the sample, said conditioning means including means for energizing the light source and for supplying dynode voltage to the photomultiplier dynode;
a separate light source proximate the detector; and
means operative during normal instrument "off" or "idle" intervals, when the instrument is not conditioned for measuring a sample, (1) to energize the separate source

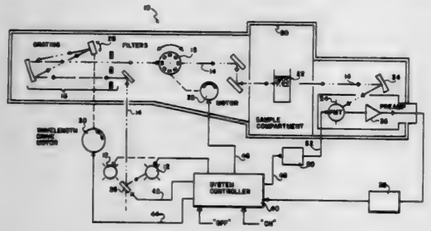
and hence illuminate the photomultiplier cathode and (2) to supply dynode voltage to the photomultiplier dynode.

4,437,763

CONTROL OF DETECTOR GAIN HYSTERESIS IN A SINGLE BEAM SPECTROPHOTOMETER

Wilbur I. Kaye, Corona del Mar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 335,021
Int. Cl.³ G01J 3/00; H01J 40/00
U.S. Cl. 356—326 **3 Claims**



1. A single beam spectrophotometer comprising:
a light source for illuminating a sample with light energy;
a photomultiplier detector for receiving light energy from the sample and generating an output signal proportional thereto, the photomultiplier including a photo-emissive cathode receiving incident light, a plurality of dynodes for multiplying electrons emitted by a cathode, and an anode at which the output current signal is derived;
means conditioning the single beam spectrophotometer during instrument "on" or "operating" intervals for measuring the sample, said conditioning means including means for energizing the light source and for supplying dynode voltage to the photomultiplier dynode; and
means operative during normal instrument "off" or "idle" intervals, when the instrument is not conditioned for measuring a sample, to illuminate the photomultiplier cathode and to supply dynode voltage to the photomultiplier dynode.

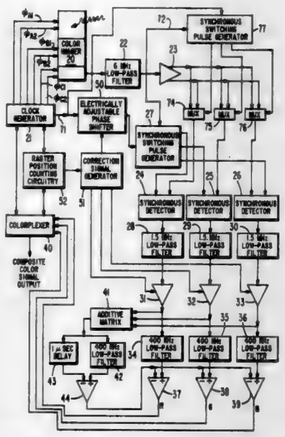
4,437,764

ELECTRICAL COMPENSATION FOR MISREGISTRATION OF STRIPED COLOR FILTER IN A COLOR IMAGER WITH DISCRETE SAMPLING ELEMENTS

Peter A. Levine, West Windsor, and Allen L. Limberg, Titusville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 4, 1981, Ser. No. 327,582
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 **7 Claims**

1. A color television camera comprising:
an imager having discrete sensing elements arrayed in columns and rows;
a color stripe filter interposed in the optical path to said imager, so its stripes project to respective columns of sensing elements;
means for deriving from said imager discrete derived samples of the respective colors of the information imaged on the imager, which samples are subject to cross-color errors owing to misregistration of the projected stripes and the columns of sensing elements; and
means for generating further color samples with reduced cross-color errors, including means for re-sampling said discrete samples to obtain said further color samples, each said further color sample comprising a portion of a derived sample differentially combined with a portion of an adjacent derived sample.

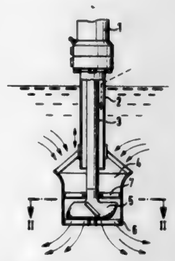


4,437,765

DISPERSION TURBINE

Hans-Peter Seeger, Ballrechten-Dottingen, Fed. Rep. of Germany, assignor to Ystral GmbH, Ballrechten-Dottingen, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 354,133
Int. Cl.³ B01F 5/12
U.S. Cl. 366—264 **16 Claims**



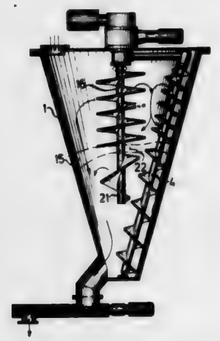
1. In a vertical axis dispersion turbine which has a stator consisting of a stator tube with a lower end, an essentially cylindrical guide ring of larger diameter than said tube mounted thereon generally concentric with the lower end portion of the stator tube and extending below said lower end to define an annular chamber through which a medium to be mixed and dispersed may flow, an axial rotor shaft which is freely rotatable in the stator tube and has a rotor at its lower end with several blades inside the guide ring to draw the medium from above into and downwardly through the guide ring and dispersion means through which the medium flows, the improvement comprising:
the stator tube and the rotor shaft cooperate to define a substantially annular passage which is unobstructed throughout its length and at its lower end;
the relationship of the rotor blades to the lower end of the stator tube causes the downward flow of the medium through the guide ring to provide a venturi effect that produces a negative pressure in said annular passage;
and the dispersion means consists of a dispersion element which is mounted on the guide ring in a plane transverse to the rotor shaft near the blades of the rotor and which is constructed and arranged for axial flow of the medium therethrough so as to reduce rotational flow of the medium and enhance the venturi effect.

4,437,766

MIXER HAVING TWO FEED WORMS DEFINING UPPER AND LOWER MIXING REGIONS WITH AN INTERMEDIATE EQUILIBRIUM ZONE

Rudolph Joachim, Weil der Stadt, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,216
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110437
Int. Cl.³ B01F 7/30
U.S. Cl. 366—287 **7 Claims**



1. A mixer comprising a conical mixing vat having a wall tapering downwardly and having a discharge outlet near the lower end thereof, means for introducing material to be mixed into said vat at the top thereof, a first mixing worm driven in rotation about its axis and in revolving movement within said vat proximate said wall, said first mixing worm having an upper region of relatively small pitch and a lower region of relatively large pitch and defining between said upper and lower regions a neutral conveyance zone, and a second mixing worm driven in rotation about its axis, said second mixing worm being centrally disposed in said vat with the axis of the second mixing worm concentric with the axis of said vat, said second mixing worm extending downwardly from the top of the mixing vat up to and into said neutral conveyance zone, said second mixing worm being cylindrical and having an outer diameter in close proximity with the outer diameter of said first worm, said first and second mixing worms being driven in respective directions of rotation to each convey the material in the vat.

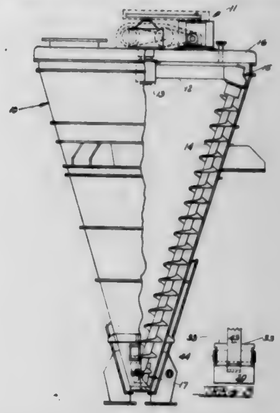
4,437,767

LOWER SUPPORT FOR SINGLE SCREW MIXER

Richard A. Hargis, Cincinnati, Ohio, assignor to Day Mixing Company, Cincinnati, Ohio

Filed Mar. 4, 1983, Ser. No. 472,073
Int. Cl.³ B01F 7/30
U.S. Cl. 366—287 **7 Claims**

1. In a mixer having an inverted, truncated cone for a mixing chamber having also a top and a bottom, a horizontal orbit arm rotatable at a relatively slow speed about the axis of the mixer within the upper region thereof and with the outer end of said arm moving adjacent the inner periphery of said chamber, a mixing screw disposed parallel to the inner periphery of said chamber and rotatable on its own axis at a relatively high speed, coupling means attaching the upper end of said screw to the outer end of said orbit arm so as to permit linear movement between said screw and said arm, motor drive and gear means to rotate said orbit arm at its said slow speed and said screw at its said high speed, and a lower support for said screw, the improvement which is characterized by: said lower support comprising a rotatable vertical support shaft attached to the bottom of said chamber, an extension fixed on the lower end of said screw, a connecting shaft having one end freely received within said extension and the other end adjacent the upper end of said support shaft, and connecting means connecting said support shaft to said connecting shaft so as to permit a rocking movement therebetween while ensuring that said support shaft and said connecting shaft will rotate together at said slow speed only, said extension on said screw rotating about said connecting shaft at said high speed, whereby deflections imparted to said screw by the forces encountered during mixing are accommodated via said coupling means and said connecting means while said support shaft and said connecting shaft rotate at said slow speed only.

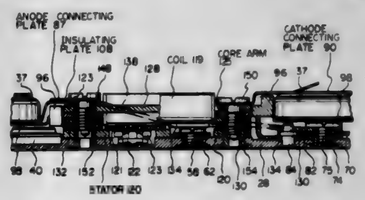


4,437,768

MOVEMENT STRUCTURE FOR AN ELECTRONIC TIMEPIECE

Kenji Miyasaka, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,812
Claims priority, application Japan, Apr. 11, 1980, 55-47565; Jul. 22, 1980, 55-99415; Jul. 22, 1980, 55-99417; Sep. 12, 1980, 55-126991
Int. Cl.³ G04C 23/02
U.S. Cl. 368—88 **20 Claims**



1. A movement structure for a miniature analog type of electronic timepiece powered by a battery and having time indicating hands, a crystal vibrator, an electronic circuit electrically coupled to said crystal vibrator for producing timekeeping signals, a time correction switch mechanism which is externally actuatable for producing correction signals to be applied to said electronic circuit unit to provide time correction signals, a stepping motor comprising a coil, a coil core, a

stator and a rotor, said stepping motor being responsive to said timekeeping signals for periodically rotating said rotor and also responsive to said time correction signals to correct time indicated by said hands, and a wheel train coupled to said rotor for transmitting the motion thereof, said movement structure comprising:

a baseplate having a central area and first, second, third and fourth areas surrounding said central area; and

a wheel train bridge positioned over said central area of the baseplate and secured to said baseplate, such as to provide a space between said wheel train bridge and said baseplate, with said wheel train being contained within said space;

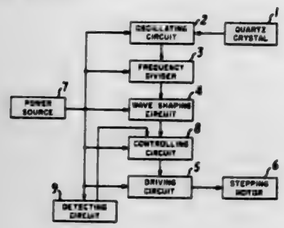
said time correction switch mechanism being positioned in the first area of said baseplate, said electronic circuit unit being positioned in the second area of said baseplate, said crystal vibrator being positioned in the third area of sid baseplate, and said stepping motor being positioned in the fourth area of said baseplate, with said battery being positioned such as to substantially cover said wheel train, said electronic circuit and said crystal vibrator, and with said stepping motor coil being positioned directly above said stepping motor rotor and stator.

4,437,769

ELECTRONIC TIMEPIECE

Masaharu Shida; Makoto Ueda; Shuji Otawa; Masaaki Mandai, and Katsuhiko Sato, all of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,321
Claims priority, application Japan, Jul. 13, 1979, 54-89008
Int. Cl.³ G04C *3/00*
U.S. Cl. 368—204 **16 Claims**



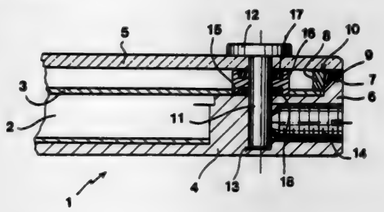
1. An electronic timepiece comprising: a power source; a quartz crystal oscillating circuit for generating a high frequency output signal; a dividing circuit connected to receive the high frequency output signal and operative to frequency divide the output signal into predetermined lower frequency signals; a wave shaping circuit connected to receive a plurality of lower frequency signals from the dividing circuit for producing a plurality of control signals; a controlling circuit connected to receive the control signals from the wave shaping circuit for controlling a driving circuit to produce a driving signal having an intermittent signal portion having one signal component effective when applied to the coil of the stepping motor for flowing driving current from the power source through the coil and another signal component effective to connect one terminal of the coil to the other terminal thereof so as not to make the driving current zero; a stepping motor connected to receive the drive signal from the driving circuit; and a detecting circuit for detecting the voltage output of the power source and operative to change the duty ratio of the intermittent signal portion in response to the detected output.

4,437,770

TIMEPIECE

Paul Gogniat, Bienne, Switzerland, assignor to Montres Rado S.A., Longeau, Switzerland

Filed Nov. 30, 1982, Ser. No. 445,731
Claims priority, application Switzerland, Dec. 2, 1981, 7705/81
Int. Cl.³ G04B *37/00, 19/06, 37/08*
U.S. Cl. 368—294 **7 Claims**



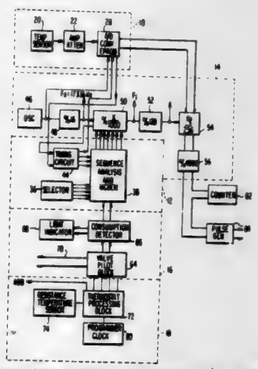
1. A timepiece comprising a workpiece movement controlling a dial, the movement being housing in a lower part of a watch case and crystal applied over at least a portion of its periphery against an upper edge of the lower part, wherein a housing is provided below the periphery of said crystal, said housing being formed by said upper edge having a surface inclined toward the inside of the case and the surface on the periphery of the crystal opposite said inclined surface, and a gasket placed and deformably held in said housing below said periphery of said crystal.

4,437,771

METHOD AND APPARATUS FOR INDIRECT MEASUREMENT OF THERMAL ENERGY

Luigi Cazzaniga, Milan, Italy, assignor to Cazzaniga S.p.A., Milan, Italy

Filed Jan. 8, 1982, Ser. No. 337,959
Claims priority, application Italy, Sep. 30, 1981, 24233 A/81
Int. Cl.³ G01K *17/06*
U.S. Cl. 374—39 **18 Claims**



1. An apparatus for indirect measurement of the thermal energy supplied to a plurality of zones by flow of a heat carrying fluid from a common heating system wherein a plurality of valves control the supply of the heating fluid to the respective zones, the apparatus comprising:

a heating fluid temperature sensor for sensing the temperature of the heat carrying fluid being distributed to the zones,

memory means containing a plurality of heat transfer coefficients which are proportional to unit heat transfer rates of heat transfer devices in the zones relative to corresponding temperatures,

means responsive to the heat carrying fluid temperature sensor for selecting one of the memorized heat transfer coefficients,

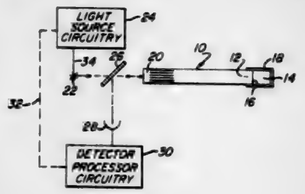
preset heating capacity coefficient means for generating heating capacity coefficients of the corresponding zones, and an electronic processing circuit including a frequency generator and variable multiplier means responsive to the selected heat transfer coefficient and the zone heating capacity coefficients for generating series of pulses having frequencies corresponding to heat consumption in the respective zones.

4,437,772

LUMINESCENT DECAY TIME TECHNIQUES FOR TEMPERATURE MEASUREMENT

Thaddeus V. Samulski, 4013 Stilwell St., Pittsburgh, Pa. 15214

Continuation-in-part of Ser. No. 73,841, Sep. 10, 1979, Pat. No. 4,245,507. This application Dec. 8, 1980, Ser. No. 213,827
Int. Cl.³ G01J *5/00, 9/00*; G01K *11/20*
U.S. Cl. 374—129 **29 Claims**



1. A temperature probe comprising:

an optical fiber bundle having at least one optical fiber;

a temperature sensitive luminescent element having time dependent light emission properties having at least two different time emission components, said temperature sensitive element being attached at one end of said bundle and being adapted to be implanted in such material whose temperature is to be measured;

light source located proximate the other end of said bundle, said light source having a given frequency spectrum for transient excitation of said temperature sensitive luminescent element;

means proximate said other end for separating the light passed from said source toward said temperature sensitive element from that being emitted from said temperature sensitive element; and

light responsive detection and analysis means located proximate said other end of said bundle, said light responsive detection means including means for detecting and analyzing said at least two different time emission components emitted by said temperature sensitive luminescent element as a function of the change in temperature of said temperature sensitive element.

4,437,773

QUARTZ THERMOMETER

Rudolf Dinger, St. Aubin; Jean-Georges Michel, and Claude-Eric Leuenberger, both of Neuchatel, all of Switzerland, assignors to Asulab S.A., Neuchatel, Switzerland

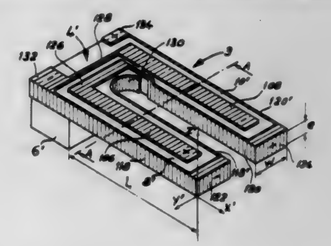
Filed Aug. 24, 1981, Ser. No. 295,777
Claims priority, application Switzerland, Aug. 29, 1980, 6508/80; Apr. 21, 1981, 2588/81
Int. Cl.³ G01K *11/22*
U.S. Cl. 374—117 **15 Claims**

1. A quartz thermometer comprising:

a resonator including at least one elongate element made from a quartz crystal, the length of said element being substantially parallel to the X axis of said quartz crystal, said element having two main surfaces which are substantially parallel to each other and to said length and delimited by edges, said main surfaces being perpendicular to an axis Z' which is inclined at an angle of between +30° and −30° with respect to the optical axis Z of said quartz crystal;

at least one first group of four electrodes disposed on said element, parallel to said length, said electrodes being disposed on said two main surfaces of said element, adjacent the edges thereof;

means for applying two different voltages to two of said electrodes that are disposed on the same main surface and to two of said electrodes that are located opposite each other on different main surfaces so as to cause said element



to vibrate torsionally and to emit a signal, the frequency variations of which are a substantially linear function of temperature;

means for supporting said element for said torsional vibration; and

an electronic circuit for processing said signal emitted by said resonator, said circuit comprising:

a reference frequency oscillator; and

means for comparing the frequency of the signal emitted by said resonator and the signal emitted by said reference frequency oscillator and for producing an indication of the temperature to which said resonator is subjected from the difference between the frequencies of these signals.

4,437,774

DRILLING BIT BEARINGS

Daryl A. Schultz, R.R. 2, Box 92-A, Rensselaer, Ind. 47979

Filed Jun. 28, 1982, Ser. No. 392,992
Int. Cl.³ F16C *19/28*
U.S. Cl. 384—92 **10 Claims**

1. A drilling bit comprising a frame having a leg

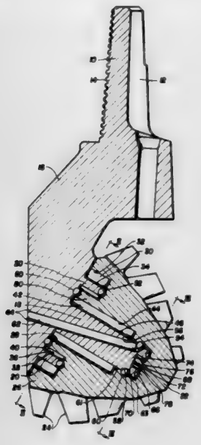
said leg having a central journal and an annular journal concentric with, radially outward of, and axially coextensive with said central journal, said central journal having an outer face and said annular journal having inner and outer faces,

a cutter rotatably mounted on said leg having an outer collar with an inner face located outward of said annular journal and an inner collar with inner and outer faces disposed between said central and annular journals,

an outer bearing means between said inner face of said outer collar and said outer face of said annular journal,

an intermediate bearing means between said inner face of

said annular journal and said outer face of said inner collar, and



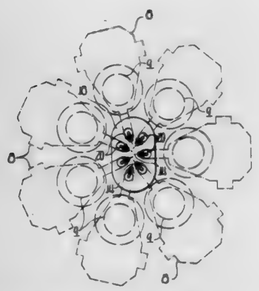
an inner bearing means between said inner face of said inner collar and said outer face of said central journal.

4,437,775

DOT PRINTER HEAD

Kuniaki Ochiai, Mishima; Masami Horii, and Hidekazu Ishii, both of Shizuoka, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1982, Ser. No. 403,284
Claims priority, application Japan, Aug. 14, 1981, 56-120894[U]
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124 5 Claims



1. A dot printer head comprising:

(a) a plurality of electromagnets arranged in annular form around the central axis of the dot printer head, each of said plurality of electromagnets having an armature operatively associated therewith;

(b) a plurality of flat needle caps, each of which has an elongated cross-section in the radial direction of the dot printer head, one of said needle caps being associated with each of said plurality of electromagnets in position to be driven by the armature thereof in the direction of the axis of the dot printer head;

(c) a plurality of needles, the non-working end of each of said plurality of needles being bent in the radial direction of the dot printer head and embedded in an associated one of said needle caps, the working ends of said plurality of needles being aligned with one another and equi-distantly spaced from one another in a plane which includes the central axis of the dot printer head;

(d) a guide body which receives said plurality of needles, said guide body having a plurality of guide holes in a surface thereof perpendicular to the axis of the printer head, each of said guide holes being composed of an oval portion which extends in the radial direction of the dot printer head and which slidably receives one of said needle caps and a circular portion disposed radially outwardly of the oval portion, the circular portion of each guide hole being in communication with the oval portion of each guide hole and the diameter of the circular portion of each guide hole being greater than the width of the oval portion of each guide hole and greater than the diameter of the needle spring recited in subparagraph (f);

(e) a needle spring rest mounted in said guide body perpendicularly to the central axis of the dot printer head, said needle spring rest having a plurality of guide holes therein each of which slidably receives and guides one of said needles; and

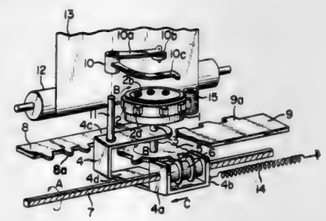
(f) a needle spring surrounding each of said needles and bearing at one end against said needle spring rest and at the other end against one of said plurality of needle caps, each of said needle springs serving to urge the associated one of said needle caps towards the associated one of said armatures.

4,437,776

PRINTING MECHANISM

Hirofumi Hirano, Arakawa, Japan, assignor to Canon Denshi Kabushiki Kaisha, Saitama, Japan

Filed Mar. 8, 1982, Ser. No. 356,101
Claims priority, application Japan, Mar. 30, 1981, 56-46635
Int. Cl.³ B41J 1/34
U.S. Cl. 400—142 3 Claims



1. A printing mechanism for printing characters on a recording medium, such as a paper sheet, that is fed in a feeding direction, said mechanism comprising:

a type drum mounted for rotation in a plane that extends perpendicularly to the feeding direction and for translation in a shift direction extending along a line on which characters are to be printed on the recording medium;

a plurality of character type carried on said type drum; and

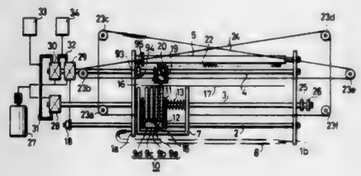
control means for simultaneously causing one of said type to strike said recording medium and translating said type drum in said shift direction, said control means comprising a pinion gear fixed to said type drum for rotation therewith and a rack gear extending in said shift direction and selectively engageable with said pinion gear, wherein said type drum is translated in said shift direction during rotation thereof when said rack gear engages said pinion gear.

4,437,777

PRINTER HAVING PLURAL TYPE WHEEL ASSEMBLY

Fumihisa Hori, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,308
Claims priority, application Japan, Feb. 2, 1981, 56-12981
Int. Cl.³ B41J 1/34
U.S. Cl. 400—154.2 11 Claims



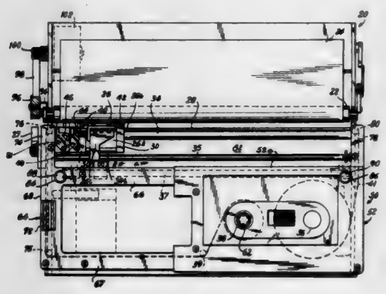
1. A printer comprising a carriage adapted to be shifted along a line to be printed and carrying a plurality of type wheels each having a plurality of type elements spaced around respective areas of its circumference, selection means connected with said type wheels for rotating them and shifting them laterally within said carriage for bringing a respective area of any one of said type wheels into a printing position, impact means including a hammer movable along a line to be printed to bring said hammer into a printing position opposite the selected area for impacting a record medium between said hammer and any type element in said printing position, carry means interconnecting said impact means and said carriage for moving them unitarily along the line to be printed, return means for returning said carriage and said impact means to their initial position for the start of printing of the next line, and control means responsive to a particular rotary position of at least one of said type wheels for operating said return means by the actuation of said carry means with said at least one type wheel being placed in said particular rotary position.

4,437,778

TAPE CASSETTE HAVING MEANS FOR ADJUSTING A TAPE SEGMENT LENGTH FOR A THERMAL PRINTER

Takao Miyashita, Atsugi; Hidekuni Aizawa, and Toru Takamiya, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 11, 1981, Ser. No. 329,700
Claims priority, application Japan, Dec. 11, 1980, 55-178144
Int. Cl.³ B41J 33/14
U.S. Cl. 400—208 11 Claims



1. A tape cassette for use with a printing apparatus, comprising:

housing means including a first projecting portion at one side thereof;

first and second reels rotatably mounted in said housing means;

a tape having a pigment thereon wound about said reels and having a segment extending between said reels, the length of said segment being adjustable;

tape drawing means slidably moveable within said housing means for adjusting the length of said segment and including at least one sliding member moveable within said housing means in a direction parallel to said segment of tape and having a portion thereof always positioned within said housing means and having an end section, a connecting member connected to said end section, and a second projecting portion having a free end and extending from said connecting member at an opposite side of said housing means and being substantially parallel to said first projecting portion; and

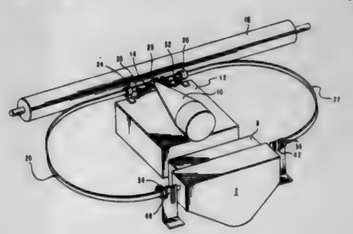
first guide means attached to said free end of the second projecting portion of said tape drawing means for slidably moving therewith in said direction parallel to said segment of tape with respect to said housing means as the tape drawing means moves within said housing means for guiding said segment of tape and for adjusting the length thereof used for printing.

4,437,779

REPLACEABLE RIBBON CARTRIDGE

Willie Goff, Jr., and William M. Jenkins, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1981, Ser. No. 335,479
Int. Cl.³ B41J 31/10
U.S. Cl. 400—208 3 Claims



1. Apparatus for replacing an off the print element carrier ribbon supply cartridge in a printer having a movable print station comprising:

means for maintaining a portion of said ribbon external of said cartridge, said external ribbon being positioned in operative relation to the print station;

a pair of means located on either side of the cartridge for severing said external portion of ribbon from the ribbon remaining in the cartridge;

said means for maintaining comprising two flexible guide means each connected on one end to the printer adjacent one pair of said means for severing, and at the other end to said print element carrier, one on each side thereof, for movement therewith; and

means for splicing said external portion of ribbon to ribbon in a replacement cartridge.

4,437,780

CYLINDRICAL PLATEN PRINTER WITH IMPROVED PAPER GUIDE

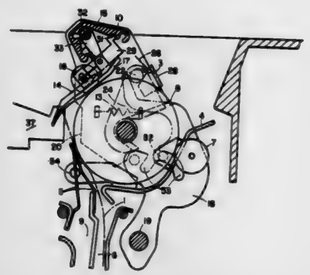
Wendelin Weber, Siegen, and Manfred Rosenthal, Kirchen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,778
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043630
Int. Cl.³ B41J 13/16
U.S. Cl. 400—642 20 Claims

1. A printing mechanism comprising a circular cylindrical

platen defining an axial direction, means for guiding and feeding a record carrier around the platen, and a printing member mounted to be displaceable in said axial direction between extreme positions, characterized in that said means for guiding and feeding comprises:

a plurality of hold-down devices movable in a direction substantially tangential to the platen surface, and transverse to said axial direction, between an engaging position and a deflecting position, in said engaging position said



devices engaging the platen such as to hold an inserted record carrier against the platen, in said deflecting position said devices being lifted off the printing platen and forming guides which define a path followed by the leading edge of a record carrier being inserted around the platen, and

control means for moving said devices between said positions, responsive to the printing member being in one of said extreme positions.

4,437,781

RING BINDER

Rolf Weihe, and Georg Weihe, both of Kreuztal-Ferndorf, Fed. Rep. of Germany, assignors to Siplast Siegerländer GmbH, Kreuztal-Ferndorf, Fed. Rep. of Germany

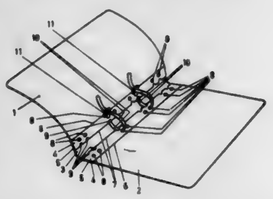
Continuation of Ser. No. 853,101, Nov. 21, 1977, abandoned, which is a continuation of Ser. No. 777,316, Mar. 14, 1977, abandoned, which is a continuation of Ser. No. 596,831, Jul. 17, 1975, abandoned, which is a continuation of Ser. No. 433,867, Jan. 16, 1974, abandoned. This application May 6, 1982, Ser. No. 375,561

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1973, 2302365

Int. Cl.³ B42F 13/00, 13/06

U.S. Cl. 402—8

5 Claims



1. A ring binder for perforated paper stock comprising:

(a) a first cover having exterior and interior surfaces and an inner edge,

(b) a second cover having exterior and interior surfaces and a inner edge spaced from the inner edge of the first cover,

(c) a back part of flexible sheet material connecting the first and second covers and forming a flexible back strip which spans the space between inner edges of the first and second covers for allowing the covers to move between an open coplanar position and a closed, generally spaced, parallel position, said back part overlapping the back surface of the first cover to form a first edge part adjacent the inner edge thereof and overlapping the back surface of the second cover to form a second edge part adjacent the inner edge thereof, said first cover having a first pair of holes at said first part, said second cover having a second pair of holes at said second edge part, said first and second pairs of holes being located along a line which extends transversely across said back part, said back part being attached to the first and second covers along the longitudinal edges of the first and second edge parts, the area extending between the first pair of holes and the area extending between the second pair of holes being unattached, and

(d) flexible binding prong means extending through the first pair of holes, along the interior surface of the back part, and also extending through the second pair of holes, the binding prong means having a first free end with an eye for receiving a second free end of the prong means to allow for sliding engagement of the prong means through the eye to form a closed loop.

4,437,782

SPLINED HUB ASSEMBLY FOR CONNECTING TWO SHAFTS

Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

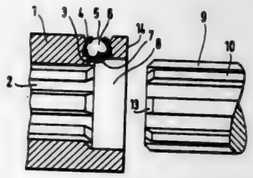
Filed Dec. 29, 1982, Ser. No. 454,233

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1982, 3200846

Int. Cl.³ F16D 1/12

U.S. Cl. 403—13

4 Claims



1. A spline assembly for connecting together a pair of shafts, particularly for connecting together a power takeoff shaft of a tractor and a drive shaft of an agricultural implement, one of said shafts being a splined hub and the other being a splined shaft, comprising: hub spline means on said splined hub; a cylindrical inner centering surface extending between the termination of said hub spline means and an end of said splined hub; shaft spline means on said splined shaft arranged to be placed in torque-transmitting engagement with said hub spline means and having an outermost diameter, said cylindrical centering surface being formed with a diameter corresponding to said outermost diameter to guide said splined shaft into engagement with said splined hub; an opening extending through the wall of said splined hub having a ball located therein, said ball being arranged to have a segment thereof project inwardly into said hub to effect engagement of said ball with said splined shaft; said opening being positioned relative to said hub spline means so that said ball will engage between said shaft spline means when said splined shaft is arranged in engagement with said splined hub with the axial distance between the center of said opening and said end of said splined hub being equal to or smaller than the axial length of said cylindrical inner centering surface.

4,437,783

DEVICE FOR THE DETECTION OF THE POSITION OF THE THRUST REVERSER OF A TURBOJET ENGINE

Yves R. Halin, Melun, and Rene M. J. Hersen, Combs la Ville, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, S.N.E.C.M.A., France

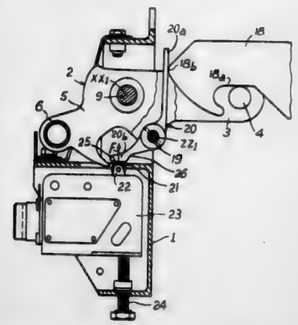
Filed Jul. 27, 1981, Ser. No. 286,886

Claims priority, application France, Aug. 11, 1980, 80 17640

Int. Cl.³ F16B 1/00

U.S. Cl. 403—27

5 Claims



1. A device to detect the position of a thrust reverser of a turbojet engine and its locking means, having a hook element integral with a moving part of the thrust reverser which moves in rectilinear translation, mechanical locking means and a stationary electric detection means for detecting the position of the hook element with respect to the mechanical locking means comprising: (a) a stationary support element; (b) locking means pivotally mounted on the stationary support element so as to pivot about a first axis, the locking means having an arm extending therefrom on one side of the first pivot axis, a strap extending therefrom on the opposite side of the first pivot axis, and an axle mounted on the strap so as to be engageable with the hook element; (c) control means connected to the arm to pivot the locking means about the first pivot axis; and (d) a lever pivotally mounted on the locking means to pivot about a second pivot axis which extends parallel to the first pivot axis, the lever having a first lever arm extending into the path of movement of the hook element and a second lever arm which actuates the electric detection means such that when the thrust reverser is in its locked position the hook element contacts the first lever arm to actuate the electric detection means.

4,437,784

ADJUSTABLE SHIM SYSTEM

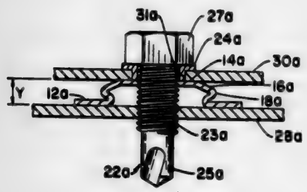
Francis C. Peterson, St. Charles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 28, 1982, Ser. No. 343,623

Int. Cl.³ F16B 37/02

U.S. Cl. 403—408

4 Claims



1. An adjustable shim device for use in accurately controlling the distance between a support structure and a workpiece to be fastened to the support structure, the device including a pair of spaced flange means creating a first coplanar surface for welding to a support structure and an imperforate second web section to be perforated by a self drilling threaded fastener integrally connected to the first surface by strut means, said second web section being generally parallel with said first surface, said strut means extending on both extremities of said spaced flange means interconnecting the flanges with the imperforate second web section, the strut means including a knee-like joint which includes a bend line about which the strut can be transformed to change the spatial relationship between the first section and second surface in a predetermined but accurately controlled fashion.

4,437,785

ELASTOMERIC SEALING MEMBER

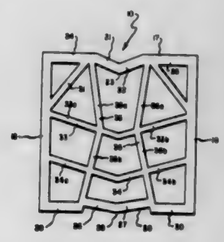
Guy S. Puccio, Snyder, N.Y., assignor to Acme Highway Products Corp., Amherst, N.Y.

Filed Jan. 25, 1983, Ser. No. 460,923

Int. Cl.³ E01C 11/10

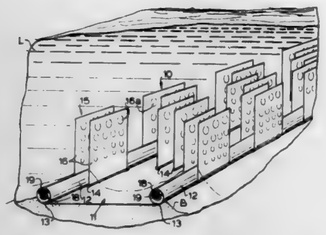
U.S. Cl. 404—64

18 Claims



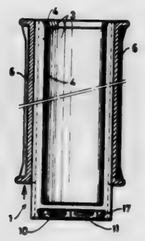
1. An elastomeric sealing member positionable in an expansion joint for use in sealing the same, said sealing member comprising an elongated tubular body having a length commensurate with the length of the joint to be sealed and having a substantially uniform cross section throughout its length and a plurality of interconnecting internal support members for providing support to said body and for controlling resistance to compression thereof in a direction transverse to its length, said body including a top wall, a bottom wall, and a pair of opposed side walls, each of said side walls being adapted to bear tightly against the sides of said joint, each of said top and bottom walls including downwardly directed V-shaped portions which cause deflection of the associated wall to occur in a downward direction when transverse compression forces are applied to the side walls, the interconnecting internal support members including upper and lower spaced apart ribs and right and left spaced apart struts, the upper and lower spaced apart ribs extending from one side wall to the other and each rib including a generally downwardly directed V-shaped element, the ends of the upper ribs joining the side walls at locations above the midpoint of the side walls and the ends of the lower rib joining the side walls at locations below the midpoint of the side walls, and the right and left spaced apart struts extending between the top wall and the bottom wall, each strut including upper and lower generally straight portions, the upper ends of the upper portions joining the top wall at spaced apart locations and the lower ends of the upper portions joining the upper rib at spaced apart locations between the ends thereof, the spacing between the upper ends of the upper portions of the spaced apart struts either being the same or slightly greater than the spacing between the lower ends of the upper portions, and the lower portions of the struts extending downwardly and outwardly from the upper rib to locations intersecting the bottom wall, the spacing between the upper ends of the lower portions of the spaced apart struts being less than the spacing between the lower ends of the lower portions.

4,437,786
ARTIFICIAL SEAWEED
John P. Morriaroe, 283 Park Dr., Palatine, Ill. 60067
Filed Jul. 6, 1982, Ser. No. 395,618
Int. Cl.³ E02B 3/04
U.S. Cl. 405—24 15 Claims



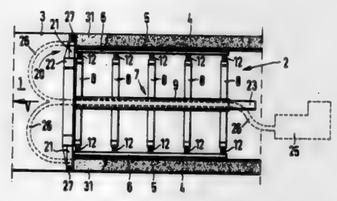
1. Artificial seaweed for deployment on lake bed bottoms and the like to build thereon deposits from particulate material suspended in the water which comprises an anchor having a plurality of elongated flexible particulate material receiving tubes positioned in laterally spaced side-by-side relation, means spanning the spaced tubes connected thereto along the length thereof and arranged to be held taut against the lake bottom when the tubes are deployed, and a plurality of rows of buoyant fingers anchored at their bottom ends to said means and having free upper ends for rising in the water to levels below the surface thereof, and said fingers being spaced apart in a plurality of rows exposing the surfaces of the fingers to the water for trapping suspended particulate material to build up said deposits on the bottom.

4,437,787
PLASTIC CHEESE MOLD
Dirk C. H. van der Ploeg, Oud-Beyerland, and Hendrikus M. Tameris, Rotterdam, both of Netherlands, assignors to Albany International Plastic B.V., Netherlands
Filed Sep. 30, 1982, Ser. No. 429,450
Int. Cl.³ B29C 1/00, 15/00; A01C 25/13
U.S. Cl. 425—84 8 Claims



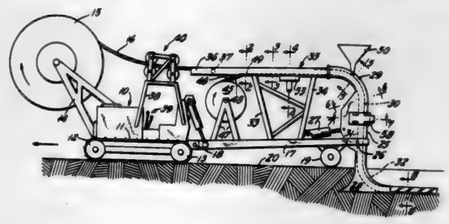
1. A cheese mold of plastics material comprising: at least two matching shells each having an integral bottom member, said two shells and the bottom members when coupled together forming a hollow mold having a substantially constant integral cross-section along its length and with a bottom closure, said shells having a moisture permeably layer securely attached to their inner walls, said mold having at least one outlet opening for removing whey; said bottom members having a hinged connection therebetween and having adjacent thereto an annular recess and a hollow follower container member having edges frictionally engaged with said mold in said annular recess.

4,437,788
METHOD AND APPARATUS FOR THE ADVANCING OF A SLIDING FORM
Heinz T. Walbröhl, Nordstrasse 75, Bonn 1, Fed. Rep. of Germany (5300)
Filed Nov. 16, 1981, Ser. No. 321,487
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1980, 3043312
Int. Cl.³ E21D 11/04
U.S. Cl. 405—146 22 Claims



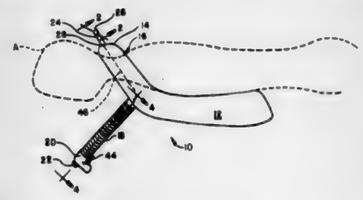
1. A method for advancing a sliding form upon the lining of a gallery or tunnel, which comprises a formwork body extending in the longitudinal direction of the gallery or tunnel and substantially parallel to its working face, an end form which closes off the front side of the annular space contained between the working face of the gallery or tunnel or an outer shell arranged there and the formwork body and a supporting structure which bears at least the formwork body, characterized by the fact that, at least in the region of the roof of the gallery or tunnel, the parts of the formwork body which are filled at the back with liquid concrete and the parts of the formwork body which rest against concrete which has not yet hardened, are rigidly supported on the supporting structure and that, after sufficient hardening of the concrete, transfer is effected to an elastic supporting of the formwork body on the supporting structure.

4,437,789
METHOD AND MEANS FOR PROTECTING BURIED CABLE FROM RODENT DAMAGE
Allen B. Kasiewicz, Rumson, N.J., assignor to GK Technologies, Incorporated, Greenwich, Conn.
Filed Sep. 24, 1981, Ser. No. 305,359
Int. Cl.³ E02D 29/10; F16L 1/02, 57/00
U.S. Cl. 405—156 16 Claims



1. The method of laying rodent-protected cable from a forwardly moving vehicle having (1) a cable supply-reel support from which unprotected cable can be continuously paid out and (2) a sheath-material reel support from which a strip of flexible sheath material can be continuously paid out, the strip being of width between lateral edges more than sufficient to circumferentially envelop the cable at desired ultimate radial offset from the cable, which method comprises continuously paying out from said supports a supply of cable and a supply of sheath material at a rate coordinated with forward movement of the vehicle, supporting the sheath material at substantially said offset beneath the cable and for a predetermined longitudinal zone of travel of cable and sheath material, the sheath entering said zone in substantially flat condition and being formed into upwardly dished enveloping contour around the cable as it travels through said zone, centrally supporting the cable with respect to the progressively enveloping sheath, completing the sheath-envelopment of the cable by lapping the edges of the sheath, admitting a continuous flow of hardenable cementitious material between lateral edges of the sheath to fill the sectional area defined by the sheath just prior to sheath-edge lapping to complete the envelopment, and guiding the thus-filled and ensheathed cable to ground-supported at-rest position behind the vehicle while the vehicle is moving forward, whereby the cementitious material may harden in situ to become a rodent-protective sheath.

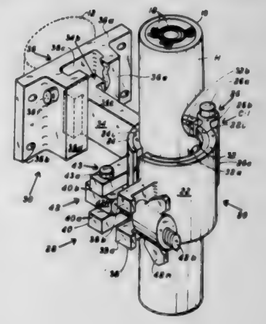
4,437,790
BUOYANCY COMPENSATOR
Timothy N. Trop, 139 Elmwood Dr., Naperville, Ill. 60540
Filed Sep. 24, 1982, Ser. No. 423,221
Int. Cl.³ B63C 11/18, 11/02
U.S. Cl. 405—186 21 Claims

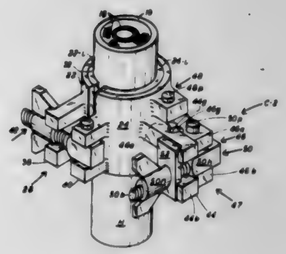


1. A buoyancy compensator, comprising:
an enclosure for containing air including a vest portion adapted to be worn on the user's chest and a back portion adapted to be encircle the back of the user;
an inflation means for allowing the user to inflate said enclosure, said inflation means including an elongate hose in fluid communication with the interior of said enclosure, said inflation means further including a manually operable valve for controlling the fluid flow through said hose;
an exhaust means for exhausting air from said enclosure, mounted on said enclosure and communicating with the interior of said enclosure, said exhaust means including a valve operable to release air under pressure from said enclosure; and
means for automatically opening said exhaust means valve when said inflation hose is extended forcefully away from the user.

4,437,791
CLAMP FOR HYDRAULIC HOSE BUNDLES
Graeme E. Reynolds, 10859 Church La., Houston, Tex. 77043
Filed Apr. 2, 1982, Ser. No. 364,998
Int. Cl.³ E02B 3/00
U.S. Cl. 405—195 11 Claims

1. In a marine hydraulic control system for an offshore oilwell platform, a clamping device adapted to secure a hydraulic hose bundle to a tubular riser system, said hydraulic hose bundle extending between the well platform and a subsea control pod, comprising:
a generally cylindrical clamping body having an axial passage through said body for receiving such a hydraulic hose bundle;
said clamping body being formed of first and second generally semi-cylindrical body members, each of said first and second body members having a semi-cylindrical interior wall portion;
pivotal mount means operably connected with said first and second members and mounting said first and second body members for pivotal movement between an open position and a closed position;
first clamping means mounted with said first and second body members for securing said first and second body members in said closed position about such hydraulic hose bundle with said interior wall portions of said body members in secure engagement with such hydraulic hose bundle;
second clamping means mounted with one of said first and second body members independently of said first clamping means and extending laterally from said one body member for removably attaching said generally cylindrical clamping body to said tubular riser system;
said second clamping means including an arm formed extending laterally from said body member, said arm having at its outer end a base member wider than said arm;
tubular riser system mount means adapted for attachment to said tubular riser system; and
said tubular riser system mount means having a groove formed therein for receiving said base member of said arm





to removably attach said clamping body to the tubular riser system.

7. In a marine hydraulic control system for an offshore oilwell platform, a clamping device adapted to secure a hydraulic hose bundle to a wireline extending between the well platform and a subsea control pod, comprising:
a generally cylindrical body having an axial passage through said generally cylindrical body for receiving such a hydraulic hose bundle;
said generally cylindrical body being formed of first and second generally semi-cylindrical body members, each of said first and second body members having a semi-cylindrical interior wall portion;
pivotal mount means operably connected with said first and second body members and mounting said first and second body members for pivotal movement between an open position and a closed position;
first clamping means mounted with said first and second body members for securing said first and second members in a closed position about such hydraulic hose bundle with

said interior wall portions of said body members in secure engagement with such hydraulic hose bundle;

second clamping means mounted with one of said first and second body members independently of said first clamping means and extending laterally from said one body member for releasably attaching said generally cylindrical clamping body to such wireline extending between the well platform and subsea control pod;

second clamping means including a first yoke extending laterally from said one body member and having a groove to receive the wireline;

a second yoke and yoke mount means attached to said body and mounting said second yoke for pivotal movement with respect to said first yoke, said second yoke having a groove alignable with said groove in said first yoke, the combined size of said alignable grooves being sufficient to cause a bulge in such cable to prevent relative movement of said cable; and

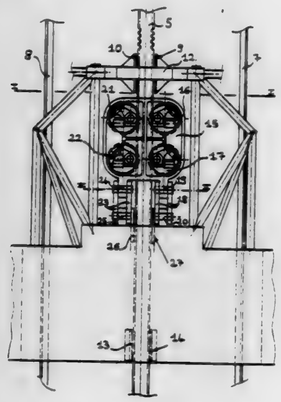
yoke connector means for releasably connecting said first and second yoke together with the wireline positioned in said aligned grooves in said first and second yokes.

4,437,792

VERTICALLY MOVING PLATFORM SUPPORTED ON LEGS

Francois Durand, Antibes, France, and Auguste Smulders, Geneva, Switzerland, assignors to Societe Anonyme Engrenages et Reducteurs, Velizy Villacoublay, France; a part interest

Filed Aug. 13, 1981, Ser. No. 292,695
Claims priority, application France, Oct. 13, 1980, 80 21804
Int. Cl.³ E21B 7/12
U.S. Cl. 405—198 **2 Claims**



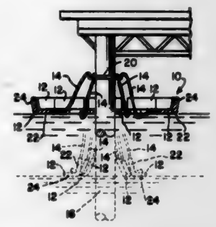
1. In a platform having legs vertically movable relative to the platform, each leg having a double rack thereon and two rows of pinions one engageable with each rack of one of the legs; the improvement comprising a pinion carrier for each row of pinions, a link for each pinion carrier, each link being pivotally connected at one end to the platform and at the other end to its associated said pinion carrier, the links being located substantially in the medial plane of the teeth of the racks and pinions, and means detachably interconnecting the lower ends of the legs for vertically swinging movement about horizontal axes relative to the platform in raised positions of the legs, said axis being parallel to but spaced from the plane defined by the teeth of said double rack, whereby rotation of the corresponding pinions swings the leg vertically about said axis.

4,437,793

PROTECTING MEANS

Allan H. Meny, 1 Hoover St., North Arlington, N.J. 07032, and Dennis L. Palmer, 61 Douglas Dr., Towaco, N.J. 07082

Filed May 4, 1982, Ser. No. 374,731
Int. Cl.³ E02B 3/22
U.S. Cl. 405—212 **11 Claims**



1. Means for protecting a water-bound and partially water-submerged object, such as a boat, pile, float, pillar, or the like, from ice- or impact-caused damage, comprising:

means for buoyant flotation thereof substantially upon the surface of water; and

means for coupling said flotation means in spaced-apart circumjacency to such object; wherein

said flotation means comprises means (a) for defining, and substantially circumscribing, a water-surface area which is exposed to the ambient atmosphere about such object, and (b) which is yieldable, (1) in response to a pressured engagement thereof by an ice formation, to enlarge said area, and (2) to exhibit resilient deformation upon being impacted; and

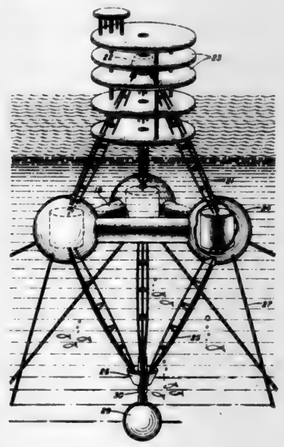
said flotation means comprises a plurality of individual flotation devices, each one of said flotation devices having means for tethering thereof separately to such object.

4,437,794

PYRAMIDAL OFFSHORE STRUCTURE

R. Leroy Grimsley, and Len J. Gawel, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jan. 29, 1981, Ser. No. 229,425
Int. Cl.³ B63B 35/44
U.S. Cl. 405—224 **16 Claims**



1. An offshore support structure comprising

(a) a substantially horizontal flotation adjustable section

containing at least 3 flotation adjustable members, each of said members having means to adjust its buoyancy, wherein each of said members is connected at each end to other flotation adjustable members wherein each connection of members form an apex point,

(b) at least 3 upper support members connected at the lower end thereof to the horizontal flotation adjustable section at the apex points thereof, wherein all upper support members substantially mutually join to form a common upper apex, wherein the geometric configuration of any 2 adjacent upper support members and the horizontal flotation adjustable center section forms an isosceles triangle, and

(c) at least one substantially horizontal platform connected to and supported by said upper support members at a level above the water line.

4,437,795

MINE ROOF ANCHOR ASSEMBLY

Claude C. White, Birmingham, Ala., assignor to Birmingham Bolt Company, Birmingham, Ala.

Filed Nov. 2, 1981, Ser. No. 317,490
Int. Cl.³ E21D 21/00, 20/02
U.S. Cl. 405—259 **10 Claims**



1. A mine roof anchor assembly including

(a) an elongated bolt having a head at one end and threaded for a portion of its length at the other end

(b) an expansion anchor mounted on the threaded end of said bolt

(c) said expansion anchor including a wedge member threadedly engaged with the threaded end of said bolt, and an expansion member through which said wedge member passes to urge said expansion member into gripping engagement with the mine roof

(d) said expansion anchor further including a bail member secured to one end of said expansion member

(e) said bail member including a first upwardly extending portion and a second portion extending inwardly from the upper end of said first portion and in overlying relation to said wedge member, to limit the upward movement of said elongated bolt relative to said expansion member, and

(f) mine roof-engaging means carried by the inwardly extending second portion of said bail member

(g) said mine roof-engaging means and bail member being deflected in a direction to urge the former into impinging engagement with the mine roof under force of said elongated bolt engaging the inwardly extending second portion of said bail member.

4,437,796

PNEUMATIC TRANSPORT PROCEDURE AND APPARATUS

Leon Ulveling, Howald; Edouard Legille, Luxembourg, and Jean Boever, Bergem, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Jun. 11, 1980, Ser. No. 158,612
Claims priority, application Luxembourg, Jun. 15, 1980, 81388
Int. Cl.³ B65G 53/66
U.S. Cl. 406—25 **21 Claims**

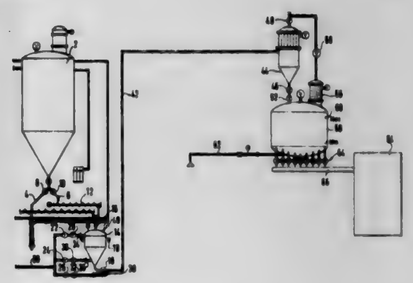
1. A method for transferring a controlled quantity of pulverized material from a storage container at atmospheric pressure into a pressurized container, comprising the steps of:

delivering pulverized material from the storage container into a first receptacle;

continually measuring the weight of material delivered into the first receptacle and terminating the delivery of material from the storage container when a pre-selected quantity of the material is present in the first receptacle;

isolating the first receptacle from the storage container subsequent to termination of the delivery of pulverized material thereto;

introducing a pressurized gas to said first receptacle and coupling the discharge from said first receptacle to a source of pressurized gas to pneumatically transfer the contents of the first receptacle into a second receptacle during the isolation of the first receptacle from the storage container;



isolating the second receptacle from the first receptacle when the contents of the first receptacle have been transferred thereto;

pressurizing the second receptacle subsequent to the isolation thereof from the first receptacle;

causing the material in the pressurized second receptacle to flow into a feed chamber in which an intermediate pressure is maintained between the pressure in said second receptacle after pressurization thereof and the pressure in said presaurized container; and

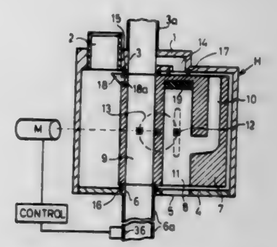
delivering the material from the feed chamber to a pressurized container.

4,437,797

PNEUMATIC MAIL STATION FOR THE DELIVERY, PNEUMATICALLY DECELERATED RECEPTION AND TRANSIT OF PNEUMATIC DISPATCH CASES

Hans J. Kardinal, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,420
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1981, 3102248
Int. Cl.³ B65G 51/32
U.S. Cl. 406—110 **21 Claims**



1. A pneumatic mail station for the transmission, reception and transit of pneumatic dispatch cases, comprising two tube sections for coupling with an incoming and an outgoing forwarding tube path, wall means providing mutually opposite

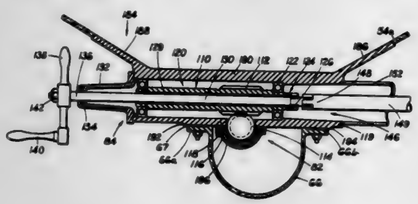
limiting walls of the pneumatic mail station at which the respective tube sections are located, said wall means having an inward transfer opening means for pneumatic dispatch cases to be sent out and an outward transfer opening means for received pneumatic dispatch cases at the same limiting walls, carrier means disposed between the limiting walls and having a reception tube chamber (8, 23) for the reception of pneumatic dispatch cases which can be introduced into alignment with the tube section associated with the incoming forwarding tube path, said reception tube chamber (8, 23) having closure means effective at one end of the reception tube chamber for creating an air pillow which decelerates an incoming pneumatic dispatch case and an air conduit (10, 20) pneumatically connecting the tube section associated with the incoming forwarding tube path to the tube section associated with the outgoing forwarding tube path in the reception position of the reception tube chamber (8, 23), characterized in that the reception tube chamber (8, 23) has said closure means at the end thereof closer to the outgoing forwarding tube path, said carrier means having a second tube chamber (9, 22) which extends parallel to the reception tube chamber (8, 23) and is displaceable in common with it, said second tube chamber (9, 22) being in alignment with the two tube sections (3, 29; 6, 30) in one position and being in alignment with the inward transfer opening means in another position; and in that the air conduit (10, 20) joins at one end with the reception tube chamber (8, 23) and can be displaced in common with said reception chamber (8, 23) and the second tube chamber (9, 22) in such manner that, given the position of the second tube chamber (9, 22) in alignment with the two tube sections, the communication of the air conduit (10, 20) at least with the tube section (3, 29) associated with the outgoing forwarding tube path is blocked but, in contrast thereto, is released at the position of the reception tube chamber (8, 23) in alignment with the two tube sections.

4,437,798

VALVE FOR DISCHARGE OUTLET AND ACTUATING MEANS THEREFORE

Dennis J. Schipper, St. Charles, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,052
Int. Cl.³ B65G 53/46
U.S. Cl. 406—119 **15 Claims**



1. Valve means provided in a discharge opening defined by laterally spaced outlet slope sheets; said valve means being movable into a closed position blocking communication between an outlet compartment and a discharge conduit; said valve means comprising a segment of an arc which in said closed position spans the distance between outlet slope sheets and is rotatable to an open position located generally below one of said outlet slope sheets; said arcuate segment being actuated by a gear means engaging said segment at an area located generally in the mid-portion of said arcuate segment; said gear means attached to actuating means extending to at least one side of the outlet.

4,437,799

PIPELINE TRANSPORTATION SYSTEM

Henry Liu; Donald L. Gibson; David H. S. Cheng, and James E. Rathke, all of Columbia, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Continuation of Ser. No. 839,254, Oct. 4, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,493
Int. Cl.³ B65G 51/04
U.S. Cl. 406—198 **1 Claim**



1. In a hydraulic capsule pipelining system comprising a pipeline adapted for flow therethrough of a carrier liquid, and cargo-carrying capsules adapted to be transported through the pipeline by the carrier liquid, and cargo-carrying capsules adpated to be transported through the pipeline by the carrier liquid flowing through the pipeline; means for pumping the carrier liquid through the pipeline in the direction for transport of the capsules, said pumping means comprising at least one segment of length of the pipeline constituting a pump cylinder, the capsules being transported through the pipeline being adapted to pass endwise through said pump cylinder from one end thereof to the other and at least some of the capsules having a relatively close fit in said pump cylinder to act as pistons in said pump cylinder for pumping the carrier liquid through the pipeline in the direction for transport of the capsules, and means for driving said close-fitting capsules acting as pistons through said pump cylinder in said direction for pumping the carrier liquid in said direction, said driving means comprising electrically energized means along said pump cylinder for producing an electromagnetic field in said pump cylinder for linear propulsion of said close-fitting capsules acting as pistons through said pump cylinder in said direction in response to said field, said close-fitting capsules acting as pistons forcing the carrier liquid ahead of them through the pump cylinder as they are driven through said pump cylinder by said driving means, said driving means comprising coil means surrounding said cylinder and means for supplying said coil means with multiphase alternating current, at least the surface of the capsules acting as pistons being electrically conductive, the driving means acting as a linear induction motor for propulsion of the capsules acting as pistons through the cylinder, said pump cylinder being electrically nonconductive, of short length relative to the overall length of the pipeline, its internal diameter being smaller than the internal diameter of the pipeline and such as to provide a relatively close fit for the capsules acting as pistons, and there being a gradual transition from the internal diameter of the pipeline to the internal diameter of the cylinder at the inlet end of the cylinder, each capsule being formed to act as a piston in the cylinder and comprising a cargo-carrying cylindrical container of ferromagnetic material covered on the outside with a material of higher electrical conductivity.

4,437,800

CUTTING TOOL

Masatada Araki, Handa, and Yukio Tanaka, Aichi, both of Japan, assignors to Nippon Oil and Fats, Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,108
Claims priority, application Japan, Sep. 3, 1980, 55-121200
Int. Cl.³ B23G 1/20
U.S. Cl. 407—119 **2 Claims**

1. A cutting tool consisting of a plate-shaped body comprising a sintered cermet layer and a sintered body layer containing high density boron nitride or diamond, said sintered cermet layer constituting the center portion of the plate-shaped body and being surrounded and adhered at the side surface or at the



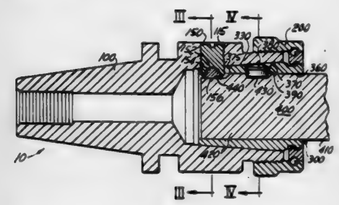
side surface and upper and lower surfaces with the sintered body layer.

4,437,801

HIGH TORQUE CHUCK ASSEMBLY AND COLLET

David L. Lewis, Darien, Ill., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 2,118, Jan. 9, 1979, Pat. No. 4,266,895. This application Sep. 2, 1980, Ser. No. 183,489
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.³ B23C 5/26; B23B 31/04
U.S. Cl. 409—232 **3 Claims**



1. A chuck assembly for securely but releasably retaining a cutting tool centered within the chuck assembly comprising:
- a chuck body having an outer surface a rearwardly tapering internal bore and a radial aperture extending through the body between the outer surface and the internal bore;
- a rearwardly tapering compressible collet mounted within the internal bore of the chuck body, said collet including a tool-receiving bore extending axially through the collet and a transverse bore extending between the outer surface of the collet and the axial collet bore for securely retaining and centering the tool within the chuck body's internal bore;
- means for mounting the collet within the internal bore of the chuck body and for compressing the compressible collet to secure the tool centered therein by urging the collet and tool rearwardly into tight engagement with the rearwardly tapering internal bore of the chuck body;
- means coupled to said collet, but not to the chuck body, for releasably retaining a tool within said axial collet bore when said tool is mounted within said compressible collet which is in turn mounted and compressed within internal bore of the chuck body; and
- means for securing the chuck body directly to the tool when mounted within the tool-receiving bore of said collet, said means including a member coupled to the chuck body and passing through the collet to engage the tool.

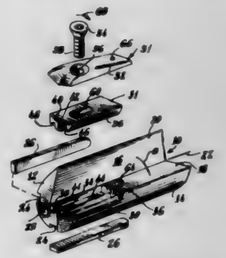
4,437,802

BORING TOOL HAVING A DETACHABLE CUTTING BLADE

John J. Hall, Jr., 13 Ridgwood Rd., Wallingford, Conn. 06492

Filed Sep. 14, 1981, Ser. No. 302,165
Int. Cl.³ B23B 41/02; B26D 1/12
U.S. Cl. 408—197 **7 Claims**

1. A boring tool comprising:
- a cylindrical head having a front end and a cylindrically shaped outer surface, said head including a groove for removing chips extending longitudinally rearwardly from said front end and being open radially to said outer surface, said groove including a planar surface having a recess therein for receiving a detachable cutting blade, said recess having a floor extending longitudinally rearwardly from said front end to a stop surface at the rear thereof for preventing rearward movement of said blade, said recess extending radially outwardly to the outer surface of said head, said blade having an interior surface for seating on said recess floor and having a cutting edge protruding from the front end of said bead, said interior blade surface and said floor including at least one mating



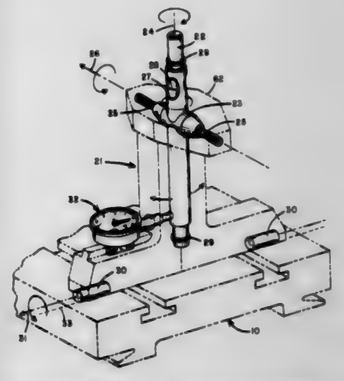
protrusion and slot extending longitudinally for permitting longitudinal advancement of said blade surface with respect to said floor and for retaining said seated blade against radial outward movement, and including a plate for releasably securing said blade against transverse movement out of said recess, said blade including an outer surface that is substantially flush with said groove surface, said plate being positioned in overlying relationship adjacent said blade outer surface and said groove surface, said plate being held in place by releasable fastening means.

4,437,803

SPINDLE SQUARING TOOL

William M. Volna, 1808 Quincy St. NE., Minneapolis, Minn. 55418

Filed May 10, 1982, Ser. No. 376,565
Int. Cl.³ B23C 9/00; B23Q 17/16
U.S. Cl. 409—218 **11 Claims**



1. An instrument for measuring and squaring the spindle and collet of a vertical milling machine to be perpendicular with the machine table or work surface comprising
- (a) a first cylinder member adapted for securing along an axis coaxial to said spindle with said collet, having a portion thereof protruding from said collet;
- (b) a pivotal second member that contains a portion of said first member which protrudes from said collet, said second member having rotational and axial freedom relative

to said first member and with negligible radial clearance about said first member, and said second member having a pivotal axis which is perpendicular to the axis of said first member;

(c) a main frame which supports said second member along said pivotal axis of said second member, said main frame having at least two surface contact points along a line that defines an axis which is perpendicular to said pivotal axis of said second member; and

(d) an indicator affixed between said main frame and said pivotal second member to quantify relative motion about said pivotal axis of said second member.

4,437,804

MOUNTING ELEMENT FOR MOUNTING OBJECT TO SUPPORT STRUCTURE

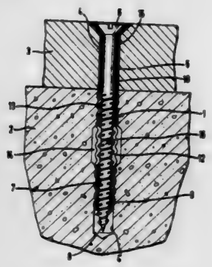
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3, Tumlingen, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,354

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022458

Int. Cl.³ F16B 13/14

U.S. Cl. 411—59 **15 Claims**



1. A mounting element for mountin an object on a support structure having a mounting hole, comprising an elongated expansion sleeve member insertable into a mounting hole of a support structure and having a longitudinal opening; and an elongated expander member insertable into said longitudinal opening so as to expand said expansion sleeve member and to thereby fix the latter in the mounting hole of the support structure, said expander member being provided with a thread which has a round profile and a predetermined pitch, a plurality of peaks and a plurality of valleys, said expander member being also provided with a further thread which has a pitch corresponding to the pitch of said first-mentioned thread and a pointed profile, said further thread of said expander member being arranged both on said plurality of peaks and in said plurality of valleys of said first-mentioned thread of said expander member.

4,437,805

MULTIGRIP FASTENER

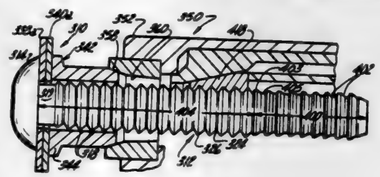
Walter J. Smith, Waco, Tex., assignor to Huck Manufacturing Company, Irvine, Calif.

Continuation-in-part of Ser. No. 26,652, Apr. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 899,591, Apr. 24, 1978, Pat. No. 4,208,943. This application Jan. 26, 1981, Ser. No. 228,600

Int. Cl.³ F16B 19/00

U.S. Cl. 411—361 **8 Claims**

1. In a two piece fastener for fastening a plurality of workpieces together with the workpieces having a thickness varying from a determinable minimum to a determinable maximum thickness, comprising a pin member having a head and a shank portion having a plurality of grooves thereon and a tubular member adapted to be swaged into locking engagement with a predetermined number of the grooves on the shank portion of the pin member by means of a tool having a swaging anvil adapted to engage the tubular member and gripping means adapted to grip a gripping portion of the shank portion, the gripping means including a plurality of jaw members having a plurality of teeth with a preselected pitch, the tool being actuable to apply a relative axial tensile force between the pin member and the tubular member whereby the tubular member is swaged into the predetermined number of the grooves on the shank portion of the pin member, the improvement comprising said pin member with at least said predetermined number of said combination grooves being annular combination locking and breakneck grooves, each of said predetermined number of said combination grooves being defined by first and second radially outwardly diverging sidewalls, said first sidewall being positioned closer to said head than said second sidewall, a selected one of said combination grooves being located at a predetermined location proximate the outer end of the tubular member and adapted to receive the material of the tubular member as it is swaged onto the shank portion whereby the



shank portion will fracture at said selected one of the grooves, any one of said combination grooves being capable of functioning as said selected one of said combination grooves when located at said predetermined location while said pulling tool exerts the relative axial tensile force on said pin member, said gripping portion of the shank portion located at the end opposite side head and having a plurality of different grooves adapted to be gripped by the gripping means of the tool, said different grooves having a shape different from that of said combination grooves whereby said different grooves will not effectively function as a breakneck groove, said combination grooves and said different grooves having the same pitch as said preselected pitch whereby said teeth can engage both said combination grooves and said different grooves separately or simultaneously said combination grooves and said different grooves having substantially no transition portion at the area of their juncture such that the last of said combination grooves and the first of said different grooves are separated by said preselected pitch.

4,437,806

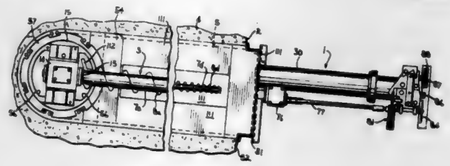
OVERLOAD MECHANISM FOR THE SYSTEM OF A BOTTOM SILO UNLOADER

George E. Olson, Arlington Heights, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Division of Ser. No. 205,461, Nov. 10, 1980, Pat. No. 4,386,695. This application Sep. 27, 1982, Ser. No. 424,414

Int. Cl.³ B65G 65/46

U.S. Cl. 414—307 **4 Claims**



1. In a bottom silo unloader mechanism, a sweep auger disposed to rotate about the center of the silo and having a drive unit for rotating said sweep auger, an overload mechanism connected in the drive unit and including a drive member, a drive pawl operably connected to the drive member and disposed to move in a reciprocating path, a rotatable ratchet having a series of teeth to be engaged by the drive pawl, said drive pawl acting to engage said teeth and incrementally rotate said ratchet in one direction, a holding pawl engaged with said teeth to prevent rotation of the ratchet in the opposite direction, a shaft operably connected to the ratchet and disposed to rotate with the ratchet, a sprocket connected to the inner end of the shaft and having a plurality of teeth, a turntable mounted for rotation with respect to the silo and located at the center of the silo, a plurality of spaced driving elements disposed on said turntable and engageable with the teeth of said sprocket for rotating said turntable in accordance with rotation of said sprocket, said sweep auger being mounted on said turntable and disposed to rotate therewith about the axis of said silo, and resilient means interconnecting the drive pawl and the drive member, whereby interruption of rotation of the sweep auger due to engagement of the sweep auger with a densely packed area of stored material will cause compression of said resilient means and enable said drive pawl to move in said reciprocating path without corresponding rotation of said ratchet, said overload mechanism having the capability of permitting the sweep auger to oscillate and back away in a reverse direction from said densely packed area.

4,437,807

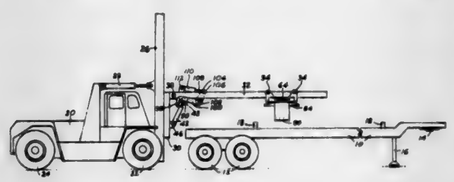
WHEELED TRAILER FRAME CARRYING UNIT ATTACHMENT FOR LIFT TRUCK

Lynn F. Perrott, Portland, Oreg., assignor to Scott S. Corbett, Jr., Portland, Oreg.

Continuation of Ser. No. 174,519, Aug. 1, 1980, abandoned. This application Aug. 30, 1982, Ser. No. 412,504

Int. Cl.³ B66F 9/18

U.S. Cl. 414—620 **20 Claims**



1. A trailer frame carrying unit for carrying the empty elongated wheeled frame of a trailer of the detachable cqrgo container type having a wheel assembly mounted adjacent its rearmost end, the trailer frame carrying unit comprising, in combination with a powered vehicle mounting a vertically movable carriage:

(a) an elongated boom secured at one end to the carriage for pivotal movement between horizontally and vertically extending positions,

(b) power means engaging the boom for moving the latter between said positions, and

(c) trailer frame holding means mounted on the boom and arranged to releasably clamp a trailer frame thereto, to move the secured trailer frame vertically by moving the carriage vertically, and to move the trailer frame between horizontal and vertical positions by pivoting the boom between horizontally and vertically extending positions, the holding means including a base mounted on the boom and a pair of spaced apart frame-engaging clamp jaw members mounted on the base for movement one toward and away from the other to a clamping position closely adjacent each other for releasably clamping between them the thickness dimension of the frame of a trailer,

(d) said boom and trailer frame holding means configured and arranged to clamp the trailer frame forwardly of the wheel assembly for moving the clamped trailer frame selectively between its normal ground-supported horizontal position and a substantially vertical position with its forwardmost end extending upwardly and its rearmost, wheeled end elevated above ground for transport.

4,437,808

APPARATUS FOR CAUSING A UNIT GUIDED ON RECTILINEAR RAILS TO MOVE GRADUALLY AND A FORKLIFT EQUIPPED WITH SUCH A UNIT

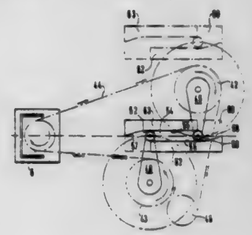
Rene Loudoc, and Jean-Luc Barbereau, both of Saint-Jean-de-Braye, France, assignors to Compagnie Generale de Manutention et de Stockage, Paris, France

Filed Apr. 12, 1982, Ser. No. 367,522

Claims priority, application France, Apr. 27, 1981, 81 08304

Int. Cl.³ B65G 1/06

U.S. Cl. 414—667 **7 Claims**



1. An apparatus for causing a load to be moved gradually in either of two directions between two end positions, said apparatus comprising: a load support, rectilinear rails for guiding said support for movement along said rails, said support having a rectilinear slot, said slot being elongated perpendicularly to the direction of movement of said support and being open at both its end, toothed wheels driven in opposite directions, mounted on either side of a a neutral central position of the slot, each wheel bearing an eccentric crankpin which engages in the slot to drive it while it runs through a half-circumference around the toothed wheel and said crankpins alternately engaging said slot so as to drive it alone while running through a half-circumference.

4,437,809

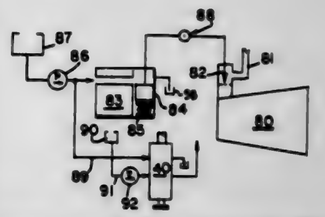
TURNING GEAR INTERLOCK

Norman E. Nutter, Lunenburg, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 31, 1981, Ser. No. 336,500

Int. Cl.³ F01D 15/12, 21/00

U.S. Cl. 415—41 **7 Claims**



1. A turning gear apparatus for a turbomachine of the type including a rotor and a motive fluid admission valve, said motive fluid admission valve mechanically connected to a hydraulic valve control manifold; the turning gear including a movable gear carriage for selectively engaging with and disengaging from a rotor ring gear wherein the turning gear further includes;

a turning gear interlock housing hydraulically connected to the valve control manifold; and,

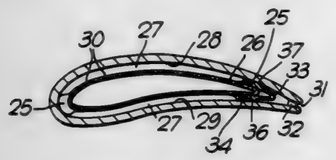
a spool valve axially slidable within the interlock housing for selectively blocking and porting hydraulic fluid through said housing; the spool valve being connected to the turning gear carriage whereby in the engaged position the interlock housing is ported thereby preventing pressurization of the valve control manifold and in the disengaged position the interlock housing is blocked to permit pressurization of the valve control manifold.

4,437,810

COOLED VANE FOR A GAS TURBINE ENGINE

Eric W. J. Pearce, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed Feb. 24, 1982, Ser. No. 351,616
Claims priority, application United Kingdom, Apr. 24, 1981, 8112806
Int. Cl.³ F01D 5/18
U.S. Cl. 415—115 **3 Claims**



1. A cooled vane for a gas turbine engine comprising a hollow aerofoil having a leading edge region and a trailing edge region, said aerofoil including convex and concave flanks having opposed faces defining a hollow interior, at least one cooling fluid entry tube extending spandwise of and located within said hollow interior of said aerofoil, said tube being spaced from the opposed faces of said convex and concave flanks to define a clearance therebetween, said tube having apertures for supplying a cooling fluid into said clearance to impinge upon and cool said opposed faces of said convex and concave flanks, an unrestricted aperture means in the trailing edge region of said aerofoil having communication with said clearance for discharging cooling fluid, and a flow metering insert extending spanwise of said aerofoil between opposed faces of said concave and convex flanks of said aerofoil adjacent the trailing edge region thereof for metering the cooling air from said clearance to said unrestricted aperture means, said flow metering insert having a hairpin-shaped cross section defined by a pair of limbs and into which a trailing edge of said tube projects to form a seal therewith, said limbs of said flow metering insert defining two accurately predetermined flow areas for cooling fluid leaving said clearance to be discharged through said unrestricted aperture means, a first one of said flow areas controlling leaving of said fluid from said clearance between said cooling tube and one of said opposed faces and a second one of said flow areas controlling leaving of said fluid from said clearance between said cooling tube and a second one of said opposed faces of said convex and concave flanks of said aerofoil.

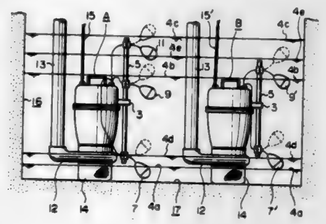
4,437,811

SUBMERSIBLE PUMP WITH ALTERNATE PUMP OPERATION CONTROL MEANS

Minoru Iwata, Chigasaki; Yukio Murata, Fujisawa, and Tomoyuki Shibata, Yokohama, all of Japan, assignors to Ebara Corporation and Ebara Densan, Ltd., both of Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 163,948
Int. Cl.³ F04B 49/04
U.S. Cl. 417—8 **10 Claims**

1. A pump control system employing two pumps for pumping out the liquid in a reservoir or the like wherein the one pump includes first and second sensing means for providing first or high and second or low liquid level signals, respectively, and control circuit means responsive to said first and second sensing means for controlling the one pump to be alternately energized between said first and second liquid levels and wherein the other pump includes third and fourth sensing means for providing third or high and fourth or low liquid level signals, respectively, and control circuit means responsive to said third and fourth sensing means for controlling the other pump to be energized between said third and



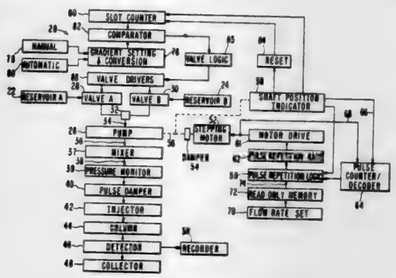
fourth liquid levels; the improvement comprising that the control circuit means for the one pump includes step memory means having first and second states or positions, the state of said memory means being changed between the first and second states upon receipt of each of said first liquid level signals for conditioning the control circuit means to alternately initiate and inhibit the operation of the one pump upon receiving said first liquid level signal whereby said second liquid level may be positioned either higher or lower than said fourth liquid level.

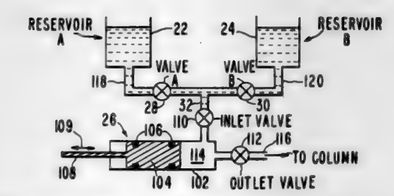
4,437,812

SINGLE-PUMP MULTIPLE STROKE PROPORTIONING FOR GRADIENT ELUTION LIQUID CHROMATOGRAPHY

Ahmad Abu-Shumays, Los Altos; John C. Helmer, Menlo Park, and Stephen J. Luchetti, Berkeley, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 796,782, May 13, 1977, abandoned. This application Sep. 25, 1981, Ser. No. 305,426
Int. Cl.³ F04B 49/00; B67D 5/46
U.S. Cl. 417—53 **14 Claims**





1. In a high pressure, high performance liquid chromatography system a method for providing gradient proportioning of a plurality of solvent components, said system comprising:

a plurality of solvent reservoirs, each of said reservoirs containing a particular one of said solvent components,

a single reciprocating pumping means,

proportioning valves for admitting said solvent components into said pumping means from said reservoirs during fill strokes of said pumping means according to a programmed concentration distribution that may vary for different fill strokes, and

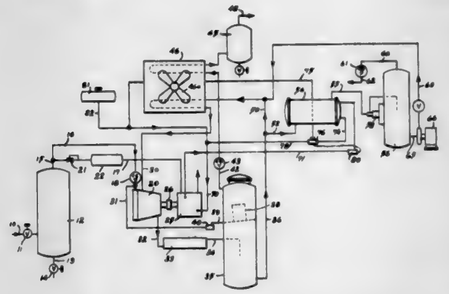
a mixing structure into which said pumping means can deliver said plurality of solvent components, said gradient proportioning method comprising utilization of a pumping cycle that provides accurate proportioning near zero and one hunhundred percent concentration, said method includes a plurality of fill strokes, with a selected concentration distribution of more than one of said solvent components being permitted in said pumping means during less than all of the fill strokes of said pumping cycle and, during a said fill stroke in which a selected concentration is created, actuating the said proportioning valve for the higher concentration solvent prior to the activation of the said proportioning valve for the lower concentration solvent.

4,437,813

GAS RECEIVING AND TRANSMITTING SYSTEM

Walter B. Ingram, Hagerstown, Md., assignor to Frick Company, Waynesboro, Pa.

Filed May 4, 1982, Ser. No. 374,820
Int. Cl.³ F04B 17/00
U.S. Cl. 417—53 **17 Claims**



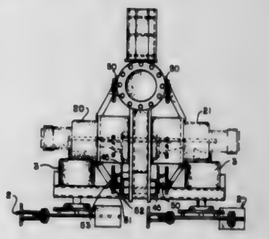
1. A system for receiving relatively high moisture content raw gas from a location and pumping it in a relatively dry condition to an outlet, comprising an oil injection type rotary compressor, an internal combustion engine connected to drive said compressor, first pipe means for carrying said raw gas to the inlet of said compressor, second pipe means for carrying raw gas to said engine, third pipe means for carrying oil to said compressor, fourth pipe means leading from said compressor to a separator housing, means in said fourth pipe means for intermingling the fluids discharged from said compressor, means in said separator housing for separating the gas from the oil and water mixture, means for discharging dry gas from the upper portion of said separator housing, discharge means from the lower portion of said housing for the mixture of oil and water, means for returning a predetermined major portion of said oil and water mixture to the third pipe means to said compressor, means for diverting the remainder of said oil and water mixture, heat exchange means between said means for diverting the remainder and said engine thereby raising the temperature of said diverted remainder of said oil and water mixture, a dehydrator housing, means carrying said diverted remainder to said dehydrator housing, pump means for drawing liquid from the lower portion of said dehydrator housing, means connected to the upper portion of said dehydrator housing for creating a vacuum therein whereby water vapor is removed from the oil and drawn off from said dehydrator housing, and means for returning the water-free oil from said pump means of said dehydrator housing to said third pipe means to said compressor.

4,437,814

DREDGE PUMP DRIVE SYSTEM

John F. Kalbac, St. Louis, Mo., assignor to Delta Dredge and Pump Corporation, St. Louis, Mo.

Filed Jul. 15, 1981, Ser. No. 283,488
Int. Cl.³ F04B 17/00
U.S. Cl. 417—351 **4 Claims**



1. In a dredge pump having a pump housing and an impeller within said housing, the improvement comprising a shaft upon which said impeller is mounted, said shaft projecting through and beyond said housing on both sides of said impeller; two drive motors outside said housing, one rigidly coupled to one end of said shaft and the other, to the other end of said shaft, to drive said shaft, hence said impeller, and mounting means for mounting said drive motors, said mounting means comprising angularly spaced supports to which said drive motors are connected, pads, each including an elastomeric block bonded to and sandwiched between inner and outer flat plates, one of each of said plates being connected to one of said supports, the flat plates on the supports of each of the motors lying in substantially a common plane and the said plates on the supports of the two motors lying in substantially parallel planes, fixed structures on opposite sides of said pump housing, each having mounting flats spaced and arranged complementarily to pads on its respective side of the pump housing, the other of said plates of each pad being connected to a flat of one of said structures, the pad plates closest to the housing on opposite sides of the pump housing facing one another, whereby in response to axial movement of the impeller shaft, hence the motors, one set of pads is in compression, the other, in tension and in response to turning moment of said motors, both sets are in shear.

4,437,815

PUMP, AND AN APPARATUS INCORPORATING THE PUMP FOR INFUSING LIQUID MEDICINE

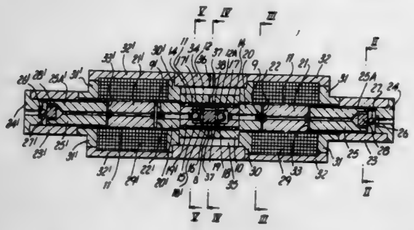
John K. McMullen, "Carragh" 11 Mount Aboo Park, Finaghy, Belfast BT10 ODJ, Northern Ireland

PCT No. PCT/GB80/00150, § 371 Date May 15, 1981, § 102(e) Date May 15, 1981, PCT Pub. No. WO81/00688, PCT Pub. Date Apr. 2, 1981
PCT Filed Sep. 29, 1980, Ser. No. 269,042
Claims priority, application United Kingdom, Sep. 27, 1979, 7933486
Int. Cl.³ F04B 17/04
U.S. Cl. 417—418 **6 Claims**

1. A pump comprising a casing defining an elongate chamber, inlet and outlet valves communicating with the chamber, a piston coaxially movable in the chamber, and an electromagnet controlling movement of the piston via an armature, the outlet valve also being controlled by the electromagnet via a valve armature;

characterised in that the inlet and outlet valves are balls

made from a material having ferromagnetic properties and seats made of non-magnetic material and magnets tensioning the balls of said inlet and outlet valves against their seats when in a closed position, and in that power means for opening said balls from their seats, comprise for said inlet valve a force equivalent to a hydraulic force caused by coaxial movement of the piston in the chamber, said



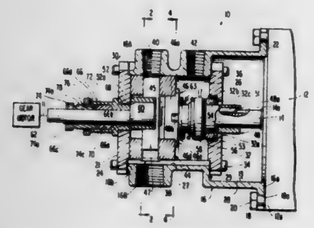
piston and said outlet valve being operated against the flow of liquid by the excitation of the single electromagnet, a piston lock magnet providing a biasing force on the piston thereby to inhibit unintentional movement of the piston, and said outlet valve remaining closed in response to adverse inlet or outlet pressure conditions to prevent inadvertent flow of liquid.

4,437,816

VARIABLE VOLUME POSITIVE DISPLACEMENT ROTARY PUMP

Dennis A. Magee, Marshalltown, and Charles E. McCubbin, Melbourne, both of Iowa, assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Mar. 21, 1980, Ser. No. 132,712
Int. Cl.³ F04B *19/02*
U.S. Cl. 417—465 **4 Claims**



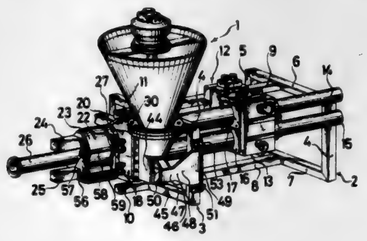
1. An improved variable volume rotary pump comprising:
a pump housing having a cylindrical bore,
a cylinder block having a diameter on the order of said pump housing bore and being mounted concentrically within said bore for rotation about its axis,
circumferentially spaced inlet and outlet ports within said housing opening radially to said bore,
said cylinder block being provided with an axial opening,
at least one diametric passage of rectangular cross-section extending through said cylinder block,
a piston member of corresponding rectangular transverse cross-section slidably and sealably positioned within said diametric passage and having a cross-section corresponding to but being slightly smaller than that of said diametric passage, said piston member bearing a square slot within a side face thereof intermediate of its ends and facing axially towards one end of said cylinder block and forming two connected rectangular cross-section pistons on respective sides of said rectangular slot,
a square drive block carried within said piston member slot,
means for mounting said square drive block within said cylinder block for rotation eccentrically relative to the axis of said drive block,
motor means for driving said cylinder block about its axis of rotation, and
annular grooves carried by said pump housing within said cylindrical bore opening respectively to said inlet and said outlet port but being separated from each other by lands such that said at least one diametric passage of said cylinder block opens alternately to said grooves during continuous rotation of said cylinder block;
whereby, said rectangular cross-section pistons reciprocate within said cylinder block at least one diametric passage to pump fluid from said inlet port to said outlet port with said assembly preventing piston rotation and contact between pistons, with increased contact area between said pistons and said drive block to reduce wear, noise and fatigue of said pistons,
and wherein said motor drive shaft bears a cylindrical drive coupling rotatable therewith, said drive coupling terminating at the end remote from said electric drive motor in a rectangular cross-section axial projection, and a drive plate comprising a rectangular cross-section slot on the side opposite that bearing the square projection received within the axial opening of square transverse cross-section of said cylindrical block, and said pump further comprising transverse end plates for closing off said pump housing cylindrical bore, one annular seal member carried by said cylindrical drive coupling on the outer periphery thereof and bearing at one end on a second annular seal member mounted to the end plate through which said drive motor shaft projects, and a compression coil spring concentrically surrounding the cylindrical drive coupling and interposed between said drive plate and said one annular seal member and biasing said annular seal member carried by the cylindrical drive coupling against the annular seal member fixed to said one end plate and for pressing the square face of the drive plate into the square opening within the cylindrical block to maintain driving engagement between said cylindrical drive coupling and the cylindrical cylinder block and for maintaining said at least one diametric passage in alignment with the inlet and outlet ports of said pump housing during rotation of said cylinder block about its axis towards said pump housing during rotation of the cylinder block about its axis.

4,437,817

TWO CYLINDER VISCOUS MATERIAL PUMP

Wolfgang Metzelder, Ibbenbüren, Fed. Rep. of Germany, assignor to Friedrich Wilh. Schwing GmbH, Herne, Fed. Rep. of Germany

Continuation of Ser. No. 205,296, Nov. 10, 1980, abandoned. This application Jul. 20, 1983, Ser. No. 515,450
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024139
Int. Cl.³ F04B *39/08*
U.S. Cl. 417—507 **6 Claims**



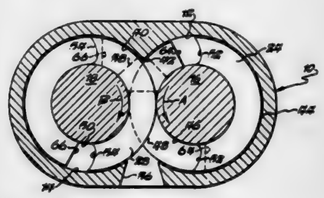
1. A viscous material pump comprising:
a pair of conveying cylinders (16, 17), one of said conveying cylinders being arranged above the other in a common plane with axes of the cylinders, along which the material is conveyed, being horizontal and lying parallel to each other;
an inlet valve housing (18) connected to said conveying cylinders;
a viscous material supply source (41) mounted on a side of said inlet valve housing laterally of the common plane of said conveying cylinders;
an outlet valve housing (23) connected intermediate said inlet valve housing (18) and a delivery conduit (26) for conveying the viscous material and extending horizontally from said outlet valve housing;
a pair of inlet valve means (27, 27*a*) mounted on said inlet valve housing for controlling the passage of the viscous material from said supply source (41) to said conveying cylinders (16, 17), said inlet valve means extending horizontally from a side of said inlet valve housing opposite that on which said viscous material supply source is mounted and extending normal to the conveying axes of the cylinders, one of said inlet valve means being arranged above the other on said inlet valve housing in a common plane; and
a pair of outlet valve means (24, 25) mounted on said outlet valve housing (23) adjacent said delivery conduit for controlling the passage of viscous material to said delivery conduit (26), said outlet valve means (24, 25) extending horizontally from said outlet valve housing parallel to said conveying axes, one of said outlet valve means being arranged above the other in a common plane with said delivery conduit extending between said pair of outlet valve means.

4,437,818

OIL-FREE ROTARY COMPRESSOR

Roger C. Weatherston, 58 Bridle Path, Williamsville, N.Y. 14221

Filed Dec. 2, 1981, Ser. No. 326,766
Int. Cl.³ F01C *1/08*; F04C *18/00*
U.S. Cl. 418—9 **9 Claims**



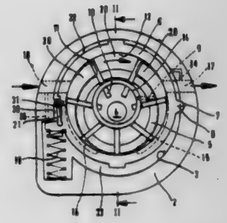
1. A rotary compressor comprising:
a housing defining two working chambers;
mating impellers rotatably mounted in each working chamber;
each impeller having at least two profiles;
each profile containing only one lobe and only one well, the well volume in any one profile in fluid communication with the well volume in any other profile of each impeller;
each of said lobes occupying a constant axial position;
inlet port means in direct fluid communication with all of said profiles;
outlet port means for cyclically and alternately coacting with each of said working chambers to deliver a continuous gas discharge; and
the arcuate extent of each profile and the angular displacement between adjacent profiles on the same impeller being such that as a leading well volume in one of said profiles begins to engage with the lobe of its mating profile to start precompression of the gas therein at inlet pressure, the trailing well volume in the profile adjacent said first profile is still in communication with said inlet port means, whereby the pressure of the gas in said leading well volume is increased above that in said trailing well volume until the trailing well volume is blocked from communication with said inlet port means.

4,437,819

CONTROLLABLE VANE PUMP

Johann Merz, Bopfingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,935
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122598
Int. Cl.³ F04C *2/00, 15/04*
U.S. Cl. 418—26 **6 Claims**



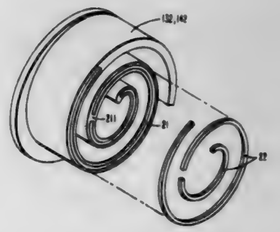
1. In an adjustable vane cell pump having a rotor, a plurality of radially displaceable vanes slidably mounted on the rotor, a control ring in sliding contact with the vanes enclosing fluid displacing spaces therebetween, means biasing the vanes into said sliding contact with the control ring, a housing formed with an internal surface and means pivotally supporting the control ring in the housing exclusively at a pivot point for angular adjustment to vary flow rate, the improvement residing in sealing means including an arcuate sealing portion (30) of the internal surface concentric with the rotor (5) mounted radially opposite the pivot point, a sealing element (21, 32) having opposite ends, and means pivotally mounting one of said ends of the sealing element on the control ring (6), the other of the ends of the sealing element being held in contact with the sealing portion on the housing (2).

4,437,820

SCROLL TYPE FLUID COMPRESSOR UNIT WITH AXIAL END SURFACE SEALING MEANS

Kiyoshi Terauchi, Isesaki, and Masaharu Hiraga, Honjyo, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Sep. 30, 1981, Ser. No. 307,291
Claims priority, application Japan, Sep. 30, 1980, 55-140393[U]; Sep. 30, 1980, 55-140394[U]
Int. Cl.³ F04C *18/02, 27/00*; F16J *15/16*
U.S. Cl. 418—55 **7 Claims**



1. In a scroll type fluid compressor including a pair of scroll members each comprising an end plate and a spiral wrap extending from one side of said end plate, said spiral wrap having a groove formed in the axial end surface thereof along the

spiral curve, said spiral wraps interfitting at an angular and radial offset to make a plurality of line contacts which define at least one pair of fluid pockets, drive means operatively connected to one of said scroll members for orbiting said one scroll member relative to the other scroll member and preventing rotation of said one scroll member to change the volume of the fluid pockets, the improvement comprising:

at least one closed portion intermediate the ends of said groove to divide said groove into at least two separate grooves to block fluid flow in said groove; and

seal elements loosely fitted within said grooves on both sides of said closed portion, said closed portion preventing deformation and bending of said seal elements.

4,437,821

SHAFT SEAL FOR PUMP MEANS

Hitoshi Ogawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

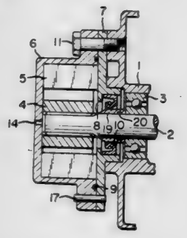
Filed Jul. 20, 1981, Ser. No. 284,538

Claims priority, application Japan, Jul. 23, 1980, 55-104401[U]

Int. Cl.³ F04C *15/00*; F16J *15/32*

U.S. Cl. 418—104

3 Claims



1. A pump means comprising:

a cylindrical housing means having a hollow interior open at one end thereof and having an inlet port and an outlet port in the cylindrical wall of said housing;

an annular disc over the open end of said housing means for closing said hollow interior so as to form a working chamber;

a rotor means rotatably mounted within said working chamber with the axis of rotation eccentric to the axis of said working chamber;

vane means radially shiftably mounted on said rotor means and having out edge portions constantly slidably abutting the inner peripheral surface of said housing means for urging fluid from said inlet port to said outlet port;

frame means to which said housing means and said annular disc are fixed;

shaft bearing means on said frame means;

a shaft having a bearing supported portion and rotatably mounted in said bearing means and extending into said working chamber through the center opening of said annular disc means, the portion of said shaft within said working chamber being splined;

said rotor being fixedly mounted on said splined portion of said shaft;

an oil seal means secured at its outer surface of the inner periphery of the center opening of said annular disc means and having an inner diameter larger than the outer diameter of the splined portion of said shaft; and

a spacer means tightly fitted on said shaft with the outer periphery sealingly engaging said oil seal means for hermetically sealing said working chamber, said spacer means extending along the length of said shaft only from said splined portion to said bearing supported portion.

4,437,822

RADIAL SEALING MEANS FOR USE WITH, AND IN COMBINATION WITH, A SLOTTED ROTOR

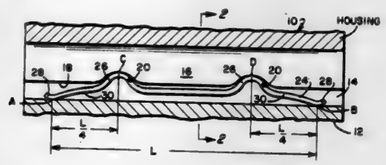
Jeremy Schwartz, Somerset, and Raymond Frick, West Windsor Township, Mercer County, both of N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 23, 1981, Ser. No. 333,996

Int. Cl.³ F01C *19/02*; F04C *27/00*

U.S. Cl. 418—122

49 Claims



1. For use with a rotor having a substantially radial slot formed therein, which slot extends axially of the rotor, radial sealing means, for insertion in said slot for effecting fluid sealing externally of said rotor, comprising:

first means comprising an elongate element, such as a seal, a vane, or the like, for slidable disposition and radial movement, of at least a portion thereof, within said rotor slot; and

second means, for interpositioning thereof between said first means and said slot, for biasing said first means outwardly relative to said slot; wherein

said first and second means have keying means cooperative for constraining said first and second means against a relative longitudinal or axial movement therebetween in either of opposite longitudinal or axial directions;

said second means comprises a leaf spring of a given length; and

said elongate element has an inner surface, of approximately said given length, for confrontingly engaging said leaf spring;

one of said first and second means has means defining keyways therein; and

the other of said first and second means has means defining keys thereon;

said keys and keyways being defined intermediate said given lengths of said leaf spring and said inner surface, and defining a pair of points of mutual contacting engagement which maintain a given, unaltering, radial alignment therebetween during slidably radial movement of said element in said slot.

4,437,823

ROTARY MACHINE WITH AN AXIALLY MOVING PARTITION

Rein K. Tigane, Tallin, U.S.S.R., assignor to Upravlenie Sanitarno-Tekhnicheskikh Rabot, Tallin, U.S.S.R.

PCT No. PCT/SU80/00040, § 371 Date Nov. 10, 1980, § 102(e) Date Nov. 10, 1980, PCT Pub. No. WO80/01934, PCT Pub. Date Sep. 18, 1980

PCT Filed Feb. 29, 1980, Ser. No. 217,111

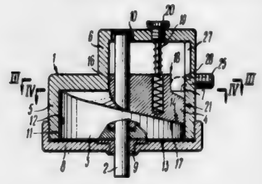
Claims priority, application U.S.S.R., Mar. 13, 1979, 2729663; Mar. 13, 1979, 2729664

Int. Cl.³ F01C *1/00*; F04C *18/00*

U.S. Cl. 418—219

7 Claims

1. A rotary machine construction for use in pumps, compressors and motors, comprising a stator defining a housing having a cylindrical working chamber therein, a rotor rotational in said chamber, a shaft fixed to the rotor and having one end extending externally of the housing, said rotor comprising a disk driven rotationally, said disk having peripheral, circumferentially disposed surfaces in sliding contact with interior surfaces of said housing defining said chamber, the disk having a major side having a flat surface and an opposite major side having an eccentric flat surface extending radially inwardly from a peripheral edge of the disk and having two symmetrical surfaces as continuations of the eccentric flat surface extending away from said eccentric flat surface, the two symmetrical surfaces defining two portions on said opposite major side merging smoothly with the eccentric flat surface and extending progressively axially away from the eccentric flat surface to the edge of the disk at part of the edge of the periphery thereof, said two symmetrical portions thereby having a thickness progressively reducing axially toward said part of the edge of the periphery of the disk, a radial partition mounted for movement axially of said shaft and disposed relative to said opposite major side of the disk dividing the working chamber into two separate chamber working spaces continuously varying in volume as the disk is rotated, means resiliently continuously biasing the partition into contact with said opposite major side of said disk radially of said eccentric flat surface, said two symmetrical surfaces configured for each effectively camming the partition each through 180° and reciprocably actuating the partition as the disk is rotationally driven and the partition functions as a cam follower, and means on said housing defining two circumferentially spaced ports each in com-



munication with a corresponding one of said chamber working space for functioning alternatively as an inlet or outlet in dependence upon the direction of rotation of the disk, said housing having two opposed flat walls defining said chamber, one of said walls having a slot in which said partition reciprocates internally of the housing, said housing defining a second chamber defined by said one flat wall and another flat wall of the housing and disposed axially spaced from said partition, a second disk in said second chamber fixed to said shaft constructed similar to the first-mentioned disk and disposed on said shaft rotated 180° relative to the first-mentioned disk and having symmetrical surfaces of the first-mentioned disk with said one wall therebetween and the disk portions of reducing thickness being rotated 180° relative to each other, said partition being disposed extending through said slot into said chamber to define therein two separate working spaces in conjunction with said symmetrical surfaces of the second disk, said partition having edge face surfaces in sliding contact with corresponding symmetrical surfaces of the individual disks and reciprocably actuated by each disk in a respective corresponding opposite direction of reciprocation as the disks are rotated, and means mounting the second disk for rotation with said shaft and free to move axially on said shaft.

4,437,824

APPARATUS FOR MAKING PARTICLEBOARD BY A CONTINUOUS EXTRUDING TECHNIQUE OF PARTICULATED MATERIALS

Jozsef Palotai, Budapest, Hungary, assignor to Chemokomplex Vegyipari Gepes Berendeses Export-Import Vallalat, Budapest, Hungary

Filed May 4, 1981, Ser. No. 259,819

Int. Cl.³ B29J *5/00*

U.S. Cl. 425—131.1

5 Claims

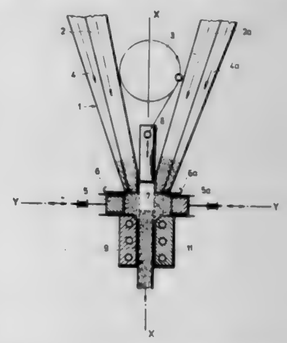
1. Apparatus for the continuous manufacturing of a pressed multilayer product from particulated materials, comprising:

a multicompartmented hopper means for receiving said particulated materials, each compartment is adapted to be charged with a different material and having an input and an output end portions;

a pressing chamber located at the output end portions of said compartments;

a forward pressing piston means mounted for sliding into and out of said pressing chamber for compacting said particulated materials during such forward motion;

a pair of side pressing piston means having pressing surfaces and mounted for moving into and out of said pressing chamber from opposing directions, said opposing directions being perpendicular to the direction of motion of



said forward pressing piston means wherein said side pressing piston means compact said particulated materials from said opposing directions;

an output canal means for receiving said compacted material and feeding same away from the region of said pressing chamber upon the action of said forward pressing piston means and of said pair of side pressing piston means, wherein said hopper means comprises at least a pair of compartments located on each side of said forward pressing piston means, and wherein heating means are provided along said output canal means.

4,437,825

BLOW MOLDING APPARATUS

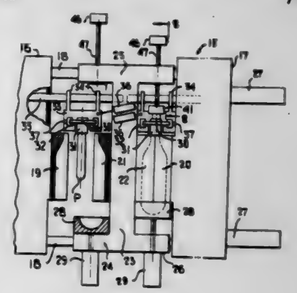
Ieuan L. Harry; Suppayan M. Krishnakumar, both of Nashua; Walter R. Jolly, Merrimack; Martin H. Beck, Brookline, all of N.H., and John F. E. Pocock, Gravenbruch, Fed. Rep. of Germany, assignors to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 321,152, Nov. 13, 1981, Pat. No. 4,409,161. This application Sep. 30, 1982, Ser. No. 432,039

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—145

7 Claims



1. A blow molding apparatus comprising a blow mold including blow mold halves, means for moving said blow mold halves between a closed blow molding position and an open

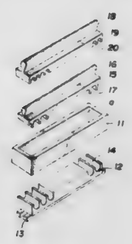
combined blown article discharge and preform receiving position, a stretch rod and a blow head in constant alignment with one of said mold halves, means movable laterally relative to said one mold half for effecting discharge of a blown article from between said blow mold halves and the positioning of a preform between said blow mold halves in transverse alignment therewith, sensor means for sensing when a preform is in transverse alignment with said blow mold halves, means actuated by said sensor means for transversely shifting the preform into a seated position within said one blow mold half, and means for advancing said stretch rod into the preform seated within said one blow mold half and the blow head to a position adjacent the preform before mold closing is completed.

4,437,826

RICE-BODY SHAPING DEVICE FOR ROLLED SUSHI

Akitomi Tezuka, 5-11, Kinuta 3-chome, Setagaya-Ku, Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,532
Int. Cl.³ B29C *1/00*; B29D *3/00*
U.S. Cl. 425—182 **2 Claims**



1. A rice-body shaping device for a rolled sushi comprising a hollow square frame, a base having a width insertable into the hollow frame which is fixedly provided with a stopper member of a size larger than the said width on the lower side thereof and is provided on the upper side thereof with plural semi-cylindrical notches in parallel arrangement, a ram member having a width insertable into the said hollow member and plural projections provided on the lower side thereof which are arranged at such intervals that, when inserted into the frame, the projections are made to come at the center of the respective semi-cylindrical notches provided on the said base, and a push cover of a width insertable into the said hollow member which is provided on the lower side thereof with notches symmetrical to the said semi-cylindrical notches of the said base.

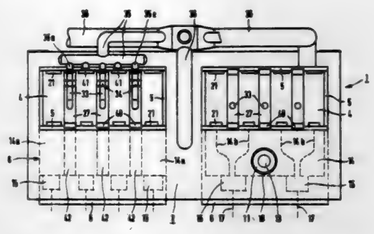
4,437,827

SPINNING MANIFOLD WITH SERIAL NOZZLE BLOCKS

Helmut Moderlak, Maintal; Günter Koschinek, Dietzenbach; Rolf Zinsser, Heusenstamm; Richard Prehler, Frankfurt am Main, and Bernd Kretschmann, Kahl, all of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,249
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113495
Int. Cl.³ D01D *1/06*
U.S. Cl. 425—378 S **7 Claims**

1. A spinning manifold for melt-spinning synthetic high molecular weight polymers comprising, an elongated hollow member for the conduction of a heating medium and at least one vertical nozzle shaft having heatable walls, said nozzle shaft having a plurality of serially arranged separately dismountable nozzle blocks and at least one separately dismountable heatable member, said at least one heatable member extending the width of said nozzle shaft, said at least one heatable member and said nozzle blocks being arranged in an alternating configuration with respect to each other such that at least one of said at least one heatable member is located between and



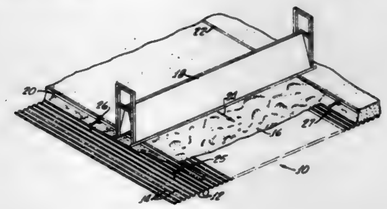
in heat exchange with each juxtaposed pair of said nozzle blocks.

4,437,828

SCREED BAR ASSEMBLY

David L. Egger, 1270 Lynwood St., LaHabra, Calif. 90631

Filed Jan. 15, 1982, Ser. No. 339,190
Int. Cl.³ B28B *1/29, 21/92*; E01C *19/00, 19/22*
U.S. Cl. 425—458 **16 Claims**



1. A screed support assembly comprising
a screed bar support,
a screed bar mounted in said support for vertical adjustment,
first and second support legs positioned outwardly of said support, and
means for mounting at least one of said legs to said support for motion relative to said screed bar, whereby the position of said one leg relative to the other of said legs and relative to the screed bar may be adjusted.

4,437,829

ROLL-OUT FLAME DETECTOR FOR SWIMMING POOL HEATER FUEL GAS CONTROL

Marvin E. Baker, 815 Ewing Ave., Nashville, Tenn. 37203

Filed Oct. 19, 1981, Ser. No. 312,403
Int. Cl.³ F23N *5/02*
U.S. Cl. 431—21 **6 Claims**



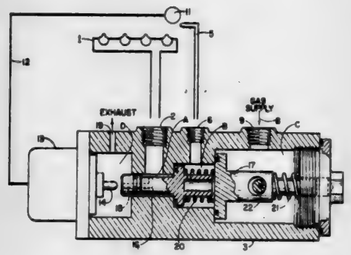
1. In a swimming pool heater having a combustion chamber and a control chamber separated by a fire wall having a lower edge, burner tubes extending from the control chamber into the combustion chamber beneath the lower edge, a fluid fuel supply, a control valve connected in fluid communication between the fuel supply and the burner tubes and adapted to be opened and closed to the flow of fluid fuel to the burner tubes, and an electrical control circuit operably connected to the control valve for opening and closing the control valve, a flame detector device, comprising:
(a) a base,
(b) a pair of electrical contacts,
(c) insulated mounting means supporting said electrical contacts at longitudinally spaced positions on said base,
(d) an elongated thermal fuse element having opposite ends and adapted to melt at a predetermined termperature substantially less than the temperature of the flame produced by the burner tubes,
(e) suspension means holding the opposite ends of said fuse element between, and in electrical communication with, said pair of electrical contacts and spaced from said base,
(f) an inextensible linear member extending along said fuse element and having opposite ends connected to said suspension means to prevent stretching of said fuse element,
(g) means mounting said base on the fire wall within the control chamber so that said fuse element extends substantially along and proximate to the lower edge of the fire wall, for sensing any roll-out flame from the combustion chamber beneath the fire wall into the control chamber, and
(h) means connecting said electrical contacts in said electrical control circuit so that the control valve functions normally while said fuse element is unbroken, but said control valve is closed when said fuse element ruptures.

4,437,830

BURNER AND PILOT VALVE SAFETY CONTROL SYSTEM

Lewis K. Harris, and Billie S. Burrus, both of Tulsa, Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 19, 1982, Ser. No. 399,558
Int. Cl.³ F23Q *9/08*
U.S. Cl. 431—54 **5 Claims**



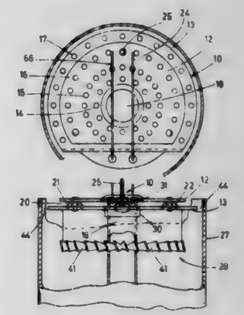
1. A system for controlling the fuel to a burner and its pilot, including,
a supply of fluid fuel,
a main burner adapted to be connected to the supply of fuel,
a pilot burner adapted to be connected to the supply of fuel,
a housing containing a first chamber adapted to be connected to the main burner,
a second chamber in the housing connected to the pilot burner and the first chamber through a valve,
a third chamber in the housing connected to the fuel supply and the second chamber through a valve,
a first valve element normally closed by being spring-urged to seal between the first and second chambers,
a second valve element normally closed by being spring-urged to seal between the second and third chambers and arranged to be unseated by engagement with the first valve element,
a closed fluid pressure system arranged to respond to combustion at the pilot burner and to generate movement of an included piston element within the housing,
means for temporarily and manually unseating the second valve element to permit flow of fuel from the supply through the third chamber and into the second chamber and to the pilot burner where its combustion generates the heat which develops the force in the closed system and the mechanical movement of the piston within the housing,
and an arrangement within the housing for the piston of the closed fluid pressure system to engage the movable valve elements and overcome their spring forces to maintain the elements unseated and release the manual control which had temporarily unseated the second valve element.

4,437,831

BURNER HEAD

Michael F. C. Brooker; Steven J. McKerihen, both of Toronto; Hashmukrai D. Attwala, Scarborough, and Antonio L. Cautillo, Toronto, all of Canada, assignors to Aero Environmental Limited, Toronto, Canada

Filed Oct. 27, 1980, Ser. No. 201,346
Int. Cl.³ F23C *5/08*; B05B *3/00*
U.S. Cl. 431—177 **2 Claims**

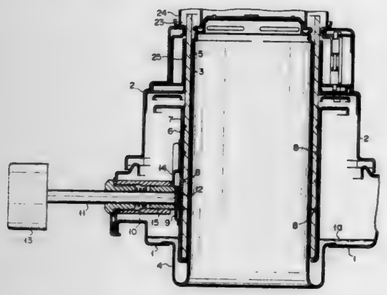


1. A flame spreading gas burner comprising in combination; a gas delivery tube, a gas delivering nozzle adjacent the end of said tube, an air passing inner nozzle plate, an air passing outer flame spreading plate, a turbulator, and an air delivery duct surrounding the foregoing parts, said nozzle plate surrounding said tube adjacent to and upstream of said nozzle, said flame spreading plate closing the end of said tube, said nozzle plate and said flame spreading plate being spaced and at right angles to the cylinder-axis of said tube, said nozzle being that part of the tube between the plates is circumferentially perforate between said nozzle plate and said flame spreading plate, said air delivery duct having an air discharge opening circumference greater than that of said nozzle plate and said spreading plate to provide relatively narrow circumscribing air passage therebetween; said turbulator being in the form of a set of radially disposed and uniformly skewed vanes surrounding said gas delivery tube spaced upstream from said nozzle plate and said spreading plate; the end of said gas delivery tube lying approximately in the centre of said nozzle plate and said spreading plate, said plates being closely adjacent; the area of said air discharge opening and the area of said nozzle plate and of said spreading plate are each at least predominately circular, said spreading plate being of a greater diameter than said nozzle plate, said greater diameter being occupied by a ring of air apertures, said nozzle and spreading plates being spaced apart a distance only approximately equal to that of the perforations in said tube.

4,437,832
LAMP WICK EQUIPMENT FOR A COMBUSTION APPARATUS

Kazunori Amano, Niitsu, and Youichi Sekiwaga, Kamo, both of Japan, assignors to Toshiba Heating Appliances Co., Ltd., Kamo, Japan

Filed Sep. 23, 1982, Ser. No. 422,197
Claims priority, application Japan, Oct. 15, 1981, 56-153261[U]
Int. Cl.³ F23D 8/24
U.S. Cl. 431—304 **8 Claims**

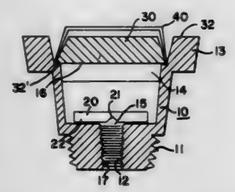


1. A lamp wick equipment for a combustion apparatus which comprises:
- a cylindrical lamp wick whose peripheral wall is provided with at least one opening;
- a cylindrical auxiliary lamp wick holder which is fitted around the lamp wick and comprises an engagement hole formed at that spot on the peripheral wall of said auxiliary lamp wick holder which faces said opening of the lamp wick;
- a lamp wick holder which comprises a cylindrical body fitted around the auxiliary lamp wick holder, and an engagement pawl which is so elastically supported as to be normally advanced into the inside of said cylindrical body, to be retractable therefrom, and to project into the engagement hole of the auxiliary lamp wick holder fitted into said cylindrical body to effect engagement between the lamp wick and lamp wick holder; and
- a lamp wick-removing device comprising at least one leg member which is inserted between the auxiliary lamp wick holder and the lamp wick holder to retract the engagement pawl from the engagement hole, thereby disengaging the lamp wick from the lamp wick holder.

4,437,833
INFRARED RADIATING BURNER ARTICLE

Frank D. Mertz, Bergenfield, N.J., assignor to Red-Ray Manufacturing Company, Inc., Cliffside Park, N.J.

Filed Mar. 5, 1981, Ser. No. 233,851
Int. Cl.³ F23D 13/14
U.S. Cl. 431—329 **7 Claims**

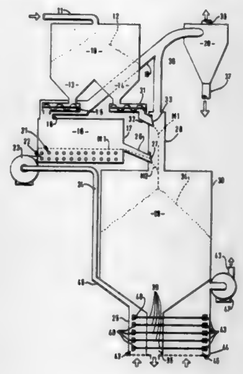


1. An infrared radiating burner article for generating infrared radiation, connectable to means for mixing air and gas and supplying such air/gas mixture thereof, comprising:
- (a) a housing, having a restricted inlet opening in communication with an enlarged opening extending therethrough, through which the air/gas mixture may be fired;
- (b) means for diffusing the air/gas mixture upon firing thereof through the housing opening so as to generate substantial pressure in such air/gas mixture, secured in the housing opening in the path of movement of the air/gas mixture upon firing thereof through the housing opening, said diffuser means including a plate confronting said inlet opening to form a slit orifice along the sides thereof;
- (c) a refractory grid, positioned in the housing opening in the path of movement of the air/gas mixture therethrough upon firing thereof through the housing opening, at a point beyond the location of the diffusing means in such path, such that the air/gas mixture is fired through the refractory grid, which refractory grid includes a surface thereof facing outwardly from the housing;
- (d) means for igniting the air/gas mixture, upon firing thereof through the refractory grid, at the outwardly facing surface of the refractory grid such that the flame heats the outwardly facing surface of the refractory grid so as to generate infrared radiation thereby;
- (e) means for reverberating infrared radiation generated by the refractory grid, secured to the housing so as to be spaced from the outwardly facing surface of the refractory grid in the path of infrared generated thereby, said reverberating means being a screen lying in a spaced relationship to said refractory grid;
- (f) means for enabling the article to be detachably connected to the means for mixing and supplying the air/gas mixture, said means for detachably connecting said article including external threads mounted on restricted portion of said housing, said restricted portion having a restricted opening directing said air/gas mixture to said diffusing means for delivery to said opening; and
- (g) said housing having tapered walls, adjacent said slit orifice between said orifice and said refractory grid.

4,437,834
METHOD OF AND APPARATUS FOR TREATING GRANULAR MATERIAL

Alfredo Vogel, Malvern, England, assignor to Cosworth Research and Development Limited, United Kingdom

Filed Dec. 15, 1981, Ser. No. 330,864
Claims priority, application United Kingdom, Dec. 16, 1980, 8040281; Nov. 23, 1981, 8135225
Int. Cl.³ F27B 15/00, 15/18, 5/02
U.S. Cl. 432—14 **25 Claims**

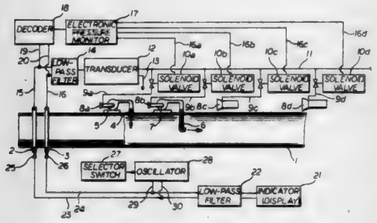


1. A method of reclaiming used foundry sand containing an organic binder comprising the steps of separating a mass of sand from castings, placing the mass of sand in a stationary container and providing a supply of combustion supporting gas to the container wherein to reclaim the sand the mass of sand is maintained without agitation in the container whilst permitting the gas to percolate through the sand and whilst the sand is held in a treatment temperature range of 250° C. to below 400° C.

4,437,835
METHOD OF AND APPARATUS FOR MEASURING THE RATE AT WHICH GASES ARE BLOWN INTO A ROTARY KILN

Clovis L. Martin, Sao Jeronimo, Brazil, assignor to Acos Finos Piratini S.A., Porto Alegre, Brazil and Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 398,800
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1981, 3128556
Int. Cl.³ F27B 7/00
U.S. Cl. 432—103 **12 Claims**



1. A method of measuring the rate at which gases are blown in streams into a rotary kiln, said method comprising the steps of:
- (a) introducing said gases into said kiln in respective streams;
- (b) intercepting each of said streams with a constriction before the stream enters said kiln;
- (c) pneumatically tapping each stream behind the respective constriction to generate a differential pressure between the pressure of each stream upstream of the respective constriction and a static second gas pressure, said differential pressures representing the flow rate of the respective streams into said kiln;
- (d) transducing each differential pressure into respective electrical signals on said rotary kiln whereby each signal represents the flow rate of the respective stream; and
- (e) tapping said electrical signals from said rotary kiln by slip rings on said kiln and stationary taps engaging said slip rings.

5. An apparatus for measuring the rate at which gases are blown in streams into a rotary kiln, said apparatus comprising:
- means for introducing said gases into said rotary kiln in respective streams and including ducts traversed by the respective streams;
- respective constrictions in said ducts traversed by said streams;
- respective means connected to each duct upstream of the respective constrictions for detecting respective differential pressures between the pressure of each stream upstream of the respective constriction and a static second gas pressure, said differential pressures representing the flow rate of gases in the respective streams;
- transducer means on said rotary kiln responsive to said differential pressures for transducing the respective differential pressures into respective electrical signals representing the flow rate of the respective streams;
- slip rings on said rotary kiln receiving said electrical signals; and
- stationary taps engaging said slip rings for tapping said electrical signals from said rotary kiln.

4,437,836
PHOTOPOLYMERIZABLE DENTAL COMPOSITIONS

Robert Schmitz-Josten, Cologne; Carlhans Süling, Odenthal; Wolfgang Podszun, Cologne; Bruno Bömer, Leverkusen; Manfred Borgardt, Wuppertal, and Michael Walkowiak, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,643
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135113
Int. Cl.³ C08F 2/50
U.S. Cl. 433—199 **13 Claims**

13. In the formation of a dental prosthesis, filling or coating comprising forming a composition comprising
- (a) at least one ethylenically unsaturated photopolymerizable monomer,
- (b) at least one photoinitiator selected from the organic mono- or di-carbonyl compounds and
- (c) a photoactivator,

shaping said composition and then polymerizing said composition under the influence of light, the improvement which comprises employing as said photoactivator at least one alkylaminoarylsulphonyl compound of the formula

in which

R_1 and R_2 each independently is a hydrogen atom or an alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, aralkyl or alkaryl group which has 1 to 11 carbon atoms and is optionally substituted by at least one hydroxyl, amino, epoxy, urethane, urea, ester or ether group, or R_1 and R_2 together from a 3- to 6-membered ring, which optionally contains nitrogen, oxygen or sulphur as a hetero-atom,

R_3 independently of R_1, has any of the meanings given for R_1 or is a group of the formula

R_4 and R_5 each independently is a hydrogen atom, an alkyl or alkenyl group which has 1 to 10 carbon atoms and is optionally substituted by halogen, or a halogen atom, or

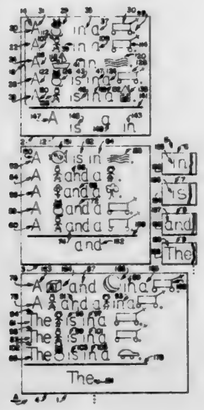
R_4 and R_5 are in ortho-positions relative to one another and, together with the aromatic nucleus, form a 4- to 8-membered ring, and

X is an alkyl or alkenyl group which has 1 to 10 carbon atoms and is optionally substituted by a hydroxyl, amino, urethane, urea or ester group, or is a group of the formula

wherein

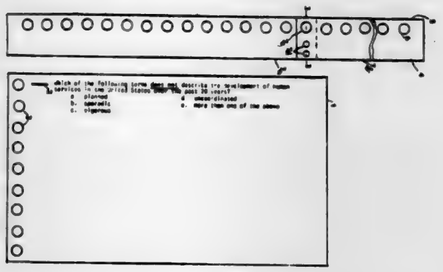
R_6 and R_7, independently of R_1 and R_2, have any of the meanings given above for R_1 and R_2.

4,437,837
EDUCATIONAL AID AND METHOD OF USING SAME
Shirley I. Schnettler, 5311 W. Berteau, Chicago, Ill. 60641, and Elinor Gilloon, 77 N. Michigan Ave., Chicago, Ill. 60611
Filed Dec. 11, 1981, Ser. No. 329,728
Int. Cl.³ G09B 17/00
U.S. Cl. 434—178 8 Claims



1. A method of using an educational aid for facilitating the instruction of learners in the ability to read comprising, in combination:
an ordered set of instructional elements for use seriatim according to a teaching plan, each element including:
background means having indicia thereon;
said indicia including an ordered series of sentence indicia;
a first one of said sentence indicia including a first alphabetic indicia representing a first single high-frequency word to be learned and at least a first rebus indicia representing a word equivalent cooperating with the high frequency word to help form a first sentence to facilitate the decoding said first alphabetic indicia in accordance with a teaching plan;
a second one of said sentence indicia including a second alphabetic indicia representing said single high-frequency word to be learned for repetition purposes and at least a second rebus indicia representing a word equivalent cooperating with the high frequency word to help form a second sentence to facilitate the decoding said second alphabetic indicia in accordance with the teaching plan;
a third one of said sentence indicia including a third alphabetic indicia representing a second single high-frequency word to be learned and at least a third rebus indicia representing a word equivalent cooperating with the second high-frequency word to help form a third sentence to facilitate the decoding said third alphabetic indicia in accordance with the teaching plan, wherein said third one of said sentence indicia includes a fourth alphabetic indicia representing said single high-frequency word to be learned for reinforcement purposes;
a fourth one of said sentence indicia including a fifth alphabetic indicia representing said second single high-frequency word to be learned for repetition purposes and at least a fourth rebus indicia representing a word equivalent cooperating with said second high-frequency word to help form a fourth sentence to facilitate the decoding said fifth alphabetic indicia in accordance with the teaching plan;
displaying the first one of said sentence indicia to the learner according to the teaching plan;
directing the attention of the learner to said first alphabetic indicia representing said single high-frequency word to be learned for explaining said word to the learner;
displaying the second one of said sentence indicia to the learner;
requesting the learner to read said second sentence to facilitate the decoding of said second indicia;
displaying the third one of said sentence indicia to the learner;
requesting the learner to read said third sentence to facilitate the decoding said third alphabetic indicia; and
repeating the displaying and requesting steps for the fourth and any additional ones of said sentence indicia;
whereby each subsequent sentence indicia includes at the most only one new alphabetic indicia representing a single new high-frequency word to be learned and possibly some alphabetic indicia representing one or more previously learned high-frequency words.

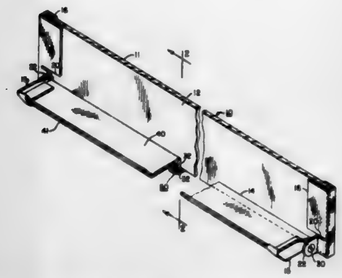
4,437,838
APPARATUS FOR PREPARING EXAMINATIONS
Robert T. Tauber, and Randolph T. Tauber, both of Erie, Pa., assignors to TTK Communication Products, Erie, Pa.
Filed Apr. 26, 1982, Ser. No. 371,736
Int. Cl.³ G09B 1/10
U.S. Cl. 434—363 2 Claims



1. Equipment for preparing an examination of a plurality of questions comprising a plurality of rectangular cards each carrying a single question and with space for non-reproducing administrative information such as instructions for grading answers and records of student response to the question, said cards being of uniform size having along the left-hand margin a vertical row of a plurality of uniformly spaced holes and an index mark of reproducible ink indicating the top line and the left-hand margin of the question, and a card holder comprising a strip of length equal to or greater than the length of the page on which the examination questions are to be assembled, said strip having a left-hand margin underlying and covered by the left-hand margin of the cards and a plurality of uniformly spaced pins registering with and frictionally gripping the holes in the cards, the cards being laid single fashion on the strip with the holes over the pins and with the question on each card exposed and with the remainder of the card covered by the card containing the following question, whereby a photocopy of the cards assembled on the card holder after placing on the photocopy the reproducible number for each question on its index mark provides a master copy of a page of examination questions which may be reproduced to provide multiple copies.

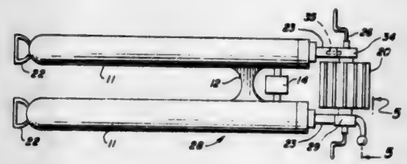
4,437,839
CHALKBOARD WITH HINGED CHALK RAIL
John H. Stempel, 117 N. Blanco, Coleman, Tex. 76834
Filed Apr. 19, 1982, Ser. No. 369,417
Int. Cl.³ B43L 21/04
U.S. Cl. 434—417 14 Claims

1. In a chalkboard having a board presenting an indicia receiving front surface with upright lateral margins,
a chalk rail comprising
a ledge coextensive with the chalk rail and adjacent the lower margin of the indicia receiving board and of sufficient transverse width to receive markers and erasers,
upright flanges projecting perpendicularly from the lower end portions of the upright lateral margins of said board adjacent the ends of said chalk rail,
hinge pins rotatably connecting said ends of said rail to the flanges so as to permit pivotal movement of said rail relative to said board, and



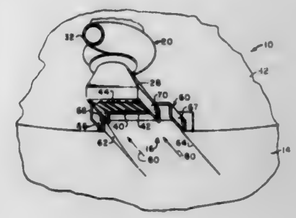
means for limiting pivotal movement of said rail between an up position folded contiguous and substantially parallel to said board and a down position substantially perpendicular to said board whereby said chalkboard is packagable for shipment in its up position and functions in its down position to provide the supporting ledge,
upright frame members at said upright lateral margins of said board,
said upright flanges being integral with the lower end portions of the frame members.

4,437,840
SWIMMING WHEEL APPARATUS
Makram I. Filippos, 102 Oakland Ave., Jersey City, N.J. 07306
Filed Oct. 30, 1981, Ser. No. 316,771
Int. Cl.³ A63B 35/04
U.S. Cl. 440—27 2 Claims



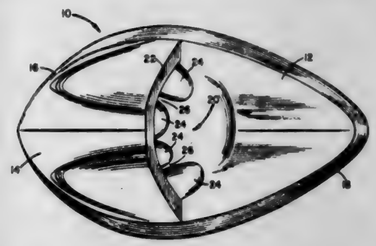
1. A swimming wheel apparatus comprising in combination: a frame; a pair of hollow pontoons separated by said frame and made an integral part thereof, so that said pontoons and said frame together physically touch and support a reclining rider; a paddle wheel powered by said rider for propelling said craft on a water surface, said paddle wheel disposed on straight beams extending from and colinear with said pontoons; a pair of stirrups disposed at one end of said pontoons for said rider's feet, wherein means to steer said craft include a mechanism to tilt said paddle wheel, said mechanism utilizing a manually rotatable knob connected by a flexible shaft to a screw which supports a bearing block which further supports one end of a paddle wheel shaft.

4,437,841
OUTBOARD JET DRIVE STEERING MECHANISM
Richard C. Stallman, 1311 Dayton Ave., Alameda, Calif. 94501
Filed Nov. 4, 1981, Ser. No. 317,999
Int. Cl.³ B63H 11/02
U.S. Cl. 440—42 4 Claims



1. A steering control apparatus for an outboard engine driven jet boat comprising
a boat hull having a bottom adapted to plane along the surface of the water,
a jet outboard propulsion apparatus having means defining a water inlet port and means defining a water outlet port, said water inlet port having an upper lip and a lower lip,
means defining a conduit disposed along said hull beginning proximate the stern of said hull and extending longitudinally forward in said hull,
said upper lip of said water inlet port disposed proximate the extended upper surface of said conduit, and said lower lip of said water inlet port disposed proximate the extended bottom surface of said hull,
means for extending said conduit sternward proximate said inlet port comprising
a channel top member having a pair of side skirts depending downwardly therefrom to partially enclose said upper lip of said inlet port, and
means for preventing entrainment of air into said inlet port during a turning maneuver of said jet boat.

4,437,842
SURFING DEVICE
Terrence E. Connor, 8146-D Imperial Ave., Lemon Grove, Calif. 92045
Filed Mar. 5, 1982, Ser. No. 354,155
Int. Cl.³ A63C 15/00
U.S. Cl. 441—65 6 Claims



1. A device for facilitating an enhancing bodysurfing, adapted to receive a hand of the surfer, and selectedly supporting one or both hands of the surfer so that the upper arms and head of the surfer are raised somewhat during surfing, whereby increased speed and buoyancy through the water are provided, the device comprising:
an elongated, buoyant planar member having its widest portion at approximately the midpoint of the length

thereof and with the sides of the member curving inwardly toward the front and rear to provide a streamlined configuration;

a compartment located at the upper forward end of said planar member, the major portion of said compartment being located forwardly of a transverse horizontal midline of said planar member, said compartment having an opening in the rear thereof to receive the hand of the surfer with the heel of the palm of the surfer being located upon said planar member at approximately said transverse midline thereof, that portion of the upper surface of the planar member adjacent said compartment opening thus defining a support surface for the heel of the palm of the surfer, there being a substantial portion of said planar member trailing rearwardly of said support surface; and

a top on said compartment extending upwardly and rearwardly from the forward end portion of the planar member, to define a streamlined, generally arched outer surface extending approximately to and above said planar transverse midline, thus to form an additional, second support surface for the other hand of the surfer;

whereby said planar member support surface is employed by one hand of the surfer during surfing to raise somewhat the upper arms and head of the surfer, thus to increase buoyancy and speed through the water, the other hand of the surfer being selectively placed upon said compartment top or trailing alongside the body of the surfer.

4,437,843

DEVICE FOR SELF-ACTING LIMITATION OF SPEED OF ASCENDING DIVERS

Theo Birle, Quellenweg 11, 8531 Markt Erlbach, Fed. Rep. of Germany

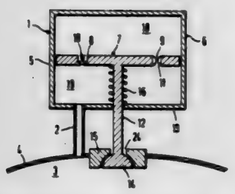
PCT No. PCT/DE81/00075, § 371 Date Jan. 22, 1982, § 102(e) Date Jan. 22, 1982, PCT Pub. No. WO81/03313, PCT Pub. Date Nov. 26, 1981

PCT Filed May 22, 1981, Ser. No. 346,082

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019993; Jul. 24, 1980, 3028070

Int. Cl.³ B63C 9/12

U.S. Cl. 441—96 **17 Claims**



1. Apparatus for limiting the ascending speed of a diver in air-filled diving equipment comprising means defining a chamber, a separating means dividing said chamber into a first compartment and a second compartment, communicating means communicating said first compartment with the inner space of said diving equipment, said separating means being movable so as to provide variable volumes for said first and second compartments, a restriction means between said first and second compartments, a check valve between said first and second compartments, and a valve means comprising a closure member connected to said separating means and movable with said separating means, said valve means further comprising a valve seat cooperable with said closure member for opening and closing said valve means, said valve means being operably connected with the inner space of said diving equipment so that when said valve means is open, the pressure within the inner space of said diving equipment is relieved to decrease the rate of ascent of said diver, said valve means being opened when the pressure in said first compartment exceeds a value which is related to the passage of fluid through said restriction means from said first compartment to said second compartment.

4,437,844

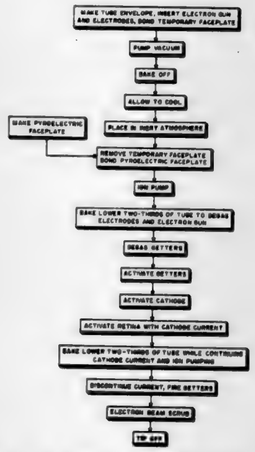
METHOD OF MAKING ORGANIC-RETINA (PYROELECTRIC) VIDICON

Ferdinand C. Petito, Alexandria, and Gerald Klauber, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1981, Ser. No. 335,921

Int. Cl.³ H01J 31/49

U.S. Cl. 445—5 **3 Claims**



1. A method of making an organic-retina vidicon which includes the following steps:

(a) make a glass tube envelope, insert the electron gun, the getters, and other electrodes in the lower two-thirds of the envelope, bond to the envelope a temporary faceplate to produce a tube assembly;

(b) vacuum pump the assembly;

(c) bake the assembly;

(d) allow the assembly to cool;

(e) place the assembly in an inert atmosphere;

(f) make an organic-retina faceplate and place in the inert atmosphere containing the assembly;

(g) remove the temporary faceplate and bond the organic-retina on the tube envelope to produce a new assembly;

(h) vacuum pump the new assembly;

(i) bake the lower two-thirds of the new assembly;

(j) heat the getters to degas same;

(k) activate the electron gun cathode by heating same;

(l) activate the retina by heating with anode current;

(m) bake the lower two-thirds of the new assembly while continuing anode current;

(n) discontinue anode current, fire getters;

(o) electron beam scrub the retina and other tube electrodes;

(p) tip-off the envelope.

4,437,845

METHOD FOR MANUFACTURING A GAS-FILLED DISCHARGE TUBE FOR USE AS TRANSIENT PROTECTION

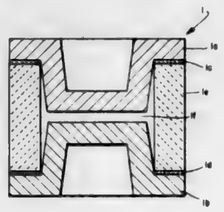
C. Arne Schleimann-Jensen, Stockholm, Sweden, assignor to TII Industries, Inc., Copiague, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,485

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ H01T 21/00

U.S. Cl. 445—39 **6 Claims**



1. A method for manufacturing a gas-filled discharge tube, designed, e.g., as transient protector, containing tube components comprised of at least two electrodes and an insulating body holding the electrodes joined vacuum-tight, with the electrodes and the insulating body dimensioned and arranged in such a way that at least one discharge gap is present in the tube, comprising the steps of:

A. sealing at a suitable temperature the components of the tube at substantially atmospheric pressure in a light gas mixed with another gas which, in view of the intended function of the tube is desirable and heavier than the first-mentioned gas, and

B. reducing the pressure exteriorally of said tube below atmospheric pressure so as to obtain a pressure lower than that pressure at sealing temperature, while simultaneously lowering the temperature to such extent that the heavy gas can only to an insignificant degree penetrate the tube walls through diffusion and/or effusion, whereas the enclosed light gas can diffuse and/or be effused through the walls such that, as a result of the partial or total pressure difference, it will migrate through the walls of the tube, thus causing a reduction in the total gas pressure inside the tube.

4,437,846

SPEED LIMITING ROTARY COUPLING

Istvan Ragaly, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,967

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942737

Int. Cl.³ F16D 7/06

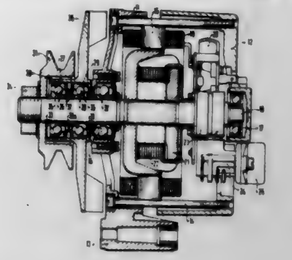
U.S. Cl. 464—36 **14 Claims**

1. Electric generator for a motor vehicle, having a shaft driven from the vehicle engine, having a fan for cooling the generator and having, seated on said shaft a friction coupling for driving said fan with a speed-limiting drive characteristic for said fan, which fan comprises:

first and second bearings each having rolling bearing elements, a first bearing race ring (26,28; 126, 128; 226,228) supported on said generator shaft and a second bearing race ring (27,29; 127,129; 227,229) affixed to said fan;

said first and second ring of each said bearing being constituted so as to hold said bearing elements, as the latter roll, at a constant spacing from said generator shaft, and

spring action pressure-producing means (37) for exerting pressure parallel to the axis of said shaft mounted for exerting said pressure as a relative force acting on said second rings (27,29; 127,129; 227,229) of both said bearings.



4,437,847

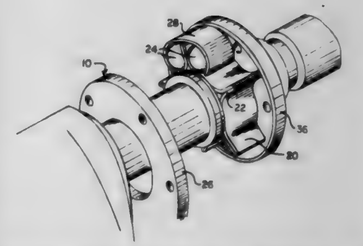
FLEXIBLE COUPLING

Michael M. Callstrat, Sykesville, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 146,253, May 5, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,369

Int. Cl.³ F16D 3/74

U.S. Cl. 464—74 **6 Claims**



1. An improved flexible coupling for transmitting torque between a driving and driven shaft, comprising:

(a) a plurality of elastomeric elements;

(b) first hub means fixed to a shaft, said first hub means having blade means comprised of a plurality of blades engaging said elastomeric elements;

(c) sleeve means comprised of a plurality of cylindrical segments having radially inwardly extending straight end portions circumferentially arranged about said first hub means, the end portions of adjacent segments abutting over a substantial area thereof, said segments being positioned radially toward said blade means to maintain said plurality of elastomeric elements in engagement with said blades during rotation of said coupling;

(d) retainer means having chamfered guide means engaging said sleeve means; and

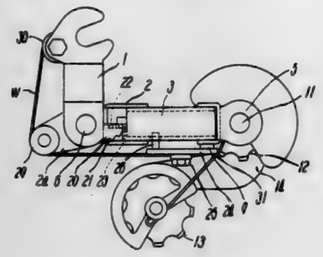
(e) second hub means fixed to a second shaft placed in substantial alignment with said first shaft, said second hub means having chamfered guide means engaging said sleeve means and being fixed to said retainer means by fastening means, whereby rotation of one of said hub means will cause rotation of the other hub means through said elastomeric elements.

4,437,848

DERAILLEUR FOR A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Mar. 9, 1981, Ser. No. 241,642
Claims priority, application Japan, Mar. 15, 1980, 55-33684; Sep. 19, 1980, 55-134347[U]; Sep. 19, 1980, 55-134348[U]; Sep. 19, 1980, 55-134349[U]
Int. Cl.³ F16H 9/00
U.S. Cl. 474—82 14 Claims



1. A derailleur for shifting a chain among the sprockets of a multistage sprocket assembly comprising:

(a) a fixing member fixed to a frame of the bicycle;

(b) a derailleur body being provided with a four link parallelogram mechanism comprising a support member, a pair of linkage members connected pivotably to said support member, and a movable member which has a chain guide and is connected pivotably to said linkage members, and with a return spring for biasing said movable member unidirectionally with respect to said support member,

said derailleur body being supported swingably with respect to said fixing member through said support member, said chain guide at said derailleur body being supported swingably with respect to said movable member, said movable member and chain guide having therebetween a tension spring, said spring biasing said derailleur body counterclockwise with respect to said fixing member, a member at said derailleur body operable with respect to said support member thereat, having a fixture for a control wire which is operated to transform said derailleur body against said return spring and move said chain guide axially of said sprockets, and swing said derailleur body with respect to said fixing member against said tension spring, to move said chair guide radially of said sprockets; and

(c) an intermittent feed mechanism interposed between said fixing member and said derailleur body, said mechanism being operated by said wire to swing said derailleur body intermittently corresponding to the speed change stages with respect to said fixing member, and to transform said derailleur body after a swinging motion thereof.

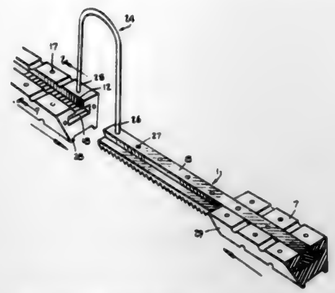
4,437,849

REPLACEMENT DRIVE BELT

Winfred M. Berg, East Rockaway, N.Y., assignor to Winfred M. Berg, Inc., East Rockaway, N.Y.

Filed Jun. 12, 1979, Ser. No. 47,716
Int. Cl.³ F16G 7/00
U.S. Cl. 474—256 15 Claims

1. A replacement drive belt comprising an elongated belt portion of indeterminate length adapted for being cut adjacent to one end for forming loops of varying sizes and having coupling means for connecting its opposite ends, said coupling means comprising a first elongated ratchet tie having immediately adjacent ratchet teeth and extending from the belt end opposite to said cut end and adapted to adjustably engage and to form a connection with second ratchet teeth positioned



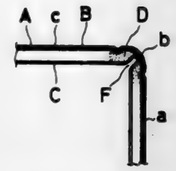
immediately adjacent to each other and extending along said belt from the cut end.

4,437,850

PROCESS OF MANUFACTURING OF REINFORCED CORRUGATED CARDBOARD TYPE PACKAGING CONTAINER

Masayuki Ono, Saitama, Japan, assignor to Kabushiki Kaisha Tomoku, Hokkaido, Japan

Filed Oct. 13, 1981, Ser. No. 310,817
Claims priority, application Japan, Oct. 14, 1980, 55-142482
Int. Cl.³ B31B 1/74, 49/02
U.S. Cl. 493—89 3 Claims



1. A process of manufacturing a reinforced corrugated cardboard-type of packaging container, comprising the steps of providing a corrugated core liner and a pair of side liners, adhering one side surface of the corrugated core liner to one side liner with an aqueous adhesive solution, applying an aqueous adhesive solution to the other side surface of the corrugated core liner, further applying a reinforcing agent to produce a reinforced region, adhering the other side liner to the other side of the corrugated core liner, heating the two side liners and the corrugated core liner, thereby adhering the side liners and the corrugated core liner together by gelatinizing the aqueous adhesive solutions to form a corrugated cardboard while the reinforcing agent remains unhardened, forming scored lines in said reinforced region before the hardening of the reinforcing agent is completed, and folding the corrugated coardboard in said reinforced region to form a packaging container.

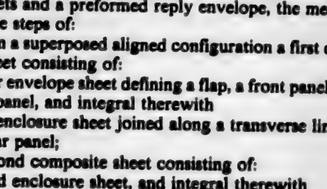
4,437,851

METHOD AND APPARATUS FOR HANDLING AND SETTING UP LARGE SIZE SLIT-BOXES

Sten A. Salenbo, Berlinggatan 3, 244 00 Kävlinge, Sweden

Filed Jun. 22, 1981, Ser. No. 275,691
Claims priority, application Sweden, Jun. 25, 1980, 8004702
Int. Cl.³ B31B 5/02
U.S. Cl. 493—124 9 Claims

6. An apparatus for handling and setting up large slit-boxes of the type in which the slit-box is formed by a generally tubular slit-box blank having sides, two of which sides have opposed bottom inner flaps connected thereto and two other sides of which have opposed outer bottom flaps connected thereto, comprising; a magazine for receiving a pile of generally flat slit-box blanks, a catcher means displacable between a first position above the magazine and a second position to the side thereof for setting up the slit-box by successively engaging the uppermost slit-box blank in the magazine and moving the same to a setting up position, said catcher means including a catcher carriage which is displaceable between a position above the magazine and setting up position, said catcher carriage including a first set of catcher devices intended to engage one of the sides of the slit-box blank which faces upwardly and also engage the bottom flap connected to the first said side,



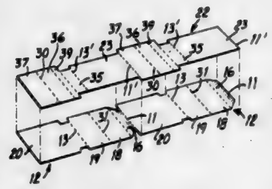
which bottom flap is an outer bottom flap, further catcher devices positioned to engage another side of the slit-box blank adjacent to the first said side, which second side also faces upwardly when the slit-box blank is positioned in the magazine, means for moving the catcher carriage between said two positions, means for actuating the catcher devices and means for controlling operation of the catcher devices so that the second catcher devices associated with the second side of the slit-box container disengage that side before the first set of catcher devices disengage the first said side, means for folding in the two inner bottom flaps into the space between the two opposed outer bottom flaps and means for folding in the outer bottom flaps over the folded in inner bottom flaps.

4,437,852

METHOD OF PRODUCING MAILER WITH SELF CONTAINED REPLY ENVELOPE

Kurt E. Volk, Jr., Westport; Everett H. Herbert, Fairfield, and John W. Stenner, Orange, all of Conn., assignors to Kurt H. Volk, Inc., Milford, Conn.

Filed Dec. 14, 1981, Ser. No. 330,320
Int. Cl.³ B31B 49/04
U.S. Cl. 493—216 19 Claims



1. A method for producing an article suitable for mailing that consists of an outer envelope containing a plurality of enclosure sheets and a preformed reply envelope, the method comprising the steps of:

(a) mating in a superposed aligned configuration a first composite sheet consisting of:

i. an outer envelope sheet defining a flap, a front panel and a rear panel, and integral therewith

ii. a first enclosure sheet joined along a transverse line to said rear panel;

and a second composite sheet consisting of:

i. a second enclosure sheet, and integral therewith

ii. a reply envelope sheet defining a flap, a front panel, and a rear panel, said reply envelope sheet joined along a transverse line to said second enclosure sheet;

(b) folding the composite sheets to superpose the reply envelope rear panel with the reply envelope front panel;

(c) bonding the longitudinal edges of the front and rear reply envelope panels to form a reply envelope pocket;

(d) further folding the composite sheets to position the reply envelope, first enclosure sheet and second enclosure sheet between the front and rear panels of the outer envelope sheet;

(e) bonding the longitudinal edges of the outer envelope front and rear panels to form an outer envelope pocket containing the reply envelope, first and second enclosure sheets; and

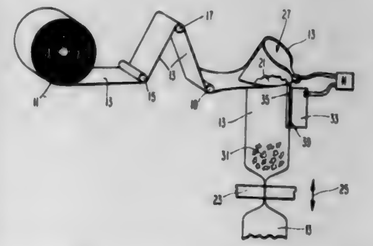
(f) while the outer envelope flap is open, simultaneously separating the reply envelope from the second enclosure sheet, and the first enclosure sheet from the outer envelope rear panel, to thereby provide an envelope containing separate first and second enclosure sheets, and a separate preformed reply envelope.

4,437,853

SEAM SEALING DEVICE AND TECHNIQUE

Bruce E. Metz, Wilmington, Del., assignor to Athena Controls Inc., Plymouth Meeting, Pa.

Filed Aug. 19, 1981, Ser. No. 294,336
Int. Cl.³ B65B 9/08
U.S. Cl. 493—302 5 Claims



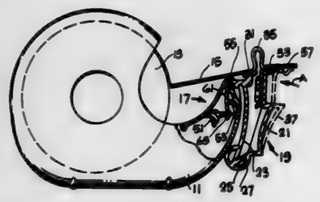
1. An arrangement for producing a sealed seam of a plastic package, which plastic package is formed in part by pulling at least a portion of a sheet of plastic material, which has first and second edge sections, through a forming means whereby said first edge section is guided to form an overlay section with said second edge section, comprising in combination: heat seal bar means disposed to come in contact, along said overlay section, with the side of the plastic material which becomes the outside of the package as said plastic material moves along said heat bar means, said heat seal bar means formed to generate heat and transfer said heat to said overlay section of said plastic material; tongue element means formed and disposed to form a slit between a first side thereof and said heat seal bar means; and flexible heating means secured to said first side of said tongue element and disposed to come in contact, along said overlay section, with the side of the plastic material which becomes the inside of the package to transfer heat to said overlay section of said plastic material as said plastic material moves within said slit, whereby a seam can be rapidly formed along said overlay section in response to the direct heat transfer from said heat seal bar and to the direct heat transfer from said flexible heating means.

4,437,854

TAPE ROLL HOLDER HAVING TAB FORMING DEVICE

Jack P. Knoop, 326 Avenida Arboles, San Jose, Calif. 95123

Filed Aug. 20, 1981, Ser. No. 294,533
Int. Cl.³ B26F 3/02
U.S. Cl. 493—353 1 Claim



1. In combination, a dispenser of adhesive tape and a device for forming a tab in the tape, comprising,

roll holder means for supporting a roll of the tape, said roll holder means having a forward upwardly extending tear-off station establishing a tape dispensing path, and

a molded polymer one-piece tab forming device detachably connectable to said roll holder means in said tape dispensing path, said device having a pair of upwardly extending forward and rearward struts and a spring, said struts having upper and lower extremities, respectively, and being connected together at said lower extremities by said spring, said struts being biased by said spring to diverge upwardly whereby said extremities normally are in a spaced open position in the direction of said tape dispensing path, said forward strut being movable in the tape dispensing path toward said rearward strut against the bias of the spring to a closed position proximate to the tear-off station of the roll holder to thereby form a tab in said tape,

said tear-off station of the roll holder means having integrally formed internally disposed anchor members, said rearward strut of said device extending into the interior of said tear-off station and detachably engaging said anchor means whereby to enable rapid coupling of the device to the dispenser without tools, said upper extremity of the forward strut having at least one integral tang on the side thereof between the struts and defining therewith a slot, and an inverted hook shaped member having one portion detachably engaged with said tang within the slot and extending forwardly over the upper extremity of the forward strut, the forward end of said member being serrated to provide a tape cutting edge.

4,437,855

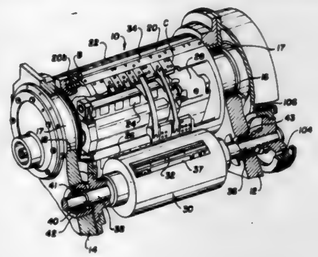
REDUCTION OF CUTOFF LENGTH FOR FOLDING MECHANISMS

Lee Bullen, Dallas, Tex., assignor to Publishers Equipment Corporation, Carrollton, Tex.

Continuation of Ser. No. 133,342, Mar. 24, 1980, abandoned. This application Apr. 21, 1982, Ser. No. 370,159
Int. Cl.³ B65H 45/16
U.S. Cl. 493—424 3 Claims

1. A method of reducing the cutoff length of an existing paper cutting and folding unit operable only at a single cutoff length, said folder having a main frame, a folding cylinder rotatably supported thereon, a cutting cylinder rotatably supported thereon at a fixed non-changeable distance from said folding cylinder, said folding cylinder including a body portion supporting a synchronously timed tucking blade internally thereof, operable pin assemblies mounted adjacent the outer periphery of said body portion, and adjustable bands mounted to define at least a portion of the outer circumferential surface of said folding cylinder, said cutting cylinder including a body portion supporting cutting assemblies in pockets formed adjacent the outer periphery thereof, the steps comprising,

removing said pin assemblies and adjustable bands from said body of said folding cylinder, and removing said cutting assemblies from said pockets formed in said body of said cutting cylinder, reducing the diameter of said body of said folding cylinder by permanently removing material therefrom, increasing the size of said pockets formed in said cutting cylinder by permanently removing material from the body thereof, reinstalling said pin assemblies and



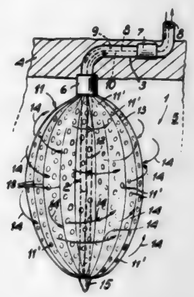
adjustable bands upon the body of said folding cylinder, reinstalling the cutting assemblies in said pockets in said body of said cylinder, and resupporting said cutting and folding cylinders within said main frame with at least one of said cylinders repositioned with respect to the other upon said main frame at a different, non-changeable distance from the other thereof shorter than their original distance from one another.

4,437,856

PERITONEAL CATHETER DEVICE FOR DIALYSIS

Alberto Valli, Via Cappelletta, 29, Cogliate (Province of Milano), Italy

Filed Feb. 9, 1981, Ser. No. 232,495
Int. Cl.³ A61M 25/00, 1/03
U.S. Cl. 604—29 4 Claims



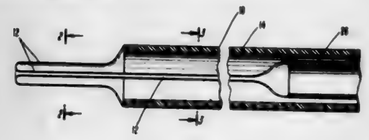
1. A peritoneal catheter device for dialysis comprising a rigid catheter portion of elongated tubular shape having an interior, a length, a distal and a proximal end thereof and a plurality of openings spaced apart from each other along the entire length of the catheter portion, said tubular catheter portion being closed at said distal end and defining a cul-de-sec, a longitudinal partition wall extending within said catheter portion along the entire length thereof and dividing the catheter interior into two separated delivery and discharge conduits, supply and discharge ducts for a dialysing liquid connected at said proximal end of said rigid catheter portion with said separated conduits, an inflatable and expandable membrane generally of tubular shape surrounding said catheter portion throughout its length and fixed near said distal and proximal end to define an expandable chamber between said catheter and said inflatable and expandable membrane adapted to be filled with dialysing liquid, said inflatable membrane having perforations defining means for the passage of said dialysing liquid therethrough and in use expanding to a substantially balloon-like shape, said catheter being adapted in use to be inserted in a body cavity such as the peritoneal cavity between the bends of the intestine to deliver and draw the dialysing liquid through the openings of said catheter.

4,437,857

METHOD AND APPARATUS FOR TRAVERSING BLOOD VESSELS

Seth Goldstein, Bethesda, Md., and Robert Jones, Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Mar. 19, 1979, Ser. No. 22,219
Int. Cl.³ A61M 25/00
U.S. Cl. 604—53 2 Claims



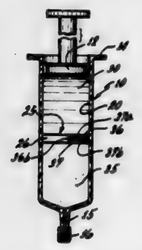
1. The method of gaining access to a relatively inaccessible region of a blood vessel comprising entering the vascular system with the leading end of a primary flexible catheter tube, at a point of entry remote from said region, working the primary catheter tube through the vascular system so that its leading end approaches said region and then everting a second flexible catheter tube contained within said primary tube from the leading end of the primary tube to approach more closely to said region.

4,437,858

SEPARATOR DISC AND HYPODERMIC SYRINGE INCORPORATING THE SAME AND METHOD

Perla J. Ty, 3640-B S. Main St., Santa Ana, Calif. 92707

Continuation-in-part of Ser. No. 869,798, Jan. 16, 1978, abandoned. This application Apr. 22, 1982, Ser. No. 370,688
Int. Cl.³ A61M 5/18
U.S. Cl. 604—90 19 Claims



1. Apparatus for separately storing and admixing at least two materials, comprising:

at least one tubular barrel means having an effective bore of essentially uniform diameter along the length thereof, a plunger at one end of said tubular barrel means adapted to be moved through said tubular barrel means,

disc means positioned in said tubular barrel means and in sealing engagement with the wall thereof along the periphery of said disc and operative to divide said tubular barrel means into at least two separate chambers,

said disc being so constructed and arranged as to be response to pressure and/or force conditions on one side thereof to form a communicating path between said chambers as a result of deflection of at least a portion of said disc away from said tubular barrel means, and

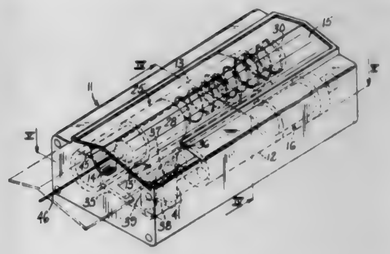
said bore being essentially free of radially inwardly extending protrusions whereby said plunger may move freely and easily through said bore.

4,437,859

HYDRAULIC SYRINGE DRIVE

Craig M. Whitehouse, New Haven; Nigel Cox, Cheshire; Allan G. Burt, East Haven, and Daniel R. Snyder, New Haven, all of Conn., assignors to DRS Infusion Systems, Inc., New Haven, Conn.

Filed Aug. 3, 1981, Ser. No. 287,861
Int. Cl.³ A61M 1/00
U.S. Cl. 604—131 23 Claims



1. An automatic drive for a hypodermic syringe having a barrel for containing a fluid medicament and a plunger adapted to eject said medicament, the drive comprising a housing, means in said housing for supporting a syringe in operative position, first and second variable volume chambers each having a movable wall element, a conduit interconnecting said chambers to constitute a constant voluem capacity, a substantially incompressible fluid filling said capacity, means associated with the first chamber for forcing fluid contained therein into the second chamber, a syringe driver associated with one of the movable wall elements and operatively engageable with the syringe plunger, means biasing the movable wall element of the second chamber in a fluid-expelling direction, adjustable means associated with the conduit for accurate metering of the fluid flow from the second chamber to the first chamber, said adjustable means automatically operative to adjust the fluid flow during the operation of said automatic drive to maintain said fluid flow constant responsive to ambient pressure and to pressure changes upstream and downstream of said adjustable means.

4,437,860

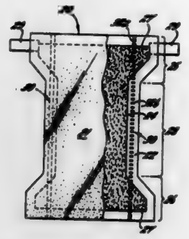
DISPOSABLE DIAPER WITH ELASTICIZED LEG OPENINGS

Wayne C. Sigl, and Richard H. Frick, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 21, 1981, Ser. No. 294,843
Int. Cl.³ A61B 13/02
U.S. Cl. 604—385 7 Claims

1. In a disposable diaper having an absorbent batt interposed between a fluid permeable facing sheet and a fluid impervious backing sheet and having a generally hour glass shape with a narrow centrally disposed crotch portion and wider waistband portions at the ends thereof, the improvement comprising, prestretched elastic means extending along the length of the diaper at each side, said elastic disposed outboard of the absorbent batt in the crotch portion and across the laterally extending ears of the absorbent batt in the waistband portions of the diaper, adhesive means for securing said elastic to at least one of said facing sheet and backing sheet substantially along the

entire length of said diaper, said adhesive being applied in the form of longitudinally spaced apart concentrations, said concentrations in the waistband portion being substantially larger and more closely spaced than said concentrations in the crotch



portions of the diaper to substantially decrease the retractive force of the stretched elastic in the waistband portions to thereby reduce gathering thereof and diminish undesirable elastic creep.

4,437,861

COAL-DEASHING PROCESS

Tetsuo Ishizuka; Hiroshi Hotta, and Yoshichika Nishimura, all of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Feb. 16, 1983, Ser. No. 467,063

Claims priority, application Japan, Feb. 19, 1982, 57-26586; Feb. 19, 1982, 57-26587; Feb. 19, 1982, 57-26588; Feb. 19, 1982, 57-26589

Int. Cl.³ C10L *5/04, 10/06*

U.S. Cl. 44—1 R **5 Claims**

1. A process for deashing coal containing inorganic impurities which comprises the steps of:

preparing an aqueous suspension of finely divided particles of coal mixed with said impurity particles;

adding to said suspension an effective amount of a water-soluble or water-dispersible copolymer having a molecular weight from about 100,000 to about 30,000,000 of a hydrophilic monomeric unit having a solubility in water greater than 15% by weight at 20° C. and a hydrophobic monomeric unit having a solubility in water less than 10% by weight at 20° C., the proportions of said hydrophilic unit and said hydrophobic unit in said copolymer being a ratio from 99:1 to 20:80 parts by weight;

flocculating said coal particles selectively as flocs while leaving the remainder containing said inorganic impurities suspended; and

recovering said flocs from said suspension.

4,437,862

WATER-PROOF BRIQUETTE AND METHOD FOR PRODUCTION THEREOF

Kyu B. Whang, Seoul, Rep. of Korea, assignor to International Monopoly Association, Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,541

Claims priority, application Japan, Oct. 6, 1981, 56-158127

Int. Cl.³ C10L *5/10, 11/00*

U.S. Cl. 44—6 **19 Claims**

10. A method for production of a water-proof briquette which comprises mixing an oxidizing agent with powders of a combustible solid material, adding a solution of brittle nitrocotton and/or cellulose acetate to the mixture followed by further mixing, compression-molding the resultant mixture and then applying at least once a solution of brittle nitrocotton and/or cellulose acetate on the surface of the molded product.

4,437,863

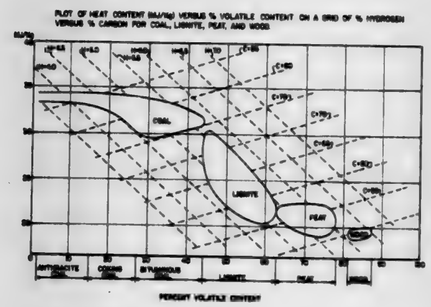
PEAT FUEL SLURRY

Brooks M. Whitehurst, 1983 Hoods Creek Dr., New Bern, N.C. 28560, and Donald F. Clemens, 1701 Sulgrave Rd., Greenville, N.C. 27834

Filed Feb. 5, 1982, Ser. No. 346,161

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **3 Claims**



1. A peat fuel composition (30 to 50% peat) which is a product of dispersing a ground North Carolina type peat with a moisture of 20–30% by weight in a fuel oil mixture of No. 6 fuel oil (40–50%) and No. 2 fuel oil (10–20%) and aerating said peat to entrap air in the composition.

4,437,864

PLANT WITH A REACTOR CONTAINER, PARTICULARLY FOR THE GASIFICATION OF FOSSIL FUELS

Rainer Gorris, Ratingen; Josef Hibbel, Oberhausen; Ulrich Gerhardus, Oberhausen, and Heinrich Scheve, Oberhausen, all of Fed. Rep. of Germany, assignors to Karrena GmbH, Düsseldorf; Ruhrchemi AG, Oberhausen and Ruhrkohle AG, Essen, all of, Fed. Rep. of Germany

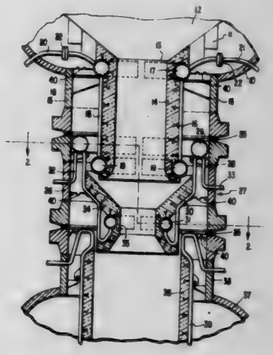
PCT No. PCT/DE81/00044, § 371 Date Nov. 9, 1981, § 102(e) Date Nov. 9, 1981, PCT Pub. No. WO81/02743, PCT Pub. Date Oct. 1, 1981

PCT Filed Mar. 13, 1981, Ser. No. 321,171

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009851

Int. Cl.³ C10J *3/20*

U.S. Cl. 48—62 R **18 Claims**



1. A plant for the gasification of fossil fuels which includes a reactor container and a further plant component attached to said container, said reactor container having a longitudinal axis, a fireproof lining which determines the inner cross-sectional area of said container, a discharge opening and a connecting part extending outwardly from said discharge opening, said connecting part having an outer casing surrounding a fireproof lining thereof and forming an annular space therebetween;

wherein, the improvement comprises an intermediate ring interposed between said connecting part and said further plant component for attaching said connecting part to said further plant component, said intermediate ring including a fireproof lining having a reduced inner cross-sectional area at a portion thereof which is less than the inner cross-sectional area of the fireproof lining of said reactor container, said reduced cross-sectional area being the smallest cross-sectional area of the connection between said reactor container and said further plant component;

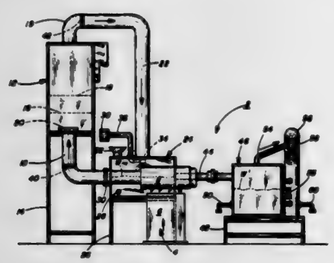
and wherein said intermediate ring further includes an outer casing surrounding the fireproof lining thereof and forming an annular space therebetween, the outer casing of said intermediate ring having one end adjacent the outer casing of said connecting part and being sealingly engaged therewith;

and which plant further comprises a support structure attached to the outer casing of said intermediate ring and the fireproof lining of said ring for suspending the fireproof lining of said intermediate ring.

4,437,865
FLEXIBLE BACKING MATERIAL FOR USE IN COATED ABRASIVES
Dhan N. Parekh, Williamsville, and Paul R. Schweyen, Tonawanda, both of N.Y., assignors to Carborundum Abrasive Company, Niagara Falls, N.Y.
Filed Aug. 27, 1982, Ser. No. 412,149
Int. Cl.³ C09K 3/14
U.S. Cl. 51—298 21 Claims

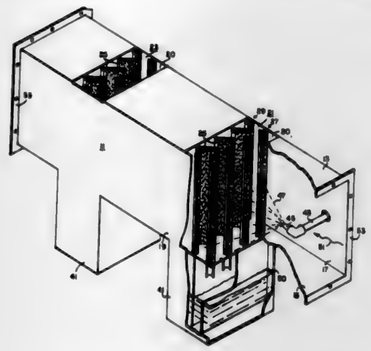
1. Flexible sheet material comprising:
(a) a straight warp fabric, including:
(i) an array of warp yarns that extend generally parallel to one another in a first plane,
(ii) an array of weft yarns that extend generally parallel to one another in a second plane adjacent and parallel to said first plane, said weft yarns extending generally transversely of said warp yarns, and
(iii) a stitching yarn network joining said array of warp yarns and said array of weft yarns to one another;
(b) a dipsize of flexible polymeric material that coats and at least partially impregnates all yarns of said straight warp fabric;
(c) an intermediate filling coat of phenol formaldehyde resin/latex;
(d) an outer filling coat of phenol formaldehyde resin;
(e) an adhesive coat overlying said outer filling coat securing abrasive grains;
(f) said sheet material being heat set and exhibiting not more than about 6.0 percent elongation in the direction of the warp yarns when subjected to a load less than that required to rupture the fabric and not exceeding 170 pounds per inch of fabric width.

4,437,866
POLLUTION HARNESS
Harry Pweblo, 4009 E. 131st St., Cleveland, Ohio 44105
Filed Aug. 24, 1982, Ser. No. 409,731
Int. Cl.³ B01D 47/00
U.S. Cl. 55—85 11 Claims



7. A process for controlling pollution resulting from flue gases like coal as produced from a combustion furnace, the steps comprising a source of combustion of flue gases like smoke, delivering said smoke to a first collector chamber and separating larger size entrained particles from said smoke in said chamber, delivering the smoke from said first collector chamber to a second collector chamber, bringing the smoke in said second collector chamber into contact with a jet-like water spray in said chamber, selectively feeding a chemical mixture into said second collector chamber in the vacinity of said jet-like water spray, delivering said smoke from said second collector chamber into a third collector chamber, said second and third collector chambers each being at least partially filled with water and continuously introducing water into said second collector chamber and delivering the water in said second collector chamber by gravity, to said third collector chamber, delivering the water from said third collector chamber to a filter means and filtering entrained particles from said water, and discharging the filter water from said filter means.

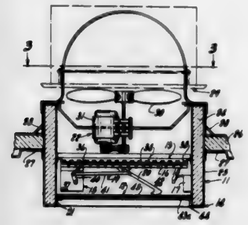
4,437,867
REMOVAL OF UNDESIRED COMPONENTS FROM GASES
Bernard J. Lerner, 727 Orchard Hill Dr., Pittsburgh, Pa. 15238
Continuation of Ser. No. 796,198, May 12, 1977, abandoned. This application Aug. 23, 1978, Ser. No. 936,078
Int. Cl.³ B01D 45/08, 50/00
U.S. Cl. 55—233 6 Claims



3. Apparatus for the continuous removal of mist from a mist-laden gas flowing at a high velocity comprising a generally horizontal flow channel through which said gas is conducted generally horizontally, a plurality of generally vertical, fibrous, high-voidage, non-capillary, free-draining bodies interposed in said flow channel, said bodies being anisotropic with respect to gas flow and gas-flow resistance, said bodies being disposed so that a portion of said gas flows through one or more of said bodies and another portion of said gas is deflected by one or more of said bodies, said bodies removing and draining, along the bodies generally vertically, the mist from said gas during the flow through and deflection, and means for suppressing the reentrainment of mist drained from said bodies into said gas.

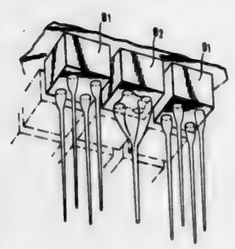
6. A scrubber for gas containing contaminants including a generally horizontal flow channel, having walls for confining a fluid in a generally horizontal path and being open at its opposite ends, for conducting said gas in a generally horizontal stream, a plurality of rows of spaced generally vertical baffles interposed in said channel in the path of said stream, each of said baffles being composed of fibrous, high-voidage, non-capillary, free-draining material, and being of substantial length and width, said bodies being anisotropic with respect to gas flow and gas-flow resistance, there being open space between each of said baffles and the baffles immediately adjacent to said each of said baffles in said channel, the baffles in each row being displaced along their row with reference to the baffles of an adjacent row, a portion of said gas passing through the baffles on which it impinges and a portion of said gas being deflected by the baffles on which it impinges, the deflected gas following a tortuous path through said flow channel, means for introducing a liquid into said gas in a region of said stream and/or channel such that contact of said baffles by said liquid will result, said contaminants in the gas passing through the baffles being captured by said liquid, and means for draining the liquid containing the captured contaminants from the gas passing down the baffles.

4,437,868
CONTROLLED EXHAUST SYSTEM FOR LOW TEMPERATURE ENCLOSURE
Ronald H. Kuhlman, N56 W21640 Silver Spring Rd., Menomonee Falls, Wis.
Filed May 24, 1982, Ser. No. 381,031
Int. Cl.³ F25D 17/06
U.S. Cl. 62—411 15 Claims



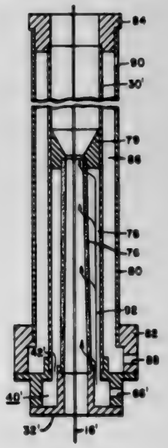
1. An exhaust apparatus for a cold storage enclosure means having an exhaust opening comprising a coupling chamber unit adapted to be mounted in sealed relationship within said opening, said exhaust chamber unit having an exterior movable closure means adapted to be moved between an open and closed position and having an interior insulated barrier wall means defining a vapor sealed closure to the coupling chamber between the closure means and the barrier wall means, opening means in said chamber to actuate said closure means and to remove said barrier wall means, and a small heating means coupled to the chamber unit and operable with the closure means in the closed position to hold the temperature in said chamber at least at the temperature necessary to ensure operation of said opening means and said heating means constructed and arranged to permit essentially free flow of air from the enclosure.

4,437,869
METHOD AND APPARATUS FOR MULTIFILAMENT GLASS STRAND
Jacques Lecron, Challes les Eaux; Maxime Manera, Jacob Bellecombette; Jean-Paul Faure, Chignin, and Jean-Pierre Renaudin, Cognin, all of France, assignors to Societe Vetrotex Saint-Gobain, Chambery, France
Continuation of Ser. No. 377,903, May 13, 1982, Pat. No. 4,391,618, which is a continuation-in-part of Ser. No. 207,712, Nov. 17, 1980, abandoned. This application May 3, 1982, Ser. No. 374,478
Claims priority, application France, Nov. 20, 1979, 7928538; May 14, 1981, 8109633
Int. Cl.³ C03B 37/025
U.S. Cl. 65—1 26 Claims



1. Apparatus for the manufacture of continuous filaments having differing cross sections by mechanical attenuation of a molten mineral material such as glass, comprising a bushing adapted to be heated by Joule's effect and having a source of supply of glass, a gas blower device directed towards the bottom of the bushing and means for attenuating the said filaments, characterized in that the bottom of the said bushing has a lower wall surface comprising a multiplicity of fiberizing centers divided into at least two different categories, each center comprising a zone perforated by a group of orifices, the centers of one category comprising means for producing one filament per center and the centers of another category comprising means for producing a plurality of filaments per center.

4,437,870
OPTICAL WAVEGUIDE FIBER COOLER
Roger A. Miller, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Nov. 5, 1981, Ser. No. 318,375
Int. Cl.³ C03B 37/025
U.S. Cl. 65—12 2 Claims



1. An apparatus for drawing a single optical fiber comprising, in order of relative location:
a solid glass preform having at one end thereof a softened root portion wherein the preform cross-sectional area tapers to the cross-sectional area of said single fiber,
means situated along said fiber below said root portion for measuring the diameter of said fiber,
means for cooling said fiber,
means for applying protective coating material to said fiber, and
means for drawing said fiber, characterized in that said means for cooling said fiber comprises
an elongated, vertically oriented tube through which said fiber is drawn, the top of said tube being below said diameter measuring means,
a cylindrically-shaped porous member surrounding said fiber at the bottom end of said tube,
a chamber surrounding said porous member,
means supplying coolant gas to said chamber, whereby said coolant gas flows inwardly through said porous member and upwardly along said fiber, and
means situated at the top of said tube for exhausting said coolant gas.

4,437,871

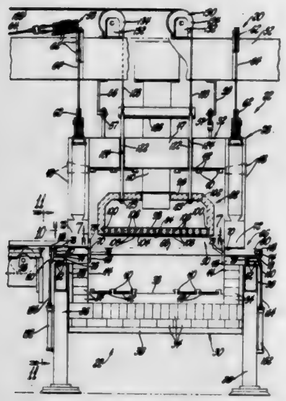
APPARATUS AND METHOD FOR BENDING GLASS SHEETS

Harold A. McMaster, 420 Water St., Woodville, Ohio 43469; Norman C. Nitschke, 9102 Buck Rd., and John S. Nitschke, 324 E. Second, both of Perrysburg, Ohio 43551

Division of Ser. No. 118,822, Feb. 5, 1980, Pat. No. 4,282,026, which is a continuation of Ser. No. 872,201, Jan. 25, 1978, abandoned. This application May 14, 1981, Ser. No. 263,626

Int. Cl.³ C03B *23/035*

U.S. Cl. 65—104 **4 Claims**



1. Apparatus for bending glass sheets comprising: a heating chamber for heating glass sheets to a sufficiently high temperature to permit bending thereof; a conveyor for conveying glass sheets through the heating chamber; a holder for receiving a heated glass sheet from the conveyor; said holder having a downwardly facing surface of a predetermined shape against which a differential gas pressure supports the heated sheet of glass received from the conveyor in preparation for bending; a mold having a generally open center and a curved shape over at least a substantial portion thereof with a greater curvature than said predetermined shape of the holder surface; and means for providing relative movement between the mold and the holder such that the mold is positioned below the holder to receive the heated glass sheet from the holder for substantial sag bending of the glass sheet on the mold solely under gravity.

3. A method for bending glass sheets comprising: heating a glass sheet to a sufficiently high temperature for bending; supporting the heated glass sheet against a downwardly facing holder surface of a predetermined shape; and releasing the glass sheet from the holder surface onto a curved mold having a generally open center and at least a substantial portion with a greater curvature than said holder surface such that the glass sheet bends substantially on the mold solely under gravity.

4,437,872

APPARATUS FOR BENDING AND TEMPERING GLASS SHEETS

Harold A. McMaster, 420 Water St., Woodville, Ohio 43469; Norman C. Nitschke, 9102 Buck Rd., Perrysburg, Ohio 43551, and John S. Nitschke, 324 E. Second, Perrysburg, Ohio 43551

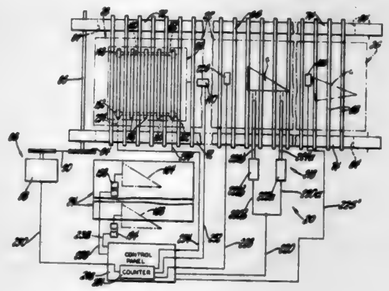
Division of Ser. No. 118,822, Feb. 5, 1980, Pat. No. 4,282,026, which is a continuation of Ser. No. 872,201, Jan. 25, 1978, abandoned. This application May 29, 1981, Ser. No. 268,535

Int. Cl.³ C03B *23/023, 23/025*

U.S. Cl. 65—104 **19 Claims**

1. A method of shaping glass sheets, comprising the steps of:
heating a glass sheet to approximately its softening point;
supporting the heat-softened glass sheet in an essentially horizontal orientation on support means;
bringing the upper surface of the glass sheet into close proximity to a flat platen in communication with a source of vacuum;
drawing a vacuum through the platen so as to retain the glass sheet on the platen;
vertically separating the platen and the glass sheet carried thereon from the support means;
bringing into vertical alignment with and beneath the glass sheet held on the platen a shaping mold having a contour defining the desired contour for the glass sheet; and
releasing the glass sheet from the platen so as to fall onto the shaping mold and conform to the contour defined by the shaping mold.

13. An apparatus for shaping glass sheets comprising:
furnace means for heating glass sheets to a softened condition;
support means for supporting glass sheets;



conveyor means for transferring heated glass sheets to the support means;
a platen having a flat perforated plate and having an enclosed interior space in communication with a source of vacuum;
means for transferring the platen into and out of close proximity to the support means so as to lift the glass sheet from the support means by means of vacuum;
a shaping mold having upwardly facing shaping surfaces defining the desired curvature and corresponding to the shape of the glass sheets; and
shuttle means for alternately bringing the platen and the shaping mold into and out of superimposed vertically spaced relationship to each other, wherein the shaping mold in the superimposed position is supported at an elevation below the platen so as to receive and shape a glass sheet dropped from the platen.

4,437,873

METHOD OF INHIBITING ALGAE

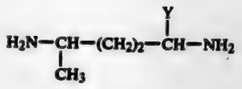
Albert Sjoerdsma, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 246,569, Mar. 23, 1981, Pat. No. 4,336,054, which is a continuation-in-part of Ser. No. 95,347, Nov. 19, 1979, abandoned. This application Apr. 15, 1982, Ser. No. 368,546

Int. Cl.³ A01N *33/04*

U.S. Cl. 71—67 **5 Claims**

1. A method of inhibiting the growth of algae which comprises contacting said algae with an algal inhibiting amount of an α-substituted amine having the formula



wherein

Y is selected from the group consisting of CH_2F, CHF_2 and C≡CH; and
the salts and individual optical isomers thereof.

4,437,874

TRI-MIXED ALKYLSULFONIUM SALTS OF N-PHOSPHONOMETHYLGYLCINE AND THEIR USE AS PLANT GROWTH REGULATORS AND HERBICIDES

George B. Large, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

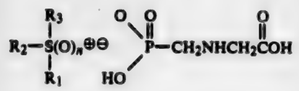
Continuation-in-part of Ser. No. 324,284, Nov. 25, 1981, Pat. No. 4,376,644, which is a continuation-in-part of Ser. No. 212,921, Dec. 4, 1980, Pat. No. 4,315,765. This application Jun. 21, 1982, Ser. No. 389,956

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.³ C07F *9/38*; A01N *57/00*

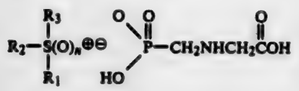
U.S. Cl. 71—87 **39 Claims**

1. A compound having the formula



where R_1, R_2, and R_3 represent C_1–C_{12} alkyl, and n is zero or one, wherein no more than two of R_1, R_2 or R_3 are identical.

19. A method of controlling undesirable vegetation comprising applying to the vegetative in post-emergent state an herbicidal composition comprising an herbicidally effective amount of a compound having the formula



where R_1, R_2, and R_3 represent C_1–C_6 alkyl, and n is zero or one, wherein no more than two of R_1, R_2 or R_3 are identical, and an inert diluent carrier.

4,437,875

2,4-DISUBSTITUTED-5-THIAZOLE-CARBOXYLIC ACIDS AND DERIVATIVES

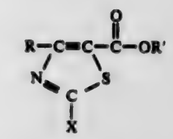
Robert K. Howe, Bridgeton, and Lee F. Lee, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 140,335, Apr. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,959, Apr. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 906,183, May 15, 1978, Pat. No. 4,199,506. This application Apr. 22, 1981, Ser. No. 256,326

Int. Cl.³ A01N *43/02, 43/56, 37/18, 37/44*

U.S. Cl. 71—90 **24 Claims**

1. A method for selectively preventing the growth of weeds in the presence of corn or sorghum crop plants which comprises applying to the crop plant locus an effective amount of acetamide herbicide selected from the group consisting of 2-chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide, 2-chloro-2',6'-diethyl-N-(butoxymethyl)acetanilide, N-(ethoxymeethyl)-N-(2-ethyl-6-methyl-1-cyclohexen-1-yl)-2-chloroacetamide,N-(ethoxymethyl)-N-(2,5-dimethyl-1-cyclopenten-1-yl)-2-chloroacetamide, 2-chloro-N-(ethoxymethyl)-6'-ethyl-o-acetotoluidide, the ethyl ester of N-chloroacetyl-N-(2,6-diethylphenyl)glycine, 2-chloro-2',3'-dimethyl-N-(isopropyl)acetanilide, 2-chloro-2',6'diethyl-N-(pyrazolylmethyl)acetanilide, 2-chloro-6'-trifluoromethyl-N-(isopropoxymethyl)acetanilide, 2-chloro-2'methyl-6'-trifluoromethyl-N-(isopropoxymethyl)acetanilide, 2-chloro-2'-methyl-6'-methoxy-N-(isopropoxymethyl)acetanilide, 2-chloro-2'-methyl-6'-methoxy-N-(propoxymethyl)acetanilide, 2-chloro-2'-methyl-6'-ethoxy-N-(propoxymethyl)acetanilide and 2-chloro-2'-isobutoxy-6'-ethyl-N-(propoxymethyl)acetanilide, 2-chloro-2'-isobutoxy-6'-methyl-N-(propoxymethyl)acetanilide, 2-chloro-2'-isobutoxy-6'-ethyl-N-(ethoxymethyl)acetanilide and 2-chloro-2'-methyl-6'-trifluoromethyl-N-(ethoxymethyl)acetanilide, said crop plants having been germinated from seeds treated with a safening effective amount of a compound of the formula



wherein X is selected from the group consisting of chloro, bromo, iodo and fluoro, R is haloalkyl with up to 5 carbons, R' is selected from the group consisting of hydrogen, agriculturally acceptable cations, alkyl with up to 10 carbon atoms, lower alkenyl with up to 10 carbon atoms, lower alkynyl with up to 10 carbon atoms, alkoxyalkyl with up to 10 carbon atoms, haloalkyl and, with up to 10 carbon atoms phenyl.

4,437,876

2,4-DISUBSTITUTED-5-THIAZOLE-CARBOXYLIC ACIDS AND DERIVATIVES

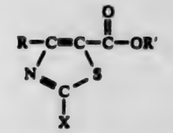
Robert K. Howe, Bridgeton, and Lee F. Lee, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 140,335, Apr. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,959, Apr. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 906,183, May 15, 1978, Pat. No. 4,199,506. This application Apr. 22, 1981, Ser. No. 256,335

Int. Cl.³ A01N *43/02, 43/56, 37/18, 37/44*

U.S. Cl. 71—90 **22 Claims**

1. A method for selectively preventing the growth of weeds in the presence of corn or sorghum crop plants which comprises applying to the crop plant locus an effective amount of herbicide selected from the group consisting of 2-chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide, 2-chloro-2',6'-diethyl-N-(butoxymethyl)acetanilide, N-(ethoxymethyl)-N-(2-ethyl-6-methyl-1-cyclohexen-1-yl)-2-chloroacetamide, N-(ethoxymethyl)-N-(2,5-dimethyl-1-cyclopenten-1-yl)-2-chloroacetamide, 2-chloro-N-(ethoxymethyl)-6'-ethyl-o-acetotoluidide, the ethyl ester of N-chloroacetyl-N-(2,6-diethylphenyl)glycine, 2-chloro-2',3'-dimethyl-N-(isopropyl)acetanilide, 2-chloro-2',6'-diethyl-N-(pyrazolylmethyl)acetanilide, 2-chloro-6'-trifluoromethyl-N-(isopropoxymethyl)acetanilide, 2-chloro-2'-methyl-6'-trifluoromethyl-N-(isopropoxymethyl)acetanilide, 2-chloro-2'-methyl-6'-methoxy-N-(isopropoxymethyl)acetanilide, 2-chloro-2'-methyl-6'-methoxy-N-(propoxymethyl)acetanilide, 2-chloro-2'-methyl-6'-ethoxy-N-(propoxymethyl)acetanilide and 2-chloro-2'-isobutoxy-6'-methyl-N-(propoxymethyl)acetanilide, 2-chloro-2'-isobutoxy-6'-ethyl-N-(ethoxymethyl)acetanilide and 2-chloro-2'-methyl-6'-trifluoromethyl-N-(ethoxymethyl)acetanilide, said crop plants having been germinated from seeds treated with a safening effective amount of a compound of the formula



wherein X is selected from the group consisting of chloro, bromo, iodo and fluoro, R is haloalkyl with up to 5 carbons and R' is benzyl.

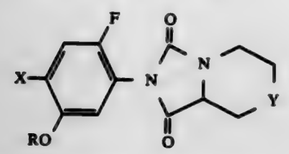
4,437,877

2-(2-FLUORO-4-HALO-5-SUBSTITUTED PHENYL) HYDANTOINS AND USE

Eiki Nagano, Nishinomiya; Shunichi Hashimoto, Toyonaka; Ryo Yoshida, Kawanishi; Hiroshi Matsumoto, Toyonaka, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 10, 1982, Ser. No. 387,275
Claims priority, application Japan, Jun. 16, 1981, 56-93315; Dec. 4, 1981, 56-196035; Dec. 4, 1981, 56-19036
Int. Cl.³ A01N *43/90*; C07D *471/04*, *513/04*
U.S. Cl. 71—90 18 Claims

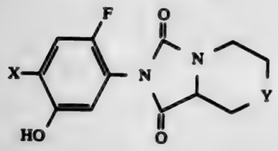
1. A compound of the formula:



wherein X is a chlorine atom or a bromine atom, Y is $-CH_2-$, $-S-$ or $-SO_2-$ and R is a C_1–C_4 alkyl group, an allyl group or a propargyl group.

17. A method for controlling weeds which comprises applying a herbicidally effective amount of the compound according to claim 1 to the area where the weeds grow or will grow.

18. A compound of the formula:



wherein X is a chlorine atom or a bromine atom and Y is $-CH_2-$, $-S-$ or $-SO_2-$.

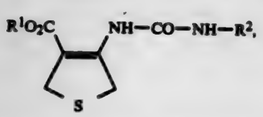
4,437,878

DIHYDROTHIOPHENECARBOXYLATES AND THEIR USE FOR CONTROLLING UNDERSIRABLE PLANT GROWTH

Rolf-Dieter Acker, Leimen; Phillip A. Rossy, Ludwigshafen; Gerhard Hamprecht, Weinheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 480,895
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211851
Int. Cl.³ A01N *43/02*; C07D *333/24*
U.S. Cl. 71—90 8 Claims

1. A dihydrothiophenecarboxylate of the formula



(I)

where R^1 and R^2 are each C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, C_2–C_{10}-alkynyl, C_1–C_{10}-haloalkyl, C_2–C_{10}-alkoxyalkyl, C_2–C_{10}-alkylthioalkyl or C_3–C_7-cycloalkyl, or are each phenyl which is unsubstituted or substituted by halogen or C_1–C_4-alkyl, or are each unsubstituted or halogen-substituted benzyl, and R^1 may furthermore be hydrogen.

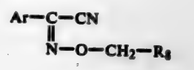
4,437,879

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

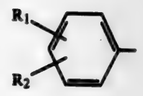
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,935.
This application Jul. 14, 1982, Ser. No. 398,164
Claims priority, application Switzerland, Aug. 31, 1978, 9201/78
Int. Cl.³ A01N *43/38*; C07D *209/48*
U.S. Cl. 71—96 5 Claims

1. A compound of the formula



wherein

Ar is 1-naphthyl or



in which

R_1 is hydrogen, lower alkyl, lower alkoxy or halogen, and

R_2 is hydrogen or lower alkyl, and

R_3 is phthalimido or tetrahydrophthalimido.

5. An antidote composition for use in safening plants against the harmful effects of potent herbicides which comprises (1) an antidotally effective amount of a compound according to claim 1 and (2) a carrier.

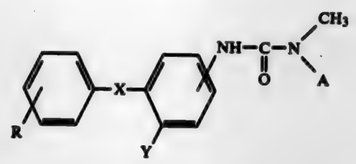
4,437,880

N'-PHENYL-N-METHYLUREA DERIVATIVES

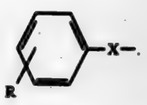
Junya Takahashi, Nishinomiya; Ichiki Takemoto, Takarazuka; Katsuzo Kamoshita, Osaka; Ryo Yoshida, Kawanishi; Haruhiko Katoh, and Seizo Sumida, both of Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 28, 1981, Ser. No. 269,851
Claims priority, application Japan, May 28, 1980, 55-71938
Int. Cl.³ A01N *47/30*; C07C *127/19*
U.S. Cl. 71—120 8 Claims

1. A compound of the formula:



wherein R is a hydrogen atom or a C_1–C_4 alkyl group, X is a C_3–C_4 alkylene group or a C_3 alkenylene group, Y is a hydrogen atom or a chlorine atom, A is a methyl group or a methoxy group and the substituted ureido group is present at the m- or p-position to the group of the formula:



7. A method for controlling or exterminating weeds which

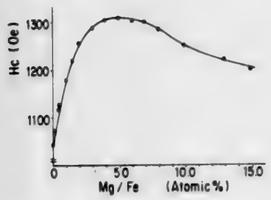
comprises applying a herbicidally effective amount of at least one of the compounds according to claim 1 to the area where the weeds grow or will grow.

4,437,881

ACICULAR FERROMAGNETIC ALLOY PARTICLES AND PROCESS FOR PRODUCING SAID PARTICLES

Akio Mishima; Yoshiro Okuda; Toshiharu Harada; Akira Mukaizaka, and Tomoyuki Imai, all of Hiroshima, Japan, assignors to Toda Kogyo Corp., Japan

Filed Jul. 14, 1983, Ser. No. 513,866
Claims priority, application Japan, Jul. 31, 1982, 57-134016; Aug. 30, 1982, 56-151467
Int. Cl.³ B22F *9/22*
U.S. Cl. 75—0.5 AA 15 Claims



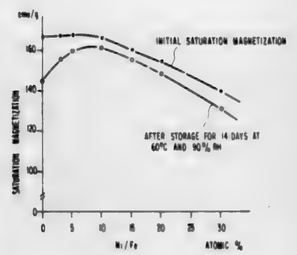
1. Acicular ferromagnetic alloy particles doped with silicon, chromium and nickel.

4,437,882

FERROMAGNETIC POWDER TREATED WITH AN ORGANIC SILANE COMPOUND

Shizuo Umemura; Akihiro Matsufuji; Masashi Aonuma; Tatsuji Kitamoto, and Hajime Miyatsuka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1983, Ser. No. 517,304
Claims priority, application Japan, Jul. 26, 1982, 57-129024
Int. Cl.³ B22F *9/22*
U.S. Cl. 75—0.5 R 17 Claims



9. A process for producing a ferromagnetic metal powder, comprising the steps of:

reducing an iron compound selected from the group consisting of nickel-doped iron oxyhydroxide, nickel-coated iron oxyhydroxide, nickel-doped iron oxide and nickel-coated iron oxide in a reducing gas, to provide a reduced metal powder including nickel in an amount of 3 to 30 atomic % based on the atomic % of iron present in the reduced metal powder; and

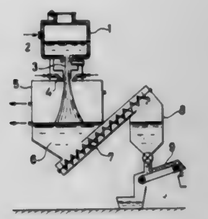
treating the reduced metal powder with an organic silane compound to provide a silane-treated powder.

4,437,883

PROCESS FOR PRODUCING METAL POWDER

Toshihiko Kubo, Namekata; Minoru Ichidate, Otsu; Toshiyuki Kawai, Nishinomiya; Sadao Yonehara, Katano; Yoshihisa Koiwai, and Kazuhiko Endo, both of Yokohama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Nippon Oil Co. Ltd., Tokyo, both of, Japan

Filed Feb. 14, 1983, Ser. No. 466,317
Claims priority, application Japan, Feb. 12, 1982, 57-21818
Int. Cl.³ B22F *9/08*
U.S. Cl. 75—0.5 C 8 Claims



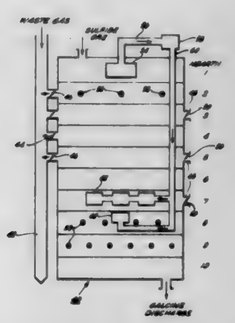
1. A process for producing metal powder by impinging an atomizing medium against a molten metal in a state isolated from the ambient air, said atomising medium consist essentially of an alcohol having 1–4 carbon atoms and water and the weight ratio of said alcohol to water is within the range of 2–70:98–30.

4,437,884

ORE ROASTING WITH RECYCLE OF GASES

Raymond Hawryluk, Upper St. Clair; Clyde R. Johnson, Claysville, both of Pa., and N. Henri Masarky, Tenafly, N.J., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 205,788, Nov. 10, 1980, abandoned.
This application Aug. 30, 1982, Ser. No. 412,779
Int. Cl.³ C22B *1/02*; C01G *39/00*
U.S. Cl. 75—7 13 Claims

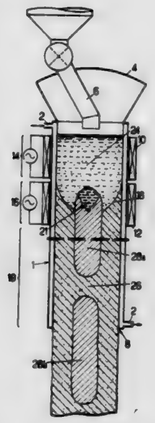


1. A process for reducing organic matter emissions during the oxidative roasting of metal sulfides in a furnace which is heated by fuel burners, and which has a plurality of hearths in a vertical configuration, wherein at least a portion of higher-temperature gases formed during the oxidation is recycled to a lower-temperature, lower portion of the furnace.

4,437,885
METHOD FOR THE PHYSICAL SEPARATION OF A METALLIC PHASE AND SCORIAE IN AN INDUCTION FURNACE

Georges Boize, Paris, France, assignor to Compagnie Generale des Matieres Nucleaires (Cogema), Velizy Villacoublay, France

Filed Aug. 31, 1982, Ser. No. 413,457
Claims priority, application France, Sep. 3, 1981, 81 16783
Int. Cl.³ C22C 4/00
U.S. Cl. 75—10 R 18 Claims

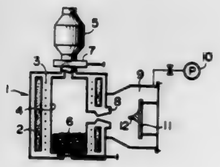


1. Method for the separation in an induction furnace of a metallic phase and scoriae contained in a crucible essentially transparent to an electromagnetic field maintained within said induction furnace, which comprises subjecting the materials:
in a first zone to an induction current of sufficiently high power and frequency to permit the direct coupling of this induction current with the materials in this first zone, so as to maintain the scoriae in the molten state,
then, in a second zone, adjacent to the preceding one, to an induction current of such power or frequency, or both, that direct coupling between the induction current and the scoriae is no longer permitted.

4,437,886
PROCESS FOR MANUFACTURE OF METALLIC MAGNESIUM

Hirohisa Miura, Okazaki; Hiroshi Satou, and Toshio Natsume, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 29, 1982, Ser. No. 373,267
Claims priority, application Japan, May 6, 1981, 56-68025
Int. Cl.³ C22B 26/22
U.S. Cl. 75—67 R 8 Claims

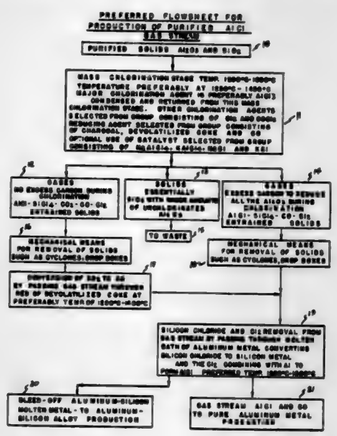


1. A process for manufacture of metallic magnesium, comprising the steps, performed in the specified order, of:
(a) mixing together:
(a1) a first quantity of magnesium oxide;
(a2) a second quantity of a carbide forming material which is either a material selected from the group of materials consisting of calcium, aluminum, boron, silicon, calcium oxide, aluminum oxide, boron oxide, and silicon oxide, or is a mixture of two or more of these materials; the weight of said second quantity being 10% or less than the weight of said first quantity; and
(a3) a third quantity of carbon, said third quantity being at least the equivalent mol weight of said first quantity of magnesium oxide plus said second quantity of carbide forming material;
then
(b) heating the resultant mixture within a reducing furnace at a pressure between about 5 and 200 torr and at a temperature of at least 1600° C., so as to effect a first reaction to generate carbide from the selected carbide forming material and the carbon, and a second reaction to reduce the magnesium oxide by the carbide thereby generating magnesium vapor while regenerating the carbide forming material;
and then
(c) cooling the magnesium vapor rapidly by adiabatic expansion thereof so as to generate metallic magnesium.

4,437,887
PRODUCTION OF ALUMINUM METAL FROM ALUMINA BAUXITES AND CLAYS BY FIRSTLY PRODUCING A PURIFIED ALUMINUM MONOCHLORIDE

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada (M4V 2X1)

Continuation-in-part of Ser. No. 253,639, Apr. 13, 1981. This application Sep. 29, 1982, Ser. No. 426,971
Int. Cl.³ C22B 21/02
U.S. Cl. 75—68 B 10 Claims



1. The process steps for the production of aluminum metal from the group of materials consisting of alumina, bauxites and clays and said materials containing at least Al_2O_3 minerals in the group consisting of $Al_2O_3xH_2O$ and $Al_2O_3.2SiO_2$ $2H_2O$ and free moisture and said Al_2O_3 minerals containing chemically combined H_2O comprising: subjecting the said materials to calcination in the temperature range of about 625° C. to 1500° C. to produce a calcined product substantially free of said chemically combined H_2O and said free moisture; subsequently subjecting the said calcined product to at least a mass chlorination stage in the presence of chlorination agent selected from the group consisting of Cl_2, $COCl_2$, and $AlCl_3$ and reducing agent selected from the group consisting of C and CO and in the temperature range of about 1200° C. to 1600° C. to produce a gas stream wherein the said Al_2O_3 has been converted to gaseous AlCl and said gas stream contains said AlCl, and at least CO_2 and Cl_2; subsequently passing the said gas stream through at least one bed selected from the group consisting of charcoal and devolatilized coke and in the temperature range of about 1200° C. to 1600° C. to convert said CO_2 to CO to produce a first modified gas stream containing at least said AlCl and Cl_2, and said CO; subsequently passing the said first modified gas stream through molten aluminum metal in the temperature range of about 1200° C. to 1600° C. to convert the said Cl_2 to AlCl to produce a second modified gas stream containing at least the said AlCl and CO; subsequently lowering the temperature of the said second modified gas stream to within the temperature rang of about 670° C. to 1050° C. to produce molten aluminum metal and a third modified gas stream containing $AlCl_3$ and said CO.

4,437,888
PREPARATION OF TITANIUM/ALUMINUM ALLOYS

Gilbert Jecker, Schiltigheim, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed May 5, 1982, Ser. No. 375,099
Claims priority, application France, May 6, 1981, 81 08975
Int. Cl.³ C22C 14/00
U.S. Cl. 75—84.4 28 Claims

1. A process for the production of an admixture of metals in metallic state and a cryolite mineral comprising (1) reducing an alkali metal fluotitanate with aluminum at an elevated temperature which is below that at which vaporization of products of said reduction occurs, said reduction occurring in the presence of an alkali metal oxide reactive flux, (2) solubilizing with water fluorine compounds formed during said reduction which are in admixture with a dispersion of metallic titanium and aluminum also formed during said reduction, (3) separating said titanium and aluminum from said aqueous solution of solubilization of step (2), (4) contacting said aqueous solution of solubilization from which said metallic titanium and aluminum have been separated with a mineral acid to form a cryolite mineral, and (5) recovering said cryolite mineral.

16. A process for the production of an admixture of metals in metallic state and a cryolite mineral comprising (1) coreducing an admixture of an alkali metal fluotitanate, aluminum and at least one halide of a metal M wherein M is selected from the group consisting of vanadium, zirconium, chromium, niobium, tantalum and iron at an elevated temperature which is below that at which vaporization of products of said coreduction occurs, said coreduction occurring in the presence of an alkali metal oxide reactive flux, (2) solubilizing with water fluorine compounds formed during said reduction which are in admixture with a dispersion of metals in metallic state also formed during said reduction, (3) separating said metals in metallic state from said aqueous solution of solubilization of step (2), (4) contacting said aqueous solution of solubilization from which said metallic titanium and aluminum have been separated with a mineral acid to form a cryolite mineral, and (5) recovering said cryolite mineral.

4,437,889
METHOD OF RECOVERING SILVER FROM SOLID AND LIQUID PHOTOGRAPHIC WASTE

Eliodoro Palacios-Mendoza, Calle Centro, Santa Sofia QTA. Ginarali, Caracas, Venezuela (1060)

Continuation of Ser. No. 290,694, Aug. 6, 1981, abandoned. This application Jul. 15, 1983, Ser. No. 514,351
Int. Cl.³ C22B 11/00
U.S. Cl. 75—118 P 4 Claims

1. A method of recovering silver from a silver-containing photographic liquid fixer waste, comprising:
(a) heating the silver-containing photographic liquid fixer waste to a temperature between about 45° C. and 65° C.;
(b) mixing under agitation said heated silver-containing photographic liquid waste with aqueous nitric acid at a 65% concentration and having a specific density of 1.40 grams per ml at a ratio of at most eight parts of nitric acid to one part of said photographic liquid waste;
(c) digesting said mixture during a period between 0.7 and 1.5 hours at a temperature between 55° C. and 65° C.;
(d) filtering through a porous ceramic filter the digested mixture and washing the filtrate at room temperature;
(e) the filtered residue is collected in a ceramic dish and heated therein to a temperature of about 65° C. for about 0.5 hours;

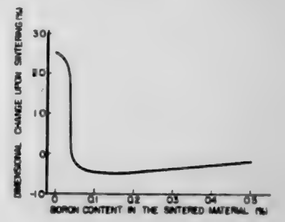


(f) subjecting the heated filtered residue to a further heating stage in a temperature ranging between about 600° C. and 700° C. until said residue turns into a gray solid;
(g) fusing at a graphite crucible said gray solid during between about 0.4 and 0.6 hours in a temperature between about 900° C. and 1000° C.; and
(h) dumping the fused product directly from the graphite crucible into water at room temperature to solidify it, obtaining a 99.5% purity silver.

4,437,890
METHOD OF THE PREPARATION OF HIGH DENSITY SINTERED ALLOYS BASED ON IRON AND COPPER

Tadao Hayasaka, Chiba; Masahiro Suzuki, Adachi; Shigeru Ozawa, Tokiwadaira, and Yoshiaki Takeya, Matsuhidai, all of Japan, assignors to Hitachi Powdered Metals Co., Ltd., Japan

Continuation of Ser. No. 170,991, Jul. 18, 1980, abandoned. This application Mar. 21, 1983, Ser. No. 477,365
Claims priority, application Japan, Jul. 28, 1979, 54-096389
Int. Cl.³ B22F 3/00
U.S. Cl. 75—244 26 Claims



1. Method of preparing a high density iron and copper based sintered alloy from alloy material composed mainly of iron and by weight up to 50% copper, 0–0.5% carbon, 0–3% nickel, and 0–1.5% molybdenum in which boron is added to the alloy material in an amount of no less than 0.03% and sufficient to suppress or limit the copper growth phenomenon of the copper present during sintering, and then sintering the alloy material.

4,437,891
OIL-ATOMIZED LOW-ALLOY STEEL POWDER

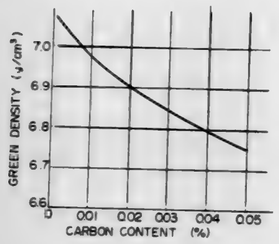
Masahide Umino, Nara; Eijiro Tamura, Hirakata; Isamu Kurasano, Yamato-Koriyama; Minoru Ichidate, Obtsu, and Toshihiko Kubo, Chiba, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 22, 1982, Ser. No. 350,565
Claims priority, application Japan, Feb. 24, 1981, 56-26476
Int. Cl.³ B22F 1/00; C22C 38/12, 38/22
U.S. Cl. 75—251 10 Claims

1. An oil-atomized low-alloy steel powder having improved

compressibility, compactibility and hardenability, the chemical composition of which after decarburization is:

C: no greater than 0.02%,
Mn: 0.3–2.0%,
Oxygen: no greater than 0.10%,
one or more of
Cr: 0.1–2.0%, Mo: 0.05–1.0%,



Ni: 0.1–2.0%, Cu: 0.2–2.0%,
V: 0.03–0.5% and Nb: 0.05–0.5%,
the balance substantially iron,
the powder having a green density of 6.9 g/cm³ or more and a Rattler value of 1.0% or less when the powder is mixed with 0.8% of zinc stearate as a lubricant and then is compacted at a pressure of 5 ton/cm².

4,437,892

MARINE ANTIFOULING COATING COMPOSITION

Jeffrey R. Kelsey, Ashford, England, assignor to The British Petroleum Company Limited, London, England

Filed Mar. 23, 1981, Ser. No. 246,384
Claims priority, application United Kingdom, Mar. 27, 1980, 8010350
Int. Cl.³ C09D 5/14
U.S. Cl. 106—15.05 **8 Claims**

1. A marine anti-fouling surface coating composition comprising components

(1) from 5 to 55% wt of a polymer having 1 to 50% by weight of functional groups selected from the group consisting of carboxylic acid, anhydride and acid chloride groups capable of reacting with amine groups to form a three dimensional polymer network,
(2) from 2 to 10% wt of a hydrocarbyl polyisocyanate which is not, in itself, a cross-linking agent for the polymer of (1) above, wherein the hydrocarbyl group has from one to ten carbon atoms,
(3) from 5 to 35% wt of a hydrocarbyl tin compound having the formula R_3SnX wherein R is the hydrocarbyl group having from one to ten carbon atoms and X is oxygen or sulfur,
(4) from 0 to 20% wt of an epoxy compound, and
(5) from 0 to 80% wt of a pigment, wherein components (1), (2) and (3) interact in use according to the following sequence of reactions
(a) the hydrocarbyl polyisocyanate and the hydrocarbyl tin compound react to form a carbamate or thiocarbamate,
(b) the carbamate or thiocarbamate hydrolyses to an amine and the original hydrocarbyl tin compound, and
(c) the amine and the polymer having functional groups react to give a surface coating.

4,437,893

USE OF SOY POLYSACCHARIDES AS A THICKENING AGENT FOR ALKALI SILICATE ADHESIVES

Thomas L. Krinski, Granite City, Ill., and Charles E. Coco, Saint Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Feb. 28, 1983, Ser. No. 470,408
Int. Cl.³ C04B 19/04
U.S. Cl. 106—90 **26 Claims**

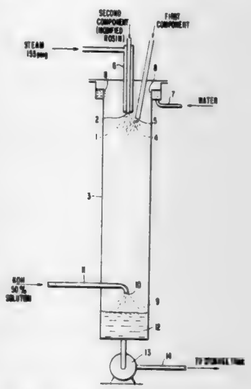
1. A silicate containing adhesive composition comprising an aqueous solution of an alkali metal silicate containing a soy polysaccharide material in an amount effective to thicken said solution and improve the adhesive properties thereof.

4,437,894

SIZING COMPOSITIONS CONTAINING A FORMIC ACID SALT, PROCESSES, AND PAPER SIZED WIH THE COMPOSITIONS

Ralph W. Emerson, Sr., Boston, Mass., assignor to The Plasmine Corporation, Portland, Me.

Filed Nov. 17, 1982, Ser. No. 442,319
Int. Cl.³ C08L 93/04
U.S. Cl. 106—238 **39 Claims**



1. A sizing composition which comprises sizing -effective amounts of a rosin that is modified with from about 5 to 50 percent, based on the weight of the rosin, of an organic acidic compound selected from the group consisting of an alpha, beta-unsaturated aliphatic acid containing from about 3 to 6 carbon atoms, an anhydride thereof, and their mixtures; ammonia in amounts sufficient to enhance the sizing characteristics of the composition; ammonium formate effective to, and in amounts sufficient to, enhance the sizing characteristics of the composition; and containing amounts of the modified rosin, ammonia and ammonium formate sufficient to provide the composition with a total acidity of at least about 1,000 parts per million.

4,437,895

MIXTURE OF VEGETABLE OILS BASED ON JOJOBA OIL AND COSMETIC COMPOSITIONS COMPRISING THE MIXTURE

Constantin Koulbanis, Paris; Quang L. N'Guyen, Antony; Arlette Zabotto, Paris, and Josiane Plot, Aulnay-sous-Bois, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Jul. 20, 1982, Ser. No. 400,221
Claims priority, application France, Jul. 23, 1981, 8114366
Int. Cl.³ C08L 91/00; C09D 3/26; A61K 7/48
U.S. Cl. 106—245 **10 Claims**

1. An oxidation stable mixture comprising 5–95 percent by weight of jojoba oil, the remainder being a member selected from the group consisting of hazelnut oil, mango oil, coffee bean wax, karite butter, soya oil, palm oil, maize germ oil and mixtures thereof.

4,437,896

SYNTHETIC ASPHALT MIXTURES AND PROCESSES FOR MAKING THEM

John F. Partanen, 612 W. Kiva Ave., Mesa, Ariz. 85202

Continuation-in-part of Ser. No. 432,091, Sep. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 268,363, May 29, 1981, abandoned. This application Feb. 8, 1983, Ser. No. 465,013
Int. Cl.³ C08L 95/00
U.S. Cl. 106—273 R **20 Claims**

1. A synthetic asphalt composition, consisting of a mixture of gilsonite and a tall oil product.

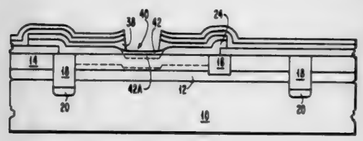
5. A modified synthetic asphalt composition consisting of a mixture of gilsonite, a tall oil product, and additive material for modifying the composition to provide desired properties selected from the group consisting of aggregate, petroleum asphalt, and reclaimed rubber.

4,437,897

FABRICATION PROCESS FOR A SHALLOW EMITTER/BASE TRANSISTOR USING SAME POLYCRYSTALLINE LAYER

Bernard M. Kemlage, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1982, Ser. No. 379,535
Int. Cl.³ H01L 21/425, 21/265, 21/225
U.S. Cl. 148—1.5 **9 Claims**



1. A process for forming a transistor having a shallow emitter region and a narrow intrinsic base region and an extrinsic base region using the same polycrystalline silicon layer comprising the steps of

depositing a layer of polycrystalline silicon on a semiconductor substrate provided with a subcollector, epitaxy, isolated regions, and oxide surface with holes open in the oxide surface for the extrinsic base, intrinsic base and emitter region,
thermally oxidizing the surface of the polycrystalline silicon layer,
implanting the base impurity into the polycrystalline silicon layer,
defining and removing the surface oxide layer and the polycrystalline silicon layer from the subcollector reach-through area,
depositing a silicon nitride layer,
depositing a silicon dioxide layer,
opening the silicon dioxide layer the silicon nitride layer and the thermal oxide layer to define the intrinsic base and the emitter area,
thermally oxidizing the polycrystalline layer and driving the base impurity downwardly into the epitaxial layer to form the extrinsic base region and the intrinsic base region,
etching the thermal oxide in the emitter area in an isotropic etch,
ion implanting the emitter impurity into the emitter area of the polycrystalline silicon layer,
thermally oxidizing to drive the emitter impurity inwardly into the epitaxial layer to form the emitter region, and opening the collector, extrinsic base and emitter contact openings and forming the conductive metallurgy.

4,437,898

METHOD AND AGENT FOR PASSIVATING IRON AND STEEL SURFACES

Hermann Drosdziok; Jürgen Geke, both of Dusseldorf, and Hans G. Germscheid, Ratingen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

PCT No. PCT/EP81/00128, § 371 Date Apr. 5, 1982, § 102(e) Date Apr. 5, 1982, PCT Pub. No. WO82/00665, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 19, 1981, Ser. No. 369,022
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032226
Int. Cl.³ C23F 7/08
U.S. Cl. 148—6.15 R **14 Claims**

1. Method for passivating iron and steel surfaces with the aid of aqueous, alkaline reacting solutions which contain corrosion inhibitors, consisting essentially in that the metal surface is treated with solutions which contain from 0.5% to 5% by weight of a combination, giving a clear solution in water, of

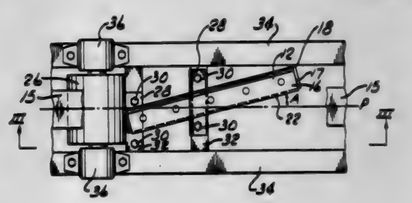
(a) one or more maleic acid monoalkylamides having from 6 to 14 carbon atoms in said monoalkyl,
(b) one or more alkanolamines having from 2 to 12 carbon atoms,
(c) one or more phosphonic acids which have complexing properties, the weight ratio of maleic acid monoalkylamide to alkanolamine being 1:0.3 to 1:10 and the weight ratio maleic acid monoalkylamide to phosphonic acid being 1:0.01 to 1:0.5 and the pH value of the solution being between 7.5 and 10.5.

4,437,899

METAL BILLET CUTTING APPARATUS AND METHOD

Joseph Rokop, Pittsburgh, and Nikolaus Rokop, Bridgeville, both of Pa., assignors to Rokop Corporation, Pittsburgh, Pa.

Filed Jul. 25, 1983, Ser. No. 516,907
Int. Cl.³ B23K 7/02
U.S. Cl. 148—9 R **11 Claims**



1. In a metal processing apparatus wherein an elongated stand of metal is severed as it moves along a pass line by cutting means which is operative to cut the strand transversely of said pass line into billets of a given length, the improvement comprising:

a material removing means located at a fixed position with respect to the longitudinal extent of said pass line and operable to engage an exterior surface of said strand of metal moving on said pass line along at least one continuous line of action extending throughout the lateral extent of said exterior surface for removing material from said exterior surface as said strand moves along said pass line in a manner that the material removal effected by said material removing means at the location of any such transverse severing progresses transversely of said exterior surface from one lateral side of said strand to the other lateral side thereof as said strand moves along said pass line.

4,437,900

THERMAL MECHANICAL TREATMENT FOR ENHANCING HIGH TEMPERATURE PROPERTIES OF CAST AUSTENITIC STEEL STRUCTURES

Ruzica Petkovic-Luton, Englewood, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 334,651, Dec. 28, 1981, abandoned. This application Jan. 5, 1983, Ser. No. 455,881

Int. Cl.³ C21D *7/14*

U.S. Cl. 148—12 E **10 Claims**

1. A method for improving the high temperature properties of cast austenitic steel structures, the method comprising:

(a) heating the structures to at least the temperature at which chromium carbides go into solution, but below the temperature where incipient melting occurs;

(b) maintaining the structures at such temperature for an effective amount of time;

(c) hot working the structures by applying from about 15% to 60% plastic deformation; and

(d) cooling the structures at a rate less than about 100° C./hr to allow recrystallization of the grains to occur such that the resulting average grain size is from about 45 μm to about 180 μm.

4,437,901

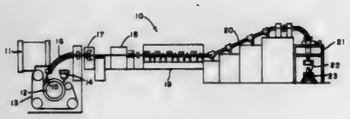
METHOD AND APPARATUS FOR IMPROVED HEAT TREATMENT OF ALUMINUM ALLOY ROD

Bobby C. Gentry, Temple, Ga., assignor to Southwire Company, Ga.

Filed Dec. 21, 1981, Ser. No. 332,988

Int. Cl.³ C21D *1/00, 9/62*

U.S. Cl. 148—11.5 A **13 Claims**



7. A method for the thermal treatment of an intermediate metallic rod product comprising the steps of:

(a) continuously advancing an elongated metallic rod product along a predetermined path,

(b) passing an electrical current through said elongated rod product to elevate the temperature thereof to a predetermined solution heat treating temperature in a first heating zone,

(c) continuously advancing the elongated metallic rod product through a second heating zone and heating the rod product therein by thermostatically controlled radiant heaters and accumulating an extended length of the metallic rod product therein in multiple wraps only partially around a pair of rotatable cylinders within the second heating zone and having parallel axes in a horizontal plane,

(d) maintaining the continuously advancing elongated metallic rod product within the second heating zone until solutionizing is completed,

(e) continuously advancing the elongated metallic rod product through a cooling zone, and

(f) cooling the continuously advancing elongated metallic rod product to room temperature after solutionizing is completed.

4,437,902

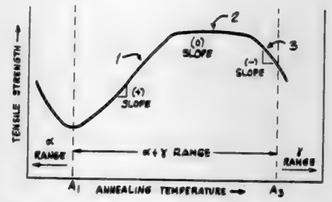
BATCH-ANNEALED DUAL-PHASE STEEL

John W. Pickens, Strongsville; John K. Abraham, Broadview Heights; Raymond E. Mintus, Warren, and Millicent H. Thomas, Broadview Heights, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Oct. 19, 1981, Ser. No. 312,510

Int. Cl.³ C21D *8/10*

U.S. Cl. 148—12 F **11 Claims**



1. A method of making a dual-phase rolled steel product which has ultimate tensile strength of at least 80 ksi, yield/ultimate tensile ratio not higher than about 0.65 and at least about 18% total elongation, comprising: establishing steel in ingot form having a composition consisting essentially of 0.03 to 0.2% carbon, 0.65 to 2.0% manganese, 0 to 0.75% silicon, 0.4 to 1.5% copper, 0.6 to 1.5% nickel, 0 to 1% molybdenum, 0 to 0.15% tungsten, 0 to 0.1% aluminum, balance iron and incidental elements, subjecting said steel to rolling, including hot rolling, to convert said steel to tightly coiled, rolled strip, batch annealing said coiled strip in an enclosed region, by heating said coiled strip to within an alpha plus gamma region of said steel, at a temperature not higher than about 1400° F., thereafter cooling the coiled strip within the range of about 25° to 100° F. per hour, and thereby producing the above-described rolled steel product, which comprises a matrix phase that is chiefly ferrite, and bodies of a second phase that are chiefly martensite distributed in said matrix.

4,437,903

METHOD FOR PRODUCING TWO-PHASE HOT ROLLED STEEL SHEET HAVING HIGH STRENGTH AND LOW YIELD RATIO

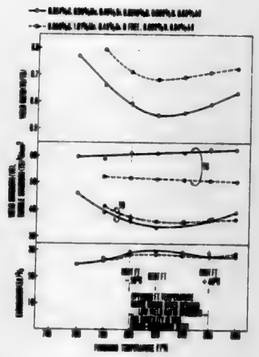
Takashi Furukawa, and Michio Endo, both of Kanagawa, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,145

Claims priority, application Japan, Jan. 28, 1982, 57-12277

Int. Cl.³ C21D *8/04*

U.S. Cl. 148—12 F **5 Claims**



1. A method for producing high-strength, low yield ratio two-phase hot rolled steel sheets having a tensile strength of at least about 52 kg/mm² which comprises:

hot rolling a steel composition comprising:

0.03%–0.12% C

0.7%–1.0% Mn

0.01%–0.9% Si

0.01%–0.1% Al

0.0005%–0.005% B

less than 0.006% N and which is about equal to the B content

with a finishing temperature FT as defined by the formula:

$$FT\,(°C.) = 953 - 400 \times (C\,\%) - 133 \times (Mn\,\%) + 40 \times (Si\,\%) \begin{matrix}+40\\-20\end{matrix}$$

(by weight %)

cooling the hot rolled sheet thus obtained to a temperature not higher than 300° C. with an average cooling rate of 20° to 200° C./second and coiling the steel sheet thus cooled.

4,437,904

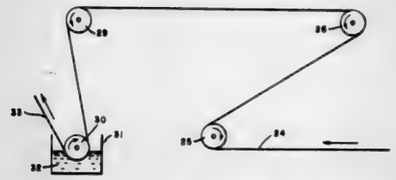
METHOD FOR IMPROVED HEAT TREATMENT OF ELONGATED ALUMINUM ALLOY MATERIALS

Joseph MacCraven, Bremen, Ga., assignor to Southwire Company, Carrollton, Ga.

Division of Ser. No. 332,992, Dec. 21, 1981. This application Aug. 16, 1982, Ser. No. 408,380

Int. Cl.³ C21D *1/40*

U.S. Cl. 148—13.1 **21 Claims**



1. A method of heat treating aluminum wire material after cross section reduction thereof, comprising the steps of:

(a) continuously advancing an elongated aluminum wire material along a predetermined path,

(b) passing an electrical current through said elongated aluminum wire material sufficient to heat said elongated aluminum wire material to a temperature of at least 650 degrees F. and within the annealing temperature range of the aluminum wire in a first heating zone,

(c) continuously advancing the elongated aluminum wire material through a second, adjustable heating zone having a temperature of at least 650 degrees F. and below 850 degrees F., and controlling the second, adjustable heating means to rapidly change the temperature of the wire from the first zone so as to complete annealing of the wire during a brief residency period thereof within the second heating zone,

(d) continuously advancing the elongated aluminum wire material through at least one cooling zone.

4,437,905

PROCESS FOR CONTINUOUSLY ANNEALING A COLD-ROLLED LOW CARBON STEEL STRIP

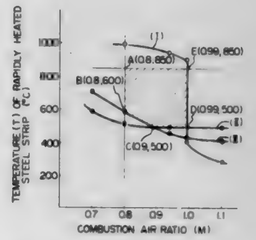
Hajime Nitto, and Hiromitsu Naitoh, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 139,275, Apr. 10, 1980, abandoned. This application Jan. 13, 1982, Ser. No. 339,053

Claims priority, application Japan, Dec. 5, 1979, 54-156844; Dec. 5, 1979, 54-156845

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16 **11 Claims**



1. A process for continuously annealing a cold-rolled low carbon steel strip, comprising the continuous steps of:

introducing a cold-rolled low carbon steel strip into a direct fired furnace, in which a fuel is burnt in a combustion air ratio of 0.8 or more, but less than 1.0 to produce a gaseous combustion product, and in which furnace said steel strip is heated in said gaseous combustion product atmosphere at an average heating rate of from 30° to 100° C./second in the temperature range of from 500° C. to the Ac_3 point of said steel strip, whereby a layer of oxides is formed on the surface of said steel strip, said oxides having a thickness limited to 1,000 angstroms or less;

introducing said heated steel strip into a reducing atmosphere which consists essentially of a mixture of 4% or more of hydrogen gas and the balance consisting of nitrogen gas and which has a dew point of 10° C. or less and in which atmosphere the temperature of said steel strip is maintained in the range of from 700° C. to the Ac_3 point of said steel strip for 10 seconds or more, whereby said layer of oxides is reduced;

cooling said reduced steel strip to a desired temperature in such a manner that the cooling operation is started from a temperature of at least 600° C. of said steel strip and carried out at an average cooling rate of from 10° to 300° C./second by bringing a cooling medium, consisting of a mixture of a gas and a liquid, into contact with said steel strip; and

subjecting said cooled steel strip to a treatment for eliminating a layer of oxides which has been formed on the surface of said steel strip during said cooling operation;

wherein said air combustion ratio refers to the ratio of the amount of air in volume supplied to combust a predetermined amount of fuel to the amount of air in volume stoichiometrically necessary for completely burning the predetermined amount of fuel.

4,437,906

FLUX COMPOSITION FOR ELECTRO-SLAG OVER-LAY WELDING OF A CYLINDRICAL VESSEL WITH A STRIP ELECTRODE

Junji Tatsishi, Chiba; Takeharu Ishikawa, Ichihara; Shozaburo Nakano, Mobara, and Noboru Nishiyama, Ichihara, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Mar. 14, 1983, Ser. No. 475,362

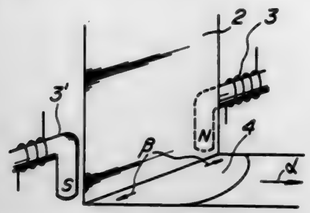
Claims priority, application Japan, Mar. 26, 1982, 57-47302

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—26 **2 Claims**

1. A flux composition for horizontal electro-slag over-lay

welding a stainless steel on a circumferential inner surface of a cylindrical vessel with a strip electrode under controlling a flow of molten slag and metal with an outer electro-magnetic



field, which contains 50–60% by weight of CaF_2, 10–20% by weight of SiO_2, 5–25% by weight of CaO and 10–30% by weight of Al_2O_3 in a ratio of SiO_2/CaF_2 of at least 0.20 and a ratio of CaO/SiO_2 of at least 0.50.

4,437,907

AMORPHOUS ALLOY FOR USE AS A CORE

Takashi Sato, and Tsutomu Ozawa, both of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 5, 1982, Ser. No. 355,241
Claims priority, application Japan, Mar. 6, 1981, 56-32345
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—31.55 **17 Claims**

1. An annealed amorphous alloy for use as the core of electric-power transforming machines and devices, wherein said annealed alloy has an essentially amorphous structure, an extremely low watt loss, a high thermal stability in respect to the magnetic properties and amorphous structure, a small change in the magnetic properties depending upon the temperature, and exhibits a very low increase in watt loss and a very low decrease in magnetic flux density after aging, and is composed of the chemical formula of $Fe_aSi_bB_cC_d$, said parameters a, b, c, and d being the following atomic percentages:

a=from 74 to 79%
b=from 10 to 19%
c=from 6 to 13%
d=from 0 to 3.5%

with the proviso that a+b+c+d=100%;

wherein the decrease in magnetic flux density after annealing in terms of:

$$\frac{B_1 \text{ after said aging} - B_1 \text{ before said aging}}{B_1 \text{ before said aging}} \times 100(\%)$$

does not exceed 3%, and,

wherein said alloy is annealed at a temperature of from 350° to 430° C. in a magnetic field higher than the coercive force of said alloy.

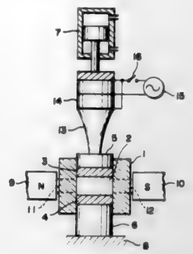
4,437,908

METHOD OF TREATING A MAGNETIC MATERIAL

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Oct. 10, 1980, Ser. No. 195,928
Claims priority, application Japan, Oct. 13, 1979, 54-132130; Oct. 13, 1979, 54-132131
Int. Cl.³ C21D *1/04*
U.S. Cl. 148—108 **21 Claims**

1. A method of treating a preshaped magnetic material in the manner to improve its magnetic properties, comprising: placing said magnetic material in an essentially unidirectional magnetic field and, imparting mechanical vibrations to said magnetic material while said magnetic material is in said magnetic



field and independently of the application of the magnetic field.

4,437,909

PROCESS FOR PRODUCING A GRAIN-ORIENTED SILICON STEEL SHEET OR STRIP HAVING EXCELLENT MAGNETIC PROPERTIES

Kensuke Mori, Himeji; Hiromi Matsumoto, Kitakyushu; Yozo Suga, Kitakyushu; Tadashi Nakayama, Kitakyushu; and Fumio Matsumoto, Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,878
Claims priority, application Japan, May 30, 1981, 56-83072
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—111 **8 Claims**

1. A process for producing a grain-oriented silicon steel strip or sheet, wherein a silicon steel slab containing from 2.0 to 4.5% by weight of silicon and not more than 0.080% by weight of carbon is subjected to hot-rolling and then to cold-rolling, the cold-rolling being carried out in either one step or two steps to obtain a thickness of a final product, an intermediate annealing being carried out between the two cold rolling steps, decarburization annealing being carried out, and, after applying an annealing separator, final high-temperature annealing being carried out so as to form a {110} <001> texture, characterized in that during hot rolling said silicon slab is subjected, at a temperature range of from 850° C. to 1160° C., to at least one pass in which the axial lines of the top working roll and the bottom working roll are non parallel, and as a result of these working rolls being non parallel, the grain-oriented electromagnetic steel sheet or strip has no streaks and has a high magnetic flux density.

4,437,910

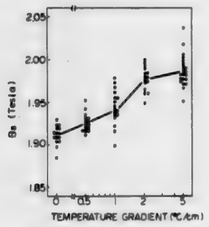
PROCESS FOR PRODUCING GRAIN-ORIENTED ELECTROMAGNETIC STEEL SHEET

Tadao Nozawa, Munakata; Takaaki Yamamoto, Kitakyushu; Tadashi Nakayama, Kitakyushu; Fumio Matsumoto, Kitakyushu, and Satohiro Hayami, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,855
Claims priority, application Japan, Jun. 4, 1980, 55-75033
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—112 **10 Claims**

1. In a process for producing a grain-oriented silicon steel sheet with secondary recrystallized grains having a high degree of (110)[001] orientation and increased magnetic flux density by a secondary recrystallization annealing of a silicon steel sheet having a primary recrystallized structure, the improvement wherein the secondary recrystallization proceeds towareds the primary recrystallized grain region and is completed over the entire area of the steel sheet, while a temperature gradient of not less than 2° C./cm is generated in any direction of the short width direction, longitudinal direction or intermediate direction of said first two directions of the steel sheet at the boundary region between the primary recrystallized grain region and the secondary recrystallized grain region formed upon reaching the secondary recrystallizing temperature.

10. A grain-oriented silicon steel sheet with secondary recrystallized grains having a high degree of (110)[001] orientation and increased magnetic flux density produced by a process in which a silicon steel sheet having a primary recrystallized structure is primary recrystallization annealed in such a manner that the secondary recrystallization proceeds toward the primary recrystallized grain region and is completed over the entire area of the steel sheet, while a temperature gradient of not less than 2° C./cm is generated in any direction of the short width direction, longitudinal direction or intermediate direction of said first two directions of the steel sheet at the boundary region between the primary recrystallized grain region and the secondary recrystallized grain region formed upon reaching the secondary recrystallizing temperature.



4,437,911

BETA ALLOYS WITH IMPROVED PROPERTIES

Lucas J. Delaey, Bertem, Belgium, assignor to Leuven Research & Development V.Z.W., Louvain, Belgium

Filed Jul. 20, 1982, Ser. No. 400,017
Claims priority, application Netherlands, Jul. 30, 1981, 8103612
Int. Cl.³ C22C *9/04*; C22F *1/08*
U.S. Cl. 148—402 **12 Claims**

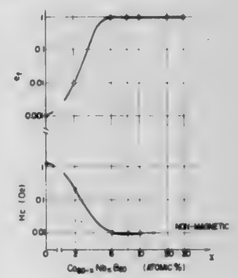
1. A shape memory beta copper alloy with improved fatigue strength properties and with an adjustable Ms-temperature, consisting essentially of 4–40% by weight of Zn, 1–12% by weight of Al, 0.01–2% by weight of Co, 0–8% by weight of Mn, 0–4% by weight of Ni and the balance Cu, said alloy showing on heating to a first temperature a transition from an (alpha+beta)-region, an (alpha+beta+gamma)-region or a (beta+gamma)-region to a beta-region, said alloy having an average grain size of less than 200 μm and containing cobalt- and aluminium bearing precipitates, the average size of which is less than 10 μm and which are insoluble in the alloy below a second temperature that is higher than said first temperature.

4,437,912

AMORPHOUS MAGNETIC ALLOYS

Hiroshi Sakakima, Hirakata; Mitsuo Satomi, Katano; Harufumi Senno, Yamatokoriyama, and Eiichi Hirota, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 16, 1981, Ser. No. 321,560
Claims priority, application Japan, Nov. 21, 1980, 55-164978
Int. Cl.³ C22C *19/00*
U.S. Cl. 148—403 **4 Claims**



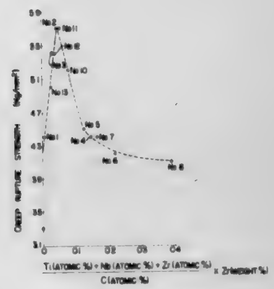
1. Amorphous alloy consisting of 60–94 atomic % of at least one of Fe, Co and Ni, and 2 to 20 atomic % of niobium, the balance being at least one other metal selected from the group consisting of Ti, Zr, Hf, V, Ta and Ru.

4,437,913

COBALT BASE ALLOY

Yutaka Fukui, and Tetsuo Kashimura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 98,665, Nov. 29, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,514
Claims priority, application Japan, Dec. 4, 1978, 53-149135
Int. Cl.³ C22C *19/07*
U.S. Cl. 148—408 **10 Claims**



1. A cobalt base cast alloy consisting essentially of, by weight, 0.15 to 2% carbon, less than 2% silicon, less than 2% manganese, 5 to 15% nickel, 18 to 35% chromium, 3 to 15% tungsten, 0.003 to 0.1% boron, 0.01 to 1% niobium, 0.01 to 1% titanium, 0.01 to 1% zirconium, less than 10% iron, less than 1% tantalum, less than 1% hafnium and the remainder substantially cobalt, wherein the carbon (C), niobium (Nb), titanium (Ti) and zirconium (Zr) contents are so selected as to satisfy the following equation:

$$\frac{\text{Ti (atomic \%)} + \text{Nb (atomic \%)} + \text{Zr (atomic \%)}}{\text{C (atomic \%)}} \times \text{Zr (wt \%)} = 0.01 \text{ to } 0.17$$

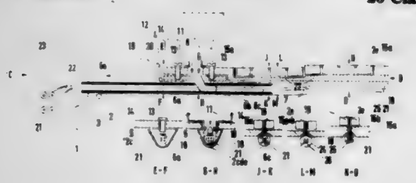
and wherein there exist eutectic carbides and secondary carbides precipitated by an age-treatment in uniformly dispersed form in the vicinity of grain boundaries whereby growth of the secondary carbides is suppressed; said alloy having a creep rupture strength of higher than 4.3 Kg/mm² in 1,000 hours creep rupture at 982° C. and a reduction of area of at least 34% in 100 hours creep rupture at 982° C.

4,437,914

METHOD OF PRODUCING SHEATHED CABLES AND/OR TRANSDUCERS AND A DEVICE FOR CARRYING OUT THIS METHOD

Franz Frischen, Kreppe 26, D-8359 Ortenburg-Dorfbach, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,455
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3109101
Int. Cl.³ H01B *13/26*
U.S. Cl. 156—54 20 Claims



1. A method of producing sheathed cables comprising:
bending a sheet material into a tube;
forming outwardly radial flanges of said tube parallel to an axis of said tube;
gripping said flanges in frictional engagement by a gripping means;
separately inserting at least one lead and an insulating material into said tube;
drawing said flanges in a radial direction against an abutment, whereby a diameter of said tube is reduced and said insulating material is simultaneously compressed;
inserting a cover band over said insulating material prior to said drawing of said flanges;
welding said tube along a seam parallel to said axis of said tube.

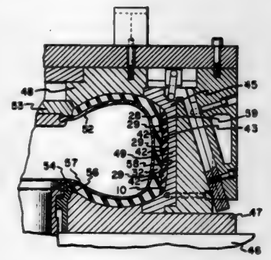
4,437,915

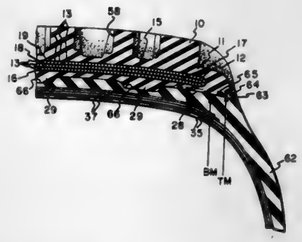
METHOD OF CURING REMOVABLE TREAD BELT

Paul E. Appleby, Cuyahoga Falls, and Max D. Brinkley, North Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 13, 1981, Ser. No. 310,448
Int. Cl.³ B29H *17/02*; B60C *11/02*; B29H *21/04*
U.S. Cl. 156—126 11 Claims

1. A method of curing an annular replaceable tread belt body of uncured resilient material having reingorcing cords of high modulus material comprising:
a. mounting said annular tread belt body on a radially outer surface of a precured tire casing having a curing medium chamber therein;
b. supporting said tire casing in a segmental mold having radially movable segments for engagement with said tread belt body;
c. closing said mold;
d. transmitting a curing medium at high temperatures and pressures into said chamber within said tire casing to press the radially outer surface of said tread belt body into molding contact with said segments;
e. curing said tread belt body in said mold at predetermined temperatures and pressures for a predetermined period of time;
f. reducing the pressure of said curing medium in said chamber within said tire casing;
g. moving said radially movable segments radially outward out of engagement with said tread belt body;





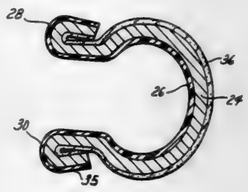
h. opening said mold; and
i. removing said tread belt from said tire casing.

4,437,916

METHOD OF MANUFACTURING EDGE GUARDS

Robert Adell, Novi, Mich., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Nov. 23, 1981, Ser. No. 323,510
Int. Cl.³ B31F *1/00*; B29C *19/00*; B32B *31/00*; B23P *14/00*
U.S. Cl. 156—222 2 Claims



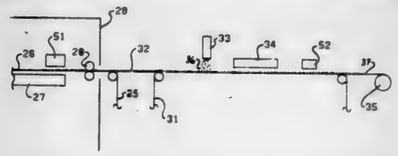
1. The method of making an insulated, self-retaining metallic edge guard of the type comprising a metal channel of generally U-shaped cross section having an interior and an exterior and inner and outer legs, including beads at distal ends of the legs, via which self-retention forces are applied to an edge of an object on which the edge guard is to be installed, and protective insulation on the interior of the channel to insulate the metal of the channel from an edge of the object on-which the edge guard is to be installed and with the exterior of the channel being exposed to view when in use, said insulated metallic edge guard being made from a strip of metal on one side of which the protective insulation is applied to completely cover said one side, said method comprising applying a protective layer of a material different from that of said protective insulation to a side of the metal strip opposite that to which the protective insulation is applied to thereby completely cover said other side, roll forming the strip, including the protective insulation and the protective layer into a U-shaped cross section of desired configuration to form said inner and outer legs and to form said beads by outwardly reversing the distal ends of the legs so that the protective insulation lines the entire interior of the U-shaped channel, and the protective layer the entire exterior except at said beads where the protective insulation, instead of the protective layer, is visible on the exterior of the roll-formed edge guard, and then when the edge guard is put to use, removing the protective layer from the exterior of the channel to reveal the metal of the channel to view.

4,437,917

CONTROL OF BULK IN AIR LAID FIBROUS WEBS

Thomas M. Tao, Neenah, Wis. and William C. Bean, Larsen, Wis., assignors to James Riner/Dixie-Northern, Inc., Norwalk, Conn.

Continuation of Ser. No. 219,613, Dec. 24, 1980, abandoned.
This application Mar. 15, 1983, Ser. No. 475,617
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—296 12 Claims



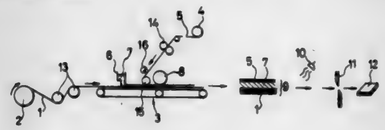
1. A method of increasing bulk of dry-formed fibrous webs during their manufacture, comprising the steps of:
forming a loose web of fibers dispersed on a forming wire in a zone under temperature and humidity conditions that cause the loose web to have a moisture content of more than 4% by weight;
partially drying the loose web to reduce the moisture content of the web to less than 4% by weight; and
subjecting the loose, partially dried web to compaction or consolidation to impart some strength to the web.

4,437,918

METHOD OF MAKING A CARPET TILE

Kazuo Morohashi, Yokohama; Teruo Kajikawa, Yokosuka, and Sakuya Iwai, Tokyo, all of Japan, assignors to Nippon Oil Company Ltd., Japan

Continuation of Ser. No. 254,044, Apr. 14, 1981, abandoned.
This application Feb. 24, 1983, Ser. No. 469,296
Claims priority, application Japan, Apr. 25, 1980, 55-51654; May 10, 1980, 55-61235
Int. Cl.³ B32B *31/08*, *31/26*
U.S. Cl. 156—322 2 Claims



1. In a method of making an asphaltic composition-backed carpet tile including feeding a carpet onto a conveyor through a roll guider from a carpet feeding section, advancing the conveyor with the carpet along a feedpath, directing a heated thermoplastic asphaltic composition backing onto the carpet as it is fed along the conveyor and applying it to the carpet so as to form an asphaltic composition-backed carpet on the conveyor, feeding a secondary backing fabric through a cloth guider along its course of running from a secondary backing fabric feed section onto the asphaltic composition-backed carpet and pressing them together by a pressure roll to form a laminated carpet belt material, cooling the laminated carpet belt material and cutting it into selected lengths, the improvement which comprises preheating said secondary backing fabric in the course of the running of said fabric, by a heater at a position upstream of said pressure roll, and thereafter passing said preheated fabric through an expander roll at a position downstream of the heater and upstream and adjacent to said pressure roll for opening and removing wrinkles from said preheated fabric by the expander roll prior to the pressing together of said fabric and said asphaltic composition-backed carpet by said pessure roll.

4,437,919

ADHESIVE TOPCOATED POLYESTER MATERIAL AND PROCESS FOR INCORPORATING SAME INTO RUBBER

Edward J. Powers, Louisville, Ky., assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed Jun. 25, 1982, Ser. No. 391,909
Int. Cl.³ D02G *3/02*, *3/36*
U.S. Cl. 156—329 12 Claims

1. A multi-filament polyester fibrous material for incorporation into rubber which bears a lubricant topcoat comprising the combination,
at least about 5% to about 50% by weight, based on the weight of the topcoat, of a dissolved, active isocyanate compound, and at least about 20% by weight, based on the weight of the topcoat of an endcapped silicone glycol copolymer.

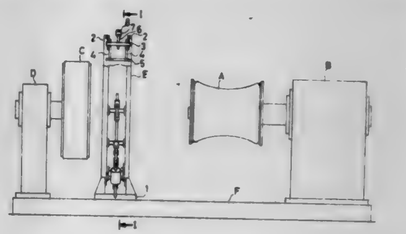
10. In a process for preparing a polyester reinforced rubber article wherein a multi-filament fibrous material is coated with an RFL latex, is heated and a layer of rubber is applied and cured on the thus treated fibrous material, the improvement comprising: providing on said polyester multi-filament fibrous material prior to coating with said RFL latex a topcoat, said topcoat comprising the combination of:
at least about 5% to about 50% by weight, based on the weight of the topcoat, of a dissolved active isocyanate compound, and
at least about 20% by weight, based on the weight of the topcoat of an endcapped silicone glycol copolymer.

4,437,920

APPARATUS FOR PRODUCT TRANSPORTATION IN TIRE-FORMING MACHINE

Masayoshi Kubo, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Nagasaki, Japan

Filed Apr. 15, 1982, Ser. No. 368,856
Claims priority, application Japan, Apr. 20, 1981, 56-59518
Int. Cl.³ B60C *17/10*, *17/37*
U.S. Cl. 156—406.2 1 Claim



1. A tire forming machine mounted on a base and including thereon a forming drum and a transport apparatus for transporting green tire or an intermediate assembly body for green tire, the transfer apparatus including transfer means for holding said green tire or body and movable in the axial direction of the forming drum, a pair of circular plates which are parallel to each other and attached to said transfer means, a plurality of shafts rotatably mounted on said circular plates at substantially equal intervals in the circumferential direction and positioned on a circle concentric with the circle of said circular plates,

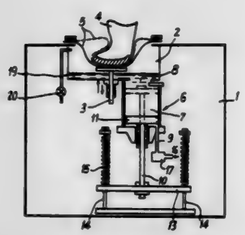
levers fixed on said shafts to pivot therewith, product-holding means connected to said levers for holding said green tire or body, an angular lever fixed to each of said shafts and pivotable therewith, link members connecting said angular levers in pairs, said angular levers and said link members being mutually combined to form a number of parallelogram links having mutually cooperatuve movement, and at least one driving means for swinging said angular levers to thereby open and close said product holding means upon said green tire or body.

4,437,921

PRESS FOR GLUING FOOTWEAR ELEMENTS

Lucien Bichet, Dravel, France, assignor to Anver S.A., Maisons-Alfort, France

Filed Nov. 10, 1982, Ser. No. 440,727
Claims priority, application France, Nov. 25, 1981, 81 22024
Int. Cl.³ B30B *15/00*
U.S. Cl. 156—475 **9 Claims**



1. A press for gluing footwear elements to each other comprising a tank, means for supporting an article of footwear in said tank, a flexible pocket adapted to envelope at least the portion of said article of footwear which includes said footwear elements which are to be glued to each other, wherein the improvement comprises a jack including a cylinder and a piston movable in said cylinder, said piston being adapted to be moved by the application of a pressurized pneumatic fluid to one surface of said piston, the opposite surface of said piston communicating with a liquid supply in said tank, whereby movement of said piston is operable to force said liquid under pressure against said flexible pocket to cause said flexible pocket to conform to the contour of the footwear elements which are to be glued to each other whereby to cause said elements to become glued to each other, and means for moving said piston to a retracted position when the pneumatic pressure on said piston is relieved.

4,437,922

METHOD FOR TAILORING OXYGEN PRECIPITATE PARTICLE DENSITY AND DISTRIBUTION SILICON WAFERS

Bernard K. Bischoff, Putnam Valley; William J. Patrick, Fishkill, and Thomas H. Strudwick, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,448
Int. Cl.³ H01L *21/322, 21/324*
U.S. Cl. 156—603 **10 Claims**

1. A method for tailoring oxygen precipitate particle density and distribution in a silicon wafer, comprising the steps of:
heating the silicon wafer to a first high temperature at a rate higher than 10° C./minute, said first high temperature being sufficiently high to reduce the number of pre-existing oxygen clusters,
keeping said wafer at said first high temperature for a period sufficient to allow outdiffusion of oxygen,
allowing said wafer to cool,
annealing said wafer at a low temperature, said low temperature being sufficiently low to nuceleate precipitated oxygen, and
heating said wafer to a second high temperature at a rate lower than 2° C./minute, said second high temperature



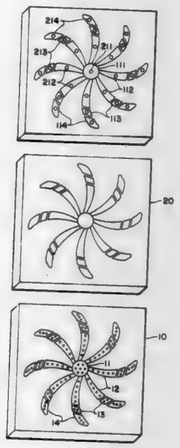
being sufficiently high to grow the precipitated oxygen nucleated at said low temperature to a size which ensures survival of the precipitated oxygen in subsequent processing.

4,437,923

MULTICOLOR PRINTING PLATE JOINING

William J. Waters, Cleveland, Ohio, assignor to The United States of America as represented by the Adminstrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 28, 1982, Ser. No. 425,203
Int. Cl.³ B44C *1/22*; C23F *1/02*; B41M *1/00*; B21D *39/00*
U.S. Cl. 156—630 **9 Claims**



1. A method of making a plate for multicolor printing comprising the steps of:
(a) providing first and second plates each having a top and bottom surface;
(b) forming in the bottom surface of said first plate patterns of the images to be printed;
(c) forming a plurality of apertures extending through said first plate, said apertures being distributed within said patterns;
(d) forming in said bottom surface of said second plate a plurality of ink distribution channels, each channel having a shape such as to enclose all the apertures of a respective pattern when the plates are juxtapositioned;
(e) forming at least one ink input port in each distribution channel;
(f) coating each ink distribution channel of said second plate with a liquid removeable solder mask;
(g) coating said bottom surface of said second plate with solder;
(h) pressing the bottom surface of said second plate against the top surface of said first plate;

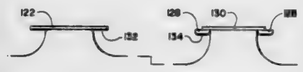
(i) heating said plates for a time period sufficient to fuse them together;
(f) flowing a solder mask dissolving liquid through the ports, apertures and channels of said plates to remove said solder mask whereby a solder-joined multicolor printing plate is produced.

4,437,924

METHOD OF MAKING FINE-LINE DIE

Walter Weglin, Bellevue, Wash., assignor to Jerobee Industries, Inc., Redmond, Wash.

Filed Apr. 19, 1982, Ser. No. 369,906
Int. Cl.³ C23F *1/02*; C03C *15/00, 25/06*; B44C *1/22*
U.S. Cl. 156—651 **13 Claims**



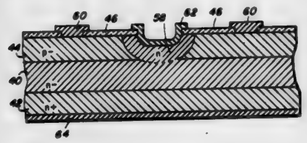
1. A method for fabricating a precision die by chemical milling the working face of an etchable workpiece form a plurality of raised die elements separated and bounded by a plurality of cavities, said method comprising the steps of:
a. forming an etchant-resistant surface pattern of boundary grooves penetrating slightly into the working face of an etchable workpiece outwardly proximate and substantially conforming to a desired configuration for die element precursors; and,
b. selectively etching said workpiece in regions outwardly bounded by said boundary grooves to undercut said grooves and form recessed cavities outwardly proximate and substantially conforming to the complementary configuration of said die element precursors.

4,437,925

ETCHED-SOURCE STATIC INDUCTION TRANSISTOR

Adrian I. Cogan, Waltham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 320,242, Nov. 12, 1981. This application Sep. 12, 1983, Ser. No. 531,373
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—653 **4 Claims**



1. A method for forming a gate-source structure for a static induction transistor, said method comprising the steps of:
growing a high resistivity epitaxial silicon layer of one conductivity type on a semiconductor substrate also of said one conductivity type;
growing a high resistivity epitaxial silicon layer of opposite conductivity type on said one-type epitaxial layer;
forming a silicon dixode layer on said opposite-type epitaxial layer;
opening parallel source windows and gate windows in said silicon dioxide layer;
growing a thin silicon dioxide layer in said source windows and said gate windows;
protecting said gate windows by photolithographic masking;
removing said thin silicon dixode layer in each of said source windows;
removing said protective photolithographic masking from said gate windows;
etching source grooves in said opposite-type epitaxial layer at the location of said source windows;
depositing one-type impurities on the surface of said source grooves;
diffusing said one-type impurities into said opposite type epitaxial layer to form a diffused region, said diffused region extending to form a channel to said one-type epitaxial layer;
removing said thin silicon dioxide layer from each of said gate windows; and
depositing metal and patterning gate electrodes and source electrodes in said gate windows and said source windows respectively.

4,437,926

METAL ALLOY WITH HIGH CATALYTIC ACTIVITY

Jean-Louis Barnabe, Chatou, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Division of Ser. No. 166,400, Jul. 7, 1980, Pat. No. 4,384,891. This application Sep. 30, 1982, Ser. No. 429,543
Int. Cl.³ H01L *1/22*; B22D *25/00*; B01J *21/18*; C25F *3/08*
U.S. Cl. 156—654 **4 Claims**

1. A method for producing an alloy consisting essentially of:
iron: 40–80% by weight
nickel: 0–40% by weight
Chromium: 0–40% by weight
carbon: 0.02–0.1% by weight
at least one platinum group metal: 0.05–2% by weight
comprising melting under vacuum or in air, said alloy having a carbon content of between 0.02 and 0.1% and a platinum metal content from 0.05 to 2%, treating the resulting product by annealing at a temperature of about 1150° C., then forming into thin elements such as sheets, wires, or chips, which are subjected in turn to successive annealing at a temperature between 1050° C. and 1150° C. and heating again between 400° C. and 800° C. for a period of time between 30 minutes and 10 hours producing sensitization to intergranular corrosion; then cleansing the surface of the alloy and subjecting to intergranular corrosion in an acid bath of chloronitric type, producing rapid microfissutation, then immersing in a 20% aqueous hydrochloric acid for two minutes and heating in a solution of between 5% and 30% oxalic acid at a temperature between 60° and 90° C. for about two hours, then oxidizing the resulting product at about 350° C.

4,437,927

DISSOLUTION OF METALS UTILIZING A LACTONE

Kwee C. Wong, Youngstown, Ohio, assignor to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 22, 1983, Ser. No. 524,965
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—666 **21 Claims**

1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of a lactone.

4,437,928

DISSOLUTION OF METALS UTILIZING A GLYCOL ETHER

Kwee C. Wong, Youngstown, Ohio, assignor to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 22, 1983, Ser. No. 525,070
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—666 **19 Claims**

1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of a glycol ether.

4,437,929
DISSOLUTION OF METALS UTILIZING PYRROLIDONE

Kwee C. Wong, Youngstown, Ohio, assignor to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 22, 1983, Ser. No. 525,071
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—666 **21 Claims**

1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of a pyrrolidone.

4,437,930
DISSOLUTION OF METALS UTILIZING ϵ-CAPROLACTAM

Kwee C. Wong, Youngstown, Ohio, assignor to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 22, 1983, Ser. No. 525,072
Int. Cl.³ C23F *1/00*; B44B *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—666 **15 Claims**

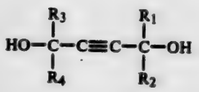
1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of ϵ-caprolactam.

4,437,931
DISSOLUTION OF METALS

Moenes L. Elias, Canfield, and Walter L. Burger, Salem, both of Ohio, assignors to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 22, 1983, Ser. No. 525,078
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—666 **13 Claims**

1. In a process for the dissolution of metals in which a metal is contacted with an aqueous solution containing free chloride or bromide ions, from about 0.2 to about 4.5 gram moles per liter of sulfuric acid and from about 0.25 to about 8 gram moles per liter of hydrogen peroxide, the method of increasing the metal dissolution rate of the solution in the presence of chloride or bromide ions to a value higher than that obtained by such a solution free of any chloride and bromide ions, which method comprises adding an effective amount of a diol promoter having the general formula:



where R_1, R_2, R_3 and R_4 can be either H, CH_3, OC_2H_5 or OC_3H_8.

4,437,932
DISSOLUTION OF METALS UTILIZING A FURAN DERIVATIVE

Kwee C. Wong, Youngstown, Ohio, assignor to Dart Industries Inc., Northbrook, Ill.

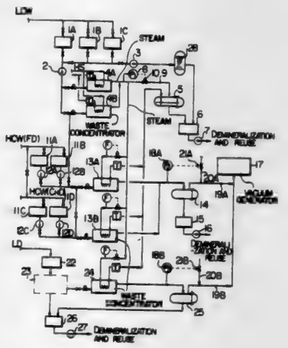
Filed Aug. 22, 1983, Ser. No. 525,080
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—666 **23 Claims**

1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of a furan.

4,437,933
APPARATUS FOR TREATING RADIOACTIVE LIQUID WASTES

Ryozo Kikkawa, Hitachi, and Masaki Takeshima, Komae, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 238,041, Feb. 25, 1981, abandoned. This application Jul. 16, 1982, Ser. No. 398,853
Claims priority, application Japan, Feb. 26, 1980, 55-23622
Int. Cl.³ B01D *1/26, 1/28*; G21F *9/08, 9/20*
U.S. Cl. 159—17 R **6 Claims**

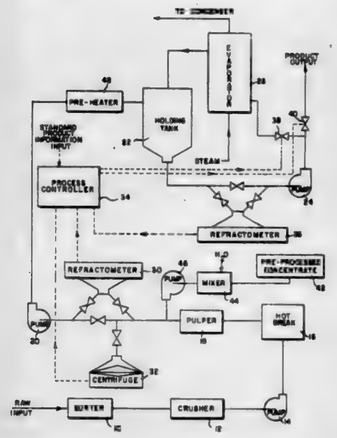


1. An apparatus for treating radioactive liquid waste from atomic power plant, which comprises:
- a low electroconductivity liquid waste concentrator of the pressurized evaporation type, for evaporating a low electroconductivity liquid waste with outside steam as a heat source at high temperature,
- a high electroconductivity liquid waste concentrator of the vacuum evaporation type, for evaporating a high electroconductivity liquid waste with the steam generated by evaporation of the low electroconductivity liquid waste,
- a laundry liquid waste concentrator of the vacuum evaporation type for evaporating a laundry liquid waste with steam generated by evaporation of the low electroconductivity liquid waste,
- means for supplying steam generated by evaporation in said low electroconductivity liquid waste concentrator to said high electroconductivity liquid waste concentrator as a heat source for low electroconductivity liquid waste concentration,
- means for supplying steam generated by evaporation in said low electroconductivity liquid waste concentrator to said laundry liquid waste concentrator as a heat source for laundry liquid waste concentration,
- a low electroconductivity liquid waste condenser for condensing the steam from said low electroconductivity liquid waste concentrator, said high electroconductivity liquid waste concentrator and said laundry liquid waste concentrator,
- a high electroconductivity liquid waste condenser for condensing the steam from said high electroconductivity liquid waste concentrator,
- a laundry liquid waste condenser for condensing the steam from said laundry liquid waste concentrator, and
- means for demineralization of condensed low electroconductivity liquid waste, high electroconductivity liquid waste and laundry liquid waste.

4,437,934
METHOD FOR CONTROLLING CONSISTENCY OF TOMATO PRODUCTS

Philip E. Nelson, W. Lafayette, Ind., and Norihisa Takada, Gumma, Japan, assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 13, 1982, Ser. No. 417,184
Int. Cl.³ B01D *1/00*; A23L *1/212*
U.S. Cl. 159—47.1 **9 Claims**

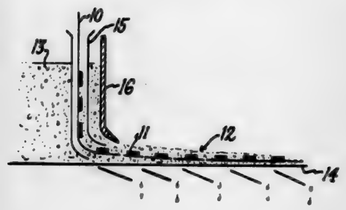


1. A process for manufacturing tomato products to an established consistency standard, comprising the steps of:
- introducing into a system a tomato extract feedstock having an initial precipitate weight ratio and an initial Brix level,
- measuring the initial precipitate weight ratio and initial Brix level of the tomato extract feedstock,
- calculating an expected precipitate weight ratio of the tomato product selected for manufacture from the tomato extract feedstock,
- computing an expected Brix level of the tomato product selected for manufacture from the tomato extract feedstock, and
- concentrating the tomato extract feedstock while measuring the Brix level thereof until the expected Brix level is achieved.

4,437,935
METHOD AND APPARATUS FOR PROVIDING SECURITY FEATURES IN PAPER

Frederick G. Crane, Jr., Dalton, Mass., assignor to Crane and Company, Dalton, Mass.

Filed Jun. 3, 1981, Ser. No. 269,850
Int. Cl.³ D21D *3/00*; D21H *5/10*
U.S. Cl. 162—103 **2 Claims**

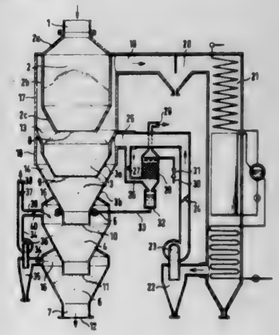


1. A method for producing identifiable paper during the paper forming process on a paper making machine comprising the steps of:
- attatching a security device consisting of a plastic film diffraction grating to one surface of a carrier web of water-dispersible paper;
- positioning the carrier paper and security device relative to a predetermined position on a base paper web of less porous web density than said carrier web during the deposition and dewatering of said base paper web from a water suspension of said base paper fibers; and
- dispersing the carrier paper web to integrally join the security device to said one surface of the base paper.

4,437,936
PROCESS FOR UTILIZING WASTE HEAT AND FOR OBTAINING WATER GAS DURING THE COOLING OF INCANDESCENT COKE

Richard A. Jung, Gummersbach, Fed. Rep. of Germany, assignor to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,053
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112256
Int. Cl.³ C10B *27/00, 39/02, 39/04*
U.S. Cl. 201—39 **7 Claims**

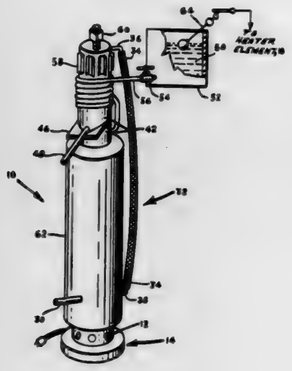


1. A process for utilizing waste heat and for obtaining water gas during the cooling of incandescent coke ejected from a chamber oven, this process comprising two stages, in which
- (a) in a first stage, dry-cooling is effected with a cooling gas, wherein the cooling gas enters the lower region of a cooling zone, rises by counterflow through the coke falling in the cooling zone, thereby absorbing heat, flows out from the cooling zone in the upper region thereof, is recooled in a heat sink and is then cleaned, and is recirculated into the lower region of the cooling zone, and
- (b) in a second stage, at a lower coke temperature relative to the first stage, the coke is wet-cooled with water sprayed in a quenching zone, whereupon the cooled coke is discharged via a discharge zone,
- including, in the first stage according to (a), forming a mixture of water gas and water vapor which is used as the cooling gas, and wherein, in the second stage according to (b), the water vapor formed during evaporation of the water sprayed into the quenching zone is conveyed through the coke, portion of said water vapor being drawn off from there, discharged into the environment after cleaning and/or fed back into the quenching zone and wherein a portion of said water vapor is conveyed through the coke into the cooling zone located above the quenching zone and reacts with the coke to form said mixture of water gas and water vapor.

4,437,937
CONTINUOUS TRICKLE-DOWN DISTILLATION UNIT FOR PRODUCING HYDRATED ALCOHOL

Thomas F. McGraw, 9034 Ashmeade Dr., Fairfax, Va. 22032

Filed Dec. 3, 1981, Ser. No. 327,135
Int. Cl.³ B01D 3/28; C07C 29/80
U.S. Cl. 202—160 4 Claims



1. A continuous trickle-down distillation unit for producing hydrated alcohol comprising:

means for containing a fluid mixture, said fluid mixture including alcohol and water;

a single, compact, elongated housing operably connected to and below said fluid mixture containing means for receiving said fluid mixture therefrom;

means situated within said elongated housing for increasing the surface area with which said fluid mixture comes in contact with as it passes therethrough, said surface area increasing means being in the form of a labyrinth-like structure made up of small fragments of material incapable of reacting with the constituents of said fluid mixture;

an electrical heater element operably connected within the bottom of said elongated housing for heating the interior of said housing and said labyrinth-like structure to a predetermined temperature, and means operably connected to said heater element for controlling said electrical heater element so as to maintain said predetermined temperature, said predetermined temperature being in the range of 170°–180° F., whereby alcohol-predominant vapors rise in said housing;

means in direct communication with said elongated housing for condensing said alcohol-predominant vapors into hydrated alcohol, said condensing means including a chamber and a plurality of fin-like elements protruding from said chamber for passively cooling said chamber;

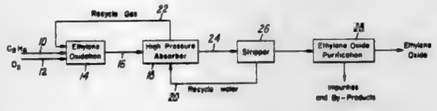
means operably connected to said chamber for directing said hydrated alcohol out of said distillation unit, said directing means including a plate extending partially within said chamber for receiving said hydrated alcohol and directing said hydrated alcohol through an output line; and

means operably connected to said elongated housing for directing remaining liquid constituents of said fluid mixture out of said distillation unit, said remaining liquid constituent directing means including means situated within said housing in the form of a cone-shaped element adjacent said heater element for preventing said remaining liquid constituents of said fluid mixture from contacting said heater element during the distillation process.

4,437,938
PROCESS FOR RECOVERING ETHYLENE OXIDE FROM AQUEOUS SOLUTIONS

Vijay S. Bhise, Bloomfield, N.J., and Robert Hoch, Ridgewood, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Jul. 17, 1981, Ser. No. 284,153
Int. Cl.³ B01D 3/34; C07D 301/32
U.S. Cl. 203—14 6 Claims



1. A process for recovering ethylene oxide from aqueous solutions comprising:

(a) contacting said aqueous solution of ethylene oxide with a solvent comprising carbon dioxide in the near-critical or super-critical state to selectively absorb ethylene oxide relative to water and;

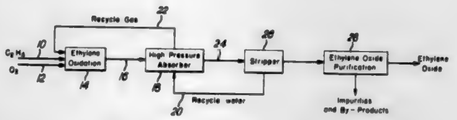
(b) separating the ethylene oxide-containing carbon dioxide of (a) from the ethylene oxide-depleted aqueous solution and thereafter;

(c) recovering the ethylene oxide from the separated ethylene oxide-containing carbon dioxide of (b).

4,437,939
PROCESS FOR SEPARATING ETHYLENE OXIDE FROM AQUEOUS SOLUTIONS

Vijay S. Bhise, Bloomfield, N.J., and Robert Hoch, Ridgewood, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 284,153, Jul. 17, 1981. This application Nov. 16, 1981, Ser. No. 321,966
Int. Cl.³ B01D 3/34; C07D 301/32
U.S. Cl. 203—14 6 Claims



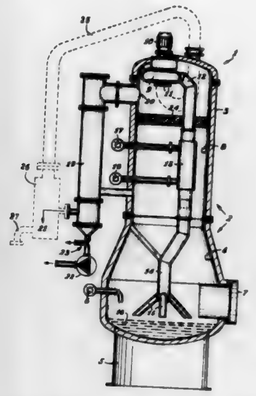
1. In a process for recovering ethylene oxide from aqueous solutions wherein carbon dioxide at near-critical or super-critical conditions extracts ethylene oxide and thereafter the extracted ethylene oxide is separated from the carbon dioxide by distillation at sub-critical conditions, the improvement comprising adding an amount of a gas or gases to said carbon dioxide sufficient to provide a critical temperature for the carbon dioxide-ethylene oxide-added gas mixture at the top of said distillation column between 32° C. and 75° C.

4,437,940
PROCESS FOR AUTOMATIC AND CONTINUOUS VAPORIZATION AND CONDENSATION

Robert Sussmeyer, Brussels; Alain Pluvinage, Irchonwelz, and Christian Moensert, Brussels, all of Belgium, assignors to Ateliers Sussmeyer SPRL, Belgium

Filed May 24, 1982, Ser. No. 381,223
Claims priority, application France, Jun. 4, 1981, 81 11054
Int. Cl.³ F01D 9/02
U.S. Cl. 203—49 4 Claims

1. An automatic and continuous vaporization and condensation process for the fractionation of a mixture comprising at least one liquid volatile fraction comprising the steps of continuously circulating a vapor of the volatile fraction, superheating said continuously circulating vapor, injecting said superheated vapor into the mixture to be fractionated to which it releases its superheated heat for vaporizing at least one liquid fraction

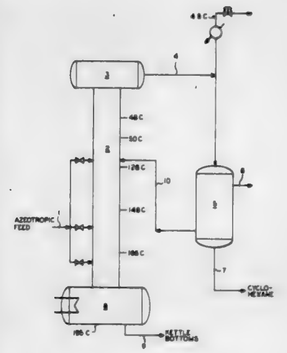


condensing and collecting a portion of the vapor of volatile fraction and controlling the ratio of condensed and recirculated volatile fractions so that a substantially constant amount thereof is continuously circulated and superheated.

4,437,941
SEPARATION OF HYDROCARBON AND ALCOHOL AZEOTROPIC MIXTURES BY DISTILLATION WITH ANHYDROUS AMMONIA

Stanley J. Marwil, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 7, 1982, Ser. No. 376,075
Int. Cl.³ B01D 3/36; C07C 7/06, 29/82
U.S. Cl. 203—50 15 Claims



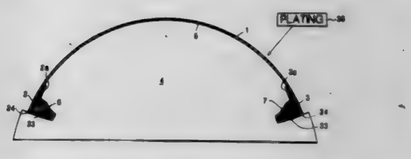
1. A process for separating an azeotropic mixture comprising a hydrocarbon and an alcohol which comprises:

adding to the azeotropic mixture an effective amount of anhydrous ammonia and, under distillation conditions, removing a vapor phase comprising the hydrocarbon, ammonia and no more than a minor amount of the alcohol, and removing a liquid phase comprising the major portion of the alcohol.

4,437,942
METHODS FOR PRODUCING PRINTING PLATES, AND PRINTING PLATES PRODUCED THEREBY

Max Dätwyler, Langenthal, Switzerland, assignor to MDC Max Dätwyler AG, Bleienbach, Switzerland

Continuation-in-part of Ser. No. 279,383, Jul. 1, 1981, abandoned. This application Jan. 6, 1982, Ser. No. 337,561
Claims priority, application Switzerland, Jul. 10, 1980, 5290/80
Int. Cl.³ C25D 1/20, 5/00
U.S. Cl. 204—6 62 Claims



1. In a method of producing a wrap-on printing plate with first and second clamping bars along opposite sides thereof for installation on a printing cylinder, the improvement comprising in combination the steps of:

providing a layer defining a printing plate body;

forming from marginal portions of said layer, along opposite sides thereof, first and second foundations for said first and second clamping bars, respectively;

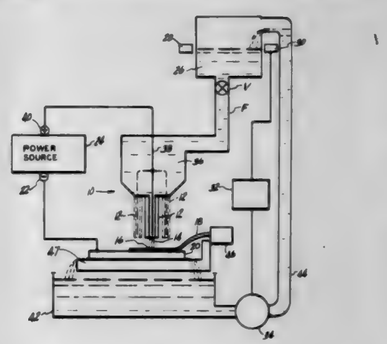
providing said first and second clamping bars on said first and second foundations by interatomic bonding between said first and second foundations and said first and second clamping bars, respectively; and

finishing said printing plate body and clamping bars.

4,437,943
METHOD AND APPARATUS FOR BONDING METAL WIRE TO A BASE METAL SUBSTRATE

Alexander F. Beck, Hamden, and Joseph Winter, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 9, 1980, Ser. No. 167,178
Int. Cl.³ C25D 5/02, 5/08
U.S. Cl. 204—16 20 Claims



1. An apparatus for bonding a substrate to a lead wire comprising:

means for supporting said substrate and said lead wire in an overlapping relationship and in physical contact with each other; and

means for electrodepositing a spot of material over at least a portion of said substrate and said lead wire to firmly bond said physically contacting substrate and lead wire.

4,437,944

PROCESS OF MAKING LONG-LIFE THIN METAL PLATE FOR AUTOMOBILE BODIES

Roberto Bruno, and Massimo Memmi, both of Rome, Italy, assignors to Zincroksid S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 173,234, Jul. 28, 1980, abandoned. This application Dec. 22, 1980, Ser. No. 219,112
Int. Cl.³ C25D 11/38
U.S. Cl. 204—27 5 Claims

1. A process for producing sheet steel for long life motor vehicle bodies, comprising the steps of:

depositing a layer of zinc on only one face of the sheet steel, and

thereafter simultaneously applying to both faces of the sheet steel a chrome-chromic oxide coating, said coating being applied by electrodeposition from an aqueous solution comprising, per liter: from 0.05 to 1 ml of H_2SO_4 at 96%; from 20 to 100 g of CrO_3; and from 0.5 to 3 g of CrF_3.

4,437,945

PROCESS FOR ANODIZING ALUMINUM FOIL

Mary A. Sells, Seymour, and John W. Scott, Clinton, both of Tenn., assignors to Sprague Electric Company, North Adams, Mass.

Filed Aug. 31, 1983, Ser. No. 528,182
Int. Cl.³ C25C 11/08, 11/12, 11/16
U.S. Cl. 204—35 N 5 Claims

1. In an improved process for electrochemically anodizing aluminum electrolytic capacitor foil including the formation of a hydrous oxide layer on said foil before anodizing, then anodizing said foil and repeatedly interrupting said anodizing to subject the foil to a stabilizing treatment in a mildly alkaline borate bath of at least 80° C., the improvement comprising carrying out said anodizing in a bath containing monosodium phosphate and having a pH of 3.5 to 5.0.

4,437,946

STABILIZATION OF ALUMINUM ELECTROLYTIC CAPACITOR FOIL

Walter J. Bernard, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 31, 1983, Ser. No. 528,183
Int. Cl.³ C25C 11/08, 11/12, 11/18
U.S. Cl. 204—35 N 4 Claims

1. A process for stabilizing anodized capacitor foil comprising passing said foil from an anodization step through a stabilizing bath containing a borate solution at a temperature of at least 80° C. and at a pH of 8.5 to 9.5 for from 2 to 8 minutes, and reanodizing, the cycle of said stabilizing and reanodizing being performed at least twice.

4,437,947

COLD ROLLED STEEL STRIP HAVING AN EXCELLENT PHOSPHATIZING PROPERTY AND PROCESS FOR PRODUCING THE SAME

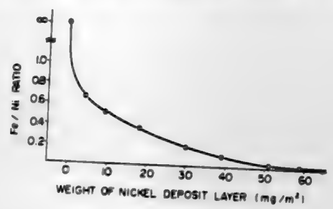
Takao Saito, Himeji; Jyun-ichi Morita, Chita; Kikuji Hirose, Tatsuno, and Akitosi Kato, Tokai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 235,734, Feb. 18, 1981, abandoned. This application Sep. 15, 1982, Ser. No. 418,382
Claims priority, application Japan, Feb. 21, 1980, 55-20851
Int. Cl.³ C25D 5/44
U.S. Cl. 204—35 R 5 Claims

1. A process for producing a cold-rolled steel strip having an excellent bonding property with a corrosion-resistant paint coating, comprising the steps of:

descaling at least one surface of a cold-rolled steel strip substrate to such an extent that the surface becomes substantially free from carbonaceous and oxide substances;

forming metallic nuclei scattered on said descaled surface of said cold-rolled steel strip substrate by depositing at least one transition elementary metal selected from the the group consisting of manganese in an amount of 5 to 300 mg/m², nickel in an amount of 1 to 50 mg/m², cobalt in an amount of 1 to 500 mg/m², copper in an amount of 1 to 100 mg/m², and molybdenum in an amount of 1 to 500 mg/m², by means of cathodic electrolytic decomposition applied to an aqueous solution containing the corresponding metal salt, to such an extent that portions of said descaled surface of said steel strip are covered by said metallic nuclei and the remaining portions of said steel strip surface are free from said metallic nuclei and are exposed to the atmosphere; and



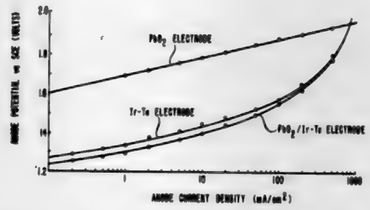
immersing said steel strip having said metallic nuclei in an aqueous solution of a phosphate to form a phosphate coating on said steel strip surface.

4,437,948

COPPER PLATING PROCEDURE

Yutaka Okinaka, Madison; Craig G. Smith, North Plainfield, and Lawrence E. Smith, Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 16, 1981, Ser. No. 312,266
Int. Cl.³ C25D 3/38
U.S. Cl. 204—52 R 11 Claims



1. A process for electroplating copper including the step of passing current through an anode, electroplating bath and cathode with a given current density at the surface of the anode characterized in that the surface of the anode consists of active oxide, said active oxide consisting of oxide of two metals, iridium and tantalum in which the composition of the oxide of two metals range from 20 to 90 mole percent iridium, remainder tantalum.

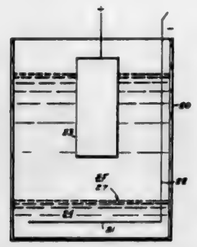
4,437,949

ELECTROLYSIS OF TIN COMPLEXES

Frank S. Holland, Hazel Grove Stockport, England, assignor to Manchem, Limited, Manchester, England

Filed Jan. 6, 1983, Ser. No. 456,317
Claims priority, application United Kingdom, Jan. 7, 1982, 8200354
Int. Cl.³ C25C 5/02
U.S. Cl. 204—59 M 13 Claims

1. An electrolytic method for the separate recovery of elemental tin and of an organic 'onium compound of the formula Cat^+X^- from a water-insoluble Cat^+ halogenotin complex produced as a by-product in the manufacture of organotin halides by the direct reaction of tin with an organic halide in the presence of said Cat^+X^- compound, wherein Cat^+ represents a positively-charged organic cation and X^- represents an inorganic anion, which method comprises passing an electric current through an electrolyte system between an anode which



is solely in contact with an aqueous anolyte and a cathode which is solely in contact with a water immiscible catholyte containing said water-insoluble complex.

4,437,950

METHOD OF CONTROLLING ALUMINUM ELECTROLYTIC CELLS

Yoji Arita, and Yuzo Seo, both of Yokohama, Japan, assignors to Itsubishi Keikinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1981, Ser. No. 321,781
Int. Cl.³ C25C 3/06, 3/20
U.S. Cl. 204—67 6 Claims

1. A method for controlling an aluminum electrolytic cell comprising the steps of detecting an increase or decrease in the quantity of alumina presenting in the bath or metal in said electrolytic cell in the solid state by calculating the difference between the quantity of alumina supplied to said electrolytic cell during an interval between an instant at which a previous anode effect has occurred or was anticipated to occur and an instant at which a present anode effect occurs or is anticipated to occur, and the quantity of alumina consumed during said interval, and increasing or decreasing the quantity of electric power supplied to said electric cell corresponding to the result of said detection.

4,437,951

MEMBRANE, ELECTROCHEMICAL CELL, AND ELECTROLYSIS PROCESS

Thomas C. Bissot, Newark, Del.; Walter G. Grot, Chadds Ford, Pa., and Paul R. Resnick, Wilmington, Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 330,606, Dec. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 319,991, Nov. 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 225,641, Jan. 16, 1981, abandoned. This application Dec. 21, 1982, Ser. No. 451,991
Int. Cl.³ C25B 1/34, 13/04, 13/08
U.S. Cl. 204—98 82 Claims

1. A membrane which is impermeable to hydraulic flow of liquid, which comprises at least two layers of fluorinated polymer which have —COOR or $—S_2W$ functional groups, where R is lower alkyl and W is F or Cl, adjacent said layers being in adherent contact with one another, and a web of support material embedded therein, there being at least a first said layer of polymer whose functional groups are —COOR functional groups and a second said layer of polymer whose functional groups are —COOR or $—SO_2W$ functional groups, each said polymer with —COOR groups having an equivalent weight of 770 to 1250, and any said polymer with $—SO_2W$ groups having an equivalent weight of 900 to 1400, the total thickness of said at least two layers of fluorinated polymer used in preparation of said membrane being in the range of about 50 to 250 microns, said web of support material having a thickness of about 25 to 125 microns and consisting of both reinforcing members and sacrificial members.

4,437,952

COEXTRUDED MULTILAYER CATION EXCHANGE MEMBRANES

Roger A. Smith, Kennett Square, and Michael S. Withers, Landsberg, both of Pa., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 336,849, Jan. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 298,600, Sep. 2, 1981, abandoned, which is a continuation of Ser. No. 225,653, Jan. 16, 1981, abandoned. This application Oct. 25, 1982, Ser. No. 436,422
Int. Cl.³ C25B 1/34, 13/02
U.S. Cl. 204—98 23 Claims

1. A process for the preparation of a multilayer cationic ion exchange membrane by heating at least two substantially incompatible melt-fabricable fluorinated polymers containing pendant side chains having functional groups selected from sulfonyl and carboxyl to a temperature above the melting point of the polymers, bringing the molten polymers into contact while each is at a temperature above the melting point of the polymer, coextruding the polymers into a composite film, cooling the resulting composite to a temperature below the melting points of each of the films, and subsequently converting the functional groups to ionizable functional groups.

4,437,953

PROCESS FOR SOLUTION CONTROL IN AN ELECTROLYTIC ZINC PLANT CIRCUIT

Oliver M. G. Newman, Moonah; David J. Palmer, Kingston Beach, and Robert V. Pammenter, Lindisfarne, all of Australia, assignors to Electrolytic Zinc Company of Australasia Limited, Melbourne, Australia

Filed May 18, 1982, Ser. No. 379,491
Int. Cl.³ C25C 1/16
U.S. Cl. 204—119 13 Claims

1. In a process for controlling the water balance and the concentration of impurity (I) in an electrolytic zinc plant circuit in which zinc is precipitated from an aqueous solution (A) containing zinc sulphate using a compound (R) containing zinc oxide as the precipitant in a selective zinc precipitation (SZP) process plant, thereby producing precipitated solids (S) containing basic zinc sulphate and a zinc depleted solution (Y), the solids (S) being returned to the said circuit, and where the impurity I comprises at least one member of the group magnesium, manganese, chloride, sodium, and potassium, the improvement which comprises reducing the volume of zinc depleted solution Y returned daily to the said circuit in association with the solids S by using a compound R which has an average particle size in the range of 5 to 150 μm.

4,437,954

FUELS PRODUCTION BY PHOTOELECTROLYSIS OF WATER AND PHOTOOXIDATION OF SOLUBLE BIOMASS MATERIALS

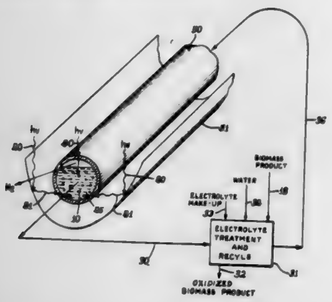
Anthony F. Sammells, Naperville, and Michael R. St. John, Chicago, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Jun. 19, 1981, Ser. No. 275,378
Int. Cl.³ C25B 1/04, 15/08; B01J 19/08
U.S. Cl. 204—129 32 Claims

1. A process for fuels production by photoelectrolysis of water and photooxidation of water soluble biomass product avoiding molecular oxygen evolution comprising:

passing an aqueous electrolyte comprising oxidizable biomass product selected from the group consisting of monosaccharides, polysaccharides, lignins, their partially oxidized products, and mixtures thereof in contact with both electrodes of a plurality of solid photochemical diodes of the type selected from the group consisting of Schottky-type metalized appro-

priately doped p-type semiconductor, Schottky-type metalized appropriately doped n-type semiconductors, appropriately doped p-n type semiconductors, and mixture thereof, said oxidizable biomass product oxidizing more cathodically than oxygen and having a decomposition potential more negative than said semiconductor;



optically illuminating said semiconductor portion(s) of said photochemical diodes producing hydrogen as the cathodic reaction of said photochemical diode and producing oxidized biomass product as the anodic reaction of said photochemical diode;

removing molecular hydrogen from said electrolyte; and

separately removing oxidized biomass product from said electrolyte.

4,437,955

COMBINED AC AND DC ETCHING OF ALUMINUM FOIL

Jesse S. Shaffer, Columbia, S.C., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,530
Int. Cl.³ C25F *3/04*
U.S. Cl. 204—129.4 **4 Claims**

1. A process for the electrolytic etching of aluminum capacitor foil comprising pre-etching said foil by immersing said foil in a first aqueous electrolyte bath containing, by weight, from 1–6% of HCl, 0–2% of H_3PO_4 and 0–2% of HNO_3 while being subjected to an AC of a current density of 0.1–2.0 amps/cm^2 and a frequency of 15–100 Hertz while said first electrolyte bath is maintained at a temperature of 30°–60° C. until a loss of weight of said foil of at least about 0.05 mg/cm^2 is achieved and then, without removing the HCl from said foil, etching said foil by immersing said foil in a second aqueous electrolyte bath containing, by weight, 18–26% of NaCl and either 0.3–2% of Na_2SO_4 or 1–4% of boric acid while being subjected to DC of a current density of 2–5 amps/cm^2 while said second electrolyte bath is maintained at a temperature of about 80°–100° C. until a total loss of weight of said foil of at least about 7 mg/cm^2 is achieved.

4,437,956

METHOD FOR PREPARING SURFACES OF METAL COMPOSITES HAVING A BRITTLE PHASE FOR PLATING

Cameron W. Coates, Knoxville, and Thomas J. Wilson, Clinton, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 19, 1982, Ser. No. 379,799
Int. Cl.³ C23F *1/02*; C25F *3/08*; C25D *5/38*
U.S. Cl. 204—129.35 **4 Claims**

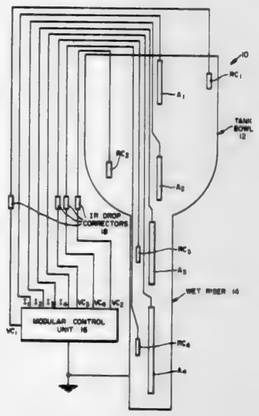
1. A method for preparing the surfaces of a two-phased metal composite for a plating with a corrosion-resistant material when the composite is formed of a relatively brittle refractory metal or carbide particulate component in a matrix of metal of greater malleability than the brittle metal or carbide component comprising the steps of selectively etching a major portion of the brittle component from the exposed surfaces of the composite, sufficiently peening the exposed surfaces of the composite to essentially deplete the latter of the brittle metal component and to spread the relatively malleable matrix metal on the exposed surfaces, and thereafter chemically removing residual particulates of the brittle component from the exposed surface so as to provide a surface on the composite consisting essentially of the malleable matrix metal for reception of an adherent plating of the corrosion resistant material.

4,437,957

CATHODIC OR ANODIC PROTECTION SYSTEM AND METHOD FOR INDEPENDENTLY PROTECTING DIFFERENT REGIONS OF A STRUCTURE

Jonathan P. Freeman, Dorset, Ohio, assignor to Freeman Industries, Inc., Dorset, Ohio

Filed May 3, 1982, Ser. No. 374,298
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—147 **23 Claims**



1. A system for protecting a structure immersed in an electrolyte using at least two protection units located adjacent to different regions of the structure comprising:

a first protection unit comprising:

first means for applying a continuously adjustable rectified alternating current voltage between the structure and at least a first electrode which is immersed in the electrolyte and spaced apart from the structure;

a first reference cell located in the electrolyte to produce a direct current voltage between the first reference cell and the structure;

first measuring means coupled to the first reference cell to measure the potential between the first reference cell and the structure; and

first control means coupled between said first measuring means and said first applying means for continuously adjusting said first applying means to control the level of the rectified alternating current voltage applied by said first applying means in accordance with the level of the potential measured by said first measuring means; and

a second protection unit comprising:

second means for applying a continuously adjustable rectified alternating current voltage between the structure and at least a second electrode which is immersed in the electrolyte and spaced apart from the structure;

a second reference cell located in the electrolyte to produce a direct current voltage between the second reference cell and the structure;

second measuring means coupled to said second reference cell to measure the potential between said second reference cell and the structure; and

second control means coupled between said second measuring means and said second applying means for continuously adjusting said second applying means to control the level of the rectified alternating current voltage applied by said applying means in accordance with the level of potential measured by said second measuring means,

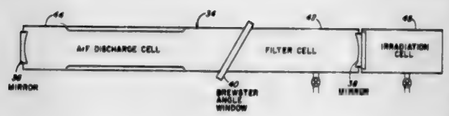
wherein the first and second protection units are essentially independent of one another in their operation and are located adjacent to different regions of the protected structure so that the level of alternating current voltage applied between the structure and the first electrode and the structure and the second electrode will be independently established by the first and second control means in accordance with the respective potentials measured by said first and second measuring means.

4,437,958

DEVICE AND METHOD FOR SEPARATING OXYGEN ISOTOPES

Stephen D. Rockwood, and Robert K. Sander, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1978, Ser. No. 868,586
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—157.1 R **17 Claims**



10. A method for separating isotopes of oxygen in oxygen gas, which comprises the steps of:

a. generating laser radiation at approximately 193 nm;

b. filtering said laser radiation, to produce interaction radiation approximately coincident with dissociative absorption bands of the oxygen isotope to be separated and preferentially absorbed thereby;

c. irradiating the oxygen gas with said interaction radiation to preferentially photodissociate oxygen molecules containing the oxygen isotope to be separated in the oxygen gas thereby producing oxygen atoms enriched in te oxygen isotope to be separated; and

d. combining said oxygen atoms with a scavenger to form a product separable from the oxygen gas and enriched in the oxygen isotope to be separated.

4,437,959

PHOTOPOLYMERIZABLE COMPOSITION BASED ON EPOXY COMPOUND

Shuzi Hayase, Kawasaki, and Shuichi Suzuki, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

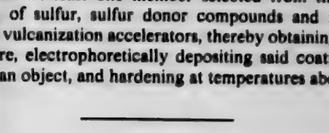
Filed Sep. 23, 1982, Ser. No. 421,733
Claims priority, application Japan, Sep. 30, 1981, 56-153746
Int. Cl.³ C08F *2/50*; C08G *59/68*
U.S. Cl. 204—159.11 **12 Claims**

1. A photopolymerizable composition comprising:

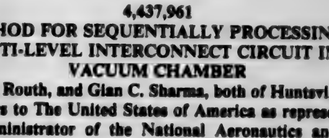
an epoxy compound;

a curing catalyst including at least one aluminum compound having at least one organic radical directly bonded to the aluminum atom, and at least one α-ketosilyl compound; and

at least one photosensitizer selected from the group consisting of benzophenone compounds represented by a formula:



(where each R is independently a halo group, an alkyl group, an aromatic group or a substituted aromatic group, an n is an integer from 0 to 5), and thioxanthone compounds represented by a formula:



(where R and n have the same meanings as above).

4,437,960

METHOD FOR THE CROSSLINKING OF CATHODICALLY DEPOSITABLE COATING AGENTS

Hans-Georg Zengel, Kleinwallstadt; Hilde Kersten, Erlenbach, and Helmut Mägerlein, Obernburg, all of Fed. Rep. of Germany, assignors to Akzo, N.V., Arnham, Netherlands

Filed Dec. 10, 1981, Ser. No. 329,562
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047525
Int. Cl.³ C25D *13/06, 13/10*
U.S. Cl. 204—181 C **16 Claims**

1. Method for the crosslinking of cathodically depositable coating agents, optionally containing pigment, dyestuff, filler, solvent, varnish adjuvant or additional crosslinking components, based upon a water-soluble or dispersible nitrogen based cationic resin, at least partially present as salt, comprising contacting a cationic resin having a molecular weight of at least 1000, containing 2 to 20 equivalents of double bonds per 1000 g with at least one member selected from the group consisting of sulfur, sulfur donor compounds and mixtures thereof as vulcanization accelerators, thereby obtaining a coating mixture, electrophoretically depositing said coating mixture onto an object, and hardening at temperatures above 120° C.

4,437,961

METHOD FOR SEQUENTIALLY PROCESSING A MULTI-LEVEL INTERCONNECT CIRCUIT IN A VACUUM CHAMBER

Donald E. Routh, and Gian C. Sharma, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 19, 1982, Ser. No. 409,679
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 EC **7 Claims**

1. A method for processing multi-level interconnections for microelectronic circuits comprising:

providing a processed wafer device having a first metal contact layer, an insulating layer over said metal contact layer, and a photo resist pattern applied over said insulating layer defining a via to be formed in a subsequent step;

providing a vacuum chamber;

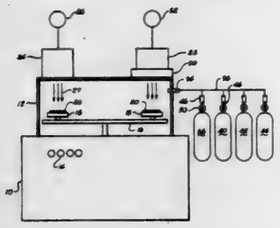
providing an RF sputtering means and DC mangetron sputtering means arranged in operable position for sputtering in said vacuum chamber;

placing said processed wafer device in said chamber and sequentially performing the following steps in said vacuum chamber without exposure to the atmosphere;

forming said via by etching through said insulating layer of the wafer device according to said photo resist pattern by means of RF sputtering;

removing any remaining photo resist on said wafer device by utilizing RF sputtering while said wafer device remains continuously in said vacuum chamber;

cleaning said wafer device and removing remaining oxide from the wafer device after removing the photo resist by



sputtering said wafer device with said RF sputtering means while said wafer device is continously processed in said vacuum chamber; and

depositing a layer of interconnect material on the wafer device in place while continuously in said vacuum chamber by means of magnetron sputtering, thereby filling said via to make electrical connection with said metal contact layer.

4,437,962

DIAMONDLIKE FLAKE COMPOSITES

Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 17, 1983, Ser. No. 495,381

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 C **18 Claims**

1. A method of making a composite material comprising the steps of

depositing carbon on a surface,

removing flakes of said carbon from said surface, and

mixing said flakes with a matrix material to form the composite material.

4,437,963

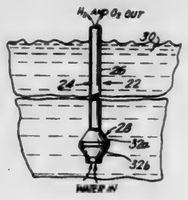
APPARATUS FOR ELECTROLYZING WATER

David R. Yeoman, 869 Concourse Village West, Bronx, N.Y. 10451

Filed Sep. 10, 1981, Ser. No. 300,812

Int. Cl.³ C25B *1/04, 15/08;* F03B *13/10, 13/12*

U.S. Cl. 204—229 **10 Claims**



1. Apparatus for the electrolysis of water, comprising:

an elongated tube;

an electrolysis assembly provided at one end of said tube defining an interior chamber constituting an extension of said tube, said electrolysis assembly including,

at least one fixed stator and at least one rotatably mounted rotor,

drive means for rotating the rotor adapted to be driven by a flowing fluid,

a pair of fixed electrodes extending across said interior chamber,

a matrix of modules, each module comprising bistable magnetic means having a reversing polarity when exposed to an increasing magnetic field and having respective positive and negative leads, affixed to one of said rotor and stator and magnetic field generating means provided on the other of said rotor and stator, and

circuit means coupling said positive and negative leads of said modules to respective ones of said electrodes;

whereby upon a fluid being caused to flow through said interior chamber, said drive means effect rotation, of said rotor with respect to said stator whereupon said modules are exposed to continuous excursions in magnetic field strength to generate a voltage which is impressed across said electrodes to electrolyze water coming into contact with the same.

4,437,964

ASSEMBLY FOR SPOT FEEDING ALUMINA TO AN ELECTROLYTIC TANK FOR THE PRODUCTION OF ALUMINUM

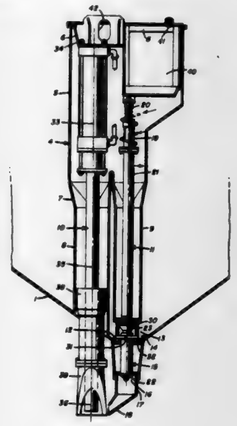
Jean-Louis Gerphagnon, and Claude Wolter, both of St. Jean De Maurienne, France, assignors to Aluminium Pechiney, St. Jean de Maurienne, France

Filed May 19, 1983, Ser. No. 496,244

Claims priority, application France, May 27, 1982, 82 09700

Int. Cl.³ C25C *3/14, 3/22*

U.S. Cl. 204—245 **4 Claims**



4. A system for spot feeding alumina into a tank for producing aluminum by electrolysis of alumina dissolved in molten cryolite, comprising; a hopper over the tank, crust breaking means for making a hole in the crust of solidified electrolyte, which covers the surface of the tank in normal operation, and alumina feed control means for feeding controlled doses of alumina into the hole, said hopper having a bottom aperture for discharge of the alumina, an impervious case positioned vertically in said hopper, said case having an open upper end substantially at the level of the upper portion of the hopper, said case, in spaced relation below the open upper end, having two substantially parallel depending branches, a first branch downwardly opening outside the hopper, and the second branch opening inside the hopper, in the immediate vicinity of the aperture for the discharge of alumina, the crust breaking means being positioned detachably in the first branch of the case, and the alumina feed means being positioned detachably in the second branch of the case, and a support overlying and generally sealing the open upper end of the case, the crust breaking means and the alumina feed means being fixed to said support with the support being common to the feed means and the crust breaking means, said support, feed means, and crust breaking means being removable from the hopper as a unit.

4,437,965

REINFORCED LEAD ANODE FOR THE ELECTROLYTIC PRODUCTION OF ZINC FROM SULPHATE SOLUTION AND PROCESS FOR THE PREPARATION THEREOF

Noël Dreulle; Alain Van Ceulen, and Claude Eusebe, all of Douai, France, assignors to Compagnie Royale Asturienne des Mines, Brussels, Belgium

Filed Mar. 11, 1982, Ser. No. 357,195

Claims priority, application France, Mar. 18, 1981, 81 05396

Int. Cl.³ C25B *11/00*

U.S. Cl. 204—290 F **7 Claims**

1. In a lead anode for producing zinc from aqueous solutions of zinc sulphate, the improvement wherein said lead anode comprises a thin, generally flat reinforcing member and an active part comprising argentiferous lead coated on said reinforcing member, said reinforcing member being made of a metal selected from the group consisting of titanium and zirconium, and said argentiferous lead coating comprising a layer on each side of said reinforcing member, the two layers being joined along their peripheral edges and the total thickness of the two layers being greater than the thickness of said reinforcing member.

4,437,966

SPUTTERING CATHODE APPARATUS

Lawrence L. Hope, Stow, and Ernest A. Davey, Peabody, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 30, 1982, Ser. No. 431,958

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **5 Claims**

1. In a sputtering cathode apparatus for the deposition of a thin film on a substrate which is moved relative to the apparatus and including planar sputtering means and means for exciting the planar sputtering means, the improvement comprising a sputtering cathode target associated with said sputtering means, said target having a predetermined plasma sputtering area in the form of a closed convoluted electron path defining a target area larger than the planar area of the substrate, said substrate motion being confined to an area within said defined target area, and said predetermined plasma sputtering area including multiple plasma legs separated by non-emissive regions therebetween.

4,437,967

APPARATUS FOR ELECTROPHORETICALLY FRACTIONATING A SOLUTION

Victor Sanchez, Ramonville-Saint-Agne; Patrick Espenan, Toulouse; Ernest Casademont, Montgiscard, and J. Pierre Lafaille, Saint-Orens, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Nov. 9, 1981, Ser. No. 319,408

Claims priority, application France, Nov. 7, 1980, 80 23952

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—301 **10 Claims**

1. An electrophoretic fractionating apparatus for separating solutions containing dissolved substances, in particular solutions containing proteins, comprising:

(a) a frame;

(b) first and second opposed electrodes mounted to said frame and extending therefrom and including means for generating an electric field between said electrodes;

(c) first and second opposed semi-permeable membranes, each of said membranes being adjacent one of said electrodes;

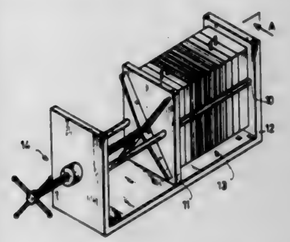
(d) a fractionating chamber having first and second parallel surfaces and being of a pre-determined thickness positioned between said membranes;

(e) solution intake means associated with said chamber;

(f) solution evacuation means associated with said chamber and at a distance from said intake means;

(g) said fractionating chamber including a plurality of spaced parallel strips for dividing said chamber into a plurality of compartments of substantially equal volume, said strips having a thickness equal to said chamber thickness adapted for maintaining said membranes said predetermined thickness apart;

(h) said solution intake means including a first compartment



associated with said first surface and having a depth less than said chamber thickness and spanning said plurality of said strips for distributing said solution to said compartments;

(i) said solution evacuation means including a second compartment associated with said second surface and having a depth less than said chamber thickness and spanning said plurality of said strips for evacuating said solution; and,

(j) said chamber having partition elements located on one hand along one side of said chamber to separate said intake means from said evacuation means and on the other hand along the opposite side for the purpose of bounding the evacuation means in the vicinity of the first membrane.

4,437,968

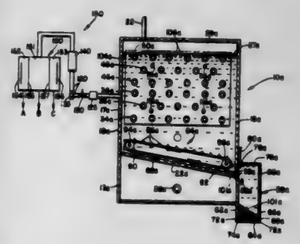
BOILER APPARATUS

Robert H. Elliott, Jr., Fort Washington, Pa., assignor to Zerpol Corporation, Fort Washington, Pa.

Continuation-in-part of Ser. No. 185,830, Sep. 10, 1980, which is a division of Ser. No. 65,816, Aug. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 907,190, May 18, 1978, abandoned. This application Dec. 10, 1981, Ser. No. 329,514

Int. Cl.³ B01D *13/02;* C02F *1/02*

U.S. Cl. 204—301 **1 Claim**



1. Apparatus for use in treatment of wastewater effluent from an industrial process wherein a steam component, a useful industrial chemical, and a treated water stream having a low concentration of impurities is generated from wastewater fed to said apparatus, comprising: boiler means for receiving and heating said wastewater under pressure to produce an impure concentrate and a steam component, said impure concentrate

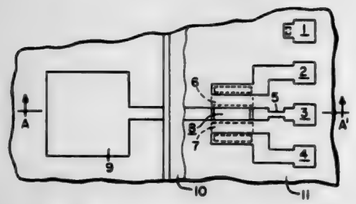
comprising a boiler dissolved solids containing component substantially free of suspended solids and a boiler sludge component containing suspended solids; bolwdown means having first means communicating with said boiler means for removing said sludge component, said blowdown means further including means for removing said sludge from said first means; and second means for removing said dissolved solids containing component from said boiler means and for treating said dissolved solids containing component to form said treated water stream and a useful industrial chemical wherein said second means further includes (A) controller means for measuring the conductivity of said dissolved solids containing component and in response to said conductivity withdrawing said dissolved solids containing component from said boiler means, (B) means for controlling the rate of flow of said dissolved solids containing component withdrawn from said boiler means in response to said controller means, (C) third means having a central chamber for receiving said flow of said dissolved solids containing component, end chambers defined by ion-permeable membranes separating said central chamber from said end chambers, said end chambers containing electrodes, and means for flowing a direct current from the electrodes transversely through said membranes and said chambers, said third means for diluting the concentration of said component entering said central chamber to form said treated water stream and for forming an industrial chemical in said end chambers, (D) means for introducing said dissolved solids containing component into said central chamber and (E) means for removing said treated water stream from said central chamber and said industrial chemical from said end chambers.

4,437,969

OFFSET-GATE CHEMICAL-SENSITIVE FIELD-EFFECT TRANSISTORS (OG-CHEMFETS) WITH ELECTROLYTICALLY-PROGRAMMABLE SELECTIVITY

Arthur K. Covington, Newcastle upon Tyne, and Alastair Sibbald, Whitley Bay, both of England, assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,721
Claims priority, application United Kingdom, Apr. 9, 1981, 8111198
Int. Cl.³ C12Q *1/00*; G01N *27/46*
U.S. Cl. 204—403 8 Claims



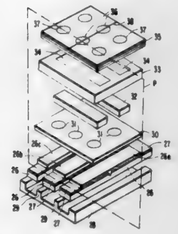
7. A field-effect device comprising a semiconductor substrate, a source region located in a first surface of said substrate, a drain region located in said first surface and spaced apart from said source region, an electrical insulator material overlying at least a portion of said source and drain regions and the surface of the substrate lying between said regions, a gate conductor disposed over said insulator material between said source and drain regions, said gate conductor extending laterally along said first surface to a region remote from said source and drain regions, the width of that portion of said gate conductor in said remote region being greater than the width of said gate conductor in the region of said source and drain regions, at least a portion of said lateral extension of said gate conductor being covered by at least one electroactive material suitable for the detection and measurement of chemical properties to which the device is exposed, an electrical conductor connected to said conductive layer, and a fusible link connected in series with said electrical conductor.

4,437,970

DEVICE FOR DETERMINING IONIC ACTIVITY

Masao Kitajima; Osamu Seshimoto; Kikuo Kubotera, and Akira Yamaguchi, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1983, Ser. No. 500,600
Claims priority, application Japan, Jun. 2, 1982, 57-94575
Int. Cl.³ G01N *27/46, 27/58*
U.S. Cl. 204—412 19 Claims



1. In a device for determining ionic activity composed of plural pairs of solid electrodes each pair having an ion-selective layer selectively responsive to a specific predetermined ion as the outermost layer of the solid electrodes and one porous bridge formed thereon for achieving, after supplying a test solution and a reference solution to said pairs of solid electrodes, the electrical conduction between both electrodes in each said pair by the permeation of the solutions through the porous bridge, the improvement comprising said plural pairs of solid electrodes, each electrode pair having one electrode on each of two sides and having a different ion-selective layer, at least one liquid distribution porous member provided for each said side of plural pairs of solid electrodes so that said liquid distribution porous member covers at least partially all the electrodes at each said side, and said bridge disposed on or between said liquid distribution members.

4,437,971

ELECTROCHEMICAL OXYGEN SENSOR, PARTICULARLY FOR EXHAUST GASES FROM COMBUSTION ENGINES

Herbert Csanitz, Bietigheim-Bissingen, and Helmut Weyl, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 19, 1981, Ser. No. 275,518
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023337
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—427 14 Claims

1. In combination with an exhaust system of an internal combustion engine having an exhaust component (E) subject to vibration,

an electrochemical sensor to determine the oxygen content of gases, particularly of exhaust gases from an internal combustion engine, said sensor having

a body (11) of solid electrolyte material;

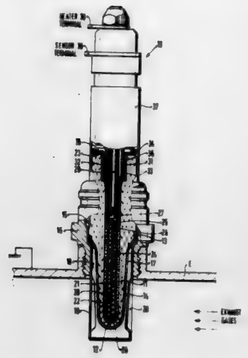
a layer-like porous measuring electrode (14) applied to a first surface region of the body;

means including another surface region of the body defining a hollow chamber (21);

a layer-like reference electrode (22) located on said other surface region of the body and positioned within the hollow chamber (21), said hollow chamber being open to ambient air, the oxygen of which providing a reference gas;

and comprising

movable granules (39) loosely retained and located in at least part of said hollow chamber (21) in which the layer-like reference electrode (22) is located, said granules being



inert with respect to oxygen and having a surface hardness which is at least as great as that of the layer-like reference electrode (22).

4,437,972

PROCESS FOR CO-PROCESSING COAL AND A PARAFFINIC MATERIAL

Francis J. Derbyshire, Ewing, N.J., and Philip Varghese, Newtown, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,438
Int. Cl.³ C10G *1/00, 1/06, 3/00*
U.S. Cl. 208—8 LE 21 Claims

1. A process for treating a mixture comprising coal and a paraffinic feedstock, said process comprising: thermally reacting said mixture in a thermal reaction zone to form an effluent comprising a solids fraction, a polar asphaltenic liquid fraction derived substantially from said coal and a paraffinic liquid fraction, said paraffinic liquid fraction containing a sufficient paraffin content derived from said feedstock to promote separation of said polar asphaltenic fraction from said paraffin liquid fraction, cooling said effluent to precipitate said polar asphaltenic fraction and separating said solids fraction and precipitated polar asphaltenic fraction from said paraffinic liquid fraction.

4,437,973

COAL HYDROGENATION PROCESS WITH DIRECT COAL FEED AND IMPROVED RESIDUUM CONVERSION

Derk T. A. Huibers, Pennington, and Paul H. Kydd, Lawrenceville, both of N.J., assignors to HRI, Inc., Gibbsboro, N.J.

Filed Apr. 5, 1982, Ser. No. 365,660
Int. Cl.³ C10G *1/08*
U.S. Cl. 208—10 23 Claims

1. A process for hydrogenation of coal to produce hydrocarbon liquid and gaseous products, comprising:

(a) pressurizing particulate coal which has been dried to a moisture content of less than about 5 W % and feeding it at temperature below about 600° F. directly, without further heating into a pressurized backmixed type reaction zone containing coal-derived liquid and hydrogen;

(b) passing the coal along with said coal-derived liquid and hydrogen upwardly through said reaction zone which is maintained at 700°–975° F. temperature and 1000–5000 psig hydrogen partial pressure to rapidly heat the cool and convert it to hydrogenated coal-derived material;

(c) heating recycle hydrogen and a recycle coal-derived hydrogen liquid normally boiling above about 550° F. to a temperature sufficient to maintain said reaction zone temperature and recycling the heated materials into the lower part of said reaction zone to maintain said temperature therein;

(d) withdrawing said hydrogen coal-derived material containing gas and liquid fractions from the upper part of said reaction zone, and phase separating said material into gaseous and liquid fractions;

(e) passing said liquid fraction from said phase separation to a liquid-solids separation step, from which an overhead liquid stream normally boiling above about 550° F. and containing a reduced concentration of particulate solids is heated to said temperature above the reaction zone before recycling said heated coal-derived liquid into the reaction zone; and

(f) recovering hydrocarbon gas and increased yield of low boiling hydrocarbon liquid product from the process.

4,437,974

COAL LIQUEFACTION PROCESS

Ryohei Minami, Chiba; Shozo Okamura; Yoshihiko Sunami, both of Ibaraki; Takuji Hosoi, Kawasaki, and Takuo Kanou, Tokyo, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 17, 1982, Ser. No. 389,566
Claims priority, application Japan, Jun. 29, 1981, 56-99647
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 17 Claims

1. A coal liquefaction process comprising a coal liquefaction step to contact finely divided coal with molecular hydrogen and a solvent in the presence of a catalyst to provide a slurry, and a separation step to separate the resulting slurry into a gaseous component, a liquid component and a solid residue, characterized by further comprising a metal bath gasification step to gasify a carbonaceous solid material by blowing an oxygen gas and said solid residue onto a molten metal bath through a non-immersing lance, and with fine powdery solids which are derived from the molten metal bath and recovered from the generated gas in said metal bath gasification step being introduced to said liquefaction step and used as said catalyst.

4,437,975

MANUFACTURE OF LUBE BASE STOCK OIL

Bernard M. Gillespie, Pitman; Michael S. Sarli, Haddonfield, and Kenneth W. Smith, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 74,361, Sep. 10, 1979, abandoned, which is a division of Ser. No. 862,460, Dec. 20, 1977, Pat. No. 4,181,598, which is a continuation-in-part of Ser. No. 817,309, Jul. 20, 1977, Pat. No. 4,137,148. This application Sep. 30, 1982, Ser. No. 430,180
Int. Cl.³ C10G *47/16, 65/12*
U.S. Cl. 208—87 4 Claims

1. In a process for preparing a lube base stock oil from a deasphalted short residuum of a waxy crude, said deasphalted short residuum having a pour point substantially higher than +30° F., said process comprising dewaxing said deasphalted short residuum and recovering a dewaxed residuum having a pour point from about −25° F. to not higher than +30° F., the improvement, whereby increasing the yield of said dewaxed residuum, which comprises:

catalytically dewaxing said deasphalted short residuum by contact, in the presence of hydrogen, with a dewaxing catalyst contained in a dewaxing zone, said dewaxing catalyst comprising an aluminosilicate zeolite having a silica/alumina ratio of at least about 12 and a Constraint Index of about 1 to about 12, said contacting being at a temperature from 500° to about 675° F. and at a hydrogn partial pressure at the reactor inlet of about 150–1500 psia, and cascading the effluent from said dewaxing zone to a hydrotreating zone wherein it is contacted with a hydro-

treating catalyst at a temperature of 500° to 575° F., thereby increasing the oxidation stability of said dewaxed residuum.

4,437,976

TWO-STAGE HYDROCARBON DEWAXING HYDROTREATING PROCESS

Stephen M. Oleck, Moorestown, and Robert C. Wilson, Jr., Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 290,759, Aug. 7, 1981. This application Sep. 13, 1982, Ser. No. 417,765
Int. Cl.³ C10G 65/02, 45/12
U.S. Cl. 208—97 10 Claims

1. A process for catalytically dewaxing and hydrotreating a waxy hydrocarbon fraction boiling within the approximate range of 400° to 1050° F. to provide a lubricating oil of high viscosity index which comprises:

(a) contacting said fraction with a dewaxing catalyst under conditions sufficient to effect at least a partial dewaxing of said fraction; and

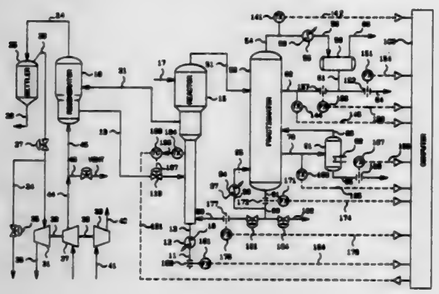
(b) contacting the reaction product thereby obtained with hydrogen and a hydrotreating catalyst comprising one or more zeolites selected from the group consisting of ZSM-5, ZSM-11, ZSM-23, and ZSM-35, blended with a refractory inorganic oxide to form an extrudate, said extrudate having a metal hydrogenation component present therein in a concentration of metal in elemental, oxide, or sulfide form of between about 0.05 and about 25 percent by weight and a concentration of zeolite in said extrudate of between about 5 and about 40 percent by weight.

4,437,977

CONTROL OF A CATALYTIC CRACKING UNIT

Gary L. Funk, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 29, 1982, Ser. No. 427,260
Int. Cl.³ B01J 8/26; C10G 11/18
U.S. Cl. 208—113 16 Claims



1. Apparatus comprising:

a reactor;

a fractional distillation column;

means for supplying a feed to said reactor;

means for removing the products produced by the cracking of said feed from said reactor and for supply the thus removed products as a feed to said fractional distillation column;

cooling means;

an accumulator;

means for withdrawing an overhead stream from said fractional distillation column and for supplying the thus withdrawn overhead stream through said cooling means to said accumulator;

means for withdrawing a liquid stream from said overhead accumulator, for returning a first portion of the thus withdrawn liquid stream to an upper portion of said fractional distillation column as an upper external reflux and for withdrawing a second portion of the thus withdrawn liquid stream as an overhead product stream;

means for withdrawing a sidedraw stream from an intermediate portion of said fractional distillation column, wherein at least a portion of said sidedraw stream is utilized to provide a side draw product stream;

means for withdrawing a bottoms product stream from a lower portion of said fractional distillation column, wherein a portion of the thus withdrawn bottoms product stream may be recycled to said reactor;

means for establishing a first signal representative of the actual internal reflux to vapor ratio in said upper portion of said fractional distillation column;

means for establishing a second signal representative of the actual internal reflux to vapor ratio in said intermediate portion of said fractional distillation column;

means for establishing a third signal representative of the actual flow rate of product removed from said fractional distillation column in said overhead product stream and said sidedraw product stream which has a boiling point above a specified boiling point in response to said first and second signals;

means for establishing a fourth signal representative of the actual flow rate of said bottoms product stream;

means for summing said third signal and said fourth signal to establish a fifth signal representative of the total flow rate of product withdrawn from said fractional distillation column which has a boiling point above said specified boiling point;

means for establishing a sixth signal representative of the flow rate of the portion of said feedstream to said reactor which has a boiling point above said specified boiling point;

means for establishing a seventh signal representative of the flow rate of any portion of said bottoms product stream recycled to said reactor;

means for summing said sixth signal and said seventh signal to establish an eighth signal representative of the total flow rate of feed to said reactor which has a boiling point above said specified boiling point;

means for establishing a ninth signal representative of the amount of the feed flowing to said reactor which has a boiling point above said specified boiling point which is converted to a product having a boiling point below said specified boiling point (Conversion) in response to said fifth and eighth signals;

means for establishing a tenth signal representative of a desired Conversion;

means for comparing said ninth signal and said tenth signal and for establishing a eleventh signal which is responsive to the difference between said ninth signal and said tenth signal; and

means for manipulating a process variable associated with said reactor in response to said eleventh signal to thereby maintain the actual Conversion represented by said ninth signal substantially equal to the desired Conversion represented by said tenth signal.

4,437,978

CRACKING CATALYST COMPOSITIONS FOR REDUCTION OF SULFUR CONTENT IN COKE

Arthur W. Chester, Cherry Hill; Harry A. McVeigh, Belle Mead, and William A. Stover, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 945,967, Sep. 26, 1978. This application May 3, 1982, Ser. No. 374,454
Int. Cl.³ B01J 29/10; C10G 11/05, 47/18
U.S. Cl. 208—120 9 Claims

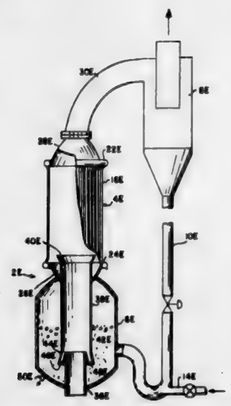
1. A cyclic fluidized catalytic cracking process, characterized by reduced emissions of sulfur oxides in regenerator stack gases, wherein a hydrocarbon feedstock containing organic sulfur compounds is subjected to cracking under fluidizing conditions with a high-activity fluid cracking catalyst in a reaction zone, cracking catalyst deactivated by coke deposits is separated from cracked hydrocarbon reaction zone effluent and regenerated to high activity in a catalyst regeneration zone by burning the coke deposits from the fluid catalyst in contact with an oxygen-containing gas stream, and regenerated fluid catalyst is recycled to the reaction zone, said process comprising the cracking of the hydrocarbon feedstock containing organic sulfur compounds in the presence of a regenerable fluid cracking catalyst, said cracking catalyst comprising a base cracking catalyst comprising a rare earth exchanged zeolite Y contained in a matrix therefor, co-impregnated with rare earth oxides, and a metal selected from chromium, manganese, cobalt, nickel and platinum group metals, said rare earth oxides being present in amounts between about 1 and 10 wt percent above the exchange capacity of said base material, said chromium, manganese, cobalt and nickel components being present in amounts between about 0.05 and 5 wt percent as the oxides, and said platinum group metals in amounts between about 0.1 and 200 ppm of metal.

4,437,979

SOLIDS QUENCH BOILER AND PROCESS

Herman N. Woebcke, Stamford, Conn.; Arju H. Bhojwani, Lawrenceville, N.J., and Robert J. Gartside, Auburndale, Mass., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Division of Ser. No. 165,784, Jul. 3, 1980, Pat. No. 4,356,151, which is a continuation-in-part of Ser. No. 82,162, Oct. 5, 1979, Pat. No. 4,351,275. This application Feb. 2, 1982, Ser. No. 345,099
Int. Cl.³ C10G 9/32
U.S. Cl. 208—153 5 Claims



1. In a TRC process wherein hydrocarbon feed of hydrosulfurization residual oil, together with entrained inert solids and diluent gas, are passed through a cracking zone within a thermal cracking reactor for a residence time of 0.05 to 2 seconds to produce a stream of reactor effluent, wherein the temperature in said cracking zone is between 1300° F. and 2500° F., and after which said reactor effluent is quench cooled, the improvement comprising a process for sequentially quenching the reactor effluent including the steps of:

a. introducing particulate solids into the effluent stream in the first quenching zone to partially quench the effluent;

b. passing the composite stream of partially quenched effluent and particulate solids in indirect heat exchange relationship with a coolant in the second quenching zone to further cool the composite stream of effluent and particulate solids;

c. separating the quenched and cooled gas from the particulate solids after the effluent and particulate solids have passed in indirect heat exchange relationship with the coolant; and

d. returning the separated particulate solids for reintroduction to the effluent stream leaving the reactor.

4,437,980

MOLTEN SALT HYDROTREATMENT PROCESS

Laszlo A. Heredy, Canoga Park, and Raymund P. Skowronski, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 30, 1982, Ser. No. 403,693
Int. Cl.³ C10G 49/02; B01J 23/92
U.S. Cl. 208—235 8 Claims

1. A hydrotreating process for sulfur, asphaltene and metal removal from a carbonaceous material which comprises:

(1) introducing a carbonaceous material and an organic hydrogen donor solvent into a mixing zone;

(2) introducing the resulting solution of carbonaceous material in organic hydrogen donor solvent into a reaction zone containing a molten medium comprising potassium hydroxide and water, said water being present in an amount of about 16–33 wt. % based on the combined weight of said potassium hydroxide and water, said potassium hydroxide and water being present in a combined amount of about 50–300 wt. % based on the weight of said carbonaceous material;

(3) introducing hydrogen into said reaction zone in an amount sufficient to provide a pressure in said reaction zone within the range of about 10 to 300 atmospheres;

(4) reacting said carbonaceous material and hydrogen at a temperature in the range of about 350°–550° C. for a period of time of about 1 minute to 2 hours;

(5) recovering desulfurized, deasphalted and demetallized hydrotreated products comprising about 90–98 wt. % of liquid hydrocarbonaceous products having a sulfur content reduced by at least about 80% from the sulfur content of said carbonaceous material, an asphaltene content reduced by at least about 60% from the asphaltene content of said carbonaceous material, a metals content reduced by at least about 90% from the metals content of said carbonaceous material, and less than about 1 wt. % of gaseous hydrocarbonaceous products;

(6) separating from said liquid hydrocarbonaceous products an organic hydrogen donor solvent;

(7) recycling said organic hydrogen donor solvent to said mixing zone;

(8) removing from said reaction zone a portion of spent molten medium;

(9) adding water to the removed portion of spent molten medium to form an aqueous slurry of solids comprising potassium sulfide, heavy metal salts, ash and solid organic matter in a concentrated aqueous potassium hydroxide solution containing about 34–50 wt. % water;

(10) separating said solids from said concentrated aqueous potassium hydroxide solution;

(11) treating said solids with water to dissolve said potassium sulfide and to leave undissolved heavy metal salts, ash and solid organic matter;

(12) separating said undissolved heavy metal salts, ash and solid organic matter from the aqueous solution resulting from dissolving said potassium sulfide to form a clarified aqueous solution of potassium sulfide;

(13) carbonating said clarified aqueous solution of potassium sulfide to remove hydrogen sulfide therefrom and to produce a carbonated solution comprising potassium carbonate;

(14) reacting said carbonated solution with calcium hydroxide to precipitate calcium carbonate and regenerate an aqueous solution of potassium hydroxide;

(15) separating said calcium carbonate from said aqueous potassium hydroxide solution;

(16) partially dehydrating both said concentrated aqueous potassium hydroxide solution from step (10) and said

aqueous potassium hydroxide solution from step (15) to provide a potassium hydroxide solution containing about 16–33 wt. % water; and

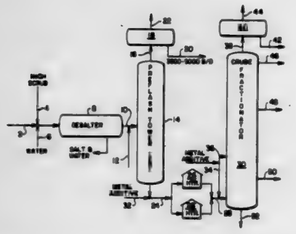
(17) recycling said potassium hydroxide solution containing about 16–33 wt. % water to said reaction zone.

4,437,981

IMMOBILIZATION AND NEUTRALIZATION OF CONTAMINANTS IN CRUDE OIL

Stephen M. Kovach, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 22, 1982, Ser. No. 443,413
Int. Cl.³ C10G *29/04, 29/06*
U.S. Cl. 208—253 **13 Claims**



1. A method for deactivating alkaline contaminants and metal contaminants in crude oils prior to affecting catalytic conversion of fractions thereof which comprises:

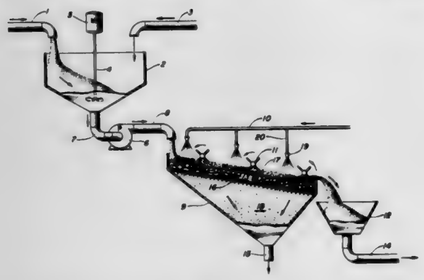
contacting a crude oil with one or more metal compounds selected from the group consisting of titanium, zirconium, and indium compounds immediately prior to or during distillation thereof, whereby residual alkaline material in said crude oil is neutralized and vanadium is reacted to form a reaction product having a melting point above the maximum temperature of a downstream catalytic conversion operation, and recovering a residual fraction of said crude oil boiling above 32.2° c. (630° F.) comprising metal contaminants reduced in deactivating affect upon a downstream contacted zeolite conversion catalyst at an elevated temperature.

4,437,982

SEPARATION OF CLAY FROM COAL

George E. Wasson, Eighty Four, Pa., assignor to Conoco Inc., Wilmington, Del.

Filed Aug. 9, 1982, Ser. No. 406,151
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—5 **14 Claims**



1. A method of separating refuse from a mixture of fine coal particles and refuse particles comprising the steps of:

(a) providing a coarse coal filter cake means having an upper surface,

(b) forming a solids-liquid mixture comprising a solids mixture of fine coal particles, and inorganic solid refuse particles in a liquid mixture comprising water and petroleum oil,

(c) conveying said solids-liquid mixture onto said upper surface of said coarse coal filter cake to form a layer of fine coal and refuse above said coarse coal filter cake,

(d) spraying water from water spray means onto said fine coal-refuse layer,

whereby a major portion of said water and a major portion of said refuse pass through said coarse coal filter cake means and a major portion of said petroleum oil and a major portion of said fine coal particles remain above said filter cake means and recovering the fine coal.

4,437,983

FROTH FLOTATION METHOD FOR RECOVERING ZIRCONIUM MINERALS

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Filed Sep. 9, 1982, Ser. No. 416,285
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—166 **2 Claims**

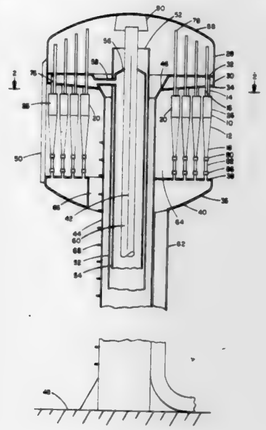
1. In concentrating by froth flotation of zirconium ores, which includes the subjecting of said ore material when finely ground to froth flotation process in the presence of alkylaryl and aryl glycolic acid or its sodium salt promoter-collector; the step of adding to the mineral slurry an amount of the order from 0.05 to 0.5 kg per ton of ore treated of said alkylaryl or aryl glycolic acid sodium salt; said addition to aqueous dispersion of ore produce a froth flotation product of zirconium mineral value by continuing agitation and aeration of the aqueous dispersion of ore, and separating and recovering the zirconium mineral value as float froth concentrate product.

4,437,984

MULTIPLE HYDROCYCLONE APPARATUS

Stephen J. King, Clearwater; Bruce S. Moffatt, Largo, and John C. Stewart, St. Petersburg, all of Fla., assignors to Clark & Vicario Corporation, Pinellas Park, Fla.

Filed Apr. 5, 1982, Ser. No. 365,773
Int. Cl.³ B03D *45/12*
U.S. Cl. 209—211 **27 Claims**



1. Multiple hydrocyclone apparatus of the type having:

(a) a plurality of elongated, vertically extensive hydrocyclones disposed side by side in a plurality of loop-like arrays, said plurality of arrays including an innermost array and at least one outer array surrounding said innermost array;

(b) means for conducting feed stock to the inlets of said hydrocyclones;

(c) means for conducting rejected stock from the reject outlets of said hydrocyclones, such means including a reject manifold disposed below said hydrocyclones; and

(d) means for conducting accepted stock from the accept outlets of said hydrocyclones, such means including an accept plenum disposed above said hydrocyclones, means for maintaining a partial vacuum within said accept plenum, means for spraying accepted stock from the accept outlets of said hydrocyclones into said accept plenum and an accept outlet pipe communicating with said accept plenum and extending downwardly therefrom in the space bounded by the innermost one of said arrays of hydrocyclones;

wherein the improvement comprises disposition of said innermost array and said accept outlet pipe to provide a clearance between such pipe and the hydrocyclones of said innermost array so that said accept outlet pipe and said innermost row of hydrocyclones cooperatively define a walkway space of sufficient size to accommodate a humahn operator and means for permitting entry of a human operator to said walkway space during operation of the hydrocyclones without removal of any of said hydrocyclones, said accept outlet pipe including an outwardly flaring transition section adjacent said accept plenum, the wide end of said transition section being disposed at the top thereof, said transition section extending outwardly of said accept outlet pipe above said walkway space.

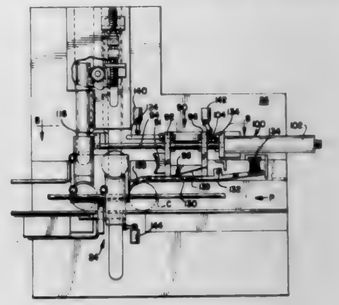
4,437,985

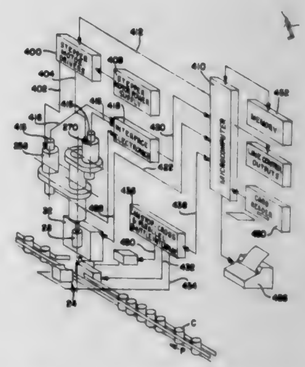
CONTAINER DEFECT MONITORING SYSTEM

James J. Hinds, LeGrange; John C. Hoeflich, and George C. Kolodziej, both of Oak Park, all of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed May 18, 1981, Ser. No. 264,798
Int. Cl.³ B07C *5/02, 5/342*
U.S. Cl. 209—538 **22 Claims**

1. A monitoring device for inspecting the condition of the surface of articles moving along a path comprising a color monitor positioned adjacent said path, first means for removing an article from said path, second means for positioning said article into general alignment with said color monitor, third means for indexing a preselected point of said surface with respect to said color monitor, said color monitor producing a signal indicative of the condition of said surface at said preselected point, and ejector means for ejecting said article when said signal is outside preselected limits, said first and second means cooperating to return said article to said path when said signal is within said preselected limits, and said first means returning said article to said path and thereafter removing another article from said path, said first means including first and second members reciprocable transversely of said path, means between said members for moving said members in





opposite directions with respect to each other, and drive means for reciprocating said members.

4,437,986

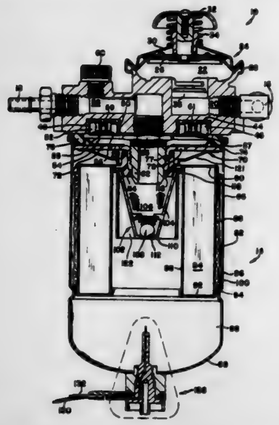
SEPARATING DEVICE AND CARTRIDGE THEREFOR

Charles K. Hutchins; Donald I. Thornton, and Richard H. Peyton, all of East Providence, R.I., assignors to Fram Corporation, East Providence, R.I.

Filed Sep. 22, 1982, Ser. No. 421,613
Int. Cl.³ B01D *27/10*
U.S. Cl. 210—130 **13 Claims**

1. Separator cartridge for separating immiscible components of a liquid mixture comprising a casing having inlet and outlet connections adapted for communication to a liquid flow system, an annular coalescing medium within said casing for causing the liquid component to be separated from said mixture to agglomerate into liquid droplets, said coalescing medium having inner and outer surfaces, a sump defined within said casing for collecting the liquid to be separated from the liquid mixture, means in said casing for deflecting liquid flow through said inlet connection to the outer surface of said coalescing medium, a separating medium coaxial with said coalescing medium and located downstream of the latter so that the liquid mixture flows through the coalescing medium before reaching the separating medium, said liquid mixture flowing from the inner surface of said coalescing medium to said separating medium while allowing at least some of the coalesced liquid droplets of the liquid to be removed from said mixture to deposit in said sump, the surface of said separating medium being a material repellant to the liquid to be removed from said mixture so that droplets of the liquid to be removed deposit on said surface and fall into said sump while the other liquid of

said liquid mixture passes therethrough, and pressure differential responsive means opening to permit said liquid mixture to bypass said separating medium when pressure differential



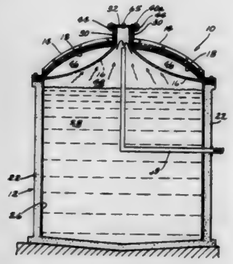
across said separating medium attains a predetermined level, said pressure differential responsive means closing when the pressure differential drops below the predetermined level.

4,437,987

ANAEROBIC DIGESTER GAS COLLECTION AND STORAGE SYSTEMS

Marvin L. Thornton, 509 SE. Fourth, Ankeny, Iowa 50021, and Arthur J. Boyt, Jr., 4602 Kingman, Des Moines, Iowa 50311

Filed Jul. 1, 1982, Ser. No. 394,405
Int. Cl.³ C02F *11/04*; C12M *1/02*
U.S. Cl. 210—137 **6 Claims**



1. In an anaerobic sludge digester storage container having a wall communicating with a floor forming a storage container for holding sludge with a fixed outer cover overlying the storage tank, the tank having a sludge inlet and outlet with a center stack communicating with the storage container therebelow, the improvement comprising:

a flexible gas membrane means extending between the wall and the center stack and over and above the storage container, in a configuration forming a gas tight seal between the sludge and the outer cover from the wall to the center stack of the outer cover, forming a gas chamber;

a pressurizing membrane means extending over the top of the gas membrane means and between the gas membrane means and the outer cover extending between the wall and the center stack, for creating an inner pressurizing chamber between the top surface of the gas membrane means and the bottom surface of said pressurizing membrane means, said two membranes being sealingly attached to the top of the wall at their bottom portion and the center stack at their upper portion;

a pressure differential sensor means for monitoring the air pressure within the inner pressurizing chamber and the gas pressure within the gas chamber;

an air injection means operated by the pressure differential sensor means for injection of pressurized air into the inner pressurizing chamber between the gas membrane and the pressurizing membrane causing the controlled expansion of the inner chamber via the downward movement of the gas membrane means toward the sludge within the storage container to maintain and regulate the pressure of the gas at a predetermined level produced by the anaerobic process and collecting between the top of the sludge and the bottom of the gas membrane;

gas exhaust means for removing the gas stored in the gas chamber, the exhaust means communicating with the gas chamber and the outside of the storage container; and

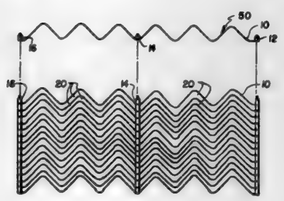
a bleed-off valve communicating with the inner chamber for permitting air to flow from the inner chamber to the outside of the digester.

4,437,988

PLATE SEPARATOR CONSTRUCTION AND METHOD

William James, 1483 Pine Knoll La., Mamaroneck, N.Y. 10543

Division of Ser. No. 289,152, Aug. 3, 1981, Pat. No. 4,337,561.
This application Feb. 18, 1982, Ser. No. 349,971
Int. Cl.³ C02F *1/40*; B01D *21/00*
U.S. Cl. 210—237 **8 Claims**



1. A liquid separator and plate stack combination comprising:

a housing having opposite side walls spaced from each other by a selected distance;

a stack of a plurality of spaced corrugated and interconnected plates defining tortuous paths therebetween and made of resilient material;

said stack having an undistorted stack length and stack width, with one of said stack length and stack width being substantially similar to said selected distance between said housing side walls;

said stack having one of a distorted stack length and distorted stack width respectively so that said stack is insertable between said housing side walls

said stack with undistorted side length and side width provided between said housing side walls and closely associated with each side wall by the resiliency of said plate material; and

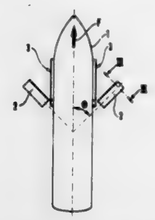
suspension means engaged with said stack for supporting said stack in such a way to produce said at least one of a distorted stack length and distorted stack width.

4,437,989

APPARATUS FOR COLLECTING SUBSTANCES FLOATING ON AN EXPANSE OF LIQUID

Bernard Valibouse, Grenoble; Albert Bonazzi, Gieres, both of France, assignors to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

Filed Nov. 9, 1981, Ser. No. 319,762
Claims priority, application France, May 30, 1980, 80 12062
Int. Cl.³ B01D *23/00*
U.S. Cl. 210—242.3 **5 Claims**



1. An apparatus for removing and collecting a light liquid from a water surface and being borne by a ship hull moving through the water, said apparatus comprising:

a long narrow separator plate mounted to the outside of the ship hull, separate therefrom and extending lengthwise away from the ship hull and forming an acute angle θ forwardly in the direction of ship movement with the centerline of the ship hull, said separator plate being partially submerged widthwise within the water,

a collector trough being mounted against the side of the ship's hull abovethe surface of the water laterally spaced inboard of said separator plate and ahead of the rear end of said separator plate for collecting said light liquid separated from the water surface, said collector trough communicating with a chamber internally of said ship's hull.

and wherein said partially submerged separator plate is inclined downwardly and rearwardly widthwise relative to the direction of hull movement at an acute angle α such that at a relatively fast hull speed, the light liquid rebounds against the bottom of the separator plate and is thrown forwardly and sidewise into the air toward the side of the ship hull and above the collector trough for separation from the water and collection thereby.

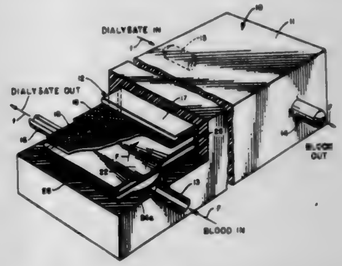
4,437,990

SEMIPERMEABLE MEMBRANE MASS TRANSFER APPARATUS HAVING SLOTTED SUPPORT MEMBERS

Alexander S. Borsanyi, Newport Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 44,072, May 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 779,577, Mar. 21, 1977, abandoned. This application Dec. 18, 1981, Ser. No. 332,324
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.3 **4 Claims**

1. A mass transfer apparatus for use in hemodialysis and ultrafiltration comprising a housing; a semi-permeable membrane disposed within said housing; said membrane being folded to form a stack of accordion pleats and being so constructed and arranged that two separate fluid chambers for blood and dialysate are thereby formed with said dialysate chamber being on one side of said membrane and said blood chamber on the other; ports provided by said housing for directing the flow of blood and dialysate into and out of the respective chambers; and a plurality of discrete planar support members of open-mesh plastic material associated with said membrane; said discrete support members each being flat and unfolded, of generally rectangular outline, and of substantially the same size, and being arranged to provide a pair of said members in superimposed contiguous relation within each pleat only on the dialysate side of said membrane, and being absent from the pleats on the blood side of said membrane; one support member of each contiguous pair being provided with at least one transverse slot which extends the full thickness of said one support member and in which the plastic material of said one support member is completely absent; said slot being in substantial alignment with one of said ports for directing the



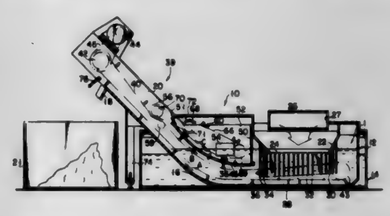
flow of blood into and out of said blood chamber; said transverse slot extending from an edge of said one support member facing towards said blood flow directing ports and terminating short of the opposite edge of said one support member, whereby, the portions of said one support member bordering said slot remains structurally integrated with each other.

4,437,991

FILTER APPARATUS

Minoru Tashiro, Tokyo, Japan, assignor to Bunri Industry Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1982, Ser. No. 371,270
Claims priority, application Japan, Apr. 28, 1981, 56-64726
Int. Cl.³ B01D *25/38*
U.S. Cl. 210—413 **23 Claims**



1. A filter apparatus for filtering a liquid containing solid materials comprising:

a filter member made of a flexible sheet having a number of though holes which prevent passage of solid materials while allow passage of the liquid thereby filtering the liquid;

at least one wiper which has an oil-resistant material plate and is slidably arranged over the surface of the filter member on the liquid inlet side to scrape off the solid materials deposited on the surface of the filter member upon sliding movement thereof;

at least one second wiper which has two oil-resistant material plates and is slidably arranged over the surface of the filter member on the liquid outlet side; and

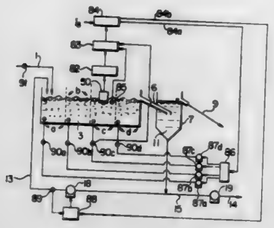
driving means for sliding the first and second wipers over the surfaces of the filter member at the same speed and in the same direction so that the first and second wipers sandwich the filter member on both its sides and the first wiper is interposed between the oil-resistant material plates of the second wiper.

4,437,992

PROCESS FOR CONTROLLING AN AERATION TANK IN AN ACTIVATED SLUDGE SEWAGE TREATMENT

Yukio Saito; Shunsuke Nogita; Syoji Watanabe, and Kenji Baba, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 149,995, May 15, 1980, abandoned.
This application Mar. 5, 1982, Ser. No. 355,110
Claims priority, application Japan, May 16, 1979, 54-59153
Int. Cl.³ C02F 3/12
U.S. Cl. 210—603 7 Claims



1. A process for controlling an aeration tank in an apparatus for sewage treatment by activated sludge which apparatus includes an aeration tank for stirring and mixing inflow sewage with activated sludge and a gas containing oxygen, a sedimentation tank for settling a mixed liquor from the aeration tank, thereby concentrating and separating sludges converted by assimilating action of microorganisms upon organic matter in the sewage, a gas blowing means for supplying the gas containing oxygen into the aeration tank, and a sludge return means for returning the sludge concentrated and separated in the sedimentation tank to the aeration tank, said process comprising the following steps:

(a) a step of measuring a concentration of carbon dioxide of an effluent gas from the aeration tank at the sewage inflow side of the aeration tank,

(b) a step of measuring a concentration of nitrous oxide of an effluent gas from the aeration tank at the sewage outflow side of the aeration tank, and

(c) a step of controlling the aeration rate at the sewage inflow side corresponding to the side of measuring the concentration of carbon dioxide from the aeration tank by the gas blowing means, thereby making the measured concentration of carbon dioxide equal to a predetermined value and

(d) a step of controlling the aeration rate at the sewage outflow side corresponding to the side of measuring the concentration of nitrous oxide from the aeration tank by the gas blowing means, thereby making the measured concentration of nitrous oxide equal to a predetermined value.

4,437,993

PREVENTION OF PENETRATION OF OILY HYDROCARBONS INTO SAND

Walter Lindorfer, Kassel; Fritz Wagner, Stockheim, and Walther Schulz, Vechta, all of Fed. Rep. of Germany, assignors to Wintershall AG, Kassel and Gesellschaft fur Biotechnologische Forschung mbH, Brunswick, both of, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 303,996
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035685
Int. Cl.³ E02B 15/04
U.S. Cl. 210—631 16 Claims

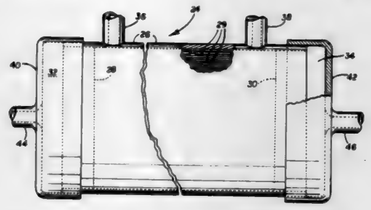
1. A method for preventing the penetration of an oily hydrocarbon composition into dry or moist sand comprising the step of spraying the sand with a thin layer of an aqueous solution or dispersion of glycolipids, whose hydrophilic component comprises a dicarbohydrate, prior to contact of the hydrocarbon composition with the sand.

4,437,994

EXTRACTION OF METAL IONS FROM AQUEOUS SOLUTION

Richard W. Baker, Bend, Oreg., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 890,149, Mar. 27, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 177,976
Int. Cl.³ B01D 13/00
U.S. Cl. 210—638 10 Claims



1. A process for extraction of selected ions of metals from an aqueous feed solution and deposition of said ions in an aqueous product solution comprising:

circulating said feed solution into the lumens of a multiplicity of hollow fibers, the walls of said fibers consisting essentially of a microporous anisotropic membrane having pores of about 0.01 to 0.04 micron in diameter at each surface and pores of about 2 to 10 microns in diameter in the interior, and said membrane having a water-immiscible organic liquid comprising a complexing agent specific for said ions substantially completely filling, and retained within, the pores thereof, and

circulating said aqueous product solution over the outer sides of said fibers,

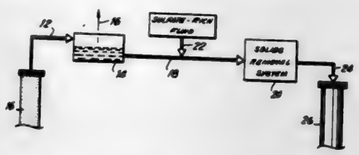
whereby a complex is formed between said complexing agent and said ions in the feed solution followed by diffusion of said complex through the organic liquid in the pores of the membrane, and subsequent liberation of said ions in the product solution.

4,437,995

TREATMENT OF GEOTHERMAL BRINE SULFATE-RICH FLUIDS TO FACILITATE THE PRECIPITATION OF SILICA

Robert W. Rex, La Habra, Calif., assignor to Republic Geothermal, Inc., Santa Fe Springs, Calif.

Filed Mar. 23, 1983, Ser. No. 477,954
Int. Cl.³ C02F 1/52
U.S. Cl. 210—714 9 Claims



1. A method for controlling the precipitation of silica from geothermal brine supersaturated with silica comprising the steps of: adding into said brine a liquid rich in sulfate ion and thereby forming, by reaction of said sulfate-rich liquid and salts contained within said brine, a fine, metal sulfate colloidal suspension containing adsorbed silica solids; and separating said suspension and adsorbed silica solids from said brine.

4,437,996

PROCESS FOR TREATING CYANIC LIQUID CONTAINING COPPER(I) CYANIDE COMPLEX ION

Michihide Okugawa, Nishinomiya, Japan, assignor to Dainichi-Nippon Cables, Ltd., Hyogo, Japan

Filed Nov. 19, 1982, Ser. No. 442,915
Claims priority, application Japan, Nov. 27, 1981, 56-191318
Int. Cl.³ C02F 1/58
U.S. Cl. 210—718 9 Claims

1. A process for treating a cyanic liquid containing copper(I) cyanide complex ion which comprises heating the liquid at a temperature of not lower than 200° C. in the presence of a water-soluble metal hydroxide.

4,437,997

CLARIFICATION OF AMMONIUM POLYPHOSPHATE SOLUTIONS

Alan M. Dobry, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 251,294, Apr. 6, 1981, abandoned, which is a continuation-in-part of Ser. No. 950,974, Oct. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 781,625, Mar. 28, 1977, abandoned. This application Jun. 14, 1982, Ser. No. 387,824
The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.
Int. Cl.³ B01D 21/01
U.S. Cl. 210—727 11 Claims

1. A process for the removal of suspended carbonaceous material from an aqueous ammonium polyphosphate solution wherein (i) said solution contains from about 10 to about 90% by weight of the total P_2O_5 in a polyphosphate form, (ii) said solution has a pH above about 4.5, (iii) said solution is prepared by the molecular dehydration and subsequent or concurrent ammoniation of wet-process phosphoric acid, (iv) said solution ranges in grade from about 8-27-0 to about 13-37-0, and (v) said carbonaceous material results from organic impurities in said wet-process phosphoric acid which char during said molecular dehydration, which process comprises the steps of:

(a) mixing said ammonium polyphosphate solution with an aqueous solution of a cationic terpolymer of about 75 mole % of acrylamide, about 25 mole % of diallyldi(2-hydroxyethyl)ammonium chloride, and a small amount of dimethyldiallylammonium chloride, said terpolymer having a molecular weight in excess of about 10,000, and wherein the amount of said terpolymer is effective to promote the flocculation of said carbonaceous material and said mixing is carried out at a temperature in the range from about 35° to about 200° F.;

(b) holding the resulting mixture at a temperature in the range from about 35° to about 200° F. for a period of time effective to permit the separation of said mixture into an upper layer of flocculated carbonaceous material and a lower layer of clarified ammonium polyphosphate solution; and

(c) separating said lower layer of clarified ammonium polyphosphate solution from said upper layer of flocculated carbonaceous material.

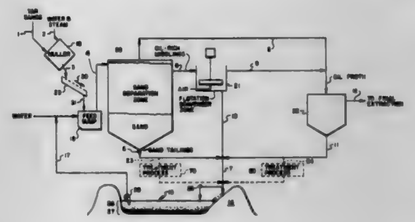
7. The process as set forth in claim 1 wherein an aqueous solution of at least one anionic polymer selected from the group consisting of anionic, water soluble organic polymers, is additionally added to said mixture of ammonium polyphosphate solution and aqueous cationic terpolymer solution, wherein the amount of said anionic polymer is from about 0.001 to about 0.1% by weight based on the weight of said ammonium polyphosphate solution, and wherein said anionic polymer is added to the ammonium polyphosphate solution subsequent to the addition of said cationic terpolymer.

4,437,998

METHOD FOR TREATING OIL SANDS EXTRACTION PLANT TAILINGS

Raymond N. Yong, Beaconsfield, Canada, assignor to Suncor, Inc., Toronto, Canada

Filed Apr. 23, 1982, Ser. No. 371,083
Claims priority, application Canada, May 19, 1981, 377832
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.³ C02F 1/54; C08L 3/02
U.S. Cl. 210—728 12 Claims



1. A process for achieving an internally surcharged sludge layer in a fines-containing body of water comprising the steps of:

(A) partially-treating any fines-containing aqueous material to be discharged into said body of water by mixing into the aqueous material 25–75 ppm of a hydrolyzed starch additive, which additive is obtained by the aqueous hydrolysis of the starch in the presence of one or more metal salts;

(B) depositing the partially-treated aqueous material resulting from step (A) into a holding/settling pond having a sufficient volume to provide a residence period for the partially-treated aqueous material within the range of six months to two years;

(C) withdrawing sludge from beneath a clarified water layer in said holding/settling pond and mixing into said sludge 25–175 ppm of the hydrolyzed starch additive;

(D) admixing sand into the mixture resulting from step (C); and

(E) discharging the mixture resulting from step (D) into the body of water.

4,437,999

METHOD OF TREATING CONTAMINATED INSOLUBLE ORGANIC SOLID MATERIAL

Sherman T. Mayne, Goldhill, N.C., assignor to Gram Research & Development Co., Charlotte, N.C.

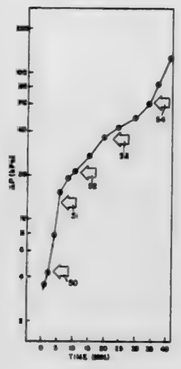
Filed Aug. 31, 1981, Ser. No. 297,849
Int. Cl.³ C02F 1/32
U.S. Cl. 210—748 19 Claims

1. A method of treating insoluble organic solid resin material, that contains a contaminating material, to oxidize said organic material and isolate said contaminating material, comprising feeding said contaminated insoluble organic solid material into a body of water, simultaneously applying ultraviolet light and ozone to said water while agitating said water to distribute said ozone therein, continuing said applying of ultraviolet light and ozone while agitating said body of water for sufficient time to oxidize said organic material substantially into water and carbon dioxide, thereby leaving said contaminating material as either soluble material in solution in said water or as precipitated insoluble material or as both.

4,438,000
METHOD OF FILTRATION USING SEMIFLUIDIZED BEDS

Liang-tseng Fan, Manhattan, Kans., and Edward H. Hsu, Houston, Tex., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Aug. 10, 1982, Ser. No. 405,612
Int. Cl.³ B01D 23/10
U.S. Cl. 210—786 10 Claims



1. The method of filtering particulate solids from a fine solids-containing fluid flowing upwardly through a semifluidization filtration chamber having a porous fluid distributor across the lower portion thereof, a porous medium retainer across its upper portion, and a semifluidized body of filtration medium captivated therebetween, said medium during the filtration being in the form of an upper packed section extending downwardly from said retainer and a fluidized section from the bottom of said packed section to said distributor, the bottom surface of said packed section providing an interface with said fluidized section, wherein the improvement comprises:

(a) in a first phase of a filtration cycle providing a packed section of at least sufficient downward extend to prevent breakthrough of the filtered solids as they are removed from said fluid by the packed section with concentration of the removed solids adjacent the interface between the packed and fluidized sections;

(b) continuing said filtration in said first phase without appreciably increasing the percent of said medium in said packed section until a filter cake of removed solids has accumulated across the packed section interface, said solids accumulation having taken place while the upward velocity varied between opposite adjacent wall portions of said packed section interface, said accumulated filter cake in one area adjacent a wall portion of said chamber containing a larger accumulation of solids than in an other area of thereof adjacent an opposed wall portion of said chamber so that upward fluid flow is diverted from said one area to said other area; and

(c) in a second phase continuing said filtration with the fluid flow predominately through said other area to deposit additional medium together with filtered solids beneath said other area with a progressive increase in the downward extend of said packed section along said opposed wall portion, said second phase being continued until at least the major part of the total medium is in said packed section, said first and second phases being carried out without changing the position of said medium retainer within said filtration chamber.

4,438,001
OILING AGENT FOR TREATING SYNTHETIC FIBERS

Akira Suzuki, and Fumitoshi Sugiura, both of Gamagorishi, Japan, assignors to Takemotoyushi Co. Ltd., Aichi, Japan

PCT No. PCT/JP81/00082, § 371 Date Dec. 3, 1982, § 102(e) Date Dec. 3, 1982
PCT Filed Apr. 8, 1981, Ser. No. 448,911
Int. Cl.³ D06M 13/18, 13/30, 13/38, 00/00
U.S. Cl. 252—8.7 16 Claims

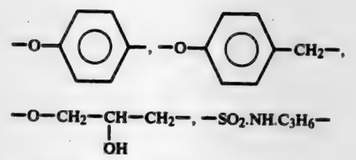
1. An oiling agent for treating synthetic fibers which comprises

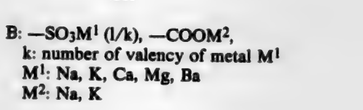
(I) 0.05 to 5% by weight of one kind or two kinds or more of fluorine-containing ionic surfactants expressed by the following general formula:

$$C_nF_{2n\pm1}—A—B$$

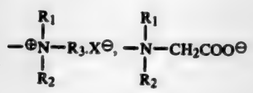
wherein

A: a group selected from the group of $—CF_2—$, $—O—(CH_2)_m—$ (m: integer of 1-3),





B: $—SO_3M^1$ (l/k), $—COOM^2$,
k: number of valency of metal M^1
M^1: Na, K, Ca, Mg, Ba
M^2: Na, K



R_1–R_3: alkyl of 1–20 carbon atoms
X: Cl, Br, I, R_4SO_4
R_4: CH_3 or C_2H_5
n: integer of 4–14;

(II) 30 to 99.95% by weight of a poly(oxyethylene-oxypropylene) ether derivative having a molecular weight of 1,000 to 10,000, obtained by adding ethylene oxide and propylene oxide to a monohydric or polyhydric alcohol of 1 to 20 carbon atoms;

(III) 0 to 30% by weight of a nonionic surfactant; and

(IV) 0 to 40% by weight of a mineral oil having a viscosity at 30° C. of 5 to 30 cst or a fatty acid ester having a molecular weight of 300 to 700 or mixtures thereof.

4,438,002
SURFACTANT FLOODING SOLUTION

Vernon H. Schievelbein, Houston, and Paul Zabczuk, Dallas, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,430
Int. Cl.³ C07C 143/00; B01F 3/00; E21B 3/00, 43/16
U.S. Cl. 252—8.55 D 8 Claims

1. An aqueous treating solution for injection into an underground hydrocarbon formation to increase hydrocarbon recovery, comprising:

about 80% to about 99% by weight of water disposable in the formation;

about 40% to about 85% of total solute by weight of petroleum sulfonate surfactant disposed in the water;

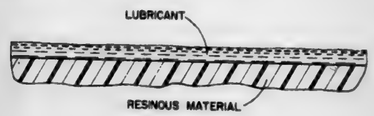
about 10% to about 40% of total solute by weight of a solubilizer compound disposed in the water, said solubilizer selected from the group consisting of alkylpolyalkoxyalkyl sulfate alkylpolyalkoxyalkyl sulfonate, alkylarylpolyalkoxyalkyl sulfate and alkylarylpolyalkoxyalkyl sulfonate; and

about 1% to about 35% of total solute by weight of dicyclopentadiene sulfonate disposed in the water.

4,438,003
SKATING SURFACE

Elmer O. Nathaniel, 9178 Villaridge, St. Louis, Mo. 63123, and John Elbert, Jr., 1076 Humber Clr., St. Louis, Mo. 63129

Continuation of Ser. No. 850,953, Nov. 14, 1977, which is a continuation of Ser. No. 751,607, Dec. 17, 1976, abandoned, which is a continuation of Ser. No. 652,802, Jan. 27, 1976, abandoned, which is a continuation of Ser. No. 508,985, Sep. 25, 1974, abandoned. This application Aug. 21, 1978, Ser. No. 935,485
Int. Cl.³ C10M 7/14
U.S. Cl. 252—12 1 Claim



1. A flat non-refrigerated surface-forming member for ice skating purposes formed of resinous material in the class consisting of high density polyethylene, polypropylene and fluorinated polyethylene, and a lubricant provided upon said member and forming a film thereon, said lubricant being a solution consisting essentially of approximately three parts by volume of water and approximately one part by volume of a water soluble agent from the class consisting of glycerin, ethylene glycol, butylene glycol, propylene glycol, diethylene glycol, trimethylene glycol, tetramethylene glycol, and pentamethylene glycol.

4,438,004
FUSED METALLIC FRICTION MATERIALS

Paul A. Myers, Crawfordsville, Ind., assignor to Raymark Industries, Inc., Trumbull, Conn.

Filed Dec. 6, 1982, Ser. No. 447,149
Int. Cl.³ C10M 7/04, 7/26, 7/52
U.S. Cl. 252—12 29 Claims

1. A method for making friction material members comprising the steps of:

preparing a mixture of sinterable metal particles, carbonaceous material and curable polymeric resin, the mixture comprising at least about 50 percent by weight of sinterable metal particles and sufficient curable polymeric resin to coat and bond the metal particles and carbonaceous material;

placing the mixture in a mold;

curing the resin to form the mixture into a piece in a solid preformed shape corresponding to the shape of the mold; and thereafter

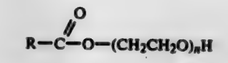
heating the preformed piece sufficiently to carbonize the resin and fuse the metal particles into a sintered metal matrix.

4,438,005
MARINE DIESEL ENGINE LUBRICANT OF IMPROVED SPREADABILITY

Benjamin H. Zoleski, Beacon, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

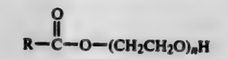
Continuation-in-part of Ser. No. 224,414, Jan. 12, 1981, abandoned. This application Dec. 17, 1982, Ser. No. 450,606
Int. Cl.³ C10M 1/40
U.S. Cl. 252—33.4 3 Claims

1. In a process for improving the spreadability of a diesel engine cylinder lubricant comprising an oil having an SAE viscosity of 50 and having a total base number ranging from about 50 to 100 provided by the presence therein of effective amounts of conventional alkaline detergent dispersants, the improvement consisting of blending with said lubricant a spreadability improving amount of at least one polyoxyethylene ester of the formula:



wherein R is an alkyl group having from 11 to 17 carbon atoms and n is 18 to 22, said ester having a molecular weight ranging from 1000 to 1200.

3. A diesel engine lubricant comprising an oil having an SAE viscosity of 50 and a total base number ranging from about 50 to about 100 provided by the presence therein of effective amounts of conventional alkaline detergents-dispersants including overbased calcium sulfonates and carbonates, said lubricant having improved spreadability resulting from the incorporation therewith of a spreadability improving amount of a polyoxyethylene ester of the formula:



wherein R is an alkyl group having 17 carbon atoms, n is 20 and said ester has a molecular weight in the range of 1100 to 1170.

4,438,006
PERFLUORINATED ALIPHATIC POLYALKYLETHER LUBRICANT WITH AN ADDITIVE COMPOSED OF AN AROMATIC PHOSPHINE SUBSTITUTED WITH PERFLUOROALKYLETHER GROUPS

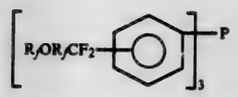
Carl E. Snyder, Jr., Trotwood, and Christ Tamborski, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1982, Ser. No. 418,113
Int. Cl.³ C10M 1/10
U.S. Cl. 252—49.9 10 Claims

1. A lubricant composition comprising (1) a base fluid consisting essentially of a mixture of linear fluorinated polyethers having the formula

$$R_fO(CF_2CF_2O)_m(CF_2O)_nR_f$$

wherein R_f is CF_3 or C_2F_5, m and n are integers whose sum is between 2 and 200 and the ratio of m to n is between 0.1 and 10; and (2) a corrosion inhibiting amount of an aromatic phosphine with perfluorinated polyalkylether substituents having the formula



wherein R_fOR_f— is a perfluoroalkylether group containing at least one ether linkage.

4,438,007

PERFLUORINATED ALIPHATIC POLYALKYLETHER LUBRICANT WITH AN ADDITIVE COMPOSED OF AN AROMATIC PHOSPHINE SUBSTITUTED WITH PERFLUOROALKYLETHER GROUPS

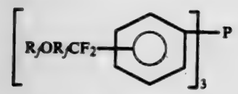
Carl E. Sayder, Jr., Trotwood, and Christ Tamboruki, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1982, Ser. No. 418,116
Int. Cl.³ C10M 1/10
U.S. Cl. 252—49.9 10 Claims

1. A lubricant composition comprising (1) a base fluid consisting essentially of a mixture of linear fluorinated polyethers having the formula

$$C_3F_7[CF(CF_3)CF_2O]_nCF_2CF_3$$

wherein n is an integer having a value of 5 to 50 and (2) a corrosion inhibiting amount of an aromatic phosphine with perfluorinated polyalkylether substituents having the formula



wherein R_fOR_f— is a perfluoroalkylether group containing at least one ether linkage.

4,438,008

LUBRICANT, CONTAINING ESTERIFIED ETHYLENE/ACRYLIC ACID OR ETHYLENE/MALEIC ACID COPOLYMERS AS THE ACTIVE INGREDIENT, FOR MOULDING CHLORINE-CONTAINING THERMOPLASTICS

Dieter Oeder, Weisenheim; Walter Ziegler, Edingen; Manfred Daeuble; Wolfram Dietsche, both of Frankenthal; Albert Hettche, Hessheim, and Stefan Weiss, Neckargemuend, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,276
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107245
Int. Cl.³ C10M 3/12
U.S. Cl. 252—56 R 6 Claims

1. A lubricant for molding chlorine-containing thermoplastics and combined in an amount of 0.1 to 5 phr with said chlorine-containing thermoplastic, which contains ethylene/acrylic acid or ethylene/maleic acid copolymers esterified, in a molar ratio of carboxyl groups to alcoholic hydroxyl groups of from 1:0.2 to 1:1, with C_1–C_{20}-aliphatic alcohols which may or may not contain ether groups, the copolymers, prior to esterification, having a mean molecular weight of from 500 to 10,000 and containing from 2 to 15% by weight of acrylic acid or from 1 to 8% by weight of maleic acid as copolymerized units, the percentages being based on copolymer.

4,438,009

LOW SOLVENT LAUNDRY PRE-SPOTTING COMPOSITION

Jeanne A. Brusky, and Rodney W. Schrader, both of Racine County, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Aug. 14, 1981, Ser. No. 293,049
Int. Cl.³ C11D 1/72, 1/825, 3/04, 3/42
U.S. Cl. 252—90 16 Claims

1. A water-in-oil detergent emulsion to be applied to fabrics as a laundry pre-spotting composition comprising:

(a) from about 1 to about 30% by weight of a salt selected from the group consisting of citrates, gluconates, borates, silicates, phosphates, chlorides, carbonates and mixtures thereof;

(b) from about 1 to about 35% by weight of a surfactant mixture of (i) about 0.5 to about 5% by weight of a sorbitan nonionic surfactant selected from the group consisting of sorbitan monolaurate, sorbitan monooleate, sorbitan trioleate and mixtures thereof; (ii) from about 0.5 to about 30% of at least one other nonionic surfactant; and (iii) from about 0.5 to 3.0% by weight, of an ethoxylated sorbitan nonionic surfactant, said mixture having an HLB of from 8.5 to 10.5;

(c) from about 5 to about 60% by weight of a solvent selected from the group consisting of isoparaffinic hydrocarbons having a boiling range of from 98°–210° C., low odor petroleum solvents having a boiling range of from 195°–250° C., kerosene, d-Limonene and mixtures thereof; and

(d) the balance water.

16. A water-in-oil detergent emulsion to be applied to fabrics as a laundry pre-spotting composition contained in a pressurized aerosol container comprising from 95 to 80% by weight of a composition comprising:

(a) from about 1 to about 30% by weight of a salt selected from the group consisting of citrates, gluconates, borates, silicates, phosphates, chlorides, carbonates and mixtures thereof;

(c) from about 1 to about 35% by weight of a surfactant mixture of (i) about 0.5 to about 5% by weight of a sorbitan nonionic surfactant selected from the group consisting of sorbitan monolaurate, sorbitan monooleate, sorbitan trioleate and mixtures thereof; and (ii) from about 0.5 to about 30% of at least one other nonionic surfactant, said mixture having an HLB of from 8.5 to 10.5;

(c) from about 5 to about 60% by weight of a solvent selected from the group consisting of isoparaffinic hydrocarbons having a boiling range of from 98°–210° C., low odor petroleum solvents having a boiling range of from 195°–250° C., kerosene, d-Limonene and mixtures thereof; and

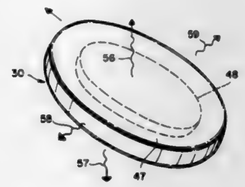
(d) the balance water and from 5 to 20% by weight of a propellent.

4,438,010

SOAP TABLET INCLUDING PERFUME-CONTAINING PLASTIC CORE AND PROCESS FOR PREPARING SAME

Jerome I. Lindauer, Hillsdale; Ira D. Hill, Locust, and Arthur L. Liberman, Highlands, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,263
Int. Cl.³ C11D 3/50, 9/44
U.S. Cl. 252—91 2 Claims



1. A detergent bar comprising:

(i) an aromatized plastic core comprising a polymer in the solid phase and imbedded in said polymer an aromatizing agent which is compatible with said polymer;

(ii) surrounding said plastic core and in intimate contact with the surface area of said plastic core, and adhering to said plastic core, a detergent composition existing in the solid phase, said detergent composition having a defined outer surface;

the quantity of aromatizing agent within the plastic core, the physical properties of the plastic core, and the physical properties of the detergent composition surrounding the plastic core being such that the aromatizing agent is transported at a steady state from the plastic core into said detergent composition past the outer surface of said detergent composition and into the environment surrounding said detergent bar, said aromatizing agent being compatible with said detergent composition, said detergent bar being produced by the process consisting essentially of the steps of:

(a) forming a thermoplastic polymeric pellet having imbedded therein aromatizing agent;

(b) Collecting a plurality of said aromatized polymeric pellets and forming the plurality of aromatized thermoplastic polymeric pellets into an aromatized thermoplastic core by means of fusion of the plurality of pellets in a mold; and

(c) propelling a detergent composition in the fluid state in such a manner as to cause said detergent to surround the aromatized plastic core; and

(d) causing the detergent composition surrounding the aromatized thermoplastic polymeric core to harden.

4,438,011

METHOD FOR STERILIZING SOFT CONTACT LENS

John G. B. Howes, Hertford Heath, England, assignor to Smith and Nephew Associated Companies Limited, England

Filed Nov. 12, 1981, Ser. No. 320,710
Claims priority, application United Kingdom, Dec. 18, 1980, 8040532
Int. Cl.³ C11D 1/84, 3/48
U.S. Cl. 252—106 10 Claims

1. A method of sterilizing a soft contact lens, which comprises contacting said lens for sufficient time to effect sterilization with a substantially isotonic, aqueous solution having small or no propensity to cause ocular irritation, said solution comprising a sterile aqueous solution of 0.00125 to 0.0025% of a chlorhexidine salt and sufficient nonionic tonicity adjusting agent to render the solution substantially isotonic, said tonicity adjusting agent containing ionic species producing a tonicity equivalent to not more than a 0.3% solution of sodium chloride.

4,438,012

STABLE AQUEOUS SUSPENSION OF WATER-INSOLUBLE, CALCIUM-BINDING ALUMINOSILICATES AND NONIONIC SUSPENDING AGENTS

Dieter Kühling, Monheim Rhld.; Huppertzl Josef, Düsseldorf-Holthausen; Peter Krings, Krefeld, and Herbert Reuter, Hilden Rhld., all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 620,387, Oct. 7, 1975, Pat. No. 4,072,622. This application Dec. 14, 1977, Ser. No. 860,619
Claims priority, application Austria, Oct. 10, 1974, 8151; Fed. Rep. of Germany, Jun. 19, 1975, 2527388
Int. Cl.³ B01F 3/12; C11D 1/72, 3/12, 17/08
U.S. Cl. 252—131 12 Claims

1. An aqueous suspension having a pH of between 7 and 12 of water-insoluble, calcium binding aluminosilicates with improved stability against settling consisting of

(A) from 20% to 42% by weight on the anhydrous basis of at least one crystalline, finely-divided, water-insoluble silicate compound having a calcium binding power of from 100 to 200 mg CaO/gm when measured at 22° C. for 15 minutes according to the Calcium Binding Power Test Method described in the specification and a primary particle size of from 0.1μ to 30μ and having the formula, combined water not shown

$$(M_2O)_x.Al_2O_3.(SiO_2)_y$$

where M is a member selected from the group consisting of sodium and potassium, x is a number from 0.7 to 1.5 and y is a number from 0.8 to 6, and

(B) from 0.5% to 6% by weight of a practically water-insoluble nonionic aliphatic surface-active compound having a turbidity point of a 1% solution in water of below room temperature, in water, said aqueous suspension being capable of being pumped after 24 hours of standing.

12. An aqueous suspension having a pH of between 7 and 12 of water-insoluble, calcium binding aluminosilicates with improved stability against settling consisting of

(A) from 20% to 42% by weight on the anhydrous basis of at least one crystalline, finely-divided, water-insoluble silicate compound having a calcium binding power of from 100 to 200 mg CaO/gm when measured at 22° C. for 15 minutes according to the Calcium Binding Power Test Method described in the specification and a primary particle size of from 0.1μ to 30μ having the formula, combined water not shown

$$(M_2O)_x.Al_2O_3.(SiO_2)_y$$

where M is a member selected from the group consisting of sodium and potassium, x is a number from 0.7 to 1.5 and y is a number from 0.8 to 6,

(B) from 0.5% to 6% by weight of a practically water-insoluble nonionic aliphatic surface-active compound having a turbidity point of a 1% solution in water of below room temperature, and

(C) a content up to 0.5% by weight, sufficient to exhibit an antifoaming effect, of antifoaming agents selected from the group consisting of foam-reducing soaps, silicones and triazine derivatives, in water, said aqueous suspension being capable of being pumped after 24 hours of standing.

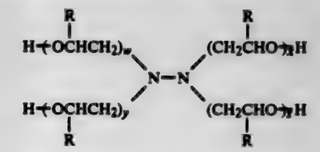
4,438,013

PHOSPHORYLATED AND THIOPHOSPHORYLATED POLY(OXYALKYLATED) HYDRAZINES AND SELECTED ADDUCTS AND THEIR USE AS CORROSION INHIBITORS

Gregory W. Grynkewich, West Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed May 27, 1983, Ser. No. 499,039
Int. Cl.³ C23G 1/06, 1/18; C07F 9/02
U.S. Cl. 252—146 33 Claims

1. A composition comprising the reaction product of a poly-(oxyalkylated) hydrazine and at least one compound selected from the group consisting of a phosphorylating agent, a thiophosphorylating agent, and mixtures thereof, wherein said poly(oxyalkylated) hydrazine has the formula:



wherein each R is individually selected from hydrogen, lower alkyl groups having from 1 to 4 carbon atoms and phenyl; and the sum of w, x, y, and z is from about 4 to about 25, and wherein the mole ratio of said poly(oxyalkylated) hydrazine to said compound being from about 0.1:1 to 10:1.

4,438,014

NONIONIC SURFACTANTS FOR AUTOMATIC DISHWASHER DETERGENTS

Robert J. Scott, New City, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 16, 1982, Ser. No. 349,174
Int. Cl.³ C11D 1/66
U.S. Cl. 252—174.21 1 Claim

1. A method of washing dishes comprising washing them in a mechanical dishwasher with an aqueous solution comprising a nonionic surfactant having a cloud point of 20°–30° C. and having the formula:

R—O—A_x—B—H

wherein R is 2-ethylhexanol or n-octanol; A is an oxypropylene group; x is 8 or 9; and B is a random mixture of oxyethylene and oxypropylene groups with the molar ratio of oxyethylene to oxypropylene groups being about 3:1; in a dishwasher detergent exhibiting low-foaming, good wetting and scouring having a chlorine retention of at least 15 percent, and not needing an auxiliary foam suppressor.

4,438,015

LAVATORY CLEANSING BLOCK

Otto Huber, Winterthur, Switzerland, assignor to Lever Brothers Company, New York, N.Y.

Filed Aug. 17, 1982, Ser. No. 408,988
Claims priority, application United Kingdom, Aug. 24, 1981, 8125733
Int. Cl.³ C11D 3/37, 17/00
U.S. Cl. 252—174.24 6 Claims

1. A process for preparing a lavatory cleansing block intended for immersion in the cistern of a lavatory bowl or urinal, comprising the steps of melting a mixture of 1–25 parts by weight of a copolymer of vinylmethyl ether and maleic anhydride (PVM/MA) having specific viscosity of between 0.1 and 2.0 and 50–99 parts by weight of a solid, water-soluble nonionic surface active compound, heating the melt further to raise the temperature to about 125°–135° C., and keeping it at this level to effect esterification to such an extent that the resulting blocks do not have a tendency to flocculate in use, followed by cooling and adding as desired builders and other ingredients before solidification, casting the liquid product into forms where it solidifies upon further cooling to form blocks or tablets of about 20–150 grams.

4,438,016

STABLE AQUEOUS CLEANING AGENTS AND A PROCESS FOR THEIR PRODUCTION

Eva Kiewert, Dusseldorf, and Karlheinz Diach, Haan, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,869
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1982, 3240088
Int. Cl.³ C11D 3/12
U.S. Cl. 252—174.25 8 Claims

1. A process for the production of a stable, aqueous cleaning agent composition comprising (a) a surfactant-effective amount of a surfactant selected from the group consisting of non-chlorine stable anionic surfaceants, non-chlorine stable nonionic surfactants, chlorine-stable anionic surfactants, chlorine-stable nonionic surfactants and mixture thereof, (b) from 0 to an abrasively-effective amount of at least one abrasive component, (c) from 0 to a bleaching-effective amount of an active-chlorine-relessing compound and (d) from 0 to an effective amount of dyes and (e) from 0 to an effective amount of fragrances, with (f) a further suspending-effective amount of an amorphous calcium aluminum silicate precipitated in situ, where an effective amount of at least one of component (b) and component (c) is present, comprising the steps of mixing component (b), if present, with an aqueous solution of component (a) and component (d) if present, at room temperature, then successively adding under continuous mixing a calcium chloride solution, an aluminum hydroxide solution and a waterglass solution in amounts sufficient to form said component (f) in situ, followed by adding component (c), if present, and component (e) if present, and recovering said stable, aqueous cleaning agent composition.

4,438,017

SCINTILLATION LIQUID COMPATIBLE WITH HIGH PERFORMANCE LIQUID CHROMATOGRAPHY SOLVENTS

Arjun Mallik, Pequannock; Daniel Koetters, Butler, and Harold Edelstein, Fair Lawn, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 28, 1982, Ser. No. 425,622
Int. Cl.³ C09K 11/06
U.S. Cl. 252—301.17 4 Claims

1. A liquid scintillation composition having a substantially uniform counting efficiency when mixed with specimens comprising radio-tagged compositions in a solvent/water mixture over a wide range of solvent/water ratios comprising:
an aromatic liquid capable of capturing energy from radiation;
at least one fluor compound;
optionally one low molecular weight alcohol; and
a surfactant consisting essentially of a oxyalkylated straight chain alcohol or acid.

4,438,018

METAL CATALYZED PREPARATION OF POLYOXYALKYLENE SURFACTANTS FOR PHENOLIC FOAM STABILIZATION

Richard L. Frentzel, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 113,841, Jan. 21, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,868
Int. Cl.³ B01F 17/32, 17/36
U.S. Cl. 252—356 69 Claims

1. A process for preparing a surfactant for cellular foams comprising reacting a cyclic nitrogenous vinyl monomer and an esterified unsaturated dibasic acid by free radical addition polymerization in the presence of
(a) a polyoxyalkylene adduct having the formula

H—polyoxyalkylene chain)$_t$R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R,
(b) an organic or inorganic per-compound, and
(c) a metal catalyst selected from the group consisting of ferrocene, acetylferrocene, benzoylferrocene, cobaltocene, 1,1′-diacetylferrocene, 1,1′-ferrocenebis-(diphenylphosphine), nickelocene, hafnocene dichloride, ferrocenecarboxaldehyde, mixtures of said ferrocene compounds and other transition metal compounds containing a metal having an atomic number of 21 to 30, and a mixture of compounds selected from the group consisting of iron (II) sulfate and iron (III) sulfate, iron (II) sulfate and iron (III) chloride, manganese (II) acetylacetonate and manganese (III) acetylacetonate, cobalt (II) benzoate and cobalt (III) acetylacetonate, copper (I) acetate and copper (II) acetylacetonate, and vanadium (III) acetylacetonate and vanadium (IV) oxide acetylacetonate, to provide a foam surfactant composition, wherein the major component of said foam surfactant composition comprises the product formed from the reaction of said cyclic nitrogenous vinyl monomer and unsaturated diester onto said polyoxyalkylene adduct.

35. A surfactant for cellular foams comprising the product of a free radical addition polymerization of a cyclic nitrogenous vinyl monomer and an esterified unsaturated dibasic acid in the presence of
(a) a polyoxyalkylene adduct having the formula

H—polyoxyalkylene chain)$_t$R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R,
(b) an organic or inorganic per-compound and
(c) a metal catalyst selected from the group consisting of ferrocene, acetylferrocene, benzoylferrocene, cobaltocene, 1,1′-diacetylferrocene, 1,1′-ferrocenebis-(diphenylphosphine), nickelocene, hafnocene dichloride, ferrocenecarboxaldehyde, mixtures of said ferrocene compounds and other transition metal compounds containing a metal having an atomic number of 21 to 30, and a mixture of compounds selected from the group consisting of iron (II) sulfate and iron (III) sulfate, iron (II) sulfate and iron (III) chloride, manganese (II) acetylacetonate and manganese (III) acetylacetonate, cobalt (II) benzoate and cobalt (III) acetylacetonate, copper (I) acetate and copper (II) acetylacetonate, and vanadium (III) acetylacetonate and vanadium (IV) oxide acetylacetonate, wherein the major component of said polymerization comprises the product formed from the reaction of said cyclic nitrogenous vinyl monomer and unsaturated diester onto said polyoxyalkylene adduct.

4,438,019

CATALYST FOR THE POLYMERIZATION OF OLEFINS BASED UPON MAGNESIUM AND TRANSITION METAL

Daniel C. Durand, and Pierre M. Mangin, both of Martigues, France, assignors to BP Chimie, Paris, France

Continuation of Ser. No. 63,123, Aug. 3, 1979, abandoned, which is a continuation of Ser. No. 850,230, Nov. 11, 1977, abandoned, which is a continuation of Ser. No. 363,037, May 23, 1973, abandoned. This application Mar. 10, 1981, Ser. No. 242,354
Claims priority, application France, May 25, 1972, 72 18595
Int. Cl.³ C08F 4/64, 4/68
U.S. Cl. 502—169 1 Claim

1. The method of preparing pre-oxidized solid catalysts which can be used in the polymerization of olefins having the formula CH_2=CHR in which R is hydrogen or an alkyl group containing 1 to 8 carbon atoms consisting essentially of reacting magnesium, a monohalogenated hydrocarbon selected from the group consisting of chlorine and bromine derivatives of a saturated hydrocarbon and a transition metal compound having the general formula $MX_{4-m}(OR)_m$ wherein X is chlorine, R is an alkyl group having from 2 to 8 carbon atoms, m is a whole number or fraction thereof from 0 to 4 and M is a transition metal selected from the group consisting of titanium and vanadium at a temperature within the range of −20° to 150° C. for a time sufficient to react the magnesium, monohalogenated hydrocarbon and the compound of the transition metal, and then contacting the solid magnesium and transition metal compound resulting from the previous reaction with an oxidizing compound selected from the group consisting of chlorine, bromine and iodine to completely convert the transition metal to its original valence, in which the magnesium, monohalogenated hydrocarbon and transition metal compound are reacted in amounts such that:
(a) the ratio between the number of molecules of the monohalogenated hydrocarbon and the number of magnesium atoms is within the range of 0.5 to 10, and
(b) the ratio between the number of molecules of transition metal and the number of magnesium molecules is less than 0.5
whereby the activity of the catalyst after oxidation is not substantially modified and the oxidized catalyst can be stored and used in the presence of air.

4,438,020

CATALYST SUITABLE FOR PREPARING ALDEHYDES

Mohammad M. Habib, Allison Park, and Wayne R. Pretzer, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 289,404, Aug. 3, 1981, Pat. No. 4,361,706. This application Sep. 13, 1982, Ser. No. 417,534
Int. Cl.³ B01J 31/02
U.S. Cl. 252—162 34 Claims

1. A novel catalyst composition comprising (1) cobalt, (2) iodine and (3) a ligand containing phosphorus atoms separated by a sterically constrained carbon-carbon bonding, the molar ratio of cobalt to said ligand being in the range of about 1:2 to about 7:1, and the molar ratio of cobalt to iodine being in the range of about 1:1.15 to about 1:15.

4,438,021

CATALYST FOR DEHYDROCOUPLING OF TOLUENE OR XYLENE

Yoshio Okada; Takashi Terauchi; Makoto Naoki, and Masatoshi Hino, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,214
Claims priority, application Japan, Mar. 27, 1981, 56-46018; Mar. 27, 1981, 56-46019; Mar. 27, 1981, 56-46020
Int. Cl.³ B01J 23/06
U.S. Cl. 502—341 1 Claim

1. A catalyst for dehydrocoupling of toluene or xylene, consisting essentially of an activated catalyst composition represented by the general formula (I):

$Zn_aTl_bO_c$ (I),

where a denotes a number in a range of 0.25 to 5; b is 1 and c denotes a number necessary for fulfilling the respective average atomic valencies of Zn and Tl in the oxidation states in which they exist in the composition.

4,438,022

LUBRICATING OIL COMPOSITIONS CONTAINING POLYETHER POLYAMINE ETHANES

Curtis B. Campbell, Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 30, 1982, Ser. No. 403,606
Int. Cl.³ C10M 1/32
U.S. Cl. 252—51.5 R 9 Claims

1. A lubricating oil composition comprising a major portion of oil of lubricating viscosity, and a minor amount of hydrocarbyl polyoxyalkylene polyamine ethane of molecular weight from about 300 to about 2500; wherein said hydrocarbyl group contains from 1 to about 30 carbon atoms, said polyoxyalkylene moiety comprises 1 to 30 oxyalkylene units selected from oxyalkylene units having from 2 to about 5 carbon atoms, said ethane moiety contains from about 2 to about 8 carbon atoms and said polyamine moiety comprises from about 2 to about 12 amine nitrogen atoms and from about 2 to 40 carbon atoms.

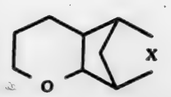
4,438,023

OXYGENATED TRICYCLIC DERIVATIVES OF NORBORNANE AND USE OF SAME AS PERFUMING INGREDIENTS

Werner Skorianetz, Dardagny, and Günther Ohloff, Bernex, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

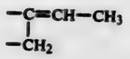
Filed Apr. 8, 1982, Ser. No. 366,552
Claims priority, application Switzerland, May 21, 1981, 3315/81
Int. Cl.³ C11B 9/00; C07D 311/78
U.S. Cl. 252—522 R 7 Claims

1. Compounds of formula



(I)

wherein symbol X represents a divalent radical of formula



7. A perfuming composition containing as perfuming ingredient 0.1% to 20% of a compound of formula (I) as set forth in claim 1.

4,438,024

STABLE LIQUID DETERGENT COMPOSITIONS

Angela G. DelGreco, Hamilton; Malcolm L. Allen, Cincinnati, and Ronald L. Jacobsen, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 10, 1982, Ser. No. 376,876

Int. Cl.³ C11D *1/14, 1/75, 17/08*

U.S. Cl. 252—545 **5 Claims**

1. A stable liquid detergent composition that recovers, after freezing, to a single isotropic phase by 50° F., comprising:

(a) a C_{12-16} alkyl dimethylamine oxide surfactant;

(b) an alcohol polyethoxylate sulfate surfactant of the formula $R^4O(C_2H_4O)_mSO_3M$ wherein R^4 is an alkyl radical containing from about 12 to about 18 carbon atoms, m is from about 1 to about 4, and M is a compatible cation;

(c) from about 15% to about 25% by weight of a water-soluble nitrilotriacetate detergency builder capable of sequestering calcium and magnesium ions in water solution;

(d) from about 2% to about 4% by weight of monoethanolamine;

(e) from about 4% to about 7% by weight of a hydrotrope selected from the group consisting of the water-soluble salts of toluene sulfonate, xylene sulfonate, cumene sulfonate, and mixtures thereof; and

(f) from about 55% to about 80% by weight of water; said composition containing from about 8% to about 17% by weight of amine oxide and alcohol polyethoxylate sulfate surfactants, provided the molar ratio of amine oxide to alcohol polyethoxylate sulfate is from about 0.8 to about 1.2, and containing from about 25% to about 37% by weight of the amine oxide and alcohol polyethoxylate sulfate surfactants and the water-soluble nitrilotriacetate builder.

4,438,025

DETERGENT COMPOSITIONS

Teruhisa Satsuki, Funabashi; Seiiti Ota, Chiba, and Setsuko Tabata, Tachikawa, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,691

Claims priority, application Japan, Dec. 30, 1981, 56-210654

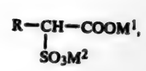
Int. Cl.³ C11D *1/28, 1/665, 1/52*

U.S. Cl. 252—545 **6 Claims**

1. A detergent composition suitable for washing glassware without leaving water spots, and having excellent detergency and foaming characteristics, said composition consisting essentially of:

from 15 to 50 parts by weight of a component (a) composed of

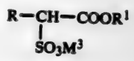
(a-1) at least 20% by weight of a water-soluble neutral salt of an α-sulfonated fatty acid represented by the general formula



(I)

in which R is an alkyl group having from 12 to 16 carbon atoms and M^1 and M^2 are each independently from the other a cation selected from the class consisting of magnesium ion $\frac{1}{2}Mg^{++}$ and substituted or unsubstituted ammonium ions, and

(a-2) up to 80% by weight of a water-soluble salt of an α-sulfonated fatty acid ester represented by the general formula



(II)

in which R has the same meaning as defined above, R^1 is an alkyl group having from 1 to 3 carbon atoms and M^3 is a cation independently selected from the same class as defined for the symbols M^1 and M^2 above, and

from 85 to 50 parts by weight of a component (b) which is a diethanolamide of a higher fatty acid, said fatty acid having about 11 to about 15 carbon atoms on an average in a molecule.

4,438,026

SOLVENT DEWATERING COMPOSITION

Edward G. Tajkowski, Williamsville, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 28, 1983, Ser. No. 470,342

Int. Cl.³ C11D *1/34, 1/68, 3/43;* C23G *5/02*

U.S. Cl. 252—545 **6 Claims**

1. A solvent-surfactant drying composition comprising essentially

(a) 1,1,2-trichloro-1,2,2-trifluoroethane, and containing

(b) from about 0.05 to about 0.5 weight percent linear dodecylbenzene sulfonic/amine salt and

(c) from about 0.05 to about 0.5 weight percent of polyphosphoric ester acid anhydride comprising a reaction product of an aliphatic alcohol of 4–12 carbon atoms and the dimeric phosphoric acid derived from P_2O_5 and

(d) from about 0.05 to about 1 weight percent of a demulsifier selected from the group consisting of (i) acetylenic diols and mixtures thereof with (ii) aliphatic primary alcohols of six to twelve carbon atoms and (iii) phosphate tri-esters having carbon substituents of three to twelve carbon atoms.

4,438,027

CHLORINATED ALKYLAROMATIC BASED COMPOUNDS AND NEW LIQUID DIELECTRICS

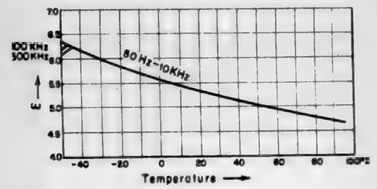
Henri Mathais, Jarrie; Raymond Commandeur, Vizille, both of France; Achille Pontoglio, and Sergio Nebel, both of Brescia, Italy, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 243,143, Mar. 12, 1981, abandoned, which is a continuation of Ser. No. 57,982, Jul. 16, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 429,082

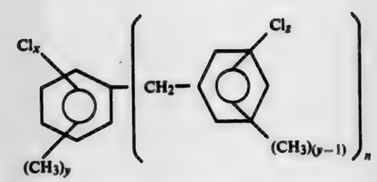
Claims priority, application France, Jul. 27, 1978, 78 22216; Feb. 20, 1979, 79 04259

Int. Cl.³ H01B *3/24*

U.S. Cl. 252—581 **9 Claims**

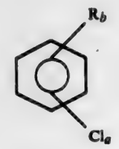


1. Liquid dielectrics of formula:



where n, x, y and z have value 1 or 2.

4. An insulating fluid comprising one or more compounds according to the formula of claim 1 in admixture with one or more compounds of the general formula:



(2)

in which a varies from 2 to 4, b varies from 0 to 2 and R is an aliphatic hydrocarbon radical containing 1 to 3 carbon atoms and an acid acceptor.

4,438,028

FIRE RETARDANT AND COMPOUNDS BASED THEREON

Hans-Bernd Schmittmann, Langenhorster Str. 30, 5620 Velbert, Fed. Rep. of Germany, and Alfons Thier, Rosbach, Fed. Rep. of Germany, assignors to Charles M. Wiersma and Jack G. Wiersma, both of Grand Rapids, Mich., by said Alfons Thier

Filed Jan. 11, 1982, Ser. No. 338,544

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1981, 3100626

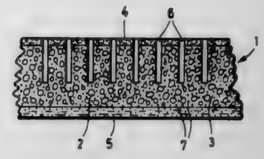
Int. Cl.³ C09K *3/28*

U.S. Cl. 252—609 **87 Claims**

1. A fire retardant plastic comprising:

a plastic resin composition combined with monoammonium phosphate, ammonium polyphosphate, an inorganic compound which releases water when heated, an anhydrous inorganic compound capable of hydration, and a urea polymer.

2. The fire retardant plastic of claim 1 wherein said anhydrous inorganic compound is anhydrous borax.



3. The fire retardant plastic of claim 1 in which said inorganic compound which releases water when heated is selected from the group consisting of borax decahydrate, borax pentahydrate and boric acid.

4,438,029

SYNTHETIC PEPTIDES

Bruce W. Erickson, Closter, N.J., and Tony E. Hugli, San Diego, Calif., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 870,713, Jan. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 762,427, Jan. 25, 1977. This application Feb. 21, 1979, Ser. No. 13,176

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **17 Claims**

1. Ala-Ser-His-Leu-Gly-Leu-Ala-Arg-Gly.

4,438,030

ANTIBODIES TO IMMUNOGENIC PEPTIDES AND THEIR USE TO PURIFY HUMAN FIBROBLAST INTERFERON

David J. Ganfield, Clementon, N.J.; Michael W. Hunkapiller, San Gabriel, Calif.; Ernest Knight, Jr., and Bruce D. Korant, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 172,466, Jul. 25, 1980, Pat. No. 4,341,761. This application Mar. 30, 1982, Ser. No. 363,743

Int. Cl.³ C07C *103/52;* A61K *45/02*

U.S. Cl. 260—112.5 R **2 Claims**

1. A process for purifying human fibroblast interferon contained in a liquid phase mixture of proteins, comprising (i) contacting the protein mixture with antibodies produced in response to the peptide having the amino acid sequence:

(X-Ser-Tyr-Asn-Leu-Leu-Gly-Phe-Leu-Gln-Arg-Ser-Ser-Asn-Phe-Gln-Y-Gln-Lys-Leu-Leu)$_n$

wherein:

X is selected from Met and Ser,

Y is selected from His and Cys, and

n is 1 to 12;

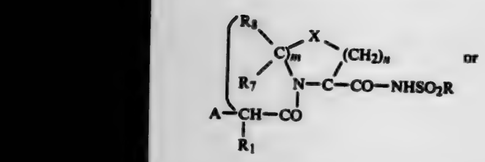
and forming an interferon-antibody complex; (ii) separating the interferon-antibody complex from the liquid phase; and (iii) separating the interferon from the antibody.

4,438,031
N-(ALKYLSULFONYL)-L-PROLINE AMIDE AND N-(ALKYLSULFONYL)-2-CARBOXYLIC ACID AMIDE-INDOLINE DERIVATIVES

Michael W. Winkley, Malvern, and Scott J. Childress, Philadelphia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

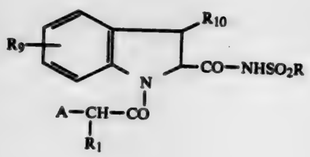
Filed Feb. 24, 1982, Ser. No. 351,716
Int. Cl.³ C07D *209/26, 207/16, 277/06;* C07C *103/52*
U.S. Cl. 260—112.5 R 23 Claims

1. A compound of the formula:



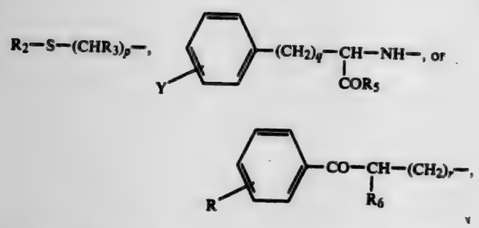
Ia

or



Ib

wherein:
m is 0 or 1, and m is 1 when X is S;
n is 1 or 2;
X is —CH_2— or S;
R is methyl, ethyl, n-propyl, or iso-propyl;
R_7 is hydrogen, lower alkyl, lower alkoxy, phenyl, or substituted phenyl;
R_8 is hydrogen or lower alkyl;
R_9 is hydrogen, hydroxy, lower alkyl, lower alkoxy, or halogen;
R_{10} is hydrogen or lower alkyl;
R_1 is hydrogen, lower alkyl, phenyl, substituted phenyl, phen-lower alkyl, substituted phen lower alkyl, amino lower alkyl, or perfluoroalkyl;
A is:



in which:
R_2 is hydrogen or R_4CO— where R_4 is hydrogen, lower alkyl, phenyl, substituted phenyl, phen lower alkyl, or substituted phen lower alkyl;
R_3 is hydrogen, lower alkyl, benzoyl, or substituted benzoyl;
R_6 is SR_{11} where R_{11} is hydrogen, lower alkanoyl, benzoyl, substituted benzoyl, benzoxycarbonyl, or substituted benzoxycarbonyl;
R_5 is hydroxy, lower alkoxy or amino;
Y is hydrogen, halogen, a lower alkyl group, or a lower alkoxy group;
p is 0 or 1;
q is 0–3; and
r is 0 or 1.

4,438,032
UNIQUE T-LYMPHOCYTE LINE AND PRODUCTS DERIVED THEREFROM

David W. Golde, and Shirley G. Quan, both of Los Angeles, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 229,900, Jan. 30, 1981, abandoned. This application Jan. 6, 1983, Ser. No. 456,177
Int. Cl.³ C12P *21/00;* C12N *15/00;* C12R *1/91;* C07G *7/00*
U.S. Cl. 260—112 R 22 Claims

1. A method for producing in isolatable amounts an excretory protein produced by a T-lymphocyte,
said method comprising:
cultivating as a single cell suspension the Mo cell line in a nutrient medium, whereby said excretory proteins are produced and excreted into said nutrient medium.

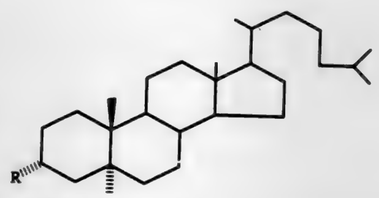
14. A protein composition comprising erythroid potentiating factor in an amount of at least about 50,000 units/mg.

4,438,033
STEROIDAL CHIRAL PHOSPHINES, METHODS FOR THEIR PREPARATION, CATALYTIC SYSTEMS CONTAINING THEM AND CATALYTIC PROCESSES IN WHICH THEY ARE USED

Carlo Botteghi, Alghero; Serafino G. Gladiali, Sassari; Mauro Marchetti, Sassari, and Giovanni A. Faedda, Sassari, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

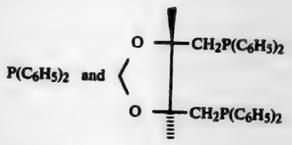
Filed Nov. 18, 1982, Ser. No. 442,679
Claims priority, application Italy, Dec. 4, 1981, 25463 A/81
Int. Cl.³ C09J *21/00*
U.S. Cl. 260—239.55 C 5 Claims

1. New steroidal chiral phosphines of formula:



(I)

wherein R represents a phosphorated group selected between



and

4,438,034
PROCESS FOR PREPARING LACTAM MAGNESIUM HALIDES

Albert Y. Garner, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 10, 1983, Ser. No. 456,702
Int. Cl.³ C07D *223/10*
U.S. Cl. 260—239.3 R 34 Claims

1. A method of preparing a lactam magnesium halide comprising the steps of:
a. Reactively admixing magnesium, hydrocarbon halide, and lactam in the presence of a cyclic ether solvent, wherein the halide is either chloride or bromide; and
b. removing the cyclic ether and the hydrocarbon residue.

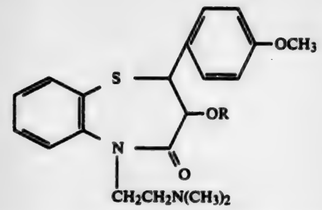
3. The method of claim 1 wherein said lactam is caprolactam.

4,438,035
METHOD OF PREPARING BENZOTHIAZEPINE DERIVATIVES

Mitsunori Gaino, Omiya; Ikuo Iijima, Urawa; Shigeru Nishimoto, Minoh; Kuichiro Ikeda, Onoda, and Tokuo Fujii, Yamaguchi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

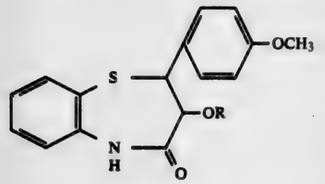
Filed Dec. 1, 1982, Ser. No. 445,964
Claims priority, application Japan, Dec. 7, 1981, 56-197358
Int. Cl.³ C07D *281/02*
U.S. Cl. 260—239.3 B 12 Claims

1. A method of preparing a benzothiazepine derivative of the formula:



(I)

wherein R is hydrogen or acetyl, or a pharmaceutically acceptable acid addition salt thereof, which comprises condensing a compound of the formula:



(II)

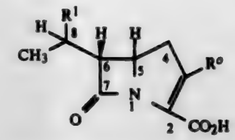
wherein R is the same as defined above, with 2-(dimethylamino)ethyl halide either in the presence of potassium hydroxide in acetone or in the presence of potassium carbonate in a solvent selected from acetone, lower alkyl acetate, a mixture of acetone and water and a mixture of lower alkyl acetate and water, and if required, further converting the product into a pharmaceutically acceptable acid addition salt thereof.

4,438,036
β-LACTAM ANTIBIOTICS THEIR PREPARATION AND THEIR USE

David F. Corbett, Reigate; Robert Southgate, Warnham, and Steven Coulton, Cranleigh, all of England, assignors to Beecham Group Limited, England

Filed Oct. 13, 1981, Ser. No. 310,491
Claims priority, application United Kingdom, Oct. 25, 1980, 8034453
Int. Cl.³ C07D *487/04*
U.S. Cl. 260—245.2 T 5 Claims

1. A process for the preparation of a compound of the formula (II):

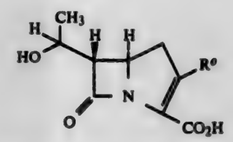


(II)

or a pharmaceutically acceptable salt or in vivo hydrolyzable ester thereof, wherein R^1 is azido, amino or hydroxy, or is a group of the sub-formula (a):

—$OCOR^3$ (a)

wherein R^3 is hydrogen or C_{1-6} alkyl, aryl or aryl (C_{1-6}) alkyl; and R^o is hydrogen or —$S(O)_xR^2$, wherein x is zero or one and R^2 is C_{1-6} alkyl, unsubstituted or monosubstituted by amino, di-(C_{1-6} alkyl) amino, C_{1-6} alkyl amino, acylamino, hydroxy, C_{1-6} alkanoyloxy, C_{1-6} alkoxy, benzoyl, C_{1-6}-alkanoyl or carboxy or an ester or pharmaceutically acceptable salt thereof; C_{2-6} alkenyl, unsubstituted or monosubstituted by hydroxy, C_{1-6} alkoxy, acetamido, propionamido or carboxy or an ester or pharmaceutically acceptable salt thereof; C_{2-6} alkynyl; C_{1-6} alkanoyl; phenyl, naphthyl, pyrrolyl, furyl, tetrazolyl, thienyl, indolyl, thionaphthyl, benzofuryl, imidazolyl or thiazolyl, each of which being unsubstituted or monosubstituted by C_{1-3} alkyl, phenyl, nitro, amino or phenyl substituted by halogen, C_{1-3} alkoxy or acetamido; phenyl C_{1-6} alkyl, unsubstituted or monosubstituted by halogen, C_{1-3} alkoxy, nitro or acetamido; pyrrolyl C_{1-6}-alkyl, unsubstituted or monosubstituted by phenyl or C_{1-3}-alkyl; thienyl C_{1-6} alkyl, unsubstituted or monosubstituted by phenyl or C_{1-3} alkyl; furyl C_{1-6} alkyl, unsubstituted or monosubstituted by phenyl or C_{1-3} alkyl; tetrazolyl C_{1-6}-alkyl, unsubstituted or monosubstituted by phenyl or C_{1-3}-alkyl; imidazolyl C_{1-6} alkyl, unsubstituted or monosubstituted by phenyl, nitro, amino or C_{1-3} alkyl; thiazolyl C_{1-6} alkyl, unsubstituted or monosubstituted by one or more phenyl, nitro, amino or C_{1-3} alkyl; phenyl C_{1-6} alkanoyl; phenoxy C_{1-6} alkanoyl; or benzoyl; which comprises the reaction of an ester of a compound of the formula (III):



(III)

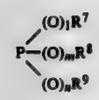
wherein the stereochemistry at C-8 is inverted compared to that at C-8 of the compound of the formula (II), with
(a) a compound of the formula (IV):

R^4—H (IV)

wherein R^4 is azido or a group of the sub-formula (a);
(b) a compound of the formula (V):

$R^5O.CO.N{=}N.CO.OR^6$ (V)

wherein R^5 and R^6 are independently C_{1-6} alkyl, aryl-C_{1-6} alkyl or aryl; and
(c) a compound of the formula (VI):



(VI)

wherein l, m and n are independently zero or one and R^7,

R^8 and R^9 are independently C_{1-6} alkyl, aryl C_{1-6} alkyl or aryl and thereafter if necessary:

(i) reducing a compound of the formula (II) wherein R^1 is azido to form a compound of the formula (II) wherein R^1 is amino; or

(ii) hydrolyzing a compound of the formula (II) wherein R^1 is a group of the sub-formula (a) to form a compound of the formula (II) wherein R^1 is hydroxy.

4,438,037

OXIDATION OF AROMATIC COMPOUNDS TO QUINONES BY USE OF SODIUM HYPOCHLORITE

Thomas F. Rutledge, Avalon, N.J., assignor to ICI Americas Inc., Wilmington, Del.

Filed Aug. 27, 1982, Ser. No. 412,140
Int. Cl.³ C07C *45/28, 50/18*
U.S. Cl. 260—385 **7 Claims**

1. A method for the preparation of anthraquinones which comprises oxidizing corresponding anthracenes dissolved in an inert organic solvent in the presence of an aqueous solution of sodium hypochlorite as oxidizing agent and maintaining the pH of the process at from about 4.5 to about 8.0.

4,438,038

PROCESS FOR THE PRODUCTION OF OIL-SOLUBLE METAL SALTS

Joseph Petronella, Old Bridge Township, Middlesex County, N.J., assignor to Nuodex Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 234,514, Feb. 17, 1981, Pat. No. 4,337,208. This application May 13, 1982, Ser. No. 378,022
Int. Cl.³ C07F *1/08, 15/04, 15/06*; C11C *1/00*
U.S. Cl. 260—414 **10 Claims**

1. In the process for the production of oil-soluble metal salts wherein a reaction mixture that comprises a polyvalent metal, an organic monocarboxylic acid having 5 to 18 carbon atoms, water, and an inert, water-immiscible organic solvent is heated in the presence of oxygen for a period of time sufficient to form the metal salt of said monocarboxylic acid, the improvement wherein the reaction between the polyvalent metal and the monocarboxylic acid is carried out in the presence of an alkali metal salt catalyst.

6. The process of claim 1 wherein the alkali metal catalyst comprises 30% to 70% by weight of an alkali metal salt component selected from the group consisting of alkali metal salts of mineral acids, alkali metal salts of monocarboxylic acids having 1 to 4 carbon atoms, and mixtures thereof and 30% to 70% by weight of an ammonium salt component selected from the group consisting of ammonium salts of mineral acids, ammonium salts of monocarboxylic acids having 1 to 4 carbon atoms, and mixtures thereof.

4,438,039

TITANIUM CHELATE CATALYST FOR SILICONE COMPOSITIONS

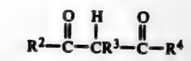
Melvin D. Beers, Schenectady, and Richard P. Surprenant, Troy, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,327
Int. Cl.³ C07F *7/28*
U.S. Cl. 260—429.5 **25 Claims**

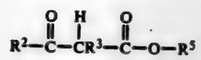
1. A titanium chelate catalyst for room temperature vulcanizable silicone rubber compositions which does not form nodules upon standing prior to cure comprising a first reaction product of a titanium compound of the formula,

$$Ti(OR)_4$$

with a first ketone compound of the formula,



and with a second ketone compound of the formula



where R and R^2 are halogen substituted or unsubstituted monovalent hyudrocarbon radicals, R^3 is selected from the group consisting of hydrogen, hydrocarbyl, halohydrocarbyl, and acyl, all not having more than 8 carbon atoms and taken together with R^2 forms together with the carbon atoms to which they are attached a cyclohydrocarbon substituent of not more than about 12 carbon atoms and chloro, nitro, acyl, cyano and carboxy ester substituted cyclic hydrocarbon substituents, R^4 is a radical selected from the class consisting of radicals having not more than about eight carbon atoms selected from the group consisting of hydrocarbyl halohydrocarbyl, cyanoalkyl, and amino and R^5 is selected from the group consisting of monovalent hydrocarbon radicals, amino, ether and polyether moieties of the formula,

$$-(C_qH_{2q}O)_vR^{30}$$

where q varies from 2 to 4 and v varies from 1 to 20 and R^{30} is a monovalent hydrocarbon radical; said first reaction product then being reacted with a diol of the formula

$$HO-R^6-OH$$

to produce the second and final catalyst reaction product where R^6 is a divalent hydrocarbon radical of 2 to 20 carbon atoms.

4,438,040

PROCESS FOR MAKING AMINOPOLYCARBOXYLIC ACID CHELATES OF IRON

Katherine H. Svatek, Lake Jackson; David A. Wilson, Richwood, and Freddie Griffin, Jr., Missouri City, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 184,848, Sep. 8, 1980, Pat. No. 4,364,871. This application May 12, 1982, Ser. No. 377,519
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ C07F *15/02*
U.S. Cl. 260—439 R **9 Claims**

1. A process for producing a ferric-ammonium-chelate of an aminopolycarboxylic acid wherein an oxide of iron is reacted with an aminopolycarboxylic acid chelant in the presence of a base, which comprises: (1) providing a mixture in water of ammonia together with said chelant in a molar ratio of ammonia to chelant of at least 1.05 but not more than 1.5, (2) adding to said mixture said oxide of iron at less than 1 mole of iron per mole of chelant, (3) heating said mixture to a reaction temperature within the range of from about 85° to about 105° C., (4) maintaining said reaction temperature for a time sufficient to complete the reaction, (5) cooling said mixture to a temperature within the range of from about 45° to 80° C., (6) introducing ammonia to said mixture in sufficient amount to dissolve and to maintain in solution the iron chelate so formed, (7) cooling said chelate solution to room temperature and (8) oxidizing any ferrous ion present in said chelate solution to the ferric ion.

4,438,041

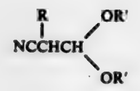
PROCESS FOR PREPARING ESTERS OF CYANOACETIC ACIDS

Kanenobu Matsui; Shinichiro Uchiumi; Mitsuo Takahashi; Hideki Asada, and Masaru Kurahashi, all of Ube, Japan, assignors to UBE Industries, Ltd., Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,417
Claims priority, application Japan, Jun. 9, 1981, 56-87471
Int. Cl.³ C07C *120/00, 121/16, 121/46, 121/66*
U.S. Cl. 260—464 **9 Claims**

1. A process for preparing an ester of cyanoacetic acid with an alcohol selected from the group consisting of an aliphatic alcohol, a substituted aliphatic alcohol having a nitro group or a halogen atom substituent, an alicyclic alcohol and a substituted alicyclic alcohol having a nitro group or a halogen atom substituent which comprises reacting

(i) a cyanoacetaldehyde acetal represented by the general formula



wherein R is a hydrogen atom, an alkyl group, a substituted alkyl group having a nitro group or a halogen atom substituent, a cycloaklyl group, a substituted cycloalkyl group having a nitro group or a halogen atom substituent, a phenyl group, a substituted phenyl group having a nitro group or a halogen atom substituent, an aralkyl group, and a substituted aralkyl group having a nitro group or a halogen atom, and R′ is an alkyl group, a substituted alkyl group having a nitro group or a halogen atom substituent, a cycloalkyl group, a substituted cycloalkyl group having a nitro group or a halogen atom substituent, a phenyl group, a substituted phenyl group having a nitro group or a halogen atom substituent, an aralkyl group, a substituted aralkyl group having a nitro group or a halogen atom substituent, and the two R′ groups can be linked to form a bridging alkylene group;

(ii) hydroxylamine; and

(iii) an alcohol selected from the group consisting of an aliphatic alcohol, a substituted aliphatic alcohol having a nitro group or a halogen atom substituent, an alicyclic alcohol and a substituted alicyclic alcohol having a nitro group or a halogen atom substituent,

with each other at a temperature of 50° to 150° C., the amount of said hydroxylamine being within the range of 0.1 to 10 moles per one mole of said cyanoacetaldehyde acetal, to form said ester of cyanoacetic acid.

4,438,042

PREPARATION OF AROMATIC/ALIPHATIC NITRILES

Roland Jacques, Ales; Michel Reppelin, Collonges-au-Mont-d'Or, and Laurent Seigneurin, Salindres, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed May 14, 1982, Ser. No. 378,226
Claims priority, application France, May 15, 1982, 81 09695
Int. Cl.³ C07C *120/10*
U.S. Cl. 260—465 B **18 Claims**

1. A process for the preparation of an aromatic or aliphatic nitrile having the formula:

$$Ar-A-CN \qquad (I)$$

wherein Ar is a benzene radical and A is a direct chemical bond or a hydrocarbon radical having from 1 to 6 carbon atoms, comprising heating to a temperature ranging from about 450° C. to about 550° C. a formamide or formanilide having the formula:

$$Ar-A-NHCHO \qquad (II)$$

or an amide having the formula:

$$Ar-A-CONH_2 \qquad (III)$$

in the presence of a fluorinated siliceous catalyst, said catalyst having been prepared by (i) impregnating a particulate silica prepared by the precipitation of sodium silicate with sulfuric acid, with a dilute aqueous solution of hydrofluoric acid, said hydrofluoric acid solution having a concentration in HF of less than about 5% by weight, and the ratio by weight of the hydrofluoric acid contained in said aqueous solution thereof to the silica being less than about 5%, followed by (ii) drying the catalyst thus impregnated.

4,438,043

PROCESS FOR PREPARATION OF DI- OR TRIFLUOROMETHOXYPHENYL KETONES OR DI- OR TRIFLUOROMETHYLTHIOPHENYL KETONES

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jun. 28, 1982, Ser. No. 392,886
Claims priority, application France, Apr. 22, 1982, 82 6903
Int. Cl.³ C07C *121/75, 45/43, 149/00*
U.S. Cl. 260—465 F **12 Claims**

1. A process for the preparation of di- or trifluoromethoxyphenyl ketones or di- or trifluoromethylthiophenyl ketones comprising reacting a di- or trihalomethoxybenzene or a di- or trihalomethylthiobenzene with a trihalomethylated aromatic or aliphatic compound in the presence of boron trifluoride in an amount such that the absolute pressure of boron trifluoride within the reaction vessel exceeds 1 bar and in the presence of hydrofluoric acid as a solvent; and hydrolyzing the resultant product.

4,438,044

DI-L-CYSTEINE L-MALATE AND PROCESS FOR THE PRODUCTION THEREOF

Ichiro Chibata, Suita; Akihiko Sumi, Ashiya; Osamu Ohtsuki, Nagaokakyo, and Nozomu Izutsu, Yao, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

Filed Jul. 16, 1981, Ser. No. 284,119
Claims priority, application Japan, Jul. 31, 1980, 55-106280
Int. Cl.³ C07C *51/02*
U.S. Cl. 260—501.12 **9 Claims**

1. Di-L-cysteine L-malate of the formula:

$$[HS-CH_2-CH(NH_3)^+-COOH]_2.(^-OOC-CHOH-CH_2-COO^-)$$

2. A process for the preparation of di-L-cysteine L-malate which comprises reacting 2 mole of L-cysteine mineral acid salt with more than 0.9 mole of L-malic acid in the presence of an alkali metal hydroxide and collecting the resulting crystalline di-L-cysteine L-malate.

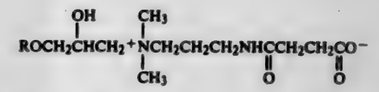
4,438,045

AMPHOTERIC SURFACTANTS

Edward C. Y. Nieh, and Carter G. Naylor, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 15, 1982, Ser. No. 449,957
Int. Cl.³ C11D *1/88*; C07C *101/20*
U.S. Cl. 260—501.13 **22 Claims**

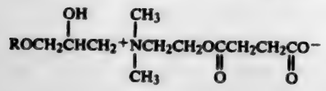
1. A composition of matter of the general formula:



wherein R is selected from the group consisting of a linear

alkyl, a branched alkyl and an alkylaryl containing from 8 to 20 carbon atoms.

12. The composition of matter of the general formula:



wherein R is selected from the group consisting of a linear alkyl, a branched alkyl and an alkylaryl of 8 to 20 carbon atoms.

4,438,046

QUATERNARY AMMONIUM SALTS

Edward L. Grew, Huntingdon, England, and Nigel D. V. Wilson, Midlothian, Scotland, assignors to Glaxo Group Limited, London, England

Filed Apr. 29, 1982, Ser. No. 372,850
Claims priority, application United Kingdom, Apr. 30, 1981, 8113416; Aug. 14, 1981, 8124864
Int. Cl.³ C07C *87/68*; C12F *5/00*
U.S. Cl. 260—501.15 **9 Claims**

1. Crystalline lignocaine benzyl benzoate hydrate.

4,438,047

PROCESS FOR THE PREPARATION OF AN AQUEOUS 3-CHLORO-2-SULFOPROPIONIC ACID REAGENT

Martin M. Tessler, Edison, and Dennis V. Neigel, Whitehouse Station, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 208,371, Nov. 19, 1980, abandoned. This application Sep. 28, 1981, Ser. No. 306,129
Int. Cl.³ C07C *143/02*
U.S. Cl. 260—513 R **9 Claims**

1. A process for preparing an aqueous 3-chloro-2-sulfopropionic acid reagent, which comprises the steps of:

(a) forming a reaction mixture by adding acrylic acid to chlorosulfonic acid maintained at about 45° to 130° during said addition;

(b) heating said reaction mixture at about 60° to 130° C. to form anhydrous 3-chloro-2-sulfopropionic acid reagent; and

(c) adding water to said anhydrous reagent maintained at about 65° and below 100° C.; said water being added in an amount sufficient to decompose said unreacted chlorosulfonic acid and to dilute said anhydrous reagent to a solids content of about 50–95% by weight, based on total reagent solids.

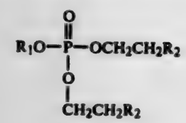
4,438,048

PROCESS FOR THE MANUFACTURE OF MIXED PHOSPHORIC ACID ESTER COMPOSITIONS

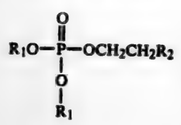
Joseph H. Finley, Metuchen, and Hsiang P. Liao, Princeton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 4, 1982, Ser. No. 432,603
Int. Cl.³ C07F *9/09*
U.S. Cl. 260—982 **3 Claims**

1. A process for the manufacture of a mixed phosphoric acid ester composition comprising by weight less than about 4% of a triphenyl phosphate; from about 30% to about 35% of a phenyl dialkoxyalkyl phosphate having the formula:



and from about 60% to 65% of an alkoxyalkyl diphenyl phosphate having the formula:



wherein R_1 is a phenyl radical and R_2 is an alkoxyalkyl radical, which comprises:

(a) heating about 2 moles of an alcohol characterized by a boiling point above about 170° C. and having the formula:

$R_2CH_2CH_2OH$

with a catalytic amount of from greater than about 1.5 mole percent to about 2 mole percent based on the alcohol of sodium hydroxide in an aqueous solution under vacuum to distill off the water present in the mixture and form a sodium alkoxide;

(b) adding about 1.0 mole of a triphenyl phosphate of the formula:

$(R_1O)_3P{=}O$

to the reaction mixture under a nitrogen atmosphere and maintaining the temperature at about 100° C. with agitation for about an hour;

(c) heating the reaction mixture at 100° C. to 140° C. under vacuum to remove aromatic and aliphatic alcohols from the reaction mixture; and

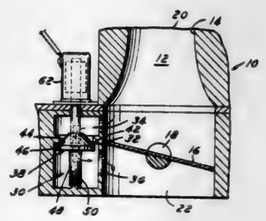
(d) distilling the filtrate in a wiped film still under vacuum and at a temperature below the decomposition temperature of said mixed phosphoric acid ester composition to obtain the desired product.

4,438,049

CARBURETOR ENGINE IDLE SPEED AIR BYPASS

Edward A. Ammous, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 7, 1982, Ser. No. 415,053
Int. Cl.³ F02M *3/06*
U.S. Cl. 261—42 **8 Claims**



1. An engine idle speed air flow control for a carburetor having an air induction passage and a throttle valve mounted for a rotatable movement across the passage between a closed engine idle speed position and a wide open position to control the flow of air therethrough, the passage being open to air at one end and adapted to be connected to the engine intake manifold at the other end, an engine idle speed air bypass channel connecting the induction passage on opposite sides of the throttle valve for the bypass of air around the throttle valve when the throttle valve is in a closed position, the control comprising

a two-stage bypass control valve in the channel spring biased to a closed position blocking the channel and movable through one stage to an open position to open the channel,

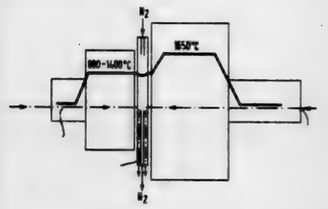
a variable volume flow-through passage located in the valve connecting air to opposite sides of the valve at all times for another stage of operation, and means for varying the volume of flow through the valve passage to control the bypass of air.

4,438,050

METHOD FOR THE MANUFACTURE OF VERY DENSE OXIDIC NUCLEAR FUEL BODIES

Wolfgang Dörr, Herzogenaurach; Gerhard Gradel, Erlangen, and Martin Peehs, Bubenreuth, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 190,981
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939415
Int. Cl.³ G21C *3/62*
U.S. Cl. 264—0.5 **12 Claims**



1. Method for the manufacture of very dense oxidic nuclear fuel bodies of UO_2 with additions of rare earth oxides which act as a neutron poison in the relatively large amount of more than 4% to 10% by weight, comprising the following steps:

(a) Mixing of the nuclear fuel powder with more than 4% up to 10% by weight powder or rare earth oxide which acts as a burnable neutron poison,

(b) pressing the mixture into blanks,

(c) sintering the blanks in an oxidizing atmosphere at 800° to 1400° C. for a time of 15 minutes to 2 hours, and

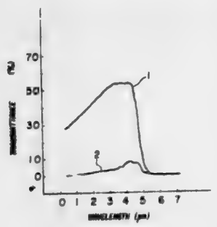
(d) sintering the blanks, which had been subjected to sintering in an oxidizing atmosphere, in a reducing atmosphere at temperatures above 1650° C. for a time of 30 minutes to 4 hours.

4,438,051

PROCESS FOR PRODUCING A TRANSLUCENT β-SIALON SINTERED PRODUCT

Mamoru Mitomo; Yusuke Moriyoshi; Toshikazu Sakai, and Toshiaki Osaka, all of Sakura, Japan, assignors to National Institute for Researches in Inorganic Materials, Ibaraki, Japan

Filed Jun. 14, 1982, Ser. No. 387,779
Claims priority, application Japan, Jul. 6, 1981, 56-105301
Int. Cl.³ C04B *35/58, 35/64*
U.S. Cl. 264—1.2 **6 Claims**



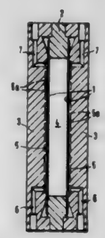
1. A process for producing a translucent β-SIALON sintered product, which comprises mixing fine powders of silicon nitride and aluminum nitride having a high purity of at least 99% and a particle size of at most 200 microns and fine powders of aluminum oxide and silicon oxide having a high purity of at least 99% in such a proportion as to form β-SIALON of the formula $Si_{6-z}Al_zO_zN_{8-z}$ where z is from 1 to 4.2, and hot-pressing the mixture in a nitrogen atmosphere at a temperature of from 1500° to 1850° C. under pressure of from 10 to 1500 kg/cm².

4,438,052

PROCESS AND DEVICE FOR PRODUCING BILAYER VESICLES

Hans G. Weder, E. Merck, Postfach 4119, 6100 Darmstadt 1, Fed. Rep. of Germany; Otmar Zumbühl, Wolfenshiessen; Reto Schwendener, Arosa, both of Switzerland, and Manfred Milsmann, Bielefeld, Fed. Rep. of Germany, assignors to Hans Georg Weder, Zurich, Switzerland

Filed Jan. 14, 1981, Ser. No. 224,993
Claims priority, application Switzerland, Jan. 16, 1980, 340/80
Int. Cl.³ B01J *13/02*; B01D *13/00*
U.S. Cl. 264—4.6 **7 Claims**



1. A process for producing unilamellar bilayer vesicles of substantially homogeneous size from a colloidal solution comprising mixed micelles of a bilayer-forming substance and a detergent,

the process comprising removing the detergent from the micelle-containing colloidal solution by means of flow-through dialysis whereby the colloidal solution is dialyzed against a dialysis liquid in a chamber whose walls are at least partially formed by a semi-permeable membrane, wherein the dialysis liquid is moved along the outer side of the semi-permeable membrane in laminar flow in at least one channel at a sufficient velocity to ensure that the detergent concentation in the dialysis liquid, on at least 90% of the active surface of the membrane, is at most 10% of the detergent concentration in the micelle solution in contact with the other side of the membrane, and wherein a homogeneous detergent concentration is maintained in the micelle solution by the movement of the latter.

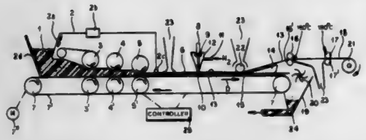
7. A dialysis device for carrying out the process of claim 1, comprising a chamber (4) for the micelle solution, the walls of said chamber being at least partially formed of a semi-permeable membrane; means for moving the micelle solution in the chamber; at least one flow-through compartment for the dialysis liquid, which compartment has an inlet and an outlet for the dialysis liquid and is separated from the chamber (4) by a semi-permeable membrane (1); continuous guide elements (5a) in contact with the membrane (1) and arranged in the flow-through compartment such that the dialysis liquid can be moved along the surface of the membrane (1) in a laminar flow, said guide elements forming at least one channel which is in contact with the active surface of the membrane and extends continuously therealong from said inlet to said outlet and within which the dialysis liquid is guided along said membrane.

4,438,053

MAKING A FIBRILLATED SYNTHETIC-RESIN STRAND

Karl-Heinz Banke; Elisabeth Hering; Wilfried Löbel, all of Karl-Marx-Stadt; Dieter Pollack; Günter Wiedemann, both of Dresden; Ute Grell, Malchow, and Ingo Schüler, Pirna-Copitz, all of German Democratic Rep., assignors to Forschungsinstitut für Textiltechnologie, Karl-Marx-Stadt, German Democratic Rep.

Filed Apr. 9, 1982, Ser. No. 367,071
Claims priority, application German Democratic Rep., Apr. 12, 1981, 229183
Int. Cl.³ B29D 27/00
U.S. Cl. 264—25 16 Claims



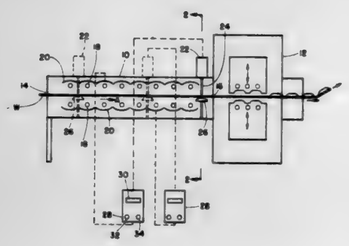
1. A method of making a fibrillated strand, said method comprising the steps of:
- compressing a mass of a powder of a high polymer of a predetermined density into a substrate having a density smaller than that of said high polymer and having a multiplicity of gas-filled voids;
- playing a laser beam only on a spot on said substrate to melt the high-polymer at the spot and simultaneously heat the gas of said voids to explosively enlarge same;
- relatively displacing said beam and said substrate so that same is melted along a path into a porous strand extending along said path in said substrate;
- cooling said substrate at said path after irradiation by said beam to resolidify said porous strand;
- separating the resolidified strand from said substrate; and
- at least uniaxially stretching the separated strand.

4,438,054

METHOD AND APPARATUS FOR MEASURING AND CONTROLLING FOAM SHEET BLOW-UP IN A THERMOFORMER OVEN

M. James Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 20, 1982, Ser. No. 435,590
Int. Cl.³ B29D 27/00
U.S. Cl. 264—40.6 17 Claims



1. A method of measuring and controlling foam plastic sheet blow-up by regulating the operation of a thermoformer oven responsive to measuring of the thickness of a continuous sheet of a thermoformable foam plastic material which is conveyed through said thermoformer oven towards a thermoforming installation; comprising:
- (a) sensing the sheet thickness of the thermoformable material at a plurality of locations within said thermoformer oven;
- (b) and regulating the temperatures within said thermoformer oven in response to the sensed sheet thickness for maintaining the temperatures of said web of thermoformable material at predetermined temperature levels so as to thereby obtain a requisite blow-up of the material.

4,438,055

METHOD OF MAKING A CERAMIC ARTICLE AND ARTICLES MADE BY THE METHOD

Jan H. Van der Velden, Apeldoorn, Netherlands, assignor to Esmil, B.V., Netherlands and Hoeke Engineering, N.V., Belgium

Continuation of Ser. No. 84,131, Oct. 12, 1979, abandoned, which is a continuation of Ser. No. 916,009, Jun. 16, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,429
Claims priority, application Netherlands, Jun. 21, 1977, 7706797
Int. Cl.³ B29J 1/00
U.S. Cl. 264—44 7 Claims

1. A method of making a ceramic article comprising the steps of preparing a mixture of (a) 40 to 65% (by weight) of clay consisting essentially of aluminum silicate, Fe_2O_3 and CaO of which more than 10% (by weight of the clay) is a fraction consisting of particles of size greater than 2_μ and (b) an organic fraction which is obtained from domestic waste after separation therefrom of metal parts, coarse material and material in sheet form, said organic fraction having a screen analysis as follows (% by weight)

particle size	<4 mm	60–75%
particle size	4–6 mm	25–35%
particle size	6–30 mm	4–10%
particle size	>—10 mm	absent

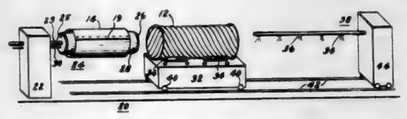
and having a moisture content of 25 to 50% by weight, and being substantially free from glass particles of size greater than 2 mm, shaping said moisture into a body, and drying and firing the shaped body.

4,438,056

METHOD FOR PRODUCING A CORRUGATED PIPE HAVING A SMOOTH LINING OF FOAM PLASTIC

Bernard J. Bast, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 166,660, Jul. 7, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,214
Int. Cl.³ B29D 27/04
U.S. Cl. 264—45.2 7 Claims



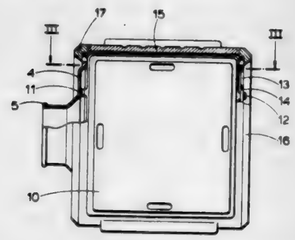
1. A method for producing a smooth-lined corrugated pipe which comprises:
- (a) applying a plastic foaming mixture to the internal surface of a corrugated pipe progressively along its entire length,
- (b) pressing a sheet liner in the form of an expandable cylinder against the plastic foaming mixture, and
- (c) maintaining the pressure until the foaming mixture has substantially solidified.

4,438,057

AIR FILTERS

Jarl Sundseth, 23 Lennox Gardens, London S.W. 1, England

Filed Jul. 21, 1981, Ser. No. 285,473
Claims priority, application United Kingdom, Jul. 23, 1980, 8024020; Feb. 3, 1981, 8103255
Int. Cl.³ B29C 27/00
U.S. Cl. 264—46.5 4 Claims



1. A method of making a filter element of the type employing a block of deep pleated paper comprising the steps of
- providing bottom and top end support members of relatively rigid material each end member having a rectangular peripheral portion defined by first and second pairs of opposed peripheral edges and, within it, an opening for air flow,
- providing a first pair of side walls, the first pair of edges of the peripheral portion of the members and the end edges of the first pair of side walls being connected by hinge connections along at least two pairs of adjacent edges,
- placing the bottom and top members and said first pair of walls around a block of deep pleated paper with the sides of the pleats extending generally parallel to the first pair of side walls,
- connecting the previously unconnected pair or pairs of edges of said members and first pair of side walls, the connection being formed by interengaging elements at the adjacent edges,
- forming from an elastomeric material settable in situ a second pair of side walls extending over and sealing the ends of the pleats of the block, the second pair of side walls extending between the end members at corresponding opposite, second edges of their peripheral portions and between the adjacent side edges of the first pair of side walls with which they effect a seal, and
- forming also from an elastomeric material settable in situ peripheral flanges at the first pair of peripheral edges of the peripheral portion of both end members in sealing relationship with the adjacent edges of the first pair of side walls, the flanges sealing the side pleats of the pleated paper, and embedding the interengaging elements.

4,438,058

EXPANDING PROCESS

Yoshio Tanaka, No. 7-6, Shibuya 2-Chome, Shibuya-ku, Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 356,240
Claims priority, application Japan, Mar. 9, 1981, 56-33550
Int. Cl.³ B29D 27/00
U.S. Cl. 264—51 11 Claims

1. Process for blowing expandable resin particles, which comprises expanding said resin particles in the presence of surfactant in an amount of 0.5 to 10% by weight based on the particles.

4,438,059

ELECTRICALLY CONDUCTIVE FIBER GLASS ARTICLES AND SHEETS

Robert E. Mollman, Moreland Hills, Ohio, and Ralph Silva, Springboro, Pa., assignors to Molded Fiber Glass Companies, Ashtabula, Ohio

Filed Sep. 22, 1982, Ser. No. 421,530
Int. Cl.³ B29G 1/00
U.S. Cl. 264—105 6 Claims

1. A method of making an electrically conductive laminate comprising,
- providing a thermoset resin,
- adding sufficient carbon black to the material to give the material the desired electrical conductivity,
- adding a pigmentation material to said carbon black and polymer to partly overcome the pigmentation effect of the carbon black,
- mixing said carbon black and pigmentation material,
- said pigmentation material being in the form of titanium dioxide in the amount of 15% to 30% by weight, to completely disperse the carbon and pigment in the resin,
- and adding a catalyst to the material to form a paste, adding the paste to fiber glass and curing the resin.

4,438,060

PROCESS FOR PRODUCING CROSS-SECTIONALLY STABLE, HYGROSCOPIC FIBERS AND FILAMENTS HAVING A CORE-JACKET STRUCTURE

Ulrich Reinehr; Toni Herbertz, both of Dormagen, and Hermann-Josef Jungverdorben, Grevenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 210,467
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947824
Int. Cl.³ D01F 6/18
U.S. Cl. 264—206 5 Claims

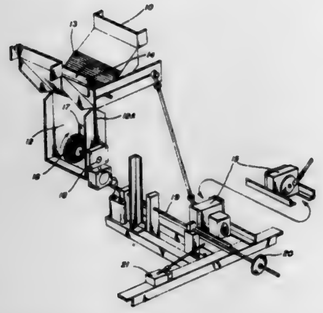
1. A process for the production of hygroscopic polyacrylonitrile filaments with fibers containing at least 80% by weight of acrylonitrile units which filaments or fibers have a core-jacket structure and uniform round to oval cross-sectional profiles from hydrophobic, filament forming synthetic polyacrylonitrile polymer containing at least 80% by weight of acrylonitrile units by a dry-spinning process which comprises addition of a substance to the spinning solvent which
- a. has a higher boiling point than the spinning solvent used,
- b. is readily soluble with the spinning solvent and with water,
- c. is a non-solvent of the polymer to be spun; and
- d. is selected from the group consisting of polyhydric alcohols, sugars and glycols, and addition of another substance which
- a. is soluble in the non-solvent of the polymer to be spun
- b. is soluble in the solvent to the polymer
- c. remains dissolved in the non-solvent for the polymer during solidification of the filaments,
- d. is insoluble in water,
- e. does not evaporate to any significant extent during the spinning process, and
- f. is selected from the group consisting of polycarbonate, polystyrene, polyvinyl acetate and cellulose acetate to the system in quantities of 1 to 5% by weight, based on polymers solid/spinning/non-solvent, carrying out the spinning process in such a way that the non-solvent does not evaporate to any significant extent in the spinning duct and washing out the non-solvent from the solidified filaments.

4,438,061

TUBE INSERTING MACHINE

Simon J. Richter, Marietta, Ga., and Ardashus A. Aykanian, Rancho Palos Verdes, Calif., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Nov. 23, 1982, Ser. No. 444,358
Int. Cl.³ B29C *6/02*
U.S. Cl. 264—249 **35 Claims**



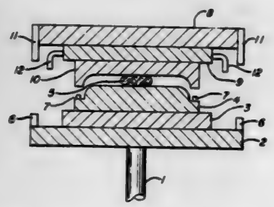
1. An apparatus for automatically inserting a tubular article within each of a sequence of containers at the same predetermined positions therein comprising:
- means for sequentially conveying said containers through a work station;
- means for temporarily arresting the conveyance of said containers when any one of said containers reaches said work station;
- means for supporting a supply of tubular articles at a transfer station adjacent said work station; and
- reciprocating rod means for engaging a tubular article at said transfer station and carrying said tubular article therewith into said predetermined position within a container at said work station as said rod means moves in a forward direction, and leaving said tubular article at said predetermined position as said rod means moves in a reverse direction.

4,438,062

IN-MOLD COATING METHOD

Richard M. Griffith, and Henry Shanoski, both of Akron, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Apr. 14, 1983, Ser. No. 484,760
Int. Cl.³ B29C *1/00, 9/00*
U.S. Cl. 264—255 **2 Claims**



1. The method which comprises, in a heated compression mold having two halves forming a cavity for molding, (1) placing a SMC (sheet molding compound) charge in the cavity of one of said mold halves, (2) forcing one of said halves against the other while providing essentially parallelism between the mold halves as the mold is closed to spread the SMC throughout the mold, to mold the SMC and substantially to cure the SMC to form a molded FRP (glass fiber reinforced plastic) part, (3) slightly separating said mold halves and injecting an IMC (in-mold coating) composition onto the outer surface of the FRP part, (4) reclosing the mold halves while, in substantially the first or initial portion of said mold reclosing, skewing one of said mold halves relative to the other to effect a scissoring action between the mold halves with the fulcrum being essentially at about said IMC injection port and where said IMC was injected in order or sweep or wipe said IMC composition across the surface of the SMC part and, in the latter portion of said mold reclosing, effecting at least substantial parallelism between the mold halves to complete the coating of the SMC with the IMC composition, and (5), in said finally closed mold, curing said IMC to said FRP, said IMC composition at least essentially completely coating the outer surface of said FRP part with a minimum thickness of said IMC composition.

4,438,063

PRESS ROLL AND MANUFACTURING METHOD THEREFOR

Masayoshi Suguri, Fujisawa; Kazuo Yamada, Kawasaki, and Masaaki Nandate, Tokyo, all of Japan, assignors to Kinyosha Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,139
Int. Cl.³ C08K *3/34*
U.S. Cl. 264—311 **10 Claims**

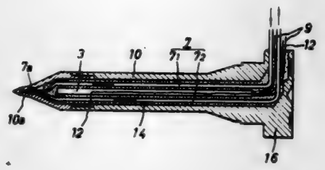
1. A press roll, comprising:
- an inorganic stone powder containing as a main component SiO_2, Al_2O_3, or a mixture of SiO_2 and Al_2O_3; and,
- a non-cellular polyurethane having a Shore D hardness of over 70° which is obtained by reacting an organic isocyanate with one or more organic compounds having a functional group which reacts with said isocyanate, wherein at least 10% by weight of said organic compounds comprises a polyether having more than three functional groups.

4,438,064

INJECTION MOLDING PROCESS FOR SYNTHETIC RESIN AND ITS APPARATUS

Shigeru Tsutsumi, Yonezawa, Japan

Filed Nov. 10, 1982, Ser. No. 440,569
Claims priority, application Japan, Nov. 20, 1981, 56-185450
Int. Cl.³ B29F *1/03, 1/08*
U.S. Cl. 264—328.15 **4 Claims**



1. A process for injection molding a fused synthetic resin into a cavity comprising the steps of:
- heating and fusing a synthetic resin in a runner and a gate which communicate with each other;
- injecting fused synthetic resin from said runner and gate into a cavity which communicates with said gate; and
- forcibly supplying a cooling medium into a cooling chamber projecting into the runner and the interior of the gate;
- whereby the fused synthetic resin is cooled and solidified within the gate to close the gate after the resin has been injected into the cavity.

2. An injection molding apparatus for synthetic resin comprising:
- a pair of molds defining a cavity;
- a gate communicating with said cavity;
- a runner communicating with said gate;
- heater means for heating and fusing resin in the gate and the runner;

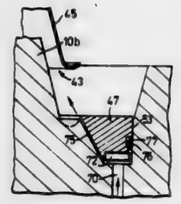
- cooling means disposed in said runner and extending into said gate for locally cooling the area of the gate; and
- actuating means to actuate the cooling means every time an injection molding operation is carried out whereby fused resin in the gate can be cooled and solidified in order to close the gate.

4,438,065

AIR EJECTION OF MOLDED CONTAINERS

Paul Brown, Orangeville, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Mar. 8, 1982, Ser. No. 355,891
Int. Cl.³ B29C *7/00*
U.S. Cl. 264—335 **3 Claims**



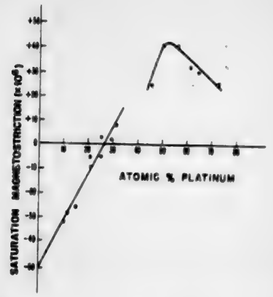
1. A method of operating an injection-molding apparatus for ejecting a cup-shaped workpiece with a closed front end and a rearwardly facing rim from a tapering core around which the workpiece has been molded with said rim resting on an annular zone surrounding said core, comprising the steps of:
- (a) directing a first stream of a gaseous fluid from the surface of said core into the interior of a freshly molded workpiece for initiating a separation of said workpiece from said core, thereby creating a peripheral gap therebetween; and
- (b) thereafter directing a second stream of a gaseous fluid from said annular zone forwardly toward said rim for completing the separation of said workpiece from said core.

4,438,066

ZERO TO LOW MAGNETOSTRICTION, HIGH COERCIVITY, POLYCRYSTALLINE, CO-PT MAGNETIC RECORDING MEDIA

Joseph A. Aboaf, Peekskill, N.Y.; Erik Klokholm, Stamford, Conn., and Sigrid R. Herd, Pawling, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 280,144
Int. Cl.³ C22C *19/07*
U.S. Cl. 420—435 **12 Claims**



1. A thin film magnetic recording medium for recording magnetic transitions representative of data said thin film magnetic recording medium consisting of a sputtered polycrystalline film of Co and Pt, having a magnetostriction value of from about -35×10^{-6} to a smaller positive value near substantially zero magnetrostriction to about $\pm10\times10^{-6}$ in accordance with the formula Co_xPt_y where x (Co) is up to about 90 at. % of said material and the value y (Pt) is within the range of about 10 to about 30 at. % of said material whereby alteration of the magnetic state of said material in response to extraneous mechanical forces is averted.

4,438,067

TEST STRIPS FOR ANALYZING DISSOLVED SUBSTANCES

Iqbal Siddiqi, Veyrier, Switzerland, assignor to Battelle Memorial Institute, Switzerland

Continuation of Ser. No. 193,271, filed as PCT EP/00035, May 16, 1979, published as WO 79/01081, Dec. 13, 1979, § 102(e) date Dec. 27, 1979, abandoned. This application Apr. 28, 1982, Ser. No. 372,796
Claims priority, application Switzerland, May 17, 1978, 5334/78
Int. Cl.³ G01N *21/78*; C12Q *1/54, 1/26, 1/28, 1/30*; C12N *11/04*; G01N *35/22*
U.S. Cl. 422—56 **7 Claims**

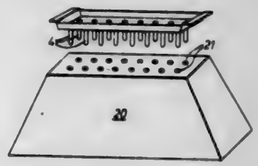
1. A test strip for analyzing for a substance dissolved in an aqueous test solution which can be a biological fluid, said test strip comprising:
- an inert nonabsorbent base strip forming a support; and
- a layer of solid spherical hydrophilic beads composed of a semipermeable polymer and coated onto and bonded to at least one surface of said support, said beads being in mutually contacting relationship in said layer to define pockets between mutually contacting beads and said support in which reproducible quantities of aqueous test solution can be retained, said beads being formed with microvacuoles containing at least one reagent located within the beads and retained therein such that said substance or a compound generated by said substance can penetrate into said beads to effect a color-change of said beads.
- a plurality of reagents being provided in said beads at sites and under conditions such that the different reagents are held apart during storage and being allowed to react mutually only upon contact with said test solution.

4,438,068

TEST-TUBE ASSEMBLY FOR IMMUNOASSAYS UTILIZING MAGNETICALLY ATTRACTABLE PARTICLES

Gordon C. Forrest, Ingatestone, England, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 12, 1980, Ser. No. 206,245
Claims priority, application United Kingdom, Nov. 13, 1979, 7939214
Int. Cl.³ G01N *33/54*
U.S. Cl. 422—61 **14 Claims**



1. A two-part test-tube assembly for use in immunoassays utilising magnetically attractable particles, which comprises:
- (a) a plurality of test-tubes mounted in a planar support member and fixedly held relative thereto, and the lower portions of the tubes projecting below the support member by a fixed distance; and
- (b) a substantially planar base member having magnet means permanently located therein;

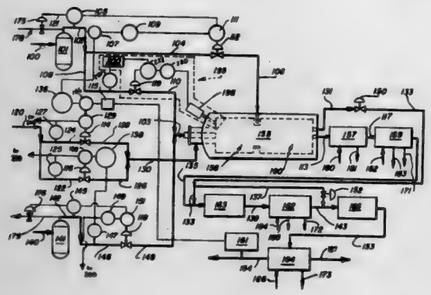
the support member and the base member being releasably couplable together to form a unitary assembly in which the bottoms of the test-tubes are held adjacent the base member, the assembly being manually invertable (in use) whilst remaining unitary to decant liquids from the tubes whilst retaining magnetically attractable particles within said tubes under the influence of the magnet means.

4,438,069

SYSTEM FOR TEMPERATURE CONTROL OF A CLAUS SULFUR UNIT THERMAL REACTOR

Lee G. Peterman, Flossmoor, Ill., and Raymond J. Staebel, Houston, Tex., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 30, 1981, Ser. No. 335,912
Int. Cl.³ G01N *33/00*
U.S. Cl. 422—62 **6 Claims**



1. A sulfur plant for converting hydrogen sulfide into water and elemental sulfur comprising:

at least two successive reaction zones, which are a first reactor zone adapted to receive a first hydrogen sulfide-containing stream and a molecular oxygen-containing stream and a second reaction zone adapted to receive a first reaction product stream from said first zone and a second hydrogen sulfide-containing stream, where in said first reaction zone said first hydrogen sulfide-containing stream is contacted during operation with said molecular oxygen containing stream at conditions sufficient to oxidize hydrogen sulfide to form said first reaction product stream containing sulfur dioxide, which is a reaction product of at least a portion of hydrogen sulfide in said hydrogen sulfide-containing stream and molecular oxygen in said molecular oxygen-containing stream, and where in said second zone, said first reaction product stream is contacted with a second hydrogen sulfide-containing stream at conditions sufficient to form a second reaction product stream containing water and elemental sufur made from at least a portion of said second hydrogen sulfide-containing stream and said first reaction product stream;

a first means for measuring amount of hydrogen sulfide in said first hydrogen sulfide-containing stream which during operation would enter said first reaction zone and transmitting to a third means a hydrogen sulfide-amount signal indicative of said amount of said hydrogen sulfide;

a second means for measuring amount of molecular oxygen which during operation would enter said first reaction zone and transmitting to said third means a molecular oxygen-amount signal indicative of said amount of said molecular oxygen;

a said third means for comparing said hydrogen sulfide-amount signal and said molecular oxygen-amount signal and for transmitting to a fifth means a comparison signal dependent, at least in part, upon both said hydrogen sulfide-amount signal and said molecular oxygen-amount signal;

a fourth means for determining temperature within said first reaction zone and for transmitting a temperature signal indicative of said temperature to said fifth means;

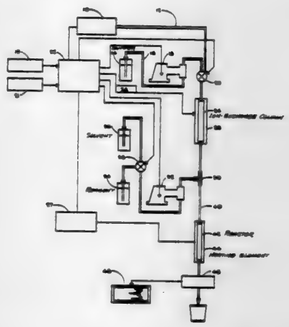
a said fifth means for varying relative amount of hydrogen sulfide to molecular oxygen which during operation would enter said first reaction zone in response to two signals: said temperature signal and said comparison signal; whereby a temperature control strategy can be followed to maintain temperature in the first reaction zone to some desired value.

4,438,070

PACKED COLUMN THERMAL REACTOR FOR AN ANALYTICAL INSTRUMENT

Donald E. Stephens, Palo Alto, and Thomas D. Sharples, Atherton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 4, 1981, Ser. No. 327,379
Int. Cl.³ G01N *31/08*
U.S. Cl. 422—70 **1 Claim**



1. A reactor for an automated analyzer, said reactor comprising:

an elongate straight column including an interior surface defining a column bore;

a noble metal electroplated onto said interior surface;

externally threaded fittings on each end of said column for establishing fluid communication between said bore and said analyzer, said fittings being no wider than the width of said column;

a pluarality of inert particles packed within said bore; and

a packing support disc at each end of said column, said packing support disc having a plurality of small openings therein to allow fluid passage from one side of said disc to the other side of said disc, said openings small enough to retain said inert particles in said bore.

4,438,071

FLUID CATALYST REGENERATION APPARATUS

Anthony G. Vickers, and David A. Lomas, both of Arlington Heights, Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 301,923, Sep. 14, 1981, Pat. No. 4,364,849. This application Aug. 12, 1982, Ser. No. 407,681
Int. Cl.³ F27B *15/08*; B01J *21/20, 29/38*; C10G *11/18*
U.S. Cl. 422—109 **5 Claims**

1. Apparatus for regenerating a coke contaminated, fluid catalyst which apparatus comprises in combination:

(a) a vertically oriented combustion chamber;

(b) a disengagement chamber located superadjacent to and above said combustion chamber;

(c) a high level catalyst collection section at the bottom of said disengagement chamber;

(d) a first conduit effecting communication between said combustion chamber and said disengagement chamber having at least one outlet opening positioned above said high level catalyst collection section so that catalyst will flow from said first conduit into said high level catalyst collection section;

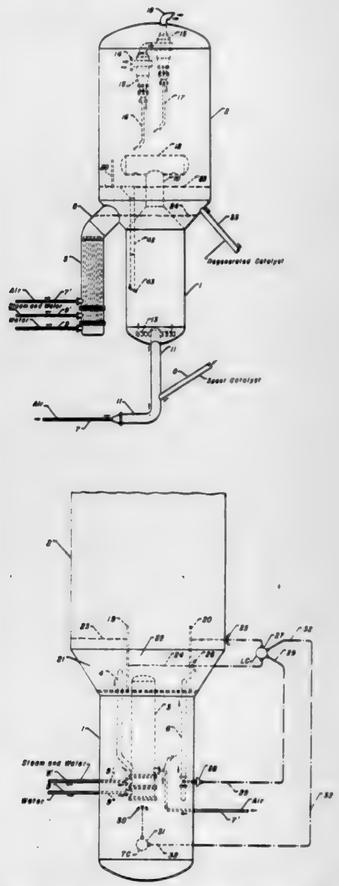
(e) a low level catalyst collection section at the bottom of said disengagement chamber separated from said high level catalyst collection section by means of baffles such that the level of a fluidized catalyst bed filling said high level catalyst collection section will be maintained higher than the level of a fluidized catalyst bed maintained in said low level catalyst collection section;

(f) a shell and tube heat exchanger of vertical orientation,

changer into said low level catalyst collection section can flow to said lower portion of said combustion chamber;

(i) a fluidizing gas inlet conduit connected to a bottom portion of the shell side of said heat exchanger, such that fluidizing gas can pass into said shell side and maintain a fluidized catalyst bed therein;

(j) inlet and outlet conduits connected to said tubes of said heat exchanger, such that a cooling fluid can flow through said tubes.



remote from said combustion and disengagement chamber, having a catalyst inlet in the shell side of said heat exchanger and the upper end of the shell being in open communication with the bottom of said low level catalyst collection section;

(g) a hot catalyst conduit connecting said high level catalyst collection section of said disengagement chamber with said shell side heat exchanger inlet, such that hot regenerated catalyst can flow from said disengagement chamber to said heat exchanger;

(h) a cooled catalyst conduit connecting the bottom of said low level catalyst collection section with a lower portion of said combustion chamber, such that cooled catalyst which overflows from said shell side of said heat ex-

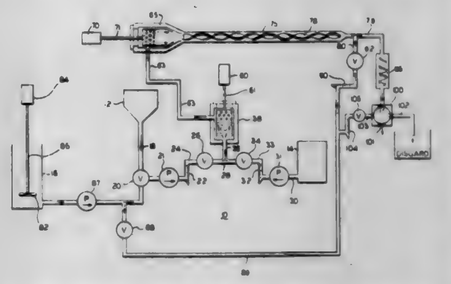
---

4,438,072

CONTINUOUS STREAM MIXER HAVING VARIABLE DWELL TIME CHAMBER WITH AUGER

Joseph L. Nothnagel, Saukville, Wis., assignor to Freeman Chemical Corporation, Port Washington, Wis.

Filed Feb. 22, 1982, Ser. No. 350,861
Int. Cl.³ C08J *9/00*; B01F *13/10, 15/04*; B29D *27/02*
U.S. Cl. 422—133 **8 Claims**



1. An apparatus for mixing together materials which are reactive with one another, said apparatus comprising:

a source of a first material;

a source of a second material;

a source of a third material;

first and second conduit means coupled respectively to said first and second sources of material and means for conveying said materials from said sources through said conduit means and controlling the quantity of material conveyed from said sources;

mixing conduit means coupled to said first and second conduit means;

mixing means coupled to said mixing conduit means whereby said materials are mixed together;

an elongate, generally cylindrical dwell chamber coupled to said mixing means whereby mixed materials flowing therethrough will react for a time dependent on the length of said dwell chamber;

a dispensing means coupled to said dwell chamber;

a third conduit means coupled to said source of said third material and to said dispensing means;

said dispensing means including valve means arranged to permit said mixed material to be selectively discharged therefrom to two separate locations through two pathways established within said valve means,

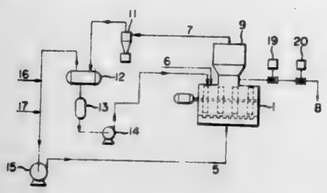
said third conduit means being coupled to said valve means in such a manner that said third material may be selectively flowed through either of said pathways whereby mixed material may be washed from one pathway while the other pathway is used for discharge of said material.

4,438,073

VAPOR PHASE POLYMERIZATION APPARATUS FOR OLEFINS

Kunimichi Kubo, Tokyo; Yasunosuke Miyazaki, Machida; Masaru Yoshikawa, Kawasaki, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,616
Claims priority, application Japan, Oct. 31, 1980, 55-152224
Int. Cl.³ B01J 12/02
U.S. Cl. 422—135 7 Claims



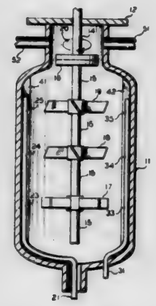
1. In a vapor phase polymerization apparatus for olefins constituted by a horizontal type hollow cylindrical vessel having a centrally located driving shaft, the improvement comprising a plurality of cells whose upper portions are open to the inner surface of the lower portion of said vessel, said cells having vertical side walls extending downwardly from the curved bottom wall of the vessel, means defining small holes in said vertical side walls and means for feeding a starting olefin gas into said vessel through said cells.

4,438,074

CONTINUOUS POLYMERIZATION REACTOR

Mason S. Wilt, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 21, 1981, Ser. No. 285,644
Int. Cl.³ B01J 14/00, 19/18
U.S. Cl. 422—135 6 Claims



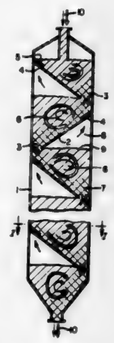
1. A reactor for contacting olefinic monomer and initiator in a continuous polymerization process, said reactor comprising:
- a vessel, having an upper portion and a lower portion, wherein a longitudinal axis extends from said lower portion to said upper portion;
- radial turbine means for creating a first turbulent zone in said vessel;
- a first axial turbine means for creating a second turbulent zone in said vessel;
- a first conduit means extending from the lower portion of said vessel to the upper portion of said vessel substantially along a first portion of the wall of said vessel, wherein said first conduit means has a fluid outlet at the position of said means for creating said first turbulent zone and at the position of said means for creating said second turbulent zone;
- means for introducing said olefinic monomer into said first conduit means to thereby introduce said olefinic monomer into the periphery of said first and second turbulent zones;
- a second conduit means extending from the lower portion of said vessel to the upper portion of said vessel substantially along a second portion of the wall of said vessel, wherein said second conduit means has a fluid outlet at the position of said means for creating said first turbulent zone and at the position of said means for creating said second turbulent zone, wherein said first portion of the wall of said vessel is substantially diametrically opposed to said second portion of the wall of said vessel;
- means for introducing initiator into said second conduit means to thereby introduce said initiator into the periphery of said first and second turbulent zones; and
- means for removing the reaction products from said vessel.

4,438,075

PROCESS AND APPARATUS FOR THE PRODUCTION AND MAINTENANCE OF A FLUIDIZED LAYER IN HETEROGENEOUS SYSTEMS

Helmut von Branchel, Troisdorf-Spich; Georg Schreiber, Cologne-Rodenkirchen, and Heinz Schroeder, Witten/Ruhr, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 713,583, Aug. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 681,474, Apr. 29, 1976, abandoned. This application Jun. 5, 1978, Ser. No. 912,309
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1975, 25189757
Int. Cl.³ B01D 11/04
U.S. Cl. 422—189 5 Claims



3. An apparatus for the production and maintenance of a fluidized layer in a heterogeneous system which comprises a vertical contact column having a plurality of successive, vertically arranged fluidizing cells and inlet means located at one end of said contact column for cocurrently introducing a liquid and a solid and/or gas into one end of said column to provide a heterogeneous mass stream containing the liquid as a continuous phase and the solid and/or gas as the disperse phase, the continuous phase having a density different than that of said disperse phase, a plurality of plates arranged superimposed and inclined in opposition to each other with respect to a horizontal plane, each of said plates covering the inside cross-section of the column in each two plates inclined in opposition to another forming a fluidizing cell therebetween; in the region of the lower end of each plate a fluid flow connecting means placing the space above the plate in communication with the space below the plate and in the region of the upper end of each of the plates, a discharge means for discharging a portion of the heterogeneous mass stream from a space below the plate and having a flow resistance different from the flow resistance of said fluid flow connecting means, the difference in flow resistance between the fluid flow connecting means and the discharge means providing means for establishing a pressure gradient across each plate positioned between two fluidizing cells, whereby the heterogeneous mass stream is caused to flow from one fluidizing cell to the next fluidizing cell with a vertical rotational motion being imparted to the heterogeneous mass stream within each of the fluidizing cells of the column, said motion being further promoted by the force of gravity due to the difference in density of the continuous and disperse phases, another inlet means for introducing a gas into the space above the lower plate of the two plates providing a fluidizing cell therebetween, said another inlet means directing the gas along said lower plate and means located at the other end of said column for discharging a resultant homogeneous mass stream from the other end of said column.

4,438,076

METHOD OF EXTRACTING GOLD AND SILVER FROM AN ORE

Hartmut Pietsch, Bad Homburg; Wolfgang Türke, Schöneck; Ernst Bareuther, Butzbach; Fritz Kämpf, and Hubert Bings, both of Lünen, all of Fed. Rep. of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main and Vereinigte Aluminum-Werke AG, Bonn, both of, Fed. Rep. of Germany

Continuation of Ser. No. 391,959, Jun. 24, 1982, abandoned.
This application Aug. 12, 1983, Ser. No. 523,022
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126234
Int. Cl.³ C22B 11/08
U.S. Cl. 423—30 8 Claims

1. A method of recovering at least one element selected from the group which consists of gold and silver from an ore containing same, comprising the steps of:
- forming a slurry of the ore in an aqueous alkali cyanide solution; and
- maintaining said slurry in a turbulent state at a pressure of 25 to 130 bar by passing it through a tube reactor in continuous unidirectional flow, while injecting oxygen of a purity of at least 90% into said slurry in said tube reactor at said pressure so that the CN/O_2 molar ratio is at most 0.7 at 25 bar and 0.7 g/l NaCN and is lower at higher pressures whereby said element is leached from said ore.

4,438,077

TWO STAGE SELECTIVE OXIDATIVE LEACH METHOD TO SEPARATELY RECOVER URANIUM AND REFRACTORY URANIUM-MINERAL COMPLEXES

Tien-Fung Tsui, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 27, 1982, Ser. No. 372,419
Int. Cl.³ C01G 43/00, 31/00; C22B 60/02, 34/22
U.S. Cl. 423—7 19 Claims

1. An improved process for the recovery of uranium and other minerals from uranium ore wherein part of the uranium is present as refractory uranium-mineral complexes, the process comprising;
- a. subjecting the uranium ore to mild oxidative carbonate leach fluid to dissolve and remove uranium values other than the refractory uranium-mineral complexes;
- b. subsequently subjecting the uranium ore to an oxidative chemically severe acid leach system to dissolve and remove the refractory uranium-mineral complexes; and
- c. separating and recovering the uranium and other mineral species in the leachate fluids.

4,438,078

RECOVERY OF GADOLINIUM AND GALLIUM OXIDES

David Nalewajek, West Seneca, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 20, 1982, Ser. No. 451,296
Int. Cl.³ C01G 15/00; C01F 17/00
U.S. Cl. 423—21.5 7 Claims

1. A method for recovering gadolinium and gallium oxides from by-product material which contains both of these oxides and various impurities comprising the steps of:
- (a) dissolving the gadolinium and gallium oxide in a strong mineral acid that does not yield compositions which react adversely with an ion exchange resin used in separation of the gallium oxide,
- (b) filtering the solution of (a), isolating the filtrate, adding a compound generating oxalic acid ion and precipitating the gadolinium as oxalate from said filtrate,
- (c) separating, washing and drying the precipitated gadolinium oxalate,
- (d) converting the gadolinium oxalate salt from step (c) by calcining the recovered gadolinium oxalate to yield gadolinium oxide,
- (e) contacting the filtrate from step (b) with an ion exchange resin containing a quaternary ammonium functionality, eluting the resin with an acid having a concentration in the range 6–12 N and thereafter eluting the resin with an acid having a concentration of about 1 N to elute the gallium fraction,
- (f) reacting the filtrate containing the gallium fraction eluted in step (e) with a compound generating oxalic acid ion and precipitating the gallium oxalate by basifying the acidic filtrate solution,
- (g) washing and drying the gallium oxalate salt and gallium hydroxide which precipitates from step (f), and
- (h) calcining the precipitate of step (g) to form gallium oxide.

4,438,079

METHOD FOR MANUFACTURE OF ARSENIOUS ANHYDRIDE

Tadashi Nakano; Hiroyuki Tamura, and Naoki Kubo, all of Niihama, Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Mar. 26, 1982, Ser. No. 362,154
Claims priority, application Japan, Mar. 30, 1981, 56-454443; Sep. 11, 1981, 56-142485
Int. Cl.³ C01B 27/00, 29/00
U.S. Cl. 423—87 26 Claims

1. A method of manufacturing arsenious anhydride from an arsenic sulfide-containing substance, said method comprising the steps of
- (a) extracting arsenic from the arsenic sulfide-containing substance by contacting the arsenic sulfide-containing substance with a copper sulfate-containing aqueous solution to thereby produce an extract solution containing arsenious acid together with an extraction residue,
- (b) oxidizing the extract solution obtained in step (a) in the presence of at least 1 g/l of copper ions to convert most of the arsenious acid therein to arsenic acid and thereby provide an oxidized solution,
- (c) contacting the oxidized solution obtained in step (b) with a weak reducing agent to form crystals of arsenious anhydride, and
- (d) recovering said crystals of arsenious anhydride formed in step (c).

4,438,080

PROCESS FOR OXIDIZING THALLIUM (I) TO THALLIUM (III)

Bruce K. McEuen, Hopewell, and Robert D. Norris, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 6, 1982, Ser. No. 447,367
Int. Cl.³ C01G 15/00
U.S. Cl. 423—112 9 Claims

1. In the process for oxidizing ions of thallium (I) contained in a reaction solution to thallium (III) using hydrogen peroxide as the oxidizing agent wherein the improvement comprises removing at least part of the thallium (III) from the reaction solution during the oxidation process.

4,438,081

PROCESS FOR THE PURIFICATION OF CYCLIC CHLOROPHOSPHAZENES

Hans-Peter Rieck, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,882
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144751
Int. Cl.³ C01B 25/10
U.S. Cl. 423—300 16 Claims

1. A process of substantially suppressing or completely preventing a change of color during polymerization of an oligomeric chlorophosphazene of the formula

$$(N{=}PClR)_n$$

in which n is an integer of from 3 to 8, and
R is phenyl, C_1–C_6-alkyl, or chlorine, which comprises treating the oligomeric chlorophosphazene with sulfur dioxide or a sulfur oxide chloride.

4,438,082

PLATINUM GOLD CATALYST FOR REMOVING NO_x AND NH_3 FROM GAS STREAMS

Joseph C. Dettling, Jackson; William F. Carr, Monmouth Junction; Ronald M. Heck, Frenchtown, and James M. Chen, Rahway, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Sep. 30, 1982, Ser. No. 430,450
Int. Cl.³ C01B 21/00, 21/26; B01J 8/00, 8/02
U.S. Cl. 423—235 7 Claims

1. A process for reducing oxides of nitrogen while maintaining an effluent free of ammonia in a gas stream containing at least about 0.8 moles of ammonia for each mole of NO_x present, at least 2 mole % of oxygen, comprising the step of passing the gas stream over a catalyst containing an amount of noble metal which is effective to catalyze the reduction of nitrogen oxides to nitrogen, wherein the noble metal consists essentially of from about 0.001 to about 5.0 percent platinum and from about 0.0005 to about 2.5 percent gold by weight of support and noble metal and the temperature of the gas stream is maintained within a range in which the noble metal catalyst is effective to decompose ammonia.

4,438,083

PROCESS FOR PREPARING MAGNESIUM NITRATE HEXAHYDRATE AND FOR THERMALLY STABILIZING AMMONIUM NITRATE USING MAGNESIUM NITRATE HEXAHYDRATE

Michael H. Willems, and Winfried J. W. Vermijs, both of Geleen, Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Sep. 15, 1982, Ser. No. 418,547
Claims priority, application Netherlands, Sep. 17, 1981, 8104284
Int. Cl.³ C01F 11/14
U.S. Cl. 423—266 9 Claims

1. Process for preparing pure magnesium hexahydrate suitable as a stabilizer for thermally stable ammonium nitrate granules by reacting magnesium oxide or magnesium carbonate with nitric acid in the presence of water, comprising the combination of steps of:

(a) forming a suspension of magnesium oxide or magnesium carbonate in melted magnesium nitrate hexahydrate at a suspension temperature in excess of 90° C. up to about 120° C.;
(b) adding a nitric acid solution to said suspension at a temperature in excess of about 90° C. and up to about 120° C. while stirring said suspension to obtain a liquid reaction mixture, whereby additional magnesium nitrate hexahydrate is formed in said mixture, said nitric acid solution having a concentration of about 53 weight percent to about 58 weight percent acid;
(c) filtering said liquid reaction mixture at a temperature in excess of about 90° C. and up to about 120° C. to obtain a clear magnesium nitrate hexahydrate filtrate; and
(d) discharging as a product fraction a quantity of said clear filtrate approximately corresponding to the amount of magnesium oxide or magnesium carbonate introduced in step (a).

4,438,084

MANUFACTURE OF HYDROXYLAMMONIUM SALTS

Guenther Rapp, Ludwigshafen; Erwin Thomas, Freinsheim, and Rolf Muenster, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 119,927, Feb. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 942,890, Sep. 18, 1978, abandoned. This application Dec. 17, 1982, Ser. No. 450,581
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743346
Int. Cl.³ C01B 21/20
U.S. Cl. 423—387 6 Claims

1. A process for the manufacture of hydroxylammonium salts conducted in a passivated reaction vessel which is non-corroding, insensitive to impact and shock, resistant to aging and easily processable, which possesses high mechanical strength and which does not release materials detrimental to the course of reaction into solution; said process comprising the catalytic reduction of nitric oxide with hydrogen in a dilute aqueous mineral acid in the presence of a suspended platinum catalyst at an elevated temperature in a passivated reaction vessel, wherein the walls of the reaction vessel consist of essentially copper-free molybdenum-containing austenitic chromium-nickel steel, which consists of from 16 to 28% by weight of chromium, from 10 to 50% by weight of nickel, from 1 to 4% by weight of molybdenum, at most 0.05% by weight of carbon, and 0.12% to 0.5% by weight of nitrogen, remainder iron said reaction vessel having been passivated by exposure to the process for the manufacture of hydroxylammonium salts for about 200 hours, whereby no materials detrimental to the course of reaction are released on exposure to the process.

4,438,085

PREPARATION OF DIHYDROXYALUMINIUM SODIUM CARBONATE

Jeffrey L. Kaufman, Mulgrave, Australia, assignor to Nicholas Proprietary Limited, Victoria, Australia

PCT No. PCT/AU81/00036, § 371 Date Nov. 23, 1981, § 102(e) Date Nov. 23, 1981, PCT Pub. No. WO81/02728, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 26, 1981, Ser. No. 325,422
Claims priority, application United Kingdom, Mar. 28, 1980, 8010521
Int. Cl.³ C01F 7/00; A61K 33/06, 33/08, 33/10
U.S. Cl. 423—419 P 13 Claims

1. A method of preparing dihydroxyaluminum sodium carbonate, which comprises:

synthesizing said dihydroxyaluminum sodium carbonate by reacting an aluminum salt selected from the group consisting of aluminum chloride, aluminum nitrate, aluminum sulfate, aluminum acetate and alum with a stoichiometric excess of sodium carbonate in a ratio of at least 10 parts by weight sodium carbonate to said aluminum salt in a basic aqueous medium containing sodium hydroxide in an amount sufficient to ensure the presence of no sodium bicarbonate in solution but in an amount which does not permit the pH of the solution to exceed 10.5 at a temperature ranging from 40° to 80° C.;
precipitating dihydroxyaluminum sodium carbonate and the salt formed from sodium ion and the anion of the aluminum salt reactant from the aqueous medium with substantially all of the unreacted sodium carbonate being retained in the aqueous medium at least until separation of said precipitated sodium salt is effected; and
washing said precipitated dihydroxyaluminum sodium carbonate free of coprecipitated sodium salt, thereby obtaining the desired dihydroxyaluminum sodium carbonate product.

4,438,086

METHOD FOR PREPARATION OF GRAPHITE FLUORIDE BY CONTACT REACTION BETWEEN CARBON AND FLUORINE GAS

Minoru Aramaki; Yasushi Kita; Hishagi Nakano, and Shiro Morol, all of Ube, Japan, assignors to Central Glass Company Limited, Ube, Japan

Filed Sep. 1, 1982, Ser. No. 413,889
Claims priority, application Japan, Sep. 2, 1981, 56-136963
Int. Cl.³ C01B 31/04, 9/08, 31/30
U.S. Cl. 423—448 15 Claims

1. A method of preparing a graphite fluoride, which is expressed by $(CF_x)_n$ where x is in the range from 0.1 to 1.4, by heterogeneous contact reaction between a solid carbon material and fluorine gas, the method comprising the steps of:

placing a carbon material in the form of pieces smaller than about 10 mm in or on a holder so as to form a layer of the carbon material in or on said holder, said holder having a plurality of openings through which said fluorine gas can permeate into and pass through said layer of the carbon material;
introducing said holder into a reaction vessel such that gas passages are left around said holder; and
keeping the carbon material in or on said holder heated at a temperature in the range from about 200° C. to about 550° C. without agitating said carbon material and, simultaneously forcibly passing said fluorine gas through said gas passages in the reaction vessel thereby allowing a portion of said fluorine gas to permeate into said layer of the carbon material through said openings of the holder and pass through said layer, whereby said reaction takes place not only at the surfaces of said layer of the carbon material but also in the interior of said layer.

4,438,087

CARBON BLACK PROCESS

John R. Casperson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 274,029, Jun. 16, 1981, Pat. No. 4,406,862. This application Sep. 29, 1982, Ser. No. 427,248
Int. Cl.³ C01B 31/02; C09C 1/48
U.S. Cl. 423—450 10 Claims

1. A method for producing negative tint residual carbon black comprising

(1) introducing carbon black reactants under carbon black producing conditions into a carbon black reactor said carbon black reactor comprising:
(a) a mixing section with conduit means for the introduction of reactants;
(b) a reaction section positioned downstream of the mixing section and in open communication therewith;
(c) a choke positioned within said reactor; and
(d) means for producing reciprocating movement of said choke along the longitudinal axis of said reactor during operation of said reactor; and
(2) reciprocating said choke while producing carbon black said reciprocation sufficient to disrupt flow of reactants.

4,438,088

PREPARATION OF ANTIMONY TRIFLUORODICHLORIDE AND FLUORINATION OF FLUORINATABLE HYDROCARBONS AND HALOCARBONS THEREWITH

John D. Weaver, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 11, 1982, Ser. No. 357,342
Int. Cl.³ C01B 7/24
U.S. Cl. 423—466 16 Claims

1. A process for making antimony trifluorodichloride comprising dispersing antimony trifluoride in a liquid organic medium and contacting the dispersed antimony trifluoride with an amount of chlorine up to an amount equimolar to the antimony trifluoride, wherein the liquid reaction organic medium is selected from a group consisting of fluorinatable hydrocarbons, fluorinatable halocarbons and perfluorocarbons, under conditions such that antimony trifluorodichloride is prepared.

4,438,089

PROCESS FOR OXIDIZING THALLIUM (I) TO THALLIUM (III)

Lance R. Byers, East Windsor, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 6, 1982, Ser. No. 447,368
Int. Cl.³ C01G 15/00
U.S. Cl. 423—624 14 Claims

1. A method of oxidizing a thallous compound to a thallic compound consisting essentially of reacting the thallous compound with hydrogen peroxide in a solvent at a pH of less than 9.

4,438,090

METHOD OF PREPARING AN INSECTICIDE CONTAINING BORIC ACID

Alan D. Brite, 5147 W. Jefferson Blvd., Los Angeles, Calif. 90016

Continuation-in-part of Ser. No. 24,962, Mar. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 870,740, Jan. 19, 1978, abandoned. This application Apr. 29, 1982, Ser. No. 372,948
Int. Cl.³ G01N 31/00, 31/22, 33/48; A01N 59/14
U.S. Cl. 424—7.1 7 Claims

1. A method of preparing an insecticide containing an insecticidally effective amount of boric acid which comprises:

milling boric acid to a particle size between about 100 to about 400 mesh;
blending said boric acid particles with effective amounts of a member selected from the group consisting of magnesium stearate, silica gel, and tricalcium phosphate, and with a taste deterent effective amount of sucrose octa-acetate or denatonium benzoate, and with a non-white powdered pigment of sufficient quantity to color the insecticide sufficiently soon after said boric acid is milled so that said boric acid particles remain smaller than about 100 mesh; and
electrically charging said blend to induce an electrostatic charge on the discrete particles of the insecticide.

4,438,091
BROMHEXINE DELAYED-RELEASE PHARMACEUTICAL FORM

Peter Gruber, Biberach; Jochen Schmid, Warthausen; Horst Lechner, and Eckhart Bauer, both of Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,760
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3126703
The portion of the term of this patent subsequent to Jan. 4, 1999, has been disclaimed.
Int. Cl.³ A61K *9/22, 9/24*
U.S. Cl. 424—21 28 Claims

1. A composition for the delayed release of bromhexine which comprises (i) spheroid particles or tablets comprised of (a) bromhexine and/or acid addition salts thereof and (b) at least one pharmacologically acceptable acid or acidic substance, the total amount of acid substance from acid addition salts present and the acid or acidic substance being in a ratio of at least 2 mols to 1 mol of bromhexine, and (ii) a coating surrounding said spheroid particles or tablets, said coating being comprised of from about 50 to 100 percent by weight of lacquers insoluble in gastric juices and soluble in intestinal juices and from about 0 to 50 percent by weight of lacquers insoluble in gastric and intestinal juices and said coating being present in an amount of from about 2 to 30 percent by weight, based upon the weight of the spheroid particles or tablets.

4,438,092
5-AMINO-N-(3-CHLORO- 2-METHYL-, OR 2-FLUOROPHENYL)-1,3-DIMETHYL-1H-PYRAZOLE-4-CARBOXAMIDES AND USE AS AN ANTI-CONVULSANT

Dietrich Schweiss, and Ivan C. Nordin, both of Holland, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 192,407, Sep. 30, 1980, Pat. No. 4,346,097.
This application Jun. 14, 1982, Ser. No. 388,344
Int. Cl.³ A61K *31/415;* C07D *231/38*
U.S. Cl. 424—273 P 6 Claims

1. 5-Amino-N-(3-chlorophenyl)-1,3-dimethyl-1H-pyrazole-4-carboxamide, and the pharmaceutically acceptable acid addition salts thereof.

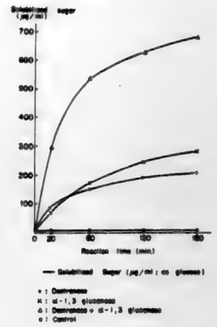
4. A pharmaceutical composition useful for treating convulsions in a warm-blooded animals consisting essentially of an effective amount of 5-amino-N-(3-chlorophenyl)-1,3-dimethyl-1H-pyrazole-4-carboxamide, or the pharmaceutically acceptable acid addition salts thereof, in combination with a pharmaceutically acceptable carrier.

4,438,093
ORAL COMPOSITION CONTAINING DEXTRANASE AND α-1,3 GLUCANASE AND A METHOD FOR PREVENTING AND SUPPRESSING ORAL DISEASES USING THE SAME

Kazuo Shimada, Nakatado; Masataka Akiyama, Kanonji, and Masami Sudo, Mitoyo, all of Japan, assignors to The Research Foundation for Microbial Diseases of Osaka University, Osaka, Japan

Filed Mar. 31, 1982, Ser. No. 364,182
Claims priority, application Japan, Apr. 3, 1981, 56-51004
Int. Cl.³ A61K *7/28, 37/48*
U.S. Cl. 424—50 7 Claims

1. An oral composition synergistic at pH 6.5 which comprises a pharmaceutically acceptable carrier, dextranase and α-1,3 glucanase, said dextranase and said α-1,3 glucanase both being present in an amount of 0.5 to 100 enzyme units per gram of said oral composition, said dextranase being present in an enzyme unit ratio of 1:2 to 2:1 relative to said α-1,3 glucanase, said dextranase being one prepared from dextranase-biosynthesizing microorganisms belonging to the genus Corynebacterium, said α-1,3 glucanase being one prepared from an α-1,3



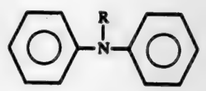
glucanase-biosynthesizing microorganism belonging to the genus Pseudomonas.

4,438,094
COSMETIC FORMULATIONS CONTAINING OXYETHYLATED DIPHENYLAMINES AS SUN SCREEN AGENTS

Knut Oppenlaender, Ludwigshafen; Rainer Strickler, Heidelberg; Karl Seib, Weinheim, and Paul Naegele, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 30, 1982, Ser. No. 373,417
Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119385
Int. Cl.³ A61K *7/42, 7/035*
U.S. Cl. 424—59 4 Claims

1. A sunscreen composition comprising from 0.1 percent to 15 percent, based upon the total weight of the composition, of an N-oxyethylated diphenylamine sunscreen agent of the formula



wherein R is $(CH_2—CH_2—O)_n—H$ and n is an integer from 1 to 25, a cosmetic carrier selected from the group consisting of a solution, an oil, a cream, a salve, a lotion, a gel and a powder and auxiliary agents selected from the group consisting of thickeners, emulsifiers, preservatives and fragrances.

4,438,095
NEW COSMETIC COMPOSITIONS FOR HAIR OR SKIN CONDITIONING, AND THE APPLICATION THEREOF

Jean-Francois Grollier, Paris, and Josiane Allec, Pierrefitte, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Mar. 16, 1981, Ser. No. 244,313
Claims priority, application France, Mar. 18, 1980, 80 05985
Int. Cl.³ A45D *19/00;* A61K *7/06, 31/74, 47/00*
U.S. Cl. 424—70 6 Claims

1. A non-detergent, non-foaming cosmetic composition for conditioning the hair or skin consisting essentially of two separate liquid phases for admixture at the time of use, one of said liquid phases comprising an aqueous phase containing a soluble cationic polymer and the other of said phases comprising an oily phase, said aqueous phase being present in an amount ranging from 2–50 volume percent of said composition the balance being said oily phase, said soluble cationic polymer being present in an amount ranging from 0.2 to 50 weight percent based on the total weight of said composition and said oily phase comprising 25 to 100 volume percent of a vegetable oil.

4,438,096
PEARLESCENT SHAMPOO

John C. Preston, Chicago, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.

Filed May 27, 1982, Ser. No. 382,421
Int. Cl.³ A61K *7/06*
U.S. Cl. 424—70 17 Claims

1. In an improved pearlescent shampoo containing water and an effective amount of a cleansing, surface active agent wherein the improvement comprises myristyl myristate present in a crystalline state and in an amount of about 0.2 to about 2.5 weight percent as the pearlescing agent.

4,438,097
COCCIDIOSIS VACCINES

Martin W. Shirley, Huntingdon, England, assignor to National Research Development Corporation, London, England

Filed Sep. 8, 1981, Ser. No. 299,922
Claims priority, application United Kingdom, Sep. 5, 1980, 8028676
Int. Cl.³ A61K *39/012*
U.S. Cl. 424—88 12 Claims

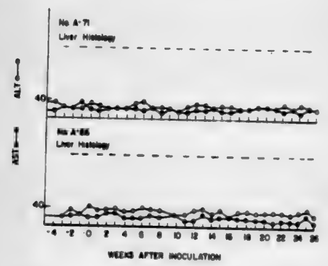
1. A process for the production of an attenuated strain of *E. necatrix,* which comprises:

passaging a pathogenic *E. necatrix* in embryonated eggs for from about 20 to about 60 passages.

4,438,098
HEAT TREATMENT OF A NON-A, NON-B HEPATITIS AGENT TO PREPARE A VACCINE

Edward Tabor, Rockville, and Robert J. Gerety, Potomac, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jan. 27, 1982, Ser. No. 343,026
Int. Cl.³ A61K *39/29*
U.S. Cl. 424—89 2 Claims



1. A method of treating the agent of human non-A, non-B hepatitis to render it incapable of causing infection which consists essentially of heating said agent contained in serum or plasma at about 60° C. for about 10 hours and recovering said treated agent.

4,438,099
BURN TREATMENT

Vittorio Azzariti, Los Ficus 239-San Isidro, Lima 27, Peru

Filed Dec. 9, 1981, Ser. No. 328,815
Int. Cl.³ A61K *35/70*
U.S. Cl. 424—93 3 Claims

1. A method for treating burn wounds comprising:

(a) applying to said burn wound a spray of a culture of *Candida Kruseli;*
(b) continuing application of said spray of *Candida Kruseli* to said burn wound until a crust forms covering said burn wound;
(c) allowing healing of said burn wound and regeneration of skin beneath said crust; and
(d) allowing said crust to spontaneously detach from said burn wound.

4,438,100
STERILIZED PRESERVED, STABLE MUCINE-CONTAINING SOLUTIONS

Erik Balslev, Fredensborg; Svenn S. Hansen, Virum, and Ernst L. Pedersen, Taastrup, all of Denmark, assignors to A/S Orthana Kemisk Fabrik, Kastrup, Denmark

PCT No. PCT/DK81/00043, § 371 Date Dec. 28, 1981, § 102(e) Date Dec. 28, 1981, PCT Pub. No. WO81/02977, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 27, 1981, Ser. No. 336,357
Claims priority, application Denmark, Apr. 25, 1980, 1811/80; Mar. 13, 1981, 1163/81
Int. Cl.³ A61K *35/38, 33/40*
U.S. Cl. 424—104 29 Claims

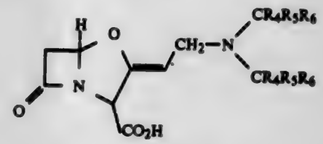
1. An aqueous mucine-containing composition, in particular for application to human mucous membranes and/or for use as an ophthalmic solution, comprising a non-human mammalian mucine selected from the group consisting of buccal and gastrointestinal mucines, the composition having a viscosity of at the most 50 relative to water, as measured with an Oswald viscosimeter, said composition being sterilized and containing an oxidizing bactericide preservative which is present in a physiologically tolerable concentration with respect to the application of the composition.

4,438,101
ANTIBIOTICS

Roger J. Ponsford, Dorking, and Thomas T. Howarth, Ewhurst, both of England, assignors to Beecham Group Limited, England

Division of Ser. No. 731,928, Oct. 13, 1978, abandoned. This application Sep. 22, 1978, Ser. No. 944,808
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—114 88 Claims

1. A pharmaceutical composition for treating bacterial infections in humans and animals which comprises a synergistically effective amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof wherein R_4 is hydrogen. R_5 is hydrogen or alkyl of 1 to 4 carbon atoms and R_6 is phenyl unsubstituted or substituted by a substituent selected from the group consisting of halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms and hydroxyl, and an antibacterially effective amount of amoxycillin or a pharmaceutically acceptable salt thereof, in combination with a pharmaceutically acceptable carrier.

4,438,102

METHOD OF PROMOTING TISSUE GROWTH

Salvatore Ganci, New York, N.Y., assignor to Ciro's Touch, Ltd., New York, N.Y.

Filed Aug. 10, 1982, Ser. No. 406,869

Int. Cl.³ A61K *31/19, 33/40*

U.S. Cl. 424—130 **14 Claims**

1. A method of promoting the growth of normal dermal and epidermal tissue in mammals which comprises topical treatment of a mammal in need of such promotion with a composition comprising from 25 to 40% by weight of a mixture containing thioglycolic acid and 65% to 85% dilute ammonium hydroxide at a pH of from 8.5 to 11 together with:

Glycerine: 0.15 to 0.25%
Citric Acid: 0.095 to 0.29%
Hydrogen Peroxide: 0.0097 to 0.014%
Solvent: 0.39 to 0.78%
Lower Alkanol: 0.78 to 1.95%
Gelatin: 1.17 to 2.73%

and water, all percentages pased on the total weight of the composition.

4,438,103

ORGANIC COMPOUNDS

Wilfried Bauer, Magden; Francois Cardinaux; Rene Huguenin, both of Reinach; Janos Pless, Basel, and Edmond Sandrin, Riehen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 762,646, Jan. 26, 1977, abandoned. This application Dec. 2, 1977, Ser. No. 856,617

Claims priority, application Switzerland, Feb. 2, 1976, 1266/76; Jun. 14, 1976, 7524/76; Jun. 14, 1976, 7525/76; Jul. 13, 1976, 8955/76; Jul. 13, 1976, 8956/76; Jul. 19, 1976, 9206/76; Jul. 19, 1976, 9208/76; Aug. 25, 1976, 10763/76; Aug. 25, 1976, 10764/76; Sep. 23, 1976, 12064/76

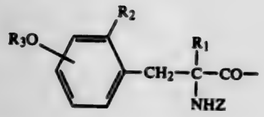
Int. Cl.³ A61K *37/00; C07C 103/52*

U.S. Cl. 424—177 **19 Claims**

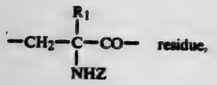
1. A compound of the formula

A-B-Gly-D-E

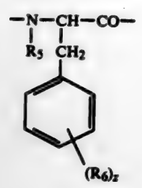
wherein A is a residue of formula



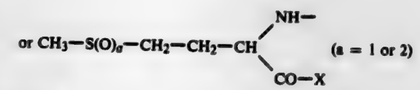
wherein
R_1 is hydrogen or alkyl of 1 to 4 carbon atoms,
R_2 is hydrogen or, together with R_1, forms an ethylene bridge, and
R_3 is hydrogen, alkyl of 1 to 4 carbon atoms or an R_4CO— group, wherein
R_4 is a saturated or unsaturated branched or unbranched alkyl residue of 1 to 17 carbon atoms, phenyl or phenylalkyl of 7 to 12 carbon atoms in which the phenyl residue can be mono- or disubstituted with fluorine, chlorine or bromine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, whereby the R_3O group is in a position meta- or para- to the


residue,

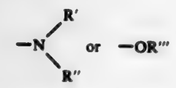
Z is hydrogen, alkyl of 1 to 5 carbon atoms, alkenyl of 3 to 5 carbon atoms, cyclopropylmethyl, cyclobutylmethyl, R_4CO, wherein R_4 is as previously defined, H-Arg, H-Lys, H-Phe or H-Tyr,
B is -(D)Ala-,
D is a residue of formula



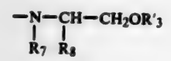
wherein
R_5 is hydrogen or alkyl of 1 to 4 carbon atoms,
R_6 is hydrogen, fluorine, chlorine, bromine, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and
z is 1 or 2,
E is
(i) -Met-X, -Leu-X, -Nle-X, -Nva-X, -Ile-X, or


(a = 1 or 2)

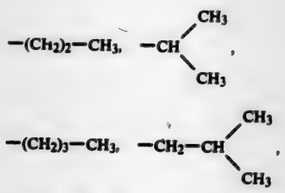
wherein X is



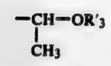
and each of R′, R″, and R‴ independently signifies hydrogen or alkyl of 1 to 5 carbon atoms, or
(ii) a residue of formula



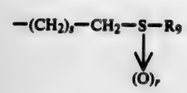
wherein
R_3' is hydrogen or R_4CO—, wherein R_4 is as previously defined,
R_7 is hydrogen or alkyl of 1 to 4 carbon atoms, and
R_8 is (a)



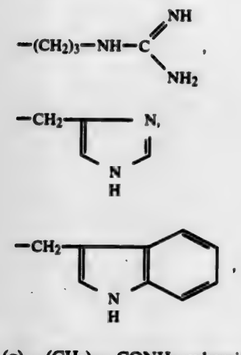
(b) $-(CH_2)_m-CH_2OR_3'$ wherein R_3' is as previously defined, and m is from 0 to 6,
(c)



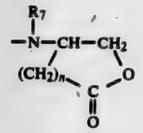
wherein R_3' is as previously defined,
(d) $-CH_2-S-H$,
(e)



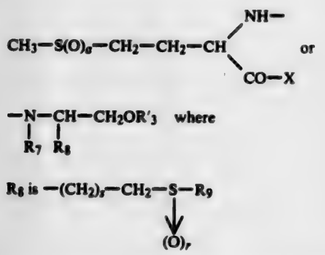
wherein R_9 is alkyl of 1 to 5 carbon atoms, r is 0, 1 or 2, and s is 0, 1 or 2,
(f) $-(CH_2)_4-NH_2$, $-(CH_2)_4-NHCOR_4$, wherein R_4 is as previously defined,



(g) $-(CH_2)_n-CONH_2$, wherein n is 1 or 2,
(h) $-(CH_2)_n-COOR_{10}$, wherein n is as previously defined, and R_{10} is hydrogen or alkyl of 1 to 5 carbon atoms, or
or (iii) a residue of formula



wherein n and R_7 are as previously defined, whereby the A and D residues possess either the L- or D,L-configuration and the residue E possesses
(1) the L-, D- or D,L-configuration, where E is



r is 1 or 2 and s, X, R_3', R_7 and R_9 are as previously defined or
(2) the D-configuration when E is other than as defined in 1 or a pharmaceutically acceptable salt or complex form thereof.

4,438,104

ENDORPHINS HAVING PLACENTAL OR PANCREATIC ORIGIN

Charles D. Kimball, and John C. Houck, both of Seattle, Wash., assignors to Endorphin, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 293,118, Aug. 17, 1981, abandoned, which is a continuation of Ser. No. 109,233, Jan. 3, 1980, Pat. No. 4,316,895. This application Jul. 1, 1982, Ser. No. 394,340

The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.

Int. Cl.³ A61K *37/00; C07C 103/52*

U.S. Cl. 424—177 **2 Claims**

1. An endorphin peptide having a molecular weight by amino acid analysis of about 14,000 daltons, having an infrared spectrum substantially as shown in FIG. 5, and having an amino acid analysis substantially as follows:

Amino Acid	Nanomoles
Aspartic acid	9.4
Threonine	6.2
Serine	10.1
Glutamic acid	16.0
Proline	6.3
Glycine	18.6
Alanine	12.5
Valine	6.0
Methionine	1.0
Isoleucine	2.6
Leucine	7.1
Tyrosine	1.1
Phenylalanine	4.3
Histidine	3.6
Lysine	7.8
Arginine	2.8
Total	115.4

said peptide being immunoreactive against beta-endorphin rabbit antisera and displacing Naloxone from opiate receptors in brain tissue.

4,438,105

4'-IODODERIVATIVES OF ANTHRACYCLINE GLYCOSIDES

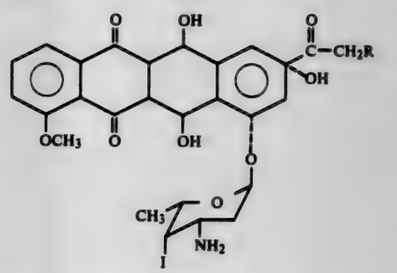
Antonino Suarato; Sergio Penco; Federico Arcamone, and Anna M. Casazza, all of Milan, Italy, assignors to Farmaitalia Carlo Erba S.p.A, Milan, Italy

Filed Apr. 14, 1982, Ser. No. 368,415

Int. Cl.³ A61K *31/71; C07H 15/24*

U.S. Cl. 424—180 **5 Claims**

1. An anthracycline glycosidic compound of the general formula I.


I

wherein R is a hydrogen atom or a hydroxy group.

5. A method of inhibiting the growth of a tumor selected from the group of P388 leukemia or Gross leukemia, said method comprising administering to a host afflicted with said tumor a therapeutically effective amount of an anthracycline glycoside as claimed in claim 1.

4,438,106
INCLUSION COMPOUND OF EICOSAPENTAENOIC ACID OR DOCOSAHEXAENOIC ACID WITH CYCLODEXTRIN

Masakatsu Wagu; Shoichiro Hayashi, and Kouichi Kodama, all of Iwaki, Japan, assignors to Kureha Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,314
Claims priority, application Japan, Jul. 16, 1981, 56-111439
Int. Cl.³ A61K *31/70*
U.S. Cl. 424—180 4 Claims

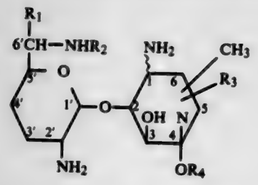
1. An inclusion compound of cyclodextrin and one or more compounds selected from the group consisting of eicosapentaenoic acid, docosahexaenoic acid, alkali metal salts thereof, and C_1 to C_4 alkyl esters thereof.

4,438,107
AMINOGLYCOSIDES AND USE THEREOF

Isamu Watanabe, Higashimurayama; Takashi Yamaguchi, Tokyo; Kazuhiro Kamiya; Toshihito Mori, both of Higashimurayama; Hamao Umezawa; Sumio Umezawa, both of Tokyo, and Tsutomu Tsuchiya, Yokohama, all of Japan, assignors to Kowa Company, Ltd., Aichi and Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, both of, Japan

Filed Jul. 28, 1982, Ser. No. 402,812
Claims priority, application Japan, Jul. 29, 1981, 56-117856
Int. Cl.³ A61K *31/70*; C08B *37/00*
U.S. Cl. 424—180 4 Claims

1. A compound of the following formula



wherein one of R_1 and R_2 represents a hydrogen atom and the other, a methyl group, R_3 represents a hydrogen atom or an amino acyl group having 2 to 5 carbon atoms, R_4 represents a lower alkyl group substituted by one or two substituents selected from the class consisting of hydroxy and amino groups, or a hexopyranosyl group whose hydroxy groups may be substituted by amino groups,
or a pharmaceutically acceptable acid addition salt thereof.

4,438,108
ANTI-THROMBOTICUM BASED ON POLYSACHARIDES, METHOD FOR PREPARATION AND PHARMACEUTICAL COMPOSITIONS

Adrianus L. M. Sanders, Uden; Dirk G. Meuleman, Oss; Hulbert C. T. Moelker, Megen; Gijsbert W. K. van Dëdem, and Francois E. A. van Houdenhoven, both of Heesch, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed May 12, 1982, Ser. No. 377,581
Claims priority, application Netherlands, May 21, 1981, 8102514
Int. Cl.³ A61K *35/14*; C08B *37/10*
U.S. Cl. 424—183 8 Claims

3. An antithrombotically effective heparinoid, which is a mixture of oligo- and polysaccharides from residues of glucuronic acid, iduronic acid, glucosamine, galactosamine, and sulfated and acetylated derivatives thereof, said heparinoid having

(a) a molecular weight between 2000 and 40,000 daltons with a main peak between 2500 and 15,000 daltons;
(b) a specific rotation ($[\alpha]_D^{20}$) between +25° and +80°;
(c) a nitrogen content between 1.5 and 4% by weight;
(d) a sulphur content between 5 and 7.5% by weight;
(e) a content of ionic groups in meq/g between 3 and 5;
(f) a content of sulphamido groups in meq/g between 0.5 and 1.5;
(g) a glucosamine content in meq/g of 0.5 to 1.5;
(h) a galactosamine content in meq/g of 0.0 to 0.1; and
(i) an idose (iduronic acid)/glucose (glucuronic acid)-ratio of 0.5 to 3;

said heparinoid having

(1) an anti-coagulation activity (USP) of less than 10 international units per mg;
(2) a negligible thrombin activity (less than 1% of that of heparin USP);
(3) an anti-X_a activity of less than 20% of that of heparin, usually between 2.5 and 15%;
(4) an anti-thrombotic activity (Umetsu model) with an ID_{50} of roughly 2 to 8 mg/kg i.v.;
(5) a bleeding activity which hardly increases at all over a wide dosage range (up to 300 mg/kg i.v.);
(6) a benefit/risk ratio which is 10–40 times more favourable than that for heparin USP having regard to the anti-thrombotic activity as compared with haemmorrhagic activity, and
(7) half value time which is at least twice as long as that of heparin USP.

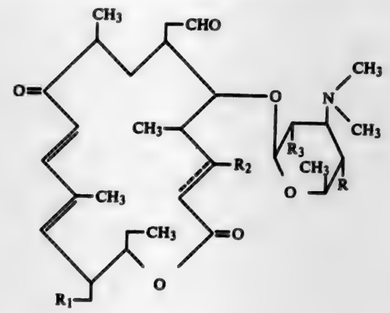
6. Pharmaceutical composition having anticlotting activity which comprises an anticlotting effective amount of a compound of claim 3 in a pharmaceutical acceptable carrier.

4,438,109
TYLOSIN DERIVATIVES

(I) Hamao Umezawa; Sumio Umezawa, both of Tokyo; Tsutomu Tsuchiya, and Akihiro Tanaka, both of Kanagawa, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

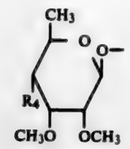
Filed Jul. 22, 1981, Ser. No. 285,747
Claims priority, application Japan, Jul. 25, 1980, 55-101933; Aug. 28, 1980, 55-118915; Nov. 6, 1980, 55-156263; Jan. 6, 1981, 56-573; Jan. 6, 1981, 56-574; Jan. 6, 1981, 56-575; Feb. 25, 1981, 56-26457; Jun. 19, 1981, 56-93782
Int. Cl.³ A61K *31/70*; C07H *17/08*
U.S. Cl. 424—180 15 Claims

1. A compound derived from tylosin having the formula



wherein R represents a hydrogen atom or a hydroxyl group; R_1 represents a halogen atom, a hydroxyl group, a tetrahydrofuranyloxy group, a tetrahydropyranyloxy group, a tetrahydrothiofuranyloxy group, a tetrahydrothiopyranyloxy group, an alkanoyloxy group, an arylcarbonyloxy group, an aralkylcarbonyloxy group, a lower alkylthiomethyloxy group,

a substituted or unsubstituted heterocyclic thio group, a mono- or di-lower alkylamino lower alkylthio group, or a group of the formula



wherein R_4 represents a hydroxyl group or an alkanoyloxy group; R_2 represents a hydrogen atom, a hydroxyl group, or an alkanoyloxy group; R_3 represents a hydroxyl group or an alkanoyloxy group; and ---- represents a single bond or a double bond but, when R_3 is a hydrogen atom, represents a double bond.

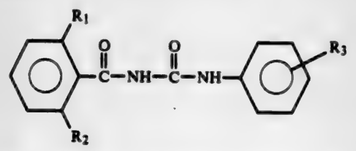
11. An antibiotic composition comprising a therapeutically effective amount of a tylosin derivative of claim 1 in combination with a pharmaceutically acceptable carrier.

4,438,110
CHEWING INSECT TOXICANT COMPOSITIONS

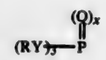
Hafez M. Ayad, Cary, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

This application Apr. 28, 1982, Ser. No. 372,668
Continuation-in-part of Ser. No. 278,722, Jun. 29, 1981, now abandoned.
Int. Cl.³ A01N *57/02, 47/28*
U.S. Cl. 424—217 37 Claims

1. A chewing insect toxicant composition comprising a non-toxic carrier and an insecticidally effective amount of (1) a 1-(mono-substituted phenyl)-3-benzoyl urea compound having the formula:



in admixture with (2) a phosphorous-containing compound having the formula:



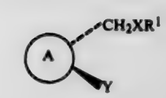
wherein:
R is:
an alkyl group having no more than ten carbon atoms, or aryl or aryl substituted with alkyl or alkoxy;
R_1 and R_2 are independently:
hydrogen, or halogen;
R_3 is:
halogen,
an alkyl, haloalky, alkoxy, or
haloalkoxy group having no more than
eight carbon atoms,
a pyridyloxy group, or
a halopyridyloxy group;
Y and Q are independently:
oxygen,or
sulfur; and
x is:
zero, or
one
wherein the weight proportion ratio of the 1-(mono-substituted phenyl)-3-benzoyl urea compound to the phosphorous containing compound is from about 1:5 to about 1:50,000 parts by weight respectively.

4,438,111
PROSTANOID COMPOUNDS AND PHARMACEUTICAL FORMULATIONS

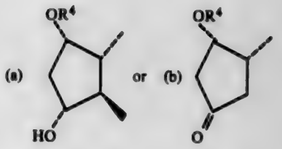
Eric W. Collington, Welwyn; Peter Hallett, Buntingford, and Christopher J. Wallis, Royston, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 223,316, Jan. 8, 1981, abandoned. This application Sep. 17, 1982, Ser. No. 419,520
Claims priority, application United Kingdom, Jan. 9, 1980, 8000698
Int. Cl.³ A61K *31/535, 31/54*; C07D *413/12, 417/12*
U.S. Cl. 424—246 8 Claims

1. A compound of the formula



in which
A represents



X is cis or trans —CH=CH— or $-(CH_2)_2-$;
R^1 is straight or branched C_{1-7} alkyl bearing as a terminal substituent —$COOR^{10}$ where R^{10} is a hydrogen atom, C_{1-6} alkyl or C_{7-10} aralkyl;
Y is a saturated heterocyclic amino group which has 5–8 ring members, and optionally contains in the ring one or more —O—, —S—, $-SO_2-$, $-NR^{14}-$, or $C(OH)R^6$ substituents;
wherein R^{14} is a hydrogen atom, C_{1-7} alkyl or aralkyl having a C_{1-4} alkyl portion, R^6 is a hydrogen atom, C_{1-7} alkyl, phenyl or aralkyl having a C_{1-4} alkyl portion; and said saturated heterocyclic amino group is optionally substituted by one or more C_{1-4} alkyl groups;
R^4 is the group:



where alk is C_{1-3} alkylene;
Z is O, or S;
R^{11} is a hydrogen atom; C_{1-6} alkyl; C_{1-6} alkoxy; aryl or phenylalkoxy or phenylalkyl having a C_{1-3} alkyl portion, wherein the aryl portion is optionally substituted by C_{1-3} alkyl, C_{1-3} alkoxy or halogen; aryloxy; C_{5-7} cycloalkyl; halogen or nitro; and the physiologically acceptable salts thereof.

8. A composition comprising a compound as claimed in claim 1, 2, 3 or 7 with one or more pharmaceutical carriers.

4,438,112
PROSTANOID COMPOUNDS AND PHARMACEUTICAL FORMULATIONS

Eric W. Collington, Welwyn; Peter Hallett, Buntingford; Christopher J. Wallis, Royston, and John Bradshaw, Ware, all of England, assignors to Glaxo Group Limited, London, England

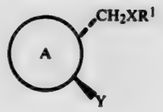
Continuation of Ser. No. 223,315, Jan. 8, 1981, abandoned. This application Sep. 17, 1982, Ser. No. 419,521

Claims priority, application United Kingdom, Jan. 9, 1980, 8000697

Int. Cl.³ A61K *31/53, 31/54;* C07D *295/14*

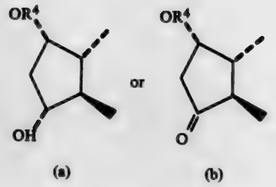
U.S. Cl. 424—244 8 Claims

1. A compound of the formula



in which

A represents



(a) (b)

X is cis or trans —CH=CH— or —$(CH_2)_2$—;

R^1 is straight or branched C_{1-7} alkyl bearing as a terminal substituent —$COOR^{10}$ where R is a hydrogen atom, C_{1-6} alkyl or C_{7-10} aralkyl;

Y is a saturated heterocyclic amino group which has 5–8 ring members, and optionally contains in the ring one or more —O—, —S—, —SO_2—, —NR^{14}—, or $C(OH)R^6$ substituents; wherein R^{14} is a hydrogen atom, C_{1-7} alkyl or aralkyl having a C_{1-4} alkyl portion, R^6 is a hydrogen atom, C_{1-7} alkyl, phenyl or aralkyl having a C_{1-4} alkyl portion; and said saturated heterocyclic amino group is optionally substituted by one or more C_{1-4} alkyl groups;

R^4 is a phenalkyl group having a C_{1-3} alkyl portion and a phenyl portion substituted with C_{1-3} alkylthio, C_{1-3} alkylsulphinyl, C_{1-3} alkylsulphonyl, C_{1-3} alkanoylamino, benzoylamino, phenylalkyl having a C_{1-3} alkyl portion, aminosulphonyl having the amino group optionally substituted by one or more C_{1-3} alkyl groups, C_{1-3} alkanoylaminosulphonyl having the amino group optionally substituted by C_{1-3} alkyl, phenylsulphony having the phenyl portion optionally substituted by C_{1-3} alkyl, nitro, tetrazol-5-yl, thienyl, or phenyl substituted by R^5 where R^5 is C_{1-4} alkyl, C_{1-4} alkoxy, halogen or phenyl;

and the physiologically acceptable salts thereof.

8. A composition comprising a compound as claimed in claim 1, 2, 3 or 7 with one or more pharmaceutical carriers.

4,438,113
7-ACYLAMINOCEPHALOSPORANIC ACID DERIVATIVES

Takao Takaya, Kawanishi; Hisashi Takasugi; Masayoshi Murata, both of Osaka, and Akiteru Yoshioka, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

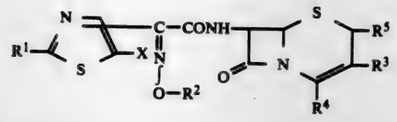
Filed Dec. 31, 1981, Ser. No. 336,161

Claims priority, application United Kingdom, Dec. 31, 1980, 8041635; Mar. 23, 1981, 8108991; Sep. 1, 1981, 8126500

Int. Cl.³ A61K *31/545;* C07D *501/56*

U.S. Cl. 424—246 17 Claims

1. 7-Acylaminocephalosporanic acid derivatives of the formula:



wherein

R^1 is amino or protected amino,

R^2 is carboxy(lower)alkenyl, protected carboxy(lower)alkenyl, lower alkenyl, cyclo(lower)alkenyl or lower alkynyl,

R^3 is a heterocyclicthiomethyl which may have substituents selected from the group consisting of lower alkyl and carboxy(lower)alkyl,

R^4 is carboxy or protected carboxy,

R^5 is hydrogen or lower alkyl, and

X is halogen,

and pharmaceutically acceptable salts thereof.

17. A pharmaceutical antimicrobial composition comprising an effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,438,114
β-LACTAM ANTIBIOTICS

Michael Boberg; Dieter Häbich; Karl G. Metzger, and Paul Naab, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

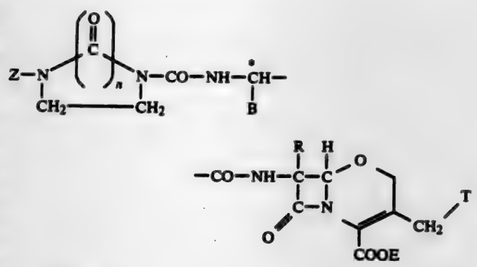
Filed Sep. 7, 1982, Ser. No. 415,632

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3137038

Int. Cl.³ A61K *31/535;* C07D *498/04*

U.S. Cl. 424—248.51 12 Claims

1. A β-lactam of the formula



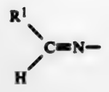
or a hydrate thereof,

in which

R represents a hydrogen atom or a methoxy group,

n is 1 or 2,

Z represents a group of the formula



wherein R^1 denotes a phenyl group which is optionally substituted by halogen, alkyl or alkoxy having 1 to 4 carbon atoms, nitro, cyano, 1 or 2 hydroxyl groups, S-alkyl having 1 to 4 carbon atoms, alkyl-sulphonyl having 1 to 4 carbon atoms or CH_3OOC—; or denotes a thienyl or furyl group which is optionally substituted by halogen, NO_2, alkyl or alkoxy-carbonyl having 1 to 4 carbon atoms, S—C_1 to C_4 alkyl, C_1 to C_4 alkylsulphonyl, C_1 to C_4-alkyl-sulphinyl or CH_3COOCH_2—, or denotes a pyridyl group;

or, when n is 1,

Z can also represent a cyclopropyl, furyl, pyridyl, thienyl, or benzthiazol-2-yl radical, or a 1, 3, 4-thiadiazol-2-yl radical which is optionally substituted in the 5-position by sec.-butyl, trifluoromethyl, methylthio, i-propylthio or methylsulphonyl,

B represents a phenyl, hydroxyphenyl, cyclohexadienyl, furyl, thienyl, pyrrolyl, imidazolyl, thiazolyl, isothiazolyl, isoxazolyl or thiadiazolyl group,

T denotes an alkyl—CO—O—, pyridinium, aminopyridinium, carbamoylpyridinium or carbamoyloxy group, an —S—phenyl group which can be substituted, or a tetrazolylthio or thia-diazolylthio group which is optionally substituted by alkyl having 1 to 4 carbon atoms, by CF_3 or by CH_2COOH; and

E represents a hydrogen atom, a pharmaceutically acceptable ester grouping, a salt-forming cation or a protective group, or represents a negative charge when T contains a quaternary nitrogen.

11. A method of combating bacterial illnesses in human and non-human animals which comprises administering to the animals an antibacterially effective amount of a compound or hydrate according to claim 1.

4,438,115
COMPOSITIONS AND METHODS FOR TREATING DISEASES IN CIRCULATORY ORGANS

Hiroyuki Nagano; Mitiro Takagi; Noboru Kubodera, all of Saitama; Isao Matsunaga, Tokyo; Tamotsu Yamazaki, Saitama; Hiroyuki Nabata, Tokyo; Kazushige Sakai, Tokyo, and Shun-ichi Hata, Kanagawa, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

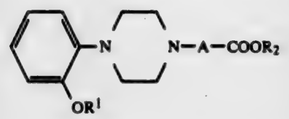
Filed Jun. 10, 1981, Ser. No. 272,077

Claims priority, application Japan, Jun. 13, 1980, 55-79043

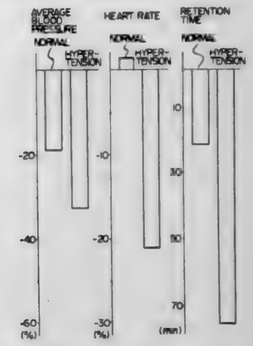
Int. Cl.³ A01N *43/48*

U.S. Cl. 424—250 15 Claims

1. A composition for treating diseases in circulatory organs which comprises a piperazine compound of the formula:



(wherein R_1 is a lower alkyl group; R_2 is a hydrogen atom or a lower alkyl; and A is a straight or branched alkylene) or a salt thereof and a pharmaceutically acceptable carrier selected from the group consisting of lactose, starch, mannitol, sucrose,



kaolin, crystalline cellulose, talc, calcium carbonate and magnesium stearate.

4,438,116
QUINOXALINYLOXY-AMINO-PROPANOL COMPOUNDS WITH BLOOD PRESSURE LOWERING AND β-BLOCKING PROPERTIES, THEIR USE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Carl H. Ross, Viernheim; Wolfgang Kampe, Heddesheim; Wolfgang Bartsch, Viernheim; Gisbert Sponer, Hemsbach, and Egon Roesch, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

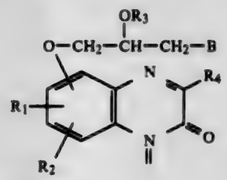
Continuation of Ser. No. 153,308, May 27, 1980, abandoned. This application Sep. 16, 1981, Ser. No. 302,894

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922084

Int. Cl.³ C07D *241/44, 241/42;* A61K *31/495, 31/505*

U.S. Cl. 424—250 21 Claims

1. An aminopropanol compound of the formula



wherein

R_1 and R_2 are individually selected from hydrogen and lower alkyl; or

R_1 and R_2 together represent an alkylene radical of between 2 and 4 carbon atoms;

R_3 is hydrogen or acyl in the form of an acid residue of an hydrocarbon aliphatic carboxylic acid containing 2 to 6 carbon atoms, an aromatic carboxylic acid or of an aromatic carboxylic acid substituted with up to two substituents selected from halogen, lower alkyl or lower alkoxy radicals;

R_4 is hydrogen or lower alkyl optionally including one substituent selected from hydroxyl, halogen or lower alkylthio; and

B is alkylamino which optionally carries on the alkyl moiety a phenyl and/or a phenoxy radical optionally substituted by one of halogen, hydroxyl, lower alkyl, lower acyl, lower alkylthio, acylamino, aminocarbonyl, lower alkoxy, lower alkenyloxy, phenoxy, lower alkenyl, lower alkylsulphonyl, lower alkylsulphinyl or haloalkyl; or

B is a phenyl-, naphthyl-, pyridyl-, pyrimidyl-, or benzimidazolinyl-oxymethylpiperidine radical, optionally

substituted by at least one of halogen, hydroxyl or lower alkyl, hydroxyl alkyl or carboxyamido alkyl, or by lower alkoxy, lower acyl, amino, carboxamido, lower alkanecarboxamido or lower alkylsulphonylamino; wherein the acyl radicals or acyl moieties in either B definition are in the form of an acid residue of an hydrocarbon aliphatic carboxylic acid containing 2 to 6 carbon atoms, an aromatic carboxylic acid or of an aromatic carboxylic acid substituted with up to two substituents selected from halogen, lower alkyl or lower alkoxy radicals, the piperidine radical in each case being fixed to the propanol chain by its nitrogen atom;

and the pharmacologically acceptable salts thereof.

2. A pharmaceutical composition with blood pressure lowering and β-blocking properties comprising a pharmaceutically acceptable carrier and, in effective amount, an aminopropanol compound as claimed in claim 1.

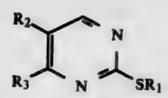
4,438,117

2-SUBSTITUTED THIO-4,5-DIARYLPYRIMIDINES

Saul C. Cherkofsky, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 3, 1980, Ser. No. 183,336
Int. Cl.³ A61K *31/505*; C07D *239/22*
U.S. Cl. 424—251 **18 Claims**

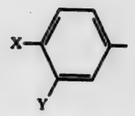
1. A compound of the formula



wherein

R_1=mono or polyfluoro C_1–C_2 alkyl or C_1–C_2 alkyl;

R_2 and R_3 independently=3-pyridyl or



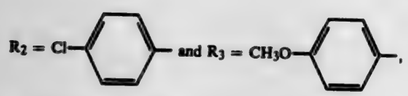
where X=H, F, Cl, OCH_3, OCH_2CH_3, $S(O)_nCH_3$, or di(C_1–C_2 alkyl)amino;

n=0, 1 or 2;

Y=H or Cl provided when Y=Cl,

X must=Cl;

provided R_2 and R_3 cannot both be phenyl; provided also that when



then R_1 cannot=CF_2CHF_2; or a pharmaceutical suitable salt thereof.

13. A method for treating arthritis or alleviating pain in a mammal which comprises administering to the mammal an effective antiarthritic or analgesic amount of a compound of claim 1.

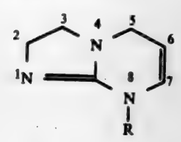
4,438,118

SUBSTITUTED IMIDAZO[1,2-a]PYRIMIDINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim; Klaus Stockhaus, Bingen; Wolfram Gaida, Ingelheim, and Wolfgang Hoefke, Wiesbaden, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jun. 17, 1982, Ser. No. 389,284
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1981, 3124718
Int. Cl.³ C07D *487/00*; A61K *31/505*
U.S. Cl. 424—251 **14 Claims**

1. A compound of the formula



wherein R represents a phenyl group having from 1 to 3 substituents selected from the group consisting of hydrogen, fluorine, chlorine and bromine atoms and methyl and trifluoromethyl groups, the substituents being identical or different, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,438,119

METHOD FOR ALLEVIATION OF EXTRAPYRAMIDAL MOTOR DISORDERS

Lloyd E. Allen, Evansville, and Leslie A. Riblet, Mt. Vernon, both of Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Dec. 23, 1982, Ser. No. 452,686
Int. Cl.³ A61K *31/505*
U.S. Cl. 424—251 **8 Claims**

1. A method for alleviation of extrapyramidal motor disorders which comprises administering a non-toxic therapeutically effective dose of buspirone or a pharmaceutically acceptable acid addition salt thereof to a mammal in need of such treatment.

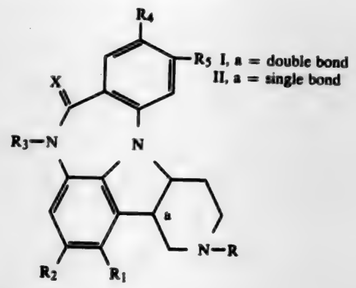
4,438,120

PYRIDOINDOLOBENZODIAZEPINE TRANQUILIZERS

Parthasarathi Rajagopalan, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 12, 1982, Ser. No. 441,376
Int. Cl.³ A61K *31/55*; C07D *471/14*
U.S. Cl. 424—256 **14 Claims**

1. A compound of the formula:



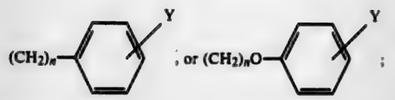
wherein

a is a single or double bond; provided that when a is a single bond, the ring fusion is of the trans-configuration;

R_1, R_2, R_4 and R_5 independently are H, alkyl of 1 or 2 carbon atoms, CF_3, Cl, F or Br;

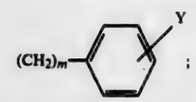
R_3 is H or alkyl of 1 to 3 carbon atoms;

R is H, alkyl of 1 to 10 carbon atoms, $(CH_2)_nC(O)R_6$, $(CH_2)_nCH(OH)R_6'$, $(CH_2)_nCONR_8R_9$, $(CH_2)_n$(C_{3-7} cycloalkyl), $(CH_2)_n$adamantyl,

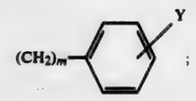


n is 1 to 8;

R_6 is H, OH, OR_7, C_{1-3} alkyl, C_{3-6} cycloalkyl, or



R_6' is H, C_{1-3} alkyl, C_{3-6} cycloalkyl,



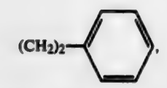
m is O to 3;

R_7 is CH_3 or C_2H_5;

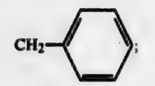
Y is H, CH_3, OCH_3 or NO_2;

R_8 and R_9 are independently H, CH_3 or C_2H_5, or R_8 and R_9, together, are $—CH_2CH_2OCH_2CH_2—$; and

X is H_2, O, or S, provided that when X is O or S, then a is a double bond; and provided further that when X is H_2, a is a single bond, and R_1, R_4 and R_5 are H, then R_2 cannot be CF_3 when R is CH_3 or



and R_2 cannot be Cl when R is



or a pharmaceutically acceptable salt thereof.

12. A method for tranquilizing a mammal which comprises administering to a mammal in need of such treatment a tranquilizing effective amount of a compound of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 or claim 10.

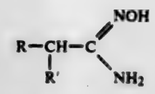
4,438,121

ISOQUINOLINE AMIDOXIME DERIVATIVES

Daniel Oblitz, Antony, France, assignor to Synthelabo, Paris, France

Filed May 25, 1982, Ser. No. 381,749
Claims priority, application France, May 26, 1981, 8110428
Int. Cl.³ A61K *310/47*; C07D *217/02*
U.S. Cl. 424—258 **6 Claims**

1. A heterocyclic amidoxime derivative of the formula:



wherein R' represents hydrogen or methyl, and R represents 1-oxo-1H-isoquinolin-2-yl or 4-chloro-1-oxo-1H-isoquinolin-2-yl, and—when R' represents methyl—racemates and enantiomers of such a compound, and pharmaceutically-acceptable acid addition salts thereof.

6. A method for the treatment of a patient suffering from a complaint of the central nervous system or for the treatment of depression which comprises administering to the patient an amount of a heterocyclic amidoxime derivative of the general formula depicted in claim 1, or a pharmaceutically-acceptable acid addition salt thereof, effective to ameliorate the condition of the patient.

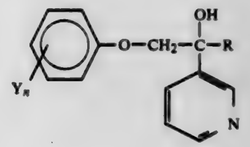
4,438,122

COMBATING FUNGI WITH 1-PHENOXY-2-PYRIDINYL-ALKANOLS

Graham Holmwood, Wuppertal; Paul-Ernst Frohberger, Leverkusen; Wilhelm Brandes, Leichlingen, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 161,636, Jun. 20, 1980, which is a continuation of Ser. No. 937,650, Aug. 28, 1978, abandoned. This application Jun. 24, 1982, Ser. No. 391,749
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742173
Int. Cl.³ A61K *31/44*; C07D *213/30*
U.S. Cl. 424—263 **8 Claims**

1. A 1-phenoxy-2-pyridinylalkanol of the formula



in which

R is alkyl with 1 to 4 carbon atoms; or phenyl optionally substituted with halogen;

Y each independently is halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms, alkoxy with up to 2 carbon atoms, phenyl, phenoxy or phenylalkoxy or phenylalkyl with 1 or 2 carbon atoms in the alkyl part; and

n is an integer from 0 to 2.

4,438,123

OPHTHALMIC COMPOSITIONS OF CARBONIC ANHYDRASE INHIBITORS FOR TOPICAL APPLICATION IN THE TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

Robert L. Smith, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 128,439, Mar. 4, 1980, abandoned. This application Dec. 22, 1981, Ser. No. 333,273
Int. Cl.³ A61K *31/425*
U.S. Cl. 424—270 **12 Claims**

1. An ophthalmic composition for lowering intraocular pressure comprising from 0.01 to 2% by weight of a mono alkali metal salt of a dibasic carbonic anhydrase inhibitor and an ophthalmologically acceptable carrier for topical application, where the carbonic anhydrase inhibitor is selected from the group consisting of N-[5-(amino-sulfonyl)-3-methyl-1,3,4-

thiadiazol-2(3H)-ylidene]-acetamide; N-[5-(amino-sulfonyl)-1,3,4-thiadiazol-2-yl]propanamide; N-[5-(aminosulfonyl)-1,3,4-thiadiazol-2-yl]butanamide and 5-benzenesulfonamido-1,3,4-thiadiazol-2-sulfonamide.

4,438,124

CYSTEINE DELIVERY SYSTEM

Alton Meister, New York, and Joanne M. Williamson, Roosevelt Island, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 233,564, Feb. 11, 1981, Pat. No. 4,335,210. This application Apr. 15, 1982, Ser. No. 368,905

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—270 **1 Claim**

1. Method of combatting poisoning associated with the lessening of the glutathione content of cells of an in vivo system which comprises administering to the cells and amount of L-2-oxothiazolidine-4-carboxylate sufficient to increase the glutathione content of said cells.

4,438,125

ARYLAMINE DERIVATIVES AND USE AS MICROBICIDES

Adolf Hubele, Magden; Wolfgang Eckhardt, Lörrach, and Peter Riebli, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

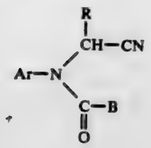
Division of Ser. No. 285,652, Jul. 21, 1981, Pat. No. 4,377,587. This application Sep. 13, 1982, Ser. No. 417,232

Claims priority, application Switzerland, Jul. 25, 1980, 5709/80; Jul. 25, 1980, 5710/80

Int. Cl.³ A01N *37/34*; C07C *121/78*

U.S. Cl. 424—269 **9 Claims**

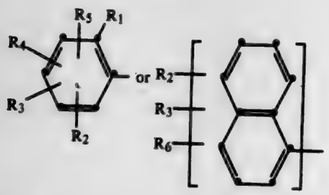
1. A compound of the formula



wherein

R is hydrogen or methyl,

Ar is one of the aromatic groups



wherein

R_1 is C_1–C_3alkyl, C_1–C_3alkoxy or halogen,

R_2 is NO_2 or NH_2,

R_3 is hydrogen, C_1–C_3alkyl, C_1–C_3alkoxy or halogen,

R_4 is hydrogen or C_1–C_3alkyl,

R_5 is hydrogen or C_1–C_3alkyl, and

R_6 is hydrogen, C_1–C_3alkyl or halogen;

B is C_3–C_4alkyl, C_2–C_4alkenyl, cyclopropyl, 2-furyl, 2-tetrahydrofuryl, β-(C_1–C_2alkoxy)ethyl or the group CH_2Z, in which

Z is 1H-1,2,4-triazolyl, methylsulfonyl, X—R_{13}, OSO_2—R_{14} or —$N(R_{15})(R_{16})$, in which

X is oxygen or sulfur,

R_{13} is an alkyl, alkenyl or alkynyl group, each containing at most 4 carbon atoms.

R_{14} is C_1–C_3alkyl or NH(C_1–C_3alkyl), and

R_{15} and R_{16}, each independently of the other, are C_1–C_3alkyl.

6. A method of controlling and/or protecting plants from attack by phytopathogenic microorganisms, which method comprises applying to said plants or to the locus thereof a microbicidally effective amount of a compound according to claim 1.

4,438,126

LOWER ALKANOIC ACID DERIVATIVES OF 2-OXO-BENZOXAZOLINES AND ALDOSE REDUCTASE INHIBITING COMPOSITIONS THEREOF

Ikuo Ueda; Masaaki Matsuo, both of Toyonaka; Susumu Satoh, Ikeda, and Takao Watanabe, Mukou, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

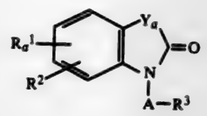
Division of Ser. No. 155,185, Jun. 2, 1980, Pat. No. 4,370,340. This application Aug. 18, 1982, Ser. No. 409,089

Claims priority, application Japan, Jun. 12, 1979, 54-74239

Int. Cl.³ C07D *263/58*; A61K *31/42*

U.S. Cl. 424—272 **3 Claims**

1. A compound of the formula:



wherein

R_a^1 is phenyl,

R^2 is halogen,

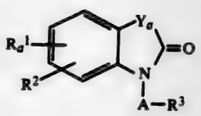
R^3 is carboxy or lower alkoxycarbonyl,

Y_a is oxygen,

A is C_1–C_6 alkylene,

and pharmaceutically acceptable salts thereof.

3. An aldose reductase inhibiting pharmaceutical composition which comprises, as an effective ingredient, at least one compound of the formula:



wherein

R_a^1 is phenyl,

R^2 is halogen,

R^3 is carboxy or lower alkoxycarbonyl,

Y_a is oxygen,

A is C_1–C_6 alkylene,

or pharmaceutically acceptable salts thereof with a pharmaceutically acceptable carrier.

4,438,127

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and Rodney C. Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

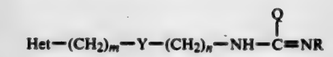
Division of Ser. No. 291,196, Aug. 10, 1981, Pat. No. 4,395,419, which is a division of Ser. No. 65,478, Aug. 10, 1979, Pat. No. 4,308,275, which is a division of Ser. No. 914,329, Jun. 12, 1978, Pat. No. 4,189,488, which is a division of Ser. No. 773,590, Mar. 2, 1977, Pat. No. 4,118,502. This application Mar. 7, 1983, Ser. No. 472,434

Claims priority, application United Kingdom, Mar. 11, 1976, 09750/76

Int. Cl.³ A61K *31/42*; C07D *263/34*

U.S. Cl. 424—272 **8 Claims**

1. A compound of the formula



wherein Het is an oxazole, isoxazole or triazole ring, which ring is optionally substituted by lower alkyl, halogen, lower alkoxy, hydroxy, trifluoromethyl, hydroxymethyl or amino; m is 0, 1 or 2 and n is 2 or 3 provided that the sum of m and n is 3 or 4; Y is sulphur, methylene or oxygen; R is hydrogen, lower alkyl or Het—$(CH_2)_m$—Y—$(CH_2)_n$— where Het, m, n and Y are as defined above; Q is —CO_2H or —SO_2H; or a pharmaceutically acceptable acid addition salt thereof.

8. A method of inhibiting gastric acid secretion which comprises administering internally to an animal a compound of claim 1.

4,438,128

CARDIOACTIVE ARYLOXYPROPANOLAMINES

Fritz Wiedemann, Weiheim-Lützelsachsen; Wolfgang Kampe, Heddesheim; Karl Dietmann, Mannheim, and Gisbert Sponer, Laudenbach, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

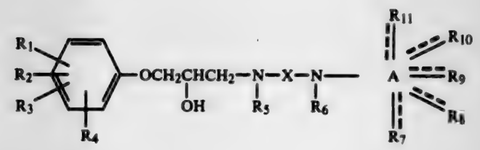
Filed Jun. 15, 1981, Ser. No. 273,543

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1980, 3023369

Int. Cl.³ A61K *31/415*; C07D *231/54*

U.S. Cl. 424—273 N **5 Claims**

1. An aryloxypropanolamine of the formula



wherein

R_1, R_2, R_3 and R_4 each independently is hydrogen, chlorine, bromine, fluorine, C_{1-4}-alkyl, cyano, carboxamido, hydroxyl, C_{2-5}-alkenyloxy or phenyl-C_{1-4}-alkoxy,

R_5 and R_6 each independently is hydrogen or C_{1-4}-alkyl,

X is an ethylene or propylene radical,

A is an indazole connected to the —X—N(R_6)— chain through a carbon atom,

R_7, R_8, R_9, R_{10} and R_{11} each independently is, or two of them together are, hydrogen, amino, C_{1-4}-alkyl or C_{2-5}-alkenyl;

or a pharmacologically compatible salt thereof.

3. A composition for combating cardiac and circulatory diseases comprising an amount effective therefor of a compound or salt according to claim 1 in admixture with a pharmacologically acceptable diluent.

4,438,129

USE OF CLOTRIMAZOLE TO TREAT HERPES LABIALIS

Isaac R. McGraw, Newtown, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 27, 1982, Ser. No. 424,121

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **2 Claims**

1. A method of treating herpes I infections of the labial area in mammals comprising topically administering to the mammal in need of said treatment an effective amount for treating the herpes I virus of a composition of 1(o-chloro-α,α-diphenylbenzyl) imidazole or its salts and at least one pharmaceutically acceptable carrier, wherein the compound is from about 0.01 to about 95% by weight of the composition.

4,438,130

ANALGESIC 1-OXA-, AZA- AND THIA-SPIROCYCLIC COMPOUNDS

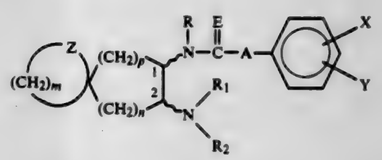
Lester J. Kaplan, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 320,635, Nov. 12, 1981, abandoned. This application Jun. 21, 1982, Ser. No. 390,462

Int. Cl.³ A61K *31/34, 31/35*; C07D *307/94, 311/96*

U.S. Cl. 424—274 **26 Claims**

1. A compound of the formula



(I)

wherein

p is a whole number integer 0, 1 or 2 and n is a whole number integer 1, 2, or 3, so that the resulting cycloaliphatic ring containing them has six (6) carbon atoms;

m is 3 or 4;

A is a single chemical bond (—), —$(CH_2)_q$ where q is a whole number integer 0 to 4 or —$CH(CH_3)$—;

X and Y are independently selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, nitro, methoxy, hydroxy, azido, C_1 to C_3-alkyl, phenyl, methanesulfonyl, cyano, amino, C_1 to C_3-alkoxycarbonyl, C_1 to C_3-alkanoyloxy, C_1 to C_3-carboxyacylamino (—NHC(=O)R_4 where R_4 is hydrogen or C_1 to C_2-alkyl);

R is hydrogen or C_1 to C_3-alkyl;

R_1 and R_2, taken separately, are each hydrogen, C_1 to C_3-alkyl or allyl;

R_1 and R_2, taken together with the nitrogen to which they are bonded complete a ring selected from the group consisting of azetidinyl, pyrrolidinyl and piperidinyl;

E is oxygen or sulfur;

Z is selected from the group consisting of oxygen, bivalent sulfur and sulfinyl;

provided that when p is 2, n is 1, m is 3, A is —$(CH_2)_q$ where q is 1, R is methyl, R_1 and R_2 are taken together with the nitrogen to which they are bonded to complete a pyrrolidinyl ring, E is oxygen, Z is oxygen, and the relative stereochemistry is (5α,7α,8β), then X and Y taken together on the phenyl ring cannot be chlorine on the 2- and 4-positions of the phenyl ring, or a pharmacologically acceptable salt thereof.

17. A composition useful in pharmaceutically effective dosage unit form for alleviating pain in warm blooded animals which comprises a compound of claim 1 in combination with a pharmaceutically acceptable carrier.

4,438,131

Ω-CYANO-1, Ω-DIPHENYL-AZAALKANE DERIVATIVES, THEIR PREPARATION AND DRUGS CONTAINING THEM

Oskar Ehrmann, Mannheim-Neuhermsheim; Manfred Raschack, Weisenheim am Sand; Josef Gries, Wachenheim; Rolf Kretzschmar, Gruenstadt; Hans D. Lehmann, Hirschberg; Ludwig Friedrich, Bruehl; Dirk Wuppermann, Freinsheim; Frank Zimmermann, Neustadt; Werner Seitz, Plankstadt; Hans J. Treiber, Bruehl; Ferdinand Dengel, Wilhelmsfeld; Wolfram Frank, Heidelberg; Hans-Georg Kurbjuweit, Weinheim-Hohensachsen, and Claus D. Mueller, Viernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

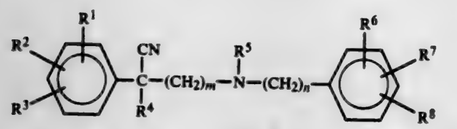
Filed Mar. 30, 1982, Ser. No. 363,501

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114497; Nov. 6, 1981, 3144150

Int. Cl.³ A61K *31/335, 31/275;* **C07C** *121/78*

U.S. Cl. 424—278 **15 Claims**

1. An ω-cyano-1,ω-diphenyl-azaalkane derivative of the formula I,



I

where R^1, R^2, R^3, R^6, R^7 and R^8 are identical or different and each is hydrogen, halogen, hydroxyl, trifluoromethyl, C_1–C_4-alkyl, nitro, C_1–C_4-alkoxy or C_1–C_4-alkylmercapto, and two radicals in adjacent positions can together form a methylenedioxy, ethylenedioxy or 1,3-dioxatetramethylene group, R^4 is straight-chain or branched, saturated or unsaturated alkyl of 9 to 20 carbon atoms, R^5 is hydrogen or C_1–C_4-alkyl and m and n are identical or different and each is from 2 to 4, and salts thereof with a physiologically tolerated acid.

15. The method of treating cardiovascular disorders in a patient suffering therefrom which comprises administering an effective amount of an ω-cyano-1,ω-diphenyl-azaalkane derivative of the formula I according to claim 1.

4,438,132

4-OXO-PGI$_2$ COMPOUNDS, THEIR USE IN INHIBITION OF THROMBII AND THEIR PRODUCTION

Gaza Galambos; Vilmos Simonidesz; Istvan Szekely; Jozsef Ivanics; Krisztina Kekesi; Gabor Kovacs; Istvan Stadler; Peter Körmoczy, and Karoly Horvath, all of Budapest, Hungary, assignors to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara Rt., Hungary

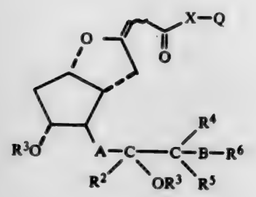
Filed Apr. 13, 1982, Ser. No. 368,013

Claims priority, application Hungary, Apr. 14, 1981, 2251/966

Int. Cl.³ A61K *31/557;* **C07D** *307/935*

U.S. Cl. 424—285 **39 Claims**

1. A compound of formula I



wherein

Q is a —COOR^1, —CH$_2$—OH, —CO—L^1 group,

R^1 is hydrogen, a pharmaceutically acceptable cation, C_{1-6} alkyl, C_{3-10} cycloalkyl, phenyl-C_{1-4}-alkyl which can be substituted on the phenyl moiety by phenyl, halogen, C_{1-4}-alkyl or halogen-substituted-C_{1-4} alkyl, or R^1 is phenyl or phenyl substituted by halogen, phenyl, C_{1-4} alkyl or halogen-substituted-C_{1-4} alkyl,

L^1 represents an amino group or an alkylamino or dialkylamino group containing C_{1-6} alkyl groups,

X is a —CH$_2$—CH$_2$—, —CH=CH—, —CH$_2$—C(CH$_3$)$_2$—, —(CH$_3$)$_2$C—CH$_2$— or a cyclopropylene group,

A is a trans- or cis—CH=CH—, —C≡C— or a —CH$_2$—CH$_2$— group,

R^2 represents hydrogen with α- or β-configuration, a methyl or ethyl group,

R^3 is hydrogen, C_{1-4} alkanoyl-, benzoyl or benzoyl whose phenyl group is substituted by halogen, phenyl, C_{1-4} alkyl or halogen-substituted-C_{1-4} alkyl, or tri-(C_{1-4})-alkyl-silyl group,

R^4, R^5 stand independently from each other for hydrogen or a C_{1-4} alkyl group,

B represents a methylene group, oxygen or a —NH-group and

R^6 is a C_{1-6} straight or branched alkyl group, phenyl or phenyl substituted by halogen, phenyl, C_{1-4} alkyl or halogen-substituted-C_{1-4} alkyl.

4,438,133

THERAPEUTICALLY EFFECTIVE DERIVATIVES OF CYSTINE

Dante Nardi; Alberto Tajana; Gianni Motta; Pietro Cazzulani, and Gabriele Graziani, all of Milan, Italy, assignors to Recordati S.A., Chiasso, Switzerland

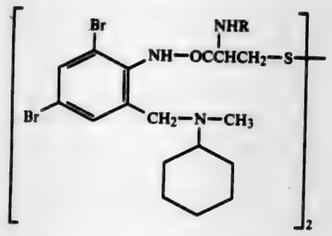
Filed Jun. 28, 1982, Ser. No. 392,806

Claims priority, application United Kingdom, Jul. 7, 1981, 8120907

Int. Cl.³ C07C *143/78, 125/073;* **A61K** *31/18, 31/27*

U.S. Cl. 424—300 **10 Claims**

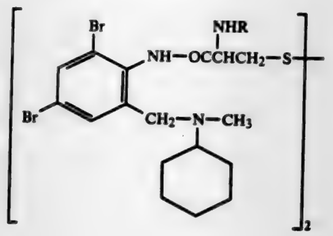
1. An amino/amide derivative of cystine having the structural formula (I):



(I)

wherein R is benzyloxycarbonyl or tosyl, or a pharmaceutically acceptable acid addition salt thereof.

5. A method for eliciting an antitussive response in a warm-blooded mammal, comprising administering to a warm-blooded mammal in need of such treatment, an antitussively effective amount of an amino/amide derivative of cystine having the structural formula (I):



(I)

wherein R is benzyloxycarbonyl or tosyl, or a pharmaceutically acceptable acid addition salt thereof.

4,438,134

USE OF TOLNAFTATE TO TREAT HERPES LABIALIS

Isaac R. McGraw, Newtown, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 27, 1982, Ser. No. 424,119

Int. Cl.³ A61K *31/27*

U.S. Cl. 424—300 **2 Claims**

1. A method of treating herpes I infections of the labial area in mammals comprising topically administering to the mammal in need of said treatment an effective amount for treating the herpes I virus of a composition of O-2-naphthyl-m,N-dimethylthio carbanilate and at least one pharmaceutically acceptable carrier, wherein the compound is from about 0.01 to about 95% by weight of the composition.

4,438,135

1-(3,4-BIS-(3-(LOWER ALKOXYCARBONYL)-2-THIOUREIDO)-PHENYL-1-PHENYLTHYLENES

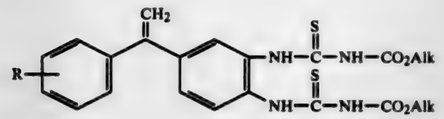
Alfred W. Chow, Radnor, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jan. 7, 1983, Ser. No. 456,199

Int. Cl.³ C07C *157/12;* **A61K** *31/325*

U.S. Cl. 424—300 **11 Claims**

1. A chemical compound of the formula:

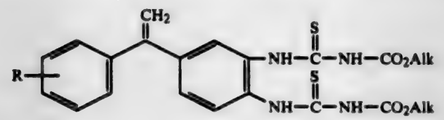


in which:

R is hydrogen, halo, C_{1-4}-lower alkoxy, C_{1-4}-lower alkyl or C_{1-4}-lower alkylthio, and

Alk is, each, C_{1-6}-lower alkyl.

4. An anthelmintic composition comprising an anthelmintic, nontoxic quantity of a compound of the formula:



in which:

R is hydrogen, halo, C_{1-4}-lower alkoxy, C_{1-4}-lower alkyl or C_{1-4}-lower alkylthio, and

Alk is C_{1-6}-lower alkyl, combined with a pharmaceutical or veterinary carrier therefor.

4,438,136

PROSTAGLANDINS

Robert L. Jones, and Norman H. Wilson, both of Edinburgh, Scotland, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 219,307, Sep. 3, 1980, abandoned. This application Sep. 17, 1982, Ser. No. 419,206

Claims priority, application United Kingdom, Jan. 5, 1979, 7900369

Int. Cl.³ C07C *103/27;* **A61K** *31/24*

U.S. Cl. 424—309 **32 Claims**

1. A compound which is a bicyclo(2,2,1)heptane or hept-2Z-ene which is substituted at the 5-position by a group of the formula —R^1—COQ, where R^1 is selected from the group consisting of C_4–C_8 alkyl; —CH$_2$—CH=CH—(CH$_2$)$_m$—, wherein m is an integer from 1 to 5; —CH$_2$—CH—2—CH=CH(CH$_2$)$_n$—, where n is an integer from 0 to 4; —X—(CH$_2$)$_p$—, where p is an integer from 3 to 7; —CH$_2$—X—(CH$_2$)$_q$—, where q is an integer from 2 to 6; —CH$_2$—CH—2—X—(CH$_2$)$_m$—, and —CH=CH—(CH$_2$)$_3$—;

wherein X is —O— or —S—;

COQ is COOH, a physiologically acceptable carboxylate salt, a branched or unbranched C_1–C_5 alkyl ester or CONHSO$_2$CH$_3$;

and wherein said bicyclo(2,2,1)heptane or hept-2Z-ene is substituted at the 6-position by a grouping of the formula:

—C(R)=NNHCO—(NH)$_a$—R′;

wherein R is selected from the group consisting of hydrogen, unsubstituted C_1–C_{10} branched or unbranched aliphatic hydrocarbon residues, and C_1–C_{10} aliphatic hydrocarbon residues substituted by Ar, where Ar represents a monocyclic aromatic hydrocarbon or pyridyl residue, or such a residue substituted by one or more substituents selected from the group consisting of halogen, halogen substituted branched or unbranched C_1–C_5 alkyl groups, sulphonamido groups, amino groups, hydroxy and C_1–C_{10} alkoxy;

a is 0 or 1; and

R′ is selected from the group consisting of unsubstituted C_1–C_{10} branched or unbranched aliphatic hydrocarbon residues, Ar and C_1–C_{10} branched or unbranched aliphatic hydrocarbon residues substituted by —Ar, —OAr, or —SAr.

25. A method of treating thrombotic disorders, anaphylactic disease states and conditions requiring anti-inflammatory treatment in patients which comprises administering to the patient an amount of a compound according to claim 1 which is effective to inhibit thromboxane activity in the patient.

4,438,137

PESTICIDAL COMPOSITIONS EMPLOYING AMITRAZ WITH STABILIZER

Keith Allan, Loughborough, England, assignor to FBC Limited, Hauxton, England

Continuation-in-part of Ser. No. 179,588, Aug. 21, 1980, abandoned. This application Jun. 29, 1982, Ser. No. 393,277

Claims priority, application United Kingdom, Sep. 20, 1979, 7932636

Int. Cl.³ A01N *33/02*

U.S. Cl. 424—330 **6 Claims**

1. A liquid insecticidal and acaricidal composition comprising a solution of from about 0.5 to 35% w/v 1,5-di-(2,4-dimethylphenyl)-3-methyl-1,3,5-triazapenta-1,4-diene and from about 1 to 3% w/v of a carbodiimide selected from the group consisting of dicyclohexylcarbodiimide and di-(2,6-diisopropylphenyl) carbodiimide.

4,438,138

REDUCTION OF CHOLESTEROL WITH META-CHLORO α-T-BUTYLAMINOPROPIOPHENONE

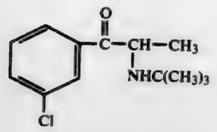
Warren C. Stern, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Dec. 6, 1982, Ser. No. 447,412

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **8 Claims**

1. A method of reducing cholesterol levels in a human in need thereof, which comprises administering to said human an effective, non-toxic, cholesterol-lowering amount of a compound of the formula (I)



(I)

or a pharmaceutically acceptable acid addition salt thereof.

4,438,139

POLYMERIC DIFFUSION MATRIX CONTAINING ESTROGENS

Alec D. Keith, Miami, Fla., and Wallace Snipes, State College, Pa., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Continuation of Ser. No. 281,391, Jul. 8, 1981, abandoned, which is a continuation-in-part of Ser. No. 217,400, Dec. 17, 1980, Pat. No. 4,321,252, and Ser. No. 167,729, Jul. 11, 1980, Pat. No. 4,291,014, and Ser. No. 109,242, Jan. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 2,565, Jan. 11, 1979, abandoned. This application Jan. 4, 1982, Ser. No. 439,023

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.³ A61L *15/03*; A61K *31/79, 31/74*

U.S. Cl. 424—28 **13 Claims**

1. A self-supporting polymeric diffusion matrix for the sustained release of a pharmacologically acceptable estrogen in order to deliver said estrogen to a patient and provide said patient with a uterine wall maintenance effect, said matrix comprising from about 1 to about 60% of a polar plasticizer, from about 6 to about 30% by weight polyvinylalcohol, from about 2 to about 30% by weight polyvinylpyrrolidone, and a pharmaceutically effective amount of the estrogen to provide a sustained release of said estrogen over a prolonged period.

4,438,140

SALTS OF ACID DYES AND COPOLYMERS HAVING TERTIARY AMINE FUNCTIONS, PROCESS FOR PREPARING SAID SALTS AND MAKEUP COSMETIC COMPOSITIONS CONTAINING THEM

Michel Guillon, Bourg-La-Reine; Jean Mondet, Sevran; Christos Papantoniou, Montmorency, and Claudine Vandenbossche, Aulnay-Sous-Bois, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

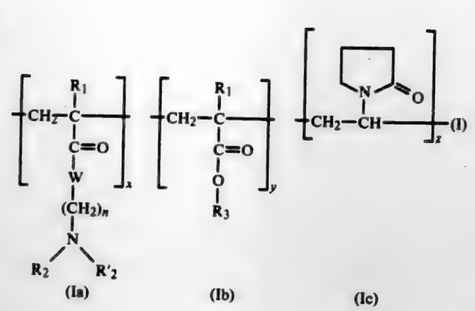
Filed Apr. 10, 1981, Ser. No. 252,809

Claims priority, application France, Apr. 18, 1980, 80 08742

Int. Cl.³ A61K *7/04, 7/021*

U.S. Cl. 424—61 **16 Claims**

1. An acid colorant salt of an acid colorant salified by a copolymer having a tertiary amine function, said acid colorant being selected from the group consisting of Red 21 D and C, Orange 5 D and C, Red 27 D and C, Orange 10 D and C, Red 3 D and C, Acid Red 7 D and C, Red 2 D and C, Red 4 D and C, Acid Red 8 D and C, Acid Red 33 D and C, Acid Yellow 5 D and C, Acid Yellow 6 D and C, Acid Green 5 D and C, Acid Yellow 10 D and C, Acid Green 3 D and C, Blue 1 D and C, Blue 2 D and C and Violet 1 D and C, and said copolymer having the formula



(Ia) (Ib) (Ic)

wherein

n is 2 or 3,

W represents a bond, —O— or —NH—,

R_1 represents H or $—CH_3$,

R_2 and R_2' each independently represent lower alkyl having from 1 to 3 carbon atoms,

R_3 represents linear or branched alkyl having from 1 to 18 carbon atoms,

x represents from 5 to 95 weight percent,

y represents from 5 to 95 weight percent, and

z represents from 0 to 20 weight percent, with x+y+z being equal to 100 weight percent.

4,438,141

THIAZOLIDINE DERIVATIVES

Yutaka Kawamatsu, Kyoto, and Takeshi Fujita, Takarazuka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

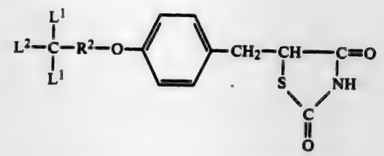
Division of Ser. No. 258,554, Apr. 29, 1981, Pat. No. 4,340,605, which is a division of Ser. No. 62,512, Jul. 27, 1979, Pat. No. 4,287,200. This application Jul. 7, 1982, Ser. No. 396,093

Claims priority, application Japan, Aug. 4, 1978, 53-95673

Int. Cl.³ C07D *277/32*; A61K *31/425*

U.S. Cl. 424—248.51 **10 Claims**

1. A thiazolidine derivative of the formula:



wherein R^1 is thienyl, furyl or a group of the formula:



where R^3 and R^4 are the same or different and each is lower alkyl or R^3 and R^4 are combined with each other either directly or as interrupted by an oxygen atom to form piperidono, morpholino or pyrrolidino; R^2 means a bond or a lower alkylene group; L^1 and L^2 are the same or different and each is hydrogen, lower alkyl or L^1 and L^2 are combined to form an alkylene group.

4,438,142

PHARMACEUTICAL COMBINATION

Ralph Vinegar, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 354,160, Mar. 5, 1982. This application Sep. 16, 1982, Ser. No. 418,979

Int. Cl.³ A61U *31/485*

U.S. Cl. 424—260 **8 Claims**

1. An analgesic preparation comprising codeine or a pharmaceutically acceptable salt thereof and 1-(1-3-benzodioxol-5-yl)-2-pyrrolidinone wherein the ratio of codeine or a pharmaceutically acceptable salt thereof to the compound of formula I 1-(1-3-benzodioxal-5-yl)-2-pyrodidinone is in the range of 1:10 to 1:50.

4,438,143

1-ARYLOXY-3-ALKYLAMINO-2-PROPANOLS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Herbert Köppe; Werner Kummer; Helmut Stähle; Gojko Muacevic, all of Ingelheim, and Werner Traunecker, Münster-Sarmsheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

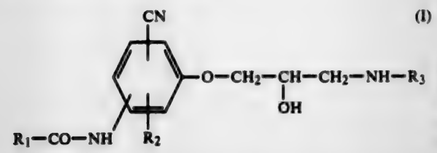
Continuation-in-part of Ser. No. 383,624, Jun. 1, 1982, abandoned, which is a continuation of Ser. No. 254,510, Apr. 15, 1981, abandoned. This application Sep. 21, 1982, Ser. No. 420,796

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3015991

Int. Cl.³ A61K *31/275*; C07C *121/80*

U.S. Cl. 424—304 **9 Claims**

1. A compound of the formula



(I)

wherein

R_1 represents a linear or branched alkyl of from 1 to 20 carbon atoms;

R_2 represents a hydrogen or halogen atom, a linear or branched alkyl or alkoxy of from 1 to 4 carbon atoms, or a divalent group —CH=CH—CH=CH— or $—(CH_2)_n—$, in which n is an integer of from 3 to 5, with the free valences bonded in the o-position relative to one another; and

R_3 represents a linear or branched alkyl of from 3 to 10 carbon atoms, with the provisos that R_3 is not tert.butyl when R_1 is ethyl or propyl and R_2 is a hydrogen atom and that R_3 is not isopropyl when R_1 is propyl and R_2 is hydrogen,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

8. A method for the treatment or prophylaxis of diseases of the coronaries, for the treatment of hypertension, or for the treatment of cardiac arrhythmia, which comprise administering to a warm-blooded animal or human an effective amount of a compound of claim 1.

4,438,144

AMINO ACID PREPARATION AND THERAPY FOR TREATMENT OF STRESS AND INJURY

George L. Blackburn, 100 Memorial Dr., Cambridge, Mass. 02142

Continuation of Ser. No. 174,189, Jul. 31, 1980, abandoned. This application Apr. 29, 1982, Ser. No. 373,125

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **5 Claims**

1. A method of nutritional therapy for a patient suffering from physical injury or metabolic stress, said patient having a normalized urinary nitrogen excretion of at least about 15 gr/dayand having at the same time at least a partial dysfunction of the gastrointestinal tract in order to at least partially sustain protein synthesis in said patient comprising parenterally administering to said patient an effective nutritional therapy amount of an amino acid parenteral composition in which 70 to 100% of the amino acid content consists of the branched chain amino acids, leucine, isoleucine and valine in relative proportions a:b:c wherein a, b and c are independent of each other and have a value from 1 to 2 to provide effective nutritional therapy for said patient.

4,438,145

PROCESS FOR THE PREPARATION OF A FOOD-STUFF CONSISTING OF A STUFFING ROLLED IN A WRAP

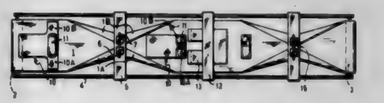
Arie Bakker, Gouda, Netherlands, assignor to Bamach, B. V., Lekkerkerk, Netherlands

Continuation of Ser. No. 245,196, Mar. 18, 1981, abandoned, which is a continuation of Ser. No. 40,766, May 21, 1979, abandoned. This application Dec. 15, 1982, Ser. No. 450,111

Claims priority, application Netherlands, May 26, 1978, 7805735

Int. Cl.³ A23L *1/31*

U.S. Cl. 426—297 **1 Claim**



1. The method of wrapping an elongate edible stuffing of generally circular cross section with a T-shaped edible wrap embodying an elongated rectangular crossbar and a rectangular stem extending continually and symmetrically therefrom, said stem having a width dimension parallel to the length of the crossbar, with the length of the elongated stuffing approximately equalling the width dimension of the stem and with the diameter of the circular cross section of the edible stuffing approximately equalling the width of the elongated rectangular crossbar, said method comprising depositing the T-shaped wrap on a continuously-moving, normally flat, flexible conveyor belt of a width exceeding the length of the crossbar of the T-shaped wrap with the crossbar centered transversely of the conveyor belt and leading the stem with respect to the direction of movement of the conveyor belt; at an intermediate point along the travel of the conveyor belt beyond the place of deposit of the wrap on the conveyor belt, depositing the stuffing on the crossbar of the wrap with its longitudinal axis coinciding with the longitudinal axis of the crossbar and centered thereon with respect to its ends and sides; at an intermediate point along the travel of the conveyor belt beyond the place of deposit of the stuffing on the wrap, with the aid of transversely-spaced guides, stationary with respect to the direction of movement of the conveyor belt, having transversely-spaced, opposed concave side surfaces situated at a spacing corresponding to substantially the length of the stuffing and horizontal surfaces parallel to the conveyor belt spaced therefrom by a distance corresponding substantially to the diameter of the stuffing, folding the marginal portions of the conveyor belt

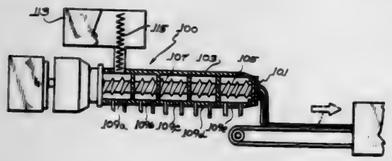
upwardly about the opposite ends of the stuffing and inwardly against the top of the stuffing to thus fold the end portions of the crossbar of the wrap upwardly about the ends of the stuffing and inwardly into engagement with the top of the stuffing; at an intermediate point in the travel of the conveyor belt beyond the place of folding the conveyor belt upwardly and inwardly, allowing the conveyor belt to return to its normally flat position, leaving the end portions of the crossbar of the wrapper folded upwardly about the ends of the stuffing in engagement with the top of the stuffing; and at an intermediate point in the travel of the conveyor belt following return of the conveyor belt to its flat position, with the aid of means positioned above the conveyor belt stationary with respect to the movement of the conveyor belt, frictionally engaging the end portions of the crossbar of the wrap in engagement with the top of the stuffing to constrain the top of the partially wrapped stuffing relative to the movement of the conveyor belt such that movement of the lower part of the partially wrapped stuffing with the conveyor belt rolls the stuffing and crossbar of the wrap about the longitudinal axis of the stuffing relative to the stem of the wrap to thus coil the stem of the wrap about the stuffing and the end portions of the crossbar and wrap.

4,438,146

METHOD FOR PREPARING COOKED WHEAT PRODUCT

Ronald W. Colby, Peru, Ill., and Arnold Spicer, Santa Ponsa, Spain, assignors to New Generation Foods, Inc., Reno, Nev.

Filed Mar. 16, 1982, Ser. No. 358,789
Int. Cl.³ A23L *1/18*; A21D *8/00*
U.S. Cl. 426—448 **13 Claims**



1. A method for preparing an expanded wheat product comprising the steps of grinding whole wheat, adding moisture to the ground wheat, uniformly distributing the moisture in the ground wheat to make a dough, conducting the dough to a die, heating the dough by passing it through the die at a rate sufficient to generate heat and steam in the dough without any external heat source to the die and cook the dough in the die to condition the wheat and extruding the dough into a lower pressure zone to flash steam and expand the dough.

4,438,147

FOAMING CREAMER AND METHOD OF MAKING SAME

Paul L. Hedrick, Jr., Plain City, Ohio, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jun. 25, 1982, Ser. No. 392,229
Int. Cl.³ A23C *1/04*; A23G *1/00*; A23L *2/00, 2/40*
U.S. Cl. 426—570 **30 Claims**

1. A method of making a foaming creamer comprising:
(a) forming a liquid mixture comprising water and solids, said mixture being devoid of an effective amount of surface tension reducing agents, said solids including at least about 5% non-dairy fat, at least about 30% water-soluble non-dairy carbohydrate, and between 0% and about 50% dry skim milk, there being present in said solids an effective amount of a proteinaceous foam stabilizer;
(b) blending an inert gas to gassify said mixture;
(c) homogenizing said mixture; and
(d) spray-drying said mixture, after said gas-blending and homogenizing steps, by:
(1) forcing the mixture through an orifice under a spray pressure sufficient to finely atomize the mixture, and
(2) contacting the atomized mixture with a gaseous drying medium at an elevated temperature, to thereby produce a substantially dry powder devoid of an effective amount of surface tension reducing agents.

4,438,148

PROCESS FOR MAKING AN IMPROVED DRY INSTANT PUDDING MIX

Joseph D. O'Rourke, Cranbury, N.J., and Jay H. Katcher, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,685
Int. Cl.³ A23L *1/187, 1/195*
U.S. Cl. 426—579 **7 Claims**

1. A process for making an instant pudding mix comprising the following steps in the stated order:
(a) pregelatinizing and drying a starch in a manner effective to produce a pregelatinized starch particle size distribution wherein at least 40% by weight of the starch has a particle size of about 63 microns or greater;
(b) grinding and controlling said dry, pregelatinized starch in a manner effective to produce a ground starch particle size distribution wherein:
(i) between at least 1% and up to 10%, by weight, of said pregelatinized starch has a particle size greater than about 63 microns, but
(A) less than about 1%, by weight, of said pregelatinized starch has particle sizes greater than about 105 microns,
(B) less than about 3%, by weight of said pregelatinized starch has particle sizes greater than about 88 microns, and
(C) less than about 6%, by weight of said pregelatinized starch has particle sizes greater than about 74 microns,
(ii) between about 55% and about 80%, by weight, of said starch has particle sizes less than about 38 microns, and at least 10%, by weight of said starch, has particle sizes less than about 20 microns;
(c) apportioning a quantity of said ground, pregelatinized starch in a manner effective to constitute between about 5% and about 25%, by weight of the pudding mix;
(d) combining said apportioned starch with sugar, setting, and flavoring components wherein:
(i) said sugar component is between about 25% and about 85% by weight of the pudding mix,
(A) between 15% and about 40% of said sugar component is powdered sugar, and
(B) at least about 90% of the sugar component has particle sizes less than 74 microns; and
(ii) said setting component is between about 1% and about 5%, by weight of the pudding mix and said setting component consists essentially of an alkali pyrophosphate and an alkali orthaphosphate;
(e) blending said combined components;
(f) packaging said blended, combined components.

4,438,149

SPREADABLE WATER-IN-OIL EMULSION BASED ON A HIGH-MELTING BUTTERFAT FRACTION AND A LIQUID OIL

Laurentius A. M. Verhagen, Vlaardingen, and Janos Bodor, Voorburg, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,715
Claims priority, application Netherlands, Apr. 2, 1981, 8101639
Int. Cl.³ A23D *3/00, 3/02*
U.S. Cl. 426—603 **17 Claims**

1. An edible spreadable water-in-oil emulsion comprising:
(i) an aqueous phase having a pH of from 4.0 to 7.0 and constituting at most 70 percent by weight of the total emulsion;
(ii) a fatty phase containing
(a) a liquid oil which at 10° C. is substantially free of solid fat crystals and
(b) a butter stearin fraction having the following solid fat contents:

N_{10}=50–80; N_{20}=25–45; N_{35}=3–18

wherein the ratios between the components of the fatty phase are such as to impart to the fatty phase the following solid fat contents:

N_{10}=15–40; N_{20}=8–20; N_{35}=0–5.

4,438,150

PROCESS FOR PREPARING AN INSTANT BABY CEREAL PORRIDGE PRODUCT

Scott Gantwerker, LaGrange, and Sai Leong, Buffalo Grove, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Sep. 9, 1982, Ser. No. 416,190
Int. Cl.³ A23L *1/10*; A21D *8/06*
U.S. Cl. 426—625 **7 Claims**

1. A process for preparing a dry, gelatinized, cereal porridge product capable of being instantly prepared as a hot or cold cereal porridge comprising:
a. preparing a slurry of cereal flour having a Mesh size less than U.S. Mesh size #40, and water in which the flour is present in an amount of from 14 to 30% inclusive based on the weight of the slurry;
b. gelatinizing the cereal flour slurry by heating until such time as the gelatinized cereal flour-water mixture has achieved a temperature in the range 180°–212° F. and the viscosity of the gelatinized cereal mixture is greater than 20,000 cps as measured on a RVT Brookfield viscometer at 50 rpm using spindle #7;
c. subjecting the gelatinized cereal mixture to mechanical shear of sufficient intensity and duration to reduce the viscosity of said gelatinized cereal mixture to a viscosity less than 10,000 cps as measured on a RVT Brookfield viscometer at 50 rpm using spindle #5 yielding a reduced viscosity gelatinized cereal mixture; and
d. dehydrating on a drum drier the reduced viscosity cereal mixture to a moisture in the range 2.0 to 9.0% inclusive, and pulverizing the dehydrated material thereby forming the dry gelatinized cereal product.

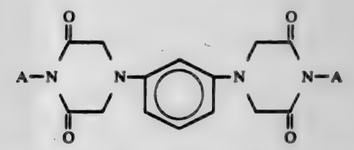
4,438,151

PROCESS FOR DURABLY MODIFYING A SHAPED SYNTHETIC POLYMER ARTICLE

Taturo Yamaguchi, Ikeda, and Norihiro Minemura, Takatsuki, both of Japan, assignors to Teijin Limited, Osaka, Japan

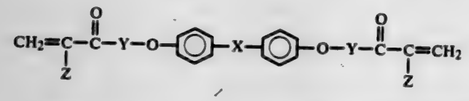
Division of Ser. No. 158,731, Jun. 12, 1980. This application Feb. 16, 1983, Ser. No. 466,864
Claims priority, application Japan, Jun. 26, 1979, 54-79613
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—36 **15 Claims**

1. A process for durably modifying a shaped synthetic polymer article, comprising the steps of:
(a) applying, onto at least a peripheral surface portion of a shaped synthetic polymer article:
(1) 0.1 percent to 40 percent, based on the weight of said shaped article, of a compound (A) selected from the group consisting of styrene, vinyltoluene, allyl cinnamate, allyl phenol, allyl phenylether, allyl glycidylether, sodium p-styrene-sulfonate, diallyl terephthalate, diallyl isophthalate, N,N'-diallyl pyromellitimide, N,N'-dimethallyl pyromellitimide, N,N'-dicrotyl pyromellitimide, N,N'-diallylbenzophenone-3,4,3',4'-tetracarboxylic acid bis-imide, N,N'-dimethylallylbenzophenone-3,4,3',4'-tetracarboxylic acid bis-imide, N,N'-dicrotylbenzophenone-3,4,3',4'-tetracarboxylic acid bis-imide, N,N'-diallylbutane-1,2,-3,4-tetracarboxylic acid bis-imide, N,N'-dimethylallylbutane-1,2,3,4-tetracarboxylic acid bis-imide, N,N'-dicrotylbutane-1,2,3,4-tetracarboxylic acid bis-imide, N,N'-diallylbenzamide, N,N'-dimethallylbenzamide, N,N'-dicrotylbenzamide, N,N'-diallylterephthalamide, N,N'-dimethallylterephthalamide, N,N'-dicrotylterephthalamide, N,N'-diallylisophthalamide, N,N'-dimethallylisophthalamide, N,N'-dicrotylisophthalamide, N,N'-diallyladipamide, N,N'-dimethallyladipamide, N,N'-dicrotyladipamide, N,N,N',N'-tetraallylisophthalamide, N,N,N',N'-tetramethallylisophthalamide, N,N,N',N'-tetracrotylisophthalamide, N,N',N''-triallyltrimesic acid amide, N,N',N''-trimethallyltrimesic acid amide, N,N'',N''-tricrotyltrimesic acid amide, N,N,N',N',N'',N''-hexallyltrimesic acid amide, N,N,N',N',N'',N''-hexamethallyltrimesic acid amide, N,N,N',N',N'',N''-hexacrotyltrimesic acid amide, N,N'-diallyltrimellitamideimide, N,N'-dimethallyltrimellitamideimide, N,N'-dicrotyltrimellitamideimide, N,N,N'-triallyltrimellitamideimide, N,N,N'-trimethallyltrimellitamideimide, N,N,N'-tricrotyltrimellitamideimide, ethylene-bis(N-allyltrimellitic acid imide), hexamethylene-bis(N-allyltrimellitic acid imide)amide, dodecamethylene-bis(N-methallyltrimellitic acid imide)amide, the compounds of the formula:

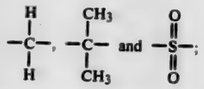


wherein A represents a member selected from allyl, methallyl and crotyl radicals, triallyl isocyanurate trimethallyl isocyanurate, tricrotyl isocyanurate, tetrallyl urea, tetramethallyl urea, tetracrotyl urea, ethyleneglycol bis-allyl-ether, ethyleneglycol bis-methallylether, ethyleneglycol bis-crotylether, tetramethylene glycol bis-allylether, tetramethyleneglycol bis-methallylether, tetramethyleneglycol bis-crotylether, neopentyleneglycol bis-allylether, neopentyleneglycol bis-methallylether, neopentyleneglycol bis-crotylether, triallyloxypropane, trimethallyloxypropane, tricrotyloxypropane, tetrakisallyloxymethlymethane, tetrakismethallyloxymethylmethane, tetrakiscrotyloxymethylmethane, triallyl cyanurate, trimethallyl cyanurate and tricrotyl cyanurate;
(2) then applying 0.05 percent to 20 percent, based on the

weight of said shaped article, of at least one compound (B) selected from acrylic acid, methacrylic acid, acrylamide, methacrylamide, N-methylolacrylamide, monopolyethyleneglycol acrylate, monopolyethyleneglycol methacrylate, monopolyethyleneglycoltrimethylammonium acrylate and methacrylate, acryloxyethylammonium chloride, acryloxyethyldimethylbenzylammonium chloride, monoethyleneglycolphosphonium acrylate and methacrylate, methoxypolyethyleneglycol acrylate and methacrylate, polyoxyethyleneglycol methacrylate, and the compounds of the formula:



wherein X represents a member selected from the radicals of the formulae,



Y represents a member selected from the radical of the formulae

$$-(CH_2CH_2O)_n-$$

and

$$-(CH_2CH\text{-}O)_m-(CH_2CH_2O)_n-$$

in which n denotes an integer of from 5 to 50 and m denotes an integer of from 1 to 20; and Z represents a member selected from a hydrogen atom and methyl radical, which is capable of imparting at least one function selected from the group consisting of anti-static, perspiration-absorbing, anti-soiling, water-absorbing, moisture-absorbing, water-repellent, oil-repellent, anti-pilling, anti-snagging, anti-flaming, anti-melting, anti-bacterial, bonding property enhancing and dyeing property-enhancing to said shaped article; and

(b) copolymerizing said compounds (A) and (B) in said shaped article.

4,438,152

PROCESS OF GASEOUS OPALIZATION OF LIGHT BULBS

Jean-Paul Barbier, Fontenay-le-Fleury, and Gilbert Lerouyer, Orgerus, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed May 5, 1982, Ser. No. 375,085

Claims priority, application France, May 20, 1981, 81 10059

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

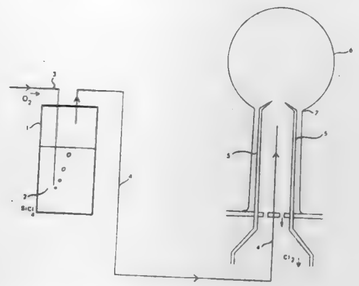
Int. Cl.³ B05D *3/04, 7/22;* **C03C** *17/345*

U.S. Cl. 427—37 **7 Claims**

1. A process for the gaseous opalization of light bulbs by producing a silica film on the inner surface of the light bulb, comprising:

entraining a chlorinated silicon compound selected from the group consisting of monochlorosilane, dichlorosilane, trichlorosilane and silicon tetrachloride in a dry carrier gas containing oxygen;

delivering said carrier gas containing oxygen and entrained chlorinated silicon compound into the presence of an



electric arc, generated by an alternating voltage between 5,000 and 10,000 volts, within the light bulb.

4,438,153

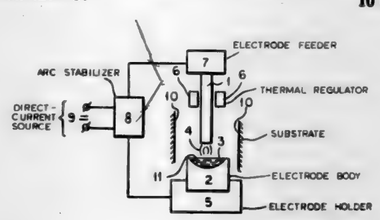
METHOD OF AND APPARATUS FOR THE VAPOR DEPOSITION OF MATERIAL UPON A SUBSTRATE

Eduard Pinkhasov, Forest Hills, N.Y., assignor to Welbilt Electronics Die Corporation, Bronx, N.Y.

Continuation-in-part of Ser. No. 237,670, Feb. 14, 1981, Pat. No. 4,351,855. This application Mar. 15, 1982, Ser. No. 358,186

Int. Cl.³ B05B *1/24;* **C23C** *13/00*

U.S. Cl. 427—37 **10 Claims**



1. A method of depositing a material upon a substrate, comprising the steps of:

juxtaposing said substrate with a gap between two electrodes spaced apart in a vacuum chamber;

drawing an initial vacuum in said chamber of a maximum of 10^{-6} torr;

forming a pool of material in a molten state between said electrodes;

striking an arc with a voltage of 70 to 120 volts and a current of 100 to 250 amperes at least in part between said pool and at least one of said electrodes spaced from said pool, thereby vaporizing material from said pool and depositing vapor of said material on said substrate which is in spaced relationship with said arc and in the path of vapor of material formed from said pool; and

maintaining the vacuum during the deposition of said material upon said substrate at a maximum of 10^{-5} torr.

4,438,154

METHOD OF FABRICATING AN AMORPHOUS SILICON FILM

Kazuhisa Kato, Atsugi, and Masaru Yasui, Yokohama, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1982, Ser. No. 372,826

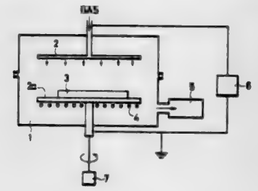
Int. Cl.³ C23C *11/00*

U.S. Cl. 427—39 **6 Claims**

1. A method of forming an amorphous silicon film photosen-

sitive receptor surface adapted for electrophotography, said method comprising the steps of:

(1) into an evacuated reaction chamber containing a discharge electrode, a substrate onto which said amorphous silicon film is to be deposited facing said discharge electrode, and a second electrode supporting said substrate, a reaction gas containing silicon hydride, introducing a gas into said reaction chamber at a rate such that the ratio (F/V) of the total flow rate (F) in liters per minute of gas



introduced relative to the volume in liters (V) of said reaction chamber is at least 0.01 min^{-1}; in combination with

(2) supplying a high frequency power across the facing electrodes in said chamber such that the power density, determined by the ratio of the supplied electric power relative to the discharge electrode's surface area, is at least 0.3 W/cm^2, thereby causing decomposition of said reaction gas and deposition of an amorphous silicon film on said substrate by glow discharge.

4,438,155

FABRICATION OF COMPOSITE METAL WIRE

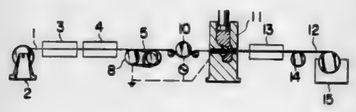
Kazumichi Kawai; Yasuo Kaneko; Keizo Abe; Hideo Matsuo; Yoshinori Kishi; Yasuhiko Miyake; and Yoshihiro Matsuyama, all of Hitachi, Japan, assignors to Hitachi Cable Ltd., Tokyo, Japan

Division of Ser. No. 95,281, Nov. 19, 1979, Pat. No. 4,291,644, which is a continuation of Ser. No. 937,830, Aug. 29, 1978, abandoned. This application Jul. 10, 1981, Ser. No. 282,148

Claims priority, application Japan, Aug. 31, 1977, 52-104447; Sep. 6, 1977, 52-106922

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—49 **10 Claims**



1. A method of fabricating a composite metal wire comprising the steps of: subjecting a core of hard metal to pretreatments including alignment, polishing, and cleaning and then to preheating; maintaining constant tension in the pretreated core at a constant low tension of between 5% and 50% of its breaking tension to improve adhesion between the core and a cladding material; introducing the pretreated constant low tension core into an extruder; and extruding a cladding of soft metal around the core while maintaining the constant low tension in the core.

4,438,156

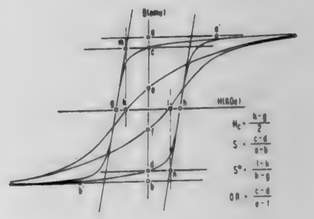
MONO-PARTICLE MAGNETIC DISPERSION IN ORGANIC POLYMERS FOR MAGNETIC RECORDING

Andrew M. Homola, Morgan Hill, and Max R. Lorenz, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,406

Int. Cl.³ H01F *10/02*

U.S. Cl. 427—57 **8 Claims**



1. A method of manufacturing a magnetic coating composition containing magnetic particles, comprising the steps of:

leaching the dry magnetic particles in an acid to form a slurry;

adjusting the pH of the said slurry to between 3 and 4 to produce a positive electrostatic charge on said magnetic particles;

adding to said slurry a dispersion of colloidal particles having a pH between 3 and 4, the colloidal particles having a negative electrostatic charge thereon;

mixing said slurry with said dispersion in a water-based system, the opposite charges on said particles causing the colloidal particles to be attracted to and irreversibly bond to the magnetic particles;

removing the coated magnetic particles from said water-based system; and

dispersing said coated magnetic particles in a water-free organic liquid binder system for application to a substrate, said colloidal particles coated on said magnetic particles preventing said magnetic particles from agglomerating to thereby improve the magnetic properties of said magnetic coating composition.

4,438,157

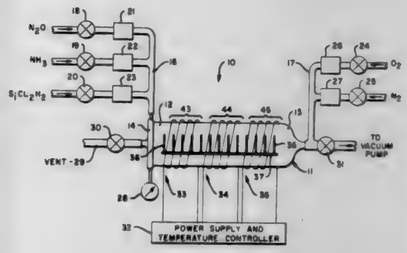
PROCESS FOR FORMING MNOS DUAL DIELECTRIC STRUCTURE

Roberto Romano-Moran, Centerville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 213,764, Dec. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 83,499, Oct. 10, 1979, abandoned. This application Jul. 12, 1982, Ser. No. 396,995

Int. Cl.³ H01L *21/316, 21/318*

U.S. Cl. 427—93 **1 Claim**



1. A process for forming continuously in the same furnace

deposition tube a silicon dioxide, silicon oxynitride and silicon nitride memory device dielectric structure on a silicon substrate comprising:

thermally oxidizing the silicon substrate in the furnace tube in a dry oxygen ambient atmospheric pressure in the range of 700°–850° C.;

forming immediately thereafter the silicon oxynitride layer on the silicon dioxide using gaseous reactants in the proportion (1–3):2:7 of N_2O, dichlorosilane and ammonia, said ammonia being introduced first into the furnace tube to prevent spurious deposits during this step, at the same temperature used for forming the silicon dioxide layer and a pressure of 400–600 millitorr; and

forming immediately thereafter the silicon nitride layer on the silicon oxynitride by cutting off the N_2O gas supply to the furnace tube and using the gaseous ammonia and dichlorosilane in the ratio of (3–4):1 at the same temperature and same range of pressure used for forming the silicon oxynitride layer.

4,438,158

METHOD FOR FABRICATION OF ELECTRICAL RESISTOR

Charles W. Eichelberger, Schenectady, and Robert J. Wojnarowski, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 220,937, Dec. 29, 1980, Pat. No. 4,377,505. This application Oct. 27, 1982, Ser. No. 437,046

Int. Cl.³ B05D *5/12*; H01C *7/00*

U.S. Cl. 427—101 **11 Claims**

1. A method for preparing an electrical resistor, comprising the steps of: combining a curable polymeric binder and finely-divided particles, having a particle size of less than 50 microns, of at least one member of the group consisting of the brown oxide of molybdenum and the brown, purple, blue and yellow oxides of tungsten; adjusting the amount of said oxides to be about 60–80 volume percent of the mixture of said oxides and said binder and sufficient to provide a desired bulk resistivity after curing; applying the resulting admixture to a substrate; and curing said binder.

4,438,159

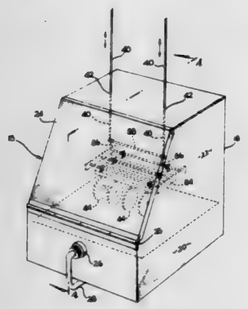
COATING PROCESS

Hermann Weber, Tarzana, Calif., assignor to Techsight Corporation, Wilmington, Del.

Filed Mar. 8, 1982, Ser. No. 355,362

Int. Cl.³ G02B *1/10*; B05D *1/18*

U.S. Cl. 427—162 **5 Claims**



1. An improved method for coating an optical material comprising the steps of:

(a) providing a volume of coating solution in an enclosed housing;

(b) providing an atmosphere substantially saturated with said coating solution;

(c) suspending said optical material above the surface of said volume of coating solution;

(d) lowering said optical material into said coating solution;

(e) maintaining said optical material within said coating solution for a predetermined time such that the temperature of said material generally equals the temperature of said solution;

(f) progressively withdrawing said optical material out of said volume of coating solution;

(g) suspending said optical material above said coating solution within said saturated atmosphere for a predetermined time;

(h) withdrawing said optical material from said saturated atmosphere;

whereby a more uniform coating is provided on said optical material.

4,438,160

METHOD OF MAKING A ROTARY BALL DISPLAY DEVICE

Reiji Ishikawa; Masaki Saito; Toshio Mori, and Hidemasa Tamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,546

Claims priority, application Japan, Jan. 18, 1982, 57-5806; Jan. 18, 1982, 57-5807

Int. Cl.³ G09G *3/00*; B05D *7/00*

U.S. Cl. 427—214 **8 Claims**



1. A method of making a rotary ball display device which comprises:

providing a plurality of ball members each having a hemispherical surface of a color different than the other hemispherical surface thereof,

coating said ball members with a thin coating,

settling the coated ball members into a low viscosity liquid to form a layer of coated ball members, said thin coating being insoluble in said low viscosity liquid,

pouring a high molecular weight hardenable coating material soluble in said low viscosity liquid into said coated ball members to cover said layer,

removing said low viscosity liquid,

hardening said hardenable coating material,

dissolving away said thin coating from said ball members to leave cavity portions thereabout, and

introducing a high resistivity liquid into said cavity portions.

4,438,161

IRON-CONTAINING REFRACTORY BALLS FOR RETORTING OIL SHALE

Lyle W. Pollock, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 209,926, Nov. 24, 1980, Pat. No. 4,371,481, which is a division of Ser. No. 9,627, Feb. 6, 1979, Pat. No. 4,360,565, which is a division of Ser. No. 837,130, Sep. 28, 1977, Pat. No. 4,160,719. This application Sep. 30, 1982, Ser. No. 430,627

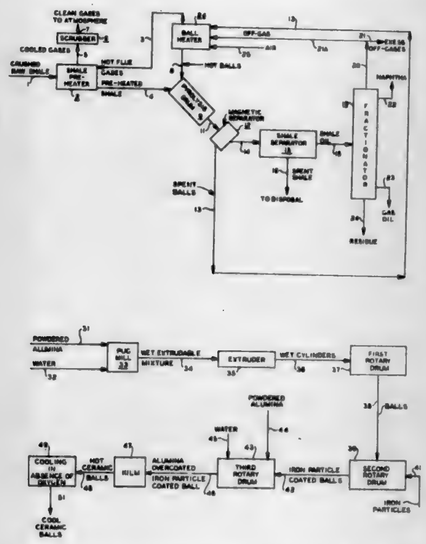
Int. Cl.³ B05D *7/00*; B32B *15/02*

U.S. Cl. 427—215 **5 Claims**

1. A process for preparing iron-containing ceramic balls, containing about 10 to 90 weight percent iron and the balance a high refractory ceramic-alumina, which comprises:

(a) tumbling iron shot with finely divided powdered refractory-grade alumina of about 5 to 10 micron particle size and with sufficient water to provide an alumina coating on each said shot,

(b) heating said alumina coating iron shot to a temperature of about 2800° F. to 3400° F. for a time sufficient to result in said iron-containing ceramic balls, and



(c) cooling said iron-containing ceramic balls in the substantial absence of molecular oxygen,

wherein said iron-containing ceramic balls contain in cross-section a metallic iron core and a ceramic-alumina over-coating.

4,438,163

PAD WITH SHAPE ADAPTING PROPERTIES

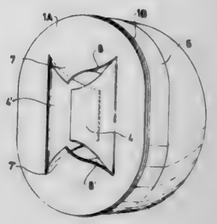
Karl G. B. Andersson, Halmstad, Sweden, assignor to Dual Bila AB, Halmstad, Sweden

Filed May 28, 1981, Ser. No. 268,082

Claims priority, application Sweden, May 30, 1980, 8004063

Int. Cl.³ B32B *23/02*

U.S. Cl. 428—35 **16 Claims**



1. A configuration conforming pad comprising at least two adjacently located superposed layers of flexible material, joined together at the surrounding outer edge portions thereof, each of the layers including an attached tongue-shaped flap defined by cuts in the layer from which it is formed, said tongue-shaped flaps being disposed in overlapping relationship and adapted to be folded out of the plane of their respective layers along the line of attachment and slidesably and overlappingly repositioned to substantially surround and conform to an object placed in the pad.

4,438,162

MODIFIED IONOMER BLEND AND APPLICATION THEREOF

Wayne F. Nelson, Akron, Ohio, assignor to A. Schulman, Inc., Akron, Ohio

Division of Ser. No. 260,180, May 4, 1981, Pat. No. 4,371,583. This application Sep. 17, 1982, Ser. No. 419,528

Int. Cl.³ B32B *31/00, 27/20*

U.S. Cl. 427—318 **6 Claims**

1. A process for preparing a metal edging with a tough, non-glossy adherent coating or inlay which comprises preparing a modified ionomeric blend consisting essentially of an intimate admixture of (1) about 20 to 60 percent of an ethylene-propylene rubber, in which ethylene is the predominant component, (2) about 40 to 80 percent of a copolymer containing ethylene units and carboxylic acid containing units, said copolymer containing between about 25 and 98.5 percent ethylene units and between about 1.5 and 30 percent acid containing units, and said carboxylic acid units being from 10 to 100 percent neutralized with metallic ions, and (3) an effective amount up to about 10 percent of an ultraviolet stabilizing coloring material selected from the group consisting of

(1) carbon black, and

(2) a pigment plus an ultraviolet stabilizer, with or without an antioxidant,

cleaning the metal edging, heating the metal edging and flowing said blend onto a cleaned, heated surface of said metal.

4,438,164

CONTAINERS FOR X-RAY FILMS OR THE LIKE

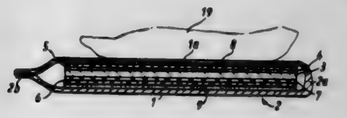
Josef Pfeifer, Unterhaching, and Alfred Rheude, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 134,925, Mar. 28, 1980, abandoned. This application Jan. 20, 1982, Ser. No. 341,193

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912668

Int. Cl.³ G03B *41/16*; B32B *15/08*; B65D *85/48*

U.S. Cl. 428—35 **22 Claims**



1. A container for a sheet-like film, particularly a container wherein a film is inserted between two spaced-apart walls, comprising carrier means consisting essentially of two sheet-like carriers flanking the film; a fluorescent stratum mounted on at least one of said carriers and disposed intermediate said one carrier and the film between said carriers; a magnetic first layer mounted on a first one of said carriers; and a second layer mounted on a second one of said carriers, said layers attracting one another so that said stratum is biased against the film.

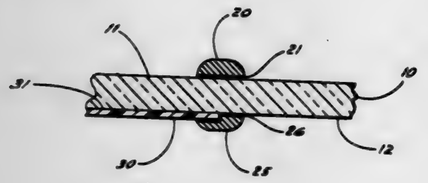
4,438,165
SIMULATED STAINED AND LEADED GLASS WINDOWS

Donald R. Butler, Newport Beach, Calif., assignor to Stained Glass Overlay, Inc., Mission Viejo, Calif.

Continuation-in-part of Ser. No. 158,919, Jun. 12, 1980, Pat. No 4,335,170, which is a continuation of Ser. No. 962,123, Nov. 20, 1978, abandoned. This application Jun. 10, 1982, Ser. No. 386,987

Int. Cl.³ B32B *17/10*; **B44F** *1/06*

U.S. Cl. 428—38 **5 Claims**



1. A simulated stained and leaded glass window structure comprising:

a. a pane substantially clear glass or plastic having a smooth first side and a smooth second side;

b. A plurality of lead strips adhered to the first side of the pane and forming closed design segments thereof;

c. a plurality of polyester plastic film segment coatings having on one side, color coatings simulating stained glass and on their undersurfaces, a pressure-sensitive adhesive coating affixed to the second side of the pane coinciding with the closed design segments, thereby imparting color thereto; and

d. a plurality of second lead strips adhered to the second side of the pane in coincidental alignment with the lead strips adhered to the first side of the pane, and overlaying the joint lines between adjacent plastic film segment coatings.

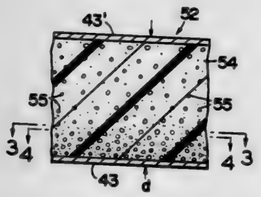
4,438,166
STRUCTURAL LAMINATE AND METHOD FOR MAKING SAME

David G. Gluck, and Leon F. Barry, both of St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Feb. 4, 1983, Ser. No. 463,786

Int. Cl.³ B32B *5/20, 5/28, 31/12*

U.S. Cl. 428—113 **20 Claims**



13. A structural laminate comprising:

(a) a rigid foam having two major, substantially planar, substantially parallel surfaces, one of the major surfaces of the rigid foam being attached to a planar facing sheet, the facing sheet having an adhesive coating disposed on the inner surface thereof and interposed between the facing sheet and the rigid foam, and

(b) a network of glass fibers wherein:

(1) the glass fibers are distributed in the rigid foam,

(2) the glass fibers are greater than one foot in length,

(3) the glass fibers are arranged in layers,

(4) each layer of glass fibers is substantially parallel to the facing sheet, and

(5) the network of glass fibers is secured to the adhesive coating of the facing sheet through attachments between the adhesive coating and glass fibers of the network proximate to the adhesive coating.

4,438,167
NOVEL POROUS FABRIC

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Biax Fiberfilm Corporation, Neenah, Wis.

Division of Ser. No. 85,228, Oct. 15, 1979. This application Nov. 6, 1980, Ser. No. 204,578

Int. Cl.³ B32B *3/10*

U.S. Cl. 428—138 **4 Claims**

1. A porous fabric comprised of a web of elongated synthetic thermoplastic fibers imbedded in a film of a synthetic polymer, said web of elongated synthetic fibers imbedded in said film of said synthetic polymer being biaxially stretched, said thermoplastic fibers and said synthetic polymer exhibiting a difference in aqueous contact angle of at least 5° and a difference in initial tensile modulus of 5000 psi between a web of said thermoplastic fibers and a film of said synthetic polymer when individually stretched, said porous fabric having surface openings of at least 100,000 perforations per square inch.

4,438,168
COMPOSITE HEAT SHIELD

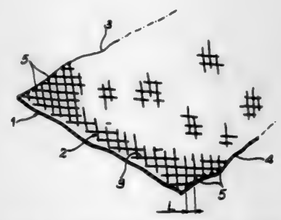
Olivier Testard, Bures sur Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 22, 1982, Ser. No. 400,888

Claims priority, application France, Jul. 30, 1981, 81 14868

Int. Cl.³ B32B *23/02*

U.S. Cl. 428—193 **9 Claims**



1. A heat shield comprising at least one thermally insulating assembly formed by a reflecting layer and a spacing layer, wherein the spacing layer is made from tulle, and wherein the spacing layer and the reflecting layer are welded to one another at their edges.

4,438,169
COLORED OPAQUE PRINTING OF TEXTILE FABRICS USING DYESTUFFS

John Y. Daniels, Pineville, N.C., and James C. Stevenson, Rock Hill, S.C., assignors to Springs Industries, Inc., Fort Mill, S.C.

Continuation-in-part of Ser. No. 429,794, Sep. 30, 1982, which is a continuation-in-part of Ser. No. 294,782, Aug. 20, 1981, abandoned. This application Oct. 22, 1982, Ser. No. 435,949

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—196 **12 Claims**

1. A printed textile fabric formed of interengaged yarns of a predetermined color, selected areas of said fabric having printed pattern areas of predetermined color contrasting with the color of said yarns, said printed pattern areas being substantially opaque and thus unaffected by the color of said yarns, and said pattern areas comprising an opaque coating covering the exposed surfaces of the interengaged yarns and hiding the underlying color of the yarns, said coating comprising an opacifying pigment providing opacity in said coating and a



cured water insoluble polymer binder affixed to said yarns and bonding said opacifying pigment to the yarns, and a dye coloring said polymer binder and thereby imparting said predetermined color to the printed area.

4,438,170
ELECTROSENSITIVE RECORDING MATERIALS WITH HETEROGENEOUS SURFACE TOPOLOGY

John P. McCue, Holyoke, Mass., assignor to Philip Morris Industrial Incorporated, New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,610

Int. Cl.³ B44D *1/16*; **G01D** *15/08*

U.S. Cl. 428—207 **6 Claims**

1. In electrosensitive recording materials of the type including (a) a substrate web, (b) an intermediate colored layer on a surface of the substrate web, and (c) a vacuum-deposited metal layer over the intermediate layer, which recording materials develop an image when portions of the metal layer are vaporized when subjected to electric current from a printhead in contact therewith to thereby expose portions of the colored intermediate layer,

the improvement wherein:

(1) the substrate is a web of paper of plastic film with a first surface having a smoothness of 20 or less Sheffield units and an ink absorption characteristic providing a brightness loss of 10 to 40 units;

(2) the intermediate layer is on the first surface of the substrate web and includes

(a) a thermally stable organic film-forming binder,

(b) small-sized solid parrticulates having a particle size range of 0.1 to 2.0 microns average diameter, and

(c) large-sized solid particulates having a particle size range of 2 to 39 microns with a median particle size of 3 to 12 microns,

the binder forming a film adhering the small-sized and large-sized particulates to the first surface of the substrate, the particulates being partially embedded in the film with the large-sized particulates having portions protruding from the film and extending beyond portions of the small-sized particulates protruding from the film, the intermediate layer thereby having a heterogeneous surface topology formed by the small-sized particulates dispersed within agglomerates of the large-sized particulates; and

(3) the vacuum-deposited metal layer is a thin even layer of metal extending over and conforming to the heterogeneous surface topology of the intermediate layer.

4,438,171
COEXTRUDED PRODUCT OF AES-THERMOPLASTIC GRAFT COPOLYMER

John M. Wefer, Newtown, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,599

Int. Cl.³ B32B *7/02, 27/08*

U.S. Cl. 428—215 **7 Claims**

1. A coextruded product having a total thickness of from 25 to 500 mils, and at least one surface layer having a thickness of from 3 to 150 mils of graft copolymer composition comprising a graft copolymer of resin-forming material selected from vinyl aromatic, alkenoic nitrile, alkenoic ester and alkenoic acid monomers on ethylene-propylene-dicyclopentadiene terpolymer rubber, said surface layer containing up to 10 parts by weight of pigment per 100 parts of graft copolymer composition.

4,438,172
HEAT RETAINING SHEET

Ando Katsutoshi, and Nishiura Eiichi, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

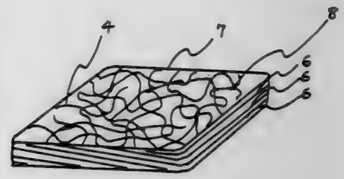
PCT No. PCT/JP81/00115, § 371 Date Jan. 27, 1982, § 102(e) Date Jan. 27, 1982, PCT Pub. No. WO81/03503, PCT Pub. Date Dec. 10, 1981

PCT Filed May 27, 1981, Ser. No. 354,097

Claims priority, application Japan, May 28, 1980, 55-72516; Dec. 2, 1980, 55-169176

Int. Cl.³ B32B *27/02, 27/36*

U.S. Cl. 428—220 **32 Claims**



1. A heat retaining sheet comprising a web formed by mutually bonding fibers containing polybutylene terephthalate, said fibers having a definite fiber length, being substantially undrawn and substantially uncrimped and having an average fineness of up to about 15 denier and a fineness distribution ranging from 0.001 to 40 denier, said web having area shrinkage in boiling weter of up to about 20%.

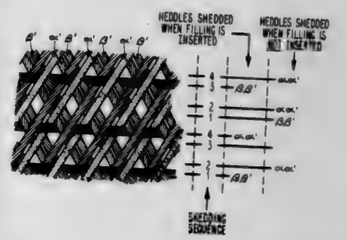
4,438,173
TRIAXIAL FABRIC

Wayne C. Trost, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Jul. 21, 1983, Ser. No. 515,786

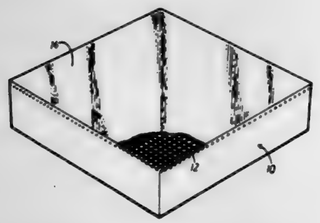
Int. Cl.³ B32G *7/08*

U.S. Cl. 428—221 **15 Claims**



1. A pliable, triaxial fabric comprising at least three sets of interwoven, angularly intersecting parallel yarn courses, at least one of said sets including at least one unstabilized yarn course substantially free of interwoven relationships with intersecting yarn courses, the remaining yarn courses being substantially interwoven with intersecting yarn courses, said fabric being weavable on a conventional, bi-plain triaxial fabric-forming machine.

4,438,174
POLYESTER ANTISTATIC LAMINATE MATERIALS
Bruce R. Whewell, 7 Singers Close, Henley-on-Thames, Oxfordshire, England
Filed May 13, 1982, Ser. No. 377,783
Claims priority, application United Kingdom, Jul. 14, 1981, 8121590
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—247 **9 Claims**



1. An anti-static laminate material comprising
a thin polyester resin layer,
an electrically conductive mesh disposed within said resin layer at or immediately below its operationally upper surface,
said electrically conductive mesh being selected from the group consisting of glass cloth tissue, impregnated with a dispersion of carbon particles, and thin carbon-fibre mesh, and
one or more backing layers of polyester resin and/or conventional fibre-glass.

4,438,175
SYNTHETIC FILM WITH A PAPER-LIKE SURFACE AND METHOD OF FORMING SAME
Charles R. Asheraft, Victor, and Kurt D. Albertson, Macedon, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 28, 1983, Ser. No. 489,426
Int. Cl.³ B32B *3/26, 7/02*
U.S. Cl. 428—315.5 **23 Claims**

1. An oriented polymeric film structure comprising:
at least one layer of a thermoplastic polymeric matrix material, within which is located a strata of voids, positioned at least substantially within at least a substantial number of said voids at least one void-initiating solid particle which is phase-distinct and incompatible with said matrix, the void space occupied by said particle being substantially less than the volume of said void, with one generally cross-sectional dimension of said particle at least approximately a corresponding cross-sectional dimension of said void, at least one surface of said layer being of a paper-like, non-even, micro-rough, microcrater-containing lamellae-like, random textured, ink-acceptable configuration.

4,438,176
THERMOPLASTIC COATED FILMS WITH ANTI-STATIC PROPERTIES
Robert H. Steiner, Rochester, and Robert E. Touhsaent, Fairport, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation of Ser. No. 970,719, Dec. 18, 1978, abandoned. This application Jan. 12, 1983, Ser. No. 457,533
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—349 **2 Claims**

1. A multi-layer thermoplastic film of improved anti-static characteristics consisting essentially of a film substrate consisting essentially of polypropylene having coated on at least one surface thereof a primer coating consisting essentially of poly-(ethylene-imine), said primer coating having a topcoating thereon comprising a vinylidene chloride polymer in admixture with an anti-static proportion of a low molecular weight glycol, said vinylidene chloride top coating retaining its inherent heat seal characteristics.

4,438,177
CURED PRESSURE SENSITIVE ADHESIVES
William D. Potter, Bishop's Stortford Herts, and Sinan B. Kismil, Harlow, both of United Kingdom, assignors to Smith and Nephew Associated Companies Ltd., London, England
Filed Jun. 16, 1982, Ser. No. 389,009
Claims priority, application United Kingdom, Jun. 17, 1981, 81-18666
Int. Cl.³ B05D *3/06*
U.S. Cl. 428—355 **16 Claims**

1. Process for the preparation of an adhesive layer on a substrate which comprises applying to a substrate a composition of an acrylate rendered curable by the presence of a crosslinking agent and curing it by electron beam radiation characterised in that the curable composition consists essentially of a liquid alkyl acrylate polymer having a K value of 10 to 30 and a polyfunctional acrylate or methacrylate crosslinking agent said liquid alkyl acrylate polymer containing copolymerisable polyfunctional acrylate or methacrylate monomer units to provide an additional crosslinking agent.

14. An industrial tape carrying a cured acrylate pressure sensitive adhesive made by the process of claim 1.

15. A surgical dressing carrying a cured acrylic pressure sensitive adhesive made by the process of any claim 1.

4,438,178
ADHESIVE ACTIVATED POLYESTER FIBROUS MATERIAL
Edward J. Powers, Louisville, Ky., assignor to Fiber Industries, Inc., Charlotte, N.C.
Filed Oct. 27, 1982, Ser. No. 437,043
Int. Cl.³ D04H *1/58;* B32B *27/34;* D02G *3/00*
U.S. Cl. 428—289 **11 Claims**

1. A multi-filament polyester fibrous material for incorporation into rubber which is coated with a finish comprising, as the active ingredient, a composition of the formula: R—(O—$CH_2CHOH—CH_2—Cl)_x$ wherein R represents the residue of a polyhydric alcohol or polycarboxylic acid and contains up to 20 carbon atoms and x represents a number greater than one.

4,438,179
RESIN PARTICLES WITH MAGNETIC PARTICLES BONDED TO SURFACE
Jitka Solc, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Feb. 3, 1982, Ser. No. 345,305
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—407 **2 Claims**

1. A synthetic resinous particle having a diameter of from about 1–150 microns, the particle having bonded to the surface thereof a coating comprising a magnetic layer, the magnetic layer being of flocculated magnetic particles being bonded to the surface thereof, the bonding layer comprising a water swellable polymer grafted to the surface of the particle.

4,438,180
PROCESS FOR COATING NYLON FILM WITH VINYLIDENE CHLORIDE COPOLYMERS
Theodore J. Lang, and Bernard J. Kershaw, both of Kingston, Canada, assignors to Du Pont Canada Inc., Mississauga, Canada
Filed Aug. 16, 1982, Ser. No. 408,492
Claims priority, application Canada, Aug. 27, 1981, 384698; Dec. 1, 1981, 391235
Int. Cl.³ B23B *27/08*
U.S. Cl. 428—475.8 **10 Claims**

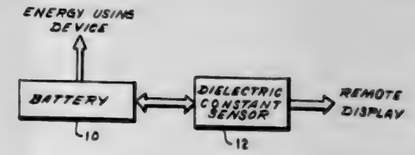
1. A nylon film coated with a vinylidene chloride copolymer, said film having been prepared by a process comprising:
(a) coating the nylon film with an aqueous dispersion of a vinylidene chloride copolymer while keeping the nylon film under sufficient machine and transverse direction tensions to prevent curling, to form a primer-coated film, said vinyldiene chloride copolymer having a crystallinity index of less than 1.15, when dry, after 30 days' storage at 20° C., and a crystallinity index, when dry, between about 1.05 and 1.20 when stored for 48 hours at 40° C.;
(b) drying the primer-coated film to remove substantially all of the water from the dispersion, while maintaining the primer-coated film under said machine and transverse direction tensions and at a drying rate sufficiently high to prevent curling of the primer-coated film;
(c) coating the primer-coated film with an aqueous dispersion of a vinylidene chloride copolymer which, when dry, is capable of developing crystallinity to a level sufficient that the crystalline vinylidene chloride copolymer so-formed resists attack by an organic solvent, as measured by the Solvent Haze Test, said organic solvent being capable of dissolving vinylidene chloride copolymers having a crystallinity index of less than 1.05, to form a vinylidene chloride copolymer coated film; and
(d) drying the vinylidene chloride copolymer coated film.

4,438,181
ELECTRONIC COMPONENT BONDING TAPE
Jon M. Schroeder, 4327 Estate Dr., Stockton, Calif. 95209, assignor to Jon M. Schroeder, Stockton, Calif.
Filed Jan. 13, 1981, Ser. No. 224,668
Int. Cl.³ H01L *23/48*
U.S. Cl. 428—571 **7 Claims**



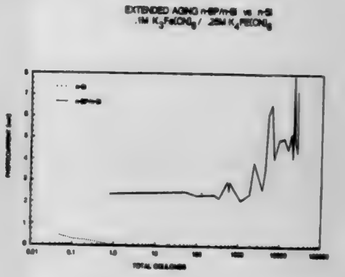
1. An integral, preformed tape for thermocompression bonding comprising:
a tape of conductive material with first bonding surface and a pressure pad surface opposite to the bonding surface with a contact pad bonding pressure pad protruding from said pressure pad surface, said tape having formed thereon a chip bonding site wherein apertures are formed through said tape to establish longitudinal edges of an electrically conductive lead, said lead having a contact pad terminal end region for bonding to an electrical contact pad formed on a surface of an electronic component chip, said contact pad bonding pressure pad being formed from a material which is harder than said tape material in the thermocompression bonding temperature range and located so as to protrude from said pressure pad surface at said contact pad terminal end region.

4,438,182
METHOD OF DETERMINING BATTERY LIFE
Harold A. Papazian, Littleton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sep. 30, 1982, Ser. No. 431,496
Int. Cl.³ H01M *6/00*
U.S. Cl. 429—91 **4 Claims**



1. A method of determining the status of a battery comprising the steps of:
measuring a dielectric constant of an electrolyte of the battery;
comparing the dielectric constant obtained during said measuring to predetermined values, the predetermined values indicating battery status at the measured dielectric constant; and
outputting the status of the battery based upon said step of comparing the measured dielectric constant to said predetermined values.

4,438,183
PHOTOELECTROCHEMICAL CELL HAVING PHOTOANODE WITH THIN BORON PHOSPHIDE COATING AS A CORROSION RESISTANT LAYER
Richard J. Baughman, and David S. Ginley, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Aug. 25, 1982, Ser. No. 411,396
Int. Cl.³ H01M *6/36*
U.S. Cl. 429—111 **8 Claims**



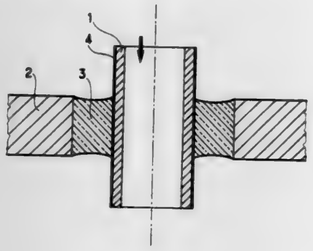
1. In a photoelectrochemical cell device comprising a photoanode, the improvement comprising a film of boron phosphide on said photoanode as a stable photoelectrode layer and as a corrosion resistant protecting film for said photoanode, whereby the surface of said photoanode is rendered resistant to electrocorrosion and photocorrosion and thereby stabilized and simultaneously provided with photoresponse properties.

4,438,184

SEALED PASSAGE FOR A NEGATIVE TERMINAL THROUGH A METAL WALL, AND ELECTRIC CELL USING SAID SEALED PASSAGE

Bernard Chenaux, Poitiers, France, assignor to Gipelec, Levallois-Perret, France

Filed Jul. 12, 1982, Ser. No. 397,436
Claims priority, application France, Jul. 21, 1981, 81 14151
Int. Cl.³ H01M 2/06
U.S. Cl. 429—181 **6 Claims**



1. A sealed passage for a negative terminal through a metal wall, wherein the sealing between said terminal and the metal wall is provided by a glass seal, and wherein at least that portion of the terminal which comes into contact with the glass seal is covered with a layer of at least one electrically insulating oxide.

4,438,185

HYDROPHILIC POLYMER COATED MICROPOROUS MEMBRANES CAPABLE OF USE AS A BATTERY SEPARATOR

Henry T. Taskier, Fanwood, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 174,146, Jul. 31, 1980, Pat. No. 4,359,510. This application Sep. 3, 1982, Ser. No. 414,747
Int. Cl.³ H01M 2/16
U.S. Cl. 429—250 **4 Claims**

1. A process for rendering a normally hydrophobic microporous membrane hydrophilic and reducing the electrical resistance thereof which comprises applying a coating to the surface of said membrane in a manner sufficient to achieve a coating thickness when dry of from about 1 to about 25 microns, said coating being selected from the group consisting of cellulose esters, and polyvinyl alcohol, and impregnating said membrane with a surfactant in a manner and in at least an amount sufficient to render the membrane hydrophilic in the absence of said coating.

4,438,186

ELECTROPHOTOGRAPHIC PROCESS AND PHOTOSENSITIVE SCREEN FOR USE IN SUCH PROCESS

Eiichi Sato, Tama; Akira Shimizu, Fuchu, and Kazuhisa Yanagisawa, Mitaka, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Continuation of Ser. No. 913,907, Jun. 8, 1978, abandoned. This application Jun. 19, 1981, Ser. No. 275,588
Claims priority, application Japan, Jun. 9, 1977, 52-68118; Jun. 17, 1977, 52-71142; Jun. 17, 1977, 52-71143; Jun. 17, 1977, 52-71144; Jun. 17, 1977, 52-71145; Jun. 17, 1977, 52-71146
Int. Cl.³ G03G 15/00
U.S. Cl. 430—53 **22 Claims**

1. A process for electrophotographically forming a duplicated copy of a document with the aid of a photosensitive screen defined by an electrically conductive sheet-like member having a plurality of fine apertures, a first photoconductive layer applied on one side of the conductive memeber, a second photoconductive layer applied on the other side of the conductive member, an electrically insulating layer applied on the second photoconductive layer, said sheet-like conductive member being completely covered with said first and second photoconductive layers and the insulating layer, whereby corona ions do not flow directly into said sheet-like conductive member when said member is exposed to a corona discharge, said process including the steps of: forming a primary electrostatic charge image of the document; subjecting the insulating layer side of said photosenstive screen simultaneously to an imagewise exposure corresponding to the image of the document and to an electrostatic charge while the first photoconductive layer is maintained highly resistive in an imagewise dark portion; subjecting at least the first photoconductive layer of the screen to a uniform exposure so as to form a primary charge image having a high surface potential and trapped capacitively across the insulating layer in a stable manner, any other portion of the screen being free from any charge; positioning a charge retentive member opposite the insulating layer side of said photosensitive screen; and forming a secondary electrostatic charge image on the charge retentive member by projecting an ion stream toward the charge retentive member through the photosensitive screen from the side of the first photoconductive layer, while the first photoconductive layer is maintained highly conductive, whereby any charge which might deteriorate the primary charge image on the screen is inhibited from deposit on the first photoconductive layer and the ion stream is modulated in accordance with the primary charge image on the screen.

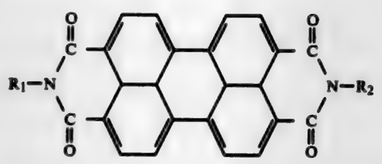
4,438,187

PHOTOSENSITIVE COMPOSITION FOR ELECTROPHOTOGRAPHY WITH CHLORONAPHTHOQUINONES

Akira Fushida, Suita, and Yoshiaki Kato, Hirakata, both of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Apr. 7, 1982, Ser. No. 366,331
Claims priority, application Japan, Apr. 6, 1981, 56-50579
Int. Cl.³ G03G 5/06, 5/07, 5/09
U.S. Cl. 430—81 **7 Claims**

1. A photosensitive plate for electrophotography, consisting essentially of an electrically conductive support and a photosensitive layer thereon, said photosensitive layer comprising 100 parts by weight of polyvinylcarbazole, 10 to 30 parts by weight of a perylene pigment represented by the following general formula



(2)

wherein R_1 and R_2 is a hydrogen atom or a substituted or unsubstituted alkyl or aryl group,

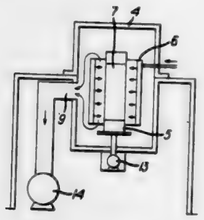
and 10 to 30 parts by weight of 2,3-dichloro-1,4-naphthoquinone.

4,438,188

METHOD FOR PRODUCING PHOTOSENSITIVE FILM FOR ELECTROPHOTOGRAPHY

Michiro Shimatani, Fujisawa, and Toyoki Kazama, Yokosuka, both of Japan, assignors to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed Jun. 10, 1982, Ser. No. 387,221
Claims priority, application Japan, Jun. 15, 1981, 56-91753; Sep. 24, 1981, 56-150946; Sep. 24, 1981, 56-150948
Int. Cl.³ G03G 5/082
U.S. Cl. 430—128 **9 Claims**



1. In a method of producing a photosensitive film on a substrate surface including generating a glow discharge in a space between a cylindrical conductive substrate coaxially supported by a rotatable support arranged in a reaction chamber and a cylindrical electrode coaxially opposed to the surface of said cylindrical conductive substrate to decompose a reaction gas introduced into said reaction chamber, said method comprising previously cleaning said surface of said substrate, and supplying or exhausting said reaction gas to or from said space between said substrate and said electrode so as to be uniformly dispersed in an axial direction of at least said substrate.

4,438,189

RADIATION-POLYMERIZABLE MIXTURE AND PHOTOPOLYMERIZABLE COPYING MATERIAL PREPARED THEREFROM

Ulrich Geissler, Frankfurt, and Walter Herwig, Bad Soden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 12, 1982, Ser. No. 407,488
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134123
Int. Cl.³ G03C 1/68
U.S. Cl. 430—280 **24 Claims**

1. A radiation-polymerizable mixture consisting essentially of (a) a compound which has at least two terminal ethylenically unsaturated groups and which can form a crosslinked polymer by free radical initiated chain addition polymerization (b) a polymeric binder which is insoluble in water and at least swellable in aqueous alkaline solutions, (c) a radiation-activatable polymerization initiator, and (d) a compound which is thermally crosslinkable with a material selected from the group consisting of the polymeric binder (b), the polymerization product of compound (a), and itself, and which, if the crosslinking groups of said compound (d) are epoxy groups, has at least three epoxy groups.

4,438,190

PHOTOSENSITIVE RESIN COMPOSITION CONTAINING UNSATURATED MONOMERS AND UNSATURATED PHOSPHATES

Toshiaki Ishimaru; Katsushige Tsukada, and Nobuyuki Hayashi, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,765
Claims priority, application Japan, Mar. 4, 1981, 56-31808; Mar. 10, 1981, 56-34779
Int. Cl.³ G03C 1/68
U.S. Cl. 430—281 **14 Claims**



1. A photosensitive resin composition for the preparation of a solder resist comprising:

(a) at least one compound selected from the group consisting of benzotriazole, benzimidazole, benzothiazole, derivatives thereof and and salts thereof, the derivatives of benzotriazole, benzimidazole, and benzothiazole being those obtained by substituting one or more hydrogen atoms in said compounds with one or more alkyl groups, aryl groups, nitro groups, amino groups, hydroxyl groups, carboxyl groups or halogens,

(b) an unsaturated organic phosphate compound having photopolymerizable ethylenically unsaturated bonds selected from the group consisting of acid phosphoxyethyl methacrylate, 3-chloro-2-acid phosphoxypropyl methacrylate, bis(methacryloxyethyl)phosphate, acryloxyethyl phosphate, bis(acryloxyethyl)phosphate, bis(2-chloroethyl)vinyl phosphate and 1,2-bis(carboxyallyl)ethyldibutyl phosphate,

(c) 20 to 40 parts by weight of a vinyl copolymer,

(d) 20 to 80 parts by weight of a photopolymerizable unsaturated compound having at least one terminal ethylene group, and

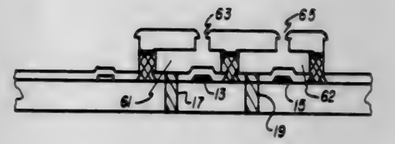
(e) 0.5 to 10 parts by weight of a sensitizer and/or a sensitizer system other than component (a) capable of initiating polymerization of components (b) and (d) upon irradiation of actinic light; the amount of component (a) being about 0.001% by weight or more and the amount of component (b) being about 0.001% by weight or more based on the weight of the photosensitive resin composition.

4,438,191

MONOLITHIC INK JET PRINT HEAD

Frank L. Cloutier; Robert N. Low, both of Corvallis, and Paul H. McClelland, Monmouth, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 23, 1982, Ser. No. 443,971
Int. Cl.³ G01D 15/18
U.S. Cl. 430—324 **12 Claims**



1. In a method for constructing a monolithic bubble-driven ink jet print head having a substrate and a heat source attached to said substrate for producing bubbles, the steps comprising:

forming an electrically conductive foundation surrounding said heat source, said foundation attached to said substrate;
applying a first resist over said substrate and said heat source;
exposing said first resist to define a wall over said foundation, said wall forming a perimeter surrounding said heat source;
removing those portions of said first resist where said wall is to be located;
depositing a first metal layer onto said foundation to form said wall;
forming a conductive surface over the remaining portions of said first resist which are contained within said perimeter;
applying a second resist over said conductive surface;
exposing said second resist to define an orifice;
depositing a second metal layer over said wall and said conductive surface; and
stripping away said first and second resist and those portions of said conductive surface formed over said first resist, to provide a monolithic print head with a void therein defined by said wall and said metal layer, and to provide an orifice in said second metal layer, said void communicating with said orifice.

4,438,192
PHOTORESIST STRIPPER COMPOSITION AND METHOD OF USE

Wesley L. Archer, Midland, Mich.; Vicki A. Lynn, Indianapolis, Ind., and Susan M. Dallessandro, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 14, 1983, Ser. No. 465,975
Int. Cl.³ B08B *3/08*; C11D *7/50*; C23G *5/02*
U.S. Cl. 430—329 9 Claims

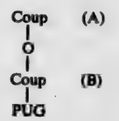
1. A composition suitable for stripping cross-linked photoresist polymer which comprises methylene chloride containing methanol and methyl formate, each in amounts of from about 1 to about 10 percent by volume of the total mixture, providing that the total amount of methanol and methyl formate is at least about 5 and not more than about 10 volume percent of the total mixture.

4,438,193
SILVER HALIDE PHOTOSENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Morito Uemura; Kenichi Kishi; Satoshi Nakagawa, and Shuji Kida, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,962
Claims priority, application Japan, Dec. 27, 1980, 55-188974
Int. Cl.³ G03C *1/46, 7/26*
U.S. Cl. 430—505 9 Claims

1. A silver halide photosensitive color photographic material comprising a coupler of the formula



wherein Coup (A) is a non-diffusion type coupling component (A) bonded to the oxygen atom at a position which enables Coup (A) to form a colored or colorless compound as a result of coupling with and releasing from an oxidized color developing agent, Coup (B) is a diffusion type coupling component (B) which is bonded to the oxygen atom in a position which enables Coup (B) to split off from said Coup (A) and form a coupling reaction product with said oxidized color developing agent, and PUG is a development inhibitor which is released when Coup (B) undergoes said coupling reaction.

4,438,194
SILVER HALIDE COLOR PHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

Fumio Hamada, Fussa, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed Mar. 19, 1982, Ser. No. 359,914
Claims priority, application Japan, Mar. 20, 1981, 56-42117
Int. Cl.³ G03C *1/46*
U.S. Cl. 430—505 4 Claims

1. A silver halide color photographic photosensitive material comprising a base having thereon a non-photosensitive intermediate layer sandwiched between a high-sensitive silver halide emulsion layer and a low-sensitive silver halide emulsion layer both having a nondiffusion coupler that forms substantially the same color and having photosensitivity in substantially the same spectral region, said non-photosensitive intermediate layer having been incorporated therein with a nondiffusion coupler that forms substantially the same color as that formed by the nondiffusion coupler contained in said high-sensitive emulsion layer and whose coupling speed is not greater than that of the nondiffusion coupler contained in said high-sensitive silver halide emulsion layer.

4,438,195
PHOTOGRAPHIC RECORDING MATERIAL CONTAINING A DEVELOPER COMPOUND

Friedrich-Wilhelm Kunitz, Leverkusen, and Karl-Wilhelm Schranz, Odenthal, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 3, 1982, Ser. No. 438,965
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145288
Int. Cl.³ G03C *1/06*
U.S. Cl. 430—566 7 Claims

1. In a photographic recording material comprising at least one light-sensitive silver halide emulsion layer and at least one layer containing a silver-halide-developer compound containing at least one amino group, the improvement according to which the silver-halide-developer compound is contained in the layer in salt form bound to an ion exchanger.

4,438,196
IMMOBILIZATION OF BIOCATALYSTS ON GRANULAR CARBON

Oreste J. Lantero, Jr., Goshen, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 28, 1982, Ser. No. 425,942
Int. Cl.³ C12P *19/20*; C12N *11/02, 11/08, 11/06*
U.S. Cl. 435—96 18 Claims

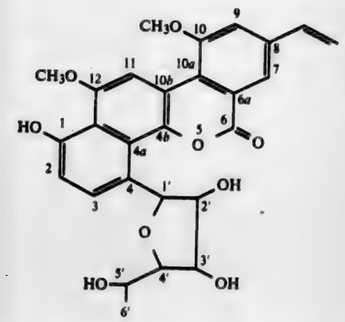
9. An immobilized enzyme conjugate comprising porous, granular, activated carbon having a particle size of from 12 to 40 mesh on the U.S. sieve series, pore dimensions of from 35 to 1,000 Å in radius and a surface area of from 200 to 600 m^2/gm as a support having attached thereto the reaction product of a polyamine compound having pendant amine groups, an amine reactive material which is a multifunctional aldehyde, a multifunctional organic halide, a multifunctional anhydride, a multifunctional azo compound, a multifunctional isothiocyanate or a multifunctional isocyanate whose unreacted amine reactive groups have been reacted with free amine groups of the enzyme to bind it thereto.

4,438,197
COMPOUND DC-38-V AND PROCESS FOR PRODUCTION THEREOF

Fusao Tomita, Machida; Yuzuru Matsuda, Koganei; Kunikatsu Shirahata; Keiichi Takahashi, both of Machida; Hirofumi Nakano; Tomoyasu Sato, both of Machida; Shuji Okubo, Matsudo, and Nobuo Nakamura, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 175,324, Aug. 4, 1980, Pat. No. 4,340,725.
This application Apr. 16, 1982, Ser. No. 369,000
Claims priority, application Japan, Aug. 3, 1979, 54-98656
Int. Cl.³ C07G *11/00*
U.S. Cl. 435—119 4 Claims

1. A process for producing a compound of the formula



and which is characterized by an infrared absorption spectrum substantially as shown in FIG. 1, an ultraviolet absorption spectrum substantially shown in FIG. 2, a molecular weight of 494 determined by mass spectrometry and a molecular formula of $C_{27}H_{26}O_9$, which comprises culturing a microorganism belonging to the genus Streptomyces which is capable of producing said compound, in a nutrient medium until substantial antibacterial activity is detected in the culture liquor and thereafter recovering said compound therefrom.

4,438,198
BIOCHEMICALLY ACTIVE MATRIX FOR USE IN A BIO-ARTIFICIAL ORGAN

Gottfried Schmer, Seattle, Wash., assignor to Trimedyne, Inc., Arlington Heights, Ill.

Filed Sep. 30, 1981, Ser. No. 307,073
Int. Cl.³ C12N *11/10, 11/02, 11/06*; C12M *1/40*
U.S. Cl. 435—178 10 Claims

1. A biochemically active matrix suitable for use in a bio-artificial organ comprising at least one biochemically active enzyme covalently bonded to the surface of a carrier matrix of organochemically cross-linked fibrin through a reactive group of the enzyme which is not essential for its enzymatic activity and suspended in a medium of agarose which irreversibly solidifies below 37° C.

4,438,199
MEASURING COMPOSITION

Naoto Miwa, Ibaragi, and Hiroshi Nakajima, Uji, both of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo and Unitika Ltd., Amagasaki, both of, Japan

Filed May 26, 1981, Ser. No. 267,245
Claims priority, application Japan, May 26, 1980, 55-69880
Int. Cl.³ C12N *9/04, 9/10*; C12Q *1/32, 1/48*
U.S. Cl. 435—190 3 Claims

1. An analytical composition, consisting of:
from 0.1 to 20 μ/ml glucokinase and from 1 to 20 μ/ml glucose-6-phosphate dehydrogenase either one or both of said enzymes being thermostable and being obtained by extraction of a species of thermophilic bacteria.

4,438,200
METHOD FOR THE PREPARATION OF GLUCOSYLRANFERASE

Martin A. Taubman, Newton, and Daniel J. Smith, Natick, both of Mass., assignors to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Sep. 13, 1982, Ser. No. 416,869
Int. Cl.³ C12N *9/10*
U.S. Cl. 435—193 14 Claims

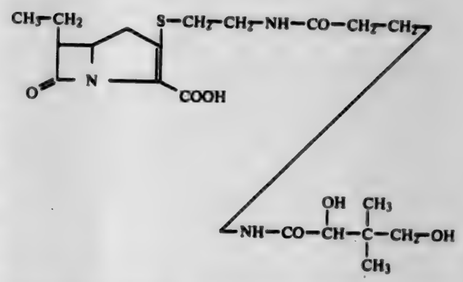
1. A method for preparing glucosyltransferase (GTF) useful for immunization against dental caries, which method comprises:
(a) culturing *Streptococcus mutans* in a medium containing glucose and dialyzable nutrients, to form a mixture of culture cells and supernatant, the supernatant containing GTF;
(b) removing the culture cells and recovering the culture supernatant containing the GTF;
(c) admixing the supernatant containing the GTF with a water-insoluble polyglucan in solid particulate bead form, for a time period sufficient to provide for the binding of the GTF to the polyglucan bead material, to provide a GTF-polysaccharide bead complex;
(d) recovering the GTF water-insoluble bead complex from the supernatant;
(e) washing the GTF water-insoluble polysaccharide complex to remove unbound GTF and medium compounds from the polyglucan bead material;
(f) contacting the GTF water-insoluble polyglucan bead complex with a denaturing solvent, to break the bond between the water-insoluble polyglucan and the GTF, to provide a GTF-denaturing solvent mixture;
(g) recovering the water-insoluble polyglucan bead material; and
(h) concentrating the GTF and purifying the GTF by gel filtration in the denaturing solvent.

4,438,201
AMIDOHYDROLASE HAVING ABILITY TO DEPANTOTHENYLATE AN ANTIBIOTIC

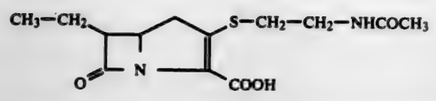
Katsuro Kubo, Fijisawa; Yasuo Fukagawa, Kamakura, and Tomoyuki Ishikura, Chigasaki, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1982, Ser. No. 394,169
Claims priority, application Japan, Jul. 1, 1981, 56-101161
Int. Cl.³ C12N *9/80*; C12P *17/18*; C12R *1/465*
U.S. Cl. 435—228 4 Claims

1. Amidohydrolase, having the ability to depantothenylate antibiotic OA-6129A represented by the formula



but no substantial ability to deacetylate antibiotic PS-5 represented by the formula



said amidohydrolase being produced by a carbapenem-producing microorganism of the genus Streptomyces.

4,438,202

STABLE, BASE SERUM COMPOSITIONS AND PREPARATION THEREOF

Philip V. Engler, Tarrytown, and Steven N. Buhl, Nyack, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,791
Int. Cl.³ G01N *33/16, 33/48;* C09K *3/00*
U.S. Cl. 436—8 **31 Claims**

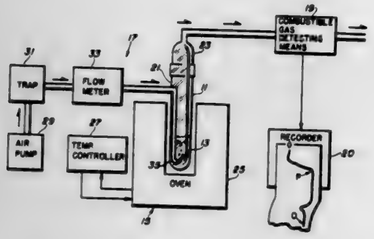
1. A method for preparing a stable, consistent serum having clear optical qualities and improved filterability without significant loss of macromolecular lipid components which comprises the steps of insolubilizing a component or components of said serum by reducing the pH of said serum by an acid addition treatment, separating said insolubilized component or components from the serum and stabilizing the separated serum by raising the pH of said separated serum.

4,438,203

METHOD AND APPARATUS FOR DETERMINATION OF LUBRICANT STABILITY

Henry Wohltjen, Burke, Va.; Paul J. Sniegoski, and Harold Ravner, both of Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1982, Ser. No. 388,356
Int. Cl.³ G01N *33/30*
U.S. Cl. 436—60 **10 Claims**



6. A method for determining the stable lifetime of a lubricant when subjected to oxidizing conditions comprising the steps of:

disposing a sample of the lubricant under test in an oxidation cell;

heating the cell to the oxidation temperature of the lubricant;

bubbling oxygen at a constant flow rate through the cell;

detecting the concentration of combustible gas in the oxygen flowing out of the cell; and

measuring the time elapsing until the onset of a rapid increase in the concentration of combustible gas.

4,438,204

DETERMINATION OF GLYCOSILATED HEMOGLOBIN

Rolf Deeg, Seeshaupt; Urban Schmitt, Tutzing, and Joachim Ziegenhorn, Starnberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,510
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141146
Int. Cl.³ G01N *33/72, 33/66*
U.S. Cl. 436—67 **12 Claims**

1. A process for the determination of glycosilated hemoglobin in a blood sample containing hemoglobin comprised of both glycosilated and non-glycosilated hemoglobin comprising the steps

liberating the glycosilated and non-glycosilated hemoglobin from erythrocytes in the blood sample, and

differentiating the glycosilated and non-glycosilated hemoglobin by reaction with haptoglobin, and

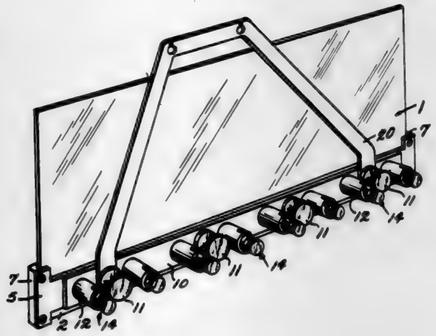
determining the glycosilated and/or the non-glycosilated portion of the hemoglobin.

4,438,205

PROCESS FOR SAMPLING AND ANALYSIS BY THIN LAYER CHROMATOGRAPHY

Didier J. Saint-Leger, Paris, and Andre Abrioux, Drancy, both of France, assignors to "L'Oreal", Paris, France

Filed Jul. 13, 1982, Ser. No. 397,861
Claims priority, application France, Jul. 30, 1981, 81 14816
Int. Cl.³ G01N *31/08, 33/92*
U.S. Cl. 436—71 **7 Claims**



1. A process for sampling and analyzing at least one mixture of substances by thin layer chromatography, said process comprising the steps of:

(a) sampling the said mixture by means of a non-adsorbent solid support;

(b) depositing the thus sampled mixture on a chromatography plate by pressing the said non-adsorbent support, by its face which bears the mixture to be analyzed, directly against an edge zone of the said chromatography plate;

(c) bringing the said edge of the chromatography plate into contact with a solvent or a mixture of solvents, so as to cause the migration of the mixture on the chromatography plate and the separation of the constituents of the said mixture; and

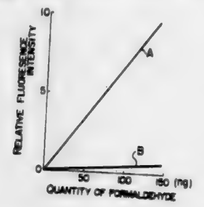
(d) developing the said plate for at least one of the qualitative and quantitative analysis of the constituents of the mixture by keeping the said support pressed against the chromatography plate until the mixture to be analyzed has essentially migrated entirely out of the said support.

4,438,206

METHOD FOR DETERMINATION OF FORMALDEHYDE

Motoo Nakajima, and Kiyoshi Mizusawa, both of Noda, Japan, assignors to Kikkoman Corporation, Noda, Japan

Filed Nov. 15, 1982, Ser. No. 441,926
Claims priority, application Japan, Nov. 19, 1981, 56-184492
Int. Cl.³ G01N *21/64, 21/77*
U.S. Cl. 436—130 **4 Claims**



1. In a method of formaldehyde determination by measuring the fluorescence of a fluorescent substance formed by allowing a formaldehyde-containing solution to react with an acetylacetone reagent capable of forming said fluorescent substance from formaldehyde, the improvement comprising measuring the fluorescence in the presence of a serum albumin.

4,438,207

RADIOIMMUNOASSAY FOR CANNABINOIDS

Kenneth E. Fahrenholtz, Bloomfield, and John E. Heveran, Fairfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 79,125, Sep. 26, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 254,022
Int. Cl.³ G01N *33/54;* C07G *7/00;* C07D *311/78*
U.S. Cl. 436—543 **15 Claims**

5. An immunogen comprising bovine serum albumen and (6aR,10aR)-4-[(6a,7,10,10a-tetrahydro-6,6,9-trimethyl-3-pentyl-6H-dibenzo[b,d]pyran-1-yl)oxy]butanoic acid.

4,438,208

REGION-SPECIFIC DETERMINANTS FOR VITAMIN K DEPENDENT BONE PROTEIN

Leonard J. Deftos, Del Mar, and Bayard D. Catherwood, San Diego, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed May 27, 1982, Ser. No. 382,844
Int. Cl.³ G01N *33/54, 33/56, 33/58;* C07C *103/52*
U.S. Cl. 436—542 **18 Claims**

1. An oligopeptide capable of competing with hBGP for an antibody specific for hBGP which comprises:

an amino acid sequence of from 10 to 16 amino acids, wherein terminal sequences of said oligopeptide include the terminal amino acids of hBGP and up to three amino acids can be substituted with different amino acids, except that not more than one amino acid substitution can involve an exchange other than Phe and Tyr or Glu and Gla.

4,438,209

RADIOIMMUNOASSAY FOR FIBRINOPEPTIDE A

Larry D. Mosier, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Jul. 17, 1981, Ser. No. 284,152
Int. Cl.³ G01N *33/56, 33/58, 33/60*
U.S. Cl. 436—542 **11 Claims**

1. In a competitive radioimmunoassay method for determining the concentration of fibrinopeptide A in plasma wherein first, a sample of blood is collected, the thrombin in said sample is inhibited by an inhibiting amount of a thrombin inhibitor and plasma is separated from said sample, and second, a sample of said plasma is contacted under radioimmunoassay competitive binding conditions with a sufficient amount of an antibody to fibrinopeptide A and radioactively labelled fibrinopeptide A, thereafter, antibody bound fibrinopeptide A is separated from the unbound fibrinopeptide A and radioactivity measured, the improvement comprising using as the inhibitor for thrombin an inhibitor selected from the group consisting of D-phenylalanyl-L-propyl-L-N-[2(1-chloro-7-guanidoheptane-2-one)] the hydrochloric acid addition salt thereof; the hydroflouric acid addition salt thereof, the acetic acid addition salt thereof and the citric acid addition salt thereof.

4,438,210

TRANSPARENT COLORLESS GLASS-CERAMICS ESPECIALLY SUITABLE FOR USE AS STOVE WINDOWS

Hermann L. Rittler, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,283
Int. Cl.³ C03C *3/22*
U.S. Cl. 501—4 **1 Claim**

1. A transparent, essentially colorless glass-ceramic article containing β-quartz solid solution as the predominant crystal plane having a composition wherein MgO is essentially absent and consisting essentially, expressed in terms of weight percent on the oxide basis, of

SiO_2—65–75,
Li_2O—1–4,
Al_2O_3—15–25,
ZnO—0.5–2,
Na_2O and/or K_2O—0–2,
TiO_2—2–6,
ZrO_2—0–2,
BaO—0–2.5,
F—0–1.2,
Fe_2O_3—>0.01–<0.1.

4,438,211

OPTICAL AND OPHTHALMIC GLASS WITH REFRACTIVE INDICES ND>1.58, ABBE NUMBERS>45 AND DENSITIES<2.75 G/CM³

Karl Mennemann, Taunusstein; Georg Gliemeroth, and Volkmar Geller, both of Mz. Finthen, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,401
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139212
Int. Cl.³ C03C *3/08*
U.S. Cl. 501—65 **15 Claims**

1. A borosilicate glass composition suitable for use as an eyeglass lens, characterized by having a refractive index nd of about 1.58–1.60, an Abbe number vd>50, a density $\rho \leq 2.75$ g/cm³, and an excellent aptitude for chemical hardening, consisting essentially of the following composition, in weight percent:

SiO_2	51–65
B_2O_3	2–14
Al_2O_3	0–5
$SiO_2 + B_2O_3 + Al_2O_3$	62–73
Li_2O	6–13
Na_2O	0–4
K_2O	0–4
$Li_2O + Na_2O + K_2O$	7–15
CaO	1–19
MgO	0–11
CaO + MgO	6–22
TiO_2	0–8
ZrO_2	0–9.

$TiO_2 + ZrO_2$ being present in an amount sufficient to exhibit said refractive index, Abbe number, and density ranges; and

ZnO	up to 2.5

2. Glass according to claim 1, having a density of 2.50–2.75

g/cm^3 and being further characterized by the following composition, in weight percent:

SiO_2	58–64
B_2O_3	4–9
Al_2O_3	0–3
$SiO_2 + B_2O_3 + Al_2O_3$	66–73
Li_2O	8–13
Na_2O	0–2
K_2O	0–2
$Li_2O + Na_2O + K_2O$	10–13.5
MgO	0–6
CaO	7–14
MgO + CaO	9–17
TiO_2	1.5–7
ZrO_2	1–6
$TiO_2 + ZrO_2$	4–8.

4,438,212

FLUORINE-FREE CALCIUM-ALUMINOSILICATE GLASSES

William D. Potter, Bishops Stortford; Andrew C. Barclay, Harlow; Reginald Dunning, Parbold near Wigan, and Richard J. Parry, Southport, all of England, assignors to Pilkington Brothers P.L.C., England

Filed Jun. 28, 1982, Ser. No. 392,668

Claims priority, application United Kingdom, Jul. 3, 1981, 8120581

Int. Cl.^{3} C03C *3/04, 12/00*

U.S. Cl. 501—73 **10 Claims**

1. A fluorine-free calciumaluminosilicate glass consisting essentially of 25 to 35% silica, 27 to 35% calcuim oxide, 25 to 40% alumina, 0 to 4% of alkali metal oxide selected from lithium oxide, sodium oxide and potassium oxide, and 0 to 5% of titanium oxide with a total content of lithium, sodium, potassium and titanium oxides of 0.5 to 9%, and with a ratio of calcium oxide to silica of 0.7:1 to 1.0:0.7, said glass being in particulate form in which the individual particles have a particle size of less than 100 microns.

4,438,213

MAGNETIC HEAD SLIDER MATERIAL AND METHOD FOR PRODUCING THE SAME

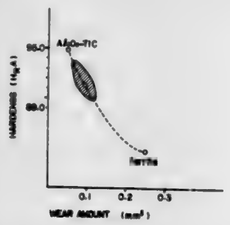
Mitsuhiki Furukawa; Michito Miyahara; Takashi Kitahira; Kiyohito Misumi; Masaharu Shiroyama, all of Fukuoka, and Toshiaki Wada, Osaka, all of Japan, assignors to Nippon Tungsten Co., Ltd., Fukuoka and Sumitomo Special Metals Co., Ltd., Osaka, both of, Japan

Filed Aug. 31, 1982, Ser. No. 413,311

Claims priority, application Japan, Aug. 31, 1981, 56-137358

Int. Cl.^{3} C04B *35/56, 35/58*

U.S. Cl. 501—92 **1 Claim**



1. Magnetic head slider material consisting of 5～10 percent by weight of silicon, 1.3～7.8 percent by weight of tungsten silicide and the balance being silicon carbide.

4,438,214

SEMICONDUCTIVE CERAMIC MATERIALS WITH A VOLTAGE-DEPENDENT NONLINEAR RESISTANCE, AND PROCESS FOR PREPARATION

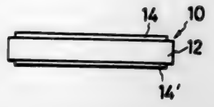
Masaru Masuyama, Harunamachi; Susumu Hirooka, Takasaki, and Nobutatsu Yamaoka, Harunamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,219

Claims priority, application Japan, Nov. 26, 1981, 56-189596

Int. Cl.^{3} C04B *35/46*

U.S. Cl. 501—136 **3 Claims**



1. A semiconductive ceramic material with a voltage-dependent nonlinear resistance consisting essentially of 100 mole parts of $Sr_{(1-x)}Ca_xTiO_3$, where x is a numeral from about 0.01 to about 0.50, from about 0.01 to about 3.00 mole parts of at least one metal oxide selected from the group consisting of Nb_2O_5, Ta_2O_5, WO_3, La_2O_3, CeO_2, Nd_2O_3, Y_2O_3, Sm_2O_3, Pr_6O_{11} and Dy_2O_3, and from about 0.02 to about 2.50 mole parts of Na_2O.

4,438,215

ACTIVITY ENHANCEMENT OF HIGH SILICA ZEOLITES

Ralph M. Dessau, Edison, and George T. Kerr, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,175

Int. Cl.^{3} B01J *29/28*

U.S. Cl. 502—71 **8 Claims**

1. A method for enhancing the acid activity of a high silica crystalline zeolite material having a silica-to-alumina mole ratio greater than 100 wherein said crystalline material has been synthesized from a reaction mixture containing tetraalkylammonium ions which comprises calcining said as synthesized crystalline material at a temperature of from about 200° C. to about 600° C. for a period of time ranging from about 1 to about 48 hours, contacting said calcined crystalline material with aluminum chloride vapor at a temperature of from about 100° C. to about 600° C., hydrolyzing said aluminum chloride contacted crystalline material by contacting the same with water and calcining said hydrolyzed crystalline material in order to obtain a crystalline material having an enhanced acid activity.

5. A crystalline zeolite material having enhanced activity prepared by the method of claim 1, 2, 3 or 4.

4,438,216

PROCESS FOR IMPROVED ACTIVATED CARBON HAVING AN ALUMINUM-HEAVY METAL SPINEL

Dennis J. Kampe, Parma, and Srinivasan Sarangapani, Cleveland, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1982, Ser. No. 393,988

Int. Cl.^{3} H01M *4/96, 4/88, 4/04;* C25B *11/06*

U.S. Cl. 502—101 **6 Claims**

1. In a method for producing an activated carbon having an aluminum-heavy metal spinel comprising a first heat treatment that activates carbon and/or decomposes the soluble netal salts to their oxides or spinels, the improvement comprises the selection of at least twice the stoichiometric amount of aluminum with respect to the heavy metal for the spinel.

2. The method of claim 1, wherein the amount of aluminum is from two to four times the stoichiometric amount.

4. The method of claim 1, wherein the spinel is $CoAl_2O_4$.

4,438,217

CATALYST FOR OXIDATION OF PROPYLENE

Masahiro Takata; Ryuji Aoki, and Takahisa Sato, all of Himeji, Japan, assignors to Nippin Shokubai Kagako Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 30, 1982, Ser. No. 454,611

Claims priority, application Japan, Jan. 6, 1982, 57-406

Int. Cl.^{3} B01J *21/08, 23/78, 23/84, 23/88*

U.S. Cl. 502—205 **3 Claims**

1. A catalyst for the oxidation of propylene, said catalyst having the composition represented by the following formula

$$Mo_aW_bBi_cFe_dA_eB_fC_gD_hO_x$$

wherein

A represents at least one element selected from the group consisting of nickel and cobalt,

B represents at least one element selected from the group consisting of alkali metals, alkaline earth metals and thallium,

C represents at least one element selected from the group consisting of phosphorus, arsenic, boron and niobium,

D represents at least one element selected from the group consisting of silicon, aluminum and titanium,

a, b, c, d, e, f, g, h, and x respectively represent the atomic ratios of Mo, W, Bi, Fe, A, B, C, D, and O,

a is from 2 to 12

b is from 0 to 10,

the sum of a and b is 12,

c is from 0.1 to 10.0,

d is from 0.1 to 10.0,

e is from 2 to 20,

f is from 0.005 to 3.0,

g is from 0 to 4,

h is from 0.5 to 15 and

X is a number determined by the atomic valences of the individual elements,

and being molded in the shape of a hollow cylinder having an outside diameter of 3.0 to 10.0 mm, an inside diameter 0.1 to 0.7 times the outside diameter and a length 0.5 to 2.0 times the outside diameter.

4,438,218

CATALYST FOR SULPHUR REMOVAL FROM HYDROCARBONS

Philip M. Boorman; Tristram Chivers; Donald F. Tavares, and Kalabeerappa N. Mahadev, all of Calgary, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Jul. 27, 1981, Ser. No. 286,843

Int. Cl.^{3} B01J *23/04, 27/04*

U.S. Cl. 502—220 **8 Claims**

1. A process for producing a catalyst composition, comprising:

slurrying together, in an aqueous solution, (a) a sulphide of a transition metal selected from the group consisting of iron, vanadium, molydenum, copper and mixtures thereof, (b) a sulphide of an alkali metal selected from the group consisting of sodium and potassium, and (c) a hydroxide of an alkali metal selected from the group consisting of sodium and potassium;

impregnating the slurry onto a catalyst support;

drying the slurry and support at an elevated temperature;

sulphiding the dried mixtures; and

heating the sulphided mixture to remove excess sulphide therefrom.

4,438,219

ALUMINA CATALYST STABLE AT HIGH TEMPERATURES

John T. Brandenburg, Port Neches, Tex., and John M. Crone, Jr., Fishkill, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,824

Int. Cl.^{3} B01J *21/02, 21/04, 21/12, 23/10*

U.S. Cl. 502—333 **22 Claims**

1. A method of preparing a catalytic article comprising the steps of contacting a substrate and aluminum metal with an aqueous solution of an alkali hydroxide, and an alkali aluminate for a period of time sufficient to form an adherent film of alumina on said substrate; separating said substrate with said adherent film of alumina from said solution; then heating said substrate and said film of alumina under calcining conditions until said alumina film develops a desired porosity and surface area; and then contacting said calcined alumina film with a material which ameliorates the reduction in surface area and loss of structural integrity of said calcined alumina film during subsequent heating.

4,438,220

POLYURETHANE FOAM-FILLED FOAM RESISTANT TO COMBUSTION AND METHOD OF PRODUCING SAME

Roland N. Fracalossi; Walter V. V. Greenhouse, and Michael S. Buchanan, all of Baltimore, Md., assignors to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 274,726, Jun. 18, 1981, Pat. No. 4,385,131. This application Aug. 18, 1982, Ser. No. 409,030

The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—55 **9 Claims**

1. A combustion-retardant polyurethane foam structure obtained through the steps of (a) obtaining particles of flexible polyurethane foam; (b) admixing said particles of (a) with solid combustion-retardant material; (c) uniformly applying to said admixture of (b) a liquid flexible polyurethane foam-forming material containing a reactive polyol and a polyisocyanate; (d) foaming said foam-forming material (c) with water to provide a flexible foam having bonded therein said polyurethane foam particles and said solid combustion-retardant material; the relative amounts of materials in said foam structure being such that for each 100 parts by weight of polyurethane foam particles, about 100 to 200 parts by weight of said combustion-retardant material and about 30 to 75 parts by weight of said foam-forming material are used.

4,438,221

POLYURETHANE FOAM-FILLED FOAMS AND METHOD OF PRODUCING SAME

Roland N. Fracalossi; Walter V. V. Groenhouse, and Michael S. Buchanan, all of Baltimore, Md., assignors to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 274,726, Jun. 18, 1981, Pat. No. 4,385,131, and Ser. No. 409,030, Aug. 18, 1982. This application May 23, 1983, Ser. No. 497,034

The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—55 **15 Claims**

1. A foam-filled polyurethane foam structure obtained through the steps of

(a) obtaining particles of flexible polyurethane foam;

(b) admixing said particles of (a) with a solid material;

(c) uniformly applying to said admixture of (b) a liquid flexible polyurethane foam-forming material containing a reactive polyol and a polyisocyanate;

(d) foaming said foam-forming material of (c) with water to

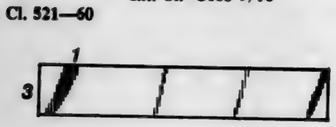
provide a flexible foam having bonded therein said polyurethane foam particles and said solid material;
the relative amounts of materials in said foam structure being such that for each 100 parts by weight of polyurethane foam particles, about 40 to 200 parts by weight of solid material and about 30 to 75 parts by weight of foam-forming material are used, said solid material being inert to said foam and foam-forming material.

4,438,222

HEAT RESISTANT EXPANDABLE PLASTIC PARTICLES AND MOLDED ARTICLES PRODUCED THEREFROM

Masao Nakagawa, Takasago, and Tatehiko Nishida, Ibaraki, both of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 299,201, Sep. 3, 1981, abandoned. This application Jan. 14, 1983, Ser. No. 458,053
Claims priority, application Japan, Sep. 13, 1980, 55-127624
Int. Cl.³ C08J 9/18
U.S. Cl. 521—60 **5 Claims**



1. A process for producing heat resistant, expandable plastic particles, which comprises subjecting a mixture containing 15–55 weight % of an α-alkylstyrene selected from the group consisting of α-methystyrene, α-ethylstyrene, α-n-propylstyrene and α-iso-propylstyrene and 45–85 weight % of another monomer polymerizable with the α-alkylstyrene, to emulsion polymerization in an aqueous medium in the presence of an emulsifying agent and a radical polymerization catalyst to obtain a polymer latex; separating and drying the polymer latex to obtain a powdery polymer; pelletizing the powdery polymer; and incorporating 3–15 weight % of a volatile blowing agent in the polymer pellets.

4,438,223

BLOWING AGENT COMPOSITION CONTAINING ZINC FORMATE AND METAL SALT ACTIVATOR

Byron A. Hunter, Alpine, Utah, assignor to Uniroyal, Inc., New York, N.Y.

Filed Aug. 22, 1983, Ser. No. 524,945
Int. Cl.³ C08J 9/08
U.S. Cl. 521—92 **2 Claims**

1. A composition comprising a gas expandable polymer and a blowing agent composition comprising :
(a) zinc formate, and
(b) a compound having the formula M_mX, wherein M is sodium or potassium; X is chlorine, bromine, iodine, CO_3, HCO_3, SO_4, SO_3, S_2O_3, NO_2, SCN, OCN, BO_2, HBO_3, HPO_4, PO_4 or H_2PO_4, and m is an integer representing the valence of X; or a compound having the formula $M_n^1R_p$, wherein M^1 is alkali metal, calcium, lead or zinc, R is organic mono- or polybasic acid having 1-18 carbon atoms and from 0 to 2 nitrogen atoms, or a benzenesulfonyl or toluenesulfonyl radical; and n and p are integers representing the valences of R and M^1, respectively or whole fractions thereof.

4,438,224

METHOD FOR THE PREPARATION OF STYRENE POLYMER FOAM AND FOAM PREPARED THEREBY

Kyung W. Suh, Granville; David C. Krueger, Reynoldsburg, and Burch E. Zehner, Pataskala, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 426,414, Sep. 29, 1982. This application Aug. 15, 1983, Ser. No. 523,216
Int. Cl.³ C08J 9/14
U.S. Cl. 521—146 **1 Claim**

1. A synthetic resinous thermoplastic foam prepared in accordance with the hereinbefore described method wherein an alkenyl aromatic thermoplastic synthetic resinous elongate foam body having a machine direction and a transverse direction, the body defining a plurality of closed noninterconnecting gas-containing cells therein, the cells having an average cell size of from about 0.1 to 1.2 millimeters, the foam body being of a generally uniform cellular structure and being without discontinuities, the body being without substantial variation in average cell size when cell size is measured by averaging cell diameter across the minimum cross-sectional dimension of the body (i.e., such as by ASTM Method D2842-69), the elongate body having a cross-sectional area of at least 8 square inches and having a minimum cross-sectional dimension of at least 0.25 inch, the foam body having a water vapor permeability not greater than 1.8 perm inches as measured by ASTM Method C355-64 Procedures for Desiccant method, a density of from about 1 to about 5 pounds per cubic foot with the further limitation that the cells contain a blowing agent which has a permeability through the alkenyl aromatic resinous polymer of not greater than 0.017 times the permeability of nitrogen through the body, a C_1 to C_3 monohydric alcohol and the blowing agent having a thermal conductivity of 0.08 British thermal units-inch per hour per square foot per degree Fahrenheit, wherein the foam is prepared by extrusion employing a blowing agent selected from the group consisting of
(1) a mixture of from about 5 to 20 weight percent isopropyl alcohol, from about 5 to 50 percent chlorodifluoromethane, and from about 30 to 70 percent dichlorodifluoromethane;
(2) a mixture of from about 5 to 50 percent of an ethanol, methanol or mixtures thereof, from about 5 to 50 percent of chlorodifluoromethane, and about 30 to 70 percent dichlorodifluoromethane;
and mixtures thereof, all percentages being by weight.

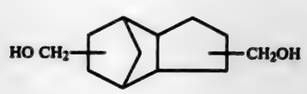
4,438,225

POLYESTER POLYOLS FROM BISHYDROXYMETHYL TRICYCLO COMPOUNDS AND CAPROLACTONE AND POLYURETHANES BASED THEREON

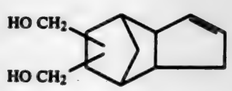
Dwight Peerman, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Apr. 12, 1983, Ser. No. 484,320
Int. Cl.³ C08G 18/14, 18/32; C07C 69/66
U.S. Cl. 521—172 **15 Claims**

1. Polyester polyols formed by the reaction of a bishydroxymethyl tricyclo compound of the formulae:



and



and alkoxylated derivatives thereof with a caprolactone in a molar ratio of bishydroxymethyl tricyclo compound to caprolactone between about 1:1 and 1:20.

7. Urethane linked reaction products derived from at least one polyester polyol of claim 1 and at least one polyisocyanate.

4,438,226

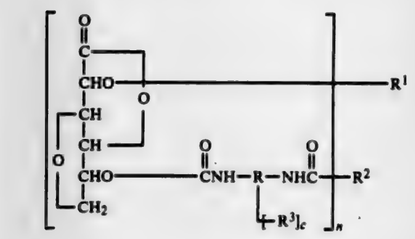
POLYURETHANES DERIVED FROM 1,4-LACTONES OF 3,6-ANHYDRO-2,3,4,5,6-PENTAHYDROXYHEXANOIC ACID

Stoil K. Dirlikov, and Connie J. Schneider, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

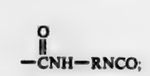
Filed Apr. 22, 1983, Ser. No. 487,475
Int. Cl.³ C08G 18/14, 18/32, 18/64
U.S. Cl. 521—175 **17 Claims**

1. A polyurethane comprising the reaction product of
(a) a 1,4-lactone of 3,6-anhydropentahydroxyhexanoic acid; and
(b) an organic polyisocyanate.

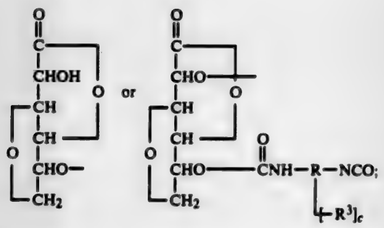
7. A polyurethane which corresponds to the formula,



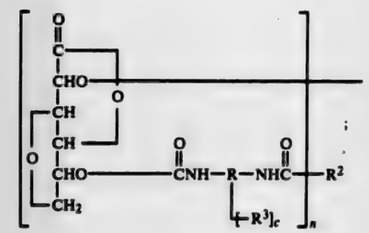
wherein
R is a 2+c valent hydrocarbyl radical;
R^1 is H or



R^2 is



R^3 is separately in each occurrence —N=C=O or



4,438,227

COMPOSITION AND METHOD OF MASKING

James B. Nail, San Diego, and Jeffery J. King, Orange, both of Calif., assignors to Ronald Jay Brahams, San Diego, Calif.

Filed Oct. 4, 1982, Ser. No. 432,451
Int. Cl.³ C08L 1/18; B05D 1/32, 5/00
U.S. Cl. 524—33 **16 Claims**

1. In the manufacture of an electrical or electronic component which includes the application of a varnish or other insulating and sealing compound to the surface of said component by either dipping, brushing or spraying method, a process, for preventing the adhesion of said compound to certain areas of said component and for conditioning them for good electrical contact, which comprises:
prior to said application, contacting said areas with a masking hydrophobic mixture comprising essentially:
a volatile organic solvent sufficient to solvate the mixture;
nitrocellulose;
a formaldehyde based resin, and
a phosphate fire retardant;
applying said compound to said surface;
curing said compound and carbonizing said mixture by heating said component to at least 93° C.; and
brushing away said carbonized mixture and overlying compound from said areas.

4,438,228

FILLED AND PLASTICIZED BLENDS OF LINEAR LOW DENSITY POLYETHYLENE

Timothy T. Schenck, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 176,783, Aug. 11, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 273,418
Int. Cl.³ B32B 27/30; C08L 23/08, 23/16
U.S. Cl. 524—109 **76 Claims**

1. A composition consisting essentially of (a) from about 5 to about 55% by weight of at least one copolymer of ethylene with at least one α-olefin comonomer said comonomer containing from 4 to 10 carbon atoms, the ethylene content of said copolymer being from about 75 to about 98% by weight, the comonomer content of said copolymer being from about 2 to about 25% by weight, and the melt index of said copolymer being from about 0.1 to about 150; (b) from about 2 to about 12% by weight of at least one plasticizer selected from the group consisting of processing oils, epoxidized oils, polyesters, polyethers and polyether esters; and (c) from about 40 to about 90% by weight of filler.

4,438,229

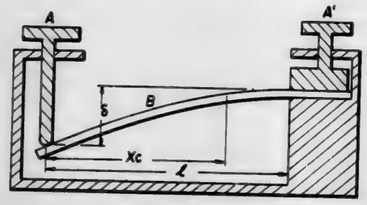
THERMOPLASTIC COMPOSITION

Yoshitugu Fujimori, Tokorozawa; Yasuo Takabori, Shiki; Hajime Sakano, Hirakata, and Akitoshi Ito, Nabari, all of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka and Honda Motor Co., Ltd., Tokyo, both of, Japan

Filed Sep. 8, 1982, Ser. No. 415,870
Claims priority, application Japan, Sep. 9, 1981, 56-143076; Nov. 12, 1981, 56-182127
Int. Cl.³ C08L 69/00
U.S. Cl. 524—109 **7 Claims**

1. A thermoplastic composition having improved weld strength which comprises a blend essentially consisting of:
(A) 20 to 80% by weight based on the weight of A and B of a thermoplastic polycarbonate resin;
(B) 80 to 20% by weight based on the weight of A and B of a graft polymer obtained by grafting at least one aromatic vinyl compound and at least one member of the group consisting of vinyl cyanides and alkyl unsaturated carboxylates onto a conjugated diene rubber or a mixture of a conjugated diene rubber with a copolymer of at least one

aromatic vinyl compound and at least one member of the group consisting of vinyl cyanides and alkyl unsaturated carboxylates, the copolymer being present in an amount of not more than 90% by weight on the basis of the combined amount of the graft polymer and the copolymer; and



(C) a polyolefin or a plasticizer having a light transmission of not less than 70% when determined on a 20 micron film prepared from a solution of the plasticizer (0.25 g) and acrylonitrile-styrene copolymer (weight ratio of acrylonitrile and styrene, 30:70; 0.75 g) in acetone (10 ml), the weight proportion of the blend, (A)+(B), and the polyolefin or the plasticizer (C) being 100:0.2–20.

4,438,230

CARBOXYLATED NITRILE RUBBER/PVC/NYLON FLUX BLENDS

Herbert F. Schwarz, Sarnia, Canada, assignor to Polysar Limited, Ontario, Canada

Filed Nov. 29, 1982, Ser. No. 444,975
Int. Cl.³ C08K 5/37; C08L 27/06, 33/18, 77/00
U.S. Cl. 524—151 **21 Claims**

1. A vulcanizable polymer composition comprising a polymer blend and a curative system, said polymer blend being a flux blend of (i) from about 5 to about 50 parts by weight of polyvinyl chloride, (ii) from about 35 to about 75 parts by weight of a carboxylated nitrile rubber, (iii) from about 5 to about 50 parts by weight of a nylon having a melting point of less than about 210° C., the total of (i), (ii) and (iii) being 100 parts by weight, (iv) from about 1.5 to about 4 parts by total weight of one or more stabilizers for (i), and (v) from about 0.25 to about 3 parts by total weight of one or more antioxidants for (ii), said parts of (iv) and (v) being per 100 parts total of (i), (ii) and (iii).

4,438,231

HIGH IMPACT STRENGTH, FLAME RETARDANT POLYCARBONATE COMPOSITION

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 29, 1982, Ser. No. 343,948
Int. Cl.³ C08K 5/42; C08L 51/06, 69/00
U.S. Cl. 524—161 **11 Claims**

1. A flame retardant molding composition which comprises:
(a) from about 70 to 85 parts by weight of a high molecular weight polycarbonate resin;
(b) from about 10 to 30 parts by weight of a copolycarbonate of tetrabromobisphenol-A and bisphenol-A;
(c) from about 1 to 5 parts by weight of a multiphase composite interpolymer comprising an acrylate and a methacrylate;
(d) from about 0.5 to 5 parts by weight of a copolymer of a C_{2-5} olefin and a C_{1-5} acrylate;
and
(e) an effective amount of a flame retardant alkali metal salt.

4,438,232

CARBOXYLATED ACRYLATE STYRENE BUTADIENE ADHESIVES

Ivan S. Lee, Brights Grove, Canada, assignor to Polysar Limited, Ontario, Canada

Filed Aug. 10, 1982, Ser. No. 406,888
Int. Cl.³ C08L 93/00, 9/08
U.S. Cl. 524—272 **15 Claims**

1. A pressure sensitive adhesive composition comprising the latex of a polymer formed by polymerizing:
(a) from about 40 to about 10 weight percent of a vinyl or vinylidene monoaromatic monomer which may be unsubstituted or substituted by a C_{1-4} alkyl radical or a chlorine or bromine atom;
(b) from about 45 to about 70 weight percent of a C_{4-6} conjugated diene;
(c) from about 1 to about 5 weight percent of a C_{3-6} ethylenically unsaturated mono- or di-carboxylic acid or a mixture thereof; and
(d) from about 5 to about 30 weight percent of a C_{1-8} alkyl ester of acrylic or methacrylic acid; wherein the total of (a), (b), (c) and (d) is 100 weight percent.

13. A substrate coated with from about 15 to about 60 g/m² of a pressure sensitive adhesive composition comprising a polymer formed by polymerizing:
(a) from about 40 to about 10 weight percent of a vinyl or vinylidene monoaromatic monomer which may be unsubstituted or substituted by a C_{1-4} alkyl radical or a chlorine or bromine atom;
(b) from about 45 to about 70 weight percent of a C_{4-6} conjugated diene;
(c) from about 1 to about 5 weight percent of a C_{3-6} ethylenically unsaturated mono- or di-carboxylic acid or a mixture thereof; and
(d) from about 5 to about 30 weight percent of a C_{1-8} alkyl ester of acrylic or methacrylic acid; wherein the total of (a), (b), (c) and (d) is 100 weight percent.

4,438,233

FAST CRYSTALLIZING POLYALKYLENETEREPHTHALATE RESIN COMPOSITIONS

Chung J. Lee, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Filed Sep. 20, 1982, Ser. No. 420,570
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ C08L 67/02
U.S. Cl. 524—299 **16 Claims**

1. A fast crystallizing molding composition comprising essentially:
a. a polyalkyleneterephthalate in which the alkylene group has 2–4 carbon atoms;
b. a complex of LiX and a polymeric compound having at least two recurring units having the formula $—CH_2C-H_2O—$, the amount of said complex being enough to give a proportion of 0.05–4 percent by weight of LiX based on the weight of said polyalkyleneterephthalate, wherein X is Br, Cl or I.

4,438,234

COMPOSITIONS COMPRISING A THERMOPLASTIC RESIN AND A VINYL ETHER MOLD RELEASE AGENT

Niles R. Rosenquist, Evansville, and Garland G. Lee, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 15, 1982, Ser. No. 449,983
Int. Cl.³ C08L 69/00
U.S. Cl. 524—378 **18 Claims**

1. A composition which consists essentially of a thermoplastic resin selected from the group consisting of aromatic polycarbonates, polyesters, polysulfones, polyethersulfones, polyamides, polysulfides, polyacrylates, polyurethanes, polyolefins, polyvinylhalides, acrylonitrile butadiene styrenes, butadiene styrenes and methacrylate butadiene styrenes and a mold release effective amount of a vinyl ether of the formula

$$R—O—CH_2=CH_2$$

wherein R is alkyl of about 14 to about 36 carbon atoms, inclusive.

4,438,235

TERTIARY ALKANOLAMINES TO INCREASE VISCOSITY OF FILLED LIQUID POLYMERS

Bernardas Brizgys, Southgate, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sep. 30, 1982, Ser. No. 430,153
Int. Cl.³ C08L 75/08
U.S. Cl. 524—700 **12 Claims**

1. A filled liquid polymer composition comprising a liquid polymer having a molecular weight of about 100 to about 2000 and containing at least two active hydrogen atoms as determined by the Zerewitinoff Method, an inorganic filler, selected from the group consisting of calcium carbonate, hydrated aluminum silicate, hydrated magnesium silicate and titanium dioxide, said inorganic filler present in the amount of about 5 percent by weight to about 50 percent by weight, based on the weight of said liquid polymer and a tertiary alkanolamine having in each chain 2 to about 8 carbon atoms, wherein said tertiary alkanolamine is selected from the group consisting of alkyl dialkanolamine, dialkyl alkanolamine and trialkanolamine, said tertiary amine present in the amount of 0.1 percent to about 2 percent by weight based on the weight of said inorganic filler.

4,438,236

COMPOSITIONS OF MELT-PROCESSABLE POLYMERS HAVING IMPROVED PROCESSABILITY

Frederic N. Cogswell, Welwyn Garden City; Brian P. Griffin, St Albans, and John B. Rose, Letchworth, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 207,708, Nov. 17, 1980, Pat. No. 4,386,174. This application Jun. 14, 1982, Ser. No. 388,462
Claims priority, application United Kingdom, Nov. 30, 1979, 7941364; Nov. 30, 1979, 7941365
Int. Cl.³ C08L 1/08; C08G 18/00, 59/19, 83/00
U.S. Cl. 525—165 **10 Claims**

1. A melt-processable polymer composition comprising from 0.5 to 5.0% by weight of the composition of at least one polymer capable of forming an anisotropic melt and at least one other melt-processable polymer characterised in that the temperature range over which the polymer can form an anisotropic melt and the temperature range over which the melt-processable polymer may be melt processed overlap, with the proviso that the other melt-processable polymer may not become melt processable until blended with the anisotropic-melt-forming polymer.

4,438,237

THERMOPLASTIC MOLDING MASSES OF STYRENE-ACRYLONITRILE AND POLYAMIDE

Franz Brandstetter, Neustadt; Juergen Hambrecht, Heidelberg; Rudolf H. Jung, Worms, and Gerhard Lindenschmidt, Leimen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,648
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105653
Int. Cl.³ C08L 77/00
U.S. Cl. 525—183 **6 Claims**

1. A thermoplastic molding mass comprising, based on a 100 parts of (a)+(b):
(a) 95 parts by weight to 99 parts by weight of a copolymer of styrene and/or α-methylstyrene with acrylonitrile wherein the copolymers contain 25 percent by weight to 35 percent by weight of acrylonitrile in polymerized form,
(b) 1 part by weight to 5 parts by weight of a polyamide made from
(1) 8 percent by weight to 13 percent by weight of adipic acid/hexamethylene diamine salts and
(2) 92 percent by weight to 87 percent by weight of a salt of piperazine and a mixture of decane dicarboxylic acids and azelaic acids in a mole ratio of 80:20 to 92:8.

4,438,238

LOW DENSITY COPOLYMER COMPOSITION OF TWO ETHYLENE-α-OLEFIN COPOLYMERS

Nobuo Fukushima, Ootsu; Shuji Kitamura, Ibaraki; Kiyohiko Nakae, Nishinomiya; Tadatoshi Ogawa, Takatsuki; Kozo Kotani, and Hidekazu Hosono, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 25, 1982, Ser. No. 342,428
Claims priority, application Japan, Jan. 30, 1981, 56-14038; Jan. 30, 1981, 56-14039; Jan. 30, 1981, 56-14040; Jan. 30, 1981, 56-14041; Jan. 30, 1981, 56-14042; Jan. 30, 1981, 56-14043; Jan. 30, 1981, 56-14044
Int. Cl.³ C08F 297/08; C08L 23/06, 23/08
U.S. Cl. 525—240 **23 Claims**

1. An ethylene-α-olefin copolymer composition excellent in transparency and strength and having a density of 0.915 to 0.929 g/cm³, a melt index of 0.02 to 50 g/10 min. and a melt flow ratio of 35 to 250, which comprises 10 to 70% by weight of an ethylene-α-olefin copolymer A and 90 to 30% by weight of an ethylene-α-olefin copolymer B; said copolymer A having a higher molecular weight than copolymer B and being a copolymer of ethylene and an α-olefin of 3 to 18 carbon atoms and having a density of 0.895 to 0.935 g/cm³, an intrinsic viscosity of 1.2 to 6.0 dl/g, the number of short chain branching per 1000 carbon atoms (hereinafter abbreviated as "S.C.B.") of 7 to 40 and a (weight average molecular weight)/(number average molecular weight) value of 2 to 10; said copolymer B being a copolymer of ethylene and an α-olefin of 3 to 18 carbon atoms and having a density of 0.910 to 0.955 g/cm³, an intrinsic viscosity of 0.3 to 1.5 dl/g, S.C.B. of 5 to 35 and a (weight average molecular weight)/(number average molecular weight) value of 2 to 10; said copolymer A and said copolymer B being selected in order to satisfy a condition that (S.C.B. of said copolymer A)/(S.C.B. of said copolymer B) is 0.6 to 1.7.

14. A composition of copolymers of ethylene and an α-olefin of 3 to 18 carbon atoms, having first and second component groups, said first component group having a higher molecular weight than said second component group, having the following properties:
(1) density of 0.915 to 0.929 g/cm³,
(2) intrinsic viscosity [η] of 0.7 to 4.0 dl/g,
(3) melt index of 0.02 to 50 g/10 min.,
(4) S.C.B. being 5 to 45,
(5) $[\eta]/[\eta]_l$ namely g_η^* being at least 0.8, where $[\eta]_l$ is an intrinsic viscosity of a linear polyethylene having the same weight average molecular weight measured by a light scattering method,
(6) (S.C.B. of the first component group)/(S.C.B. of the second component group) being 0.6 to 0.8 where the two component groups are prepared by consolidating fractions obtained by column fractionation in two portions of lower and higher molecular weight components, said portions being selected so that the weight ratio of the two portions corresponds to the weight ratio of lower and higher molecular weight components calculated from the gel permeation chromotography curve,
(7) the second components have a density of 0.910 to 0.955 g/cm³, an intrinsic viscosity of 0.3 to 1.5 dl/g and S.C.B. of 5 to 35,
(8) the first components have a density of 0.895 to 0.935

g/cm³, an intrinsic viscosity of 1.2 to 6.0 dl/g and S.C.B. of 7 to 40, and
(9) the second components are 30 to 90% by weight and the first components are 70 to 10% by weight.

4,438,239

MICROSPHERE COATED SUBSTRATE CONTAINING REACTIVE ALDEHYDE GROUPS

Alan Rembaum, Pasadena, and Richard C. K. Yen, Glendale, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 30, 1981, Ser. No. 248,898
Int. Cl.³ C07G 7/00; C12N 11/08; B05D 3/06; C08F 16/34
U.S. Cl. 525—54.1 **9 Claims**

1. A coated article comprising:
a synthetic organic resin substrate, said resin being capable of developing covalent bonds during high energy radiation;
a continuous layer of contiguous, tangential, individual microspheres having an uniform diameter between 100 Angstroms and 2000 Angstroms bound to the surface of the substrate by covalent bonds formed between the resin and the microspheres by means of high energy radiation grafting of the microspheres to the surface of the resin substrate, said microspheres consisting essentially of the addition polymerized polymer of an unsaturated aldehyde containing 4 to 20 carbon atoms.

8. A composition comprising an adduct of the article of claim 1 with a material selected from aldehyde reactive proteins, pharmaceuticals and fluorescent chromophores.

4,438,240

POLYAMIDE ELASTOMER

Chiaki Tanaka, Chita; Shinobu Nakashima, Nagoya, and Makoto Kondow, Konan, all of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Filed May 25, 1983, Ser. No. 497,864
Claims priority, application Japan, May 27, 1982, 57-90212
Int. Cl.³ C08F 283/04; C08G 69/48; C08L 77/00
U.S. Cl. 525—420 **20 Claims**

1. A polyether-ester-amide consisting essentially of about 5 to 50 weight percent of polyamide segment (A) and about 95 to 50 weight percent of polyether ester segment (B), and having a melting point not lower than 160° C., a Shore hardness in the range of 80A to 45D, a tensile modulus in the range of 100 to 1,000 kg/cm² and an elastic recovery at 50% elongation of not less than 70%,
said polyamide segment (A) having been obtained from:
a C_6–C_{20} aliphatic diamine (A-1): and
at least one dicarboxylic acid (A-2) selected from the group consisting of C_6–C_{15} aliphatic dicarboxylic acids, terephthalic acid and hexahydroterephthalic acid, provided the total number of carbon atoms of said diamine and said dicarboxylic acid is not less than 16,
said polyether ester segment (B) having been obtained from:
a poly(alkylene oxide) glycol (B-1) having a ratio of carbon atom number to oxygen atom number of not smaller than 2.3 and having a number average molecular weight in the range of 300 to 5,000; and
a C_4–C_{20} dicarboxylic acid (B-2).

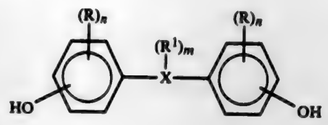
4,438,241

HEAT RESISTANT POLYARYLATES

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1982, Ser. No. 453,106
Int. Cl.³ C08G 63/18, 63/66, 63/68
U.S. Cl. 525—444 **32 Claims**

1. Polyarylate compositions exhibiting improved heat resistance comprised of (i) at least one polyarylate prepared by reacting:
(a) at least one aromatic dicarboxylic acid or a reactive derivative thereof; and
(b) at least one dihydric phenol represented by the general formula



wherein:
R is independently selected from halogen radicals, monovalent hydrocarbon radicals, and monovalent hydrocarbonoxy radicals;
R^1 is independently selected from monovalent hydrocarbon radicals;
X is selected from cycloalkylidene radicals containing from at least 8 to about 16 ring carbon atoms;
n is independently selected from whole numbers having a value of from 0 to 4 inclusive; and
m represents a whole number having a value of from 0 up to the number of replaceable hydrogen atoms present on X.

4,438,242

RETARDATION OF POLYMER BUILDUP IN MONOVINYL AROMATIC SUSPENSION POLYMERIZATION USING SULFUR TRIOXIDE AS REACTOR COATING

William J. Settineri, and John M. Hensler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 7, 1982, Ser. No. 366,264
Int. Cl.³ C08J 9/26, 9/28
U.S. Cl. 526—62 **7 Claims**

1. In suspension polymerization of monovinyl aromatic-polymers in a reactor wherein polymer buildup occurs on the internal surfaces of the reactor, the improvement which comprises contacting the internal surfaces of the reactor with at least about 0.01 gram of sulfur trioxide per gallon of reactor volume prior to said suspension polymerization, whereby further polymer buildup is retarded.

4,438,243

PROCESS FOR PRODUCING RANDOM ETHYLENE TERPOLYMER

Norio Kashiwa; Yoshinori Morita, and Michiharu Suga, all of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 85,584, Oct. 17, 1979, abandoned. This application May 14, 1981, Ser. No. 263,721
Claims priority, application Japan, Oct. 18, 1978, 53-127305
Int. Cl.³ C08F 2/06, 10/02
U.S. Cl. 526—125 **10 Claims**

1. A process for producing a random terpolymer of ethylene and alpha-olefins having at least 3 carbon atoms in the presence of a catalyst composed of (1) a titanium catalyst component having a surface area of at least 20 m²/g and comprising from 0.5 to 10 parts by weight of titanium, 15 to 30 parts by weight of magnesium, 50 to 70 parts by weight of halogen and, optionally, about 0.1 to 50 parts by weight of an electron donor; said titanium catalyst component having a halogen/titanium weight ratio of from 3 to 200, and a magnesium/titanium mole ratio of from 3 to 90 and a surface area of at least 20 m²/g and (2) an organoaluminum catalyst component in a hydrocarbon solvent at a temperature above the melting point of the terpolymer formed, under such conditions that the resulting copolymer dissolves in the hydrocarbon solvent; characterized in that said terpolymer consists essentially of
(A) 92 mole% to 99 mole% of ethylene,

(B) 0.3 mole% to 7 mole% of an alpha-olefin with 3 or 4 carbon atoms, and
(C) 0.3 mole% to 7 mole% of an alpha-olefin with 6 to 12 carbon atoms, the total of the proportions of the monomers (A), (B), and (C) being 100 mole%.

4,438,244

PROCESS FOR THE PRODUCTION OF POLYMERS AND COPOLYMERS OF VINYL CHLORIDE

Gilbert Sielfeld, and Paul Sunder-Plassmann, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,608
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120358
The portion of the term of this patent subsequent to Sep. 11, 2000, has been disclaimed.
Int. Cl.³ C08F 2/20, 14/06
U.S. Cl. 526—202 **11 Claims**

1. In a process for preparing a polymer or copolymer of vinyl chloride by suspension polymerization using a suspension stabilizer and a monomer-soluble free radical catalyst, the improvement wherein the suspension stabilizer is 0.1–0.5% by weight, based on the amount of monomer, of a copolymer of 65–85 molar percent of 2-isopropyl-Δ^2-oxazoline and 35–15 molar percent of 2-methyl-Δ^2-oxazoline, having a viscosity number of 35–80 ml/g, measured at 25° C. in an isopropanol/-water mixture (50 volume percent of isopropanol) in a concentration of 0.5% (weight/volume of solution).

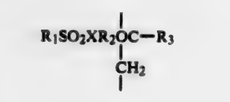
4,438,245

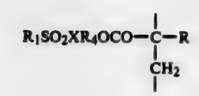
POLYMERS CONTAINING AROMATIC SULFONIC ACID ESTER OR AMIDE GROUPS

Masato Satomura, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

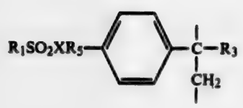
Filed Oct. 16, 1973, Ser. No. 407,034
Claims priority, application Japan, Oct. 18, 1972, 47-103550
Int. Cl.³ C08F 12/30, 16/30, 20/50, 28/04
U.S. Cl. 526—286 **19 Claims**

1. A functional group containing homopolymer or copolymer having aromatic sulfonic acid ester or amido groups, said homopolymer or copolymer containing therein monomer units of the general formula

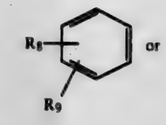




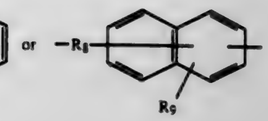
or



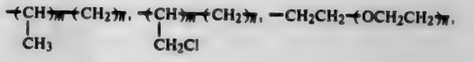
wherein
R_1 is



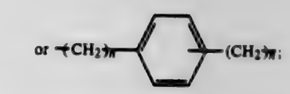
or



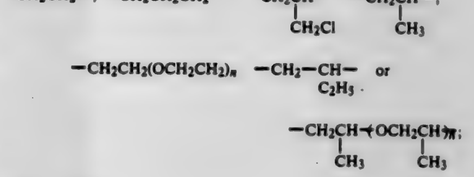
R_2 is



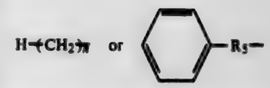




R_3 is a hydrogen atom or a methyl group;
R_4 is



R_5 is $-(CH_2)_m$;
m is 0 or 1;
n is 1, 2, 3 or 4;
x is —O—, —S—, —NH— or $-NR_{10}$—;
R_8 is a hydrogen atom, a chlorine atom, a bromine atom, a fluorine atom $H-(CH_2)_n$, $H-(CH_2)_nO-$, a nitro group, a sulfo group or a carboxy group; and
R_9 is a hydrogen atom, a bromine atom, a fluorine atom, a chlorine atom, $H-(CH_2)_n$, $H-(CH_2)_nO-$, a nitro group, a sulfo group, a carboxy group, a cyano group, a phenyl group, an acetyl group, a phenoxy group, or a benzoyl group; and
R_{10} is



and in the case of said copolymer, polymerized units of unsaturated comonomer copolymerizable with said monomer.

4,438,246

4-VINYL-2-METHYLENE BUTANEDIOIC ACID COMPOUNDS

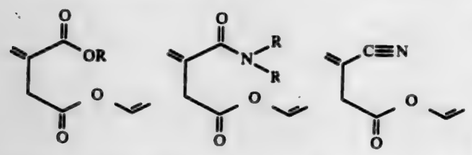
Rodney D. Bush, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 290,907, Aug. 7, 1981. This application May 27, 1983, Ser. No. 499,052

Int. Cl.³ C08F *20/42*

U.S. Cl. 526—298 **5 Claims**

4. A polymer prepared by the free radical polymerization of a compound selected from the group consisting of



wherein R is selected from H, C_1–C_{18} alkyl, substituted alkyl, aryl or substituted aryl.

4,438,247

PREPARATION OF REGIOREGULAR POLYFLUOROETHYLENES AND PRODUCTS THEREOF

Rudolf E. Cais, Long Valley, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1982, Ser. No. 350,297

Int. Cl.³ C08F *8/00, 8/26, 14/18, 14/22*

U.S. Cl. 526—249 **18 Claims**

1. A process useful for forming regioregular polymers comprising the steps of (1) polymerizing by a free-radical reaction, a fluoroethylene monomer having a chemically bonded blocking substituent comprising at least one blocking group to produce a precursor polymer and (2) replacing said blocking substituent which is chemically incorporated in said precursor polymer with hydrogen atoms, wherein (a) said blocking substituent stabilizes the free-radical formed during said free-radical reaction on said monomer, and (b) blocks bond formation during said polymerization between carbon atoms having said blocking substituent.

15. A regioregular polyfluoroethylene polymer comprising a polyfluoroethylene having asymmetric building blocks wherein less than 3 percent of said building blocks are in a spatial orientation that differs from the orientation of the majority of said building blocks comprising said polyfluoroethylene wherein the substituents on said polyfluoroethylene consist essentially of atoms chosen from the group consisting of hydrogen and fluorine.

4,438,248

TRIMERIZATION CATALYSTS AND ORGANO-MERCURY COMPOUNDS AS CO-CATALYSTS FOR THE PREPARATION OF NONCELLULAR POLYURETHANE ELASTOMERS

Donald L. Christman, Grosse Ile, and Bernard A. Merkl, Riverview, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 20, 1982, Ser. No. 451,080

Int. Cl.³ C08G *18/22*

U.S. Cl. 528—57 **6 Claims**

1. A process for preparing a noncellular polyurethane elastomer which comprises reacting, in the absence of a blowing agent, an organic polyisocyanate with an organic compound having at least two Zerewitinoff active hydrogen atoms in a ratio of from 1.0 to 1.2 equivalents of isocyanate groups per equivalent of active hydrogen atoms in the presence of a catalytically effective amount of a co-catalyst composition comprising an organo-mercuric compound and an alkali metal carboxylic acid salt in a weight ratio of from 1 to 5 parts organo-mercuric compound per part of alkali metal carboxylic acid salt.

4,438,249

BIODEGRADABLE POLYURETHANE UREA ACYL SEMICARBAZIDES FOR THE MANUFACTURE OF BIODEGRADABLE ALLOIMPLANTS

Tatyana E. Lipatova, ulitsa Rozy Ljuxemburg, 15. kv. 14; Dmitry V. Vasilchenko, ulitsa Serafimovicha, 7. kv. 26; Georgy A. Pkhakadze, ulitsa Vladimirskaya, 48a. kv. 16, and Xenya L. Konoplitskaya, ulitsa Florentsii 10ª kv. 102, all of Kiev, U.S.S.R.

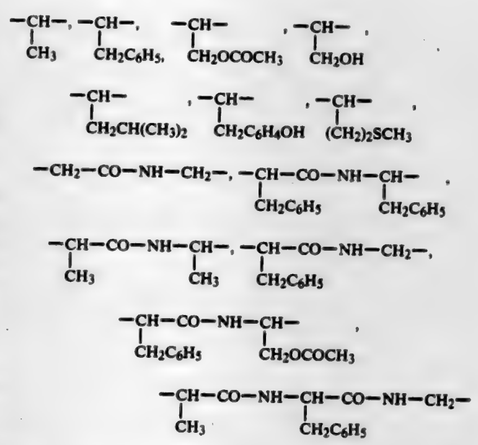
Continuation of Ser. No. 252,552, Apr. 9, 1981, abandoned. This application Mar. 26, 1982, Ser. No. 362,429

Int. Cl.³ C08G *18/10, 18/38*

U.S. Cl. 528—61 **2 Claims**

1. Polyurethane urea acyl semicarbazides for preparing biodegradable alloimplants having the general formula: $(—N—R_1—CONHNHCONH—R_2—NHCO—O—R_3—CONH—R_2—NH—CO—)_n$

R_1 is selected from the group consisting of



wherein n is from 5 to 24 R_2 is selected from the group consisting of $—(CH_2)_6—$, $—C_6H_4—CH_2—C_6H_4$;

R_3 is selected from the group consisting of $—(CH_2)_4—O—_{14}$, $—(CH_2)_4—O—_{21}$.

4,438,250

SUSPENSIONS OF ISOCYANATO UREAS IN ISOCYANATE PREPOLYMERS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE IN THE PRODUCTION OF HIGH MOLECULAR-WEIGHT POLYURETHANE PLASTICS

Gerhard Grögler; Otto Ganster, both of Leverkusen, and Klaus Recker, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,481

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902469

Int. Cl.³ C08G *18/38*

U.S. Cl. 528—66 **3 Claims**

1. A suspension of

(a) an isocyanato urea corresponding to the following general formula:

wherein

R represents a difunctional aromatic radical obtained by removing the isocyanate groups from an aromatic diisocyanate and

m represents 0 or an integer of 1 to 5,

in

(b) an isocyanate prepolymer corresponding to the following general formula:



wherein

A represents a radical obtained by removing the isocyanate groups from an organic diisocyanate,

D represents a radical obtained by removing the hydroxyl groups from an n-functional polyhydroxyl compound having a molecular weight of from 500 to 8000, and

n represents an integer from 2 to 4, said suspension being liquid at room temperature or being liquefiable by heating to at most 80° C.

4,438,251

POLYURETHANE POLYMERS COMPRISING MACROCYCLIC CROWN ETHERS IN THE POLYMER BACKBONE

John E. Herweh, East Hempfield Township, Lancaster County, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 16, 1983, Ser. No. 494,975

Int. Cl.³ C08G *18/32*

U.S. Cl. 528—73 **16 Claims**

1. Polyurethane polymers comprising macrocyclic polyether moieties in the polymer backbone, said polymers being obtained from the reaction of

(a) a crown ether of the structure

where n=1-3; R_1=—CHOHR₅, R_2, R_3, and R_4 independently=H or CH_3, and R_5=H or a straight or branched chain alkyl group having from 1-13 carbon atoms; provided that when R_1 is in the 3'-position, R_1' is in the 3''- or 6''-position, and when R_1 is in the 4-position, R_1' is in the 4''- or 5''-position, and further provided that the ring positions of R_2', R_3', and R_4' in relation to R_1' are the same as those of R_2, R_3 and R_4 in relation to R_1; and

(b) a suitable diisocyanate.

4,438,252

POLYMER-MODIFIED POLYOLS

William G. Carroll, Lancashire; Peter Farley, Manchester, and Raymond J. Markiow, Cheshire, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 16, 1982, Ser. No. 398,885

Claims priority, application United Kingdom, Aug. 8, 1981, 8124506; Mar. 29, 1982, 8209218

Int. Cl.³ C08G *18/38, 18/48, 18/52*

U.S. Cl. 528—75 **9 Claims**

1. A polymer-modified polyol comprising a dispersion in a first polyol which has a molecular weight of at least 1000, an average functionality of more than 2, and a Hydroxyl Number of less than 150, of the reaction product of a polyisocyanate and a second polyol which is either (a) a polyethylene glycol having a molecular weight of up to 600 or (b) a polyol, which is not a polyethylene glycol, and which has a molecular weight of less than 250 and is free from nitrogen atoms.

4,438,253

POLY(GLYCOLIC ACID)/POLY(ALKYLENE GLYCOL) BLOCK COPOLYMERS AND METHOD OF MANUFACTURING THE SAME

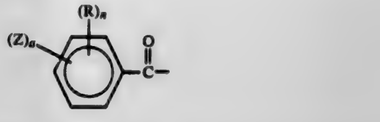
Donald J. Casey, Ridgefield, and Kenneth R. Huffman, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 12, 1982, Ser. No. 441,306

Int. Cl.³ C08G *63/06*

U.S. Cl. 528—86 **12 Claims**

1. A multiblock copolymer useful for the manufacture of bioabsorbable surgical articles comprising the formula:



wherein R represents an alkylene group and Ar is an aromatic group, the poly(glycolic acid) content is about 80 to 85 percent, the poly(oxyalkylene) content is about 20 to 15 percent l and m are the same or a different positive integer, and n is 23 to 91.

4,438,254

PROCESS FOR PRODUCING EPOXY RESINS

George A. Doorakian, Bedford, and Marsha A. Paul, Natick, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 28, 1983, Ser. No. 470,107

Int. Cl.³ C08G *59/62, 59/68*

U.S. Cl. 528—89 **20 Claims**

1. In a process for preparing an advanced epoxy resin by reacting

(a) a compound bearing an average of more than one vicinal epoxide group per molecule with

(b) a polyhydric phenol or thiophenol, in the presence of a catalytic amount of a tetrahydrocarbyl phosphonium salt, the improvement wherein the reaction is conducted at a temperature less than about 175° C. and in an essentially anhydrous medium.

4,438,255

ACYLOXY TERMINATED COPOLYESTER-CARBONATES

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 17, 1982, Ser. No. 450,810

Int. Cl.³ C08G *63/64*

U.S. Cl. 528—176 **26 Claims**

1. A composition comprising an aromatic copolyester-carbonate chain terminated with at least one residue represented by the general formula

wherein:

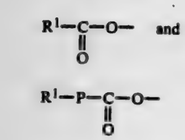
each R is independently selected from monovalent hydrocarbon radicals, substituted monovalent hydrocarbon radicals wherein at least one replaceable hydrogen atom

of said monovalent hydrocarbon radicals has been replaced with an inorganic atom or group, and halogen radicals;

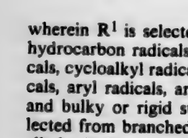
a represents a whole number having a value of from 1 to 3 inclusive;

n represents a whole number having a value of from 0 up to and including the number of replaceable hydrogen atoms present on the ring carbon atoms of the aromatic nuclear residue; and

Z is independently selected from radicals represented by the general formula



and



wherein R^1 is selected from bulky or rigid monovalent hydrocarbon radicals selected from branched alkyl radicals, cycloalkyl radicals, alkyl substituted cycloalkyl radicals, aryl radicals, aralkyl radicals, and alkaryl radicals, and bulky or rigid substituted hydrocarbon radicals selected from branched alkyl radicals, cycloalkyl radicals, alkyl substituted cycloalkyl radicals, aryl radicals, aralkyl radicals, and alkaryl radicals.

4,438,256

COPOLYAMIDE ACID AND COPOLYIMIDE

Takayuki Ohta, Tokyo; Yukio Yanaga, and Seiichi Hino, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

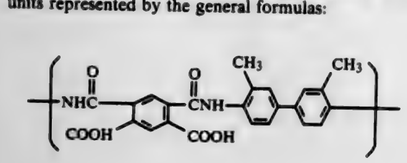
Filed Apr. 6, 1983, Ser. No. 482,417

Claims priority, application Japan, Apr. 24, 1983, 57-69145

Int. Cl.³ C08G 73/10

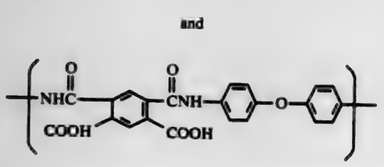
U.S. Cl. 528—188 **5 Claims**

1. A copolyamide acid consisting essentially of repeating units represented by the general formulas:



(A)

and



(B)

in which the repeating unit (A) and the repeating unit (B) are present in a molar ratio from 20:80 to 80:20, and which has a logarithmic viscosity number (η_{inh}) of 0.5 dl/g—10 dl/g measured in N,N-dimethylformamide at a concentration of 0.5 g/dl and at a temperature of 30° C.

4,438,257

PROCESS FOR PREPARING POLYAMIDE WITH MOLTEN DICARBOXYLIC ACID COMPONENT

Akira Miyamoto; Senzo Shimizu; Masahiro Harada; Tamotu Ajiro, and Hideki Hara, all of Kanagawa, Japan, assignors to Mitsubishi Gas Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,397

Claims priority, application Japan, Dec. 25, 1981, 56-211767

Int. Cl.³ C08G 69/28

U.S. Cl. 528—347 **12 Claims**

1. A process for preparing a polyamide from a reaction mixture comprising a diamine component containing at least 70 mole % of m-xylylene diamine and a dicarboxylic acid component containing at least 80 mole % of adipic acid at atmospheric pressure, comprising the steps of:

(a) heating and melting the dicarboxylic acid component to produce a molten dicarboxylic acid component;

(b) adding part of the diamine component to the molten dicarboxylic acid component from step (a) in an amount to bring the molar ratio of the diamine component to the dicarboxylic acid component to within the range of from 0.900 to 0.990 in the reaction mixture while raising the temperature of the reaction mixture to a temperature in the range of from a temperature lower than the melting point of the resulting polyamide to a temperature higher than said melting point by a degree not exceeding about 5° C., said temperature being such that the reaction mixture is maintained in a uniformly fluidized state throughout the process;

(c) after the addition of the diamine in step (b) has been completed, raising the temperature of the reaction mixture to a temperature higher than the melting point of the resulting polyamide by a degree of about 10° to 35° C.; and

(d) adding the remainder of the diamine component to the reaction mixture maintained at the temperature defined in step (c) in an amount to bring the overall molar ratio of the diamine component to the dicarboxylic acid component to within the range of from 0.995 to 1.005 to complete the polycondensation reaction.

4,438,258

HYDROGELS

Neil B. Graham, Bearsden, England, assignor to National Research Development Corporation, London, England

Filed Jun. 14, 1982, Ser. No. 387,817

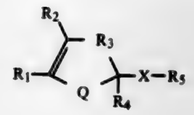
Claims priority, application United Kingdom, Jun. 12, 1981, 8118088; Jun. 12, 1981, 8118089; Jun. 12, 1981, 8118090

Int. Cl.³ C08G 63/66, 65/02

U.S. Cl. 528—361 **32 Claims**

1. A hydrogel, which comprises:

polymerized moieties derivable from (i) at least one unsaturated cyclic(thio) ether of the formula:



wherein

R_1, R_2 and R_4, which may be the same or different, each represent hydrogen or a substituted or unsubstituted hydrocarbyl or hydrocarbyloxy group;

R_3 represents a substituted or unsubstituted methylene, ethylene, or 1,3-propylene group;

R_5 represents a monovalent polymerizable group;

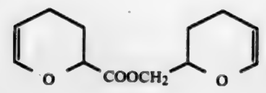
Q represents an oxygen or sulfur atom; and

X represents:



wherein Y represents an oxygen atom or an $-NR_6-$ group wherein R_6 represents any of the values which R_1 may assume; a is 0 or 1; b is 0 or 1; c is 1 or 2; d is 0 or 1; with the proviso that at least one of b or d is 1, and (ii) at least one hydrophilic homo- or copolymer.

32. A hydrogel, which comprises: a polymerizate derived from the reaction of polyethylene oxide with an acrolein tetramer of the formula:



4,438,259

(VINYLARYL)ALKYL POLYSULFIDE POLYMERS

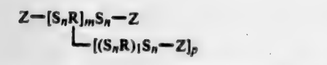
Victor E. Meyer, and Thomas E. Dergazarian, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 339,820, Jan. 18, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 426,559

Int. Cl.³ C08G 75/00

U.S. Cl. 528—388 **22 Claims**

1. A curable polysulfide polymer as represented by the general structure



wherein each R is independently a polyvalent organic polyradical with each valence residing on a carbon atom; each Z is independently (vinylaryl)alkyl, inertly substituted (vinylaryl)alkyl or a noncrosslinking monoradical, provided that a sufficient proportion of Z contain a (vinylaryl)alkyl moiety to enable the polymer to cure to a material that does not cold flow; l and m are independently zero or a positive integer; n is a number from about 2 to about 8 provided that when m is zero and each Z is vinylbenzyl, then n is at least 3; and p is zero or a positive integer which is the difference between the valence of R and two.

4,438,260

SISOMICIN COMPOUNDS

Uwe Petersen, Leverkusen; Peter Stadler, Haan; Oswald Lockhoff, Leverkusen; Hans-Joachim Zeller, Velbert, and Karl G. Metzger, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 24, 1981, Ser. No. 334,401

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101376

Int. Cl.³ C07H 15/22

U.S. Cl. 536—13.9 **2 Claims**

1. A compound, which is 1-N-([R,S,R,S]-6-Amino-2,3,4,5-tetrahydroxy-hexyloxy-carbonyl)-sisomicin or a salt thereof.

2. A compound, which is 1-N-(3-Amino-2,2-bis-[hydroxymethyl]-propyloxycarbonyl)-sisomicin or a salt thereof.

4,438,261

ANTICOAGULANT SUBSTANCE

William E. Barnett, Clearwater, Fla., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 151,163, May 19, 1980, Pat. No. 4,351,938. This application Jun. 1, 1982, Ser. No. 384,032

Int. Cl.³ A61K 31/725

U.S. Cl. 536—21 **3 Claims**

1. A chemically partially depolymerized heparin product which has

(1) a weight average molecular weight of from about 2,000 to 4,000 daltons, when determined by HPLC using 1.5 molar aqueous sodium chloride as the mobile phase and dextrans as the standard,

(2) a polydispersity (D) of less than about 2.5, and

(3) analyzable reducing end groups of which a majority are anhydromannose groups.

4,438,262

HIGHLY DIELECTRIC POLYSACCHARIDES

Ichiki Murase, Ibaraki; Fumio Fujita, Osaka; Toshihiro Ohnishi, Takatsuki, and Toshifumi Tamura, Otsu, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 30, 1982, Ser. No. 429,282

Claims priority, application Japan, Oct. 6, 1981, 56-159647; Aug. 27, 1982, 57-149449

Int. Cl.³ C08B 11/155, 31/08, 37/02

U.S. Cl. 536—43 **15 Claims**

1. A process for manufacturing a highly dielectric organic compound which comprises reacting a water-soluble polysaccharide or a derivative thereof with a dihydroxyalkylating agent to form a dihydroxyalkylate and then cyanoethylating the dihydroxyalkylate with acrylonitrle.

4,438,263

CELLULOSE GRANULES AND PROCESS FOR PRODUCING THE SAME

Erwin E. Morse, Berlin, N.H., assignor to James River Corporation of Virginia, Richmond, Va.

Filed Aug. 6, 1982, Ser. No. 405,992

Int. Cl.³ C08B 1/00; D21C 9/00, 9/18

U.S. Cl. 536—56 **20 Claims**

1. A process for producing essentially pure cellulose granules which comprises:

treating finely-divided particles of essentially pure cellulose with an agglutinating reagent in aqueous solution which promotes agglutination of said particles;

causing said particles to agglutinate and mechanically separating the agglutinated cellulose particles from the suspension medium leaving a wet mass of agglutinates;

washing said wet mass with water until said agglutinating reagent has been removed therefrom, leaving a second wet mass consisting essentially of agglutinated cellulose particles and water; and

removing the water from said second wet mass by a non-evaporative procedure wherein coalescence of said agglutinated particles is prevented and said agglutinated particles dry into discrete granules of essentially pure cellulose.

18. Essentially pure cellulose granules suitable for use as an excipient in tableting, characterized as a mass of discrete granules of essentially uniform size and character and by the following properties:

a flow rate greater than about 5 grams per second, as measured in a Flo-Graph TM through a ¼ inch orifice;

a size such that between about 15 to about 80 percent is retained on a 100 mesh screen when 25 grams is sieved in a Ro-Tap TM apparatus for 25 minutes;

a compressibility measured as hardness in Strong-Cobb units of at least 20 to No-Break when 0.4 gram of material predried at 105 degrees Centigrade is compressed into 7/16 inch diameter tablets under 1000 pounds load and the tablets tested in Model 2E Schleuniger hardness tester;

a disintegration time in water without agitation of between about 2 and about 20 seconds for tablets prepared as above; and

a bulk density of less than about 4 ml./gm.

4,438,264

PROCESS FOR THE PRODUCTION OF HYDROXYETHYL METHYL CELLULOSE

Klaus Balser, Walsrode; Helwig Tuebner, Hanau, and Wilhelm Oppermann, Bomlitz, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,272

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140813

Int. Cl.³ C08B *11/193*

U.S. Cl. 536—91 **4 Claims**

1. A process for the production of hydroxyethyl methyl cellulose having a flocculation point of at least 100° C., which comprises reacting alkali cellulose with ethylene oxide in the presence of methyl chloride with a molar ratio of methyl chloride to air-dry cellulose amounting to 6–12, alkalisation and hydroxyethylation being carried out in liquid methyl chloride; and isolating the hydroxyethyl methyl cellulose formed.

4,438,265

ESTERS OF 7-SULFENYLIMINOCEPHEM-4-CARBOXYLIC ACIDS

Tetsuo Hiraoka, and Takeo Kobayashi, both of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 907,772, May 14, 1978, abandoned, which is a division of Ser. No. 779,907, Mar. 21, 1977, abandoned. This application Dec. 5, 1980, Ser. No. 213,763

Claims priority, application Japan, Apr. 5, 1976, 51-37958

Int. Cl.³ C07D *501/14*

U.S. Cl. 544—29 **6 Claims**

1. tert-Butyl 3-methyl-7-paranitrophenylsulfenylimino-3-cephem-4-carboxylate.

6. parabromophenacyl 6-ortho-nitrophenylsulfenyliminopenicillanate.

4,438,266

TRIAZOLOPYRAZINAMINES USEFUL AS ADJUNCTS TO RADIATION THERAPY

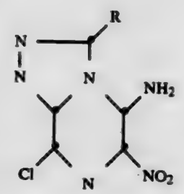
George D. Hartman, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 17, 1982, Ser. No. 379,232

Int. Cl.³ C07D *487/04*; A61K *31/495*; C07D *241/20*

U.S. Cl. 544—350 **3 Claims**

1. A compound of the formula:



wherein R is hydrogen or methyl and pharmaceutically acceptable acid addition salts thereof.

4,438,267

MONOHETERORING COMPOUNDS AND THEIR USE

Susan M. Daluge, 297 Azalea Dr., Chapel Hill, N.C. 27514, and Paul M. Skonezny, 1513 Cotherstone Dr., Durham, N.C. 27712

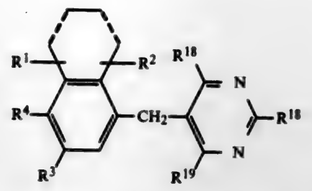
Filed Nov. 9, 1981, Ser. No. 319,644

Claims priority, application United Kingdom, Nov. 11, 1980, 8036135

Int. Cl.³ C07D *239/47, 239/49*

U.S. Cl. 544—309 **1 Claim**

1. A compound of the formula



wherein the dotted lines are both single bonds,

R^{18} is amino or C_{1-4} althylthio or halogen,

R^{19} is hydrogen or halogen provided that both R^{18} groups cannot be amino,

R^1 and R^2 is hydrogen or halogen, C_{1-4} alkyl, C_{1-4} alkylthio, C_{1-4} alkoxy and R^3 and R^4 are hydrogen, halogen, C_{2-4} alkenyl, C_{2-4} alkenyloxy, nitro, cyano, hydroxy or mercapto except that R^1 to R_4 may not all be hydrogen and when R^1, R^2 and R^3 are hydrogen, R^4 may not be hydroxyl.

4,438,268

LIQUID CRYSTAL SUBSTANCES

Horst Zaschke, Plectz der Volkerfreundschaft 3, 4020 Halle; Wolfgang Schafer, auf dern Viewitt 31, 1500 Potsdam; Hans-Joachim Deutscher, Veszpremerstr. 15, 4020 Halle; Dietrich Demus, Valchonweg 22, 4020 Halle, and Gerhard Pelzl, Block 170/2/21, 4020 Halle, all of German Democratic Rep.

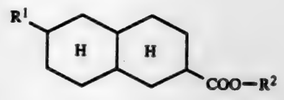
Filed Sep. 14, 1981, Ser. No. 302,288

Claims priority, application German Democratic Rep., Sep. 29, 1980, 224159; Sep. 29, 1980, 224160

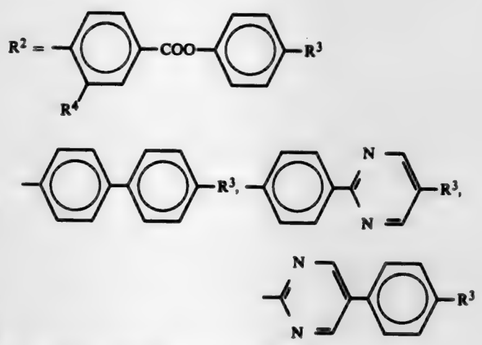
Int. Cl.³ C07C *69/753*; C07D *239/26, 239/28*; C09K *3/34*

U.S. Cl. 544—315 **12 Claims**

1. A liquid crystal trans-6-n-alkyldecalin 2-carbonic acid ester of the general formula



wherein $R^1 = C_4H_9$,



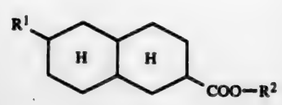
$R^3 = C_5H_{11}$, $-OC_nH_{2n+1}$, $-Cl$, $-Br$, $-CN$, $-H$

with

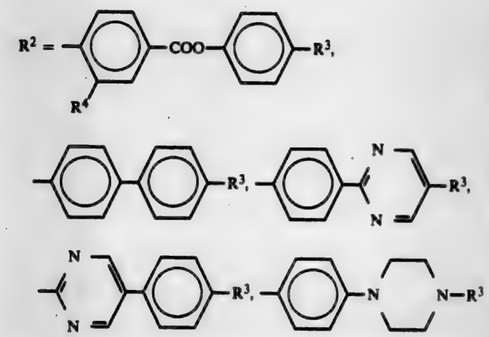
n=4 to 9

$R^4 = -H$, $-Cl$.

12. A liquid crystal trans-6-n-alkyldecalin-2-carbonic acid ester of the general formula



wherein $R^1 = C_nH_{2n+1}$



$R^3 = -C_nH_{2n+1}$, $-OC_nH_{2n+1}$, $-OCOOC_nH_{2n+1}$, $-SC_nH_{2n+1}$, $-Cl$, $-Br$, $-CN$, $-NO_2$, $-H$,

with

n=1 to 10

$R^4 = -H$, $-Cl$, $-C_2H_5$.

4,438,269

4-DIMETHYLAMINOPYRIDINIUM CHLOROCHROMATE

Frank S. Guziec, Jr., Las Cruces, N. Mex., assignor to Thiokol Corporation, Chicago, Ill.

Filed Aug. 9, 1982, Ser. No. 406,585

Int. Cl.³ C07F *11/00*; C07B *3/00*; C07D *333/22, 309/12*

U.S. Cl. 546—9 **1 Claim**

1. 4-dimethylaminopyridinium chlorochromate.

4,438,270

α-HALOMETHYL DERIVATIVES OF α-AMINO ACIDS

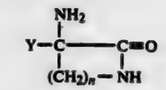
Philippe Bey, Strasbourg, and Michel Jung, Illkirch-Graffenstaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Continuation of Ser. No. 53,937, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 814,765, Jul. 11, 1977, abandoned. This application Jun. 25, 1982, Ser. No. 392,051

Int. Cl.³ C07D *211/76, 223/10*

U.S. Cl. 546—243 **4 Claims**

1. A compound having the formula



wherein Y is F_2CH-, F_3C or Cl_2CH-; and n is the integer 3 or 4.

4,438,271

2-ETHYLSULFONYL PYRIDINE 1-OXIDE DERIVATIVES

Allyn R. Bell; Arthur M. P. Doweyko, both of Cheshire, and John A. Minatelli, Watertown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,550

Int. Cl.³ C07D *211/72, 211/84, 213/62*

U.S. Cl. 546—294 **3 Claims**

1. 2-[1-(2,6-Dichlorophenyl)ethylsulfonyl]pyridine 1-oxide.

4,438,272

SPIRO-(FLUOREN-9,4'-IMIDAZOLIDINE)-2',5'-DIONES

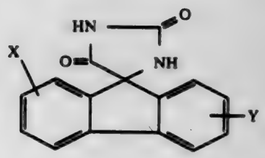
Billie M. York, Jr., Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Apr. 15, 1982, Ser. No. 368,631

Int. Cl.³ C07D *235/02*

U.S. Cl. 548—308 **14 Claims**

1. A spiro-(fluoren-9,4'-imidazolidine)-2', 5'-dione or pharmaceutically acceptable salt thereof having the formula



Where

x=hydrogen, fluoro, methylthio, methylsulfinyl, and methylsulfonyl, and

y=fluoro, methylthio, melthylsulfinyl and methylsulfonyl.

4,438,273

ISOIMIDE CONTAINING OLIGOMERS

Abraham L. Landis, Northridge, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

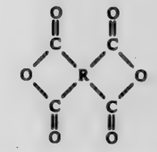
Filed Jul. 24, 1981, Ser. No. 286,317

Int. Cl.³ C07D *307/66, 307/90, 307/77*

U.S. Cl. 549—303 **11 Claims**

1. A polymerizable isoimide-containing oligomer prepared by:

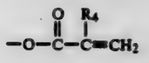
(a) reacting a carboxylic acid anhydride having the formula:



where R is a tetravalent organic group containing 2 to 27 carbon atoms, with a functional amine having the formula:

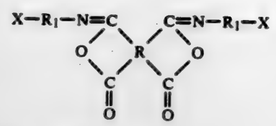
H_2N-R_1-X

wherein R_1 is a divalent organic group containing 1 to 20 carbon atoms and X is a radical selected from the group consisting of $-C{\equiv}CH$, $-CH{=}CH_2$, $-CN$, and



where R_4 is H or CH_3; and

(b) dehydrating the product under conditions to form an isoimide-containing oligomer having the formula:



where R_1 and X are defined above.

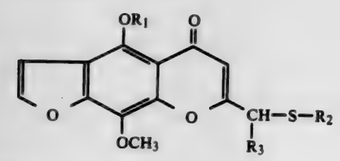
4,438,274

ANTIATHEROSCLEROTIC FUROCHROMONES

Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 17, 1982, Ser. No. 378,700
Int. Cl.³ C07D *311/78*
U.S. Cl. 549—387 **4 Claims**

1. A furochromone of formula I



wherein R_1 is C_{1-4} alkyl;
wherein R_2 is C_{1-6} alkyl; and
wherein R_3 is —O—CO—R_4, wherein R_4 is C_1–C_4 alkyl.

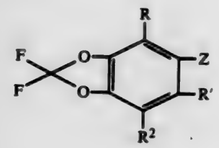
4,438,275

COMBATING ARTHROPODS WITH NOVEL BENZYL ESTERS

Reinhard Lantzsch; Albrecht Marhold, both of Leverkusen; Wolfgang Behrenz, Overath, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 30,579, Apr. 16, 1979, Pat. No. 4,310,540. This application Jul. 30, 1981, Ser. No. 288,440
Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819788
Int. Cl.³ C07D *317/44*
U.S. Cl. 549—434 **3 Claims**

1. A benzodioxole of the formula



in which
R, R′ and R^2 each is hydrogen or halogen but at least one is halogen, and
Z is CH_2Cl, CH_2Br, CH_2OH, Br or CHO.

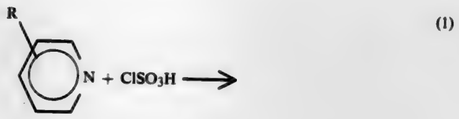
4,438,276

PROCESS FOR SYNTHESIZING N-ISOPROPYL-N′-O-CARBOMETHOXYPHENYLSULPHAMIDE

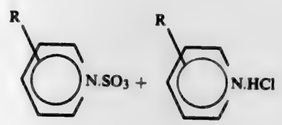
Nicolo Stabile, Pavia; Raimondo Motta, Milan, and Giancarlo Gosso, Desio, all of Italy, assignors to Oxon Italia S.p.A., Milan, Italy

Filed Jul. 13, 1982, Ser. No. 397,878
Claims priority, application Italy, Jul. 17, 1981, 23001 A/81
Int. Cl.³ C07C *143/78*
U.S. Cl. 560—13 **4 Claims**

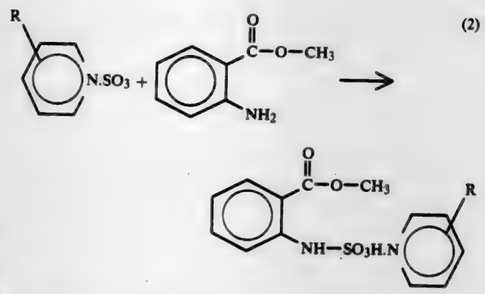
1. A process for synthesising N-isopropyl-N′-o-carbomethoxyphenylsulphamide, characterised in that sulphuric chlorohydrin is reacted with a pyridic base, which also acts as the solvent, at a temperature of between −10° C. and 50° C. in accordance with the reaction:



(1)

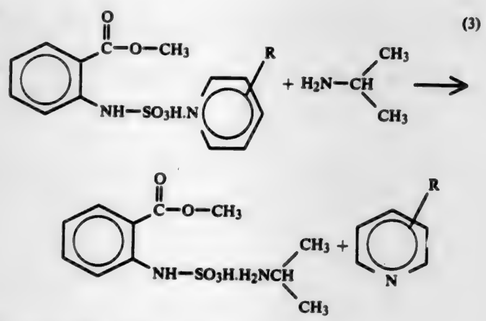


where R is H or CH_3;
anthranilic acid methyl ester is added at a temperature of between 0° and 60° C. in accordance with the reaction:



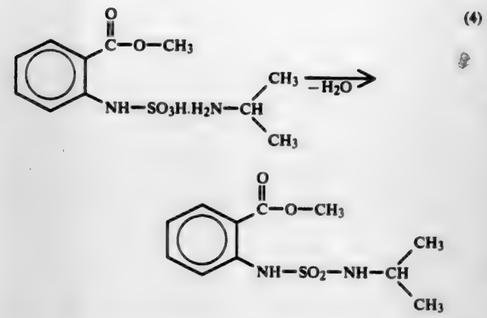
(2)

isopropylamine is added at a temperature of between 0° and 60° C. in accordance with the reaction:



(3)

a dehydrating agent is added at a temperature of between 20° and 80° C. in order to effect the reaction:



(4)

and the product obtained is precipitated by dilution with water and recovered by filtration.

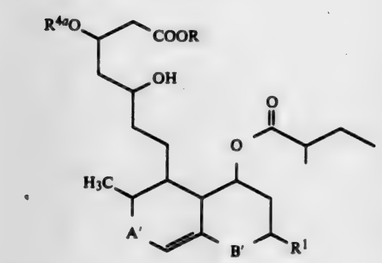
4,438,277

HYDRONAPHTHALENE DERIVATIVES

Akira Terahara; Kiyoshi Hamano; Yoshio Tsujita, and Minoru Tanaka, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 256,243, Apr. 21, 1981, Pat. No. 4,361,515. This application Apr. 15, 1982, Ser. No. 368,673
Claims priority, application Japan, Apr. 22, 1980, 55-53057
Int. Cl.³ C07C *69/738, 69/734, 69/03*
U.S. Cl. 560—119 **6 Claims**

1. Compounds of formula (Id):



(Id)

wherein:
R represents an alkali metal or a straight or branched chain C_1–C_4 alkyl group;
R^1 represents a hydrogen atom or a methyl group;
R^{4a} represents a hydrogen atom or a straight or branched chain C_1–C_6 alkanoyl group;
A′ represents a group of formula



in which R^8 represents a hydrogen atom, a straight or branched chain C_1–C_4 alkyl group or a straight or branched chain C_2–C_6 alkanoyl group, a group of formula



in which X represents a halogen atom, or a group of formula



and
B′ represents a group of formula



in which R^9 represents a hydrogen atom or a straight or branched chain C_2–C_6 alkanoyl group, a group of formula



in which X is as defined above, or a group of formula



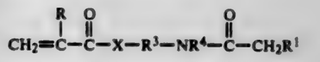
4,438,278

POLYMERIZABLE ETHYLENICALLY UNSATURATED AMIDE COMPOUNDS

Ignazio S. Ponticello, Rochester; Kenneth R. Hollister, Pittsford, and Richard C. Tultes, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 157,600, Jun. 9, 1980, which is a division of Ser. No. 85,138, Oct. 15, 1979, which is a division of Ser. No. 971,463, Dec. 20, 1978. This application Apr. 19, 1982, Ser. No. 370,001
Int. Cl.³ C07C *103/133*
U.S. Cl. 560—205 **6 Claims**

1. A compound of the formula:



wherein R is hydrogen or methyl; —X— is —NR^4— or —O—; R^1 is cyano or



wherein R^2 is alkyl of 1 to 6 carbon atoms; R^3 is alkylene of 1 to 12 carbon atoms, arylene of 6 to 12 carbon atoms, arylenebisalkylene of 8 to 32 carbon atoms, alkylenebisarylene of 13 to 34 carbon atoms, arylenealkylene of 7 to 24 carbon atoms or cycloalkylene of 4 to 12 carbon atoms; and R^4 is hydrogen or alkyl of 1 to 6 carbon atoms.

4,438,279

FIBER-GRADE TEREPHTHALIC ACID RECOVERED FROM THE EFFLUENT FROM PARAXYLENE OXIDATION IN ACETIC ACID AND THE CATALYTIC HYDROGENATION OF THE OXIDATION EFFLUENT IN THE PRESENCE OF METALLIC PLATINUM FAMILY METALS

Lawrence G. Packer, Lisle, Ill., and Edward J. Schlossmacher, Erie, Pa., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 306,959, Sep. 30, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,487

Int. Cl.³ C07C *51/16, 51/42*

U.S. Cl. 562—416 **9 Claims**

1. A process for the recovery of terephthalic acid of fiber-grade quality directly from the fluid effluent obtained (a) by catalytically oxidizing p-xylene in the liquid phase at a temperature from 170° C. to 225° C. with air as the source of oxygen and in the presence for 1.0 weight part of p-xylene from 2.0 to 10 weight parts of an acetic acid solution as the reaction solvent containing 0.4 to 22 milligram atoms of cobalt per 1.0 gram mole of p-xylene for each milligram atom of cobalt from 0.05 to 2.0 milligram atoms of manganese and for each milligram atom of total cobalt and manganese from 0.5 up to 1.5 milligram atoms of bromine; (b) heating the resulting fluid oxidation effluent comprising about 3 to 20 weight percent water and about 97 to 80 weight percent acetic acid to a temperature of from 260° C. up to 320° C. under a pressure sufficient to maintain a liquid phase of acetic acid and in the presence of sufficient acetic acid to dissolve all solids present in said effluent at the temperature range of 260° C. to 320° C.; (c) contacting the resulting solution and with hydrogen gas in the amount to provide its partial pressure of from 1.0 up to 15 kg/cm^2 with a platinum family metal catalyst; (d) cooling the hydrogen treated solution to precipitate terephthalic acid therefrom; (e) separating the precipitate from the acetic acid mother liquor; comprising about 97 to 80 weight percent acetic acid, and about 3 to 20 weight percent water; (f) washing the separated precipitate with fresh acetic acid; comprising about 3 to about 20 weight percent water and about 97 to about 80 weight percent acetic acid; and (g) drying the washed precipitate.

4,438,280

BIS-(MALEAMIC ACID) DERIVATIVES OF TRIAMINES

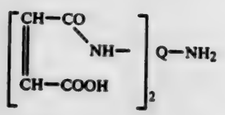
Walter J. Monacelli, St. Petersburg, Fla., assignor to Plastics Engineering Company, Sheboygan, Wis.

Division of Ser. No. 267,379, May 26, 1981. This application Jul. 12, 1982, Ser. No. 397,056

Int. Cl.³ C07C *101/453*

U.S. Cl. 562—457 **3 Claims**

1. A bis(maleamic acid) derivative of a triamine having the formula:



wherein Q is a trivalent benzenoid aromatic radical.

4,438,281

SELECTIVE PRODUCTION OF MONOALKANOLAMINES FROM ALKYLENE OXIDES AND AMMONIA OVER ACIDIC INORGANIC CATALYSTS

Fred L. Johnson, Jr., Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,505

Int. Cl.³ C07C *85/18*

U.S. Cl. 564—477 **8 Claims**

1. An anhydrous process for preparing monoalkanolamines which comprises reacting an alkylene oxide with an excess of ammonia in the presence of an acidic inorganic catalyst selected from the group of catalysts consisting of silica-alumina, zeolites, molecular sieves and acid clays.

4,438,282

PREPARATION OF SULFIDES

Hartmut Lardon, Ludwigshafen, and Guenther Seybold, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,105

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125920

Int. Cl.³ C07C *149/30, 149/10*

U.S. Cl. 568—58 **21 Claims**

1. A process for the preparation of a sulfide of the formula

$$R^1—S—R^2 \qquad I$$

where R^1 and R^2 can be identical or different groups and each is alkyl of 1–8 carbon atoms, cycloalkyl of 5–8 carbon atoms, aralkyl or alkylaryl of 7–12 carbon atoms, or phenyl or chlorophenyl, or where R^1 and R^2 as alkylene groups together with the adjacent sulfur atom also form a 5-membered or 6-membered heterocyclic ring, each of the above groups being unsubstituted or substituted by oxo, chloro, nitro, cyano or alkyl or alkoxy of 1–7 carbon atoms each, which process comprises:

reducing a sulfoxide of the formula

$$R^1—\overset{\overset{O}{\|}}{S}—R^2 \qquad II$$

where R^1 and R^2 have the above meanings, by reacting it with an amine derivative of the formula

$$H_2N—XR^3 \qquad III$$

where X is oxygen or

$$—\overset{\overset{H}{|}}{N}—, \qquad III$$

and R^3 is hydrogen, a sulfonic acid group or an acyl group of a carboxylic acid, or with its ammonium salt, the carbonyl groups which may be present in R^1 and R^2 being converted to ketoximes in the case in which R^3 is hydrogen and X is oxygen, and to the hydrazones in the case in which R^3 is hydrogen and X is

$$—\overset{\overset{H}{|}}{N}—.$$

4,438,283

PROCESS FOR THE PREPARATION OF HYDROXY-KETONES

Karl H. Schulte-Elte, Onex; Roger L. Snowden, Grand-Lancy, and Bernard L. Muller, Geneva, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

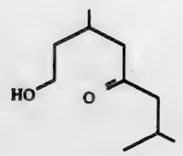
Filed Jun. 25, 1982, Ser. No. 391,996

Claims priority, application Switzerland, Jul. 24, 1981, 4842/81

Int. Cl.³ C07C *45/51*

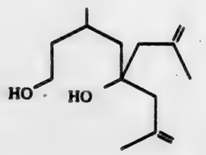
U.S. Cl. 568—403 **4 Claims**

1. A process for the preparation of hydroxy-ketones having formula



(Ia,b)

possessing a double bond in one of the positions indicated by the dotted lines which comprises treating with at least a stoichiometric amount of a strong base, in an inert organic solvent, a diallyl carbinol of formula



(II)

4,438,284

CATALYSTS FOR OXIDATIVE COUPLING OF PHENOLS

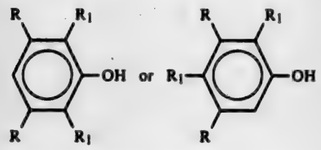
Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 241,969, Mar. 9, 1981, abandoned. This application May 17, 1982, Ser. No. 378,674

Int. Cl.³ C07C *39/14*

U.S. Cl. 568—730 **14 Claims**

1. A process for preparing by an oxidation coupling reaction a carbon-carbon coupled or carbon-oxygen coupled condensation product of a substituted phenol of the formula



wherein each R is hydrogen, halogen or R_1, and each R_1 is a substituent having up to 10 carbons selected from the group consisting of hydrocarbon, halohydrocarbon and hydrocarbonoxy comprising contacting the substituted phenol with an oxygen-containing gas under oxidative coupling conditions in the presence of a heterogeneous catalyst comprising cobalt present in an oxidation state suitable for forming oxidatively coupled reaction products.

4,438,285

PROCESS FOR THE CATALYTIC HYDROGENATION OF 1-4-BUTYNEDIOL TO 1-4 BUTANEDIOL

Franco Codignola, Buenos Aires, Argentina, assignor to S.I.S.A.S. Societa Italina Serie Acetica Sintetica S.p.A., Milan, Italy

Continuation of Ser. No. 184,838, Sep. 8, 1980, abandoned, which is a division of Ser. No. 49,245, Jun. 18, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,913

Claims priority, application Italy, Jun. 16, 1978, 24649 A/78

Int. Cl.³ C07C *31/20, 29/17*

U.S. Cl. 568—861 **7 Claims**

1. A process for producing 1–4 butanediol comprising reacting 1–4 butynediol with hydrogen in the presence of a catalyst comprising ruthenium and palladium in a weight ratio of about 4:1, at a temperature of from 60° to 180° C. and at a pressure of between 1 to 50 bars.

4,438,286

SUBSTITUTED ESTERS AND ALCOHOLS

Gohfu Suzukamo; Mitsuhisa Tamura, both of Osaka, and Masami Fukao, Shiga, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

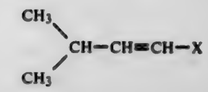
Filed Oct. 8, 1982, Ser. No. 433,443

Claims priority, application Japan, Oct. 16, 1981, 56-166075; Oct. 16, 1981, 56-166076; Oct. 16, 1981, 56-166077; Oct. 16, 1981, 56-166078; Oct. 16, 1981, 56-166079

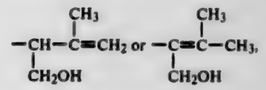
Int. Cl.³ C07C *33/02, 31/125*

U.S. Cl. 568—840 **3 Claims**

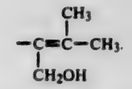
1. A substituted diene alcohol represented by a general formula:



wherein X represents a group of the formula



which has E configuration when X represents a group of the formula



4,438,287

PREPARATION OF ALCOHOLS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 248,385, Mar. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 93,461, Nov. 13, 1979, abandoned. This application Aug. 25, 1982, Ser. No. 411,213

Int. Cl.³ C07C *29/16*

U.S. Cl. 568—909 **11 Claims**

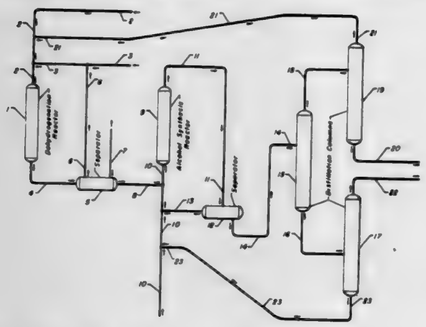
1. A process for the selective preparation of an alcohol hydroformylation product to the substantial exclusion of an aldehyde from a dehydrogenatable aliphatic paraffinic hydrocarbon possessing from 2 to about 30 carbon atoms which comprises the steps of:

(a) dehydrogenating said aliphatic paraffinic hydrocarbon in a dehydrogenation zone in the presence of from about 0.01

to about 2.0 wt. % of a noble metal of Group VIII of the Periodic Table in the elemental metallic state, from about 0.1 to about 5.0 wt. % of at least one element selected from Groups IA and IIA of the Periodic Table present in an oxidation state and from about 0.01 to about 5.0 wt. % of at least one element selected from Groups IVA, VA and VIIB of the Periodic Table present in an oxidation state composited on a porous alumina or silica carrier material to produce a reaction product comprising vaporous light ends and a liquid dehydrogenation effluent mixture comprising both aliphatic olefinic hydrocarbons and aliphatic paraffinic hydrocarbons;

(b) transferring said vaporous light ends and said liquid dehydrogenation products to a gas-liquid separation zone;

(c) separating said vaporous light ends from said liquid dehydrogenation effluent mixture comprising both aliphatic olefinic and aliphatic paraffinic hydrocarbons;



(d) passing said liquid dehydrogenation effluent mixture without any separation of said aliphatic olefinic hydrocarbon from aliphatic paraffinic hydrocarbon to a hydroformylation zone;

(e) hydroformylating said liquid dehydrogenation effluent mixture at hydroformylation conditions which include a temperature in the range of from about 50 to about 350° C. and a pressure in the range of from about 10 up to less than 300 atmospheres by treating said mixture with carbon monoxide and hydrogen in the presence of both a hydroformylation catalyst consisting essentially of a rhodium carbonyl compound and a promoter comprising a trialkyl-substituted amine in which all three of said alkyl moieties are substituted to the nitrogen atom of said amine; and

(f) recovering the selectively produced alcohol.

4,438,288

DEHYDROGENATION OF HYDROCARBONS WITH A HALOGEN CONTACTING STEP

Tamotsu Imai, Mt. Prospect, Ill., and Chi-Wen Hung, San Rafael, Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 477,699, Mar. 22, 1983, which is a continuation-in-part of Ser. No. 326,969, Dec. 2, 1981, abandoned. This application May 19, 1983, Ser. No. 496,146

Int. Cl.³ C07C *5/23*; B01J *37/22*

U.S. Cl. 585—379 **13 Claims**

1. A process for dehydrogenating hydrocarbons which comprises the steps of:

(a) contacting a dehydrogenatable hydrocarbon in a dehydrogenation zone with a catalyst comprising a platinum group component, an alkali or alkaline earth component and a porous support material to produce a dehydrogenated hydrocarbon and a used catalyst;

(b) contacting said used catalyst from step (a) above in a catalyst regeneration zone with a halogen component to produce a regenerated catalyst containing added halogen component; and

(c) contacting a dehydrogenatable hydrocarbon in a dehydrogenation zone with said catalyst from step (b) above to produce a dehydrogenated hydrocarbon and a used catalyst.

12. A process for regenerating a dehydrogenation catalyst comprising a platinum group component, an alkali or alkaline earth component and a porous support material with comprises:

(a) burning carbon from the used catalyst at about 850° F. with a regeneration gas stream containing between about 0.3 and 0.8 mol % oxygen, and

(b) contacting the catalyst with a halogen component to provide a catalyst containing added halogen component.

4,438,289

REDUCTION OF CYCLOPENTADIENE FROM ISOPRENE STREAMS

Richard M. D'Sidocky, Ravenna, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 350,913, Feb. 22, 1982, Pat. No. 4,392,004. This application Jul. 1, 1983, Ser. No. 510,471

Int. Cl.³ C07C *7/01, 7/12*

U.S. Cl. 585—827 **4 Claims**

1. A process for the removal of small amounts of cyclopentadiene (CPD) from a C-5 hydrocarbon stream which comprises contacting said stream with activated carbon.

4,438,290

FAST RESPONSE THERMOCOUPLE SURFACE PROBE

Alfred E. Wells, Jr., Rochelle Park, and James H. Casillo, Towaco, both of N.J., assignors to Thermo Electric Co., Inc., Saddle Brook, N.J.

Filed Jun. 15, 1981, Ser. No. 388,695

Int. Cl.³ H01L *35/28*

U.S. Cl. 136—221 **9 Claims**



1. A thermocouple, comprising:

a cylindrical body having a top surface with said top surface having first and second transverse crossing slots, with a first strip of resilent thermocouple material of a first type having end portions extending from the top surface towards the bottom surface of said body and having a bowed central portion positioned above and parallel to said first slot, to form a leaf type spring, a second strip of resilent thermocouple material of a second type having end portions directed from the top surface to the bottom surface of said body and having a bowed central positioned above and parallel to said second slot to form a leaf type spring, whereby said bowed central portions are transvere to and cross each other and as crossing are in contact to form a thermocouple portion with said slots operative to allow said bowed portions to flatten and expand outwardly without contracting said body via the spring action when said strips are forced against a surface upon which a temperature measurement is to be made.

4,438,291

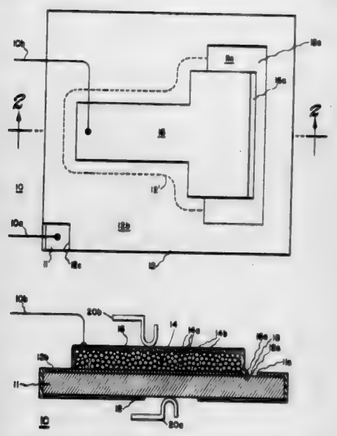
SCREEN-PRINTABLE THERMOCOUPLES

Charles W. Eichelberger, Schenectady; Robert J. Wojnarowski, Ballston Lake, and Abraham Auerbach, Albany, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,966

Int. Cl.³ H01J *35/12*

U.S. Cl. 136—236 R **20 Claims**



1. A thermocouple comprising:

a substrate of a first conductor, said substrate having a surface;

a layer of insulation fabricated upon at least a portion of said substrate surface, said insulative layer having a surface opposite said substrate;

an ink composition design fabricated upon at least a portion of said insulative layer surface, said ink composition including a polymer having at least 75% by weight of a powdered metal dispersed therein; and

a second conductor, of a material different from said first conductor and from the powdered metal of said ink composition, plated onto at least a portion of each of said ink composition design and also onto said substrate surface, and forming a single thermocouple junction by contact or said second conductor with said substrate conductor.

4,438,292

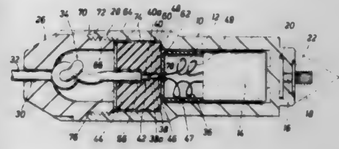
WATERPROOF HOUSING ASSEMBLY FOR GEOPHONES

James C. Woodall, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Aug. 25, 1982, Ser. No. 411,467

Int. Cl.³ G01V *1/16*

U.S. Cl. 174—52 R **3 Claims**



1. A waterproof housing and geophone assembly comprising a housing having an elongated cavity, a geophone in the cavity, means mounting the geophone in the bottom portion of the cavity, a two conductor cable extending into the cavity having a first section with the outer sheath and insulation stripped from the two conductors part of the way back from the end and a second section adjacent the first with the sheath removed from the insulated conductors, a body of elastomeric material in the cavity having a first pair of spaced openings through which the uninsulated first section of the cable extends to be connected to the geophone, a second pair of spaced openings connected to the first pair in which the second section of the cable is located, and a single opening connected to the second pair in which a portion of the sheathed cable is located, and means to compress the body of elastomeric material into sealing engagement with the housing and with the uninsulated conductors, the insulated conductors, and the outer sheath of the cable to prevent water from entering the portion of the housing containing the geophone even if the outer sheath and the insulation on the conductors develop a leak outside the housing.

4,438,293

CABLE WITH IMPREGNATED FIBER STRENGTH MEMBER FOR NON-SLIP CLAMPING

Othmar Voser, Möriken, Switzerland, assignor to Kupferdraht-Isolierwerk AG Wildegg, Wildegg, Switzerland

Division of Ser. No. 186,386, Sep. 11, 1980. This application Aug. 28, 1981, Ser. No. 297,341

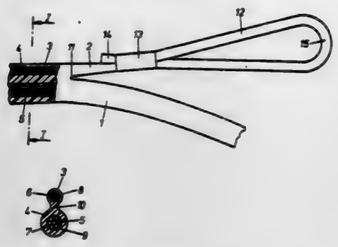
Claims priority, application Switzerland, Sep. 18, 1979, 8444/79

Int. Cl.³ H02G *15/06, 7/06*

U.S. Cl. 174—79 **14 Claims**

1. A composite cable comprising a tensile load carrier element, an overhead cable, a common protective covering enclosing said carrier element and said overhead cable and uniting the same, and connecting means transferring a tensile load to said carrier element, said covering comprising two channels, one for said carrier element and one for said overhead cable, said carrier element comprising a bundle of synthetic fibres having smooth surfaces and a tensile strength in excess of 200 kg/mm², a modulus of elasticity in excess of 3000 kg/mm², and

an elongation at rupture of less than 10%, said fibres, in order to reduce the risk of slippage in connecting regions of said carrier element due to their smooth surfaces, being impregnated at least over at least the connecting regions thereof, with a material uniting the fibres of the element and, when subjected



to compressive and/or bonding stress exceeding its ultimate strength for such stress, breaking down into a powder within the stressed areas and being broken down into a powder within the connecting regions thereby causing within such regions a wedging action both between the individual fibres of the bundle as well as at the exterior surface of the bundle as a whole.

4,438,294

CABLE SLEEVE WITH AN ENTRANCE SOCKET OF SHRINKABLE MATERIAL

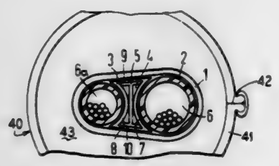
Hans J. Meltsch, Germering, and Jan Rost, Traubing, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

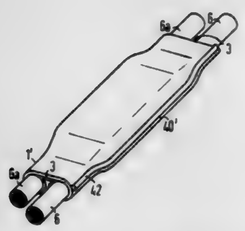
Filed Jan. 5, 1982, Ser. No. 337,295

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104916; European Pat. Off., Jul. 1, 1981, 81105109.3

Int. Cl.³ H02G *15/04*

U.S. Cl. 174—88 R **40 Claims**





1. In a cable sleeve having a longitudinally extending joint and a cable entrance socket at each end of the sleeve, said cable entrance socket consisting of a shrinkable material and receiving a liner element having an axis and having external axially extending recesses for receiving portions of the cables being introduced into the cable entrance socket, and said socket having sealing material for forming a seal between the material of the socket and sheath of the cable engaged by the cable entrance socket, the improvements comprising the liner element consisting of a thermo-plastic, cross-linked material, said element having a shape memory and being shrinkable toward a previous shape when subjected to a shrinking process.

4,438,295

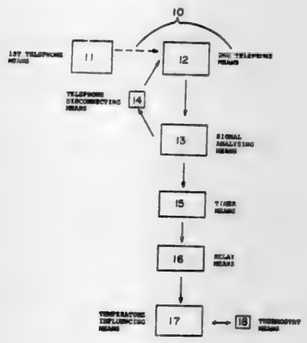
REMOTE TEMPERATURE CONTROL ACTIVATION APPARATUS

Paul D. Hales, P. O. Box 7573, High Point, N.C. 27264

Filed Jun. 1, 1982, Ser. No. 383,538

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 A **12 Claims**



1. Apparatus for remote temperature control activation of a structure comprising: a remote code receiving means, a signal transmitting means, said signal transmitting means communicating with said code receiving means, a signal receiving means, said signal receiving means distant from and communicating with said signal transmitting means, signal analyzing means, said signal analyzing means communicating with said signal receiving means, said signal analyzing means including resisting means and thermostatic switch means, said resisting means communicating with said thermostatic switch means, said resisting means being preset to activate said thermostatic switch means upon receiving a predetermined large plurality of signals, each signal corresponding to a conventional telephone ring from a single telephone call, and temperature influencing means, said temperature influencing means communicating with said signal analyzing means whereby said temperature influencing means is activated by said code receiving means.

4,438,296

MULTIMESSAGE AUTOMATIC TELEPHONE POLLING METHODS AND APPARATUS

Fred J. Smith, Plantation, Fla., assignor to Digital Products Corporation, Fort Lauderdale, Fla.

Filed Sep. 2, 1980, Ser. No. 182,943

Int. Cl.³ H04M *3/46*

U.S. Cl. 179—6.02 **33 Claims**

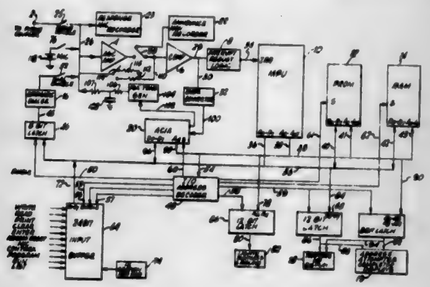
1. Automatic announcement apparatus comprising:

means for recording on a record media a plurality of messages, each of said plurality of messages being recorded in sequence and including a designation code uniquely defining that message, said means for recording including magnetic recorder means, microphone means selectively connectable to said magnetic recorder means for recording a message on said record media, means for selectively supplying one of a plurality of unique designation codes to said magnetic recorder means for recording on said record media and means responsive to an actuation of said microphone means for indicating that said means for selectively supplying one of a plurality of unique designation codes to said magnetic recorder means must be actuated;

means for selectively reproducing from said record media one message at a time including said unique designation code, said reproducing means having a playback station at which a next message to be reproduced is positioned;

memory means for storing a plurality of data words, each data word defining a particular operation and including bit information representing a designation code corresponding to one of said plurality of messages; and

processor means for reading each of said plurality of data words in a sequence from said memory means, said processor means comparing said bit information representing a designation code corresponding to one of said plurality



of messages in each data word read with said unique designation code of said next message to be reproduced as positioned at said playback station and attempting to execute said particular operation defined by said data word and to reproduce said next message to be reproduced by said reproducing means only if an affirmative comparison of said bit information and said designation code of said next message is present, said processor means reading a following data word from said memory means without attempting to execute said particular operation defined for a data word for which a negative comparison resulted.

4,438,297

DYNAMIC SPEAKER

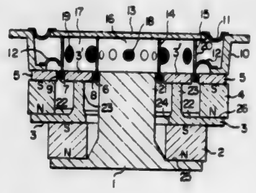
Sinichiro Kawamura, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,445

Claims priority, application Japan, Nov. 28, 1980, 55-166538

Int. Cl.³ H04R *9/02*

U.S. Cl. 179—117 **4 Claims**



1. A dynamic speaker comprising:

first, second and third magnetic poles arranged in at least three layers in spaced relation with each other;

a first magnet arranged between said first and second magnetic poles;

a second magnet arranged between said second and third magnetic poles;

a fourth magnetic pole interposed between the magnetic path of said first magnetic pole and the magnetic path of said third magnetic pole for forming first and second air gaps within said respective magnetic paths;

a first voice coil inserted into said first air gap;

a second voice coil inserted into said second air gap; and

a diaphragm coupled to said first and second voice coils and driven by said first and second voice coils.

4,438,298

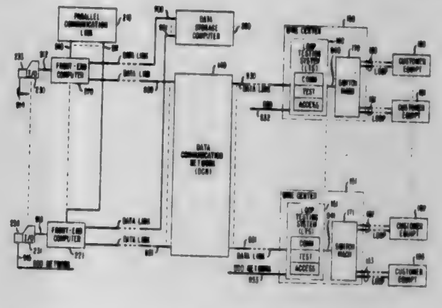
SYSTEM FOR ACCESSING AND TESTING SUBSCRIBER LOOPS

Harvey Rubin, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,185

Int. Cl.³ H04M *3/26*; H04B *3/46*

U.S. Cl. 179—175.2 R **9 Claims**



1. A system, cooperatively arranged with wire center test trunks, for accessing and testing subscriber loops in response to an access request and a test request provided by a system user, said system comprising

first microcomputer means (2000) for receiving and converting said access request and said test request into a corresponding access task and test task,

second microcomputer means (2200), responsive to said first microcomputer means, for processing said access task,

third microcomputer means (e.g., 2101), responsive to said first microcomputer means, for processing said test task, and

a switching network (2700), interposed between said third means and said trunks and responsive to said second means, for interconnecting one of said loops, via one of said trunks, to said third means.

4,438,299

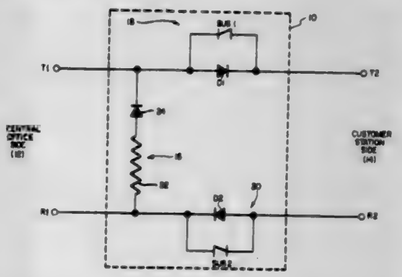
ON-LINE TELEPHONE TROUBLESHOOTING APPARATUS

William L. Tomlm, 520 S. Green Oaks Ct., Addison, Ill. 60101

Filed Feb. 26, 1982, Ser. No. 352,645

Int. Cl.³ H04B *3/46*

U.S. Cl. 179—175.3 F **6 Claims**



1. Telephone station isolating apparatus for electrical connection in circuit across the "tip" line and the "ring" line

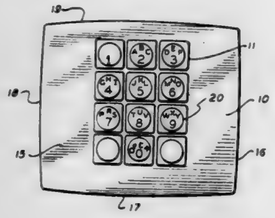
between the "central office" and the "customer station" sides of a telephone network in order to facilitate testing for faults, said apparatus comprising: termination circuit means including a termination resistor and a blocking diode connected in series with each other and arranged to be connected in shunt circuit across the "tip" and "ring" lines with the diode thereof disposed for blocking conduction in the direction from the "tip" to the "ring" line; first control circuit means arranged to be connected in series circuit in the "tip" line between said termination circuit means and the "customer station", said first control circuit means including a blocking diode and a voltage-responsive selective-conduction device connected in parallel with each other with the diode thereof disposed for blocking conduction in the direction from the "customer station"; and second control circuit means arranged to be connected in series circuit in the "ring" line between said termination circuit means and said "customer station" line, said second control circuit means for including a blocking diode and a voltage-responsive selective-conduction device connected in parallel with each other with the diode thereof disposed for blocking conduction in the direction from the "central office" line.

4,438,300

PROTECTIVE COVER FOR TELEPHONE PUSH BUTTON ARRAY

Milton Morse, Fort Lee, N.J., assignor to APM Corporation, Englewood, N.J.

Filed Feb. 23, 1981, Ser. No. 236,757
Int. Cl.³ H04M *1/23*
U.S. Cl. 179—184 **6 Claims**



1. A protective cover for the push-button array of a push-button telephone set, comprising:

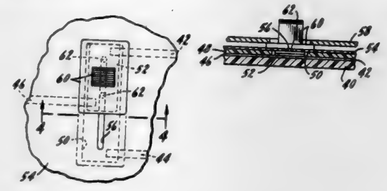
a flexible elastomeric sheet having a grid of upwardly-directed pockets, each of said pockets being defined by substantially vertical side-walls rising above the main plane of said sheet and an upper top portion extending across the tops of said vertical walls, the adjacent vertical walls of adjacent pockets being spaced from each other; said pockets thereby extending above the said plane of said sheet and being open at the lower end for snugly receiving each of the buttons of said array and thereby overlying the corresponding array of push-buttons on said telephone; said top portion of each said pocket being provided with an upwardly protruding portion, the lateral periphery of which is inward of said vertical walls; said pockets being elastically depressible independently of one another toward their open ends, to permit individual displacement of the underlying telephone set push-buttons received in said pockets; said sheet including a skirt portion extending laterally beyond said grid and said sheet being continuous between its lateral edges, whereby said entire push-button array is overlaid by said cover and thereby protected from spillage of liquids or other environmental hazards.

4,438,301

MOVABLE MEMBER MEMBRANE SWITCH

Anthony J. Van Zeeland, Crystal Lake, Ill., assignor to Oak Industries Inc., Rancho Bernardo, Calif.

Division of Ser. No. 401,075, Jul. 23, 1982, Pat. No. 4,405,841.
This application Mar. 25, 1983, Ser. No. 478,693
Int. Cl.³ H01H *15/00*
U.S. Cl. 200—16 C **3 Claims**



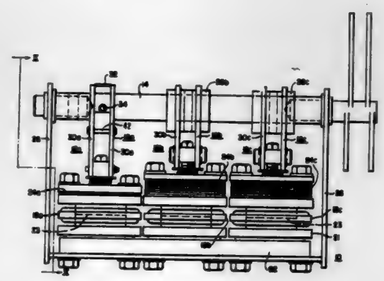
1. A slide switch using membrane technology including a substrate having spaced contacts thereon, a spacer positioned upon said substrate and contacts and having an opening therein which extends over an area in register with at least a portion of said spaced substrate contacts, a slide member positioned for movement in said spacer opening, a membrane positioned upon said spacer and having an opening therein in alignment with said spacer opening, a contact formed on the surface of said membrane facing said substrate and at least in part overlapping the opening in said spacer, said slide member being movable between positions to connect said membrane contact with one or more of said substrate contacts, and an operating member positioned upon said membrane and having means extending through said membrane opening into engagement with said slide member to cause operation thereof.

4,438,302

ELECTRICAL SHORTING SWITCH ASSEMBLY INCLUDING A LAST TO OPEN LAST TO CLOSE ARCING SWITCH

Robert M. Hruda, Horseheads, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 17, 1982, Ser. No. 349,484
Int. Cl.³ H01H *3/00, 33/66*
U.S. Cl. 200—17 R **6 Claims**



1. An electrical shorting switch assembly for connection across an electrolytic cell as a bypass shorting switch in parallel with the electrolytic cell comprising:

(a) a plurality of hermetically sealed switch modules which are connected in electrical parallel with respect to each other and to the electrolytic cell, with one of the switch modules comprising an arcing switch module which is the last-to-open and lost-to-close switch module;

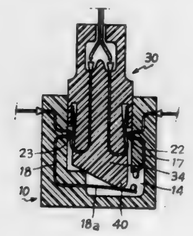
(b) switch operating means which permits sequential operation of the arcing switch module relative to the other switch modules, including means for determining that the arcing switch module is the last-to-open and last-to-close.

4,438,303

ASSEMBLY FORMING INTERFITTING SOCKET AND PLUG FOR CONNECTION TO A CIRCUIT IN WHICH THE SOCKET IS MOUNTED, WITHOUT THE CIRCUIT OPENING

Louis Astier, 51 avenue du General de Gaulle, Meudon la Foret, France 92360

Filed Apr. 13, 1981, Ser. No. 253,398
Claims priority, application France, Apr. 14, 1980, 80 08280
Int. Cl.³ H01H *27/00*
U.S. Cl. 200—51.1 **9 Claims**



1. An assembly forming an interfitting socket and plug for connection to a circuit in which the socket is mounted, without the circuit opening, wherein:

(a) the socket comprises:

(1) a body made of insulating material and provided with an outwardly open housing;

(2) a switch located in said housing near the bottom thereof and having two contact elements which are borne by conducting blades allowing series connection of the switch to the circuit through said body by being embedded in said insulating material, one of said blades having a rectilinear free end part projecting from said insulating material near the bottom of the housing and forming a substantially rectilinear elastic member bearing one of the contact elements so as to allow the return of the switch into position of closure by an elastic return force and to form a contact by pressure; and

(3) two first branch contact elements integral with said conducting blades and projecting from said insulating material on two opposite side walls of the housing inside said housing; and

(b) the plug comprises:

(1) a push element made of insulating material for opening the switch against said elastic return force when the plug is inserted into the outwardly open housing, said push element having a front end adapted for engagement with said elastic member which extends in a transverse direction with respect to the direction of insertion of the plug into the socket, and said push element having opposite side faces guided along said opposite walls of the housing, whereby the push element occupies virtually the whole width of the housing; and

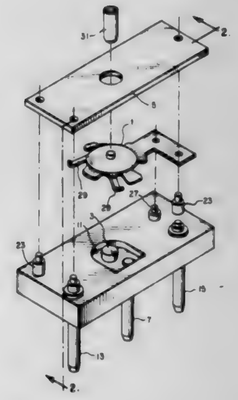
(2) two second branch contact elements located on said opposite side faces of the push element and borne by conducting blades allowing connection of said second branch contact elements to respective conductors through said push element by being embedded in the insulating material thereof, each second branch contact element coming into contact with a respective first branch contact element for a penetration of the plug less than that necessary for opening the switch, so that each pair constituted by a first branch contact element and a corresponding second branch contact element forms a sliding contact, said pressure type contact and said sliding type contacts lying substantially in a same plane parallel to said direction of insertion.

4,438,304

DOUBLE THROW SNAP ACTION SWITCH

Maruice E. Kennedy, Crystal Lake, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Oct. 1, 1982, Ser. No. 432,250
Int. Cl.³ H01H *21/40*
U.S. Cl. 200—67 D **14 Claims**



1. A snap action switch, comprising:

an electrically conducting terminal plate having at least one aperture formed therethrough;

an electrically conducting stationary contact spaced from said terminal plate;

an electrically conducting contactor means disposed between said terminal plate and said stationary contact,

said contactor means including a snap action dome having at least one cantilevered spring arm for supporting the dome in a stable position in spaced relation to said stationary contact and in conductive contact with the terminal plate; and

pushbutton means mounted over said terminal plate for engaging said dome through said aperture and flexing the dome away from the terminal plate and against the stationary contact when the pushbutton means is pressed, the dome returning to its stable position when the pushbutton means is released.

4,438,305

FIRE RESISTANT PRESSURE SWITCH

James R. Johnson, Johnson County, Kans., assignor to Sor, Inc., Olathe, Kans.

Filed Oct. 13, 1981, Ser. No. 310,783
Int. Cl.³ H01H *35/40*
U.S. Cl. 200—83 J **3 Claims**

1. A fire resistant switch device responsive to the pressure of a fluid medium, said device comprising:

a housing having a tubular end for connection with the fluid medium;

a pressure responsive piston in said housing supported for movement therein between first and second positions;

a switch element;

actuating means for effecting a first condition of said element when said piston is in said first position and a second condition of the switch element when said piston is in said second position;

yieldable means for urging said piston toward said first position;

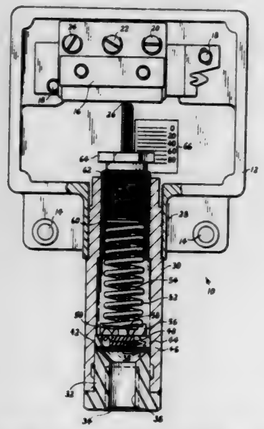
a metal fitting insertable in the said end of said housing, said

fitting located on the opposite side of said piston from said switch, said fitting including

(a) a pressure port therethrough for communication with the fluid medium, said port having opposite ends including an inlet end for the fluid medium,

(b) a flexible metal diaphragm overlying the end of said port opposite the inlet end and having its periphery generally coincident with the periphery of the fitting,

(c) a metal ring member overlying said diaphragm and having its periphery generally coincident with the periphery of said diaphragm,



(d) the adjoining peripheries of said fitting, diaphragm and ring member all being joined together by a continuous weld seam providing a pressure tight connection sealing off the housing from the fluid medium which will remain effective in the event of high temperature destruction of other components of the device,

(e) a movable disk assembly within said ring member and disposed to respond to movement of said diaphragm caused by pressure changes in the medium and operable to move said piston in response to movement of said diaphragm thereby to actuate said piston between said first and second positions.

4,438,306

CIRCUIT INTERRUPTER OPERATING MECHANISM HAVING A CHEMICAL OPERATOR WITH A STATIONARY PISTON

Ronald W. Crookston, Penn Township, Westmoreland County, and Ivan T. Burney, Plum, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1982, Ser. No. 339,605

Int. Cl.³ H01H *33/42*

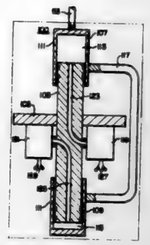
U.S. Cl. 200—148 F **6 Claims**

1. An electric circuit interrupter, comprising:

a pair of separable contacts;

operating means operatively connected to said contacts for opening and closing said contacts;

drive means operatively connected to said operating means for driving the operating means including a stationary drive piston and a movable drive cylinder enveloping said drive piston to define a drive displacement cavity; and



pressure generating means for generating an expulsion of gaseous medium into said drive displacement cavity.

4,438,307

ELECTRIC VACUUM SWITCH

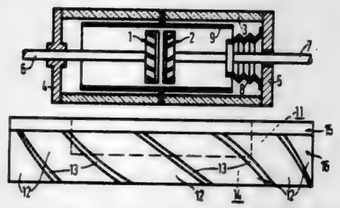
Hans-Joachim Lippmann; Gerhard Peche, and Hans Bettge, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 111,668, Jan. 14, 1980, which is a continuation of Ser. No. 820,796, Aug. 1, 1977. This application Mar. 31, 1983, Ser. No. 480,899

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2638700

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **8 Claims**



1. An electric vacuum switch comprising in combination: two cup-shaped switching contact components comprising electrically conductive material and which each have a contact carrier with a base and a cylindrical jacket-shaped wall and having a wall at an end side facing away from the base; a contact ring which is placed onto the wall at the end side facing away from the base and which has a ring-shaped contact surface; the cylindrical wall being divided up into segments by means of radial slots running obliquely to a central axis of said contact components; the electrical conductivity being suddenly reduced at least by a factor of 3 at the junction from said contact carrier to said contact ring by providing the ring with a contact material which has an electrical conductivity lower than that of the carrier at least by the factor 3; said contact carrier comprising primarily copper and the contact ring comprising a chrome matrix with an impregnation metal primarily comprised of copper; at least upper portions of the jacket-shaped cylindrical wall being formed of said impregnation metal and being joined to said contact ring by a back casting of the impregnation metal of the contact ring onto said upper portions, and at least said upper portions of the wall being soldered by a solder layer onto remaining portions of the contact carrier such that said solder layer is arranged deep and away from the contact ring whereby influencing of solder vapor upon the arc is minimized.

4,438,308

PUFFER PISTON CIRCUIT BREAKER

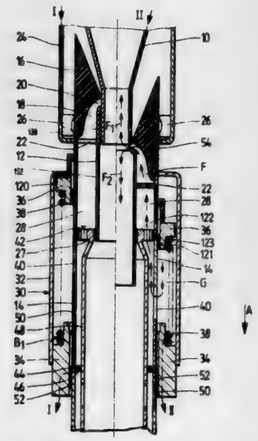
Gerhard Körner, Schriesheim, and Volker Rees, Darmstadt, both of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 27, 1981, Ser. No. 257,709

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3015946

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 A **29 Claims**



1. A puffer piston circuit breaker having a stationary and a movable contact, at least one of which is tubular in form, and a piston-cylinder puffer assembly fixedly connected with the movable contact such that there is relative displacement of the puffer piston and cylinder toward each other during a disconnecting action to obtain a flow of quenching gas for extinguishing the electrical arc created during the disconnecting action, wherein the improvement comprises a supplemental piston-cylinder assembly which defines a compression space, and means actuated by the current during the disconnecting action for causinq said supplemental piston-cylinder assembly to compress said compression space and thereby provide additional quenching gas to said flow of quenching gas.

4,438,309

TOOL HOLDER FOR MANIPULATOR ARM

Ernst Zimmer, Friedberg, Fed. Rep. of Germany, assignor to Kuka Schweissanlagen & Roboter GmbH, Augsburg, Fed. Rep. of Germany

Filed Jan. 27, 1982, Ser. No. 343,262

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105105

Int. Cl.³ B23K *11/28*

U.S. Cl. 219—86.7 **14 Claims**

1. A tool holder for a manipulator, said holder comprising:

a tool shaft extending along and rotatable about a main axis and having a tool-shaft end provided with a pivot defining a transverse axis;

a tool carried on said pivot and displaceable relative to said tool shaft about said transverse axis;

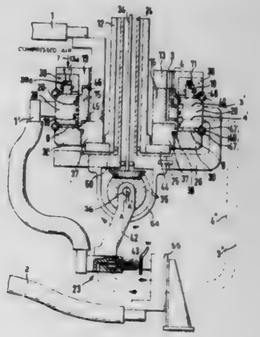
a support adjacent said tool;

a stack of guide rings coaxially surrounding said tool shaft adjacent said pivot, rotationally fixed on said tool shaft, and formed with at least two throughgoing guide-ring passages each having a radially outwardly opening passage end, two of said guide rings defining a pair of axially spaced annular confronting guide-ring surfaces;

a connector ring rotatable on said stack between said guide-ring surfaces at the outwardly opening ends of said guide-ring passages and having one axially directed connector-ring surface axially directly confronting one of said guide-ring surfaces and an oppositely axially directed connector-ring surface axially directly confronting the other of said guide-ring surfaces, said connector ring being formed with respective radially inwardly open grooves confronting the opening into said outwardly opening ends of said guide-ring passages;

means including respective fluid lines connected between said grooves and said tool for feeding a fluid from said passages through said tool;

connector means for securing said connector ring to said tool-shaft end for joint rotation of same about said main axis;



an electrical conductor connected to the guide ring of said one guide-ring surface;

a flat contact element secured to one of said one surfaces and axially flatly engageable with the other of said one surfaces, whereby current can be transmitted between said connector ring and said guide ring of said one guide-ring surface by said contact element;

means including a piston-and-cylinder assembly and a spring engaged between said connector ring and the other of said guide-ring surfaces for pressing said one surfaces and contact element together axially; and

means including an electrical line connected between said connector ring and said tool for feeding electricity through said connector ring to said tool.

4,438,310

METHOD AND APPARATUS FOR INDUCTIVELY HEATING VALVE SEAT INSERTS

John F. Cachat, Cleveland, Ohio, assignor to Park Ohio Industries, Inc., Cleveland, Ohio

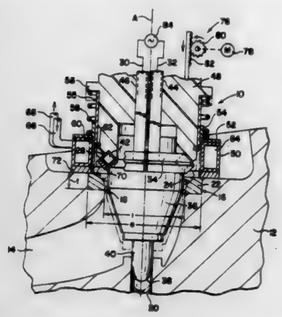
Continuation of Ser. No. 349,037, Feb. 16, 1982, abandoned, which is a continuation of Ser. No. 147,829, May 8, 1980, abandoned. This application Jun. 13, 1983, Ser. No. 501,755

Int. Cl.³ H05B *6/40, 6/14*

U.S. Cl. 219—10.43 **8 Claims**

1. A method of inductively heating a conical valve seat surface of a valve seat insert coaxially aligned within a bore in an engine component, said insert having a lower coefficient of thermal expansion than said engine component, said method comprising the steps of: providing a ring inductor having a face generally matching said valve seat surface; positioning said inductor in generally axially aligned relation to said valve seat insert with the said face located opposite and spaced a selected distance from said valve seat surface; energizing said inductor to inductively heat said valve seat surface; and shield-

ing the portion of said engine component immediately surrounding said insert from penetration and inductive heating by



stray flux generated by said inductor during the said energizing thereof.

4,438,311

INDUCTION HEATING COOKING APPARATUS

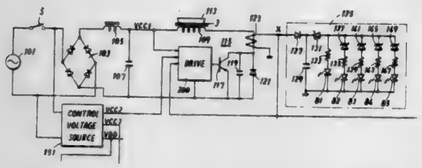
Yoshihisa Tazima; Masayuki Morishima, both of Kiryu; Hiroshi Okumura, and Shin-ichi Kasahara, both of Ashikaga, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan

Filed Jun. 26, 1980, Ser. No. 163,088

Claims priority, application Japan, Jul. 5, 1979, 54-85639; Jul. 5, 1979, 54-85638; Jul. 5, 1979, 54-85640

Int. Cl.³ H05B *6/06*

U.S. Cl. 219—10.49 R **26 Claims**



1. An induction heating cooking apparatus, comprising:

power supply means for supplying an electric power,

high frequency oscillating means being supplied with said electric power for causing high frequency oscillation during predetermined intervals, said high frequency oscillation being caused during an oscillation interval and being stopped during a non-oscillation interval,

induction heating coil means coupled to said high frequency oscillating means for receiving a high frequency current from said high frequency oscillating means for generating a high frequency alternating magnetic field for induction heating a load by said alternating magnetic field,

oscillation detecting means for detecting the output of said high frequency oscillating means during a time corresponding to a said non-oscillation interval, and

means responsive to the oscillation detected output from said oscillation detecting means during said time of detection for stopping said high frequency oscillation by said high frequency oscillating means during the intervals when high frequency oscillation is normally produced.

4,438,312

METHOD OF AND DEVICE FOR CONDUCTING MACHINING CURRENT TO A WIRE-ELECTRODE TOOL IN A WIRE-CUTTING ELECTROEROSION MACHINE

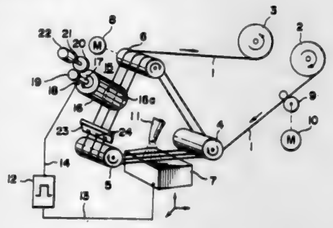
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed May 28, 1981, Ser. No. 268,012

Claims priority, application Japan, Jun. 4, 1980, 55-77677[U]

Int. Cl.³ B23P *1/10, 1/12*

U.S. Cl. 219—69 W **7 Claims**



1. A traveling-wire electroerosion machine, comprising:

drive means for axially moving a wire-electrode tool which is tautly stretched from a supply site to a collection site, along a predetermined path continuously extending between said supply and collection sites through the region of a workpiece;

power supply means having a pair of output terminals for feeding a machining current between said moving wire-electrode tool and said workpiece across a machining gap flooded with a liquid machining medium; and

a device for conducting said machining current to said moving continuous wire electrode tool from said power supply means, the device comprising:

a brush block electrically connected to one of said output terminals and having a planar current-conducting surface disposed at a location in said predetermined path for making sliding electrical contact with said axially moving wire-electrode tool,

a rotary shaft secured to said brush block and having an axis of rotation generally perpendicular to said planar current-conducting surface, and

motor means drivingly coupled to said rotary shaft for rotating said brush block about said axis to rotationally move said planar current-conducting surface in tangential sliding contact with said axially moving continuous wire-electrode tool.

4,438,313

ELECTROSLAG WELDING METHOD

Anatoly N. Safonnikov, and Anatoly V. Antonov, both of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona and Akademii Nauk Ukrainsko, both of, U.S.S.R.

PCT No. PCT/SU80/00116, § 371 Date Feb. 18, 1982, § 102(e) Date Feb. 18, 1982, PCT Pub. No. WO82/00110, PCT Pub. Date Jan. 21, 1982

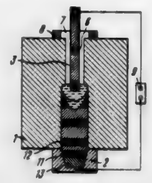
PCT Filed Jun. 30, 1981, Ser. No. 355,595

Int. Cl.³ B23K *25/00*

U.S. Cl. 219—73.1 **6 Claims**

1. A method for electroslag welding of metal segments by a large-section electrode, comprising the steps of establishing a slag bath, fusing an electrode and edges of the metal segments being weld-joined, filling with the metal being fused an inlet metal mould and the gap between the edges of the metal segments, and subsequently removing an inlet shrinkhead, wherein the improvement comprises the electrode being, in establishing the slag bath and filling with metal the inlet metal mould, fused at a rate lower than the electrode fusion rate in filling with metal the gap between the edges of the metal

segments being weld-joined at constant electrical parameters of the electroslag welding, and a brittle interlayer between the



inlet shrinkhead and the weld being formed in the course of welding, the weld being made so that it has a low electrical resistance.

4,438,314

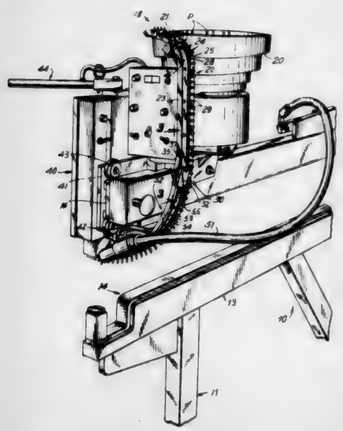
WELD PIN APPLICATOR DEVICE HAVING AUTOMATIC RELOAD

Charles Giannone, Babylon, N.Y., assignor to Duro-Dyne Corporation, Farmingdale, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,247

Int. Cl.³ B23K *9/20*

U.S. Cl. 219—98 **8 Claims**



5. A weld pin attachment apparatus comprising a frame, an elongate, horizontally disposed ground electrode mounted on said frame, a carrier beam disposed above said electrode in parallel spaced relation thereto, a weld head assembly movably mounted on said beam and including a weld electrode shiftable toward and away from said ground electrode, upwardly directed receiver track means on said assembly for storing a plurality of pins and feeding same to said weld electrode, orienting hopper means on said frame for storing a supply of said pins and delivering same in oriented condition at a downwardly directed discharge station, stop means at said discharge station blocking downward flow of said pins from said station, and means on said receiver track means for clearing said stop means from said blocking position responsive to movement of said weld head assembly along said carrier beam to move said receiver track into registry with said discharge station, thereby to refill a stack of pins into said receiver track.

4,438,315

HIGH SELECTIVITY PLASMA ETCHING APPARATUS

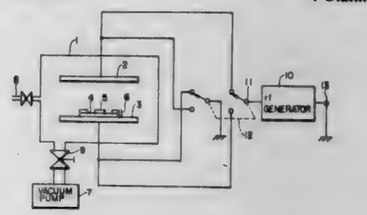
Hiroyasu Toyoda; Hiroyoshi Komiya, and Hideaki Itakura, all of Kanagawa, Japan, assignors to VLSI Technology Research Association

Division of Ser. No. 183,710, Sep. 3, 1980, Pat. No. 4,348,557. This application Aug. 26, 1981, Ser. No. 296,407

Claims priority, application Japan, Dec. 12, 1979, 54-163006

Int. Cl.³ B23K *9/00*; C23F *1/02*

U.S. Cl. 219—121 PE **4 Claims**



1. A parallel-plate type gas plasma etching apparatus for preferentially etching a workpiece having a multilayer structure composed of layers of Si and SiO_2, comprising: a reactor; a pair of parallel-plate electrodes disposed in said reactor, one of said electrodes being adapted to receive a workpiece disposed thereon; means for supplying said reactor with an etching gas consisting of CHF_3 at a pressure of 10 mTorr to 100 mTorr; and rf power generator means for applying rf power between said electrodes in a cathode-coupling mode by a rf power generator to cause said etching gas to assume a plasma state, the output frequency of said rf power generator means being limited to a range of 400 KHz to 10 MHz, and wherein the one of said electrodes upon which said workpiece is disposed is connected to a high voltage output terminal of said rf power generator and the other of said electrodes is grounded.

4,438,316

NOISELESS COMBUSTION AND PLASMA CUTTING ARRANGEMENT

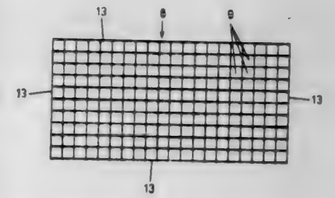
Ulrich Ackermann, and Eggo Ratsch, both of Berlin, Fed. Rep. of Germany, assignors to Versuchsanstalt f. Deutsche Forschungs-u Luft-u Raumfahrt e.V, Cologne, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,365

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1980, 3042347

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PC **11 Claims**



1. Low-noise flame and plasma arc cutting arrangement, comprising: cutting means above an associated honeycomb-type bench for supporting a workpiece, said bench being divided into a plurality of individual cells that are substantially higher than they are wide for reducing noise occurring during cutting of the workpiece; said cells in the bench having walls comprising reverberating material; said cells having a depth for permitting multiple reflections of sound against said walls of reverberating material so that sound generated below the workpiece is repeatedly reflected against the inside surface of

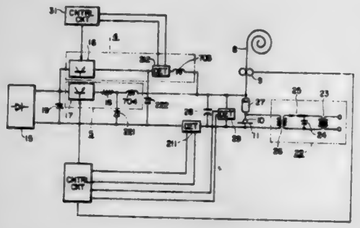
the cells and become thereby diminished, said walls being substantially free of sound absorbing material, noise reduction occurring by said multiple reflections of sound.

4,438,317

PULSE ARC WELDING MACHINE

Shigeo Ueguri; Hirotsugu Komura, both of Hyogo, and Takaji Mizuno, Aichi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,263
Claims priority, application Japan, Jul. 8, 1980, 55-93069; Jul. 8, 1980, 55-93077; Jul. 8, 1980, 55-93086
Int. Cl.³ B23K 9/09
U.S. Cl. 219—130.51 **5 Claims**



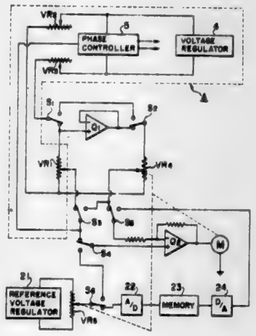
1. A pulse arc welding machine comprising:
a wire feeding unit for feeding a wire electrode to a base material to be welded;
a base current source for supplying a base current between said wire electrode and said base material;
base current setting means for controlling said base current source;
a pulse current source for supplying a pulse current superposed on said base current flowing between said wire electrode and said base material;
means for detecting an arc voltage of an arc discharge between said wire electrode and said base material;
integrating means for integrating an output of said arc voltage detecting means;
wire feeding speed instructing means for providing a first control signal representative of a desired wire feeding speed;
wire feeding speed setting means for controlling said wire feeding unit in response to said first control signal;
first function generating means for producing, in response to said first control signal, a second control signal representative of said arc voltage as a function of said first control signal;
first comparing means for comparing an output of said integrating means with said second control signal;
pulse width setting means for producing a third control signal representative of a pulse width in response to an output of said first comparing means;
second function generating means for producing, in response to said first control signal, a fourth control signal representative of a pulse frequency as a function of said first control signal;
pulse frequency setting means for producing, in response to said fourth control signal, a fifth control signal indicative of a pulse frequency, said fifth control signal being applied to said pulse current source for controlling a frequency of said pulse current;
means for detecting a sum of said base current and said pulse current and providing a signal representative of said sum;
amplifying means for amplifying said signal representative of said sum of said base current and said pulse current;
pulse peak current selecting means for producing a sixth control signal representative of a current during a pulse peak period in response to said third and fifth control signals and an output of said amplifying means;
second comparing means for comparing a fixed reference value with said sixth control signal; and
pulse peak current setting means for controlling said pulse current source for setting a pulse peak current of said pulse current in response to an output of said second comparing means.

4,438,318

METHOD AND DEVICE FOR AUTOMATICALLY CONTROLLING WELDING CONDITIONS FOR USE IN AN ARC WELDING MACHINE

Hideo Suzuki, Yokohama, Japan, assignor to Okamura Corporation, Yokohama, Japan

Filed Nov. 3, 1981, Ser. No. 317,879
Int. Cl.³ B23K 9/10
U.S. Cl. 219—137 PS **4 Claims**



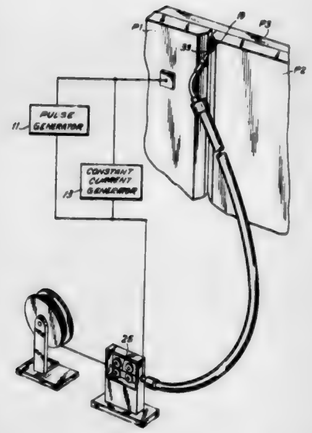
1. A method for automatically controlling welding conditions for use in an arc welding machine, wherein an ignition or turn-on phase of a thyristor is controlled by an output of a first potentiometer to which a fixed voltage is applied, thereby controlling a welding voltage and a welding current, the improvement which comprises the steps of:
(a) detecting a difference between voltages of movable terminals of the first potentiometer and a second potentiometer which are coupled together at one end directly and coupled at a second end through a voltage follower circuit, by a differential amplifier to which the two voltages of the movable terminals are input;
(b) turning movable terminals of the second potentiometer and a third potentiometer which are operated synchronously by a motor so that the voltage difference detected between the movable terminals of the second and third potentiometers may be zero;
(c) storing the output of the third potentiometer to which a fixed reference voltage is applied, into a memory;
(d) feeding the output read out of the memory and the output of the third potentiometer into the differential amplifier;
(e) detecting the voltage difference between the two outputs by the differential amplifier; and
(f) turning the movable terminal of the second potentiometer according to the detected voltage difference by the motor, while the first potentiometer is replaced by the second potentiometer in order to control the ignition phase of the thyristor.

4,438,319

PROCESS FOR WELDING METAL ARTICLES

Roger Biot, Montigny-Cormeilles, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Continuation of Ser. No. 217,665, Dec. 18, 1980, abandoned. This application Aug. 3, 1982, Ser. No. 405,166
Claims priority, application France, Dec. 27, 1979, 79 31773
Int. Cl.³ B23K 9/09
U.S. Cl. 219—137 PS **4 Claims**



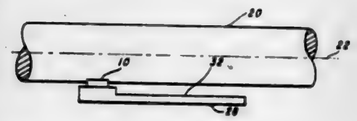
1. A process for pulsed-arc welding a metal article in a non-horizontal position, comprising the steps of:
supplying a substantially constant base current having a base current level to a consumable flux coated or cored wire in the torch, the flux being of the basic type, and the substantially constant base current being sufficient to establish an ac between the electrode and the article;
supplying to the electrode current pulses having a maximum current level and a substantially constant frequency, the current pulses being sufficient to produce a transfer of metal in which no short circuit occurs between the electrode and the articles; and
protecting the arc and the pulsed transfer of metal with an inert gas.

4,438,320

THERMAL PRINTING APPARATUS HAVING A THERMAL PRINTHEAD SUBSTRATE WITH SPECIAL GEOMETRY FOR BI-DIRECTIONAL PRINTING

Thomas R. Woodard, Austin, and Kenneth L. Martin, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 9, 1979, Ser. No. 82,443
Int. Cl.³ H05B 1/00
U.S. Cl. 219—216 **2 Claims**



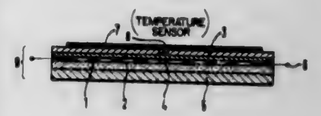
1. Thermal printing apparatus comprising:
(a) a cylindrical, rotatable platen for supporting a thermally sensitive medium,
(b) a thermal printhead, movable from left to right and right to left with respect to the platen, with a substantially planar face adapted to contact portions of said thermally sensitive medium and to form visual markings thereon, and
(c) a lapped ceramic substrate for supporting said thermal printhead in contact with said thermally sensitive medium, said lapped ceramic substrate being configured to avoid contact with said thermally sensitive medium.

4,438,321

FIXING DEVICE FOR COPIER

Roland Moraw, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,580
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 3109164
Int. Cl.³ G03G 15/20; H05B 3/02
U.S. Cl. 219—216 **9 Claims**



1. A fixing device for an electrophotographic copier, comprising a heater plate for fixing the toner image of a recording support passing over the surface of said heater plate, wherein said heater plate comprises a multiple-layered laminate including:
a contact layer for contacting the recording support;
a heating layer;
at least first and second heat-insulating layers, one provided on either side of said heating layer, said heat-insulating layers being selected so as to provide for a lower heat capacity of said heater plate during the heating-up operation and until it reaches the working temperature than the heat capacity during continuous operation; and
a heat-accumulating layer, wherein said first insulating layer is adjacent to said contact layer and said second insulating layer is in contact with said heat-accumulating layer.

4,438,322

CERAMIC COATED ELECTRIC HEATER ASSEMBLY FOR TOOLS

Frank Sylvia, Columbia, Md., assignor to Pace Incorporated, Laurel, Md.

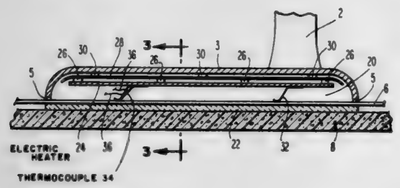
Filed Jun. 16, 1981, Ser. No. 274,224
Int. Cl.³ H05B 3/40; B23K 3/02; H01C 1/148
U.S. Cl. 219—236 **3 Claims**



1. A heater assembly for tools having a heated tip comprising:
(a) a tubular metal base having an open end adapted to receive and hold the end of a tool tip in heat conductive relationship therewith,

(b) a coating of insulating material on a portion of the exterior of said base,
(c) a length of resistance-type wire wound on said coated portion and around said base,
(d) lead wires connected to respective ends of said resistance wire, each of said lead wires being in lapped relationship to the respective end of said resistance wire and including a first portion lying between several turns of resistance wire and said insulating coating, a second portion overlaying said several turns of said resistance wire, said second portion in turn being wrapped with at least one additional turn of said resistance wire to form a terminal therewith, and
(e) a coating of insulating material on said resistance wire and said terminal formed at each end of said wire to seal same from the deleterious effects of the atmosphere.

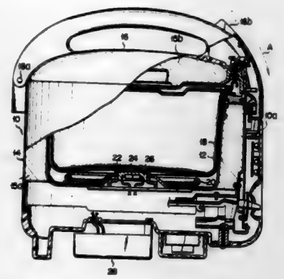
4,438,323
CARPET SEAMING TAPE ACTIVATOR
Kenneth B. Milnes, Box 134, Meadowbrook, Pa. 19046
Filed Feb. 18, 1981, Ser. No. 235,507
Int. Cl.³ D06F *75/08*; H05B *1/00*
U.S. Cl. 219—243 **16 Claims**



1. Carpet seaming apparatus comprising:
a heating means having an enclosed tunnel, said tunnel being adapted to receive a heat-activated adhesive tape through said tunnel;
said heating means having an insulated bottom, said bottom comprising means for supporting the tape while the tape is within the tunnel;
an electrical heating element disposed within the tunnel; a heat reflecting means, mounted within the tunnel and above the heating element;
at least one strut disposed, within the tunnel, between the heating element and the bottom; and
a thermocouple, disposed within the tunnel and positioned to sense the temperature of the heat-activated adhesive tape.

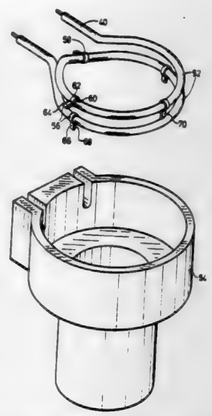
4,438,324
ELECTRIC RICE COOKER
Ryuho Narita; Kenji Yamamori, both of Nagoya; Hiroyuki Oota, Iwakura, and Terutaka Aoshima, Toyohashi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Nov. 23, 1982, Ser. No. 443,893
Claims priority, application Japan, Dec. 21, 1981, 56-207332; Dec. 21, 1981, 56-207333; Dec. 27, 1981, 56-207334
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—441 **10 Claims**

1. An apparatus for electrically cooking rice with an appropriate amount of water, said apparatus comprising:
a cooking kettle for containing the rice and water;
a removable lid covering the top of said kettle;
electrical heater means provided adjacent to the outside surface of said kettle, for heating said kettle and the contents thereof;
thermal insulating frame means for supporting and enclosing said kettle and said heater means;
measuring means for measuring the actual kettle temperature at a predetermined time to produce a first electrical signal corresponding to the actual kettle temperature; and
controlling means, connected to said heater means and said measuring means, for determining into which one of a plurality of predetermined temperature ranges the actual kettle temperature falls, in response to the first electrical signal, and for controlling said heater means so as to maintain said



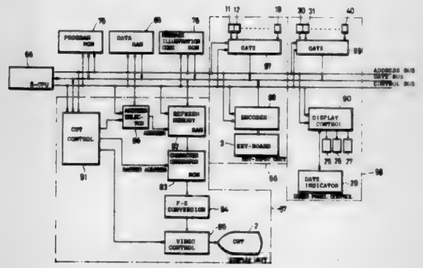
cooking kettle at least once at a suitable temperature for a first predetermined time interval at the beginning of cooking operation based on which predetermined temperature range said actual kettle temperature falls, whereby the rice in said cooking kettle effectively absorbs water at the suitable temperature in the beginning of the cooking operation in accordance with the actual kettle temperature.

4,438,325
TUBULAR ELONGATED INJECTION MOLDING ELECTRIC HEATING ELEMENT WITH SPACER CLIPS
Jobst U. Gellert, 7A Prince St., Glen Williams, Canada
Filed Dec. 24, 1981, Ser. No. 334,154
Claims priority, application Canada, Dec. 10, 1981, 392020
Int. Cl.³ H05B *3/06*
U.S. Cl. 219—536 **5 Claims**



1. The combination of a spacer clip and a tubular elongated injection molding electric heating element, the spacer clip comprising an endless band having a rectangular shaped cross section which forms an opening therethrough, the diameter of the opening being greater than the diameter of the heating element whereby an end of the heating element may be inserted through the opening and the band slipped along the heating element to a predetermined position, the band being crimped around the heating element whereby a first portion of the band is forced into contact against the outer surface of the heating element and a second portion of the band is shaped to form a radially extending finger, the band being formed of a material having a combination of the necessary strength and pliability whereby the contact between the first portion of the band and the heating element secures the clip in said position and in a predetermined orientation against longitudinal or rotational motion relative to the heating element and the finger has sufficient rigidity to provide a miminum spacing from a body against which the finger projects at least equal to the length of the finger.

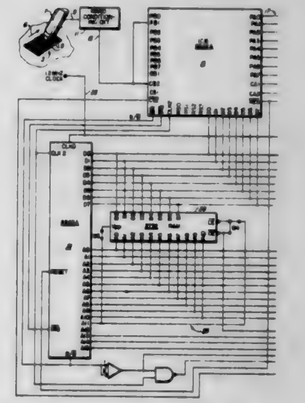
4,438,326
SYSTEM FOR PERFORMING TRANSACTIONS
Yasuo Uchida, Takatsuki, Japan, assignor to Omron Tateisi Electronics Company, Kyoto, Japan
Filed Jun. 24, 1981, Ser. No. 276,793
Claims priority, application Japan, Jun. 24, 1980, 55-86279
Int. Cl.³ G06F *15/30*; G07F *7/08*
U.S. Cl. 235—379 **17 Claims**



5. A transaction performing system operable by a customer for executing one of a plurality of transactions, each of said transactions requiring the sequential performance of a plurality of function steps by said customer, said system also including clerk operable malfunction detection and correction means, said system comprising:
electronic memory means having stored therein a plurality of transaction procedure step messages and a plurality of textual messages representing possible system malfunctions and corrective procedures therefor;
electronic display means capable of displaying said textual messages;
first means operable by said customer to cause said display means to display sequentially the transaction procedure step messages to instruct said customer to perform each function step of a desired transaction; and
second means operable by said clerk, when a malfunction is detected, to cause said display means to display a textual message which identifies the cause of said detected malfunction and provides instructions for correcting said malfunction.

4,438,327
BAR CODE READING SYSTEM AND METHOD
Robert E. Smith, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.
Filed Apr. 21, 1982, Ser. No. 370,373
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—462 **20 Claims**

1. A method of reading a bar code label, said method comprising the steps of:
(a) producing an analog signal in response to scanning of the bar code label, said analog signal including signals representative of amounts of light reflected from bars and spaces of the bar code label, the widths of said bars and spaces being representative of whether said bars and spaces represent first or second logical states;
(b) amplifying and shaping said analog signal to produce a raw data signal including a plurality of pulses, the durations of consecutive ones of said pulses corresponding to the widths of consecutive bars, respectively, of said bar code label, the durations of consecutive intervals between said pulses corresponding to widths of consecutive ones of said spaces, respectively, said bar code label including at least one character including a plurality of said bars and spaces;
(c) measuring the durations of each of a plurality of said pulses and intervals of at least said one character of said bar code label to produce a plurality of digital duration numbers representative of said plurality of durations, respectively, and storing said plurality of digital duration numbers;
(d) computing a first reference number;
(e) comparing each of said digital duration numbers to said first reference number and producing a first binary number having a plurality of bits corresponding, respectively, to the bars and spaces of said character, each of said bits being equal to said first logical state if a corresponding one of said digital duration numbers is less than said first reference number, each of said bits being equal to said second digital state if a corresponding one of said digital duration numbers is greater than said first reference number;

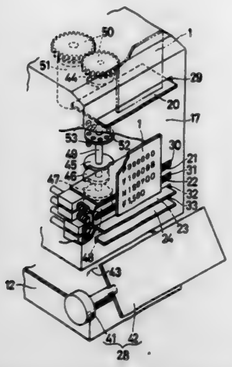


(f) determining if said first binary number is an acceptable number in accordance with a predetermined criteria, and decoding said first binary number, if it is acceptable, to determine what said character is; and
(g) adjusting the value of said first reference number by a predetermined amount if said first binary number is not acceptable and repeating steps (e) and (f).

4,438,328
CARD READER FOR READING INFORMATION CARRIED ON TAG CARDS
Masaaki Kuranishi, and Yasuhiko Togo, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 21, 1981, Ser. No. 304,156
Claims priority, application Japan, Sep. 25, 1980, 55-134910
Int. Cl.³ H01M *1/48*
U.S. Cl. 235—181 **9 Claims**

1. A card reading assembly for reading cards having information stored thereon at locations spaced along a first dimension of said card, comprising:
a travel path along which said cards unidirectly pass, said cards passing along said path with their first dimension parallel to the direction of said path;
a plurality of travel stops disposed along said path to block said path and thereby interrupt movement of said cards therealong;

means for sequentially driving said travel stops to step said card along said path; and



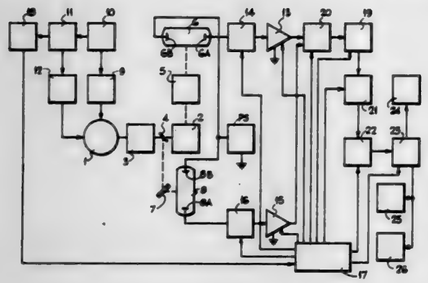
reading means juxtaposed to said travel path for reading the information stored at each location on said card as said card is stepped along said path.

4,438,329

MINIMIZING THE EFFECT OF SPURIOUS PHOTODETECTOR CURRENTS IN FLASH SPECTROFLUORIMETRY

Michael A. Ford, Maidenhead, and Brian B. Leather, Beaconsfield, both of England, assignors to Perkin-Elmer Limited, Buckinghamshire, England

Filed Apr. 29, 1982, Ser. No. 373,072
Claims priority, application United Kingdom, May 5, 1981, 8113636
Int. Cl.³ G01N *21/64*
U.S. Cl. 250—459.1 **15 Claims**



1. A method of flash spectrofluorimetry comprising the steps of:

(a) subjecting a sample under analysis to a succession of high-intensity flashes of exciting radiation arranged to provide a near continuum in the spectrofluorimetric region of interest and allowing a dwell between consecutive flashes that is at least one order of magnitude greater than the duration of a single flash;

(b) deriving through fluorescence measuring means an electrical output signal in response to the fluorescence excited in the sample by each flash, substantially the whole of said output signal occuring in a first time interval that includes a flash duration and representing a composite signal in that it includes a spurious contribution due to standing current in said fluorescence measuring means;

(c) obtaining a first integral by integrating the composite signal during said first time interval;

(d) disabling the spurious output of the fluorescence measuring means during the dwell period, except for a second time interval substantially equal to the first;

(e) sampling said spurious output during the second time interval;

(f) obtaining a second integral by integrating the sampled spurious output during said second time interval; and

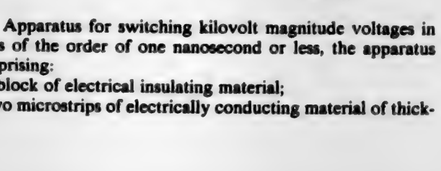
(g) subtracting the second integral from the first to obtain the integral of the true fluorescence measuring signal substantially free from said spurious contribution.

4,438,330

WAVEFRONT SENSOR EMPLOYING A MODULATION RETICLE

John W. Hardy, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 1, 1982, Ser. No. 353,554
Int. Cl.³ G01U *1/20*
U.S. Cl. 250—201 **11 Claims**



1. A relatively simple two-dimensional wavefront sensor, comprising:

a. an optical system for focusing an incident wavefront to a focal point;

b. a modulation reticle positioned substantially at said focal point, and a drive means for driving the modulation reticle in linear oscillation along a single axis, said modulation reticle having a modulation pattern thereon in which at least one light transmissive area and at least one light opaque area thereon is separated by at least two oblique, relative to said single axis, lines of demarcation such that the precise time of modulation of light at the focal point is dependent upon both the x and y position of the light with respect to the oblique line of demarcation; and

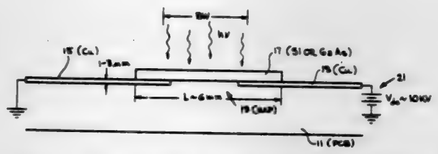
c. a first detector means for detecting the wavefront, which has passed through said transmissive area and expanded from said focal point, at a two dimensional array of zones in the expanded wavefront and for producing an output signal indicative of the light detected in each zone.

4,438,331

BULK SEMICONDUCTOR SWITCH

Steven J. Davis, Hayward, Calif., assignor to Power Spectra, Inc., Fremont, Calif.

Filed Dec. 2, 1981, Ser. No. 326,683
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 J **7 Claims**



1. Apparatus for switching kilovolt magnitude voltages in times of the order of one nanosecond or less, the apparatus comprising:

a block of electrical insulating material;

two microstrips of electrically conducting material of thickness 1-3 μm, collinearly positioned and spaced apart from one another by a gap of 1-3 mm, both microstrips being mounted on one side of the insulating material block;

a substantially rectangular block of solid semiconductor material having a length of at least twice the length of the microstrip gap and being doped with boron at a concentration of between $10^{15}/cm^3$ and $10^{18}/cm^3$, with the semiconductor block being maintained in electrical contact with the two microstrips and lying across the microstrip gap;

a voltage source electrically connected to the two microstrips to impress a substantially constant voltage of at least 5 KV between the microstrips;

cryogenic cooling means adjacent to the semiconductor block for cooling the block to a temperature $T \leqq 230°$ K.; and

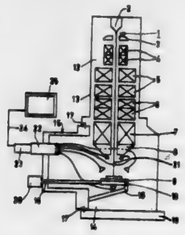
a source of pulsed radiation producing a radiative beam output of 10-100 nanojoules, the radiation beam being directed at the microstrip gap and the semiconductor block lying between the microstrip gap and the pulsed radiation source.

4,438,332

DETECTOR FOR AN ELECTRON MICROSCOPE

Siegried Lichtenegger, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 308,732, Oct. 5, 1981, abandoned, which is a continuation of Ser. No. 137,865, Apr. 7, 1980, abandoned. This application Feb. 9, 1983, Ser. No. 465,087
Claims priority, application Netherlands, Apr. 13, 1979, 7902963
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—310 **11 Claims**



1. An electron microscope comprising:

first means for generating an electron beam, second means for providing a specimen in alignment with said electron beam, and detection means for detecting radiation occurring from interaction between said specimen and said electron beam, said detection means comprising:

a plurality of separated detector elements for detecting different types of radiation placed in surrounding location about said specimen, each of said detector elements including at least one flexible optical conductor having a light funnel with a first larger end facing said specimen and said light funnel being integral with said optical conductor, and an entrance screen sensitive to radiation to be detected and positioned at said first larger end, said entrance screen including a luminescent layer facing said specimen and a reflector layer overlying said luminescent layer, said luminescent layer and said reflector layer being deposited on an entrance side of said light funnel facing said specimen,

a radiation passage structure serving as a wall seal optically coupled at ends remote from said specimen to all of said optical conductors for each of said detector elements, said radiation passage structure being an optically transmissive material of high refractive index, and

means responsive to at least one of said detector elements for enabling display of information from said specimen, including an adjustable diaphragm means which is separately connected to said radiation passage structure for detecting at least one radiation conductive signal from the plurality of detector elements.

4,438,333

NOISE ERASING APPARATUS FOR STIMULABLE PHOSPHOR SHEET

Masanori Teraoka; Takao Komaki, and Seiji Matsumoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 15, 1982, Ser. No. 339,795
Claims priority, application Japan, Jan. 16, 1981, 56-4889
Int. Cl.³ G01T *1/11*
U.S. Cl. 250—327.2 **12 Claims**



1. In an arrangement wherein stimulable phosphor sheets for use in a radiation image recording and reproducing system are taken up one at a time out of a stimulable phosphor sheet reservoir containing stimulable phosphor sheets and each is loaded into a cassette used for the recording of a radiation image,

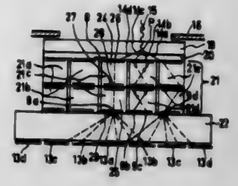
a noise erasing apparatus for stimulable phosphor sheets comprising an irradiation means for emitting noise erasing light, which is provided between the aperture of said stimulable phosphor sheet reservoir from which said stimulable phosphor sheets are taken up and the section at which said stimulable phosphor sheets are loaded into said cassettes.

4,438,334

GAMMA CAMERA COMPRISING A LOCALIZING SCINTILLATION INTENSIFIER

Michel Jatteau, Lesigny; Pierre H. Lelong, Gentilly, and Jean Pergrale, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,015
Claims priority, application France, Apr. 29, 1980, 80 09669
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—363 S **10 Claims**



1. In a gamma camera which comprises: a scintillation crystal; a protecting window which is transparent to scintillation radiation produced in the crystal disposed adjacent said crystal; a light intensifier for receiving scintillation light from said crystal through said window; an optical guide for scattering light from the intensifier; and a scintillation localizer, comprising an array of photodetectors having input faces directed toward the optical guide; the improvement wherein said light intensifier comprises a mosaic of juxtaposed, identical intensi-

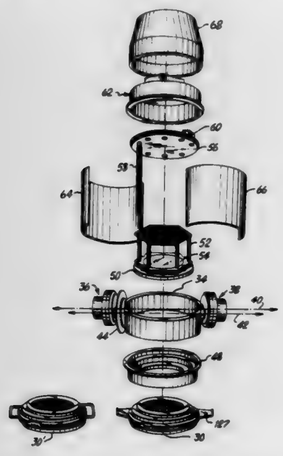
fier modules, each having a magnification of approximately one, and each of said modules comprising a photocathode disposed adjacent the scintillation crystal and a screen disposed adjacent the optical guide, wherein each module of the intensifier is a proximity focussed diode tube, and wherein the localizer comprises a network of photomultipliers.

4,438,335

DETECTOR HEAD MOUNTING APPARATUS

Raymond L. Meeder, Palos Heights, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Sep. 2, 1981, Ser. No. 298,635
Int. Cl.³ G01T 1/20; G21K 1/02
U.S. Cl. 250—363 S **4 Claims**



1. Apparatus for pivotally mounting a detector head including a collimator onto supporting structure of a radiation detector comprising:

means for mounting the head onto the supporting structure for rotation about a selected one of a first trunnion axis and a second trunnion axis; and

means for selecting the axis about which the detector head can rotate whereby the head will be rotatable about the axis which passes nearest to the center of gravity of the head;

wherein the axis selecting means is activated by the weight of the collimator.

4,438,336

CORPUSCULAR RADIATION DEVICE FOR PRODUCING AN IRRADIATION PATTERN ON A WORKPIECE

Wolfgang D. Riecke, Baden.Baden, Fed. Rep. of Germany, assignor to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,339
Int. Cl.³ H01J 37/147, 37/26, 37/30
U.S. Cl. 250—398 **18 Claims**

1. A corpuscular radiation device for producing an irradiation pattern on a workpiece comprising:

(a) means for adjustably supporting a workpiece having opposed major surfaces, and at least one partially irradiatable object and a free beam passage opening;

(b) a first radiation source spaced from one of said surfaces of said workpiece for emitting a first beam;

(c) a first corpuscular-optical condenser lens system for directing said first beam in one direction along a path towards said one surface of said workpiece;

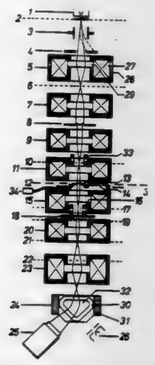
(d) a second radiation source spaced from the other of said surfaces of said workpiece for emitting a second beam;

(e) a second corpuscular-optical lens system for directing said second beam in the direction opposite said first direction along said path towards said other surface of said workpiece;

(f) an image receiver with a receiver surface;

(g) said second radiation source and said image receiver being arranged adjacent said path on the side of said second corpuscular optical lens system remote from said workpiece supporting means; and

(h) a beam switch arranged in said path and between said second radiation source and said image receiver on the one hand and said second corpuscular-optical lens system on the other hand for interlacing said first and second beams along said path;



(i) said second corpuscular-optical lens system being adapted to function as an electron microscope system for directing said first beam towards said receiving surface of said image receiver and to function as an electron scan microscope for directing said second beam towards said first radiation source; and

(j) said beam switch being adapted to deflect the beam produced by the first radiation source so that the corpuscular microscopic image drafted by the second corpuscular optical lens system is incident upon the receiver surface of the image receiver; and

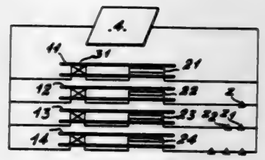
(k) said beam switch also being adapted to deflect the beam produced by the second radiation source to the axis of the second corpuscular lens system.

4,438,337

APPARATUS FOR THE PURIFICATION OF WATER BY ULTRAVIOLET RADIATION

Francis Forrat, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 12, 1982, Ser. No. 348,211
Claims priority, application France, Feb. 26, 1981, 81 03834
Int. Cl.³ G01N 21/01
U.S. Cl. 250—436 **4 Claims**



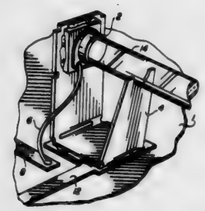
1. An apparatus for the purification of water, wherein it comprises at least one pipe traversed by the liquid to be purified, said pipe having at least one ultraviolet lamp and an electrovalve electrically connected in series with the lamp and placed upstream of the latter, the resistance of the electrovalve being substantially equal to the load impedance of the lamp, wherein the apparatus further comprises a plurality of pipes transversed by the liquid to be purified, the lamp-electrovalve assemblies of each pipe being electrically connected in parallel, and the assembly being supplied with a power by a single solar cell collector.

4,438,338

LOW PROFILE OPTICAL COUPLING FOR AN OPTOELECTRONIC MODULE

Robert M. Stitt, and Neil P. Albaugh, both of Tucson, Ariz., assignors to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Nov. 5, 1981, Ser. No. 318,475
Int. Cl.³ G02F 1/28
U.S. Cl. 250—551 **7 Claims**



1. A fiber optic module comprising a substrate bearing conductive surface portions parallel to a first plane, an optical fiber, and an optoelectronic device located substantially orthogonal to said first plane comprising two electrodes and having a planar light-coupling surface portion coupled to said optical fiber;

one of said conductive surface portions of said substrate being electrically connectable to a signal processing circuit mounted on said substrate;

first flexible conductive means for providing an electrical connection to said one of said conductive surface portions;

metal deformable device mounting means including a first portion substantially parallel with said first plane and a second movable portion substantially orthogonal to said first plane for providing optical alignment and mechanical support for and electrical contact to said optoelectronic device; and

second flexible conductive means of the same type as said first flexible conductive means attached to one of said electrodes of said optoelectronic device for electrically coupling said electrode to one of said conductive surface portions, said second flexible conductive means being attached to said optoelectronic device when its planar light-coupling surface portion is substantially orthogonal to said first plane.

4,438,339

LOW AXIAL STIFFNESS THRUST BEARING

James D. McHugh, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 164,071, Jun. 30, 1980, Pat. No. 4,325,583. This application Dec. 24, 1981, Ser. No. 334,171
Int. Cl.³ F16C 32/06, 7/04
U.S. Cl. 290—1 R **7 Claims**

1. A turbine-generator set comprising:

a gas turbine;

said gas turbine including a drive shaft supported by radial bearings;

a generator;

said generator including a central shaft supported by other radial bearings;

a clutch mechanism effective for coupling said drive shaft and said central shaft;

a thrust bearing on said drive shaft effective for generally aligning said drive shaft;

a low axial stiffness thrust bearing on said central shaft;

said low axial stiffness thrust bearing including means for permitting an axial float of said central shaft sufficient to axially align said central shaft when said clutch mechanism is disengaged and to prevent the development of destructive axial force due to thermal expansion of said drive shaft and said generator when said clutch mechanism is engaged;

said low axial stiffness thrust bearing including a housing having a generally cylindrical space formed therein;

a generally cylindrical thrust collar located coaxially within said cylindrical space, an axial length of said cylindrical space being substantially greater than an axial length of said thrust collar whereby first and second fluid chambers are disposed in said cylindrical space at opposite sides of said thrust collar, said thrust collar being axially movable within said cylindrical space over a predetermined distance; and

fluid circuit means for supplying fluid under pressure to said first and said second fluid chambers;



said fluid circuit means including means for urging said thrust collar toward a predetermined axial location within said cylindrical space.

7. A turbine-generator set comprising:

a gas turbine;

said gas turbine including a drive shaft supported by radial bearings;

a generator;

said generator including a central shaft supported by other radial bearings;

a clutch mechanism effective for coupling said drive shaft and said central shaft;

a thrust bearing on said drive shaft effective for generally aligning said drive shaft;

a low axial stiffness thrust bearing on said central shaft; and

said low axial stiffness thrust bearing including means for permitting an axial float of said central shaft sufficient to axially align said central shaft when said clutch mechanism is disengaged and to prevent the development of destructive axial force due to thermal expansion of said drive shaft and said generator when said clutch mechanism is engaged.

4,438,340

DOMESTIC ELECTRIC GENERATOR AND STEAM HEATING PLANT

Dennis L. Armiger, 94 Chautauqua Rd., Arnold, Md. 21012

Continuation-in-part of Ser. No. 286,989, Jul. 27, 1981, abandoned. This application Nov. 5, 1981, Ser. No. 318,420
Int. Cl.³ F01K 17/02, 17/06
U.S. Cl. 290—2 **11 Claims**

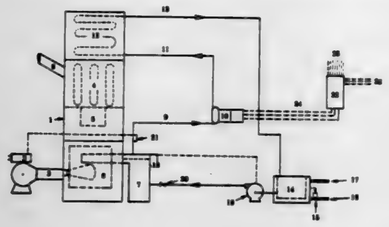
1. A method of generating heat and electricity for building use comprising:

(a) providing a furnace having a plenum chamber with a combustion chamber therein, said furnace generating hot air;

(b) placing a steam generating boiler in said combustion chamber;

(c) connecting a turbine to said boiler, passing the steam

from said turbine through coils in said plenum chamber in said furnace to supply a secondary heating source;
(d) said turbine driving an electric generator; and



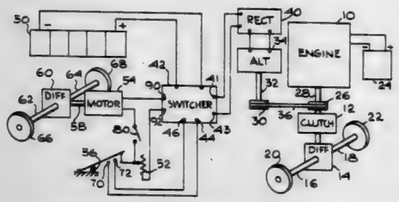
(e) feeding electricity from said generator into the building's electrical service.

4,438,341
METHOD OF AN APPARATUS FOR VARYING THE LOAD ON AN A.C. GENERATOR
Harold Winterbotham, Fern Howe, Braithwaite, Keswick, Cumbria, England (CA12)
Filed Jan. 29, 1982, Ser. No. 343,882
Int. Cl.³ H02P 5/40
U.S. Cl. 290—44 9 Claims



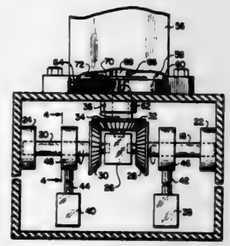
1. A method of varying the load on an A.C. generator in accordance with the speed of rotation thereof, including the steps of: detecting the period of each half cycle of the generator; calculating the percentage of conduction required in each half cycle in accordance with a predetermined law which relates the load to the speed of rotation; and gating the current flow to the load in each following half cycle in accordance with the percentage of conduction calculated.

4,438,342
NOVEL HYBRID ELECTRIC VEHICLE
Keith E. Kenyon, 14435 Hamlin St., Van Nuys, Calif. 91401
Continuation of Ser. No. 149,978, May 15, 1980, abandoned. This application May 1, 1981, Ser. No. 259,518
Int. Cl.³ B60L 11/12
U.S. Cl. 290—45 9 Claims



1. A hybrid heat-engine, electrical motor power plant, including:
a heat engine having a first output shaft;
an electrical motor having input terminals for connection to a source of electrical power and having a second output shaft for coupling to a mechanical load;
an electrical alternator having electrical output terminals and an input shaft mechanically coupled to said first output shaft for driving said alternator from said heat engine;
rectifying means electrically coupled to said electrical output terminals of said alternator and responsive to alternating current from said alternator to produce direct current;
battery means having power terminals;
switcher means having first input terminals coupled to said rectifying means, second input terminals coupled to said power terminals of said battery means and output terminals;
coupling means for coupling said output terminals of said switcher means to said input terminals of said electrical motor;
switcher control means coupled to said switcher and responsive to the activation thereof to selectively connect said battery means and said rectifying means in a predetermined electrical mode across said output terminals of said switcher means;
said electrical alternator having no elemental iron in its magnetic circuit.

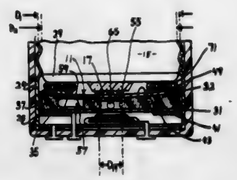
4,438,343
WAVE POWER GENERATOR
John P. Marken, 525-149 W. El Norte Pkwy., Escondido, Calif. 92026
Filed Nov. 12, 1982, Ser. No. 440,968
Int. Cl.³ F03B 13/12
U.S. Cl. 290—53 8 Claims



1. An apparatus for converting the pitch and roll motions of a floating marine body into mechanical energy, comprising:
a housing having means defining a fixed horizontal oscillatory axis, said housing adapted for mounting on a buoyant structure for floating on a body of water;
a first input shaft and a second input shaft coaxially mounted in said housing and including unidirectional coupling means for constraining said first and second shafts for counter rotation about said oscillatory axis;
first counterweight means mounted eccentrically on said first shaft and including means for restraining rotation of said shaft relative thereto in a first direction;
second counterweight means mounted eccentrically on said second shaft and including means for restraining rotation of said shaft relative thereto in a second direction; and
an output shaft drivingly connected to both said first and second input shafts for unidirectional rotation upon oscillatory motion of either one of said housing and said counterweights.

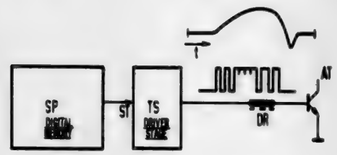
4,438,344
SWITCHED RECTIFIER DISC FOR EDISON SOCKETS
Donald Albert, Higganum, and Anthony M. Tremaglio, Waterbury, both of Conn., assignors to Miracle Products, Inc., Middlebury, Conn.
Filed May 25, 1982, Ser. No. 381,957
Int. Cl.³ H02J 1/00; H05B 37/02
U.S. Cl. 307—146 20 Claims

1. A switching device insertable into a current carrying light bulb socket, such as an Edison socket, below a light bulb for providing the bulb with attenuated power in a first mode and with full power in a second mode comprising:
(a) first and second electrically conductive planar contacts;
(b) an insulative spacer separating the first and second planar contacts, the insulative spacer being at least partially composed of elastomeric material;
(c) a means to secure the first and second planar contacts to the insulative spacer;
(d) a diode disposed between the first and second planar contacts so that, in the first mode, the diode is electrically in series with the planar contacts and all of said current passes through said diode; and



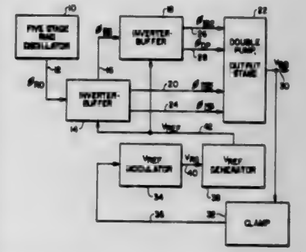
(e) a pressure switching arrangement connected in series with the planar contacts and including switch means, whereby when the planar contacts are not compressed together, said switch means remains open and said first mode is established, and the switching arrangement closes when the planar contacts are compressed against the insulative spacer by a predetermined amount thereby closing said switch means to establish direct electrical continuity between the planar contacts, thereby providing two paths for said current to simutaneously take, one said path including said diode and another said path bypassing said diode, thereby establishing said second mode.

4,438,345
TRANSISTOR PULSE DRIVE CONTROL CIRCUIT
Rainer Dangschat, Landsham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jul. 13, 1981, Ser. No. 282,719
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1980, 3030322
Int. Cl.³ H03K 3/26, 3/33
U.S. Cl. 307—270 10 Claims



1. Electronic control circuit for the horizontal deflection of a television set and for controlling a switched circuit element, including an output transistor for furnishing the output current of the control circuit and having a control electrode being addressed by at least one control signal producing a time-variable current through the control electrode, comprising a programmed digital memory delivering a series of pulses and generating the control signals for driving the control electrode of the output transistor, and a choke connected between said memory and the control electrode of the output transistor for carrying the control signals to the output transistor, said memory being binary programmed in such a manner that the control signals are formed from the series of pulses delivered by said memory and by said choke with a waveform required for controlling the output transistor without the use of a digital to analog converter.

4,438,346
REGULATED SUBSTRATE BIAS GENERATOR FOR RANDOM ACCESS MEMORY
Patrick T. Chuang, Cupertino; Paul D. Keswick, San Jose, and Jeffrey L. Linden, Sr., Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Oct. 15, 1981, Ser. No. 311,589
Int. Cl.³ H03L 1/00; H03K 3/017
U.S. Cl. 307—297 17 Claims



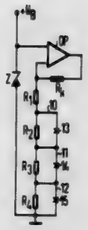
1. A regulated substrate bias generator for use in a capacitive charge storage integrated circuit memory device formed on a semiconductor substrate and having an external voltage supply, said generator comprising;
a. means for generating first and second timing signals;
b. charge pumping means disposed for pumping charge from said substrate in response to said first and second timing signals, and for generating an output bias voltage on an output terminal thereof;
c. voltage regulation means disposed between said output terminal of said charge pumping means and reference potential input terminals of said means for generating, said voltage regulation means being disposed for providing a reference potential on an output terminal thereof that regulates the amount of charge pumped from said substrate as a function of the magnitude of the generated bias voltage;
said voltage regulation means including:
d. voltage clamp circuit means disposed for clamping said generated bias voltage to a limited negative value, said voltage clamp circuit means having an input terminal coupled to the output of said charge pumping means and an output terminal;
e. a modulator circuit means having an input terminal coupled to said output terminal of said voltage clamp circuit means, and an output terminal; and,
f. a generator circuit means having an input terminal coupled to said output terminal of said modulator circuit means, and an output terminal coupled to reference voltage input terminals of said means for generating, said generator circuit means being disposed for supplying said reference potential in response to the output of said voltage clamp circuit means as modified by said modulator circuit means.

4,438,347

DEVICE FOR CHANGING THE ELECTRICAL CIRCUIT CONFIGURATION OF INTEGRATED SEMICONDUCTOR CIRCUITS

Gerhard Gehring, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 291,112
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030620
Int. Cl.³ H01L 27/01; H03H 2/00
U.S. Cl. 307—308 5 Claims



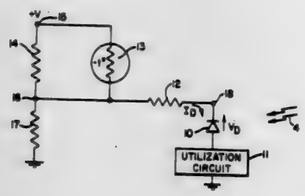
1. Device for changing the electrical circuit configuration of integrated semiconductor circuits on chips for the adjustment and trimming of circuit parameters, comprising circuit connections selectively disposed in the circuit configuration of the integrated semiconductor circuits, said circuit connections being accessible from outside the circuit chips and being mechanically openable without mechanically and without electrically stressing and modifying the circuit chips, an integrated semiconductor circuit having electrical interference signals caused by stored mechanical stresses, an evaluation circuit following said semiconductor circuit, and a balancing resistor network disposed in said evaluation circuit, said circuit connections being in the form of bridges connected to resistors of said resistor network and being mechanically openable for selectively adjusting resistance values of said resistor network and compensating said interference signals.

4,438,348

TEMPERATURE COMPENSATED AVALANCHE PHOTODIODE OPTICAL RECEIVER CIRCUIT

Paul W. Casper, Melbourne, and William B. Ashley, Indialantic, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Oct. 6, 1978, Ser. No. 949,231
Int. Cl.³ H03K 3/42; H01J 7/24
U.S. Cl. 307—310 13 Claims



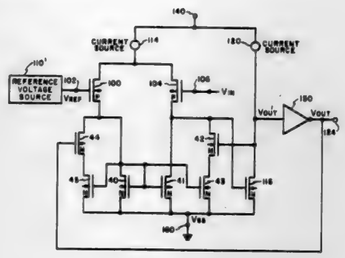
1. An avalanche photodiode circuit comprising:
an avalanche photodiode for receiving a light signal and generating an electrical output in response thereto;
a thermistor-containing voltage divider network; and
a first resistor; and wherein
said voltage divider network is electrically separated from said avalanche photodiode except for said first resistor which is connected therebetween.

4,438,349

HYSTERESIS CIRCUIT HAVING A STABLE OUTPUT FREE FROM NOISE SUPERPOSED ON INPUT SIGNAL

Masashi Shoji, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,537
Claims priority, application Japan, Oct. 29, 1980, 55-151796
Int. Cl.³ H03K 5/24, 5/153
U.S. Cl. 307—362 15 Claims



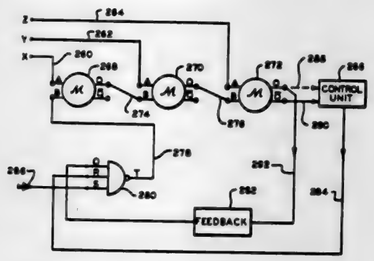
1. A comparator comprising first and second input terminals, an output terminal, a first transistor having a control electrode connected to the first input terminal, a second transistor having a control electrode connected to the second input terminal, said first and second transistors being interconnected to form a differential amplifier, a first load connected to the first transistor, a second load connected to the second transistor, a phase-inverter, means for supplying an output of said differential amplifier to said phase-inverter, first switching means for establishing a first conduction path in parallel with said first load, said first switching means being controlled by an output of said phase-inverter, second switching means for establishing a second conduction path in parallel with said second load, said second switching means being controlled by an input to said phase-inverter, and means for coupling the output of said phase-inverter to said output terminal.

4,438,350

LOGIC CIRCUIT BUILDING BLOCK AND SYSTEMS CONSTRUCTED FROM SAME

Joseph J. Shepter, New Haven, Conn., assignor to Scientific Circuitry, Inc., Conn.

Division of Ser. No. 852,594, Nov. 17, 1977, Pat. No. 4,257,008, which is a division of Ser. No. 382,981, Jul. 26, 1973, abandoned. This application Feb. 18, 1981, Ser. No. 235,635
Int. Cl.³ H03K 19/00
U.S. Cl. 307—440 10 Claims



1. A logic system which includes a plurality of identical logic circuit building blocks, each referred to as an M Circuit, said system comprising:
a plurality of M Circuits each of which responds to transitions of a two level, binary input signal to provide a memory and a logic function which has a complete truth table

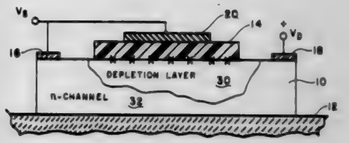
for every possible combination of input signal transitions or changes in logic level at a pair of input terminals A and B, each of said M Circuits comprising gating means having two inputs connected to said A and B input terminals, respectively, and a set-reset flip-flop means having its set input connected to the output of said gating means, its reset input connected to said B input terminal and its set and reset outputs connected respectively to output terminals Q and Q of said M Circuit, said Q and Q output terminals providing complementary binary outputs for any combination of binary inputs applied at said A and B input terminals, whereby said M Circuit is a four terminal device which responds to each transition of said input signal at said A and B terminals to provide outputs at said Q and Q terminals in accordance with its truth table function, said plurality of M Circuits being connected in a linear array for processing serial or parallel data received on a plurality of N input lines, said plurality of M Circuits being equal in number to said plurality of N input lines, each of said M Circuits having its A input terminal coupled to one of said input lines, with the B input of the first M Circuit in the linear array being coupled to a reset line and individual means connecting each of the B inputs of the second and remaining M Circuits to an output terminal of the preceding M Circuit, whereby the last M Circuit in said linear array will be activated when an input has occurred on each of said input lines to thereby provide an output signal.

4,438,351

GALLIUM ARSENIDE MIS INTEGRATED CIRCUITS

Fritz L. Schuermeyer, 1759 Southview Dr., Yellow Springs, Ohio 45387

Filed Jun. 9, 1981, Ser. No. 271,754
The portion of the term of this patent subsequent to Mar. 1, 2000, has been disclaimed.
Int. Cl.³ H03K 17/687, 3/356, 19/00
U.S. Cl. 307—450 5 Claims



1. An integrated circuit using metal insulator semiconductor field effect transistors (MISFET) of the buried channel type in which the semiconductor comprises an active layer of gallium arsenide (GaAs), each transistor having a source, a drain, and at least one gate, with a gate insulator of a material which provides large interface trap states, the region of the active layer under the gate having a doping and being of sufficient thickness so that when there is a direct connection between the source and gate providing zero direct-current bias a depletion layer extends only partly through said region and the transistor is therefore conducting, said integrated circuit comprising:
at least one inverter circuit with load means and an active transistor in series across a direct current bias supply with a node between them, the drain and source of the active transistor being coupled to said node and to a terminal of said bias supply respectively, an input connection to the gate of the active transistor, means to electrically set a threshold voltage for bias at the gate of the active transistor via said interface trap states, and to maintain said threshold voltage by signals above a cutoff frequency at said input connection which may vary between a given high level substantially equal to the bias potential at said source such that an initial high-level signal charges said interface trap states and the internal between high-level signals is sufficiently short to maintain the charge.

2. An integrated circuit using metal insulator semiconductor field effect transistors (MISFET) of the buried channel type having large interface trap states in which the semiconductor is gallium arsenide (GaAs), each transistor having a source, a drain, and at least one gate, said integrated circuit comprising:
two inverter circuits, each inverter circuit having load means and an active transistor in series across a direct current bias supply with a node between them, the drain and source of the active transistor being coupled to said node and to a terminal of said bias supply respectively, an input connection to the gate of the active transistor, means to electrically set a threshold voltage for bias at the gate of the active transistor via said interface trap states, and to maintain said threshold voltage by signals above a cutoff frequency at said input connection which vary between a given high level substantially equal to the bias potential at said source such that an initial high-level signal charges said interface trap states and that interval between high-level signals is sufficiently short to maintain the charge:
wherein said inverter circuits are connected as two branches of a latch, with direct cross coupling from said node of each branch to the gate of the active transistor of the other branch.

4,438,352

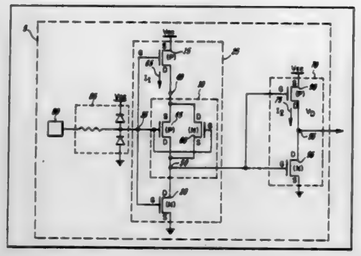
TTL COMPATIBLE CMOS INPUT BUFFER

Michael M. Mardkha, Santa Monica, Calif., assignor to Xerox Corporation, Stamford, Coan.

Continuation-in-part of Ser. No. 185,721, Jun. 2, 1980, abandoned. This application Aug. 17, 1982, Ser. No. 408,579
Int. Cl.³ H03K 19/003, 19/092, 19/094, 5/02
U.S. Cl. 307—475 3 Claims

1. A TTL compatible CMOS input buffer for converting an input signal at TTL levels to an output signal at CMOS levels comprising:
a transmission gate coupled to receive said input signal and having a high impedance during input level transitions and a low impedance during steady high and low input signal conditions,
a first transistor connected between said transmission gate and the power supply,
a second transistor connected between said transmission gate and ground,
the gates of said first and second transistors connected to said input, and
third and fourth transistors connected in series between the power supply and ground, the gates of said third and

fourth transistors connected to the connection between said second transistor and said transmission gate, the out-



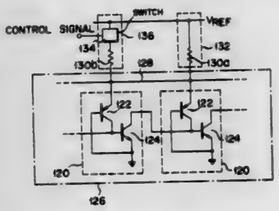
put point of the buffer being the connection point between said third and fourth transistors.

4,438,353

I^2L CIRCUIT WITH A VARIABLE INJECTOR CURRENT SOURCE

Jun Sano, Tokyo; Masahide Aoyama, and Daijiro Kubo, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 7, 1981, Ser. No. 261,617
Claims priority, application Japan, May 14, 1980, 55-63641
Int. Cl.³ H03L 5/00; H03K 19/091
U.S. Cl. 307—477 **16 Claims**



1. An I^2L logic circuit comprising:
a logic section including at least one I^2L unit circuit with a transistor for injector and a driving transistor; and
supply means for supplying said I^2L unit circuit with an injector current in response to a control signal which is a function of a desired operating speed of said I^2L unit circuit, said injector current always being large enough to operate said I^2L unit circuit.

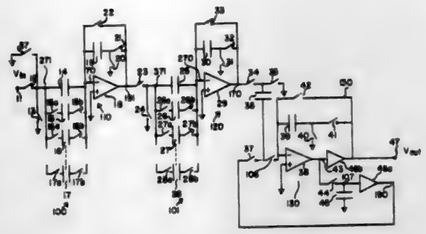
4,438,354

MONOLITHIC PROGRAMMABLE GAIN-INTEGRATOR STAGE

Yusuf A. Haque, San Jose; Vikram Saletore, Cupertino, and Jeffrey A. Schuler, Saratoga, all of Calif., assignors to American Microsystems, Incorporated, Santa Clara, Calif.

Filed Aug. 14, 1981, Ser. No. 292,870
Int. Cl.³ H03G 3/00; H03K 5/00; G06G 7/18
U.S. Cl. 307—493 **10 Claims**

1. An electronic gain-integrator stage having an input terminal for receiving an input signal and having an output terminal, comprising:
M operational amplifier gain stages connected in series where M is a selected integer varying from 1 to K, where K is the maximum number of gain stages, said M operational amplifier gain stages each having a programmable gain and an inherent offset voltage and said Mth gain stage having an output lead which provides an output signal which includes an error component which is a function of said offset voltages of said M operational amplifier gain stages;
an operational amplifier integrator stage connected to said gain stages, having an inherent offset voltage, and including
means for integrating during the first half of a selected cycle the negative of said error component, which is produced in response to the initialization of said M gain stages, and integrating during the second half of said selected cycle both the positive of said error component, which is produced in response to said input signal, and the positive of said input signal multiplied by each of said programmable gains of each of said M gain stages;
wherein the negative of said error component is integrated once for each integration of the input signal, whereby the effects of said offset voltages of each of said M gain stages are eliminated.

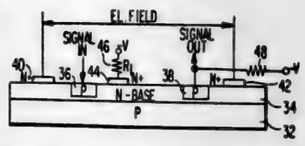


4,438,355

PHASE CANCELLER FOR CARRIER RECOVERY NETWORK

Vasil Uzunoglu, Ellicott City, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Division of Ser. No. 134,735, Mar. 27, 1980, Pat. No. 4,368,542.
This application May 6, 1982, Ser. No. 375,603
Int. Cl.³ H03K 5/153, 3/26
U.S. Cl. 307—511 **6 Claims**



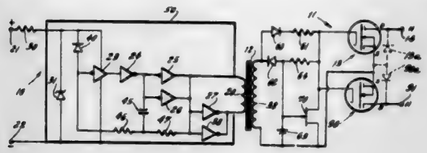
1. Apparatus for cancelling phase shifts in a signal having frequency variations and associated phase shifts comprising, a substrate formed of a first type of semi conductor material, a base region formed of a second semiconductor material adjacent to said first semiconductor material, a pair of junctions formed in said base region, one of said junctions receiving said signal and acting as an emitter of minority carriers in said base region, the other of said junctions acting as a collector, and a pair of ohmic contacts on said second semiconductor material and disposed on opposite sides of said respective emitter and collector junctions wherein an applied electric field between said ohmic contacts caused emitted minority carriers injected into said base at said emitter junction to drift toward said collector at a controlled rate determined by said applied electric field to vary the phase shift of said signal across said apparatus.

4,438,356

SOLID STATE RELAY CIRCUIT EMPLOYING MOSFET POWER SWITCHING DEVICES

Kenneth H. Fleischer, Los Angeles, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Mar. 24, 1982, Ser. No. 361,184
Int. Cl.³ H03K 17/687
U.S. Cl. 307—571 **18 Claims**



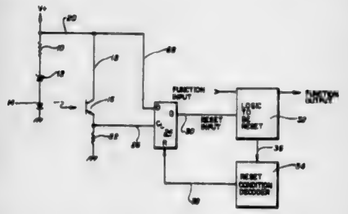
1. A solid state relay employing a MOSFET device as its power switching element; said solid state relay comprising an input circuit for receiving low voltage, low power input switching signals which vary between an on value and an off value; an oscillator circuit connected to said input circuit for producing a relatively high frequency output in response to said on value switching signal; a control circuit for applying and removing gate voltage to said MOSFET device and coupling means for coupling said control circuit to said high frequency output; said control circuit including control transistor means connected to the gate of said MOSFET device and operable to discharge the gate capacitance of said MOSFET device when said control transistor means is conductive; capacitance means coupled between the gate of said control transistor means and said coupling means for rendering said control transistor means nonconductive in the presence of an output from said coupling means; and circuit means including a diode directly connecting the output of said coupling means to the gate of said MOSFET device and to said control transistor means, whereby said circuit means including said diode can cause charging of the gate capacitance of said MOSFET device only when said control transistor is nonconductive.

4,438,357

LEVEL SENSITIVE RESET CIRCUIT FOR DIGITAL LOGIC

Michael F. Wieniewski, Antioch, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 17, 1982, Ser. No. 389,429
Int. Cl.³ H03K 17/28
U.S. Cl. 307—597 **18 Claims**



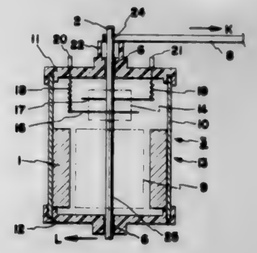
1. A system for resetting a digital logic circuit, which comprises:
a switch operable to provide a first signal when a predetermined condition has occurred;
a bistable device operable to receive said first signal and to provide an output reset signal when the device is in a first state, in response to said first signal;
a digital logic circuit to be reset coupled to the output of the bistable device for receiving the output reset signal;
feedback means coupled from said digital logic circuit back to said bistable device for sensing the state of the digital logic circuit and for switching the bistable device into a second state only when said logic circuit is in its reset condition whereby said output reset signal is terminated; whereby a functional output from the digital logic circuit is prevented unless the digital logic circuit is in its reset condition when the system is activated.

4,438,358

MEANS FOR SUPPRESSING VIBRATION NOISE IN A DEVICE DRIVEN BY A SMALL ELEC MOTOR

Yutaka Shiseki; Junichi Yagi, both of Kanagav asuyuki Miura, Tokyo, all of Japan, assignors to ., Ltd., Tokyo, Japan

Filed Jul. 25, 1978, Ser. No. 9
Claims priority, application Japan, Nov. 2 39605
Int. Cl.³ H02K 5/24
U.S. Cl. 310—51 **Claims**



1. An electric motor comprising:
an output shaft;
said motor being provided with a field magnet having a north pole and a south pole which are diametrically opposed;
said shaft supporting an armature and extending transversely through the field provided by said poles;
means urging said shaft in a direction diametrically transverse to a line connecting said north and south poles of said field magnet whereby vibration of said shaft is suppressed;
the angle between the direction of said means urging said shaft and said line connecting said north pole and said south pole lies in the range of from 30° to 90°; and
the direction of the said means urging the output shaft is normal to said line connecting said north and south poles.

4,438,359

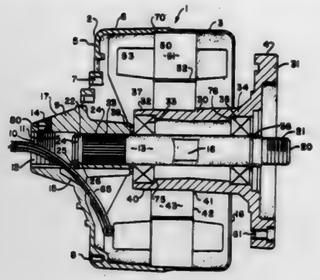
DYNAMOELECTRIC MACHINE STRUCTURE AND METHOD

Neal B. Royer, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 14, 1982, Ser. No. 368,397
Int. Cl.³ H02K 11/00
U.S. Cl. 310—68 R **12 Claims**

1. A dynamoelectric machine for a ceiling fan, comprising:
an end shield having an axial opening in it;
a shaft having a hollow bore through it immovably mounted in the axial opening of said end shield, said shaft having a first end and a second end, the first end of said shaft being attached to said end shield and said second end including means for mounting at least one additional device to said shaft, said hollow bore permitting electrification of said additional device;
a stator assembly mounted to said end shield and independently supported thereby, said stator assembly including a core of magnetic material having a central opening through it defining a bore, a plurality of winding receiving slots opening on said bore, and windings in said slots;

a rotor assembly mounted on said shaft and rotatable with respect thereto, said rotor assembly including a rotor having an axial opening in it, and a hub having an axial opening through it, said hub including an external diameter and an internal diameter, a first bearing positioned along the axial opening in said hub between said hub and



said shaft, a second bearing along the axial opening in said hub between said hub and said shaft and spaced from said first bearing, said rotor being mounted to said hub along the external diameter of said hub; and

retainer means for mounting said rotor assembly on said shaft positioned near the second end of said shaft.

4,438,360

DRIVING DEVICE FOR EFFECTING LINEAR MOTION

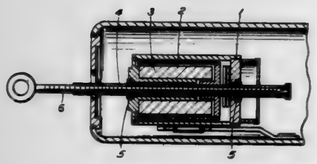
Kurt Held, Alte Str. 1, D-7728 Trossingen 2, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,138

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114591

Int. Cl.³ H02K *7/06*

U.S. Cl. 310—83 **1 Claim**



1. An electrically operated driving device for effecting linear motion using an electric motor, comprising a non-ferrous bell-type armature having an axially extending hollow armature shaft with an internal thread, an elongated threaded spindle extending through and in threaded engagement with said hollow shaft and said threaded spindle being axially displaceable relative to said hollow armature shaft when said shaft is rotated.

4,438,361

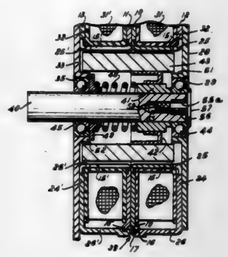
STEPPER MOTOR HAVING ROTOR WITH LIMITED AXIAL MOVEMENT

Harry G. Manson, Princeton, Ind., assignor to IMC Magnetics Corp., Jericho, N.Y.

Filed Feb. 24, 1982, Ser. No. 351,819

Int. Cl.³ H02K *7/08*

U.S. Cl. 310—90 **6 Claims**



1. A stepper motor comprising:

a stator,

a rotor rotatable with respect to the stator, the rotor having a shaft formed with a non-threaded axial bore,

bearing attachment means carried by the stator,

a pair of bearings carried by the bearing attachment means for rotatably supporting the rotor shaft, and

a stud frictionally, but non-threadably, fixed within the shaft bore, the stud having an enlarged head extending radially beyond the external contour of the shaft into axial alignment with at least part of one of the bearings,

whereby engagement between the stud head and the bearing limits the amount of axial movement of the rotor with respect to the bearing.

4,438,362

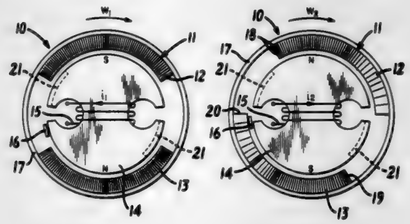
SELF-STARTING, DIRECT CURRENT MOTOR WITH PERMANENT MAGNETS OF VARIED MAGNETIC STRENGTH

Fred A. Brown, Woodstock, N.Y., assignor to Rotron, Incorporated, Woodstock, N.Y.

Filed Aug. 19, 1982, Ser. No. 409,712

Int. Cl.³ H02K *21/12*

U.S. Cl. 310—152 **8 Claims**



1. A self-starting, direct current motor comprising

first and second relatively rotatable members;

at least one winding and at least one salient pole on the first member;

at least one radially magnetized permanent magnet having a surface defining an arcuate sector of one magnetic polarity and facing the first member across an air gap, the arcuate sector extending less than 360°, the sector being a continuous single piece of magnetic material

said motor having at least one cogged position at a first angular relationship of the first and second members at which relative rotational forces between the first and second members are in equilibrium when the winding is energized;

said permanent magnet in said arcuate sector having circumferentially varying magnetic strength defining a location of increased magnetic strength nearer one end of the arcuate sector than the other end thereof in the circumferential direction; and

said salient pole and said location of increased magnetic strength being located to attract said first and second members away from said cogged position to an at-rest relative angular position that is angularly removed from the cogged position.

4,438,363

ELECTRICALLY CONTROLLED MECHANICAL POSITIONING DEVICE

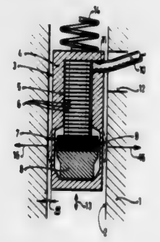
Rudolf Babitzka, Kirchberg, and Ernst Linder, Mühlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 311,677

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039973

Int. Cl.³ H04R *17/00*; H01L *41/08*

U.S. Cl. 310—328 **13 Claims**



1. Electrically controlled mechanical positioning device of a movable element (3) which is electrically controllable to, selectively, permit or inhibit movement under influence and control of an applied electrical signal, having

a support (1);

means (2) defining a guide-way in the support and guiding movementof the element,

and comprising, in accordance with the invention, a plurality of piezoelectric disks (6) stacked adjacent each other to form a stack assembly (5) in columnar form located within said element (3);

said element (3) having an elastically deformable portion;

said guide-way (2) having walls surrounding and retaining said movable element (3), said piezoelectric disks being secured within said element and, in dependence on a characteristic of an electrical signal applied to said stack assembly, expanding axially, and applying a deforming force to the elastically deformable portion which, in turn, applies a clamping force against the walls of the guide-way and, upon change of characteristics of the electrical signal, releasing the deforming, and hence clamping force and permitting movement of the movable element (3) in the guide-way.

4,438,364

PIEZOELECTRIC ACTUATOR

Rodney Morison, Huntington Beach, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 13, 1981, Ser. No. 282,478

Int. Cl.³ H01L *41/10*

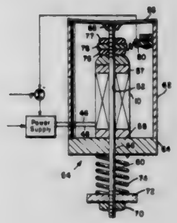
U.S. Cl. 310—328 **19 Claims**

1. An actuator for producing a force on a load in response to a single polarity D.C. voltage, comprising:

a stack of layers of a piezoelectric material having a central passage therethrough, each of the layers in said stack being not greater than 4 mils in thickness, each of said layers being poled to have an electrically positive surface and an electrically negative surface, said layers being positioned such that adjacent surfaces have like electrical polarities;

a first electrode connected to said electrically positive surfaces;

a second electrode connected to said electrically negative surfaces;



means for applying a potential difference between said first and second electrodes to produce an electric field in each said layer, said electric field causing a force in each said layer along the length of said stack for positioning the load; and

preload means wherein said preload means includes:

an actuator rod passing through said central passage;

a preload spring connected to said actuator rod; and

means, connected to said actuator rod, for urging said preload spring against said stack.

4,438,365

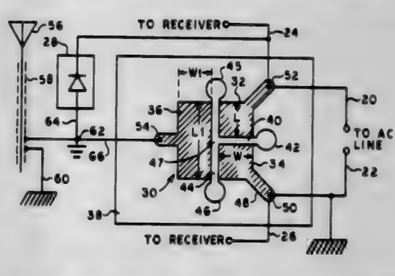
SPARK GAP FOR LINE TRANSIENT PROTECTION

Paul J. Atkinson, Buffalo Grove, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 16, 1982, Ser. No. 348,640

Int. Cl.³ H02H *1/04, 9/06*

U.S. Cl. 313—325 **10 Claims**



1. For use with electronic equipment coupled to a first power line which is at earth ground and to another power line which is at an elevated potential, a spark gap, comprising:

a first conductive pad adapted to be coupled to one power line;

a second conductive pad adapted to be coupled to the other power line and spaced from the first pad so as to define a first gap therebetween; and

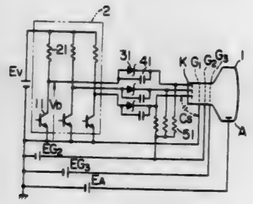
a third conductve pad adapted to be coupled to earth ground and spaced from said first and second pads so as to define a second gap which intersects said first gap.

4,438,366

CATHODE-RAY TUBE DRIVING APPARATUS

Yasuji Kamata, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1981, Ser. No. 285,734
Claims priority, application Japan, Jul. 23, 1980, 55-99906
Int. Cl.³ H01J *23/34*
U.S. Cl. 315—1 **15 Claims**



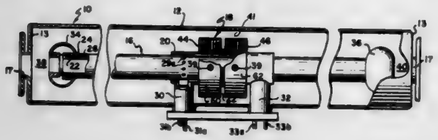
1. In an apparatus for driving a cathode-ray tube which includes at least one cathode, a grid associated with said cathode, and an anode, and a power supply connected to said cathode, grid and anode, the improvement comprising voltage regulating means connected to said power supply in series with said cathode for supplying a regulated voltage of predetermined value approximately equal to the voltage of said cathode which produces a predetermined high value of image luminance in said cathode ray tube, whereby the cathode driving voltage is reduced.

4,438,367

HIGH POWER RADIO FREQUENCY ATTENUATION DEVICE

Quentin A. Kerns, Bloomingdale, and Harold W. Miller, Winfield, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 30, 1981, Ser. No. 335,996
Int. Cl.³ H01J *25/10*
U.S. Cl. 315—5.41 **5 Claims**



1. A radio frequency resistor which attenuates unwanted RF energy of a first resonant mode, while passing desired RF energy of a second resonant mode, comprising:
- a central core for conducting radio frequency energy;
- first and second sets of spaced-apart plates of metal alloy having a magnetic permeability greater than 1000, disposed about said central core;
- said first and second sets of plates spaced apart so as to form a gap therebetween; and
- first and second conductive shield means disposed about said first and said second sets of plates, respectively, and the gap between said first and said second sets of plates positioned to lie at point along said central core where the unwanted RF energy of said second resonant mode has a current maxima.

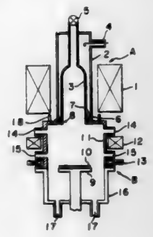
5. In a charged particle accelerator having a resonator tank disposed in the path of the charged particles, a conductive drift tube disposed within said resonator tank to lie in the path of said charged particles, corona rolls attached to each end of said drift tube to form gaps between said drift tube and said resonator tank, means for energizing said conductive drift tube with wanted RF energy of a first resonant mode such that current maxima of said wanted RF energy are located at said gaps, first and second sets of spaced-apart high magnetic permeability plates disposed about said drift tube central core, said first and said second sets of plates spaced apart so as to form a gap therebetween, first and second conductive shield means disposed about said first and said second sets of plates, respectively, and the gap between said first and said second sets of plates positioned to lie at points along said central core where unwanted RF energy of a second resonant mode has a current maxima.

4,438,368

PLASMA TREATING APPARATUS

Haruhiko Abe; Hiroshi Harada; Masahiko Denda; Koichi Nagasawa, and Yoshio Kono, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,730
Claims priority, application Japan, Nov. 5, 1980, 55-156086
Int. Cl.³ H01J *7/46, 19/80*
U.S. Cl. 315—39 **2 Claims**



1. A plasma treating apparatus comprising:
- an air-core coil for generating a static magnetic field which is axially uniform;
- a high-frequency waveguide for generating a high-frequency electromagnetic field which is irregular in the axial direction of said air-core coil;
- a plasma generating glass tube disposed in said high-frequency waveguide and adapted to be supplied with a gas whereby said electromagnetic field and said magnetic field cause an axial acceleration plasma flow in said tube;
- a plasma reaction bath held under a vacuum for receiving said plasma flow which is generated axially in said glass tube;
- a substrate platform disposed in said reaction bath for supporting a substrate to be treated at a right angle with respect to the plasma flow; and
- a magnetic field generating coil disposed outside of said reaction bath for shaping said plasma flow.

4,438,369

UNITARY LIGHT SOURCE COMPRISING COMPACT HID LAMP AND INCANDESCENT BALLAST FILAMENT

John M. Hicks, Penn Hills Township, Allegheny County, and Joseph C. Engel, Monroeville, both of Pa., assignors to North American Philips Electric Corp., New York, N.Y.

Continuation of Ser. No. 282,335, Jul. 10, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,259
Int. Cl.³ H01J *7/44*
U.S. Cl. 315—49 **4 Claims**

1. A unitary light source for operation from a source of AC energizing potential, comprising an HID lamp, a light-emitting starting and operating circuit therefor, and input terminals for connection to a source of AC energizing potential; said light source providing illumination during the warm-up period required for said HID lamp and also after short periods of power interruption when said HID lamp is hot and thus difficult to start,

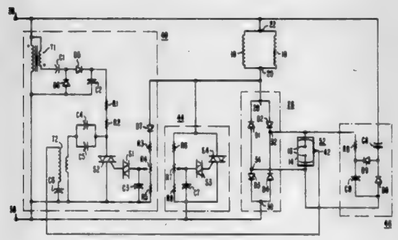
said HID lamp comprising an arc-enclosing envelope having spaced electrodes sealed therethrough and operable to sustain a high intensity discharge therebetween; and

said light emitting starting and operating circuit comprising:

an incandescent tungsten filament ballast device having two end portions;

a full-wave rectifier having two input terminals and two output terminals, one end portion of said filament ballast device being connected to one input terminal of said full-wave rectifier, the other end portion of said filament ballast device and the other input terminal of said full-wave rectifier being connected respectively to the unitary light source input terminals, and said HID lamp electrodes being connected respectively to the output terminals of said full-wave rectifier;

low impedance path means connected in parallel with said input terminals of said full-wave rectifier, for passing current through said ballast when said HID lamp is not operating, said means being actuated responsive to a predetermined potential developed across said input terminals of said full-wave rectifier during each half cycle of said AC energizing potential, which predetermined potential is greater than the maximum potential developed across said input terminals of said full-wave rectifier when said HID lamp is operating, to provide a path of low



electrical impedance which parallels said input terminals of said full-wave rectifier,

a pulse generating circuit connected in parallel with said input terminals of said full-wave rectifier, for providing a high starting voltage pulse for said HID lamp, said pulse generating circuit comprising an output terminal constituting a high-voltage electrode operatively associated with said HID lamp, arranged such that actuation of said low impedance path means, in response to a potential across said input terminals of said full-wave rectifier greater than said predetermined potential, triggers said pulse generating circuit to generate a high voltage pulse of magnitude sufficient to ionize the atmosphere within said arc-enclosing envelope of said HID lamp;

and

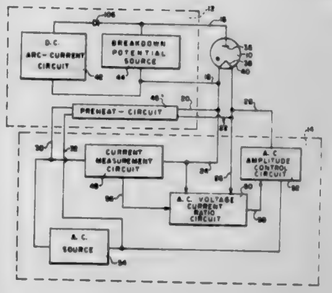
an HID lamp keep-alive and starting-aid having an input connected across said light source input terminals and an output connected across said output terminals of said full-wave rectifier, said keep-alive and starting-aid comprising means for storing DC energy of the same polarity as the output of said full-wave rectifier upon initial energization of said light-source, said DC energy being of predetermined charge and magnitude sufficient to sustain a discharge in said HID lamp for a short period during starting thereof and during periods of conduction minima of said full wave rectifier.

4,438,370

LAMP CIRCUIT

Robert W. Allington, Lincoln, Nebr., assignor to ISCO, Inc., Lincoln, Nebr.

Filed Mar. 3, 1981, Ser. No. 240,090
Int. Cl.³ H05B *41/36*
U.S. Cl. 315—106 **79 Claims**



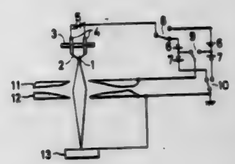
1. Apparatus comprising:
- an enclosure having at least one envelope portion capable of transmitting light therethrough;
- said enclosure containing gas, an anode and a cathode;
- said cathode and anode being spaced a predetermined distance apart within said container;
- means for establishing potentials between said anode and cathode sufficient to initiate and sustain an arc within said gas, whereby light is emitted by said gas during operation of said apparatus and an anode-cathode current flows between said anode and cathode;
- means for applying an AC potential across said cathode, whereby an AC current flows through said cathode in addition to said anode-cathode current; and
- means for controlling the electrical power applied to said cathode to maintain the AC potential across said cathode at a value that maintains a predetermined relationship between the AC potential drop across said cathode and the AC current through the cathode during the operation of said apparatus.

4,438,371

SOURCE OF CHARGED PARTICLES BEAM

Shigeyuki Hosoki, Hachioji; Masaaki Futamoto, Tsukui; Ushio Kawabe, Nishitama; Tohru Ishitani, Sayama, and Hifumi Tamura, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,417
Claims priority, application Japan, May 22, 1981, 56-76502
Int. Cl.³ H01J *7/24*
U.S. Cl. 315—111.81 **12 Claims**



1. A source of charged particles comprising: a charged particles generating chamber; a tip disposed inside the charged particles generating chamber, the tip material being carbides, nitrides or di-borides of at least one of elements Ti, Zr, Hf, V, Nb and Ta or hexa-borides of at least one of rare earth metal

elements of atomic number 57 to 70; a supporter for supporting the tip; a source for supplying material to be ionized; a first electrode for producing a field near the tip to draw out the charged particles generated; a second electrode for accelerating and converging the charged electrodes drawn out by the first electrode; a first electric source connected between the tip and the first electrode; a second electric source connected between the first and second electrodes; and a switching means for changing virtually simultaneously a relative polarity between the tip and the first electrode and between the first and second electrodes so as to make the field positive or negative to accelerate and converge the charged particles as desired.

4,438,372

MULTIPLE LOW-PRESSURE DISCHARGE LAMP OPERATING CIRCUIT

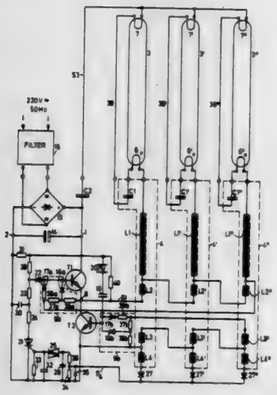
Anton Zuchtriegel, Taufkirchen, Fed. Rep. of Germany, assignor to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 193,254, Oct. 1, 1980, abandoned. This application Sep. 7, 1982, Ser. No. 415,413

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941822

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—224 **24 Claims**



1. Low-pressure discharge lamp operating circuit for connection to a plurality of discharge lamps (3, 3' . . . 3ⁿ) having first and second electrodes (7, 6),

said circuit comprising

connection means (1, 2) for connection to a d-c source (5);

a self-excited push-pull oscillator circuit including

two serially connected transistors (T1, T2) of the same conductivity type, connected across the d-c source and having a common junction (8);

a plurality of individual separate series resonance starting circuits (4, 4' . . .), connected to said serially connected transistors (T1, T2), each having a first terminal connected to the second electrode (6) of a respective lamp of the plurality of lamps,

wherein the individual series resonance circuits (4, 4' . . .) each include

a separate individual ballast inductance having a main winding (L1, L1' . . .) serially connected by a first terminal with the second lamp electrode (6) of a respective lamp, and a separate individual capacitor (C1, C1' . . .) serially connected to the main winding of the individual ballast inductance, and coupled in parallel to the respective lamp,

said ballast inductances including inductively coupled first control windings (L2, L2' . . .) and second control windings (L3, L3' . . .) to form, with the main windings, individual transformers, in which the main winding forms the primary and the first and second control windings form secondary windings;

a first bus (S1) connecting said common junction (8) to the second terminals of the plurality of inductances, and hence through the inductances to the second electrodes (6) of the lamps;

a second bus (S3) connecting one of the connection means (1) on the d-c source (5) to the first electrodes (7) of the lamps,

capacitor means (C2) in one of said buses to isolate d-c from the lamp electrodes (7, 6);

a control circuit to control said two transistors (T1, T2) for alternate conduction or blocking condition and to supply high-frequency alternating power to the lamps, including

connection means (*9a, 9b*) between the emitters and bases of the transistors (T1, T2) and the first and second control windings (L2, L2' . . . L3, L3' . . .),

and a starting circuit (10) connected to the base of one (T2) of the transistors including means (20) for energizing said starting circuit upon connection of the lamp operating circuit to a power source;

wherein the main winding (L1) and the first and second control windings (L2, L3) are wound on a common core; and

the first and second control windings (L2, L2' . . . ; L3, L3' . . .) of the respective plurality of inductances are, respectively, connected in series, and the series-connected respective first and second control windings are connected in briding circuit relationship across the base-emitter paths of the respective transistors (T1, T2), with said connection means (*9a, 9b*) interposed therein.

4,438,373

LOW PRESSURE METAL VAPOR DISCHARGE LAMP

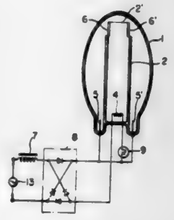
Yoshio Watanabe, Koutou; Mikiya Yamane, and Terulchi Tomura, both of Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 158,264, Jun. 10, 1980, Pat. No. 4,338,331, which is a continuation of Ser. No. 932,546, Aug. 10, 1978, abandoned. This application Jun. 1, 1982, Ser. No. 383,944

Claims priority, application Japan, Aug. 10, 1977, 52-95041; Sep. 28, 1977, 52-115622; Sep. 28, 1977, 52-115623; Sep. 28, 1977, 52-115624

Int. Cl.³ H05B *41/16*

U.S. Cl. 315—334 **8 Claims**



1. A low pressure metal vapor discharge lamp comprising an outer glass envelope defining an enclosed discharge space; an inner glass tube disposed within said envelope and having an open end and a closed end; a cathode disposed within said tube; a plurality of anodes disposed within said envelope outside said tube; and circuit means for simultaneously applying voltage to the anodes, said circuit means including ballast means in the form of a single ballast connected in common to said anodes to provide current stabilization and means connected between said anodes for shunting discharge current in equal amounts to each of said anodes, said discharge current being regulated by said common single ballast.

4,438,374

CONTROL OF ELECTRIC DISCHARGE LAMPS FOR SCANNING PURPOSES

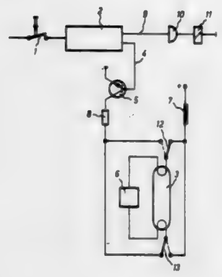
Helmut Karius, Schönkirchen, Fed. Rep. of Germany, assignor to Dr.-Ing. Rudolf Hell G.m.b.H., Kiel, Fed. Rep. of Germany

PCT No. PCT/DE80/00174, § 371 Date Jul. 13, 1982, § 102(e) Date Jul. 13, 1982, PCT Pub. No. WO82/01802, PCT Pub. Date May 27, 1982

PCT Filed Nov. 22, 1980, Ser. No. 403,512

Int. Cl.³ H05B *41/16*

U.S. Cl. 315—362 **4 Claims**



1. A method for prevention of cataphoresis actions in the case of electric discharge lamps operated by direct current, in particular during their utilisation in picture transmission apparatus with nonpunctiform illumination of the original portions which are to be scanned, characterised in that the lamp incandescence period is measured in a first polarity during a first picture transmission and is stored, that the polarity is reversed before beginning a second picture transmission, that the lamp incandescence period in the second polarity is equally measured and stored, that the difference between the first and second incandescence periods is established and stored, and that a balance quantity of the total incandescence period is established in this manner during all subsequent transmissions under consideration of the polarity which, being compared to the incandescence period of the last transmission, reverses the polarity of the lamp voltage before the following transmission only if the last incandescence period had been longer than the carry-over stored.

4,438,375

ELECTRIC CIRCUIT FOR CONVERTING AN AC VOLTAGE INTO A DC VOLTAGE OR A VOLTAGE VARIABLE AT A LOWER FREQUENCY

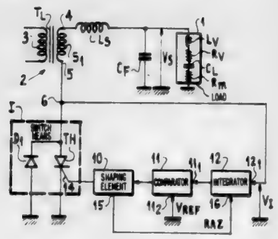
Joseph Colineau, and Jean Y. Maheo, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Dec. 31, 1980, Ser. No. 221,799

Claims priority, application France, Jan. 8, 1980, 80 00307

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—408 **19 Claims**



1. An electrical circuit for converting an ac voltage applied to an input (S1) to a dc voltage (Vs) variable at a lower frequency at an output (1), comprising

(a) a filter (LS,CF) connected between said input and output;

(b) switch means (I) having an output (6) connected in series with said input, said filter, and said circuit output and on that side of the filter which is connected to said input, for conducting during each cycle of the ac voltage for a period of time in accordance with the desired dc output voltage;

(c) means for receiving a reference signal (112,VREF) proportional to the desired dc output voltage; and

(d) control means (11,12) connected to said switch means (I) for operating said switch means and thus controlling the output dc voltage (VS), having an input (at 112) for receiving said reference signal (VREF), and an input (121) connected to said switch means (I);

said control means including means for establishing (12) a mean value of a voltage at said switch means output (6) during a cycle of input ac voltage, and including an output (to 14) connected to said switch means for operating said switch means, said control means operating said switch means in accordance with and slaved to instructions from said reference signal and proportional to a mean value of said voltage at said switch means output (6).

4,438,376

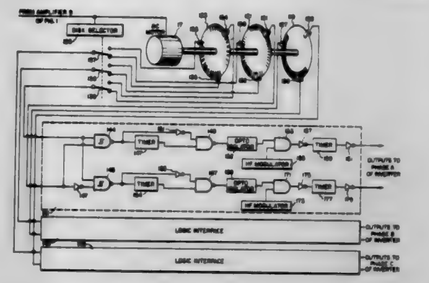
VARIABLE SLIP CONTROLLER FOR AN AC MOTOR

Marlen Varnovitsky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,350

Int. Cl.³ H02P *5/40, 5/46*

U.S. Cl. 318—78 **2 Claims**



1. A variable slip control system for an AC motor comprising:

means for generating a voltage signal proportional to the shaft speed of said AC motor;

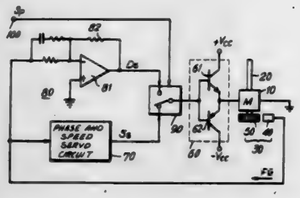
variable gain amplifier means for controlling the ratio between motor shaft speed and stator frequency and thus the slip and for receiving said shaft speed signal and providing a signal proportional to stator frequency which is dependent on commanded gain;

means for providing a DC starting signal to said variable gain amplifier means;

pulse width modulation signal generator means for rotating optically encoded means at a speed proportional to said frequency signal and for scanning the last-mentioned means and optically decoding information thereon into electrical pulse width modulation switching pulses which are supplied to appropriate switches in an inverter;

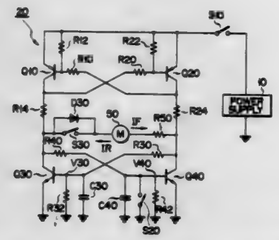
said inverter supplying variable frequency and variable magnitude power to the stator of said AC motor.

4,438,377
STOP CONTROL CIRCUIT FOR BRUSHLESS DC MOTOR
Masaaki Sakai, and Mitsugu Yoshihiro, both of Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 4, 1981, Ser. No. 270,219
Claims priority, application Japan, Jun. 6, 1980, 55-76806
Int. Cl.³ H02K *29/02*
U.S. Cl. 318—254 **15 Claims**



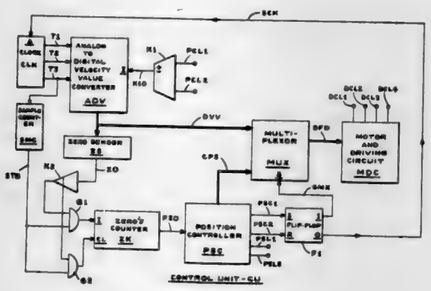
1. A drive control circuit for a brushless DC motor comprising bidirectional-rotation driving circuit means for applying current in either of two opposite directions to said motor; servo circuit means providing a servo output signal for said driving circuit means to control the phase and speed of said motor; rotation detecting means for providing a phase signal whose magnitude and polarity indicate the electrical rotational angle of said motor; amplifier means amplifying said phase signal and providing an output voltage that varies according to said phase signal; and controllable switching means having a first condition for normally providing said servo output signal to said driving circuit means, and a second condition for applying said output voltage to said driving circuit means in a sense to brake said motor.

4,438,378
MOTOR DRIVE APPARATUS
Tosio Tanaka, Gunma, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jan. 22, 1982, Ser. No. 341,626
Claims priority, application Japan, Jan. 30, 1981, 56-11057[U]; Jun. 25, 1981, 56-93974[U]
Int. Cl.³ H02P *1/22*
U.S. Cl. 318—280 **6 Claims**



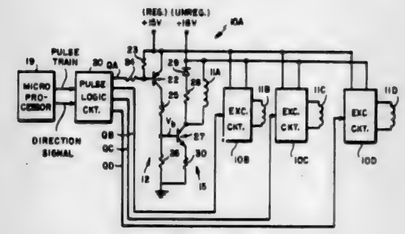
1. A motor drive apparatus for driving a reversible motor first in a first direction, then stopping it and then driving it in a second direction opposite to said first direction, comprising:
power switch means for receiving current from a power supply and passing that current in a closed state thereof or blocking current in an open state thereof;
a first flip-flop having 1st and 2nd transistors of a first conductivity type, a base of said 1st transistor being coupled to a collector of said 2nd transistor, a base of said 2nd transistor being coupled to a collector of said 1st transistor, emitters of said 1st and 2nd transistors being coupled to, said power switch means for receiving current therefrom when said switch means is in said closed state and the collectors of said 1st and 2nd transistors being respectively coupled to opposite terminals of said motor;
a second flip-flop having 3rd and 4th transistors of a second conductivity type opposite to said first conductivity type, emitters of said 3rd and 4th transistors for being coupled to a return of said power supply, the collector of the third transistor being coupled to the collector of the first transistor and the collector of the fourth transistor being coupled to the collector of the second transistor;
power switch means positioned on a power supply line of said power supply, for conducting a power of said power supply to said 1st through 4th transistors;
first coupling means for coupling the base of said 3rd transistor to the collector of said 4th transistor, said first coupling means having a first time constant which retards a potential variation passing through said first coupling means;
second coupling means for coupling the base of said 4th transistor to the collecdtor of said 3rd transistor, said second coupling means having a second time constant which retards a potential variation passing through said second coupling means, said first time constant being longer than said second time constant such that said 1st and 4th transistors conduct and said 2nd and 3rd transistors are cut off at a time when said power switch means first conducts current from said power supply, said conductor by said 1st and 4th transistors causing current to flow in a first direction through said motor causing it to operate in said first direction; and
trigger switch means, coupled to said 4th transistor, for rendering said 4th transistor non-conductive when said trigger switch means is activated, thereby stopping current flow through said motor to stop it, and then causing said 3rd transistor to conduct in response to said first time constant thereby causing current to flow in said second direction through said motor, causing it to operate in said second direction.

4,438,379
METHOD OF DAMPING A STEPPING MOTOR
David Chiang, Dix Hills; Mosi Chu, Setauket, and Solomon Manber, Sands Point, all of N.Y., assignors to MSS Associates, Short Hills, N.J.
Filed Jun. 15, 1981, Ser. No. 273,625
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—685 **11 Claims**



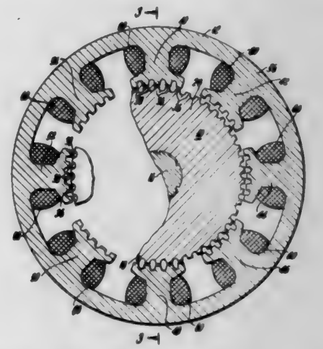
1. In a stepping motor having a rotatable stator magnetic field for driving the rotor, the method of damping the oscillations of the rotor which occur when the rotatable stator magnetic field is stopped upon arriving at a desired rotational position comprising a first step of measuring quantities related to the instantaneous velocity of the rotor due to the oscillations of the rotor about the desired rotational position, a second step of modifying the stator magnetic field by at least a rotational displacement from the desired rotational position in a direction opposite to the direction of the oscillation by an amount which is a continuous function of the instantaneous velocity, and a third step of thereafter returning the stator magnetic field to the desired stopping position.

4,438,380
STEPPING MOTOR EXCITATION CIRCUITRY
Robert G. Kaseta, Stow, Mass., assignor to Data General Corporation, Westboro, Mass.
Continuation of Ser. No. 917,564, Jun. 21, 1978, abandoned. This application Dec. 23, 1980, Ser. No. 219,512
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **4 Claims**



1. A disk storage system having movable transducer means for writing data onto or reading data from a surface of one or more storage disks, said system comprising
a stepping motor system for positioning said movable transducer means relative to a surface of said one or more storage disks, said stepping motor system comprising a stepping motor having a plurality of excitation windings capable of having current pulses supplied thereto for moving said stepping motor in discrete steps;
means coupling said stepping motor to said transducer means for moving said transducer means in discrete steps;
current drive circuits associated with each of said windings and responsive to an input driver signal for supplying current to its associated winding when said input driver signal is supplied thereto, each said current drive circuit including
a first circuit including switching transistor means responsive to said input driver signal and having a pair of precision resistance means in the collector circuit thereof for supplying a substantially constant voltage at the junction of said precision resistors;
a regulated power supply means for supplying power to said first circuit;
a second circuit comprising a transistor circuit means having a substantially constant base-to-emitter voltage, said associated winding being placed in the collector circuit thereof and resistance means being placed in the emitter circuit thereof, said second circuit having substantially greater power requirements than those of said first circuit and being responsive to said substantially constant voltage for supplying a substantially constant current to said associated winding independently of the winding resistance when said driver input signal is supplied to said first circuit; and
an unregulated power supply means for supplying power to said second circuit.

4,438,381
SYNCHRONOUS MOTOR SYSTEM
John H. Field, II, Norfolk, Mass., assignor to Sigma Instruments, Inc., Braintree, Mass.
Continuation of Ser. No. 72,323, Sep. 4, 1979, abandoned, which is a continuation of Ser. No. 742,690, Nov. 17, 1976, Pat. No. 4,255,696, which is a continuation-in-part of Ser. No. 654,400, Feb. 2, 1976, abandoned. This application Feb. 3, 1982, Ser. No. 345,617
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **8 Claims**



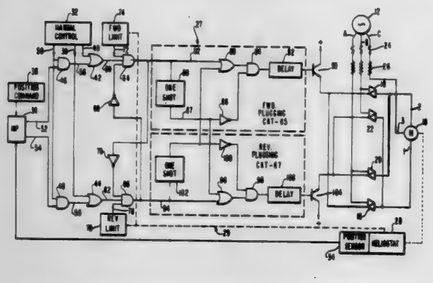
1. A synchronous motor system responsive to input pulses, comprising a motor including a stator and a rotor movable relative to each other about a common axis, said stator having a plurality of radially directed stator poles, said poles having stator teeth arranged in a circle around the axis, said rotor having a plurality of rotor teeth arranged about the axis, said rotor teeth being permanently magnetized, a plurality of winding means on said stator poles for inducing magnetic fields in said poles in radial directions, each of said poles having at least one winding; and circuit means coupled to said winding means and responsive to input pulses, said circuit means including a plurality of switches each connected in series with one of said winding means; said circuit means including driver means coupled to said switches and responsive to the pulses for rendering a plurality of said switches conductive simultaneously and energizing said connected winding means simultaneously so that each switch when conductive carries only the current for inducing magnetism in one pole, and so that the pulses energizing the windings all have levels of substantially the same absolute value.

4,438,382
THREE PHASE AC MOTOR CONTROLLER
Michael Vuckovich, Elizabeth; Maynard K. Wright, Bethel Park, and John P. Burkett, South Huntington Township, Westmoreland County, all of Pa., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.
Filed Jun. 30, 1981, Ser. No. 279,501
Int. Cl.³ H02P *3/20*
U.S. Cl. 318—744 **4 Claims**

1. A motor controller for applying power to a reversible multiphase AC motor through power switch means which are adapted to reverse the phase excitation of the motor in both a running and braking mode of operation, comprising in combination:
forward and reverse command signal means;
first and second cross coupled logic circuit means respectively implementing forward and reverse command signal channels coupled between said command signal means and said power switch means,
wherein each of said first and second logic circuit means com-

prises means for mutually exclusively coupling a first control signal to said power switch means to effect a predetermined direction of rotation of said motor and respective plugging circuit means for braking said motor, said plugging circuit means including pulse signal generator means becoming operable in response to a predetermined logic signal level of said first control signal to output a second control signal of a predetermined pulsewidth to inhibit further operation of the logic circuit means of the respective signal channel for duration of the pulsewidth of said second control signal and thereby deactivate said power switch means for said predetermined direction of rotation and additionally coupling said second control signal to the logic circuit means of the other signal channel to reactivate said power switch means for the opposite direction of rotation for the duration of the pulsewidth of said second control signal which causes said motor to brake,

wherein each logic circuit means additionally includes first and second tandemly connected multi-input logic gates, said logic gates having the output of said first logic gate coupled to one input of said second logic gate and wherein one input



of said first logic gate is coupled to said first control signal, said pulse signal generator means of the other signal channel being coupled to another input of said first logic gate for coupling its respective second control signal thereto, and additionally including circuit means coupled from the output of said pulse signal generator means of the respective signal channel to another input of said second logic gate of the respective signal channel to enable said second logic gate when the pulse generator means of the respective signal channel is inoperative, said second logic gate thereby coupling said first control signal to said power switch means but becoming inhibited upon said pulse signal generator means of the respective signal channel being triggered to deactivate said power switch means for said predetermined direction of rotation, and

wherein said first logic gate of each logic circuit means comprises an OR gate and said second logic gate comprises an AND gate, and additionally including logic inverter means coupling the output of said signal generator means of the respective signal channel to said another input of said AND gate.

4,438,383

ROCK CRUSHER MOTOR CONTROL CIRCUIT FOR PREVENTING RELAY DROP OUT

J. Eugene Etheridge, Richmond, Va., assignor to Etheridge Electric, Inc., Richmond, Va.

Filed Jul. 15, 1982, Ser. No. 398,947
Int. Cl.³ H02P 5/28
U.S. Cl. 318—799 **12 Claims**

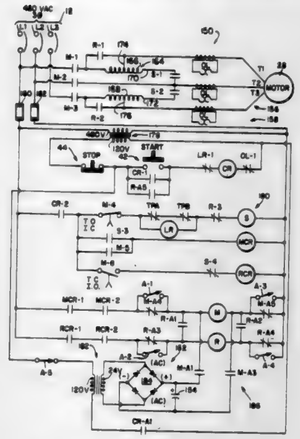
1. A motor control circuit for operating a motor driving a load which cannot be started under load but which maintains sufficient momentum to resume normal operation upon restoration following momentary interruption of a main power source, said circuit serving to prevent motor starter relay drop out during such momentary interruptions, and said circuit comprising:

a magnetic motor starter relay including an actuating coil and a set of normally-open main contacts connected for energizing the motor from the main power source;

a starting circuit for initially energizing said actuating coil from the main power source;

a storage capacitor and a DC power supply connected for charging said storage capacitor and maintaining the charge when the main power source is available;

an auxiliary contact arrangement operable following initial energization of said actuating coil to disconnect said actuat-



ing coil from the main power source and to connect said actuating coil for energization from said storage capacitor and said DC power supply such that, upon subsequent momentary interruption of the main power source, energy stored in said capacitor maintains said actuating coil of said motor starter relay energized until restoration of the main power source; and

said DC power supply being arranged to initially provide a relatively higher voltage to ensure actuation of said motor starter relay and, subsequent to full actuation of said motor starter relay, to provide a relatively lower voltage at least sufficient to hold said motor starter relay in an actuated condition.

4,438,384

GENERATION INDICATING APPARATUS FOR VEHICLE ALTERNATORS

Yoshio Akita, Ichinomiya; Toshinori Maruyama, Kariya, and Katsuya Muto, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 21, 1981, Ser. No. 294,822
Claims priority, application Japan, Aug. 29, 1980, 55-119413
Int. Cl.³ H02J 7/16
U.S. Cl. 320—48 **4 Claims**

1. A generation indicating apparatus in a charging system having an alternator, a voltage regulator and a battery, said generation indicating apparatus comprising:

a generation detecting circuit connected to receive an output of said alternator for determining a generation condition of said alternator and for producing a detection signal when the generation condition reaches a predetermined condition after the start of an engine;

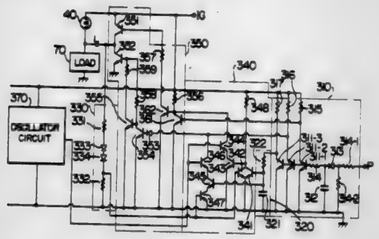
indicator means for indicating the generation condition of said alternator;

a drive circuit including a drive transistor circuit for operating said indicator means, said drive circuit having an input terminal connected to said generation detecting circuit

and an output terminal connected to said indicator means, said drive circuit operating said indicator means to indicate that said alternator is in a non-generating condition until said detection signal is received from said generation detecting circuit and to indicate that said alternator is in a generating condition after said detection signal is received; and

a protection and reset circuit for forcedly stopping the operation of said drive circuit upon occurrence of an abnormal voltage on a line connected between said output terminal of said drive circuit and said indicator means and for resetting said drive circuit to recover a normal operation after said abnormal voltage is removed,

said protection and reset circuit including



an abnormal voltage detecting circuit for detecting said abnormal voltage on said line,

an oscillator circuit for producing a pulse signal having predetermined on and off periods, and

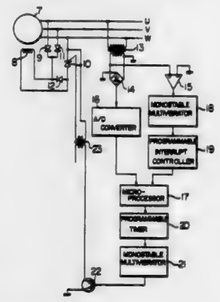
a control circuit connected to said abnormal voltage detecting circuit, said oscillator circuit and said drive circuit and for providing said pulse signal as a control signal to said drive circuit thereby to turn on and off said drive transistor of said drive circuit upon detection of said abnormal voltage by said abnormal voltage detecting circuit, wherein the conduction of said drive transistor is limited to the on period of said pulse signal to protect said drive transistor and said abnormal voltage is gradually removed through the conduction of said drive transistor.

4,438,385

AUTOMATIC VOLTAGE REGULATION SYSTEM FOR AC GENERATOR

Hiroyasu Sato; Kazuaki Yamamoto, both of Hitachi, and Hiroaki Aotsu, Nakaminato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1982, Ser. No. 380,263
Claims priority, application Japan, May 26, 1981, 56-78656
Int. Cl.³ H02P 9/00, 9/10
U.S. Cl. 322—28 **5 Claims**



1. In an automatic voltage regulation system for an AC generator, having voltage detector means for detecting an output voltage of the AC generator and a thyristor for controlling the field current in accordance with the difference between a reference voltage and the voltage detected by said detector means, said automatic voltage regulation system further comprising:

synchronous point detector means for detecting a synchronous point of the output voltage of said AC generator;

a microprocessor for computing a firing angle of said thyristor in accordance with the difference between said reference voltage and the voltage detected by said voltage detector means and producing a signal representing the computed firing angle at the time of detection of the synchronous point; and

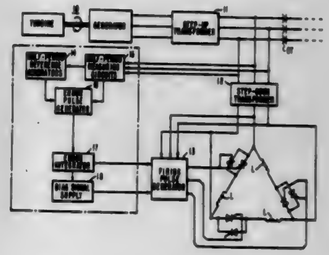
firing control means for turning on said thyristor in response to the firing angle signal at the firing angle computed by said microprocessor.

4,438,386

STATIC VAR GENERATION FOR TRANSMISSION LINE COMPENSATION OF SUBSYNCHRONOUS RESONANCE

Laszlo Gyugyi, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 10, 1981, Ser. No. 300,841
Int. Cl.³ H02J 3/16
U.S. Cl. 323—210 **2 Claims**



1. A static VAR generator and network stabilizer comprising:

(a) a reactance means disposed for connection into an AC network;

(b) a frequency monitoring means for measuring the period of the network voltage and comparing it to the period of a reference voltage cycle to detect subsynchronous resonance in said AC network;

(c) a control means connected to said reactance means and said frequency monitoring means for connection of said reactance means into said AC network to damp subsynchronous resonance in said AC network.

4,438,387

TURN-ON CONTROL SYSTEM FOR VOLTAGE DROP COMPENSATORS

Frederick Rohatin, 166-10 - 15th Dr., Whitestone, N.Y. 11357

Filed Jun. 8, 1981, Ser. No. 271,202
Int. Cl.³ G05F 1/24
U.S. Cl. 323—260 **10 Claims**

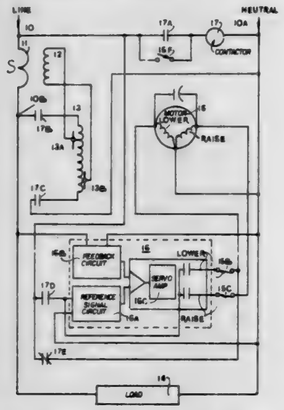
1. A turn-on control system for voltage compensation means being fed from incoming service lines, said system comprising, in combination:

compensating transformer means including primary winding means and secondary winding means, said secondary winding means being connected in series with said service lines;

variable voltage corrective transformer means connected across said primary winding means for feeding corrective

power thereto and thence to induce into said secondary winding means corrective voltage;

voltage detection control means having automation responsive to the presence of line voltage, for disconnecting said variable voltage transformer corrective means from its input lines upon occurrence of a power blackout and for placing said variable voltage corrective transformer means as a damping load across said primary winding means, said secondary winding means acting as a primary winding means and said primary winding means acting as a secondary winding means while said variable voltage corrective transformer means is so connected and said



voltage detection control means disabling itself, its automation and said compensating transformer means;

means responsive to restoration of power for setting said variable voltage corrective transformer means to its lowest voltage compensating point;

and means operative subsequently to settling of said variable voltage corrective transformer means to its lowest voltage compensating point for reconnecting said variable voltage corrective transformer means to its input and for effecting restoration of said primary winding and secondary winding means to their normal respective functions whereupon said voltage detection control means, its automation and said compensating transformer means are restored.

4,438,388

SINGLE STAGE OPERATIONAL AMPLIFIER VOLTAGE REFERENCE

Robert D. Lee, Denton, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 11, 1981, Ser. No. 329,838
Int. Cl.³ G05F 3/20
U.S. Cl. 323—313 **11 Claims**

1. A single stage operational amplifier voltage reference for providing a selected output current at a predetermined output voltage via an output terminal, the voltage reference comprising:

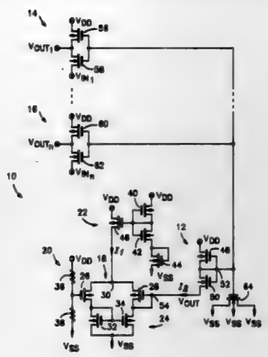
first voltage biasing means for providing a bias voltage substantially equal to said predetermined output voltage;

a constant current source for providing a bias current substantially equal to said selected output current;

a first transistor of a first conductivity type having a first current electrode coupled to said constant current source to conduct a portion of said bias current, a second current electrode, and a control electrode coupled to the bias voltage provided by said first voltage biasing means;

a second transistor of said first conductivity type having a first current electrode coupled to said constant current source to conduct a portion of said bias current, a second current electrode coupled to said output terminal, and a control electrode coupled to said output terminal; and

a current mirror for receiving the portion of the bias current



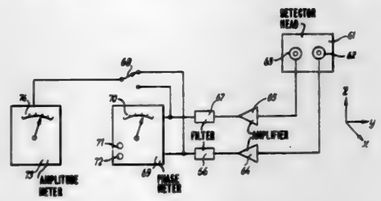
conducted by said first transistor, and providing said output current via said output terminal equal to a predetermined multiple of said received portion of the bias current.

4,438,389

METHOD FOR UTILIZING THREE-DIMENSIONAL RADIATED MAGNETIC FIELD GRADIENTS FOR DETECTING SERVING FAULTS IN BURIED CABLES

Alten J. A. De Se, Gosforth, England, assignor to Geodate Limited, England

Filed Aug. 15, 1980, Ser. No. 179,278
Claims priority, application United Kingdom, Aug. 18, 1979, 7928837; Aug. 22, 1979, 7929258
Int. Cl.³ G01R 31/08; G01V 3/11
U.S. Cl. 324—52 **10 Claims**



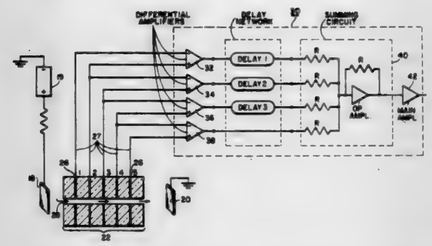
1. A method of monitoring the performance of an elongate electrically conductive cable sheath and its serving, including the steps of injecting a signal of predetermined frequency into the sheath, in order to produce a standing wave on the sheath and its serving, and examining the standing wave profile in amplitude and gradient of the resulting magnetic $\vec{H}$ field, to detect a coincident change in amplitude and gradient which is indicative of a fault, comparing the $\vec{H}$ field examined with the $\vec{H}$ field produced by a sheath having no fault, determining the position of distortion in the examined $\vec{H}$ field from that comparison and determining the position of a fault from the position of the distortion.

4,438,390

TANDEM SENSING ZONES FOR IMPROVED SIGNAL-TO-NOISE RATIO IN PARTICLE ANALYZER

Walter R. Hogg, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Mar. 23, 1981, Ser. No. 246,755
Int. Cl.³ G01N 27/00
U.S. Cl. 324—71.1 **18 Claims**



1. A particle analyzing apparatus for detecting properties of particles, said particle analyzing apparatus including a first vessel for holding a conductive liquid having a suspension of said particles, a second vessel for holding a conductive liquid, a flow cell having an aperture formed therethrough to provide a constricted liquid passageway between said first vessel and said second vessel, means for moving a quantity of the conductive liquid from said first vessel through said aperture and into said second vessel, means for providing current through said aperture, the improvement comprising:

an arrangement, including said flow cell, of alternately arranged sensing electrodes and dielectric plates wherein each dielectric plate can define a separate particle sensing zone, there being at least three of said sensing electrodes and at least two of said dielectric plates with one of said sensing electrodes being sandwiched between the two said dielectric plates, said flow cell being formed by said dielectric plates and at least said sensing electrode sandwiched therebetween with said aperture passing therethrough;

means electrically coupled to a pair of sequentially located said sensing electrodes on opposed sides of each of at least two said dielectric plates to separately detect electrical pulses produced by particles passing through each of the said dielectric plates;

means for delaying at least all but the last of said electrical pulses for each particle so that said electrical pulses occur simultaneously; and

means for summing said simultaneous electrical pulses; whereby an improved signal to noise ratio is achieved.

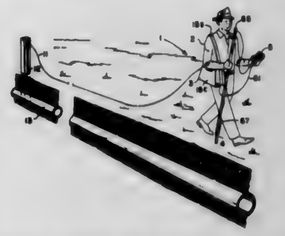
4,438,391

ELECTRICAL SURVEY APPARATUS AND METHOD WITH SPINNER-TYPE CONDUCTOR SUPPLY

Joseph W. Rog, Medina, Ohio; Charles G. Waits, Hanover Park, and Karl W. Nicholas, Roselle, both of Ill., assignors to Harco Corporation, Medina, Ohio

Continuation of Ser. No. 972,041, Dec. 21, 1978, abandoned.
This application Jan. 21, 1982, Ser. No. 341,167
Int. Cl.³ G01V 3/15; G01R 31/02; G01N 27/00; G01B 7/02
U.S. Cl. 324—71.1 **45 Claims**

1. An apparatus for making electrical surveys of structures contained in an electrolyte, said apparatus comprising electrode means for obtaining information of an electrical parameter of the electrolyte proximate the structure at a plurality of locations, wire means having one end portion electrically coupled with respect to such structure to receive information of an electrical parameter of the structure at a reference location with respect thereto and for transmitting an electrical signal proportional to the electrical parameter of the structure at the reference location, sensing means connected with said electrode means and said wire means for electrically sensing such electrical parameters, and spinner-type storage means for storing said wire means and for paying out said wire means with a spinner-type action to accommodate movement of said sensing means between said locations while said wire means remains electrically coupled with respect to such structure,



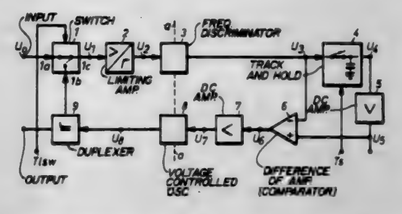
said spinner-type storage means including a spool about which said wire means is wound, said spool being non-rotating during such paying out of said wire means therefrom, said wire means having an electrical pigtail-like end portion emanating at said spinner-type storage means electrically connected with said sensing means.

4,438,392

DEVICE FOR SAMPLING AND HOLDING THE CARRIER FREQUENCY OF SHORT DURATION PULSES

Bo A. Morwing, ASA Station, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE80/00312, § 371 Date Jul. 31, 1981, § 102(e) Date Jul. 31, 1981, PCT Pub. No. WO81/01616, PCT Pub. Date Jun. 11, 1981
PCT Filed Dec. 4, 1980, Ser. No. 287,711
Claims priority, application Sweden, Dec. 4, 1979, 7909984-2
Int. Cl.³ G01R 23/14
U.S. Cl. 324—79 R **1 Claim**



1. A carrier frequency sample and hold circuit comprising switching means controllably switching between a first input adapted to receive a carrier frequency pulse signal of low duty cycle, a second input and an output, frequency discriminator means for converting the carrier frequency signal to an analog signal having an amplitude which is a function of the frequency of an input signal, said frequency discriminator having an input connected to the output of said switching means and an output, an analog track and hold means periodically switchable between a track and hold mode in synchronism with said switching means, said analog track and hold means having an input connected to the output of said frequency discriminator means and an output, a difference amplifier means having first and second inputs connected respectively to the outputs of said frequency discriminator means and said track and hold means and an output, voltage controlled oscillator means for emitting a signal having a frequency related to the amplitude of a received signal, said voltage controlled oscillator means having an input connected to the output of said difference amplifier means and an output connected to the other input of said

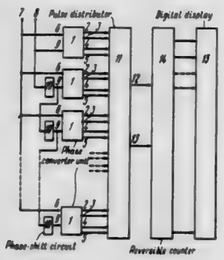
switching means, and utilization means connected to the output of said voltage controlled oscillator means.

4,438,393

PHASE-METERING DEVICE

Leonid M. Moskalik, ulitsa Molodezhnaya, 13, kv. 177; Vladimir E. Ryadchikov, ulitsa Gagarina, 28, kv. 59; Anatoly P. Bykov, ulitsa Stroitelnaya, 6, kv. 16; Vladimir P. Kulesh, ulitsa Stroitelnaya, 6, kv. 29; Stanislav I. Opasov, ulitsa Chkalova, 11, kv. 11, and Anatoly A. Orlov, Naberezhnaya Tsiolkovskogo, 22, kv. 82, all of Zhukovsky, Moskovskoi oblasti, U.S.S.R.

Filed Aug. 18, 1981, Ser. No. 294,026
Int. Cl.³ G01R *25/00*
U.S. Cl. 324—83 D 4 Claims



1. A phase-metering device comprising: first and second input signal source; N−1 phase-shift circuits at N exceeding two and a phase-shift of each circuit being π/N radians, said N−1 phase-shift circuits being electrically-connected in series, an input of the first circuit being connected to the second input signal source; N phase converter units each having positive and inverted outputs and two pulse outputs, first inputs of said units being connected to the first input signal source, a second input of the first phase converter unit being coupled to the second input signal source, while second inputs of the other phase converter units are connected to the outputs of the respective phase-shift circuits; a pulse distributor whose inputs are connected to outputs of said phase converter units; a reversible counter whose inuts are connected to the outputs of said pulse distributor; a digital recorder coupled to the outputs of said reversible counter.

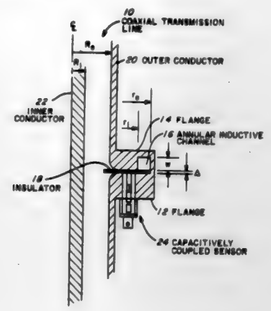
4,438,394

CAPACITIVELY-COUPLED INDUCTIVE SENSOR

Carl A. Ekdahl, Albuquerque, N. Mex., assignor to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Filed Apr. 13, 1981, Ser. No. 253,490
Int. Cl.³ G01R *19/28, 15/00*
U.S. Cl. 324—126 1 Claim

1. A capacitively coupled inductive sensor for detecting a pulsed current generated in a coaxial transmission line having an inner and outer conductor comprising:
- first and second flanges formed in said outer conductor of said coaxial transmission line;
- an insulator disposed between said first and second flanges capable of insulating between a portion of said first and second flanges;
- an annular inductive channel formed in said second flange contiguous to said insulator, so that current flowing between said first and second flanges flows around said insulator and said annular inductive channel;
- an electrode disposed in said first flange adjacent said insulator such that said electrode is capacitively coupled to said second flange;
- a feedthrough capacitor capacitively coupling said electrode to said first flange; and



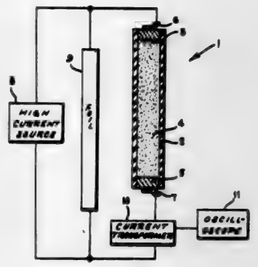
- output means coupled to said feedthrough capacitor for providing an output signal proportional to and having a substantially reduced magnitude from said pulsed current.

4,438,395

CURRENT TRANSFORMER HIGH VOLTAGE PROBE UTILIZING COPPER SULFATE WATER RESISTOR

Charles R. McClenahan, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 21, 1981, Ser. No. 265,865
Int. Cl.³ G01R *15/02;* H01C *11/00*
U.S. Cl. 324—127 2 Claims



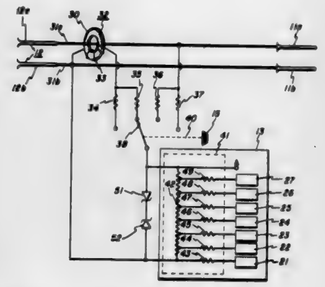
1. A device for measuring fast high voltage pulses comprising
- a current transformer having a primary winding and a secondary winding,
- a copper sulfate water resistor connected in series with said primary winding,
- means for connecting the series arrangement of said resistance means and said primary winding across a source of voltage to be measured, the secondary winding output of said current transformer being a function of the voltage at said source of voltage, and
- an oscilloscope, said oscilloscope being connected to receive and display the secondary winding output of said current transformer.

4,438,396

LOW COST VOLT/AMPERE METER WITH LIQUID CRYSTAL DISPLAY

John D. Harnden, Jr., and William P. Kornrumpf, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1981, Ser. No. 286,491
Int. Cl.³ G01R *1/22, 15/08*
U.S. Cl. 324—127 23 Claims



1. A volt/ampere meter comprising:
- a flux coupling means;
- a plurality of conductors for carrying alternating current to an electrical appliance, one of said conductors establishing a conduction path through said flux coupling means so as to form a primary winding for said flux coupling means;
- a secondary winding wound on said flux coupling means and having one end thereof coupled to a second one of said plurality of conductors;
- a first plurality of prongs coupled, respectively, to one end of each one of said plurality of conductors, respectively, and adapted to be inserted into a power receptacle;
- a socket adapted to receive a second plurality of prongs, each of said plurality of conductors, respectively, electrically coupling each prong of said first plurality, respectively, to each prong of said second plurality, respectively;
- liquid crystal display means comprising a plurality of display segments;
- switching means adapted to be selectively coupled either to the other end of said secondary winding or to said one of said conductors;
- a voltage divider network coupled between said switching means and said second one of said plurality of conductors; and
- passive circuit means coupling a separate tap, respectively, on said voltage divider network to a separate segment, respectively, of said liquid crystal display means such that selected segments of said liquid crystal display means are energized in accordance with voltage amplitude on said switching means.

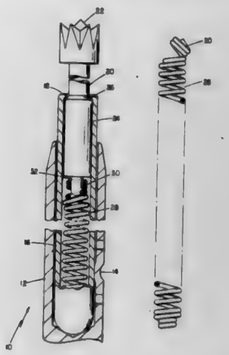
4,438,397

TEST PIN

Jonathon H. Katz, Brookline, Mass., assignor to Teradyne, Inc., Boston, Mass.

Continuation of Ser. No. 107,027, Dec. 26, 1979. This application Jun. 14, 1982, Ser. No. 388,436
Int. Cl.³ G01R *1/06*
U.S. Cl. 324—158 P 2 Claims

1. A test pin comprising:
- a tubular shaped housing,
- a plunger with a contacting end and a body portion that is slidably mounted within said housing along the longitudinal axis of said housing,
- said plunger including, at its other end, a stud having a width in a direction transverse to said axis that is smaller than that of said body portion, and
- a spring carried in said housing for yieldingly biasing said plunger along said axis relative to said housing,
- said spring including a winding that grips said stud,
- said winding being characterized in that it has an axis that is at an angle to the longitudinal axis of said spring when



- said spring is unstressed so that said spring forces said plunger to one side against an inner surface of said housing,

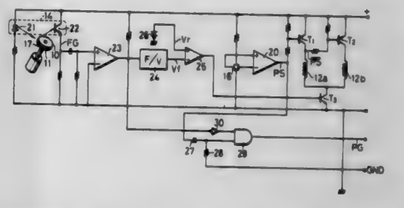
whereby electrical contact between said plunger and said housing is improved.

4,438,398

POSITION DETECTING SIGNAL GENERATOR

Tsunehiro Maruo, Yokohama, and Massomi Inagaki, Yachiyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 14, 1981, Ser. No. 311,185
Claims priority, application Japan, Oct. 22, 1980, 55-147706
Int. Cl.³ G01P *3/66, 3/42*
U.S. Cl. 324—173 24 Claims



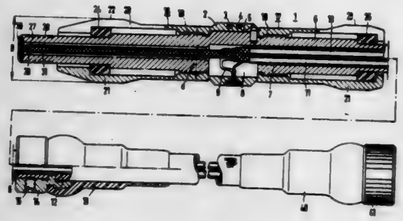
1. Apparatus for generating a phase signal corresponding to a reference phase of a movable body relative to a stationary body, comprising:
- position signal generating means associated with at least one of said movable body and said stationary body for generating a position signal corresponding to the position of said movable body relative to said stationary body;
- speed signal generating means associated with at least one of said movable body and said stationary body for generating a speed signal corresponding to the speed of movement of said movable body relative to said stationary body;
- differentiating means for differentiating one of said position signal and said speed signal to produce a differentiated signal; and
- phase signal generating means for generating said phase signal corresponding to a reference phase of said movable body relative to said stationary body in response to said differentiated signal and the other of said position signal and said speed signal.

4,438,399

EDDY CURRENT TESTING DEVICE FOR METAL TUBES OR PIPES HAVING A QUICK RELEASE COUPLING WITH A BAYONET LOCK

Karl Schnabl; Eberhard Höppner, both of Erlangen, and Hans Kastl, Neustadt, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,549
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837486
Int. Cl.³ G01N 27/72, 27/82
U.S. Cl. 324—220 5 Claims



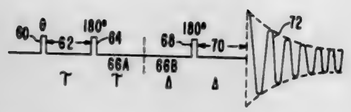
1. Probe for eddy-current testing of tubes, the probe having a coil form mechanically and electrically couplable to a thrust hose for moving the probe through the tubes to be tested, comprising an elongated support member having a central cavity containing electrically conductive cables therein, a tubular jacket flexible in radial direction and formed with a plurality of substantially axially extending leaf-springlike fins, said jackets and said fins surrounding said support member and having an end thereof disposed adjacent the coil form and another end thereof facing away from the coil form, a plug forming part of a quick-release coupling with a bayonet lock being located at said other end of said jacket facing away from the coil form and forming a connection for the probe to the thrust hose.

4,438,400

METHOD FOR SUPPRESSION OF ACOUSTIC RINGING IN NMR MEASUREMENTS

Steven L. Patt, Gillette, N.J., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jan. 18, 1982, Ser. No. 340,576
Int. Cl.³ G01R 33/08
U.S. Cl. 324—312 6 Claims



1. A method of gyromagnetic resonance spectroscopy operative upon an assembly of gyromagnetic resonators immersed in a polarizing magnetic field, said field directed along a first axis, wherein the magnetization vectors of said gyromagnetic resonators precess about said polarizing magnetic field, comprising the steps of

(a) tipping the magnetic vectors 90° from said first axis, said tipping accomplished by rotating said magnetic vector about a second axis, said second axis orthogonal to said first axis and said rotation of selected sense, whereby said magnetic vectors rotate in a plane orthogonal to said first axis,

(b) permitting the progressive loss of phase coherence among said rotating magnetic vectors for an interval of time T,

(c) reversing the sense of rotation of said magnetic vectors by inverting the sense of said first axis through rotation of 180° with respect to said first axis, whereby said progressive loss of phase coherence is reversed,

(d) permitting the progressive approach to phase coherence among said rotating magnetic vectors,

(e) detecting a spin echo resonance signal of said resonators, said signal possibly containing transients of instrumental origin arising from steps (a) and (c),

(f) storing said resonance signal,

(g) repeating the steps (a) and (b) and inverting the sense of said first axis by rotating said coordinate systems through 180° with respect to said first axis, said rotation accomplished about said second axis, said rotation sense opposite said selected sense and repeating the steps (d) through (e),

(h) adding the signal stored in step (f) with the signal detected in step (g) to form a cumulative signal free of transients arising from said 180° rotations of steps (c) and reinversion of step (g),

(i) repeating steps (a) and (b) and inverting the sense of said first axis by rotation of said magnetic vector about a third axis, said axis orthogonal to said first and second axes and said 180° rotation having second selected sense whereby said loss of phase coherence is reversed and repeating again steps (d) and (e),

(j) subtracting the signal detected in step (i) from the cumulative signal obtained at step (h) and storing said cumulative signal,

(k) repeating steps (a) and (b) and inverting the sense of said first axis by rotation of said magnetic vector through 180° about said third axis, said 180° rotation in sense opposite said second selected sense and repeating steps (d) through (e),

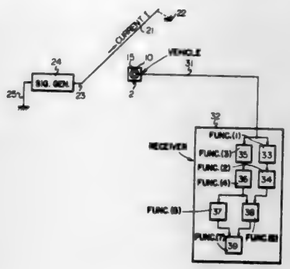
(l) subtracting the signal detected in step (k) from said cumulative signal obtained and stored at step (j) and storing said new cumulative signal, whereby ringing incident to step (a) repeated at step (g) is canceled against the ringing experienced at steps (i) and (k).

4,438,401

SYSTEM FOR DETECTING A CABLE BURIED UNDER THE SEABED

Yoshinao Iwamoto, Fujumi; Shizuo Suzuki, Yokohama, and Yuichi Shirasaki, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,402
Claims priority, application Japan, Jul. 31, 1979, 54-98656
Int. Cl.³ G01V 3/08, 3/165, 3/38; G01B 7/14
U.S. Cl. 324—326 9 Claims



1. A system for detecting a cable comprising;

(a) means for applying an alternating current in the cable to be detected so as to produce magnetic flux around the cable,

(b) a vehicle

(c) a three dimensional flux detector having three detector elements each having cosine sensitivity characteristics mounted on said vehicle, the maximum sensitivity direction of each element being perpendicular to one another, and the maximum sensitivity direction of one of the detector elements being directed in the vertical direction,

(d) means for separating the output signals of each of said detector elements into a DC component which is caused by the earth's magnetic field and an AC component which is caused by said alternating current,

(e) means for determining the direction of the cable from the DC and AC output components of two detector elements which have their directivity in the horizontal plane,

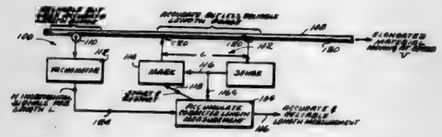
(f) means for determining the horizontal distance and the vertical distance between the cable and the cable detecting system from the AC output signals of each of the detector elements on the principle that the magnitude of the flux is inversely proportional to the distance to the cable and the direction of the flux is in the tangential direction of the circle having the center on the cable.

4,438,402

ELECTROSTATIC TRANSDUCER FOR LENGTH MEASUREMENT SYSTEM

Donald L. Cullen, Worthington, and John A. Robertson, Chillicothe, both of Ohio, assignors to Autech Corporation, Columbus, Ohio

Filed Jun. 26, 1981, Ser. No. 277,845
Int. Cl.³ G01N 27/60
U.S. Cl. 324—452 37 Claims



1. An electrostatic transducer adapted for a length measurement system used to measure the length of material moving along an intended measurement path said transducer comprising:

a corona discharge electrode disposed to be out of contact with said material;

a reference electrode substantially surrounding the intended path of moving material; and

a charge sensing electrode also substantially surrounding the intended path of moving material and disposed a predetermined distance from said corona discharge electrode, said charge sensing electrode being substantially surrounded by said reference electrode, and both said sensing and reference electrodes also being disposed out of contact with the path of relatively moving material.

4,438,403

FAULT INDICATOR WITH COMBINED TRIP AND RESET WINDING

Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60118

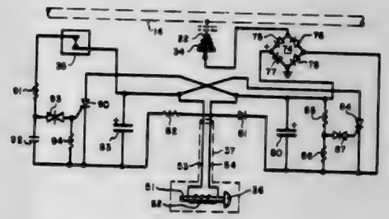
Filed Aug. 4, 1981, Ser. No. 290,012
Int. Cl.³ G01R 19/14, 31/02
U.S. Cl. 324—133 17 Claims

1. A fault indicator for indicating the occurrence of a fault current in an electrical conductor of an alternating current distribution power system, comprising, in combination:

means including a magnetic winding having end terminals for producing a magnetic field in response to an applied current, said field being of one polarity in response to current applied to said winding in one direction between said end terminals, and of opposite polarity in response to current applied to said winding in the opposite direction between said end terminals;

status indicating means in magnetic communication with said magnetic winding, said status indicating means assuming a reset-indicating state in response to the occurrence of a magnetic field of said one polarity in the winding, and assuming a fault-indicating state in response to the occurrence of a magnetic field of said opposite polarity in said winding;

reset circuit means coupled to and operable from alternating current in the electrical conductor for developing a unidirectional current in said magnetic winding between said end terminals in said one direction whereby said status indicating means is conditioned to said reset state; and



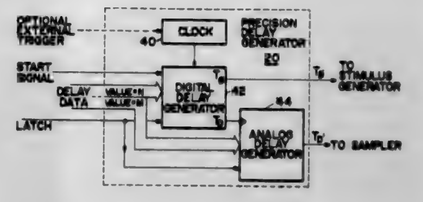
trip circuit means coupled to and operable from alternating current in the electric conductor and responsive to occurrence of a fault current in the conductor during either portion of the alternating current cycle for developing a unidirectional current in said magnetic winding between said end terminals in said opposite direction whereby said status indicating means is conditioned to said fault indicating state.

4,438,404

SIGNAL SAMPLING SYSTEM

Harald Philipp, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 4, 1982, Ser. No. 337,041
Int. Cl.³ H03K 5/13;17/28
U.S. Cl. 328—63 12 Claims



1. A sampling time base, comprising:

means for generating clock edges at a predetermined frequency;

digital timing means for generating a digital delay signal substantially coincident with the Nth clock edge of a predetermined number N of clock edges, thereby establishing a digital timing interval from the first to the Nth clock edge;

analog timing means responsive to said digital delay signal for initiating an analog timing signal substantially coincident with said Nth clock edge; and

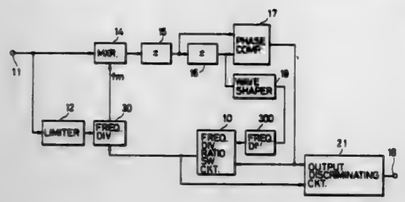
means for generating a sampling pulse at the end of a predetermined analog timing interval of said analog timing signal.

4,438,405

FREQUENCY DISCRIMINATING DEVICE

Nobuharu Yazawa, and Yasunori Sakaguchi, both of Itami, Japan, assignors to Nippon Gijutsu Boeki Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1981, Ser. No. 292,273
Claims priority, application Japan, Aug. 12, 1980, 55-110521; Aug. 12, 1980, 55-110525; May 8, 1981, 56-69617
Int. Cl.³ H03B 19/00; H04Q 3/00; H03K 5/26
U.S. Cl. 328—152 10 Claims



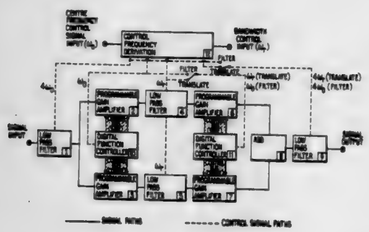
1. A frequency discriminating device, comprising:
a first frequency divider for frequency dividing a carrier signal of a received signal which is amplitude-modulated with one of two adjacent frequencies;
a frequency mixer receiving a frequency-divided output from said first frequency divider and said amplitude-modulated signal;
a first low-pass filter coupled to an output of said frequency mixer for passing only a difference component between the frequency of said output of said first frequency divider and the modulation frequency of said amplitude-modulated signal;
a second low-pass filter having an input coupled to an output of said first low-pass filter;
a phase comparator receiving an output of said first low-pass filter and receiving an output of said second filter for detecting a phase difference therebetween;
a second frequency divider for frequency dividing an output of said second filter; and
a frequency division ratio switching circuit receiving a frequency-divided output of said second frequency divider and an output of said phase comparator, for setting a frequency division ratio of said first frequency divider.

4,438,406

SIGNAL PROCESSING MEANS ACTING AS A FREQUENCY RANGE TRANSLATOR AND AS A FILTER

Michael A. McCormick, Hucknall, and Peter Gladdish, Holbrook, both of England, assignors to Rolls-Royce Limited, London, England

Filed Oct. 5, 1982, Ser. No. 432,824
Claims priority, application United Kingdom, Oct. 15, 1981, 8131074
Int. Cl.³ H03B 19/06; H03F 3/68
U.S. Cl. 328—167 14 Claims



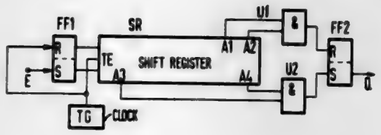
1. Signal processing means comprising first filter means arranged to receive an input signal, two first programmable gain amplifier means arranged to receive a signal from the first filter means and controlled by first digital function controller means, second filter means arranged to receive the signals from the two first programmable gain amplifier means, two second programmable gain amplifier means arranged to receive the two signals from the second filter means and controlled by second digital function controller means, means for adding the output signals from the two second programmable gain amplifier means, third filter means arranged to receive the signal from the adding means and control frequency derivator means arrange to control the first, second and third filter means and the first and second digital function controller means, the control frequency derivator means being controlled by a centre frequency control input signal, and a bandwidth control input signal.

4,438,407

INTEGRABLE DEMODULATOR FOR DIGITAL SIGNALS MODULATED ONTO CARRIERS

Hartmut Kemmesies, Puchheim-Bhf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,136
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811488
Int. Cl.³ H03D 3/18; H03K 9/00, 13/00
U.S. Cl. 329—50 6 Claims



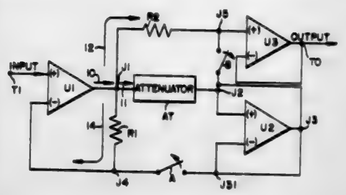
5. A demodulator for digital signals modulated onto a carrier as input signals, comprising:
a shift register including a signal input, a clock input and a plurality of outputs;
a clock connected to said clock input and operable to produce clock pulses;
input signal means including a signal receiving input for receiving the modulated digital signals, an output connected to said signal input of said shift register, a bistable flip-flop connected to said clock and to said signal receiving input and controlled by the clock pulses and the modulated digital signals and including a signal output constituting said output of said input signal means, and gating means including a first input connected to said signal receiving input, an output connected to said signal input of said shift register and a second input connected to one of said outputs of said shift register for asynchronous clocking of asynchronously-received input signals;
said input signal means operable to extend the duration of an input signal for said shift register for scanning the input signal in response to said clock pulses;
a flip-flop output circuit; and
logic means connected to said plurality of outputs of said shift register and to said flip-flop output circuit for combining the signals of said plurality of outputs and operating said flip-flop output circuit.

4,438,408

SIGNAL ATTENUATING APPARATUS

Ambroz K. Skrovanek, Bethesda, Md., and Carl A. Evert, Alexandria, Va., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Aug. 17, 1982, Ser. No. 408,900
Int. Cl.³ H03G 1/00; H03H 7/24
U.S. Cl. 330—51 9 Claims



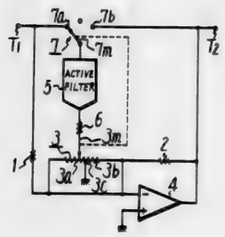
1. Apparatus for providing a predetermined gain or loss to electrical signals, comprising:
signal attenuating means including an input terminal and an output terminal for attenuating the electrical signals received at the input terminal thereof and providing the attenuated electrical signals at the output terminal thereof,
a feedback circuit coupling the attenuating means output terminal to the attenuator input terminal and including a first switching device for selectively feeding back the attenuated signal to said attenuator input,
output circuit means having an input and an output for producing output signals at the output thereof having amplitudes which are functions of the attenuation provided by said attenuating means,
first circuit means connected in parallel with said attenuating means for coupling said attenuating means input terminal to the input of said output circuit means,
a second switching device selectively connecting said attenuating means output to the input of said output circuit means, whereby said output circuit means selectively feeds the attenuated electrical signal produced by said attenuating means to said input of said output circuit means,
each of said first and second switching devices having an open and a closed state and being operative such that the apparatus provides a gain or loss in amplitude of the electrical signals received thereby.

4,438,409

ACTIVE EQUALIZER

Yasushi Katsumata, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,334
Claims priority, application Japan, Feb. 27, 1981, 56-27793
Int. Cl.³ H03F 1/34
U.S. Cl. 330—107 9 Claims



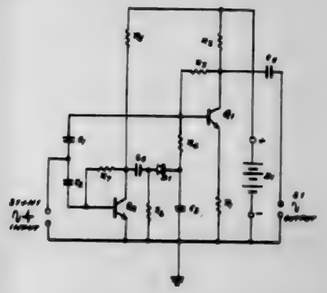
1. An active equalizer for selectively increasing and decreasing to a desired degree the amplitude of selected frequencies of an input signal, comprising:
an input terminal for receiving said input signal and an output terminal for providing an equalized output;
an input resistance;
inverting means having an inverting input connected to said input terminal through said input resistance and an output connected to said output terminal;
a feedback resistance connected between said inverting input and output of said inverting means;
active filter means responsive to said selected frequencies and having at least one filter output and at least one filter input;
means for selectively connecting each said filter input to said input terminal for increasing said amplitude, and to said output terminal for decreasing said amplitude; and
variable resistance means connecting each said filter output to said inverting input for varying said degree to which said amplitude is selectively increased and decreased.

4,438,410

VARIABLE GAIN AMPLIFIER

Laurence E. Orne, 4 Eubar Cir., Billerica, Mass. 01821

Filed Sep. 29, 1981, Ser. No. 306,844
Int. Cl.³ H03G 3/18; H03C 1/26
U.S. Cl. 330—278 3 Claims



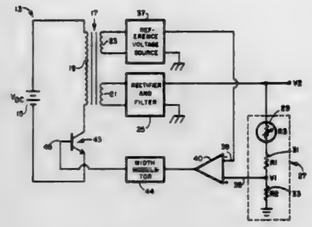
1. A variable gain amplifier apparatus comprising in combination:
a first and second transistor amplifier means to receive an input signal, said input signal comprising an AC input signal and a noise signal, said first and second transistor amplifier means respectively having an input terminal, said input terminal of said first transistor amplifier means being connected to said input terminal of said second transistor amplifier means by a first and second capacitor, the common junction of said first and second capacitor forming an input terminal, said input signal being applied to said input terminal,
a signal detector means connected to the output of said second transistor amplifier means, said second transistor amplifier means amplifying said input signal to provide an amplified output signal, said signal detector means receiving said amplified output signal from said second transistor amplifier means, said signal detector means rectifying said amplified output signal to provide DC voltages in response thereto,
a charge storage means connected to said signal detector means to receive said DC voltages, said charge storage means storing said DC voltage to provide a DC bias voltage to the input of said first transistor amplifier means, said DC bias voltage varying directly with said input signal, said first transistor amplifier means providing an output voltage in response to said input signal and said DC bias voltage, said first transistor amplifier means maintaining a constant input/output signal ratio over a wide dynamic range of said input signal.

4,438,411

TEMPERATURE COMPENSATING METHOD AND APPARATUS FOR THERMALLY STABILIZING AMPLIFIER DEVICES

Michael D. Rubin, Saratoga, and Pang T. Ho, Mountain View, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jul. 20, 1981, Ser. No. 284,755
Int. Cl.³ H03F 3/04
U.S. Cl. 330—289 **10 Claims**



1. For use in a power supply to an amplifier device, said amplifier device being operative to exhibit monotonic instability of at least one operating parameter at a constant bias on a large signal electrode with varying temperature and being operative to exhibit stability of said parameter with pre-determined controlled variation of said bias on said large signal electrode as a function of temperature, an apparatus for controlling variation of power supply output, said power supply output for application at said large signal electrode of said amplifier device, said apparatus comprising:

bias monitor circuit means, said bias monitor circuit means being coupled to receive as a sensed input signal a parameter representative of ambient temperature, said bias monitor circuit being operative to convert said ambient temperature sensed input signal into an electric signal representative of a thermal value for use in regulating said power supply output; and

feedback signal generating means, said feedback signal generating means being coupled to receive said electric signal for varying said power supply output to follow said predetermined controlled variation of electrode bias on said large signal electrode as a function of temperature, wherein said feedback signal generating means includes a DC-to-DC converter circuit comprising a DC source, a switching means for chopping said source to form and AC voltage waveform, and rectifier and filter means to convert said AC voltage waveform to a DC output voltage, and wherein said feedback signal generating means further comprises a reference voltage source, a voltage comparator circuit connected to compare said control signal with said reference voltage source and to generate an error signal, a width modulator circuit connected to receive said error signal and, in response to said error signal, to control the pulse width of output signals of said switching means.

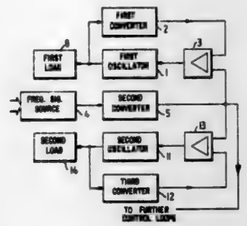
4,438,412

OSCILLATOR FREQUENCY CONTROL LOOP

Christopher W. Malinowski, and Heinz Rinderle, both of Heilbronn, Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Continuation of Ser. No. 85,333, Oct. 16, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 346,994
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2844936; Oct. 16, 1978, 2844939; Oct. 16, 1978, 2844938; Oct. 16, 1978, 2845005; Oct. 16, 1978, 2845006
Int. Cl.³ H03L 7/16
U.S. Cl. 331—2 **7 Claims**

1. In a circuit arrangement including at least one control loop composed of a controllable oscillator for producing an a.c. output signal whose frequency is a function of the value of a control signal thereto, a frequency/d.c. signal converter connected for producing a d.c. output signal which is a function of the frequency of the oscillator output signal, a signal comparator having two inputs and an output, first signal conducting means connected for applying to one comparator input a signal corresponding in value to the converter output signal, and connecting means connected for applying to the oscillator a control signal corresponding to the signal at the comparator output, the circuit arrangement further including an a.c. signal source, a second frequency/d.c. signal converter connected



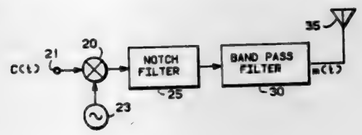
for producing a d.c. output signal which is a function of the frequency of the a.c. signal produced by the source, and second signal conducting means connected for applying to the other comparator input a signal corresponding in value to the second converter output signal, the improvement wherein there are at least two said control loops, and said second conducting means comprises adjustable signal control means connected between the output of said second converter and the other input of said comparator of each said loop for applying to each said associated comparator input a signal which differs in value from and varies in proportion with the output signal from said second converter.

4,438,413

SERIAL MINIMUM SHIFT KEYED MODULATOR INCLUDING NOTCH AND BANDPASS FILTERS

Carl R. Ryan, Gilbert, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed May 29, 1981, Ser. No. 268,419
Int. Cl.³ H03C 3/00; H04L 27/12
U.S. Cl. 332—16 R **10 Claims**



1. A serial minimum-shift keyed modulator comprising:

(a) biphase modulator means having a first input for receiving a serial bit stream of data, a second input for receiving a relatively high frequency carrier, and an output for supplying the carrier biphase modulated by the serial bit stream;

(b) a conversion filter coupled to said biphase modulator means and providing a minimum-shift keyed signal, said conversion filter including

(1) a notch filter having a notch adjacent to the carrier frequency and in the frequency spectrum of the biphase modulator, and

(2) a bandpass filter having a bandpass positioned to extend above and below the carrier frequency for the biphase modulated carrier, said notch and bandpass

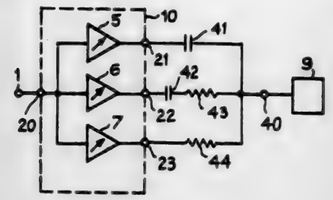
filters being coupled together to form the conversion filter.

4,438,414

TONE CONTROL CIRCUIT

Denis Blachot, Haussmann, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 12, 1981, Ser. No. 320,494
Claims priority, application France, Nov. 14, 1980, 80 24231
Int. Cl.³ H03H 7/03
U.S. Cl. 333—28 T **6 Claims**



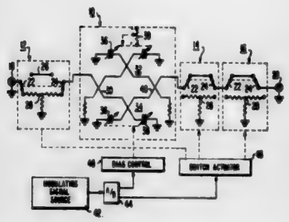
1. A tone control circuit for connecting an input terminal with a high impedance input circuit, said tone control circuit including at least two parallel channels with each of said channels including an electronic potentiometer having a low impedance output wherein each of said at least two parallel channels further comprises, a passive filter with each passive filter comprising a series element and a parallel element wherein said series element is connected between the output of each electron potentiometer and said high impedance circuit in such a manner that said parallel element of each of said filter is formed by the parallel association of the series elements of the other of said passive filters of said at least two parallel channels.

4,438,415

DIGITAL PROGRAMMABLE ATTENUATOR

Samuel Hopfer, Brooklyn, N.Y., assignor to General Microwave Corporation, Farmingdale, N.Y.

Filed Jan. 29, 1982, Ser. No. 343,737
Int. Cl.³ H01P 1/22
U.S. Cl. 333—81 A **20 Claims**



1. A digital programmable attenuator for microwave signals over a broad band of frequencies, said attenuator comprising:

a programmable phase shiftless resistive pad attenuator for switching large steps of attenuation including a plurality of pads of thin resistive films corresponding to said different large steps of attenuation, and means for switching at high speed different combinations of said resistive pads into and out of operation;

a programmable broadband phase-controlled attenuator for switching a plurality of small steps of attenuation, including means for controlling at high speeds the phase thereof to establish said small attenuation steps;

means for digitally programming the actuation of said attenuators into operation separately and together, including means for actuating said resistive pad attenuator to switch said combinations of thin film pads into and out of operation to establish said large attenuation steps, and for actuating the phase-controlling means of said phase-controlled attenuator to establish said small attenuation steps;

and means for connecting said attenuators in tandem to combine said large and small attenuation steps;

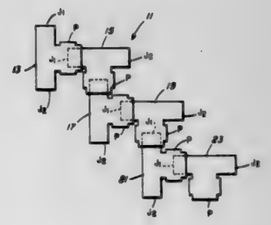
whereby a range of attenuation over a broad frequency band is provided with said small steps established monotonically between said large attenuation steps and with high resolution and accuracy.

4,438,416

PICOSECOND DELAY DEVICE

Norman H. Schiller, Queens, and Robert R. Alfano, Bronx, both of N.Y., assignors to Hamamatsu Corporation, Middlesex, N.J.

Filed Jan. 25, 1982, Ser. No. 342,486
Int. Cl.³ H01P 9/00
U.S. Cl. 333—160 **8 Claims**



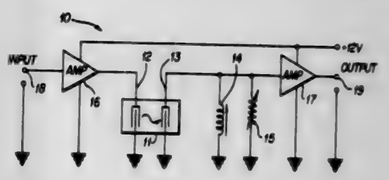
1. A delay device for use in delaying the time of arrival of an electrical signal at fixed increments in the picosecond range and starting at a time interval in the picosecond range, said delay device comprising a plurality of three port electrical connectors fixedly coupled together in series relationship, the construction and physical length of each port of each connector being such as to produce a time delay in the picosecond range of an electrical signal passing through, whereby an electrical signal introduced into any one port and emerging through any other port will be delayed in time in accordance with the total number of ports through which the signal is passed.

4,438,417

FILTER CIRCUIT UTILIZING A SURFACE ACOUSTIC WAVE FILTER

Kiyofumi Yamashita, Yokosuka, and Toshikazu Kodama, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jun. 17, 1981, Ser. No. 274,426
Claims priority, application Japan, Jun. 17, 1980, 55-80865; Feb. 25, 1981, 56-25445
Int. Cl.³ H03H 9/125, 9/64
U.S. Cl. 333—193 **3 Claims**



1. A surface acoustic wave band-pass filter circuit comprising: a surface acoustic wave filter device including a piezoelec-

tric substrate, and a uniform transducer and a weighted transducer which are disposed apart each other on a surface of the substrate, the uniform transducer comprising a first comb electrode and a second comb electrode, the first comb electrode having a first plurality of finger electrodes, and a first bus bar, bridging each end of said first plurality of electrodes, said second comb electrode having a second plurality of electrodes, said second plurality of electrodes being one less than the number of finger electrodes of a comb of a uniform transducer of a surface acoustic wave filter device designed to represent a frequency response which has a constant amoount of attenuation in a transmit band of the device, and a second bus bar bridging each end of said second plurality of finger electrodes,

an inductance element connected to the weighted transducer of the surface acoustic wave device to compensate a capacitance existing in the transducer connected to the industance element; and

means for adjusting Q-factor of the resonant circuit formed by said inductance element and the capacitance of the surface acoustic wave filter device and for optimizing a flatness of a frequency response in the pass band of the band pass filter circuit.

4,438,418

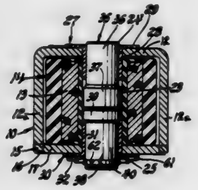
LOW-WATTAGE SOLENOID

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Filed Jul. 19, 1982, Ser. No. 399,784

Int. Cl.³ H01F 7/08

U.S. Cl. 335—255 **3 Claims**



1. A solenoid assembly, including, a support frame having a transverse member and a pair of leg members, a solenoid coil mounted within the support frame, a flux plate releasably mounted between the support frame leg members for retaining the solenoid coil in the support frame, a pole piece movably mounted in one end of an axial bore through the solenoid coil and through the flux plate, a solenoid armature movably mounted in the other end of said axial bore through said solenoid coil, and guide means for guiding the movement of the pole piece and armature in the axial bore through the solenoid coil, characterized in that said guide means includes:

(a) a first bushing mounted on the flux plate, and having a transverse flange which is seated against an outer transverse face of the flux plate, and an integral tubular body which extends inward through the flux plate and into the axial bore in the solenoid coil and telescopically along the pole piece and in sliding contact therewith; and,

(b) a second bushing mounted on the support frame and having a flange seated on an outer transverse face of the support frame transverse member and an integral tubular body that extends inward through the support frame transverse member and telescopically along the solenoid armature and in sliding contact therewith.

4,438,419

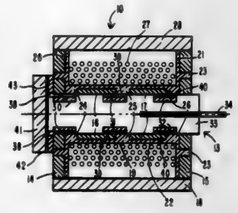
SERIAL RING ACTUATOR

Edward F. Helinski, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,486

Int. Cl.³ H01F 7/08

U.S. Cl. 335—261 **9 Claims**



1. A linear solenoid device comprising

stator means including

a plurality of magnetizable annular stator pole members having aligned central openings including a pair of end stator pole members and at least one intermediate pole member axially spaced from and separated by axial gaps between said end pole members,

flux generating means comprising a single cylindrical coil means between said end pole members and surrounding said intermediate pole member,

said cylindrical coil means having a central opening coaxial with said central openings of said stator pole members,

means including casing means forming a magnetic path between said end pole members for flux generated by said coil means when energized, and

armature means freely movable axially within said central opening of said pole members and said coil means including

a plurality of magnetizable annular armature pole elements disposed in axially spaced relationship,

said armature pole elements being concentric with said stator pole members so as to form a plurality of axially spaced annular air gaps with said stator pole members,

said armature pole elements being dimensioned and arranged to be received simultaneously in said central openings of said stator pole members,

said armature pole elements having a length whereby when said armature means is at a rest position said armature pole elements each have a portion at one end in a partial overlap relationship with one of said stator pole members and an opposite end having an axial separation from the near edge of an adjacent one of said stator pole members, and

an armature support body axially spacing said armature pole members,

said armature support body having portions of non-magnetizable material separating said armature pole elements.

4,438,420

ELECTROMAGNETIC ACTIVATION DEVICE

Heinz Leiber, Oberriexingen, and Alwin Stegmeier, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

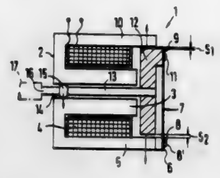
Filed Sep. 27, 1982, Ser. No. 423,578

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3107619

Int. Cl.³ H01F 7/08

U.S. Cl. 335—275 **10 Claims**

1. An electromagnetic activation device for valves comprising a magnetic body, a hinged armature fastened on one side to said body and a valve actuation rod connected to said armature, a leaf spring connected at one end to said magnetic body and having a free end, said hinged armature attached to said



free end of said leaf spring having an attachment point on one side of a single pole magnetic body and said hinged armature extends into the magnetic body while leaving a guide air gap between said armature and said magnetic body.

4,438,421

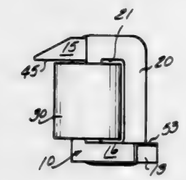
MOUNTING BRACKET FOR A TRANSFORMER

Earl A. Leach, Jr., Masonville, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 24, 1982, Ser. No. 423,355

Int. Cl.³ H01F 15/02

U.S. Cl. 336—65 **6 Claims**



1. A mounting bracket for a transformer of the type having a core structure having a center opening and a winding wound around a portion of said core, the improvement wherein said bracket comprises:

a U-shaped base portion having a foreward end and a rearward end;

a vertical channel extending upwardly from the forward end of said U-shaped base portion;

first and second members extending forwardly from a respective outer side of the upper portion of said vertical channel, said first and second members including respective downwardly facing surface portions disposed in the same plane; and

third and fourth members extending outwardly from a respective outer side of the rear portion of said U-shaped base portion, said third and fourth members including respective upwardly facing surface portions, located in a plane parallel to the plane in which the first and second members are located.

4,438,422

WARNING METHOD AND SYSTEM FOR VEHICLES

Tadao Nojiri, Oobu; Kenji Kanemaru, Chiryu; Takayoshi Nishikawa, Kariya; Masahiro Matsuyama, Kariya, and Yoji Ito, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 26, 1981, Ser. No. 296,253

Claims priority, application Japan, Sep. 5, 1980, 55-123821

Int. Cl.³ B60Q 5/00; G08B 21/00

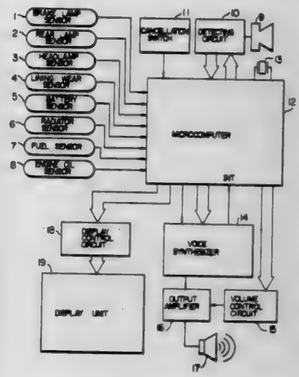
U.S. Cl. 340—52 F **7 Claims**

1. A warning method for vehicles comprising the steps of:

detecting the condition of each of a plurality of items of a vehicle which are to be monitored;

displaying, inside a vehicle compartment of said vehicle, a faulty condition when a faulty condition of at least one of said items is detected by said detecting step;

measuring the lapse of time after the display of said faulty condition is initiated by said displaying step; and



generating a voice to give a warning of said faulty condition inside said vehicle compartment when the lapse of time measured by said measuring step exceeds a predetermined time.

4,438,423

DEVICE FOR PRODUCING AN OPTICAL OR ACOUSTIC SHIFT INSTRUCTION

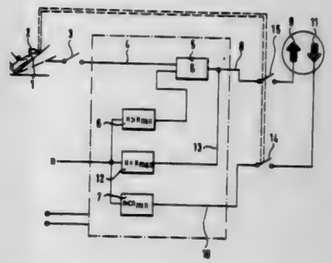
Bernhard Stier, Kelkheim-Fischbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 350,973

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3108920

Int. Cl.³ B60Q 1/26; B60K 23/00

U.S. Cl. 340—52 R **7 Claims**



1. In a device for producing an optical or acoustic shift instruction in which a speed-of-rotation signal is fed to a first threshold switch for connecting an upshift signal indicator and to a second threshold switch for connecting a downshift signal indicator, the device being adapted to cooperate with a gas pedal of a vehicle, the improvement comprising

an AND gate arranged behind the first threshold switch,

a gas-pedal position switch being connected to said AND gate at an input side of the latter such that when the gas pedal is depressed only slightly it is connected to the upshift signal indicator, and

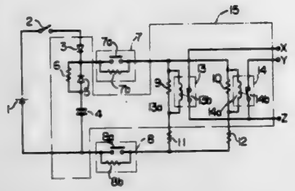
means comprising a third threshold switch in parallel to the two other said threshold switches, being connected directly with said upshift signal indicator and for becoming conductive when the maximum permissible speed of rotation is reached.

4,438,424

ELECTRIC APPARATUS FOR A VEHICLE SAFETY DEVICE

Toshio Yasui, Anjo, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 20, 1981, Ser. No. 294,555
Claims priority, application Japan, Oct. 2, 1980, 55-138141
Int. Cl.³ B60Q *1/00*
U.S. Cl. 340—52 H **7 Claims**



1. An electric apparatus for a vehicle safety device including a power supply circuit, sensor means for sensing collision of a vehicle, and a plurality of triggering means fed by said power supply circuit through said sensor means for triggering at least one vehicle safety device upon actuation of said sensor means, said electric apparatus comprising:

a plurality of resistors;

a plurality of recorder means each thereof comprising electric circuit means connected in parallel with one of said plurality of resistors and for actuation by a high potential difference across said one of said plurality of resistors, the recorder means being actuated when a large electric current flows through said one of said plurality of resistors by way of an associated one of said plurality of triggering means upon the actuation of said sensor means, and permanently remains in the actuated state;

said plurality of resistors having one end thereof connected in common to an end of said sensor means and the other end thereof connected to one of said plurality of triggering means and

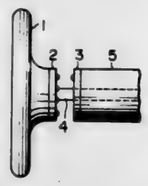
output terminals connected to outputs of said electric circuit means of said plurality of recorder means.

4,438,425

MULTIPLE SIGNAL TRANSMITTING APPARATUS FOR AUTOMOBILES

Takashi Tsuchida, Chiryu; Nobuo Kondo, Anjo; Kazukiyo Okada, Kosai, and Yutaka Okuda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 14, 1981, Ser. No. 292,431
Claims priority, application Japan, Aug. 21, 1980, 55-114923
Int. Cl.³ B60Q *1/00*
U.S. Cl. 340—55 **7 Claims**



1. A multiple signal transmitting apparatus for automobiles comprising:

a plurality of switches mounted on a steering wheel of an automobile;

a multiplexing circuit mounted on said steering wheel for multiplexing signals from said switches to generate a multiplexed signal;

at least one light-emitting means mounted on a surface of said steering wheel facing a means for supporting said steering wheel, said light-emitting means being assigned with a discrimination signal which differs depending on a mounting location on the steering wheel, said light-emitting means being responsive to said multiplexed signal together with said discrimination signal from said multiplexing circuit to generate a light signal;

at least one light-sensitive means mounted on a surface of said support means facing said light-emitting means for receiving said light signal when said light-emitting means is aligned with said light-receiving means due to a rotation of said steering wheel to generate a signal corresponding thereto; and

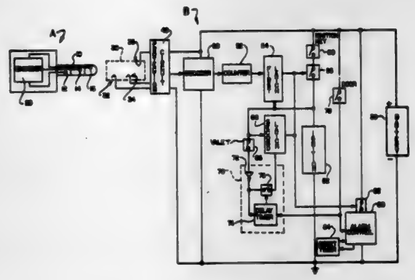
a decoder circuit arranged on a vehicle body of said automobile for decoding an output signal of said light-sensitive means to generate signals corresponding to the signals from said plurality of switches and said discrimination signal indicative of a rotational position of said steering wheel.

4,438,426

ELECTRONIC KEY ANTI-THEFT SYSTEM

Joey B. Adkins, Willowick, Ohio, assignor to Darrell E. Issa, Cleveland, Ohio

Filed Oct. 22, 1981, Ser. No. 313,820
Int. Cl.³ B60R *25/04*
U.S. Cl. 340—64 **14 Claims**



1. A passive-instant vehicular anti-theft system comprising:

an alarm control means for selectively actuating and deactuating an alarm device;

entry detecting means for detecting entry into the vehicle, the entry detecting means being connected with the alarm control means to actuate the alarm device substantially immediately upon entry into the vehicle, whereby the anti-theft system is instant;

a decoder means for decoding encoded signals, the decoder producing an enable signal in response to decoding a signal encoded with a preselected code signal;

ignition enabling means for selectively enabling an ignition to be operated, the ignition enabling means being operatively connected with the decoder means to enable the ignition in response to the enable signal;

an alarm disabling means for selectively disabling the alarm control means, the alarm disabling means being operatively connected with the decoder means to disable the alarm in response to the enable signal;

automatic reset means for causing the ignition enabling means to disable the ignition and the alarm disabling means to enable the alarm control within a preselected duration of ceasing operation of the ignition, whereby the anti-theft system is passive;

an electrical jack mounted to receive an electric plug from the exterior of the vehicle, the jack being operatively connected with the decoder means such that the decoder is adapted to receive encoded signals therefrom; and

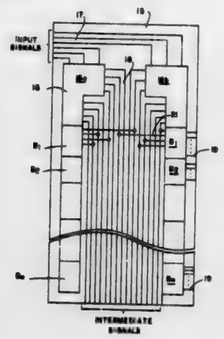
an electronic key including an encoder means which produces a signal encoded with said preselected code and a plug which is adapted to be received in the jack such that the encoder is operatively connected with the decoder, whereby the anti-theft system is undefeatable by mechanical lock picking, hot wiring, short circuiting, or the like.

4,438,427

DECODER AND METHOD UTILIZING PARTIAL AND REDUNDANT DECODING

Kenichi Miura, Saratoga, Calif., assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 20, 1978, Ser. No. 926,950
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **12 Claims**



1. In a method for decoding a digital input signal having a plurality of bits, the steps of: partially decoding the input signal by combining predetermined ones of the bits together to provide intermediate signals corresponding to decoded subsets of the input signal, at least one of the predetermined bits of the input signal being included in more than one of the subsets of said signal, applying the intermediate signals to a plurality of bus lines which extend past a plurality of logic blocks, and combining in the logic blocks predetermined ones of the intermediate signals from the bus lines to provide output signals as a predetermined decoding of the input signal.

4,438,428

MULTIPLE FUNCTION PERSONAL SECURITY ALARM

John W. Ober, Hiram, Ohio, and John M. Ferry, Garrett, Ind., assignors to Omnitronics Research Corporation, Barberton, Ohio

Filed Feb. 20, 1981, Ser. No. 236,242
Int. Cl.³ G08B *19/00, 17/00*
U.S. Cl. 340—521 **29 Claims**

1. An alarm having multiple functions for the security of an individual within a preselected area, the alarm having a board mounting substantially all electrical components, comprising:

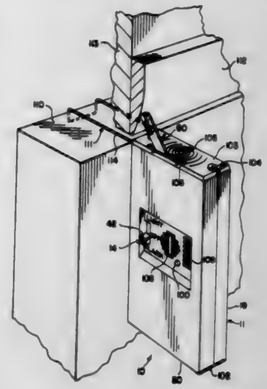
switch means for selecting among the functions the alarm performs;

smoke detection means for optically detecting the presence of smoke in the preselected area including a light source for generating light, a light sensor for detecting light and opaque chamber means, said light sensor being positioned within said opaque chamber means in substantially perpendicular alignment to a longitudinal axis of transmission of light through said opaque chamber means from said light source, said opaque chamber means receiving light from said light source and isolating said light sensor from detecting light from said light source;

intrusion detection means for detecting an unauthorized intrusion into the preselected area;

alarm means for communicating to the individual the presence of a potential security threat; and

plate assembly means housing said switch means, said intrusion detection means, and said alarm means and being secured to the board, said plate assembly means defining said opaque chamber means for permitting the transmission of light from said light source to said light sensor upon the presence of a preselected concentration of smoke in said opaque chamber means from the preselected area.

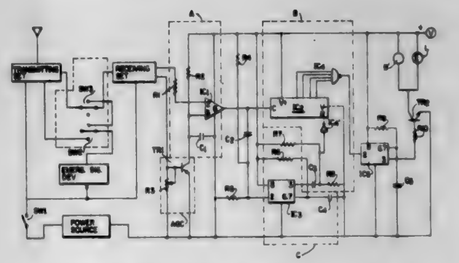


4,438,429

EMERGENCY SIGNAL TRANSCEIVER FOR DISABLED CAR

Seung M. Park, 210-29 Itaewon-dong, Yongsan-ku, Seoul, Rep. of Korea

Filed Oct. 5, 1981, Ser. No. 308,907
Int. Cl.³ G08B *1/08*
U.S. Cl. 340—539 **6 Claims**



1. An emergency alarm system for a vehicular radio transceiver having a transmitter unit, a receiver unit and an antenna comprising:

comparator means for deriving as an input from said receiver a repetitive series of digital pulses;

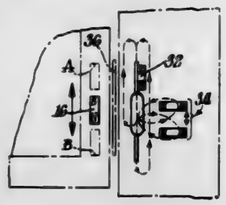
automatic gain control means, connected to receive the output signal of said receiver, to adjust the noise level of the output signal and to couple the adjusted signal to the comparator means as a reference level input signal;

first multivibrator means coupled to receive the output of said comparator means as an input and to provide a series of pulse signals of predetermined duration as an output signal;

counter means, coupled to receive as inputs the output of said comparator means and the output of said first multivibrator means, for counting the output pulses from said comparator means to determine when a preselected number of pulses has been received and for passing a digital pulse and the output pulse of said first multivibrator to a pair of its output terminals at this time;

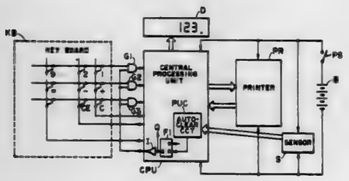
NAND gate means for receiving the outputs of said counter and providing an output signal therefrom;
second multivibrator means for providing a pulse output in response to the output signal of said NAND gate;
driver means, to which the output of said second multivibrator is coupled, for increasing the power of its input signal;
indicating means for receiving the output pulse signal of said driver means and for providing an external indication of its reception of a pulse signal.

4,438,430
ALARM SYSTEM
Alfred G. Young, Joppa, Md.; Leon F. Slocomb, Jr., Wilmington, Del., and Francis V. Bugg, Towson, Md., assignors to Acroseal Window Corporation, Annapolis, Md.
Filed Sep. 3, 1981, Ser. No. 299,069
Int. Cl.³ G08B *13/08*
U.S. Cl. 340—547 **11 Claims**



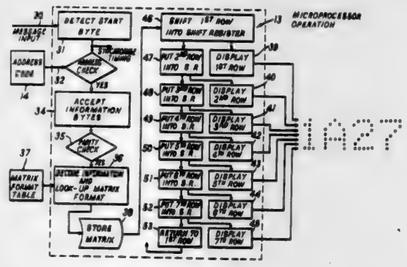
1. In an alarm system for detecting the unauthorized movement of a closure member which selectively opens and closes an opening wherein a fixed framework is associated with said opening and a movable framework is associated with said closure member and wherein at least a portion of each of said fixed framework and said movable framework is hollow, said alarm system including a switch mounted in one of said frameworks, a magnetic actuating member mounted in said hollow portion of the other of said frameworks for actuating said switch in accordance with the proximity of said actuating member to said switch, and alarm means electrically connected to said switch for actuation thereby upon actuation of said switch, the improvement being said switch and said alarm means being completely concealed within its said hollow framework, said switch being a magnetically biased proximity sensor, said switch having contacts, and including latching means for maintaining said switch contacts closed after being initially closed by said actuating member.

4,438,431
ELECTRONIC DEVICE HAVING WARNING MEANS
Shigeru Toyomura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 12, 1981, Ser. No. 262,959
Claims priority, application Japan, May 16, 1980, 55-65712
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—663 **2 Claims**



1. An electronic device for producing a warning comprising:
key input means for introducing data signals as input data into said electronic device, said key input means including a clear-key for introducing a clear-signal into said electronic device to clear the input data;
printing means for printing an output related to the input data in said key input means;
power source means for supplying electric power to said printing means;
detection means for detecting an output related to the electric power supplied from said power source means, and for generating a signal based on the detection; and
means for inhibiting data input from said key input means into said printing means upon receipt of the detection signal from said detection means,
wherein said inhibiting means includes a plurality of gate circuits which prevent said key input means from introducing data signals when said inhibiting means is receiving the detection signal from said detection means.

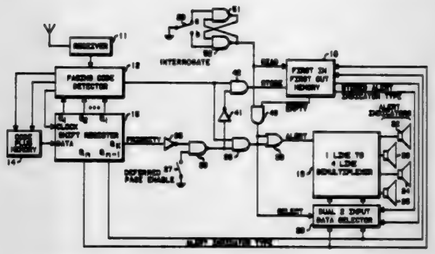
4,438,432
INFORMATION DISPLAY APPARATUS
Ivan B. Hurcum, Chippenham, England, assignor to Westinghouse Brake and Signal Company Limited, England
Filed Dec. 29, 1980, Ser. No. 220,894
Claims priority, application United Kingdom, Jan. 19, 1980, 8001871
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.35 **8 Claims**



1. An information display system comprising a mimic diagram having a plurality of locations for the selective display of information, each said location having a unique address code, multiplex data transmission means linking said locations to information supply means arranged to supply multiplexed messages consisting of an address code portion and a message portion, a connector socket mounted in the diagram at each said location, a plurality of interchangable standard plug-in display module assemblies each comprising a connector plug for mating with any one of the connector sockets, said plug being connected to address comparison means for, responsive to a correct address, gating a message information portion through information gating means to information decoding means connected to drive information display means, each module assembly further including an address programming means which is settable to provide the correct address to said comparison means corresponding to that allocated to the particular location at which the module assembly is plugged-in.

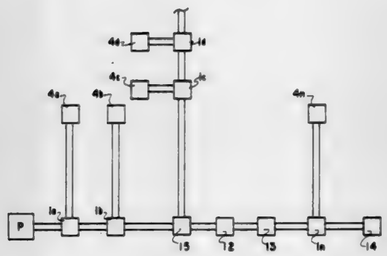
4,438,433
MULTIADDRESS PAGER WITH A CALL STORAGE AND PRIORITY PAGING OPTION
George W. Smoot, Sunrise, and Philip P. Macnak, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 29, 1981, Ser. No. 306,799
Int. Cl.³ G08B *5/22*
U.S. Cl. 340—825.44 **17 Claims**

1. A pager for receiving similarly-coded incoming calling signals which include user-designated emergency-type calls and non-emergency-type calls, wherein the emergency-type calls require immediate response and non-emergency-type calls can be responded to later at the convenience of the user of the pager, comprising:
means for decoding incoming signals and for distinguishing



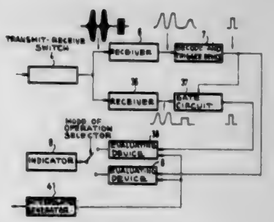
decoded emergency-type calls from non-emergency type calls;
means for generating an alert signal in response to an emergency-type call; and
means for storing an indication of non-emergency-type calls for the generation of a subsequent alert signal.

4,438,434
SELF-SEQUENCING DATA BUS ALLOCATION SYSTEM
Thomas D. Wason, Raleigh, N.C., assignor to Cain Encoder Company, Greenville, N.C.
Filed Jul. 27, 1981, Ser. No. 287,396
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.51 **8 Claims**



1. A self-sequencing data bus allocation system for obtaining data from a plurality of data communication devices in accordance with a prescribed sequence and without separately addressing each data communication device, said data communication devices being of the type which are activated by the receipt of power at a prescribed level to transmit data out along a data line, then become deactivated when all available data has been transmitted and cease to draw current, said system comprising:
(a) an electrical power source having a multi-line, main electrical cable emanating therefrom;
(b) said multi-line, main electrical cable including a supply line and at least one data line;
(c) a plurality of multi-line electrical cable branches, each of said branches having at least a supply line and at least one data line connecting the corresponding lines of said main electrical cable with one of said data communication devices;
(d) a plurality of control means, each of said control means being connected to at least the supply line in one of said cable branches, whereby said power source is connected by said control means with a first one of said control means for the activation of the corresponding data communication device and thereafter interconnected with the succeeding downstream control means;
(e) each of said control means including:
(i) a switching means positioned in the cable branch supply line between said main cable supply line and said communication device being served by said branch cable and being operable between a normal "off" position and a second "on" position responsive to the receipt of a prescribed signal for temporarily connecting said corresponding data communication device to said main electrical cable and supplying power thereto;
(ii) a current sensing means in said cable branch supply line for detecting the level of current being supplied to the corresponding one of said data communication devices;
(iii) a control signal being generated by said current sensing means and transmitted through said main cable to the switching means of the next downstream control means responsive to a drop in the current below a prescribed level; and
(iv) the switching means of the control means corresponding to the communication device which has just been read being returned to said normal "off" position responsive to the sensing by said sensing means that the current through said branch cable has dropped below a prescribed level.

4,438,435
TWO-WAY RANGING SYSTEM
Günter Höfgen, Korawestheim, and Hinrich Ecklundt, Ludwigsburg, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Jul. 10, 1981, Ser. No. 282,342
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027823
Int. Cl.³ G01S *9/02*
U.S. Cl. 343—7.3 **18 Claims**



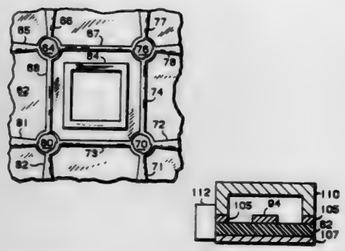
1. A two-way ranging system comprising:
an interrogator to transmit an interrogation signal to a transponder, said transponder transmitting a reply signal to said interrogator after a fixed delay following the reception of said interrogation signal, said interrogation signal and said reply signal each including, as transmitted and as received, a pulse pair having a predetermined spacing therebetween and a third pulse spaced from said pulse pair a predetermined time interval, said third pulse having a leading edge steeper than the leading edge of the pulses of said pulse pair; and
evaluating means disposed in said interrogator responsive to said third pulse in each of said interrogation signal and said reply signal to provide a distance measurement between said interrogator and said transponder, said distance measurement and said reply signal being accomplished only if said pulse pair has said predetermined spacing and said third pulse is spaced from said pulse pair said predetermined interval.

4,438,436

MILLIMETER WAVE MONOPULSE COMPARATOR CIRCUIT

Earl R. Murphy, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 4, 1981, Ser. No. 327,334
Int. Cl.³ G01S 13/00
U.S. Cl. 343—16 M 3 Claims



1. In a millimeter wave radar system of the type having a monopulse antenna array comprising four antenna elements and a guidance system for utilizing monopulse guidance signals, a millimeter wave monopulse comparator comprising:

a low dielectric constant substrate having a ground plane disposed on a first side thereof;

a first hybrid junction disposed on a second side of said substrate;

first and second microstrip lines disposed on said second side of said substrate, said first and second microstrip lines being connected to said first hybrid junction, said first and second microstrip lines having first and second predetermined electrical lengths;

means for connecting said first and second microstrip lines to first and second elements of the monopulse antenna;

a second hybrid junction disposed on said second side of said substrate;

third and fourth microstrip lines disposed on said second side of said substrate, said third and fourth microstrip lines being connected to said second hybrid junction, said third and fourth microstrip lines having third and fourth predetermined electrical lengths;

means for connecting said third and fourth microstrip lines to third and fourth elements of the monopulse antenna;

a third hybrid junction disposed on said second side of said substrate;

a fourth hybrid junction disposed on said second side of said substrate;

first, second, third and fourth interconnection lines disposed on said second side of said substrate connecting said first, second, third and fourth hybrid junctions, said first, second, third and fourth microstrip lines lying external to a closed figure formed by said interconnection lines and said hybrid junctions, said interconnection lines being short, straight, high impedance microstrip lines;

fifth and sixth microstrip lines disposed on said second side of said substrate, said fifth and sixth microstrip lines being connected to said third hybrid junction and being external to said closed figure;

seventh and eighth microstrip lines disposed on said second side of said substrate, said seventh and eighth microstrip lines being connected to said fourth hybrid junction and being external to said closed figure;

channel lines disposed on said second side of said substrate running substantially parallel to said microstrip lines and said interconnection lines;

channel means in contact with said channel lines for forming a conductive enclosure of predetermined dimensions about said microstrip lines and said interconnection lines; and

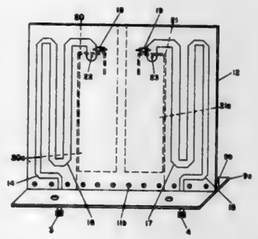
means for connecting said fifth, sixth, seventh and eighth microstrip lines to said monopulse guidance system.

4,438,437

DUAL MODE BLADE ANTENNA

Patricia L. Burgmyer, Great Neck, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,542
Int. Cl.³ H01Q 13/16, 1/28
U.S. Cl. 343—770 6 Claims



1. An antenna for radiating a signal of given wavelength comprising:

(a) a printed circuit board having first and second opposing sides;

(b) first and second folded slat monopoles on the first side of said board and spaced apart by less than one-quarter of the given wavelength;

(c) first and second microstrip feed lines on the second side of said board, said first line terminating in a first radiator port associated with said first monopole and said second line terminating in a second radiator port associated with said second monopole; and

(d) means for applying in-phase and quadrature components of the signal to said first and second lines, respectively.

4,438,438

METHOD FOR DISPLAYING A BATTLE SITUATION

Egidius Arens, Achim; Christoph Hampe, Ganderkesee; Ingo Karlowsky, Bremen; Manfred Meyersieck, Daverden; Hans D. Schwarz; Norbert Anding, both of Bremen, and Reinhard Leisterer, Lilienthal, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Dec. 24, 1980, Ser. No. 219,819
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952315
Int. Cl.³ G01S 3/02
U.S. Cl. 343—451 15 Claims

1. Method for displaying a battle situation under consideration and indication of the movement and position of friendly forces and with the position and motion behavior of targets being determined from angle and distance information derived at the observing or display station, comprising the steps of:

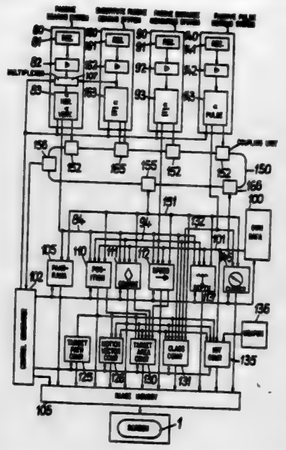
providing an electronic display device for the display of said battle situation;

furnishing angle and distance information of targets which radiate wave energy by means of at least one passive bearing and distance measuring system;

from said angle and distance information, calculating the position, course and speed of every target per time interval and indicating the calculated position, course and speed on said display as respective motion vectors;

determining the path of the targets from given time intervals from said angle and distance information about the targets, and displaying the determined target paths on said display device;

associating specific markers with the targets as a result of determined changes in position of the targets and determined characteristics of signals received from the passive bearing and distance measuring systems, and displaying said markers at the associated target positions; and



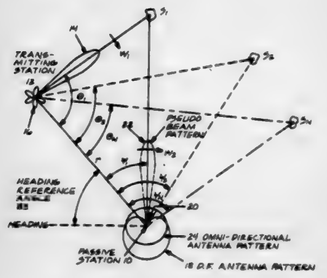
calculating uncertain measurement regions for the position of each target from the measuring tolerances of the angle and distance information and displaying said uncertain measurement region around the displayed marker for the associated target.

4,438,439

SELF-SURVEY MEANS

James S. Shreve, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1981, Ser. No. 258,828
Int. Cl.³ G01S 5/06
U.S. Cl. 343—449 15 Claims



1. A method for a passive station to locate itself relative to a transmitting station transmitting a narrow pulsed scanning beam by utilizing reception of pulses directly from the transmitting station and reception of reflected pulses from a set of scatterers S_i, comprising the steps of:

determining a bearing of said transmitting station from said passive station by rotating a direction finding antenna in azimuth until a first null position is indicated by said direction finding antenna;

measuring a set of differential times t_i, each member of said set of differential times being the difference in time measured between reception of a pulse directly from said transmitting station and reception of said pulse via reflection from a member of said set of scatterers;

determining a set of angles θ_i, said set of angles lying between a line connecting said transmitting station and said passive station and the set of lines connecting said transmitting station with said set of scatterers;

determining a set of angles ψ_i, said set of angles, ψ_i, lying between a line connecting said passive station and said transmitting station and the set of lines connecting said passive station and said set of scatterers; and

calculating a set of ranges r_i, utilizing said sets of differential times t_i, said angles θ_i, and said angles ψ_i, by

calculating a first set of values, ν_i, each member of said first set of values obtained by multiplying the speed of light, the corresponding member of said set of differential times, t_i, and the sine of the sum of the corresponding member of said set of angles, θ_i, and the corresponding member of said set of angles, ψ_i,

calculating a second set of values, χ_i, each member of said second set of values obtained by summing the sine of the corresponding member of said set of angles, θ_i, and the same of the corresponding member of said set of angles, χ_i, and subtracting the sine of the sum of the corresponding members of said sets of angles, θ_i and ψ_i, and

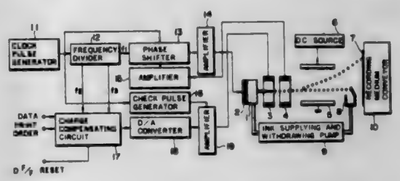
calculating said set of ranges, r_i, by dividing the corresponding members of said first set of values, ν_i, by the corresponding members of said second set of values, χ_i.

4,438,440

PRINT-DISTORTION COMPENSATING DEVICE FOR THE INK JET PRINTING APPARATUS

Koichiro Jinnai, and Yutaka Ebi, both of Kawasaki, Japan, assignors to Ricoh Company, Ltd., Japan

Filed Nov. 27, 1981, Ser. No. 325,302
Claims priority, application Japan, Nov. 26, 1980, 55-167165; Nov. 29, 1980, 55-168182
Int. Cl.³ G01D 15/18
U.S. Cl. 346—75 10 Claims



1. An ink jet printing apparatus for forming images or characters on a recording medium by deflecting ink droplets within a series thereof through any one of a multitude of deflection steps according to basic charging codes comprising:

ink ejection means for ejecting a jet of ink through a nozzle and breaking up said ink jet into ink droplets;

charging electrode means for charging said ink droplets; in response to printing signals;

charging-phase checking electrode means for checking the charging-phase by detecting a charge on said charged ink droplets;

a pair of deflection electrode means for deflecting said charged ink droplets and adapted to be connected to a high voltage direct current source;

a gutter for collecting the unused ink;

an ink supplying and withdrawing pump for supplying ink to said ink ejection means and withdrawing said unused ink collected in said gutter;

a recording medium conveyor for conveying the recording medium on which the charged ink droplets impinge to form the images or characters thereon; and

compensation means for compensating for distortion of the printing position of said ink droplets caused by an influence of neighboring ink droplets, said compensation means including memory means storing signals corresponding to various compensating amounts for each of a predetermined number of neighboring ink droplets, each

of said compensating amounts corresponding to the degree of deflection of the associated ink droplet, and means for reading out said compensating amounts and controlling the addition or non-addition of said compensating amounts to said basic charging codes depending on the presence or absence of ink droplets neighboring an ink droplet to be charged.

4,438,441

MOSAIC RECORDER WITH IMPROVED TRANSDUCER

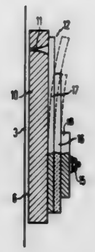
Jan Bolmgren, Vaellingby, and Kenth Nilsson, Akersberga, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,986

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114224

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **5 Claims**



1. In a mosaic recorder having a recording head with a plurality of nozzles disposed in rows for ejecting droplets of recording liquid for printing alphanumeric characters and images in punctiform representation, each nozzle having a piezoelectric transducer associated therewith having a movable free end for forcing said recording liquid through said nozzles upon selected activation of said transducers, the improvement comprising a bilaminar comb-like piezoplate having a plurality of teeth forming said transducers, said plate having a carrier layer adjacent to said recording head and a piezoceramic layer, said piezoceramic layer for each of said transducer teeth terminating a distance from said free end of said transducer such that a fraction of said transducers respectively overlying said nozzles consists solely of exposed carrier layer, said fraction of said transducers being lighter and thinner than a remainder of said piezoplate.

4,438,442

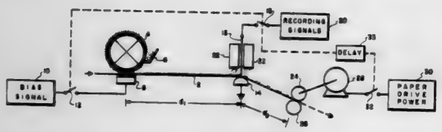
ELECTROGRAPHIC RECORDING APPARATUS WITH DELAYED PAPER DRIVE TERMINATION

Roger D. Erickson, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 9, 1981, Ser. No. 310,578

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—153.1 **6 Claims**



1. An electrographic recording apparatus comprising:

a record medium;

motive means for driving said record medium at a predetermine linear speed;

means for depositing toner particles on said record medium as it is drawn past a first position by said motive means;

means for fixing said toner particles onto said record medium as said record medium is drawn past a second position by said motive means, said second position being spaced a fixed distance subsequent to said first position;

means for terminating the deposit of said toner particles on said record medium at a selected time; and

delay means for terminating the operation of said motive means a predetermined time after said selected time.

4,438,443

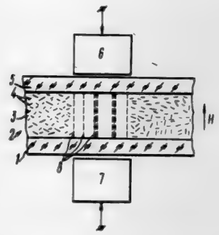
METHOD OF RECORDING INFORMATION ON A MEDIUM IN THE FORM OF ELECTRICAL SIGNALS

Vitaly S. Doev; Iosif M. Kotelyansky, both of Moscow; Valery B. Kravchenko, Fryazino; Yakov A. Monosov; Valery A. Shakhunov, both of Moscow, and Jury L. Kopylov, Fryazino, all of U.S.S.R., assignors to Institut Radiotekhniki I Elektroniki Akademii Nauk SSSR, U.S.S.R.

Filed Oct. 13, 1981, Ser. No. 314,079

Int. Cl.³ G01D *15/06, 15/12*

U.S. Cl. 346—153.1 **20 Claims**



1. A method of recording of information on a medium in the form of discrete electrical signals, comprising the steps of:

forming a working layer of said medium by substantially uniformly dispersing particles having a dipole moment in a thermoplastic binder, said particles adapted to alter in special orientation in a softened state due to said dipole moment,

applying a substantially uniform thermal field to at least a portion of said layer, to heat said portion above the softening temperature of the binder,

after ceasing application of said thermal field, applying a vector field to said portion of said layer with vector lines of said vector field being oriented substantially perpendicular to the surface of said working layer and said vector field being applied until the individual particles of said portion are substantially aligned along the vector lines, resulting in a change of optical density of said portion of said layer,

at least one of said thermal and vector fields being generated by converting the discrete electrical signals conveying the information to be recorded, and

after ceasing application of said vector field, cooling said portion to a temperature below the softening temperature of said binder, to fix the information being recorded.

4,438,444

MULTI-STYLUS HEAD

Kenya Komada, Yokohama, and Yui-Kuan Tan, Sagamihara, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

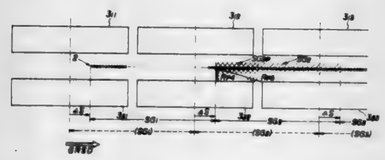
Filed Nov. 19, 1980, Ser. No. 208,261

Claims priority, application Japan, Nov. 20, 1979, 54-151271

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—155 **4 Claims**

1. In an electrographic recording multi-stylus head having a plurality of styli aligned in at least one row and divided into plural groups, and a plurality of segmented electrodes aligned in at lest one row, each of said groups of styli corresponding to a respective at least two of said segmented electrodes, wherein said groups of styli and said segmented electrodes are adapted to form an electrostatic image on a surface of a dielectric layer of a recording material by applying a voltage between the styli in each of the groups of said styli and the respective at least two segmented electrodes, the improvement comprising:



each group of styli having a leading end stylus and a trailing end stylus arranged in a recording and scanning direction, wherein the leading and trailing end styli of each stylus group are each spaced apart in a same predetermined direction from the centers of the respective at least two segmented electrodes corresponding thereto by a predetermined distance (ΔS) such that each stylus group is offset in said predetermined direction relative to said centers of said respective segmented electrodes by said predetermined distance.

4,438,445

VARIABLE CAPACITANCE DIODE AND METHOD OF MAKING THE SAME

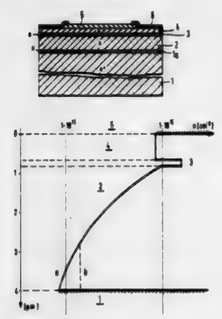
Alexander Colquhoun, Heilbronn-Sontheim, Fed. Rep. of Germany, and Erhard Kohn, Ithaca, N.Y., assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,468

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028820

Int. Cl.³ H01L *29/92, 29/48*

U.S. Cl. 357—14 **17 Claims**



1. A variable capacitance diode comprising a low resistance semiconductor substrate, and epitaxial layer arranged on said semiconductor substrate, and a barrier layer arranged in or on the major surface of said epitaxial layer opposite the major surface adjoining said semiconductor substrate; and wherein said epitaxial layer includes a relatively thin surface region which extends directly beneath the barrier layer and which is less heavily doped than an adjoining very thin intermediate region, and a further region which extends from said intermediate region to said substrate and has an impurity concentration which decreases towards said semiconductor substrate.

4,438,446

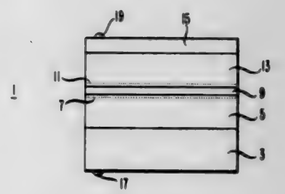
DOUBLE BARRIER DOUBLE HETEROSTRUCTURE LASER

Won-Tien Tsang, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 29, 1981, Ser. No. 268,237

Int. Cl.³ H01S *3/18, 3/19*

U.S. Cl. 357—17 **11 Claims**



1. A light emitting device comprising an active layer having a first bandgap, first and second cladding layers having first and second conductivity types, respectively, and second and third bandgaps, respectively, said active layer being intermediate said first and second cladding layers, a first barrier layer intermediate said first cladding layer and active layer and having a first conductivity type, said first barrier layer having a fourth bandgap, and being directionally graded so that said fourth bandgap increases as the barrier layer-active layer interface is approached; said first bandgap being smaller than said second and third bandgaps and said fourth bandgap being greater than said second and third bandgaps; and electrical contacts to said first and second cladding layers.

4,438,447

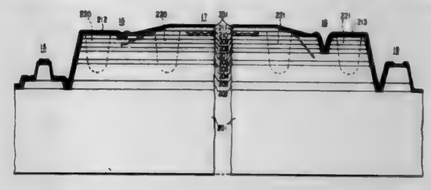
MULTILAYERED OPTICAL INTEGRATED CIRCUIT

John A. Copeland, III, Fair Haven, and Stewart E. Miller, Locust, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 18, 1982, Ser. No. 339,849

Int. Cl.³ H01L *31/12*

U.S. Cl. 357—19 **15 Claims**



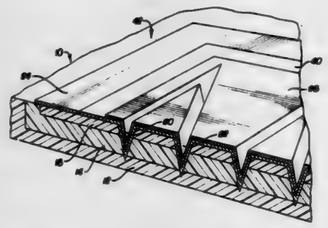
7. An electro-optic integrated device comprising a substrate having a plurality of epitaxial layers grown thereon, at least three of said plurality of epitaxial layers being primary layers, a first primary layer being grown with a bandgap suitable for optical detection, a second primary layer being grown with a wider bandgap suitable for the generation of light that can be detected by said first primary layer, and a third primary layer being grown with a bandgap that is larger than the bandgap of either of said first or second primary layers, at least two regions of said plurality of layers being electrically isolated, a first electrode means for establishing an electrical connection to the first primary layer in one of said two regions, and a second electrode means for establishing an electrical connection to the second primary layer in a second of said at least two regions, said first, second and third primary layers having at least one barrier layer between adjacent primary layers with a bandgap greater than either of said adjacent primary layers.

4,438,448

ZIG-ZAG V-MOS TRANSISTOR STRUCTURE

Alan L. Harrington, Glendale; Richard Allison, Los Angeles, and Vladimir Rodov, North Hollywood, all of Calif., assignors to TRW Inc., Los Angeles, Calif.

Filed Jul. 18, 1980, Ser. No. 170,131
Int. Cl.³ H01L 21/302, 29/04, 29/78
U.S. Cl. 357—23 24 Claims



1. In a V-MOS transistor having source, body and substrate regions, a V-groove configuration comprising:

a first set of parallel V-grooves disposed through the source and body regions and into the substrate region; and

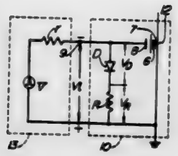
a second set of parallel V-grooves which are disposed at an intersecting angle with respect to said first set of V-grooves, and are also disposed through said source and body regions and into said substrate region, and are interleaved among said first set of grooves such that one end of each V-groove in said second set is in contact with one end of an adjacent V-groove in said first set and the other end of each said V-groove in said second set is in contact with one end of the other adjacent V-groove in said first set.

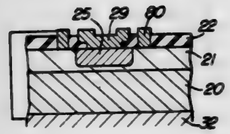
4,438,449

FIELD EFFECT SEMICONDUCTOR DEVICE HAVING A PROTECTIVE DIODE WITH REDUCED INTERNAL RESISTANCE

Koji Usuda, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1980, Ser. No. 151,985
Claims priority, application Japan, Mar. 3, 1967, 42-13079
Int. Cl.³ H01L 27/02
U.S. Cl. 357—41 2 Claims





1. A semiconductor device comprising:

a semiconductor material of a first conductivity type including a relatively high resistivity region extending to a major surface of said semiconductor material, and a relatively low resistivity region;

a semiconductor region of a second conductivity type opposite to the first conductivity type contacting the semiconductor material at said major surface thereof and closely spaced from said relatively low resistivity region;

an insulating film including a relatively thick portion and a relatively thin portion, the relatively thin portion being formed so as to cover the major surface of said relatively high resistivity region and being susceptible to electrostatic breakdown; and

an electrode formed on said relatively thin portion, spaced from said relatively high resistivity region and electrically connected to said semiconductor region;

the PN junction formed between said semiconductor region and said semiconductor material having a backward breakdown voltage lower than the electro-static breakdown voltage of said relatively thin portion of the insulating film below said electrode; and further including

a first additional electrode contacting said region of low resistivity at a surface of said semiconductor material opposite said major surface, and including a second additional electrode disposed on said semiconductor material and contacting said semiconductor region of high resistivity while being connected to said first additional electrode.

4,438,450

SOLID STATE DEVICE WITH CONDUCTORS HAVING CHAIN-SHAPED GRAIN STRUCTURE

Tan T. Sheng, Berkeley Heights; Ashok K. Sinha, and Sheila Vaidya, both of New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 98,979, Nov. 30, 1979, abandoned. This application Dec. 7, 1981, Ser. No. 328,149
Int. Cl.³ H01L 23/48, 29/44, 29/46, 29/62
U.S. Cl. 357—68 6 Claims



1. A solid state device including a first layer having a first surface and a pattern of electrically conducting lines thereon, each of said lines comprising a single layer of like material, each of said single layers comprising a succession of grains forming a chain-shaped structure, each of said grains extending from side to side and from top to bottom of the respective one of said single layers, said line having a length much greater than said width to permit the formation of a significantly long chain of grains therein.

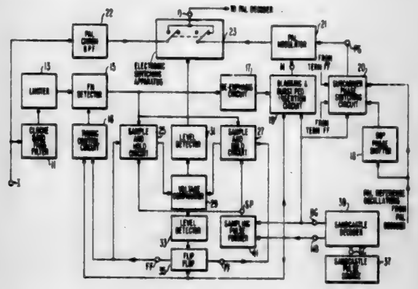
4,438,451

DUAL-STANDARD SECAM/PAL COLOR TV RECEIVER WITH AUTOMATIC CONTROL OF OPERATING MODE

Werner Hinn, Zollikerberg, Switzerland, and Mark B. Knight, Somerville, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,211
Claims priority, application United Kingdom, Apr. 29, 1981, 8113294
Int. Cl.³ H04N 9/50, 9/42
U.S. Cl. 358—11 8 Claims

1. In a dual-standard color television receiver having multiple operating modes and subject to alternative reception of (a) composite color television signals inclusive of a chrominance component encoded in a SECAM format and (b) composite color television signals inclusive of a chrominance component encoded in a PAL format; said SECAM-encoded chrominance component being accompanied by lead-in oscillations of a first subcarrier frequency during a terminal segment of the blanking portion of alternate active line intervals, and lead-in oscillations of a second subcarrier frequency during a similarly timed terminal segment of the blanking portion of the intervening active line intervals; said PAL-encoded chrominance component being accompanied by bursts of reference oscillations of a third subcarrier frequency, said bursts occupying a period of the blanking portion of each active line interval which corresponds in timing to an initial part of each of said terminal segments; apparatus comprising:



an FM detector responsive to the received signals;

means for generating line rate pulses having leading edges delayed relative to the beginning of said initial part of said terminal segments and trailing edges substantially coinciding with the termination of said terminal segments;

means, responsive to an output of said FM detector and to said line rate pulses, for developing a control signal indicative of the relationship between the amplitudes of (a) the output developed by said FM detector during alternate appearances of said line-rate pulses and (b) the output developed by said FM detector during the intervening appearances of said line rate pulses;

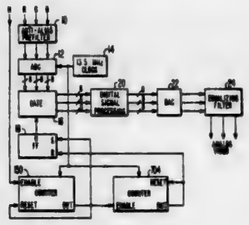
means, responsive to said control signal, for controlling the operating mode of said dual-standard color television receiver.

4,438,452

TRANSCODER FOR SAMPLED TELEVISION SIGNALS

Kerns H. Powers, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 262,619, May 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 230,384, Feb. 2, 1981, abandoned. This application Aug. 26, 1982, Ser. No. 411,907
Int. Cl.³ H04N 9/493
U.S. Cl. 358—13 7 Claims



2. A transcoder for transcoding a first television signal sampled at a first frequency (F1) into a second sampled signal by approximation of the values of those samples of said first signal which must be interpolated to form said second signal, comprising:

a clock signal generator coupled to the source of said first signal for generating a second signal sampling clock signal at a second frequency selected such that the ratio of said first and second frequencies is substantially equal to the quotient of integers, whereby said sample points recur in blocks in which the first samples of said first and second signals within a block occur substantially simultaneously and the last sample points of said first and second signals within each block occur substantially simultaneously, and wherein the number of samples of one of said first and second signals within each of said blocks exceeds the number of samples of the other of said first and second signals whereby the times of occurrence of said second signal samples move between the times of occurrence of the samples of adjacent first sample points over the duration of one of said blocks;

delay means coupled to receive said first signal for delaying said first signals to form at least second and third delayed signals delayed from said first,

differencing means coupled to said delay means for forming difference signals representing the difference in amplitude between successive delayed signals;

multiplying means coupled to said differencing means for receiving said difference signals and for multiplying said difference signals by a running variable to form weighted difference signals;

running variable generating means coupled to said multiplying means and to said clock signal generating means for generating said running variable indicative of the time position of each new sample between successive samples of said first signal; and

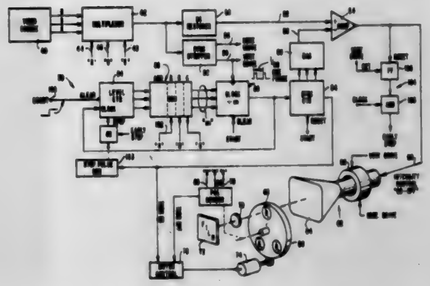
summing means coupled to said multiplying means for summing together said weighted difference signals.

4,438,453

CONSTANT LIGHT GREYSCALE GENERATOR FOR CRT COLOR CAMERA SYSTEM

Lawrence E. Alston, Chelmsford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 21, 1982, Ser. No. 341,317
Int. Cl.³ H04N 1/46, 5/84
U.S. Cl. 358—78 24 Claims



17. A method of obtaining a hard copy of a video frame represented by periodic video signals which lie within a predetermined range of amplitudes that define N levels of brightness comprising the steps of:

comparing the amplitude of the video signals with a reference signal level to provide a select output signal when the amplitude of the video signals is at least equal to the amplitude of said reference signal;

shifting the reference signal level through N levels corresponding to the N levels of brightness defined by the

predetermined range of video signal amplitudes at a frequency functionally related to and synchronized with the periodic frequency of the video signals;

controlling the intensity of a display screen to provide a two-level brightness distribution with the upper of said two levels of brightness occuring in response to said select output signal from said comparator; and

exposing a sheet of photosensitive material to said display screen.

4,438,454

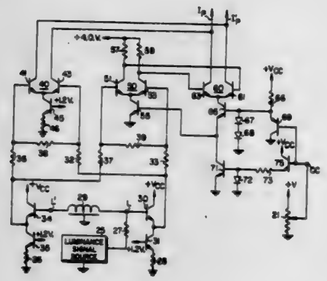
ADJUSTABLE CORING CIRCUIT PERMITTING CORING EXTINCTION

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 363,856, Mar. 31, 1982. This application Jan. 25, 1983, Ser. No. 460,846

Int. Cl.³ H04N 9/535

U.S. Cl. 358—31 **6 Claims**



1. A system for effecting an adjustable amount of coring of signals derived from a source comprising:

first signal translating means, having an input coupled to said source, for linearly translating said signals;

second signal translating means, having an input coupled to said source, for non-linearly translating said signals; said second signal translating means comprising a multistage limiting amplifier for developing a limited version of said signals, said limiting amplifier including respective input and output amplifying stages coupled in cascade;

means, responsive to the outputs of said first and second signal translating means, for developing a cored version of said signals corresponding to the difference between a linearly translated version of said signals and a limited version of said signals;

a bias voltage source;

a first current source transistor, having base, emitter and collector electrodes, for supplying operating current to said input amplifying stage;

a second current source transistor, having base, emitter and collector electrodes, for supplying operating current to said output amplifying stage;

means for connecting the respective base-emitter path of said first and second current source transistors in series across said bias voltage source;

first and second control transistors, each having base, emitter and collector electrodes, said first and second control transistors being of mutually opposite conductivity types;

means for connecting the collector-emitter path of said first control transistor in shunt with the base-emitter path of said first current source transistor;

means for connecting the emitter-collector path of said second control transistor in shunt with the series combination of the base-emitter paths of said first and second current source transistors;

a source of variable DC voltage; and

means for rendering the base electrodes of both of said first and second control transistors responsive to said variable DC voltage.

6. Apparatus in accordance with claim 1, for use with a source of luminance signals in a television receiver, wherein the signals subject to coring comprise horizontal peaking signals derived from said luminance signal source.

4,438,455

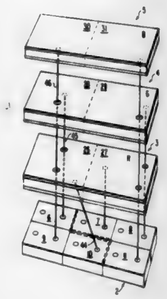
SOLID-STATE COLOR IMAGER WITH THREE LAYER FOUR STORY STRUCTURE

Masatoshi Tabei, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 330,928, Dec. 15, 1981, abandoned. This application Jul. 8, 1983, Ser. No. 512,052

Int. Cl.³ H04N 9/07

U.S. Cl. 358—44 **13 Claims**



1. A solid-state color imager, comprising:

a solid-state base comprised of an array of electrical switching elements arranged on portions of said base in sets of three;

a first layer of insulation material positioned over said base;

a first photosensitive layer superimposed on said first layer of insulation material, said photosensitive layer being comprised of a top transparent electrode sublayer, a back mosaic electrode sublayer, and a photoconductive sublayer positioned between said top and back sublayers, said back mosaic electrode sublayer being segmented into an array of portions corresponding to said electrical switching elements on said base, and each segmented portion of said back mosaic electrode sublayer being electrically connected with one of said electrical switching elements from said sets of three elements on said base;

a second layer of insulation material positioned over said first photosensitive layer;

a second photosensitive sublayer superimposed over said second layer of insulation material, said second photosensitive sublayer being comprised of a top transparent electrode sublayer, a back transparent mosaic electrode sublayer, and a photoconductive sublayer positioned between said top and back sublayers, said back mosaic sublayer being segmented into an array of portions vertically corresponding to said portions of said first photosensitive layer, wherein each back mosaic electrode sublayer portion is electrically connected to one of said electrical switching elements from said sets of three on said base;

a third layer of insulation material positioned on said second photosensitive layer; and

a third photosensitive layer superimposed on said third layer of insulation material, said third photosensitive layer being comprised of a top transparent electrode sublayer, a back transparent mosaic electrode sublayer and a photoconductive sublayer positioned between said top and back sublayers, said back mosaic sublayers being segmented into an array of portions vertically corresponding to said portions in said second photosensitive layer, wherein said back mosaic sublayer portions are electrically connected to one of said electrical switching elements from said sets of three on said base, said first, second and third photosensitive layers being sensitive to and absorptive of different ranges of the visible wavelength spectrum, whereby electrical signals from said photosensitive layers represent light intensities of three different color ranges.

4,438,456

TIME BASE CORRECTOR

Tadaaki Yoshinaka, Hadano, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 23, 1982, Ser. No. 360,904

Claims priority, application Japan, Mar. 28, 1981, 56-45754

Int. Cl.³ H04N 5/06

U.S. Cl. 358—148 **13 Claims**

1. A time base corrector for removing time base errors from composite color video signals comprising:

input circuit means for receiving incoming composite color video signals which include horizontal sync signals;

horizontal sync separating means connected with said input circuit means for separating said horizontal sync signals from said incoming composite color video signals;

write clock and write start pulse generating means for generating write clock and write start pulses in synchronism with said horizontal sync signals separated from the incoming composite color video signals;

read clock and read start pulse generating means having an input for receiving reference video signals and being operative to generate read clock and read start pulses on the basis of said reference video signals;

memory means into which said incoming color video signals are written for temporary storage in response to said write clock and write start pulses and from which the temporarily stored color video signals are read in response to said read clock and read start pulses;

means connected with said read clock and read start pulse generating means for providing added sync and sub-carrier signals and inserting said added sync and sub-carrier signals in said color video signals read from the memory means; and

phase control means for varying a phase of said separated horizontal sync signals with which said write clock and write start pulses are synchronized in accordance with a change in the relative phase of said read start pulses and said added sync signals.

4,438,457

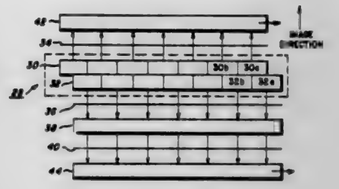
HIGH RESOLUTION IMAGER EMPLOYING STAGGERED SENSOR STRUCTURE

Jagdish C. Tandon, Fairport, N.Y.; Narayan K. Kadekodi, Torrance, Calif.; Abd-El-Fattah A. Ibrahim, Palos Verdes Estates, Calif.; Roland J. Handy, Northridge, Calif., and James C. Stoffel, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,742

Int. Cl.³ H04N 3/14

U.S. Cl. 358—213 **4 Claims**



1. A high density charge coupled device imaging array (58) on a single integrated circuit chip comprising a first row (60) of photosites deposited on said integrated circuit chip, said photosites being sensitive to applied light information, a second row (62) of photosites deposited on said integrated circuit chip immediately adjacent to and contiguous with said first row of photosites, said second row of photosites being offset from said first row of photosites approximately one-half the length of the individual photosites on said first row such that said second row of photosites are sensitive to applied light information intermediate the photosites in said first row of photosites, said first and second rows of photosites comprising a bilinear array of photosites, a first storage register (72) deposited on said integrated circuit chip adjacent to said first row (60) of photosites to receive and store the bits of light information detected by said first row of photosites (60) and converted to electronic charge information, wherein the improvement is characterized by:

a second storage register (68) deposited on said integrated circuit chip adjacent to said row (62) of photosites to receive and store alternate bits of light information detected by said second row of photosites and converted to electronic charge information,

a third storage register (70) deposited on said integrated circuit chip adjacent to said second storage register (68) to receive and store the remaining bits of light information detected by said second row of photosites and converted to electronic charge information,

a fourth storage register (74) deposited on said integrated circuit chip adjacent to said first storage register (72) to receive and store alternate intermediate bits of light information detected by said first row (60) of photosites, converted to electronic charge information and received by said first storage register (72).

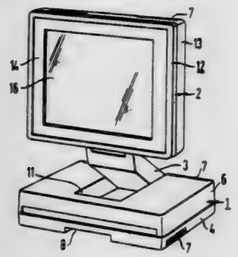
a fifth storage register (76) deposited on said integrated circuit chip adjacent to said fourth storage register (74) to receive and store the remaining bits of light information detected by said first row (60) of photosites converted to electronic charge information and received by said first storage register (72), and

wherein said second (68), third (70), fourth (74), and fifth (76) storage registers comprise a quadrilinear array such that all four registers contain the detected light information from one line of scan at the same time.

4,438,458
DATA DISPLAY DEVICE

Wolfgang Münscher, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,958
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105601
Int. Cl.³ H04N 5/64, 5/655
U.S. Cl. 358—254
6 Claims



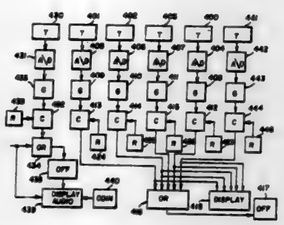
1. Data display device, comprising a plate-shaped flat pedestal part having a rectangular base with four sides, front, rear and lateral edges, and an upper surface having a recess formed therein parallel to said lateral edges, a plate-shaped screen part being disposed on top of said pedestal part and having a given surface area facing away from said pedestal part, a lower surface, front and rear edges and narrow sides, a display field substantially taking up said given surface area, an extended swivel arm support having one end being pivotable along an axis in vicinity of said upper rear edge of said pedestal part and another end being pivotable along the axis in vicinity of said lower rear edge of said screen part for supporting said screen part on said pedestal part, said axes being parallel to said upper rear edge of said pedestal part, said swivel arm being movable into a position in said recess flush with said upper surface of said pedestal part, said screen part being pivotable into a perpendicular position with respect to said pedestal part with said swivel arm in said flush position displaying a continuous planar frontal surface, and said screen part being pivotable into a parallel position with respect to said pedestal part with said swivel arm in said flush position and said screen part resting on said pedestal part with said narrow sides of said screen part at least substantially in alignment with two of said sides of said pedestal part.

4,438,459
MULTIPLEX PHOTOCOPIER SYSTEM WITH PORTABLE SCANNER

Alfred B. Levine, P.O. Box 9516, Washington, D.C. 20016

Division of Ser. No. 84,851, Dec. 4, 1979, and Ser. No. 925,290, Jul. 17, 1978, Pat. No. 4,251,153, said Ser. No. 925,290, is a continuation-in-part of Ser. No. 718,260, Aug. 27, 1976, Pat. No. 4,182,569, and Ser. No. 775,480, Mar. 8, 1977, abandoned.
This application May 17, 1982, Ser. No. 378,577
Int. Cl.³ H04N 1/20
U.S. Cl. 358—258
10 Claims

1. A copier system having plural independantly operable optical reader stations and a fewer number of developer mechanisms for producing hard copy reproductions of visual images read by said optical reader stations, malfunction indication and control means, said malfunction indication and control means including monitoring means for those operating components of the system that affect only individual reader stations for detecting malfunction of those components, and control and indicator means for each station for deenergizing only the affected stations in response to unacceptable malfunction thereof and indicating the source of malfunction of the affected stations, and additional monitoring means for those operating components of the system that affect all stations, and additional control and indicator means for deenergizing the entire copier

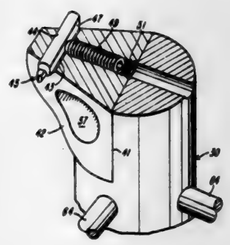


system in response to unacceptable malfunction thereof and indicating the source of malfunction.

4,438,460
ENGRAVING APPARATUS AND METHOD

Lester W. Buechler, 3193 Plainfield Rd., Dayton, Ohio 45432

Filed Sep. 24, 1982, Ser. No. 422,651
Int. Cl.³ H04N 1/24
U.S. Cl. 358—299
6 Claims



1. Apparatus for engraving cells in the surface of a gravure printing cylinder, comprising an engraving head, means supporting said head for relative movement adjacent the surface, said head including a shaft and an engraving stylus, means on said shaft and supporting said stylus eccentrically of the axis of said shaft, said stylus supporting means including an arm having a transverse hole extending generally tangent to the arc of oscillation of said arm, a stylus support holder extending within said hole, means extending generally radially outwardly within said arm and releasably securing said holder to said arm, spring means rigidly secured to said head and supporting said shaft and said stylus for oscillation, and power operated drive means for oscillating said shaft and said stylus.

4,438,461
INTEGRATED INPUT/OUTPUT SCANNER FOR ELECTRONIC DOCUMENT PROCESSING

William D. Turner, San Marino, and Robert A. Sprague, Saratoga, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 5, 1981, Ser. No. 308,301
Int. Cl.³ H04N 1/22
U.S. Cl. 358—302
12 Claims

1. An integrated input/output scanner for generting a first group of data samples to represent the information content of a subject copy and for exposing a photosensitive recording medium in accordance with a second group of data samples representing picture elements of an image; said scanner comprising

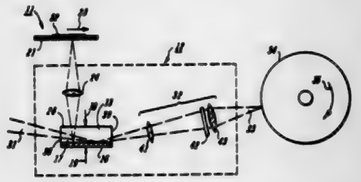
an optically transparent electro-optic element;

an array of photodetectors;

an array of individually addressable electrodes distributed in spaced apart relationship laterally of said electro-optic element adjacent a longitudinal surface thereof;

a substrate for supporting said photodetector array and said electrode array;

means for transmitting a light beam in a generally longitudinal direction through said electro-optic element, said light beam being collimated laterally of said electro-optic element;



means for imaging said subject copy onto said photodetector array without any appreciable mixing with said light beam, whereby said photodetectors generate said first group of data samples;

means for supplying said second group of data samples;

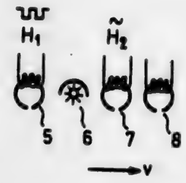
means for applying said second group of data samples to said electrodes for spatially modulating said light beam in accordance with said picture elements; and

means for focusing said modulated light beam on said recording medium to expose said recording medium in accordance with said image.

4,438,462
DOCUMENT IDENTIFICATION EMPLOYING EXCHANGE-ANISOTROPIC MAGNETIC MATERIAL

Eberhard Koester, Frankenthal; Joachim Hack, Ludwigshafen, and Manfred Steuerwald, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,629
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950129
Int. Cl.³ G11B 25/04
U.S. Cl. 360—2
4 Claims



1. A process for authenticating recording media which are to be safeguarded against falsification and which possess a layer of exchange-anisotropic magnetic material whose Neel temperature T_N is lower than the Curie temperature T_c of the ferromagnetic or ferrimagnetic component, wherein this layer of the recording medium is successively

(a) recorded with a sequence of signals,

(b) heated to a temperature T_2 which is below T_c and above T_{AFS},

(c) cooled to a temperature T_1 which is below T_2, and

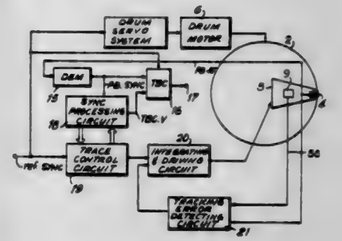
(d) exposed to a magnetic AC field which decreases to zero and whose strength is at least four times as great as the coercive force of the magnetic material present, and subsequently

(e) the residual magnetic recording is determined and compared with the sequence of signals recorded under (a).

4,438,463
TRACKING CONTROL SYSTEM

Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,199
Claims priority, application Japan, Aug. 6, 1980, 55-107938
Int. Cl.³ G11B 21/10
U.S. Cl. 360—10.2
15 Claims



1. An apparatus for reproducing information signals recorded in successive parallel tracks extending obliquely on a record tape, which apparatus includes transducer means repeatedly scanning across the tape generally in a direction along the tracks for reproducing the signals recorded therein while the tape is advanced longitudinally at a selected reproducing speed which is any arbitrary ratio n of a normal reproducing speed, and transducer deflecting means responsive to a drive voltge for deflecting said transducer means in a direction transverse to said direction along the tracks; a tracking control system comprising means for determining the value of said ratio n; means for extracting, from said value of the ratio n, the values m and l of an integer and a fraction, respectively, which, when added to each other, provide a sum equal to said ratio n; means for forming relatively large and small head jump voltages which respectively correspond to said value m and a value (m−1); means for providing a reproduced phase of the output of said transducer means in correspondence to a specific position along a track; means for forming a reference phase on the basis of said value l; discriminating means for determining whether said reference phase is in leading or lagging relation to said reproduced phase; means responsive to said discriminating means for selecting one of said large and small head jump voltages; and means operative at the end of each said scanning for including the then selected one of said large and small head jump voltages in said drive voltage applied to said transducer deflecting means for determining the next one of said tracks to be scanned.

4,438,464
METHOD FOR EDITING OF PCM SIGNAL AND APPARATUS THEREOF

Kentaro Odaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 324,139
Claims priority, application Japan, Jan. 25, 1980, 55/165571
Int. Cl.³ G11B 27/02, 5/00
U.S. Cl. 360—13
10 Claims

1. Apparatus for editing PCM signals by reproducing a plurality of first data sections from a first recording medium and recording a plurality of second data sections on a second recording medium, each of said first and second data sections including a respective plurality of data series and respective first and second error code series, said apparatus comprising:

reproducing means for reproducing one of said first data sections from said first recording medium;

first decoder means for receiving said reproduced first data section and for producing a respective plurality of data series and first and second error code series ordered in a first alignment as a first output;

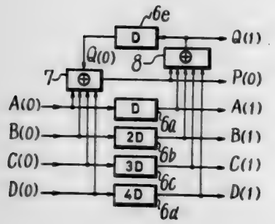
recording/reproducing means for recording on and reproducing from said second recording medium a second data section composed of a respective plurality of data series and first and second error code series ordered in a second alignment;

second decoder means for receiving said reproduced second data section, for reordering its respective plurality of data series and first and second error code series from said second alignment into said first alignment, and for producing the same as a second output;

multiplexer means for selectively outputting a selected one of said first and second outputs as a third output including received first and second error code series; and

encoding means for receiving said third output, for generating generated first and second error code series, for reordering said plurality of data series and selected first and second error code series into said second alignment and for recording the same onto said second recording medium, said encoding means including

first delay means for delaying once said plurality of data series and said received first error code series by a first predetermined period from said received second error code series;



second delay means for delaying twice said once delayed plurality of data series with respect to each other by a plurality of second different predetermined periods;

first error code generation means for generating a first generated error code series in response to said once delayed plurality of data series;

first selection means for selecting a selected one of said once delayed received first error code series and said generated first error code series in response to a selection of said first and second outputs;

second error code generation means for generating a second generated error code series in response to said twice delayed plurality of data series and said selected one of said once delayed received first error code series and said generated first error code series;

second selection means for selecting a selected one of said received second error code series and said generated second error code series in response to a selection of said first and second outputs; and

third delay means for delaying said selected one of said received second error code series and said generated second error code series by said first predetermined period.

4,438,465

TRACKING CONTROL SYSTEM FOR AN INFORMATION SIGNAL RECORDING AND REPRODUCING APPARATUS

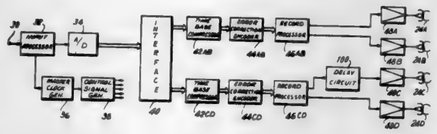
Ryusuke Moriya, Hadano; Takeo Eguchi, Hadani, and Takeo Ohba, Sagamihara, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 261,455, May 7, 1981. This application Dec. 14, 1981, Ser. No. 330,255

Claims priority, application Japan, Dec. 13, 1980, 55-176411

Int. Cl.³ G11B *5/02*

U.S. Cl. 360—22 **10 Claims**



1. Apparatus for simultaneously recording information signals in at least four successive, parallel channel tracks on a record medium, comprising:

processing means for processing said information signals and for distributing said information signals into at least four channels;

at least four transducer means corresponding to said at least four channels for recording said information signals from said at least four channels in said at least four channel tracks on said record medium, with first and second adjacent ones of said at least four channel tracks having the information signals recorded therein with different azimuth angles; and

delay means for delaying the information signals recorded in one of said first and second channel tracks relative to the information signals recorded in the other of said first and second channel tracks.

4,438,466

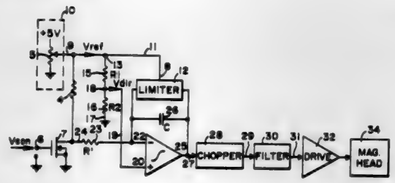
D.C. CONTROLLED ADJUSTABLE RAMP SIGNAL GENERATOR AND METHOD

John S. Fawkes, and Walter F. Umholtz, both of San Jose, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,735

Int. Cl.³ G11B *5/47, 5/02*

U.S. Cl. 360—66 **17 Claims**



1. A circuit for generating a D.C. controlled adjustable ramp signal, comprising:

an adjustable D.C. reference voltage source having an output coupled to provide a desired adjustable D.C. reference voltage;

a first means having an input coupled to receive said adjustable D.C. reference voltage and having an output coupled to provide a predetermined ratio thereof;

an integrating means having an inverting input coupled to receive a positive or negative D.C. input step voltage for responsively coupling said inverting input to said adjustable D.C. reference voltage or ground, respectively, having a non-inverting input coupled to said output of said first means for receiving said predetermined ratio of said

adjustable D.C. reference voltage and having an output coupled to provide said ramp signal in response to said D.C. input step voltage; and

said integrating means being further coupled to receive said adjustable D.C. reference voltage and to limit a maximum value of said ramp signal provided thereby to a value determined by said adjustable D.C. reference voltage.

4,438,467

MAGNETIC DISK TRACK FOLLOWING SERVO BURST AMPLITUDE DROP COMPENSATION

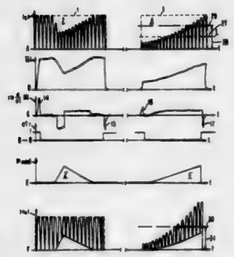
Karl H. Schaller, Herrenberg, and Volker Zimmermann, Sindelfingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,939

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120327

Int. Cl.³ G11B *5/58, 21/10*

U.S. Cl. 360—77 **5 Claims**



1. A method of compensating for decreases in the amplitude of servo signals read from a magnetic record for the track following control of a magnetic head, said servo signals appearing in periodic bursts, comprising the steps of

detecting the amount of said signal amplitude decrease in each said burst,

generating a complementary oppositely directed correction signal, and

adding said complementary correction signal to said servo signal prior to use of said servo signal for track following control.

4,438,468

TAPE CASSETTE TRANSFERRING MACHINE

Hideaki Kamei, Kyoto; Kazuhiko Yamanaka, Yawata; Haruhiko Fujisawa, Kyoto, and Shinichiro Oda, Osaka, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed May 19, 1981, Ser. No. 266,389

Claims priority, application Japan, May 20, 1980, 55-69637[U]; May 20, 1980, 55-69638[U]; May 20, 1980, 55-69639[U]; May 20, 1980, 55-69640[U]

Int. Cl.³ G11B *15/68*

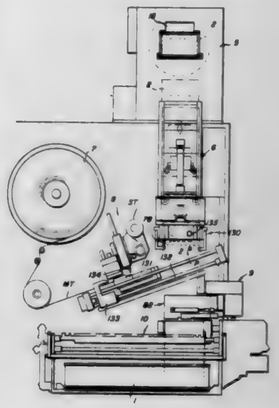
U.S. Cl. 360—92 **9 Claims**

1. A recording tape cassette machine for transferring tape cassettes towards a tape cassette treating machine which treats tape cassettes sequentially which comprises:

means for receiving at least one movable magazine container having a chamber for accommodating a plurality of recording tape cassettes, each of which stands parallel in a side-by-side relationship with a vertical attitude, aligned in the same direction;

means for discharging said tape cassettes from said magazine simultaneously; and

a cassette transferring means which receives each of said tape cassettes from said magazine with the attitute thereof aligned in the same direction and which forwards the



respective tape cassettes sequentially towards said tape cassette treating means maintaining said aligned condition.

4,438,469

DEFLECTABLE TRANSDUCER MOUNTING ASSEMBLY

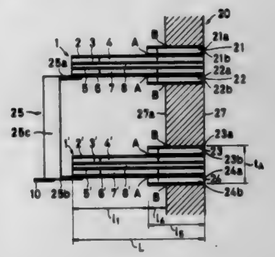
Takeo Ohba, Sagamihara, and Hirohisa Koga, Zama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 23, 1981, Ser. No. 304,786

Claims priority, application Japan, Sep. 30, 1980, 55-136014

Int. Cl.³ G11B *21/18*

U.S. Cl. 360—109 **15 Claims**



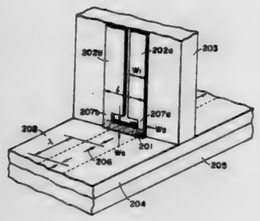
1. A deflectable transducer mounting assembly for mounting a transducer on a member, comprising first deflectable means having a first end to be coupled to said member so as to be cantilevered therefrom and a free end on which said transducer is mounted, said first deflectable means being deflectable in response to drive signals supplied thereto; and a pair of second deflectable means being deflectable in response to drive signals supplied thereto, said pair of second deflectable means being disposed at said first end of said first deflectable means to sandwich said first end therebetween and, when assembled with said member, said pair of second deflectable means is secured to said member.

4,438,470

MAGNETIC HEAD OF MAGNETIC RELUCTANCE EFFECT TYPE AND A METHOD FOR MAKING THE SAME

Takeshi Sawada, Yokohama; Ko Yoneda; Akira Shinmi, both of Kawasaki; Hirokazu Goto, Tokyo, and Shuzo Abiko, Chichibu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Filed Jul. 20, 1981, Ser. No. 284,708
Int. Cl.³ G11B *5/12, 5/30, 5/42*; H01F *7/06*
U.S. Cl. 360—113 **3 Claims**



1. A magnetic reluctance effect type magnetic head comprising:

support means made of nonmagnetic material; and

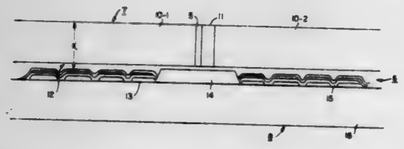
magnetic sensor means formed on said support means of magnetic reluctance effect material that varies in electric resistance in respone to a magnetic field, said magnetic sensor means being formed in a generally U-shape, having legs and a base contact, said legs of which define a pair of lead sections each having a width of W_1 at the top portion thereof and said base contact of which defines a plurality to triangular wave-like sections, connecting the bottom portions of said legs in series, each having a width of W_2; the width W_1 being greater than the width W_2.

4,438,471

MAGNETIC HEAD FOR PERPENDICULAR MAGNETIC RECORDING SYSTEM

Mitsumasa Oshiki, Yokohama, and Susumu Kawakami, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 5, 1980, Ser. No. 213,406
Claims priority, application Japan, Dec. 13, 1979, 54-162324
Int. Cl.³ G11B *5/14, 5/20*
U.S. Cl. 360—125 **16 Claims**



1. A perpendicular recording magnetic head comprising:

(a) a pole substrate member having a first surface forming a transducer face and a second surface opposite thereto, the pole substrate member being formed of first and second non-magnetic substrate portions with corresponding side edges for bonding, and a main pole of a thin ferromagnetic film formed on the side edge of said first substrate portion with the corresponding side edge of the second substrate portion bonded thereto; and

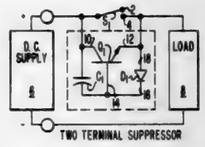
(b) a coil substrate member having a coil substrate with a magnetic portion in contact with the main pole thin film and a flat coil formed on the surface of said coil substrate, the pole substrate member being bonded at the second surface thereof to said coil substrate member wherein the main pole thin film in the pole substrate is positioned vertically to the center of the flat coil on the coil substrate to form a single integrated perpendicular recording magnetic head.

4,438,472

ACTIVE ARC SUPPRESSION FOR SWITCHING OF DIRECT CURRENT CIRCUITS

George K. Woodworth, Manassas, Va., assignor to IBM Corporation, Armonk, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,744
Int. Cl.³ H02H *7/22*
U.S. Cl. 361—13 **6 Claims**



1. An active arc suppression circuit connected in parallel with a first and second contacts of a relay switch to be protected while switching DC currents, said switch having a characteristic delay for opening said contacts and having said first contact connected to the positive terminal of a DC power supply and said second contact connected to a load, comprising:

an NPN bipolar transistor having its collector connected to said first contact and its emitter connected to said second contact, and a base;

a capacitor connected between said collector and said base of said transistor having a capacitance sufficiently large to require an interval longer than said characteristic delay to charge up, for passing load current from said first contact to said base when said contacts are opened, turning on said transistor to shunt said load current around said contacts until said capacitor charges up after said characteristic delay, at which time said transistor turns off;

a diode having its cathode connected to said base and its anode connected to said emitter of said transistor, for quickly discharging said capacitor when said contacts are closed;

whereby arcs which may occur across said contacts upon opening are suppressed.

4,438,473

POWER SUPPLY FOR AN INTRINSICALLY SAFE CIRCUIT

James C. Cawley, Venetia; Michael D. DiMartino, Library; Thomas J. Fisher, Munhall; Roger L. King, and Marcus H. Uhler, both of Pittsburgh, all of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 21, 1981, Ser. No. 285,247
Int. Cl.³ H02H *3/08*
U.S. Cl. 361—18 **4 Claims**

1. A binary controlled current interrupter circuit to safely control the supply of power to a remote electrically operated load located in an explosive atmosphere comprising:

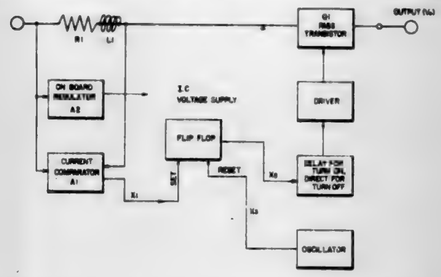
input and output terminals for the interrupter, said output terminals being electrically connected to the load in the explosive atmosphere;

means to sense the current level rate of change between the interrupter's input and output terminals to output a signal should the detected current rate of change exceed a predetermined level;

means to sense the voltage level drop across a sampling section between the input and output terminals of the interrupter to output a signal should this level exceed a predetermined voltage level;

flip-flop switch means actuated by the output signal from either the current level rate of change means or the voltage sensing means to output a responsive signal;

delay means actuated by a signal from the flip-flop switch means for delaying the turn on of the load initially or after any subsequent interruptions of power thereto, said delay means providing for the turn off of power to the load several times more rapidly than its turn on of power; and



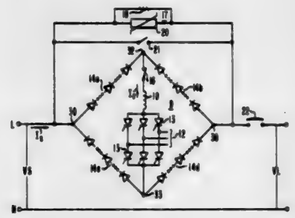
a pass transistor switch means to control the signal output of the interrupter and response to the output signal from the flip-flop and delay means to cease the supply of electrical energy to the load should either the predetermined sensed circuit rate of change means or the voltage levels be reached.

4,438,474

CURRENT LIMITER AND VAR GENERATOR UTILIZING A SUPERCONDUCTING COIL

Derek A. Paice, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 12, 1982, Ser. No. 377,524
Int. Cl.³ H02H *9/02*
U.S. Cl. 361—58 **21 Claims**



1. A current limiting device, comprising:

a plurality of unidirectional voltage means interconnected so as to have an input connected to an electrical power source for producing a constant polarity voltage at output terminals thereat;

current generating means for producing a current in a superconducting impedance means; and

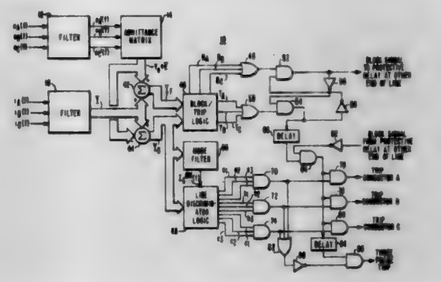
superconducting impedance means connected in series circuit relationship with said current generating means, said series circuit being connected to said output terminals, thereby slowing down the rate of current rise produced by said electrical power source.

4,438,475

ULTRA-HIGH SPEED PROTECTIVE RELAY APPARATUS AND METHOD FOR PROVIDING SINGLE POLE SWITCHING

Paul H. Haley, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 2, 1982, Ser. No. 404,170
Int. Cl.³ H02H *3/26*; G01R *31/08*
U.S. Cl. 361—82 **46 Claims**



1. A protective relay for determining the location of a fault on the conductors of a three-phase ac electrical transmission line, comprising:

means for providing first, second, and third incident-wave signals representative of the current produced on each conductor by a fault-launched incident traveling wave arriving at the relaying point from a first direction;

means for providing first, second, and third forward-wave signals representative of the current produced on each conductor by a fault-launched forward traveling wave arriving at the relaying point from a second direction;

comparator means for comparing said first, second, and third incident-wave signals with, respectively, said first, second, and third forward-wave signals to provide an indication of the direction to the fault and to provide an enable signal when the fault is in said first direction;

first filter means for filtering said first, second, and third incident-wave signals to provide a modal signal representing the total current produced on the transmission line by a first propagational mode of said first incident traveling wave; and

discriminator means for processing said first, second, and third incident-wave signals, said modal signal, and said enable signal to provide an indication of the location of the fault.

4,438,476

SELECTABLE INTEGRATING CHARACTERISTIC TIMER FOR PROTECTIVE RELAYS

Thomas B. Breen, Lansdowne, Pa., assignor to General Electric Company, King of Prussia, Pa.

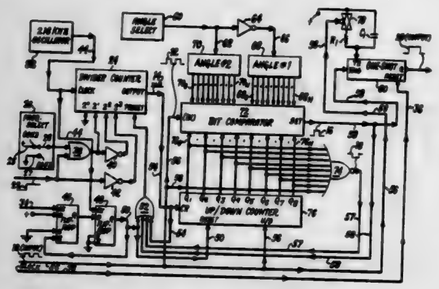
Filed May 17, 1982, Ser. No. 378,589
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—96 **10 Claims**

1. A selectable characteristic timer which measures the time duration of an applied signal representative of the normal or abnormal conditions of a portion of the transmission line associated with the protective relay, said characteristic timer measuring the time duration of the applied signal relative to a quantity representative of the frequency of the power source supplying the transmission line, said characteristic timer comprising:

(a) a clock source for developing a clock signal having a reference frequency;

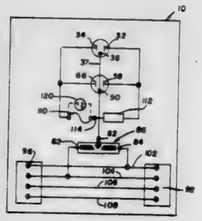
(b) a divider counter for receiving the clock signal and generating a clock pulse train comprising a plurality of pulses having a predetermined pulse repetition rate proportional to the frequency of the power source;

(c) an up/down digital counter for receiving the applied and clock pulse train signals having a digital content that is altered in response to the presence and the absence of the applied signal at a rate determined by the repetition rate of the clock pulse train, the up/down counter generating a first digital signal representative of its digital content;
(d) selectable means for selecting one or more second digital signals each representative of a desired angle within the range of 0 to 180 degrees of one cycle of said power source;



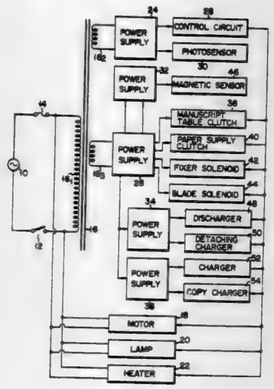
(e) comparator means rendered effective by said applied signal and responsive when effective to the first digital signal and one or more of the second digital signals for generating a SET signal when the first digital signal is equal to or greater than one of the second digital signals; and,
(f) means responsive to the SET signal for developing an output signal for the characteristic timer that extends past termination of said SET signal.

4,438,477
COMBINATION POWER AND COMMUNICATION LINE PROTECTION APPARATUS
John M. Cawley, East Islip, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.
Filed Aug. 23, 1982, Ser. No. 410,307
Int. Cl.³ H02H 9/06
U.S. Cl. 361—119 **9 Claims**



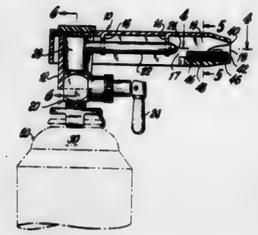
1. A combination power and communication line protection apparatus comprising:
(a) a housing;
(b) a power plug disposed in said housing, said plug having at least three terminals adapted to be received by a power receptacle having two power line terminals and a ground terminal and be in electrical conductive contact with each of said terminals;
(c) a power receptacle disposed in said housing and connected in parallel with said power plug, said power receptacle being adapted to receive a mating power plug from equipment to be protected;
(d) first overvoltage protection means connected from one of said power line terminals to the other of said power line terminals for providing a low resistance current conducting path when the voltage thereacros exceeds a predetermined value;
(e) a pair of communication line receptacles having at least two electrically conductive paths therebetween disposed in said housing, each of said communication line receptacles being adapted to receive a mating communication line plug therein; and
(f) a second overvoltage protection means having two line electrodes and a ground electrode, each said line electrode being connected to one of said respective communication lines, said ground electrode being connected to said power plug and power receptacle ground terminals.

4,438,478
POWER SUPPLYING APPARATUS
Kouszou Matsuyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Aug. 9, 1982, Ser. No. 406,516
Claims priority, application Japan, Aug. 10, 1981, 56-124120
Int. Cl.³ H01H 47/10
U.S. Cl. 361—152 **5 Claims**



1. A power supplying apparatus which comprises:
transformer means for converting a high voltage into a low voltage;
non-regulated power supplying means, connected to an output end of said transformer means, for supplying a no-load voltage higher than a full-load voltage;
at least one electromechanical converting means, connected to said non-regulated power supplying means, for instantaneously supplying an output greater than a rated output upon reception of an instantaneous voltage higher than a rated voltage from said non-regulated power supplying means, said at least one electromechanical converting means requiring for its initial operation a mechanical force larger than a mechanical force required in a steady state operation;
at least one load means connected to said non-regulated power supply means; and
control circuit means, connected to said output end of said transformer means, for supplying a control signal to said at least one electromechanical converting means so as to connect said at least one electromechanical converting means to said non-regulated power supply means so that the voltage close to the no-load voltage may be instantaneously supplied thereto, said control circuit means then supplying a control signal to said at least one load means so as to further connect said at least one load means to said non-regulated power supply means so that a substantially rated voltage may be supplied to said at least one load means and to said at least one electromechanical converting means.

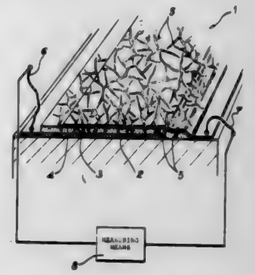
4,438,479
SELF-CONTAINED ANTI-STATIC ADAPTER FOR COMPRESSED GAS DUST BLOWING DEVICES
Lionel H. Schwartz, Short Hills, N.J.; Scott W. Miller, Stratford, Conn., and Christopher N. Severud, Jr., Denville, N.J., assignors to Falcon Safety Products, Inc., Mountainside, N.J.
Filed Mar. 13, 1981, Ser. No. 243,559
Int. Cl.³ H05F 3/00
U.S. Cl. 361—213 **11 Claims**
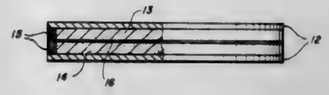


1. A self-contained anti-static adapter for attachment to a compressed gas dust blowing device, said adapter for entraining air with a stream of gas from said blowing device and ionically charging this gaseous mixture to reduce forces of static attraction on surfaces to be dusted, the adapter comprising;
a housing;
securing means to secure the adapter to said blowing device;
an ionizing chamber formed within the housing, the ionizing chamber comprising:
an inlet at an upstream portion of the ionizing chamber to conduct a stream of gas from said blowing device and to entrain air in the gas stream,
a radioactive source to ionize the mixture passing through the ionizing chamber, the radioactive source being secured and enclosed within the ionizing chamber to physically shield the radioactive source and to confine the radioactive emissions primarily to within the ionizing chamber,
an outlet nozzle located at a downstream portion of the ionizing chamber to direct the stream of the ionizing mixture;
a front shell;
secondary securing means to secure the housing to the front shell;
a rear shell pivotally connected with the front shell, the front shell and rear shell together forming an enclosure for said blowing device; and
actuator means connected integrally with at least one of the shells to actuate said blowing device when the front shell and rear shell are squeezed together.

4,438,480
CAPACITIVE HYGROMETER
Bernard Chambaz, Seyssins; Gilles Delapierre, Seyssinet, and Louis Destannes, Eybens, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Jul. 9, 1981, Ser. No. 281,603
Claims priority, application France, Jul. 9, 1980, 80 15263
Int. Cl.³ H01G 7/00
U.S. Cl. 361—278 **7 Claims**

7. A capacitor constituted by a layer of dielectric material between two conductive faces, wherein one of the conductive faces, together with the dielectric material have numerous random fissures bringing the dielectric material into contact with the atmosphere in which the capacitor is placed each fissure scoring both the dielectric material and said conductive face with the electrical continuity of the fissured conductive face being maintained.

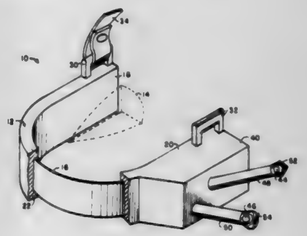


4,438,481
DOUBLE LAYER CAPACITOR
Jeffrey Phillips, Arlington Heights, and Hiroshi Takei, Wheeling, both of Ill., assignors to United Chemi-Con, Inc., Rosemont, Ill.
Filed Sep. 30, 1982, Ser. No. 429,311
Int. Cl.³ B01J 21/02; H01G 9/00
U.S. Cl. 361—433 **4 Claims**



1. An electrical capacitor comprising a housing, a pair of electrodes in said housing, one of said electrodes being composed of a mixture of carbon particles and an electrolyte and the other electrode being composed of a mixture of lead metal and the same electrolyte, and an ionically conductive separator means between and in contact with said pair of electrodes, electronically separating said electrodes from each other, wherein the electrolyte comprises a solution of soluble sulfate salts of concentration in the range from 0.5 to 5 molar at an acid pH preferably not greater than 2.

4,438,482
ILLUMINATING DEVICE
Thomas B. Leon, 4028 Norton Ave., Oakland, Calif. 94602, and Michael D. Arpin, 6427 Thornhill Dr., Oakland, Calif. 94611
Filed May 31, 1983, Ser. No. 498,692
Int. Cl.³ F21L 15/08
U.S. Cl. 362—103 **3 Claims**



1. A shoe mounted lighting device comprising:
a generally U-shaped member adapted to engage a shoe proximate the heel thereof,

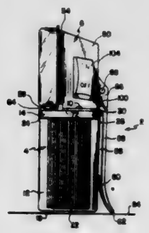
at least one battery,
means defining a container connected to said U-shaped member, said container adapted to house at least one battery,
means defining a first receptacle connected to said U-shaped member proximate the side of said U-shaped member, the axis of rotation of said receptacle projecting outwardly to the side of said shoe when said U-shaped member is engaged thereon,
an incandescent light source,
a rigid extension member having longitudinal axis of rotation, a first end and a second end comprising
a plug member attached proximate said first end of said extension member, said plug adapted to engage and be received by said first receptacle with said longitudinal axis of rotation being coincident with the axis of rotation of said receptacle,
a second receptacle attached proximate said second end of said extension member and adapted to receive and engage said incandescent light source, and
means for electrically connecting said incandescent light source to said container and said battery.

4,438,483

UTILITY HANDLAMP AND CHARGING COMPONENT MEANS THEREFOR

John E. Gulliksen, Shrewsbury; Roy A. Guimond, Holden; Charles F. Daly, Boylston, and William H. Hamilton, Lincoln, all of Mass., assignors to Koehler Manufacturing Co., Marlborough, Mass.

Filed Mar. 31, 1982, Ser. No. 363,660
Int. Cl.³ F21L 7/00
U.S. Cl. 362—183 **10 Claims**



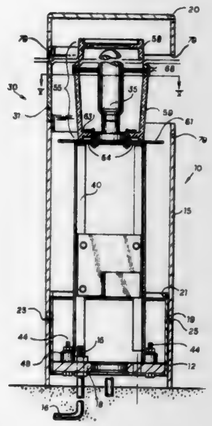
1. A utility hand lamp construction including a battery jar formed with a front side, a rear side and barrel shaped end portions joining the front and rear sides, a portion of the rear side lying between the barrel shaped portions being vertically recessed, battery cell members received in the battery jar and being electrically connected to one another internally of the battery jar to provide negative and positive battery terminals, a battery jar cover permanently secured to the top of the battery jar having positive and negative battery terminals extending therethrough, an enclosure body detachably fastened at the upper side of the battery jar cover, resilient clip means integrally formed with the enclosure body and extending downwardly in spaced relation to the said vertically recessed portion of the rear side of the battery jar for resiliently securing the hand lamp to a supporting member in suspended relationship therewith and to force a flexible supporting member into an undulating configuration to increase frictional engagement, the upper side of the battery jar cover being formed with a continuous retaining wall lying in spaced relation to the edge of the battery jar cover, the enclosure body being formed at an under side thereof with continuous mating edge means which is fitted around the said retaining wall, light source means received in the enclosure body and electrically connected through a switch to the negative and positive battery terminals, said retaining wall and mating edge means of the enclosure body cooperating to locate the resilient clip means in a desired spaced relationship to the vertically recessed portion of the battery jar and to resist displacement of the enclosure body on the battery jar cover and to inhibit entry of foreign material into the interior of the enclosure body.

4,438,484

LIGHTING BOLLARD FOR USE IN AN URBAN ENVIRONMENT

Joseph Winden, Grand Rapids, Mich., assignor to Urban Systems Streetscape, Inc., Grand Rapids, Mich.

Filed Sep. 20, 1982, Ser. No. 420,009
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 **31 Claims**



1. A vandal resistant, low elevation lighting bollard for providing indirect lighting in an urban environment comprising:
a slipfitter steel base adapted for anchoring in an area requiring illumination, said slipfitter steel base comprising a steel base plate with means for anchoring connected thereto and an upstanding steel support flange welded thereto;
a welded one-piece steel housing, said housing being received on said slipfitter base, said upstanding support flange having exterior dimensions smaller than the interior dimensions of said housing whereby said support flange is slidably received in said housing;
means for fastening said housing to said slipfitter base;
a one-piece window disposed below eye level in said housing, said window extending flush with a side of said housing and said window being formed from a tough impact resistant polycarbonate material.

4,438,485

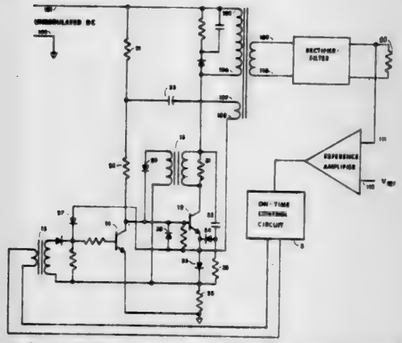
EFFICIENCY SWITCHING-MODE POWER SUPPLY

William C. Voigt, 1970 Harrison St., San Francisco, Calif. 94103

Filed Dec. 21, 1981, Ser. No. 332,449
Int. Cl.³ H02M 3/335
U.S. Cl. 363—21 **10 Claims**

1. A switching mode, regulated power supply of the self-oscillating type wherein energy stored in the primary inductance of a transformer is delivered to the load during the flyback period of a cycle, for converting power from a direct-current source, which may be unregulated, into regulated direct current, at stabilized, selected voltage levels, comprising:
a first transistor;
a first transformer having a primary winding and at least one secondary winding, the first end of the primary winding being connected to the direct current source;
a first resistor the first end of which in connected to the

emitter of the first transistor, the second end of which is connected to the direct current source return;
a first capacitor the first end of which is connected to the second end of the first transformer's primary winding;
a first diode the first terminal of which is connected to the second terminal of the capacitor, the second terminal of which is connected to the junction of the emitter of the first transistor and the first end of the first resistor such that current flow through the capacitor will flow through the diode during the flyback period;
a second resistor the first end of which is connected to the junction of the first capacitor and the first diode, the second end of which is connected to the first end of the first resistor;
first control means for controlling the turn-off of the first transistor in response to a command signal;



means for initiating current flow in the base of the first transistor at the beginning of each cycle and for maintaining said current flow until terminated by the first control means in response to a command;
means for rectifying the voltages produced during flyback of the primary of the first transformer;
means for sensing the rectified voltages and for generating an error signal which is proportional to the difference in the rectified secondary voltages and a stable reference voltage;
means for generating a command signal in response to the error signal such that the first control means terminates base current flow in the first transistor at the correct time to control the primary current build-up in the primary of the first transformer so that the energy delivered to the secondary with each pulse is similarly controlled, thereby regulating the output voltage.

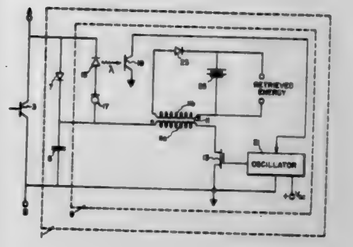
4,438,486

LOW LOSS SNUBBER FOR POWER CONVERTERS

Angelo Ferraro, Stillwater, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,372
Int. Cl.³ H02H 7/12; H02M 7/537
U.S. Cl. 363—56 **11 Claims**

1. A low loss snubber for providing stress relief to a first controllable semiconductor switch comprising:
a series combination of a diode and a capacitor connected across said first switch, said diode poled to conduct current to charge said capacitor when said first switch opens; and
an energy retrieval converter for removing energy from said capacitor when said first switch is closed including
a second controllable semiconductor switch;
means responsive to the conductive state of said first switch and coupled to said second switch for repeatedly opening and closing said second switch when said first switch is in the closed position;
inductor means coupled in series with said second switch and said capacitor, said inductor means receiving energy from said capacitor at a rate dependent upon the repeated opening and closing of said second switch; and



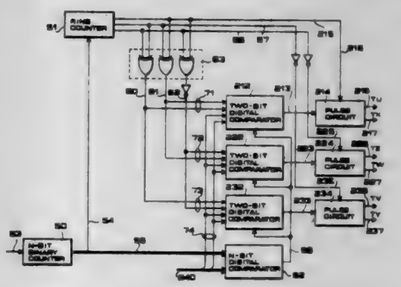
means coupled to said inductor means for receiving energy from said inductor means and transferring said energy to an external load.

4,438,487

DIGITAL PHASE-SHIFTING CIRCUIT

Jyoji Kawai, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 389,066
Claims priority, application Japan, Aug. 19, 1981, 56-169876
Int. Cl.³ H02M 7/155
U.S. Cl. 363—129 **7 Claims**



1. A digital phase-shifting circuit for igniting sequentially plural thyristors connected across a polyphase power supply, comprising:
(a) a first binary N bit counter triggered by clock signals with frequency of $2^N \times 6$ times that of said power supply,
(b) a second counter composed of a divide-by-six ring counter triggered by a most significant bit signal of said first counter,
(c) an N bit-first digital comparator for comparing a binary output signal consisting of N bits with less significant N bits of a phase reference signal consisting of N+2 bits and generating an output signal in the case where said binary output signal consisting of N bits is larger than said less significant N bits of said phase reference signal,
(d) an exclusive OR circuit generating three types of phase signals having a binary 2 bit phase difference of every 60° from one another and effecting a repeating operation of 180° period by utilizing an output signal consisting of 3 bits derived from said second counter as the input,
(e) a second digital comparator having three types of 2 bit constructions comparing phases with each other by utilizing more significant 2 bits selected from three types of binary output signals consisting of 2 bits generated from said exclusive OR circuit and said phase reference signal consisting of N+2 bits as the input signal, and
(f) three same type pulse circuits functioning to correspond

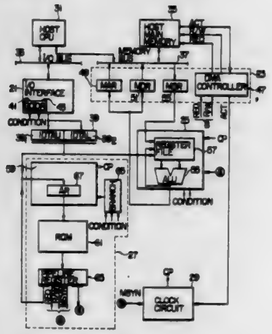
each output signal from said three types of second digital comparators having a different phase of every 60° from each other to each output signal from said second counter consisting of 3 bits by dividing separately said output signals with every 1 bit at the time when an output signal from said first digital comparator is applied to said second digital comparator as the input and generating two types of output pulse signals from binary signals consisting of the respective bits of said second counter, respectively.

4,438,488

DATA PROCESSING SYSTEM WITH A SLAVE COMPUTER USING DATA REGISTERS AS THE SOLE OPERAND STORE

Shigeki Shibayama, and Kazuhide Iwata, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 18, 1980, Ser. No. 160,490
Claims priority, application Japan, Jun. 26, 1979, 54/79662
Int. Cl.³ G06F *9/38, 15/332*
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system including a host central processing unit and a host main memory, a slave computer connected to said host central processing unit and said host main memory said slave computer comprising:

(a) a set of data registers providing the sole operand storage capability of said slave computer;

(b) arithmetic logic operating means, coupled to said data registers and having an operation cycle time shorter than the memory cycle time of said host main memory, for performing computations involving the operands in said data registers and for computing addresses for a said host main memory;

(c) DMA interface means connected to said host main memory, to said data registers, and to said arithmetic logic operating means for transferring data from said host main memory directly to said arithmetic logic operating means through said data registers and for directly loading the results of computations by said arithmetic logic operating means into said host main memory;

(d) microprogram control means connected to said arithmetic logic operating means and to said DMA interface means for controlling the operation of said microprogram control means and said DMA interface means;

(e) input/output interface means connected between said central processing unit and said microprogram control means to transfer command information from said host central processing unit to said microprogram control means; and

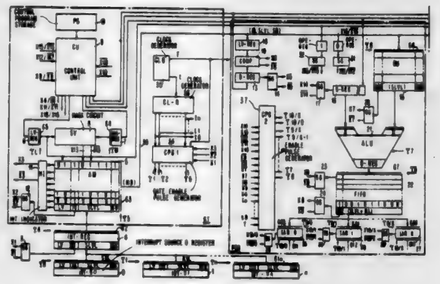
(f) clock circuit means connected to said arithmetic logic operating means and to said microprogram control means for generating slave computer system clocks which operate independently of any clock signals in said host central processing unit or in said host main memory.

4,438,489

INTERRUPT PRE-PROCESSOR WITH DYNAMIC ALLOCATION OF PRIORITY LEVELS TO REQUESTS QUEUED IN AN ASSOCIATIVE CAM

Hans J. Heinrich, Kirchheim, and Dieter Schütt, Munich, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,606
Claims priority, application European Pat. Off., Sep. 27, 1980, 80105870.2
Int. Cl.³ G06F *9/00, 9/46*
U.S. Cl. 364—200 **6 Claims**



1. A priority level controlled interrupt handler unit for pre-processing interrupt requests from plural interrupt sources having different assigned priorities, said unit including plural processing elements (PE) having means for comparing an interrupt priority level preallocated to the unit with an interrupt level of an incoming interrupt request, means for buffering incoming interrupt requests when a comparison match occurs, means for generating and buffering real addresses associated with incoming requests, each address designating a starting address of a routine for servicing the respective incoming request, and at least one instruction address register means in which real addresses are staged for initiating servicing routines, wherein the improvement comprises,

common control means (6 to 10; FIG. 2) for initializing said unit by assigning interrupt levels (LV) to said processing elements and for establishing level masking conditions (MA), and for producing control signals (e.g. X4/X4, X11/X11, X16/X16) from which other control signals (e.g. X5/X5, X9/X9, X10/X10, X12/X12, X15/X15) are generated individually in the processing elements,

associative storage means (5) in said common control means and a main bus (38) connecting the output of the associative storage means to all PE's,

means for storing interrupt requests in the associative storage means, each request including an interrupt level, and for selecting requests for transfer to a PE by means of an associative search operation relative to an associated interrupt level (e.g. LV=i) designated by the common control means,

control registers (RPE, OPE) in each processing element and means connecting the control registers to be set by the common control to show the status of each PE as neutral, standard, reserve, or old, the old status identifying a PE having an overflow in its means for storing interrupt requests, means for indicating when a standard processing element associated with a specific interrupt level (i) overflows, or is otherwise blocked, and means in the common control for selecting and assigning a neutral PE as a reserve processing element for that level, and

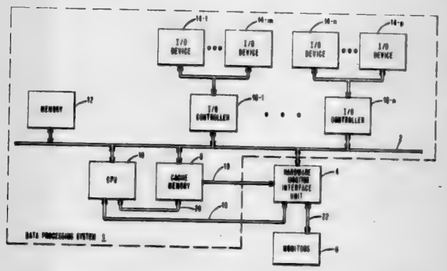
blocking means (X4, X16) in the common control for blocking servicing of interrupt requests which are queued in PE's having assigned level priorities lower than requests currently being serviced or, if a reserve PE has been allocated to a current interrupt level, for blocking the processing of the interrupt requests in that reserve PE until all interrupt requests of the old PE assigned to said current level have been processed.

4,438,490

CLOCK CONTROL OF A CENTRAL PROCESSING UNIT FROM A MONITOR INTERFACE UNIT

Richard P. Wilder, Jr., North Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 1, 1981, Ser. No. 307,564
Int. Cl.³ G06F *11/30, 1/04*
U.S. Cl. 364—200 **6 Claims**



1. A data processing system includes a plurality of subsystems, a main memory, a central processor unit (CPU), a cache and a plurality of I/O controllers, all coupled in common to a system bus, said CPU also being coupled to said cache by a separate bus,

a monitor interface unit is coupled to said system bus, said cache by a cache bus and said CPU by a CPU bus for monitoring information transferred over said system bus, information transferred between said CPU and said cache and internal CPU information, a monitor is coupled to said monitor interface unit for receiving hit signals indicative of predetermined information for generating data processing system performance data, apparatus in said monitor interface unit generates a stop clock signal having a fixed predetermined cycle time, said stop clock signal being applied to said CPU via said CPU bus, said CPU having clock control means responsive to states of said stop clock signal for starting and stopping a CPU clock signal resulting in a CPU clock signal cycling at said fixed predetermined cycle time which causes the starting or stopping of the CPU operation, said apparatus comprising:

a mode switch for generating a clock stop enable signal;

first one-shot multivibrator means responsive to said CPU clock signal, said clock stop enable signal and a potentiometer resistance value setting for generating a first and a second stretched pulse signal wherein said first and said second stretched pulse signals are complementary signals;

first latch means responsive to said CPU clock signal and said first stretched pulse signal for setting an output of said first latch means to a first state;

second one-shot multivibrator means responsive to said second stretched pulse signal for generating a delayed stretched pulse signal;

second latch means responsive to said clock stop enable signal, said delayed stretched pulse signal and said second stretched pulse signal for generating a stop reset signal, said first latch means being responsive to said stop reset signal for setting said output to a second state;

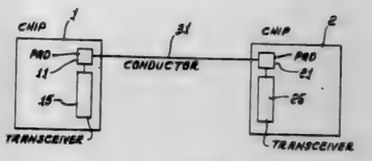
third latch means enabled by a reset switch signal and responsive to the generation of a predetermined hit signal for setting an output of said third latch means to a first state; and NOR gate means responsive to said outputs of said first and third latch means for generating said stop clock signal to said CPU.

4,438,491

COMPUTER HAVING PLURAL IC CHIPS WITH EACH CHIP INCLUDING A TRANSCEIVER

James N. Constant, 1603 Danbury Dr., Claremont, Calif. 91711

Filed Oct. 14, 1980, Ser. No. 196,201
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **30 Claims**



1. In a computer with monolithic IC chips interconnected for data transfers, the improvement to reduce the number of interconnections between chips including:

at least some IC chips with a first chip area devoted to one or more logic circuits, a second chip area devoted to interfacing means, and a third chip area devoted to at least one of a transmitter and receiver connected between said logic circuits and said interfacing means,

said interfacing means comprising one or more pads each connected to a conductor for carrying analog signals for interconnecting said IC chips,

said transmitter for receiving first signals from said logic circuits and providing second signals to said interfacing means, and

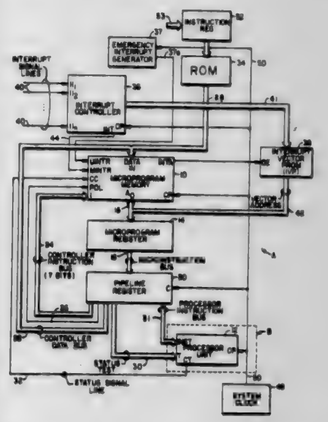
said receiver for receiving third signals from said interfacing means and providing fourth signals to said logic circuits, said transmitter and receiver including means for handling analog signals.

4,438,492

INTERRUPTABLE MICROPROGRAM CONTROLLER FOR MICROCOMPUTER SYSTEMS

William J. Harmon, Jr., San Jose; John R. Mick, Cupertino, and Vernon Coleman, Oakland, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 1, 1980, Ser. No. 174,323
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **10 Claims**



1. A microprogram controller having output means for generating through said output means microinstruction address signals used to access a program memory element containing a plurality of microinstructions, there being a first register means connected to said memory element for receiv-

ing and temporarily holding microinstructions accessed from said memory element by said microinstruction address signals and bus means for communicating a portion of said accessed microinstruction from said first register means to said microprogram controller, said microprogram controller comprising:

input means connected to said bus means for receiving instruction words and data words;

decode means connected to said input means for receiving said instruction words to generate therefrom a plurality of control signals;

first address generating means, having second register means and incrementing means operably interconnected to provide sequentially incremented address signals;

storage means responsive to said control signals for selectively storing address signals; and

first multiplex means, connected to said input means, said first address generating means and said storage means, for selectively coupling said input means, said first address generating means, and said storage means to said output means in response to said control signals, said first address generating means and said storage means further connected to a first multiplex output terminal means for receiving signals therefrom in response to said control signals;

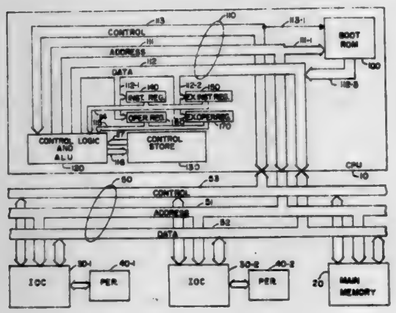
whereby said microinstruction address signals are generated.

4,438,493

MULTIWORK MEMORY DATA STORAGE AND ADDRESSING TECHNIQUE AND APPARATUS

David E. Cushing, Chelmsford, and Philip E. Stanley, Westboro, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jul. 6, 1981, Ser. No. 280,720
Int. Cl.[3] G06F *13/00*
U.S. Cl. 364—200 8 Claims



7. A memory for retrieving N multiple consecutive logical words of data in parallel, said memory comprising:

A. a plurality of physical words of data, each of said plurality of physical words of data being of a length sufficient to contain N of said logical words of data;

B. addressing means for addressing a specified one of said plurality of physical words of data by using an address of a first of said N multiple consecutive logical words of data to be read from said memory, said memory having stored therein N multiple copies of each of said logical words of data, except for a first and last N—1 logical words of data; and

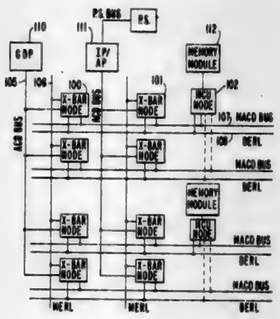
C. data output means for receiving said N multiple consecutive logical words of data from said specified one of said plurality of physical words of data read from said memory in the time required to read one of said physical words of data and wherein each of said physical words of data contains N multiple consecutive logical words of data having N consecutive logical addresses and wherein said first of said N multiple consecutive logical words of data has a logical address corresponding to a physical address of said physical word of data in which it is stored and whereby said reading of said N multiple consecutive logical words of data does not require any address incrementing or decrementing to read any group of said N multiple consecutive logical words of data and wherein a first through N—1 logical words of data, within any said group of said N multiple consecutive logical words of data as read from said memory, is located in the same relative position within said physical words of data without requiring any alignment of said logical words of data within said data output means.

4,438,494

APPARATUS OF FAULT-HANDLING IN A MULTIPROCESSING SYSTEM

David L. Budde, Portland; David G. Carson, Hillsboro, both of Oreg.; Anthony L. Cornish, Essex, England; Brad W. Hosler; David B. Johnson, both of Portland, Oreg., and Craig B. Peterson, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 25, 1981, Ser. No. 296,025
Int. Cl.[3] G06F *11/00*
U.S. Cl. 364—200 10 Claims



1. In a data processing system in which a switching matrix provides electrical interconnections between horizontal MACD buses and vertical ACD buses connected in said matrix by means of nodes, a fault-handling mechanism comprising:

an error-reporting matrix including horizontal Bus Error Report Lines (BERLs) and vertical Module Error Report Lines (MERLs),

said BERLs being associated with said MACD buses such that all nodes sharing an MACD bus are connected with a BERL,

said MERLs being associated with said ACD buses such that all nodes sharing an ACD bus are connected with a MERL; and,

error-reporting means connected at the intersection of one of said MERLs and one of said BERLs,

said error-reporting means including receiving means connected to said MERL for receiving first error messages, said first error messages being transmitted over said one MERL,

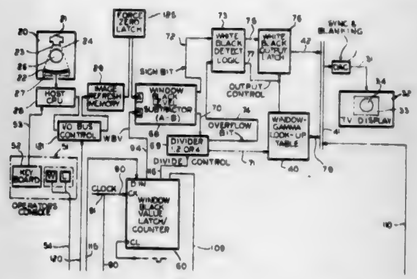
said error-reporting means further including propagating means connected to said receiving means and said one BERL, responsive to said receiving means for propagating second error messages over said one BERL to other error-reporting means located at said other nodes in said matrix.

4,438,495

TOMOGRAPHY WINDOW-LEVEL GAMMA FUNCTIONS

Arthur K. Collins, Waukesha; Edward W. Andrews, Brookfield, and Nallaswamy Srinivasan, Waukesha, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,008
Int. Cl.[3] G06F *15/42*; H04N *5/14*
U.S. Cl. 364—414 4 Claims



1. Computed tomography apparatus comprising refresh memory means for storing an array of digital CT numbers having values in a predetermined range wherein the values correspond to the intensities of the pixels that compose an x-ray image, means for converting digital values related to the CT number values to corresponding analog video signals, television means responsive to said video signals by displaying an optical version of said x-ray image, means for selecting the level and width of a window which width is defined between an upper limit CT number and a lower limit CT number that is designated as the window black value, and means for converting said CT number values within the window to gamma corrected values before they are converted to video signals, said last-named means including:

gamma lookup table storing memory means whose addresses contain a lookup table of digital gamma corrected data values for the respective CT numbers within said range, said gamma lookup table memory means having address input means and a data output port,

a window-gamma lookup table memory means having a port for data input coupled to the output port of said gamma lookup table memory means and having address input means,

address producing means responsive to occurrence of a vertical blanking pulse for said television means by producing a sequence of addresses to said window-gamma lookup table memory means,

variable rate address generator means operative concurrently with said address producing means to provide a sequence of addresses to said gamma lookup table memory means, said last-named addresses being provided at such rate that the last gamma lookup table address is addressed at the same time that the last window-gamma lookup table address corresponding to said upper window limit is addressed, said gamma lookup table memory means responding to an address by output of gamma correction data at the address to the address in said window-gamma lookup table memory means that is currently being addressed by said address producing means, and

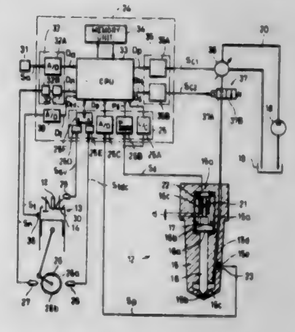
subtractor means operative after termination of a vertical blanking interval to subtract said window black value from successive CT number values that are stored in said refresh memory, the CT number difference values resulting from subtraction of CT number values within the window constituting addresses to said memory storing said window-gamma lookup table, said memory responding to successive addresses by output of the gamma corrected digital values corresponding to the CT number difference values at video rate to said means for converting said digital values to analog video signals to which said television means responds by displaying the image.

4,438,496

ELECTRONIC FUEL INJECTION FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Tomonori Ohie, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan

Filed Jun. 3, 1981, Ser. No. 269,878
Claims priority, application Japan, Jun. 11, 1980, 55-78691
Int. Cl.[3] F02M *51/06*; F02D *5/02*
U.S. Cl. 364—431.05 15 Claims



1. A method for controlling the injection of fuel being injected into at least one cylinder of an internal combustion engine through a fuel injection valve having a nozzle holder and a nozzle needle arranged within said nozzle holder, said method comprising the steps of: (1) detecting the lift amount of said nozzle needle of said fuel injection valve by means of a nozzle needle lift sensor arranged within said nozzle holder; (2) detecting fuel pressure present in an injecting fuel passage in said nozzle holder by means of a pressure sensor; (3) arithmetically calculating an actual value of fuel injection quantity from the detected values of nozzle needle lift and fuel pressure in said injecting fuel passage by means of electronic computer means; (4) detecting the values of factors indicative of the operating condition of said engine; (5) arithmetically calculating a required value of fuel injection quantity from the detected values of said factors by means of electronic computer means; (6) arithmetically calculating the difference between said calculated required value of fuel injection quantity and said calculated actual value of fuel injection quantity; and (7) controlling the quantity of fuel to be injected into said cylinder during the next fuel injection with reference to said calculated difference.

4,438,497

ADAPTIVE STRATEGY TO CONTROL INTERNAL COMBUSTION ENGINE

Frederick G. Willis, Ann Arbor; Richard R. Radtke, Plymouth; Joseph Ellison, Detroit; Steven R. Foso, Westland, and Glenn A. Kern, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 20, 1981, Ser. No. 285,221
Int. Cl.[3] G01M *15/00*; G05B *13/02*; F02B *5/02*
U.S. Cl. 364—431.05 26 Claims

1. A method for controlling the performance of a spark ignited automobile internal combustion engine using exhaust gas recirculation, the engine being responsive to the magnitude of engine control parameters, said method including the steps of:

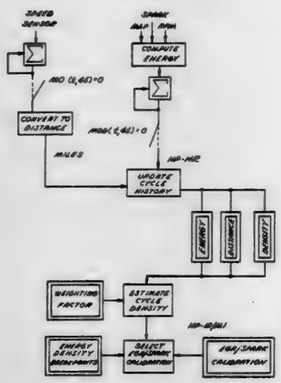
establishing a duration of time to determine the frequency of updating the engine control parameters;

determining the energy density output of the engine over the

first duration of time, wherein energy density output is the energy output divided by the distance traveled during the first duration of time;

maintaining a history of distance traveled and energy output during a plurality of successive consecutive durations of time;

estimating the magnitude of energy density output of the engine during the next duration of time;



establishing a lookup table for EGR and spark advance as functions of engine torque, engine speed, and engine energy density;

selecting a value from the table as a function of the estimated energy density for use during the next duration of time; and

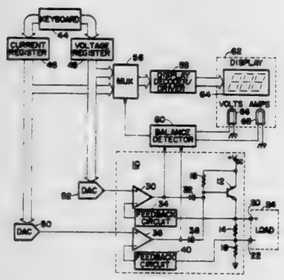
controlling the engine EGR and engine spark advance in accordance with the value selected from the table as a function of the estimated energy density thereby improving engine operation for higher efficiency.

4,438,498

POWER SUPPLY OUTPUT MONITORING METHOD AND APPARATUS

Stephen M. Sekel, Beaverton; Rodney G. Strange, Aloha, and Robert F. Verrinder, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 13, 1981, Ser. No. 282,476
Int. Cl.³ G05F *1/02*
U.S. Cl. 364—483 **10 Claims**



2. In a power supply having a pair of control circuits for providing voltage-supplying and current-supplying operating modes, a power supply monitoring apparatus, comprising:

means for providing digital numbers representative of power supply voltage and current limit values;

means for producing in one of said pair of control circuits one of the voltage and current limit values in accordance with said digital numbers, wherein the control circuit producing the limit value is in a balanced state while the other control circuit is in an unbalanced state;

means for detecting which one of said pair of control circuits is in a balanced state; and

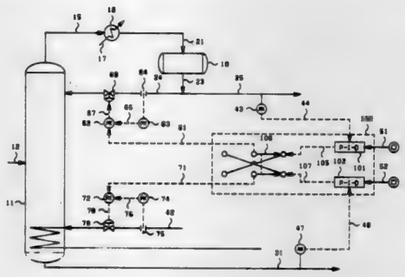
means for providing a digital number to a display device in accordance with the detected balanced control circuit, wherein the displayed digital number is proportional to the particular limit value being produced.

4,438,499

FRACTIONAL DISTILLATION PROCESS CONTROL

Bruce A. Jensen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 184,845, Sep. 8, 1980, Pat. No. 4,316,255. This application Oct. 1, 1981, Ser. No. 307,453
Int. Cl.³ G06F *15/46*; G05B *11/42*; B01D *3/42*
U.S. Cl. 364—501 **6 Claims**



1. A method for controlling a fractional distillation process comprising the steps of:

establishing a first signal representative of the concentration of at least one component in a first product stream withdrawn from said fractional distillation process;

establising a second signal representative of the desired concentration of said at least one component in said first product stream;

applying said first signal and said second signal to a first controller means to thereby establish a third signal which is responsive to the difference between said first signal and said second signal;

establishing a fourth signal representative of the concentration of at least one component in a second product stream withdrawn from said fractional distillation process;

establishing a fifth signal representative of the desired concentration of said at least one component in said second product stream;

supplying said fourth signal and said fifth signal to a second controller means to thereby establish a sixth signal responsive to the difference between said fourth signal and said fifth signal;

establishing primary first tuning constants for said first controller means for use when said first controller means controlling a primary process variable;

establishing secondary first tuning constants for said first controller means for use when said first controller means in controlling a secondary process variable;

establishing primary second tuning constants for said second controller means for use when said second controller means is controlling said primary process variable;

establishing secondary second tuning constants for said second controller means for use when said second controller means is controlling said secondary process variable;

designating said first product stream as a primary product stream;

supplying said primary first tuning constants to said first controller means;

storing said secondary first tuning constants in memory;

supplying said secondary second tuning constants to said second controller means;

storing said primary second tuning constants in memory;

manipulating said primary process variable in response to said third signal; and

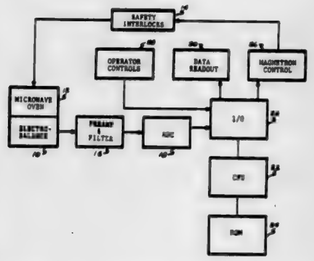
manipulating said secondary process variable in response to said sixth signal.

4,438,500

RAPID VOLATILITY ANALYZER

Michael J. Collins, Matthews; Bernard W. Cruse, Jr., Indian Trail, and Ronald J. Goetchius, Charlotte, all of N.C., assignors to CEM Corporation, Indian Trail, N.C.

Continuation-in-part of Ser. No. 603,354, Aug. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 381,087, Jul. 20, 1973, Pat. No. 3,909,598. This application Apr. 13, 1979, Ser. No. 29,883
Int. Cl.³ G06F *15/46*; G01N *5/04*
U.S. Cl. 364—567 **30 Claims**



1. An apparatus for measuring the volatile content of substances comprising electronic weighing means, microwave heating means including an enclosed heating chamber and a microwave energy source transmittably connected therewith, data acquisition and apparatus control means and information readout means, said electronic weighing means being at least partially positioned within said microwave heating means, said apparatus control means being electrically connected to and preset to sequentially actuate said weighing means and microwave heating means, said data acquisition and apparatus control means being further set to periodically sense said electronic weighing means a plurality of times and to provide an electrical output signal representative of said weight sensing, said data acquisition and apparatus control means further having means for projecting the anticipated weight change during said microwave heating to produce a further electrical output signal proportional to the anticipated weight change, said electrical output signals being electrically connected to said information readout means.

4,438,501

ANTILATCHUP PSEUDORANDOM BINARY SEQUENCE GENERATOR

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Feb. 16, 1982, Ser. No. 348,844
Int. Cl.³ H03K *3/84*; H03B *29/00*
U.S. Cl. 364—717 **11 Claims**

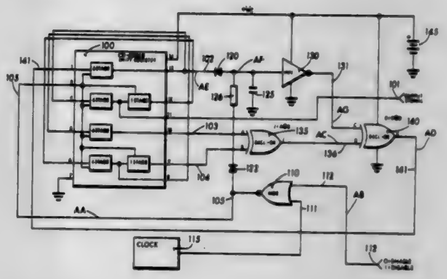
1. Antilatchup pseudorandom binary sequence generator means providing an irregular continuum of binary states whereby said generator includes at least:

a. source of effective clock signal;

b. binary shift register means including a clock input thereto coupled with said source, having at least one data signal input and plural effectively paralleled outputs;

c. combinatorial logic gate means having at least two inputs coupled to said register plural outputs to combine the said register outputs into an effectively irregular binary feedback signal;

d. selectable inverter means, effectively including a control input and a signal input coupled with said gate means to effectively receive said binary feedback signal, providing an output therefrom which is effectively coupled to said register data signal input;



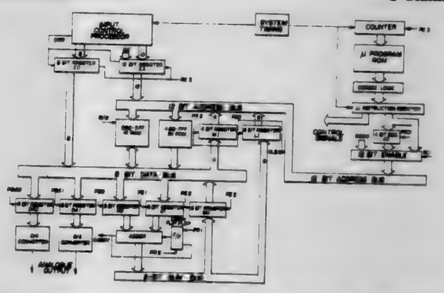
e. state sequence detector means, having an input coupled to said register plural outputs, effective for at least producing a first level signal at an output therefrom for a shift register sequence which comprises a continuum of properly irregular binary states, and a second level signal at said output therefrom for a shift register sequence which comprises a continuum of substantially constant disallowed binary states, said level signals coupled to said control input of said selectable inverter means, whereby said second level signal in conjunction with the said selectable inverter means produces relative inversion of the binary feedback signal.

4,438,502

OUTPUT PROCESSING SYSTEM FOR A DIGITAL ELECTRONIC MUSICAL INSTRUMENT

Hugh M. Fox, 61 Eastville Ter., Harrogate, and Peter H. Sutcliffe, 71 Warwick Rd., New Barnet, both of England

Continuation of Ser. No. 199,902, filed as PCT GB79/00208, Dec. 10, 1979, published as WO 80/01215, Jun. 12, 1980, § 102(e) dated Jul. 21, 1980, abandoned. This application Aug. 20, 1982, Ser. No. 409,801
Claims priority application United Kingdom, Dec. 11, 1978, 47901; Aug. 7, 1979, 7927450
Int. Cl.³ G06F *1/02*; G10H *1/06*
U.S. Cl. 364—718 **2 Claims**

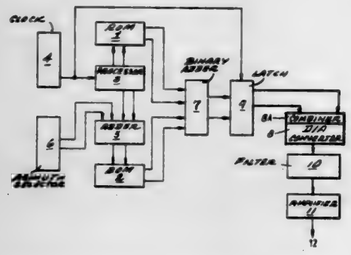


1. A sound producing system for a polyphonic electronic musical instrument, the system being responsive to digital input signals relating at any given time to frequency, amplitude and waveform selection for each of the notes sounding concurrently at that time and comprising:

an input signal digital storage circuit for storing said digital

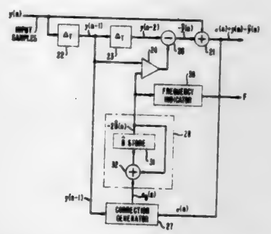
input signals and means for loading said digital input signals into said storage circuit;
a wave shape digital storage circuit containing tabular digital information representative of each of a plurality of wave shapes;
a data processing circuit comprising data register and adder means;
means interconnecting the digital storage circuits and the data processing circuit for the transfer of information therebetween;
a microcode instruction register;
storage means storing at least one fixed sequence of microinstructions;
microinstruction address sequencing means operable in each one of a consecutive series of sample periods of equal duration to cause in each sample period the sequential loading into said microcode instruction register of the entirety of one fixed sequence of microinstructions without dependence on the input signals present during said sample period;
means connecting said microcode instruction register to said storage circuits and to said data processing circuit whereby signals from said microcode instruction register control the transfer of information between said circuits and the manipulation of information within said ciruits so as to calculate the current value of all notes sounding within said sample period;
a converter circuit comprising a register and a digital to analogue converter; and
means applying said current value to said converter circuit so as to produce an analogue signal representative of the required sound during said sample period.

4,438,503
WAVEFORM SYNTHESIZERS
Robert A. White, Shepperton, and Ralph W. Yell, Hampton, both of England, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed May 13, 1981, Ser. No. 263,202
Claims priority, application United Kingdom, May 13, 1980, 8015877
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—721 **14 Claims**



1. A waveform synthesizer for calibrating VOR equipment, comprising:
a memory having first and second separately addressable areas, the first area having digital data stored therein representing a frequency modulated component of a standard VOR waveform and the second area having digital data stored therein representing an added sine wave component of a standard VOR waveform;
azimuth selector means, adapted to be manipulated by an operator, for selecting an azimuth to be simulated by said synthesizer;
a cyclic memory addressor, coupled to said azimuth selector means and to said memory, for (a) addressing the first and second memory areas, the address of the second area being offset by an amount related to the azimuth selected via said azimuth selector means and (b) providing digital data read from said first and second memory areas defining a waveform to be synthesized;
converter means, coupled to said cyclic memory addressor, for converting said digital data read from said first and second memory areas into an analog signal of a form suitable for coupling to said VOR equipment.

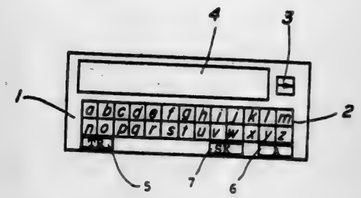
4,438,504
ADAPTIVE TECHNIQUES FOR AUTOMATIC FREQUENCY DETERMINATION AND MEASUREMENT
David L. Favin, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jun. 15, 1981, Ser. No. 273,612
Int. Cl.³ G06F *15/34*
U.S. Cl. 364—724 **3 Claims**



1. A method of tuning an adaptive variable to the frequency of a signal component in an input signal including the steps of
a. forming a predicted value of the input signal using derived signal quantities of past input signal values wherein at least one derived signal quantity is weighted in accordance with an adaptive variable,
b. comparing the present value of the input signal to the predicted value to generate an error signal,
c. using at least one of the derived signal quantities and said error signal to produce a correlation between the predicted value and the signal component of said input signal, and tuning said adaptive variable by changing said adaptive variable incrementally based on said correlation in a manner to have a prescribed relationship to the frequency of the signal component in said input signal and to reduce the magnitude of said error signal, and
d. checking the magnitude of the input signal and allowing the preceding steps to be repeated when the magnitude of the input signal exceeds a prescribed threshold.

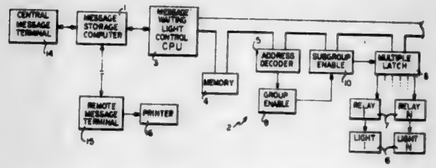
4,438,505
ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER WITH AUTO-SEARCH KEY FOR DERIVING A FULL-LENGTH WORD AND ITS ASSOCIATED TRANSLATION WORD BASED ON A PARTIAL WORD ENTERED
Shigenobu Yanagiuchi, Tenri, and Mituhiro Saizi, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 8, 1980, Ser. No. 119,662
Claims priority, application Japan, Feb. 9, 1979, 54-14813
Int. Cl.³ G06F *15/38*
U.S. Cl. 364—900 **11 Claims**

1. An electronic word conversion device wherein a first word or words represented in a first language are entered to obtain a second word or words represented in a second language equivalent to the first word or words, comprising:
input means operable for entering a partial word in said first language, said partial word containing at least one character;
means for storing a plurality of full-length words in said first language and their associated translated words in said second language;
means for addressing the storing means so as to search the plurality of full-length words and their associated translated words;
means for selecting at least one of said full-length words containing letters corresponding to the letters contained within said partial word;
auto-search means responsive to a single actuation of an auto-search key for selectively driving said means for selecting to repetitively enable said addressing means to select a plurality of full-length words having one or more characters common to the partial word and the translated words corresponding to said full-length word;



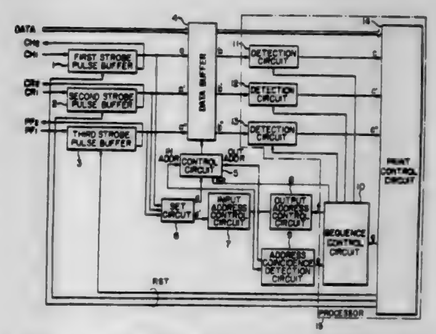
display means, responsive to said means for selecting, for indicating each full-length word and its associated translated word selected by said addressing means; said full-length words and their associated translation words being separated in said storing means from adjacent full length words and their associated translation words by first separation code information, said first separation code information being used by said addressing means to locate the beginning of each full-length word in said storing means; and
auto-search enable flip-flop being set to selectively activate said auto-search means; said device, when said auto-search means is disabled by resetting said flip-flop to place said device in a single scanning mode, displaying only a single full-length word and its associated translation.

4,438,506
MESSAGE WAITING LIGHT CONTROL SYSTEM
Alan R. Strom, Roeland Park, Kans., assignor to H & K Computer Corporation, Kansas City, Mo.
Filed Aug. 4, 1981, Ser. No. 290,375
Int. Cl.³ G06F *15/20*; H04M *1/00*
U.S. Cl. 364—900 **10 Claims**



1. A message waiting light control system for activating and deactivating message waiting lights in response to the storage and deletion of texts of messages in a message storage computer, said system comprising:
(a) a plurality of message waiting lights positioned respectively at a plurality of stations, each light upon being activated indicating the existence of a message for an occupant of the station at which said light is positioned, each light being associated with a unique identification code;
(b) a message waiting light control computer operatively connected to said lights and controlling the activation and deactivation of said lights, said light control computer including memory means;
(c) interface means connecting said light control computer to a message storage computer including message entry means, message display means, and a message memory for the storage of the texts of messages therein; and
(d) said light control computer being programmed to effect:
(1) the activation of a message waiting light in response to the entry of the text of a message into said entry means and the entry and execution by the message computer of a message waiting command including the identification code corresponding to said light; and
(2) the deactivation of said light in response to the entry into said entry means and the execution by said message computer of a message delete command including said identification code corresponding to said light.

4,438,507
INPUT SIGNAL CONTROL DEVICE
Yoshinori Nakajima, Kanagawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 233,947, Feb. 12, 1981, abandoned, which is a continuation of Ser. No. 51,986, Jun. 25, 1979, abandoned. This application Sep. 10, 1981, Ser. No. 300,804
Int. Cl.³ G06F *3/12*
U.S. Cl. 364—900 **8 Claims**



1. An interface device of the type for sequentially applying to a printer information for controlling said printer, said information being transmitted on common data buses and strobe lines from a source device whose data processing speed is faster than that of said printer, said information for controlling said printer consisting of digital data signals transmitted on said common data buses and strobe pulses for identifying the operations to be performed by said printer transmitted on said strobe lines, said interface device comprising:
(a) a storage means in which each address location has a storage location for storing a digital signal therein which is connectable to said common data buses, and a storage location for storing a strobe pulse which is connectable to said strobe lines;
(b) a first control means which is connected to at least one of said strobe lines and which is responsive to a strobe pulse on said at least one strobe line so as to generate a write-timing pulse in response to which said information for controlling said printer is stored and an input-address changing pulse;
(c) an input-address control means for specifying an input address of said storage means into which said information for controlling said printer is to be stored, and for changing an input address specified in response to said input-address changing pulse; and
(d) an output-address control means for specifying an output address of said storage means from which said information

for controlling said printer may be sequentially read out in the order said printer information is stored in said storage means.

4,438,508

MAGNETO-OPTICAL MEMORY ELEMENT

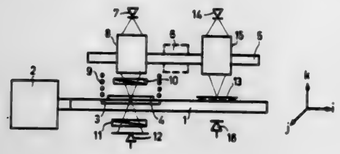
Marilies Urner-Willie, Hamburg, and Peter Hansen, Appen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 132,747, Mar. 24, 1980. This application May 27, 1981, Ser. No. 268,027

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911992

Int. Cl.³ G11C *13/06*

U.S. Cl. 365—122 **8 Claims**



1. A magneto-optical memory element comprising: a non-magnetizable substrate; and

an amorphous layer provided on the substrate, said layer comprising an alloy of a rare-earth metal and a transition metal, said alloy having a uniaxial magnetic anisotropy;

Characterized in that the alloy comprises at least one atomic percent tin.

5. A magneto-optical memory element comprising:

a nonmagnetizable substrate; and

an amorphous layer provided on the substrate, said layer comprising an alloy of a rare-earth metal and a transition metal, said alloy having a uniaxial magnetic anisotropy;

characterized in that the alloy further comprises tin.

4,438,509

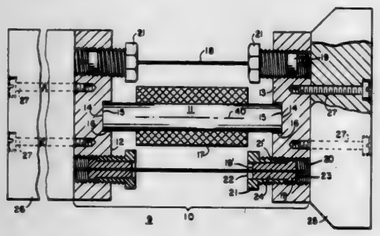
TRANSDUCER WITH TENSIONED-WIRE PRECOMPRESSION

John L. Butler, Marshfield; Thomas R. Egan, South Dartmouth, both of Mass.; Kenneth Rodberg, East Providence, R.I., and Arthur E. Clark, Adelphi, Md., assignors to Raytheon Company, Lexington, Mass.

Filed May 18, 1981, Ser. No. 264,518

Int. Cl.³ H04B *17/00*; H04R *17/00*

U.S. Cl. 367—156 **8 Claims**



1. Apparatus for providing compressive stress to a transducer magnetostrictive rod comprising:

a pair of bars;

said rod having its ends in contact with said pair of bars;

means for providing an electrical signal to said magnetostrictive rod;

a pair of wires attached to and between said bars, each wire being attached to said bars on opposite sides of said rod;

means for providing tension in each of said wires;

said bars providing a compressive force on said rod in response to the tension in said wires; and

means for measuring said tension in each of said wires from the resonant frequency of each wire in response to the frequency of said electrical signal.

4,438,510

DISK PLAYER SYSTEM HAVING A DISK SUCKING FUNCTION

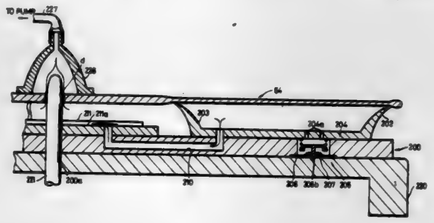
Toyosaku Matsumoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 10, 1981, Ser. No. 301,091

Claims priority, application Japan, Sep. 19, 1980, 55-129183; Sep. 19, 1980, 55-132231[U]; Sep. 19, 1980, 55-132232[U]; Sep. 19, 1980, 55-132233[U]; Sep. 19, 1980, 55-132234[U]; Sep. 19, 1980, 55-132235[U]; Sep. 19, 1980, 55-132236[U]; Oct. 16, 1980, 55-147688[U]; Oct. 16, 1980, 55-147689[U]; Oct. 16, 1980, 55-147690[U]; Oct. 16, 1980, 55-147691[U]; Nov. 19, 1980, 55-165523[U]; Nov. 19, 1980, 55-165524[U]

Int. Cl.³ G11B *17/00, 25/04*

U.S. Cl. 369—271 **23 Claims**



1. A disk player system having a vacuum function comprising:

a turntable;

means for driving said turntable;

a disk vaccuum member located on the turntable of a configuration defining a suction space between said disk vacuum member and a disk when the disk is placed on the turntable;

means provided in said disk vacuum member for defining a suction channel which communicates with said suction space at one end and with the atmosphere about a center spindle of the turntable at the other end;

a check valve provided in said suction channel; and

a vacuum device capable of being detachably connected to said turntable at about said center spindle for reducing pressure in said suction space and thereby causing said disk to be drawn to said disk vacuum member, said vacuum device adapted for disconnection from said turntable when said disk is reproduced.

4,438,511

PACKETIZED ENSEMBLE MODEM

Paul Baran, Menlo Park, Calif., assignor to Telebit Corporation, Cupertino, Calif.

Filed Nov. 10, 1980, Ser. No. 205,744

Int. Cl.³ H04J *11/00, 4/00*

U.S. Cl. 370—19 **10 Claims**

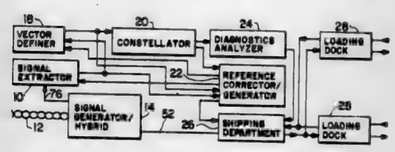
10. In a modem utilized for transmitting source digital information and for receiving destination digital information over a communication medium utilizing a plurality of carriers located within the passband of the communication medium, the improvement comprising:

means for measuring the transmission characteristics of said communication medium constructed from

means for transmitting said source digital information on

selected ones of said carriers at a predetermined amplitude level and for a predetermined period,

means for analyzing signal corruption caused by communication medium impairments to received carriers carrying said destination digital information by comparing received data patterns with known good data patterns, and



means for avoiding use of at least a selected one of said carriers for transmission of said source digital information in the event said analyzing means indicates said one of said carriers is subject to impairments to said communication medium affecting transmission of data.

4,438,512

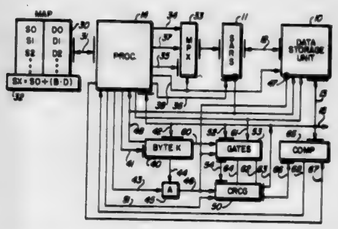
METHOD AND APPARATUS FOR VERIFYING STORAGE APPARATUS ADDRESSING

Michael H. Hartung; Richard E. Rieck, and Gerald E. Tayler, all of Pima County, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,414

Int. Cl.³ G06F *11/00*

U.S. Cl. 371—60 **11 Claims**



1. The machine-implemented method of operating a volatile random access data storage unit including a first plurality of addressable data storage registers;

the steps of:

allocating said first plurality of addressable registers into a second plurality smaller than said first plurality of groups of said addressable registers, each group having a given number of said addressable registers;

addressing each of said groups of addressable registers as a single group and accessing individual ones of said addressable registers in said group in a predetermined sequence including all but a last one of said addressable registers that would be next accessed by any reference to said data storage unit;

initializing the signal state of all said last one addressable registers in a given reference state; and

before accessing said addressable registers in said data storage unit, presetting an address for a group to be accessed for enabling said predetermined sequence such that said last one addressable registers are never normally accessed whereby any access to said one addressable registers indicates one error condition.

4,438,513

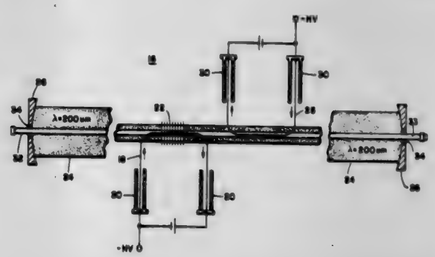
SHORT WAVELENGTH FREE ELECTRON LASER USING LOW ENERGY ELECTRONS

Luis R. Elias, Goleta; John M. J. Madey, and Todd I. Smith, both of Palo Alto, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1981, Ser. No. 228,649

Int. Cl.³ H01S *3/00*

U.S. Cl. 372—2 **4 Claims**



1. A continously tunable apparatus for the production of intense coherent optical radiation comprising:

(a) a laser cavity resonator, said resonator having a longitudinal optical axis and two opposed mirrors aligned at opposite ends of said axis to reflect radiation generated in said resonator;

(b) means for producing a first DC velocity modulated electron beam and directing said first electron beam along said axis of said resonator;

(c) means for establishing a static periodic magnetic field uniformly transverse to and symmetric about a portion of said axis of said cavity resonator and through which said first DC velocity modulated electron beam passes, said first DC velocity modulated electron beam and said static periodic magnetic field interacting to produce a tunable intense continuous electromagnetic pump field oscillating between said mirrors and along said optical axis of said cavity.

4,438,514

SURE-START WAVEGUIDE LASER

Peter P. Chenausky, Avon; Leon A. Newman, South Windsor, and Erroll H. Drinkwater, Portland, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 16, 1982, Ser. No. 349,236

Int. Cl.³ H01S *3/03*

U.S. Cl. 372—64 **4 Claims**



1. In an RF discharge waveguide laser including first and second RF electrodes;

an insulating plate disposed between said first and second electrodes;

a plurality of optical waveguides formed in said plate;

means for resonating optical radiation within said plurality of optical waveguides;

the improvement comprising:

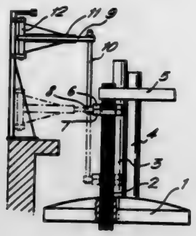
at least one coupling channel formed in said plate, said at least one coupling channel communicating between at least two of said plurality of optical waveguides.

4,438,515

PROTECTION OF GRAPHITE ELECTRODES

Dietger Dunkelmann, Bocholt; Helmut Jaunich, Raesfeld, and Josef Schiffarth, Bocholt-Barlo, all of Fed. Rep. of Germany, assignors to Fosseco Trading A.G., Chur, Switzerland

Filed Jun. 28, 1982, Ser. No. 392,463
Claims priority, application United Kingdom, Jun. 26, 1981, 8119714
Int. Cl.³ H05B 7/06
U.S. Cl. 373—88 9 Claims



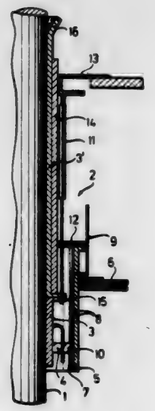
1. A method of treating the surface of a hot graphite electrode to provide a protective coating thereon comprising the steps of:
(a) disposing the electrode along an axis;
(b) advancing at least one generally arcuate spray unit towards a side of the electrode to a spraying position adjacent a side of the electrode where the centre of the arc is generally coincident with the axis of the electrode; and
(c) from the spraying position of the unit, spraying matter comprising a graphite-wetting fusible matrix material and a refractory material from said at least one spray unit generally towards the centre of the arc to provide a protective coating on the adjacent side of the electrode.

4,438,516

MEANS FOR AN ELECTROTHERMAL SMELTING FURNACE

Harald Krogsrud, Gjettum, Norway, assignor to Elkem a/s, Oslo, Norway

Filed Jul. 9, 1981, Ser. No. 281,688
Claims priority, application Norway, Jul. 25, 1980, 802265
Int. Cl.³ H05B 7/107
U.S. Cl. 373—97 13 Claims



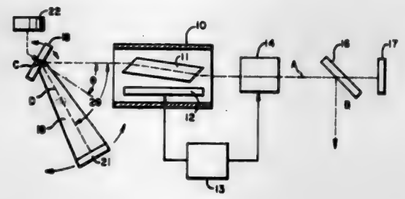
1. A holder assembly for self-baking electrodes of an electrothermal smelting furnace, said electrode hving a baking zone for baking unbaked electrode paste introduced above the baking zone, comprising:
(a) a plurality of contact clamps comprising upper and lower portions, said contact clamps extending upwardly at least to a level above said baking zone where the unbaked electrode paste is not affected by heat from the furnace;
(b) a surrounding cylindrical body arranged externally about said upper portion of said contact clamps;
(c) a thrust member arranged externally about said lower portion of said contact clamps;
(d) pressure producing means disposed between said thrust member and said contact clamps for pressing said contact clamps toward the electrode; and
(e) at least one contact clamp being individually suspended and slidable with respect to the other said contact clamps and said cylindrical body.

4,438,517

INTERFEROMETRICALLY TUNED LASER RESONATOR

Lloyd C. Bobb, Willow Grove; Michael Rankin, Hatboro, and Gerald D. Ferguson, Yardley, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 28, 1980, Ser. No. 210,902
Int. Cl.³ H01S 3/08
U.S. Cl. 372—99 11 Claims



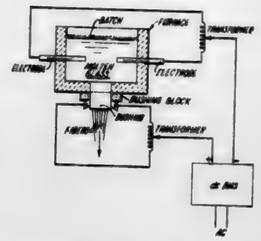
1. An interferometrically tuned laser resonator comprising, in combination:
optical means for emitting polarized radiation of fluorescent lines of a first polarity in opposite directions along a first optical axis when energized by a first signal;
switching means positioned to pass the radiation in one of the directions and for changing the first polarity to a second polarity when energized by a second signal;
first reflector means positioned to receive the radiation from said switching means for passing the radiation of the first polarity along the first optical axis, and for reflecting the radiation of the second polarity as a useful output along a second optical axis angularly displaced from the first optical axis;
second reflector means positioned to receive the radiation from said first reflector means for reflecting the radiation back along said first optical axis;
third reflector means positioned to receive the radiation in the other of the directions for interferometrically reflecting selected ones of the fluorescence lines back along the first optical axis; and
controller means connected to said optical means and said switching means for providing said first and second signals in timed sequence, the elapsed time between the first and second signals being sufficient for the radiation of the first polarity to reach a useful output level.

4,438,518

METHOD FOR PROTECTING FORMING BUSHINGS

David J. Gaul; Jay W. Hinze, and Richard A. Perkins, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 6, 1982, Ser. No. 405,850
Int. Cl.³ C03B 5/02
U.S. Cl. 373—39 8 Claims



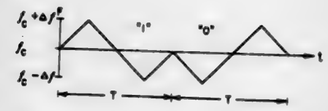
1. A process for forming molten glass in a melting furnace containing a body of electrically conductive molten glass having bushings made of a refractory or nobel metal and a bushing firing circuit, and having electrodes made of a dissimilar metal and an electrode firing circuit,
applying electrical current to the bushing firing circuit to cause heating of the bushings by resistive heating,
applying electrical current to the electrode firing circuit to cause electrical current to flow between the electrodes through the molten material to cause heating of the molten material by Joule effect and,
simultaneously applying a positive or anodic direct current bias to the bushings, including the step of biasing the bushing firing circuit with the electrode firing circuit, to protect the bushings from cracking.

4,438,519

METHODS, AND APPARATUS, FOR TRANSMITTING HIGH-BIT-RATE DIGITAL DATA IN POWER LINE COMMUNICATION MEDIA HAVING HIGH HARMONIC NOISE CONTENT

Sanjay K. Bose, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 4, 1981, Ser. No. 260,432
Int. Cl.³ H04L 27/10
U.S. Cl. 375—1 39 Claims



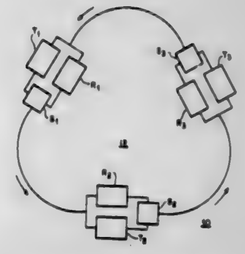
1. A method for transmitting binary data, comprising the steps of:
(a) providing a variable-frequency transmitter having a predetermined center frequency;
(b) selecting a bit time interval in which a bit of said binary data is to be transmitted;
(c) causing the transmitter instantaneous frequency to be at the center frequency at the beginning and end of each bit time interval;
(d) continuously varying without discontinuity the instantaneous transmitting frequency at least once during a bit time interval to a maximum frequency greater than the center frequency and then to a minimum frequency less than the center frequency, with the maximum frequency and the minimum frequency respectively occurring at one-quarter and three-quarters of the bit time interval, to transmit a first binary condition; and
(e) continuously varying without discontinuity the instantaneous transmitter frequency at least once during a bit time interval to a minimum frequency less than the center frequency and then to a maximum frequency greater than the center frequency, with the minimum frequency and maximum frequency respectively occurring at one-quarter and three-quarters of the bit time interval, to transmit a second binary condition.

4,438,520

SYSTEM FOR REGENERATING A DATA WORD ON A COMMUNICATIONS RING

Jerome H. Saltzer, Waban, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 22, 1981, Ser. No. 285,800
Int. Cl.³ H04J 6/02
U.S. Cl. 375—4 5 Claims



1. A system for regenerating a n-bit data word on a communications ring signal path, said system having a nominal system clock rate, comprising:
A. means for receiving said n-bit data word and generating an n-cycle derived clock signal and an n-bit derived data word from said received data word,
B. means for generating a local data word from said derived data word, said local data word corresponding to said derived data word delayed by i periods, each of said periods being approximately equal to the period associated with the nominal system clock rate,
C. means for generating an n-cycle transmit clock signal from said derived clock signal, said transmit clock signal including $n-i$ cycles at the same rate as the $(i+1)^{th}$ through the n^{th} cycles of said derived clock signal followed by i cycles at said system clock rate, where i is greater than or equal to one, and less than or equal to $n-1$,
D. means for generating an n-bit transmit data word from said transmit clock signal and said local data word, each bit corresponding in time to a correspondingly positioned cycle of said transmit clock signal and having a bit value corresponding to the correspondingly positioned bit value of said local data word, wherein said transmit data word is said reclocked n-bit data word.

4,438,521

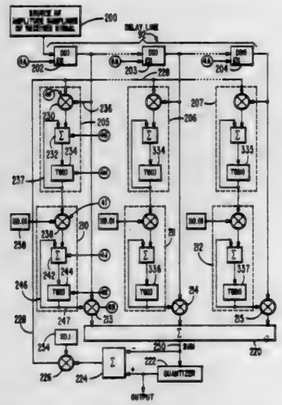
AUTOMATICALLY ADAPTIVE TRANSVERSAL FILTER

Anthony Mattel, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,920
Int. Cl.³ H04B 3/18
U.S. Cl. 375—16 7 Claims

5. In an adaptive equalizer for equalizing distortion in a received signal and comprising N-stage delay line means, and first means for sampling said received signal to provide samples and for serially entering said samples into said delay line means, and first logic means responsive to the samples con-

tained in said delay line stages to generate a scaled error signal and comprising N second logic means each responsive to the sample in an associated one of said N delay line stages and to said scaled error signal to produce a weighted sample, said first logic means further comprising summing means for summing all of said weighted samples after each entry of a new sample into said delay line means, decision making means responsive to each of the sums from said summing means to output a selected quantized output signal, and second means for determining and scaling the difference between said first and quantized output signals to produce said scaled error signal, and in which said second logic means comprises:



first multiplier means for multiplying the sample in an associated delay line stage by said scaled error signal to produce a first scaled output signal;

accumulating means for accumulating the values of successive blocks of M first scaled output signals;

third means for scaling said accumulated first scaled output signals;

second accumulating means for accumulating said scaled accumulated first scaled output signals at every Mth sample to produce a weighting tap signal; and

second multiplying means for multiplying said weighting tap signal by the value of the sample in the associated delay line stage to produce said weighted sample.

4,438,522

METHOD FOR ENCODING ANALOG SIGNALS USING PCM DIFFERENCE CODE WORD FOR FORMING A CODE WORD OF SPECIFIED LENGTH

Bjoern Bluethgen, Celle, Fed. Rep. of Germany, assignor to Polygram GmbH, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,595

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1979, 2941452

Int. Cl.³ H03K *13/22*

U.S. Cl. 375—27 **10 Claims**

1. A method for encoding analog signals for storage and transmission thereof in digital form for reducing the digital signal flow comprising the steps of:

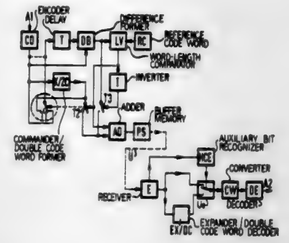
sampling momentary values of said analog signal;

converting the sampled momentary values of said analog signal into a series of pulse code modulated code words;

forming a corresponding series of pulse code modulated difference code words from pairs of successive pulse code modulated code word in said series, the length of each pulse code modulated difference code word together with one auxiliary code element indicating polarity forming a reference code word having a predetermined constant length which is selected to be less than a maximum possible length of a pulse code modulated difference code word;

constantly comparing the respective lengths of the combination of said pulse code modulated difference code word and said auxiliary code element with the length of said reference code word;

abbreviating a pulse code modulated difference code word



compared with said reference code word when the length of said combination exceeds the length of said reference code word, such that said combination is abbreviated to less than or equal to said reference code word length; and

adding a second auxiliary code element indicating code form to the abbreviated code word and to the length of said reference code word as required for identifying one of two alternative types of code form.

4,438,523

DIFFERENTIAL DIGITAL MODULATION AND DEMODULATION SYSTEM WITH AN ANALOG SIGNAL-DEPENDENT SAMPLING CLOCK

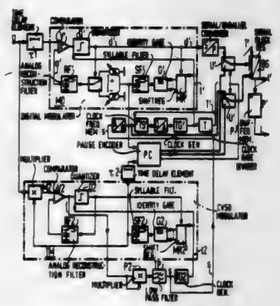
Hans Brandl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,794

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044765

Int. Cl.³ H04B *12/04*

U.S. Cl. 375—30 **18 Claims**



1. A differential digital modulation and demodulation system comprising:

a means for analog to digital conversion of an analog input signal including

a first digital modulator to which said analog input signal is supplied for converting said analog signal into a digital signal to be transmitted,

a sampling clock for controlling said first digital modulator, said sampling clock having and being controlled by a sampling clock generator,

a second digital modulator to which said analog input signal is supplied for generating a tracking error signal,

a means for generating a control signal for said sampling clock generator from said tracking error signal of said second digital modulator, said control signal increasing the frequency of said sampling clock generator upon an increasing tracking error signal and reducing the frequency of said sampling clock generator upon a decreasing tracking error signal;

a means connected to an output of said first digital modulator and to said sampling clock for generating a signal block containing a plurality of digital signal bits corresponding to said analog signal and a bit group identifying the sampling clock frequency employed for generating said digital signal bits in encoded form; and

a means for digital to analog conversion of said signal block including

a means for separating said signal block into components consisting of said digital signal bits and said bit group,

a digital demodulator for converting said digital signal bits into an analog signal corresponding to said analog input signal,

a clock generator for controlling said digital modulator,

a clock frequency memory for receiving said bit group and for controlling said clock generator such that said clock generator supplies a frequency for controlling said digital demodulator which corresponds to the frequency in said means for analog to digital conversion which was employed for generating said digital signal bits.

4,438,524

RECEIVER FOR ANGLE-MODULATED CARRIER SIGNALS

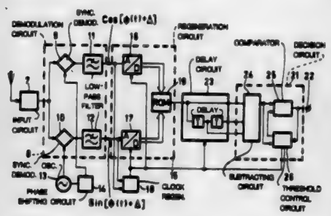
Dirk Mullwijk, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 6, 1982, Ser. No. 375,597

Claims priority, application Netherlands, May 27, 1981, 8102595

Int. Cl.³ H04L *27/18*

U.S. Cl. 375—80 **3 Claims**



1. A receiver for angle-modulated carrier signals, the receiver comprising an input circuit for deriving the transmitted angle-modulated carrier signal from a transmission channel, a reference carrier circuit, a demodulation circuit coupled to the input circuit for demodulating the transmitted angle-modulated carrier signal with the reference carriers for generating first and second demodulated signals, and a regeneration circuit for determining the instantaneous phase from said first and second demodulated signals, the receiver further comprising a decision circuit for producing regenerated binary data signals from the instantaneous phase, characterized in that the reference carrier circuit in the receiver comprises a carrier oscillator, the frequency of which is approximately equal to the frequency of the carrier oscillator of the transmitter, that the decision circuit in the receiver determines the phase difference between the end of a period, which is two symbol intervals long and has a length of 2T, and the beginning of a second period, which is two symbol intervals long and has a length 2T, that the decision circuit is arranged for generating a first logic value if the phase difference exceeds a decision threshold and for generating a second logic valve if the phase difference falls short of said decision threshold, that the decision threshold for a second dibit interval, which has a length of two symbol intervals and follows after a present dibit interval having a length of two symbol intervals, and beginning midway said present dibit interval, is equal to $(\pi/2)$ rad. if the first logic value is regenerated in the present dibit interval, that the decision threshold for the second dibit interval is equal to $(\pi/4)$ rad. if the second logic value was generated in the present dibit interval and, in a preceding dibit interval in which the first logic value was generated, the phase difference was positive (negative) and the number of symbol intervals between said preceding dibit interval and the present dibit interval is even (odd), and that the decision threshold for the second dibit internal is $-(\pi/4)$ rad, for the remaining cases in which the phase difference was negative and the number of symbol intervals is even, or vice versa.

4,438,525

REVERBERATION APPARATUS

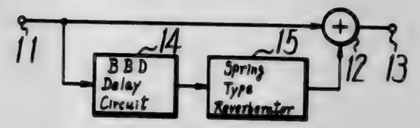
Takashi Shibata, Kamakura, and Masaaki Nishimura, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,557

Claims priority, application Japan, Dec. 23, 1980, 55-185939[U]

Int. Cl.³ G10H *1/02*

U.S. Cl. 381—63 **8 Claims**



1. A reverberation apparatus, comprising:

a signal input terminal to be supplied with an input signal;

delay circuit means having input and output terminals;

said delay circuit means input terminal being connected to said signal input terminal;

a spring type reverberator having input and output terminals, the input terminal of which is connected to the output terminal of said delay circuit means;

summing means having a pair of input terminals and output terminal, the pair of input terminals being respectively connected to said signal input terminal and the output terminal of said spring type reverberator, and the output terminal of said summing means having a desired reverberation sound produced thereat; and

said delay circuit means producing a delay time such that a relatively high level spring type reverberation sound signal produced by the spring type reverberator appears at the output terminal after said delay time relative to application of the input signal.

4,438,526

AUTOMATIC VOLUME AND FREQUENCY CONTROLLED SOUND MASKING SYSTEM

Richard O. Thomalla, St. Paul, Minn., assignor to Conwed Corporation, St. Paul, Minn.

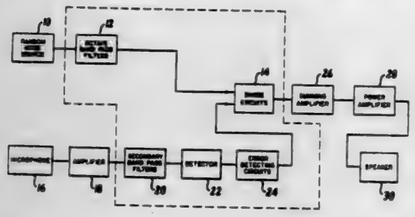
Filed Apr. 26, 1982, Ser. No. 372,033

Int. Cl.³ G10K *11/00*

U.S. Cl. 381—73 **10 Claims**

2. A sound masking system comprising means for generating a random noise spectrum; a plurality of primary filters for separating the random noise spectrum into signal components of predetermined frequencies; a plurality of divide circuits, each said divide circuit being operative for receiving an associated signal component from among said signal components at a divide input port thereof; amplification means, said amplification means receiving an output from said divide circuits for driving a sound generating means in correspondence with said output; at least one microphone for sensing sounds in the ambient sound environment and providing an electronic signal in

correspondence therewith; an input amplifier for amplifying said electronic signal; a plurality of secondary filters for receiving the amplified electronic signal and separating said electronic signal into predetermined frequency components thereof; said secondary filter providing input signals to a plurality of electronic detector circuits; said plurality of error-detecting circuits operative for receiving signals from said



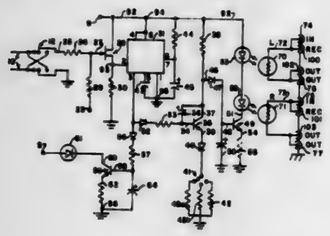
electronic detector circuits and feeding an error signal in correspondence with the output of said detector circuits to the denominator input ports of said plurality of divide circuits, whereby said divide circuits vary the output amplitude of said signal components to said amplification means for automatically adjusting the volume of the sound masking system throughout the frequency spectrum thereof.

4,438,527

SIGNAL RESPONSIVE AUTOMATIC CONTROL FOR AUDIO EQUIPMENT

William P. Hammond, 7472 Delmar, St. Louis, Mo. 63130

Filed Apr. 2, 1982, Ser. No. 365,084
Int. Cl.³ H04M *11/00*; H03G *3/20*
U.S. Cl. 361—107 13 Claims



1. A device for automatically muting an audio signal, comprising:

means for providing an electrical signal having at least first and second voltage levels;

means for sensing said first and said second voltage signal levels;

means operatively connectable to an audio amplifier for providing distortion free attenuation control of the audio output of said amplifier;

means operatively connected to said first and second voltage sensing means for predeterminedly operating said control means, said operating means automatically providing at least first and second attenuation control voltage signal levels in response respectively to said first and second voltage signals levels; and

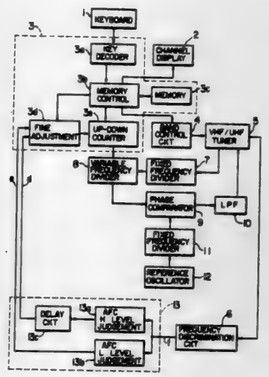
means for adjusting at least one of said first and second attenuation control voltage signal levels operatively connected to said predeterminedly operating means.

4,438,528

CHANNEL SELECTION SYSTEM FOR AN ELECTRONIC TUNER

Tsugno Itagaki, Kamakura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,649
Claims priority, application Japan, Aug. 6, 1981, 56-122497
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—182 3 Claims



1. A channel selection system comprising:

(a) a tuner having a local oscillator and a mixer for mixing the output of said local oscillator and a received signal and generating an intermediate frequency signal,

(b) a variable frequency divider for frequency-dividing the output of said local oscillator and either increasing or decreasing the ratio of frequency division in accordance with a control signal,

(c) a reference oscillator,

(d) a phase comparator for comparing the phases of the output of said variable frequency divider and the output of said reference oscillator and feeding a comparison output back to said local oscillator thereby to keep phase synchronization between said both outputs,

(e) a frequency discriminator for receiving said intermediate frequency signal and generating a discrimination signal corresponding to a difference between the frequency of said intermediate frequency signal and a reference frequency,

(f) a first control circuit for supplying to said variable frequency divider a first control signal for either increasing or decreasing the frequency division ratio of said variable frequency divider so that said discrimination signal approaches its center value when said discrimination signal is larger than a first prescribed value,

(g) a second control circuit for supplying to said variable frequency divider a second control signal for causing a variation of the frequency division ratio opposite to the variation given by said first control signal when said discrimination signal is less than a second prescribed value, and

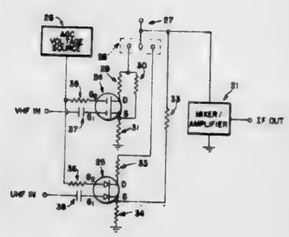
(h) a delay circuit provided between at least one of said first and second control circuits and said variable frequency divider and for causing a delay at the rise time of at least one of said first and second control signals while causing no delay at the falling time of said at least one control signal signal.

4,438,529

TV TUNER CIRCUIT

Takeshi Sato, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 7, 1982, Ser. No. 337,857
Claims priority, application Japan, Jan. 8, 1981, 56-1719
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—190 1 Claim



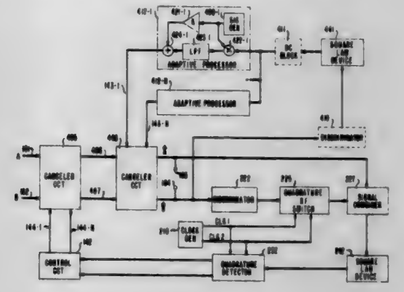
1. A TV tuner circuit comprising: a VHF RF amplifier having a MOS FET with first and second gates, a source and a drain, said first gate thereof being coupled to a VHF signal input terminal; a UHF RF amplifier having a MES FET with first and second gates, a source and a drain, said first gate thereof being coupled to a UHF signal input terminal; a switch means having a common terminal, a first terminal for selecting VHF signal receiving and a second terminal for selecting UHF signal receiving; a mixer for converting either VHF RF signal or UHF RF signal into an IF signal; an AGC voltage source coupled to said respective second gates of said MOS FET and said MES FET through resistors; a DC source voltage input terminal connected to said common terminal of said switch means and to an input terminal of said mixer; and an IF signal output terminal connected to an output terminal of said mixer; wherein said source and drain of said MOS FET are connected to said first terminal of said switch means through resistors, and said drain of said MES FET is connected to said second terminal of said switch means; and wherein said respective sources of said MOS FET and said MES FET and connected to ground through resistors, and said source of said MES FET is connected to said DC source voltage input terminal through a resistor.

4,438,530

ADAPTIVE CROSS-POLARIZATION INTERFERENCE CANCELLATION SYSTEM

Michael L. Steinberger, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 14, 1982, Ser. No. 388,032
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—278 8 Claims



1. An adaptive interference cancellation arrangement of the type including

cancellation means responsive to at least one first control signal for translating a first corrupted signal into a first output signal substantially comprised of a desired signal component of the first corrupted signal, the cancellation means also responsive to at least one second control signal for translating a second corrupted signal into a second output signal substantially comprised of a desired signal component of the second corrupted signal,

correlation means jointly responsive to the first and second output signals for combining the first and second output signals to generate both a first correlation signal and a second correlation signal, and

control means for adjusting at least one predetermined characterstic of first correlation signal to generate at least one first control signal and for adjusting at least one predetermined characteristic of the second correlation signal to generate at least one second control signal,

the arrangement characterized in that the combining means includes

oscillator means for generating first and second clock signals in an orthogonal relationship with each other,

switching means for periodically adjusting the phase of the first output signal in response to the first and second clock signals to generate a plurality of phase adjusted components of the first signal as a first multiplexed signal,

means for combining the second output signal with the first multiplexed signal to generate a third output signal,

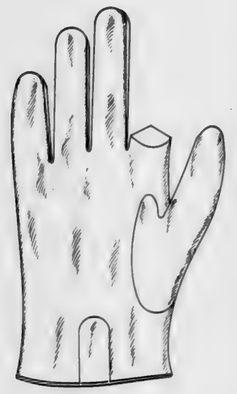
a square law device for detecting the power in the third output signal to generate an output signal representing the power envelope of the third output signal, and

a quadrature detector coupled to the square law device and responsive to the first and second clock signals for generating the second correlation signal.

DESIGNS

MARCH 20, 1984

273,054
HUNTING GLOVE
James Brinson, Jr., Augusta, Ga., assignor to Geneva L. Brinson, Augusta, Ga.
Filed Apr. 30, 1981, Ser. No. 187,426
U.S. Cl. D2—376



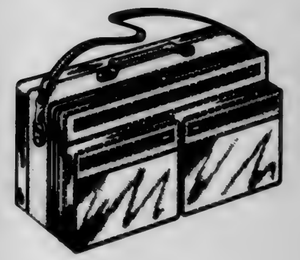


273,055
SIMULATIVE UMBRELLA
Spencer Lee, 5517 Robertson Ave., Sacramento, Calif. 05821
Filed Oct. 19, 1981, Ser. No. 312,380
U.S. Cl. D3—6

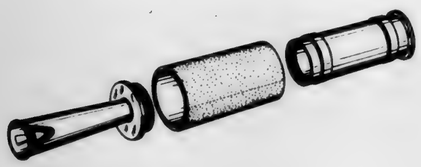


273,056
BOAT SEAT BOX CONSOLE OR SIMILAR ARTICLE
Richard C. Lenson, 1018-28th St., Sioux City, Iowa 51104
Filed Dec. 19, 1980, Ser. No. 218,219
U.S. Cl. D3—40

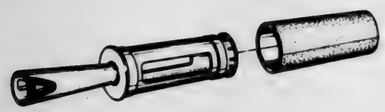
273,057
LUGGAGE DESIGN
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Feb. 12, 1982, Ser. No. 348,489
U.S. Cl. D3—71



273,058
LINT REMOVER
Nicholas D. McKay, Grand Blanc, Mich., assignor to Helmac Products Corporation, Flint, Mich.
Filed Aug. 6, 1981, Ser. No. 290,723
U.S. Cl. D4—23.1



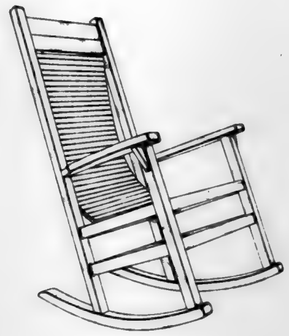
273,059
LINT REMOVER
Nicholas D. McKay, Grand Blanc, Mich., assignor to Helmac Products Corporation, Flint, Mich.
Filed Aug. 6, 1981, Ser. No. 290,725
U.S. Cl. D4—23.1



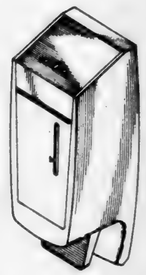
273,060
COMBINED DESK AND SEAT UNIT
John H. Martin, Carlisle Castle 207, 1850 Palm City Rd., Stuart, Fla. 33494
Filed Dec. 10, 1981, Ser. No. 329,544
U.S. Cl. D6—6



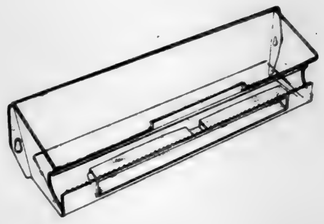
273,061
ROCKING CHAIR
Aldwin K. Goff, Rte. 2, Box 31-O, Ochlocknee, Ga. 31773
Filed Dec. 17, 1981, Ser. No. 331,637
U.S. Cl. D6—49



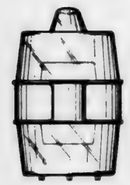
273,062
SOAP DISPENSER
James E. Richardson, Westport, Conn., assignor to Waterbury Companies, Inc., Waterbury, Conn.
Filed Jul. 20, 1981, Ser. No. 284,665
U.S. Cl. D6—95



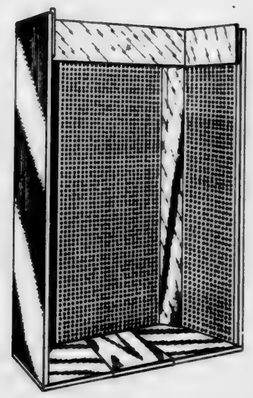
273,063
SHEET MATERIAL DISPENSER
Douglas K. Gatward, 1212, Great Cambridge Rd., Enfield, Middlesex, England
Filed Feb. 10, 1981, Ser. No. 233,142
Claims priority, application United Kingdom, Aug. 20, 1980, 996212
U.S. Cl. D6—96



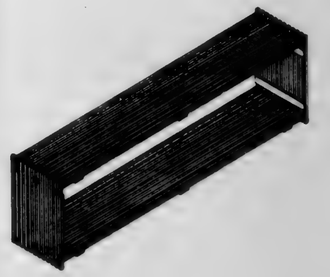
273,064
TOWEL DISPENSER
Henry Minost, Paris, France, assignor to BEGHIN-SAY S.A., Thumeries, France
Filed Aug. 27, 1981, Ser. No. 297,041
Claims priority, application France, Feb. 27, 1981, 81.0717
U.S. Cl. D6—96



273,065
DISPLAY BOOTH
Rafael T. Bustos, Atlanta, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.
Filed Jul. 2, 1980, Ser. No. 165,363
U.S. Cl. D6—132



273,066
TABLE OR SIMILAR ARTICLE
Edward H. Kaeale, III, 336 Pleasant Pines Ave., Centerville, Mass. 02632
Filed Jan. 19, 1981, Ser. No. 226,482
U.S. Cl. D6—179





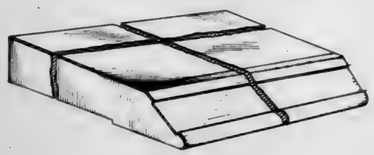
273,067
SHELF UNIT
James G. Evans, 17999 North St., Vandalia, Mich. 49095
Filed Oct. 2, 1981, Ser. No. 308,069
U.S. Cl. D6—186



273,068
DISPENSER FOR CANS OR BOTTLES
William S. Spencer, Roswell, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Aug. 27, 1981, Ser. No. 296,997
U.S. Cl. D6—188



273,069
FURNITURE TOP
Jon A. Yauger, Fairfield, Ohio, assignor to Hamilton Sorter Co., Inc., Fairfield, Ohio
Filed Jul. 18, 1980, Ser. No. 170,054
U.S. Cl. D6—192



273,070
WORK TABLE TOP
John H. Welsch, Moscow, and Rodney Brancher, Wilkes-Barre, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.
Filed Dec. 23, 1981, Ser. No. 333,994
U.S. Cl. D6—192



273,071
PILLOW
Lucille Stark, Pine Village II, Box 127, Hobart, Ind. 46342
Filed Nov. 17, 1981, Ser. No. 322,219
U.S. Cl. D6—201



273,072
SLEEPWEAR HANGER
John H. Batts, East Grand Rapids, and Everett L. Duester, Zeeland, both of Mich., assignors to John Thomas Batts, Inc., Zeeland, Mich.
Filed Mar. 15, 1982, Ser. No. 357,845
U.S. Cl. D6—254

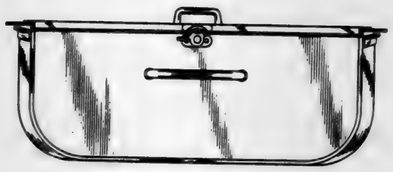


273,073
SLEEPWEAR HANGER
John H. Batts, East Grand Rapids, and Everett L. Duester, Zeeland, both of Mich., assignors to John Thomas Batts, Inc., Zeeland, Mich.
Filed Mar. 15, 1982, Ser. No. 357,851
U.S. Cl. D6—254



273,074
REMOVABLE CANOE-CARRIED COOLER
Kenneth G. Mathieu, 33980 Oakdale, Livonia, Mich. 48154
Filed Sep. 21, 1981, Ser. No. 304,119
U.S. Cl. D7—77





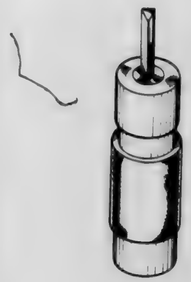
273,075
TURNING UTENSIL FOR BARBECUES
Shawn A. Hayden, 22 Stadium Rd., Methuen, Mass. 01844
Filed Oct. 15, 1981, Ser. No. 311,549
U.S. Cl. D7—106



273,076
HANDLE FOR A KITCHEN TOOL
Nigel F. Bodfish, Solihull, England, assignor to Gill-Mentor Limited, Great Britain
Filed Jul. 31, 1981, Ser. No. 291,731
Claims priority, application United Kingdom, Feb. 3, 1981, 998728
U.S. Cl. D7—395



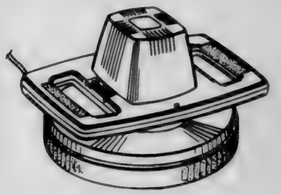
273,077
DETENT COUPLED DRILL BIT CHUCK OR THE LIKE
Melvin C. Bell, 10614 Sheldon Woods Way, Elk Grove, Calif. 95624
Filed May 11, 1981, Ser. No. 262,340
U.S. Cl. D8—10



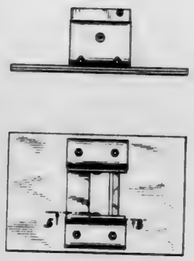
273,078
HEAD FOR A TOOL FOR APPLYING AND REMOVING CYCLE TIRES
Stig B. Böreblick, Lyngby 12, S-240 13 Genarp, Sweden
Filed Aug. 31, 1981, Ser. No. 297,601
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, URA 289/81
U.S. Cl. D8—31



273,079
BUFFER
Howard Iberaki, Hacienda Heights, Calif., assignor to Orion Industries, Inc., Compton, Calif.
Filed Nov. 16, 1981, Ser. No. 321,932
U.S. Cl. D8—62



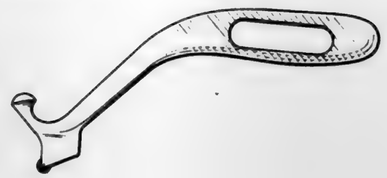
273,080
TURNING BLOCK FOR GLASS PANELS OR THE LIKE
Benjamin C. Bradberry, 4615 Early Rise La., Jacksonville, Fla. 32223
Filed Mar. 25, 1981, Ser. No. 247,235
U.S. Cl. D8—71



273,081
SHARPENING STONE HOLDER FOR KNIFE SHARPENER
Arthur L. Levine, P.O. Box 800, Williamsville, N.Y. 14221
Filed Nov. 30, 1981, Ser. No. 325,759
U.S. Cl. D8—93



273,082
GLASS CUTTER
Mellen-Thomas Benedict, 4760 Yadkin Rd., Fayetteville, N.C. 28303
Filed Dec. 24, 1981, Ser. No. 334,366
U.S. Cl. D8—98

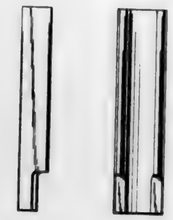


273,083
WOOD WORKING PLANE
Irving Sloane, 42, Square Marguerite, Box 73, 1040 Brussels, Belgium
Filed Dec. 21, 1981, Ser. No. 333,431
Claims priority, application United Kingdom, Jun. 19, 1981, 81/1001089
U.S. Cl. D8—101

273,084
ELECTRICAL OUTLET COVER PLATE AND CLOSURE THEREFOR
Daniel P. Henkel, Kunkletown, Pa., assignor to Square D Company, Palatine, Ill.
Filed Oct. 1, 1981, Ser. No. 307,407
U.S. Cl. D8—353

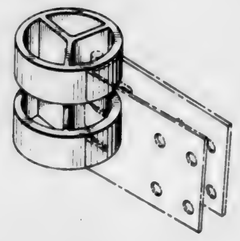


273,085
SPACER FOR FERTILIZER TUBING
Halsey J. Wetmore, Guymon, Okla., assignor to Adams Hard-Facing Company, Inc., Guymon, Okla.
Filed Mar. 16, 1981, Ser. No. 244,041
U.S. Cl. D8—384

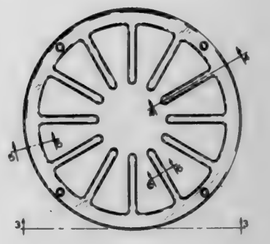


273,086
UNITARY WATER SKI ROPE HANDLE AND REEL
Neil F. Coleman, 2225 9th St. SE., Winter Haven, Fla. 33880
Filed Aug. 24, 1981, Ser. No. 295,563
U.S. Cl. D8—358

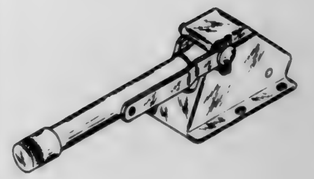
273,087
GEODESIC DOME CONNECTOR
Janet B. Johnson, and Dennis O. Johnson, both of Rte. 3, Box 105D, North Branch, Minn. 55056
Filed Aug. 14, 1981, Ser. No. 292,952
U.S. Cl. D8—382



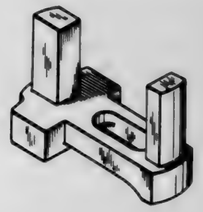
273,088
VEGETABLE HOLDER
Franklin R. Anderson, Durham, N.C., assignor to Custom Molders, Inc., Durham, N.C.
Filed Nov. 13, 1981, Ser. No. 321,082
U.S. Cl. D8—395



273,089
LOUVRE OPENER
Albert Cole, Keswick, England, assignor to Thermoforce Limited, Cumbria, England
Filed Sep. 15, 1981, Ser. No. 302,604
Claims priority, application United Kingdom, Apr. 3, 1981, 81/999793
U.S. Cl. D8—400



273,090
THRESHOLD SEAL FOR A DOOR ASTRAGAL
Raymond E. Imperial, P.O. Box 368, Richmond, Ind. 47374
Filed Nov. 6, 1981, Ser. No. 318,734
U.S. Cl. D8—400



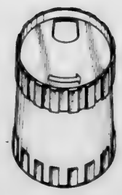
273,091
HOLE PLUG OR THE LIKE
Mutsuo Kuroeaki, Kyoto, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Dec. 23, 1981, Ser. No. 334,027
Claims priority, application Japan, Jul. 7, 1981, 56-29471
U.S. Cl. D8—499



273,092
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 20, 1981, Ser. No. 294,610
U.S. Cl. D9—389



273,093
PILL DISPENSER
Hans-Göran Lunden, and Nils-Ake W. Ternerot, both of Södertälje, Sweden, assignors to Astra-Syntex Scandinavia Aktiebolag, Södertälje, Sweden
Filed Sep. 16, 1981, Ser. No. 302,548
Claims priority, application Sweden, Mar. 19, 1981, 81-693
U.S. Cl. D9—389



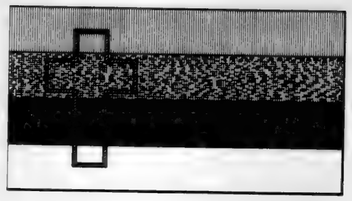
273,094
STENOGRAPHIC RULER
Mary Classen, P.O. Box 5173, Stanford, Calif. 94305, and William K. Szaroletta, San Jose, Calif., assignors to Mary Classen, Stanford, Conn.
Filed Aug. 17, 1981, Ser. No. 293,915
U.S. Cl. D10—71

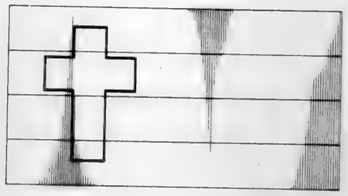


273,095
VISUAL MARKER
Herbert C. Schulze, P.O. Box 6070, Incline Village, Nev. 89450
Filed Feb. 23, 1981, Ser. No. 237,245
U.S. Cl. D10—109

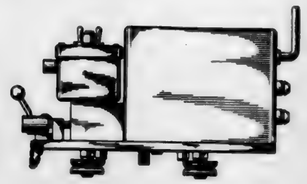


273,096
FLAG
Peggy L. Cooper Inks, Rte. 9, Box 222, London, Ky. 40741
Filed Feb. 21, 1978, Ser. No. 879,819
U.S. Cl. D11—175



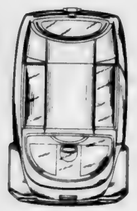


273,097
ALL POSITION TRACTOR FOR MOUNTING A TOOL SUCH AS A WELDING, CUTTING OR GOUGING TORCH
David E. Johnson, Pataskala; Kenneth E. McCall, and William J. Coughlin, both of Lancaster, all of Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Jun. 16, 1981, Ser. No. 274,090
U.S. Cl. D12—36

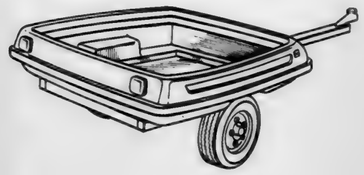


273,098
AUTOMOBILE
Teruhiko Ohhashi, Hamamatsu, Japan, assignor to Suzuki Motor Co. Ltd., Kamimura, Japan
Filed Apr. 1, 1981, Ser. No. 249,829
U.S. Cl. D12—90

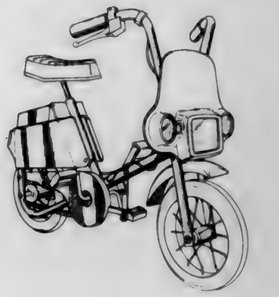




273,099
TRAILER
Kevin E. Koch, 47 Kinkaid Ave., North Plympton, State of South Australia, Australia
Filed Mar. 17, 1981, Ser. No. 244,641
U.S. Cl. D12—105



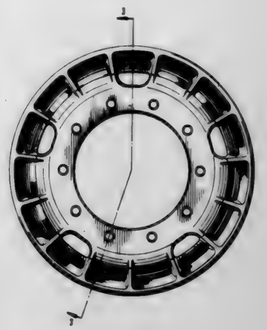
273,100
POWER ASSISTED BICYCLE
William H. Ziegler, Bedford, Pa., assignor to Brown Group Recreational Products, Inc., Bedford, Pa.
Filed Jul. 10, 1981, Ser. No. 282,097
U.S. Cl. D12—111



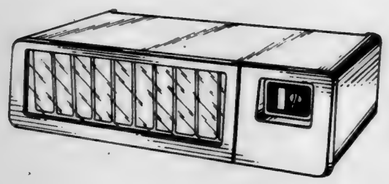
273,101
MOTORCYCLE CRUISE CONTROL
Cecil M. Kiser, Jr., 304 N. Main, Newkirk, Okla. 74647
Division of Ser. No. 8,978, Feb. 2, 1979, Pat. No. D. 267,085.
This application Oct. 16, 1981, Ser. No. 311,992
U.S. Cl. D12—174



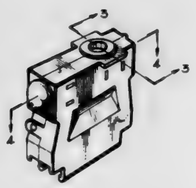
273,102
WHEEL
Richard R. Woodward, Yalding, England, assignor to GKN Kent Alloys Limited, England
Filed Sep. 8, 1981, Ser. No. 300,162
Claims priority, application United Kingdom, Apr. 7, 1981, 81 999832
U.S. Cl. D12—209



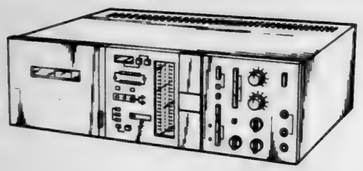
273,103
FLUID MATERIAL APPLICATION CONTROLLER
Richard R. Lewellen, Wooster, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed Sep. 14, 1981, Ser. No. 301,521
U.S. Cl. D13—12



273,104
ELECTRICAL PLUG OR SOCKET COVER
George Cousins, Lower Sackville, Canada, assignor to Cabco Research Ltd., Nova Scotia, Canada
Filed Jun. 15, 1981, Ser. No. 273,286
Claims priority, application Canada, Apr. 7, 1981, 07-0481-6
U.S. Cl. D13—24



273,105
CASSETTE TAPE RECORDER
Hirotaka Imai, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 25, 1981, Ser. No. 305,801
Claims priority, application Japan, Apr. 8, 1981, 56-14899
U.S. Cl. D14—6



273,106
LOUDSPEAKER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1981, Ser. No. 301,582
Claims priority, application Japan, Mar. 13, 1981, 56-10424
U.S. Cl. D14—30



273,107
TELEPHONE INSTRUMENT
Carl-Arne Breger, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Dec. 4, 1980, Ser. No. 213,067
Claims priority, application Sweden, Jun. 11, 1980, 80001186
U.S. Cl. D14—53



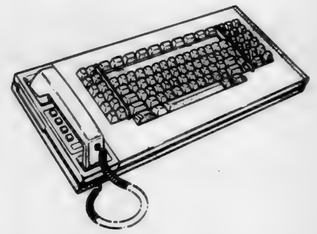
273,108
TELEPHONE INSTRUMENT
Carl-Arne Breger, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Dec. 4, 1980, Ser. No. 213,092
Claims priority, application Sweden, Jun. 11, 1980, 80001185
U.S. Cl. D14—53



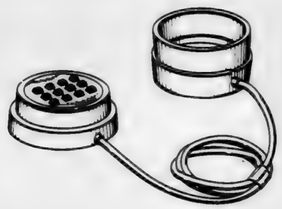
273,109
COMBINED CONTROL DEVICE AND DISPLAY UNIT FOR TELEPHONE EXCHANGE
Carl-Arne Breger, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Jan. 7, 1981, Ser. No. 223,218
U.S. Cl. D14—58



273,110
TELEPRINTER KEYBOARD AND TELEPHONE
Donald M. Genaro, Haworth, and Alvin R. Tilley, Red Bank, both of N.J., assignors to Teletype Corporation, Skokie, Ill.
Filed Nov. 23, 1981, Ser. No. 324,335
U.S. Cl. D14—58



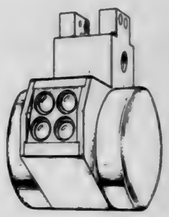
273,111
COMBINED DATA INPUT TERMINAL AND ACOUSTIC COUPLER
Takashi Hirata; Kunio Hirose, both of Yokohama, and Hirohiko Katayama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 28, 1981, Ser. No. 287,867
Claims priority, application Japan, Feb. 9, 1981, 56-4666
U.S. Cl. D14—101



273,112
DISPLAY CONSOLE
Joseph Sliwkowski, Sudbury; Gilbert G. Frykland, Winchester, and Vance A. Parker, Framingham, all of Mass., assignors to Telesis Corporation of Delaware, Inc., Wilmington, Del.
Filed Jul. 18, 1980, Ser. No. 170,103
U.S. Cl. D14—103



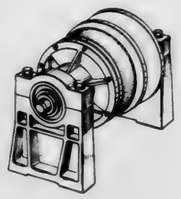
273,113
OPTICAL SCANNER HOUSING OR SIMILAR ARTICLE
Russell D. Knoll, Catlin, Ill., assignor to HurletronAltair, Inc., Danville, Ill.
Filed Nov. 27, 1981, Ser. No. 325,311
U.S. Cl. D14—116



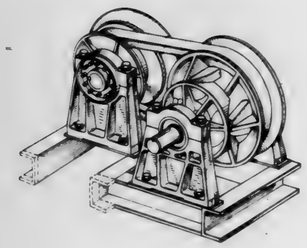
273,114
COMBINED MICROWAVE OVEN AND REFRIGERANT UNIT
Erling Damkjaer, Esbjerg, Denmark, assignor to A/S Vestfrost, Esbjerg, Denmark
Filed Jun. 23, 1981, Ser. No. 276,682
Claims priority, application Denmark, Jun. 28, 1981, 158/81
U.S. Cl. D15—88



273,115
VARIABLE SPEED BELT DRIVE
Robert O. Huff; Edward F. Krome, Jr., and Gebus Barnsfather, all of Columbus, Ind., assignors to Reliance Electric Company, Columbus, Ind.
Filed May 13, 1981, Ser. No. 263,303
U.S. Cl. D15—148



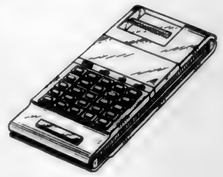
273,116
VARIABLE SPEED BELT DRIVE
Robert O. Huff, Piedmont, S.C.; Edward F. Krome, Jr., and Gebus Barnsfather, both of Columbus, Ind., assignors to Reliance Electric Company, Columbus, Ind.
Filed Sep. 30, 1981, Ser. No. 307,010
U.S. Cl. D15—148



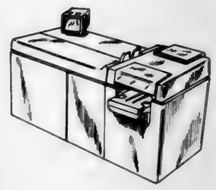
273,117
TYPEWRITER FOR EUROPEAN LANGUAGES
Taro Kasagi, Tokyo, and Kenji Tamada, Kodaira, both of Japan, assignors to Silver Seiko Limited, Japan
Filed Mar. 8, 1982, Ser. No. 355,871
Claims priority, application Japan, Jan. 20, 1982, 57-1831
U.S. Cl. D18—1



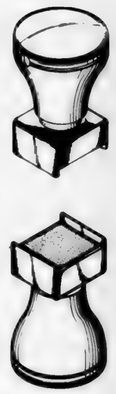
273,118
DESK-TOP ELECTRONIC CALCULATOR
Takashi Hirata, Yokohama, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 30, 1981, Ser. No. 325,823
Claims priority, application Japan, Jun. 2, 1981, 56-24159
U.S. Cl. D18—7



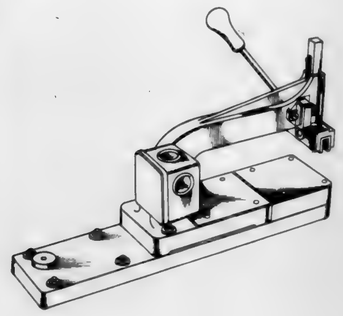
273,119
INK JET PRINTER
Daniel T. Noonan, Irving, Tex., assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 8, 1982, Ser. No. 355,448
U.S. Cl. D18—13



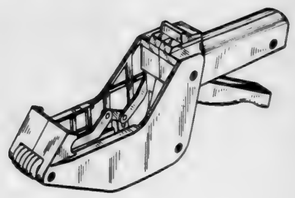
273,120
STAMP
Katsumi Ito, Nagoya, Japan, assignor to Shachihata Industrial Co., Ltd., Japan
Filed Oct. 20, 1981, Ser. No. 313,217
Claims priority, application Japan, Apr. 21, 1981, 56-16969
U.S. Cl. D18—15



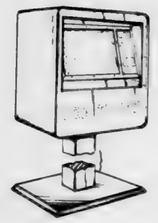
273,121
LUGGAGE MONOGRAMMING MACHINE
Charles E. Rawson, 8073 Kentwood Ave., Los Angeles, Calif. 90045
Filed Dec. 23, 1981, Ser. No. 333,660
U.S. Cl. D18—15



273,122
HAND OPERATED LABEL APPLYING MACHINE
Yo Sato, Tokyo, and Tadao Kashiwaba, Iwate, both of Japan, assignors to Kabushiki Kaisha Sato, Japan
Filed Jun. 7, 1982, Ser. No. 385,767
Claims priority, application Japan, Dec. 8, 1981, 56-54272
U.S. Cl. D18—19



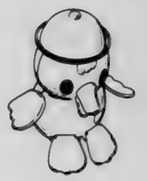
273,123
NEWSPAPER VENDING RACK OR SIMILAR ARTICLE
Fred M. Gore, Dallas, Tex., assignor to Gannett Co., Inc., Rochester, N.Y.
Filed May 12, 1982, Ser. No. 377,439
U.S. Cl. D20—6



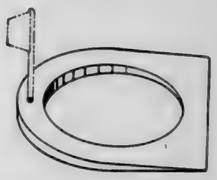
273,124
PLAYING SURFACE FOR A GAME BOARD
John S. Craft, Ellisville, Mo.
Filed Feb. 16, 1982, Ser. No. 348,731
U.S. Cl. D21—34



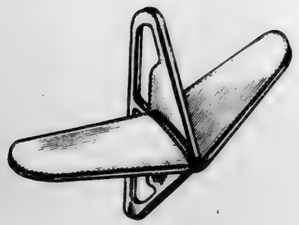
273,125
ANIMAL FIGURE TOY
Shigeroku Nakao, Kanagawa; Yoshiyasu Ishii, and Kiyoshi Hoshino, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Feb. 22, 1982, Ser. No. 350,909
Claims priority, application Japan, Sep. 17, 1981, 56-41077
U.S. Cl. D21—150



273,126
GOLF PUTTING TARGET
Peter J. Turza, 1040 Hermitage Dr.; Rudolph A. Jansen, 1730 Kent Rd., and Frank P. Turza, 1650 Chippendale Rd., all of Hoffman Estates, Ill. 60195
Filed Jul. 6, 1981, Ser. No. 280,559
Term of patent 14 years
Int. Cl. D21—*234.8*
U.S. Cl. D21—234



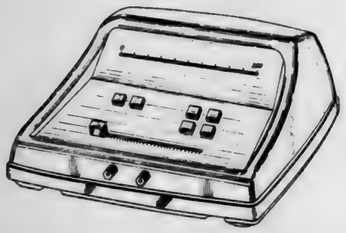
273,127
SWIMMER'S TOWABLE DIVING PLANE
Robert L. Meister, 4404 Old Mill Rd., Fort Wayne, Ind. 46807
Filed Aug. 13, 1980, Ser. No. 177,620
U.S. Cl. D21—236



273,128
HANDLE FOR A TOILET SEAT OR THE LIKE
Robert T. Roddick, 522 Hill St., San Francisco, Calif. 94114
Filed Mar. 19, 1981, Ser. No. 245,363
U.S. Cl. D23—71



273,129
ACUPUNCTURE POINT LOCATOR
Robert M. Knox, LaGrange; Kenneth Hartman, DeKalb, and Harold Worby, Maple Park, all of Ill., assignors to Meridia 12 Corporation, Skokie, Ill.
Filed Jan. 19, 1981, Ser. No. 226,197
U.S. Cl. D24—8



273,130
SURGICAL STAPLER
David T. Green, Norwalk; Paul O. Rawson, Easton, and Richard Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 2, 1981, Ser. No. 308,085
U.S. Cl. D24—26



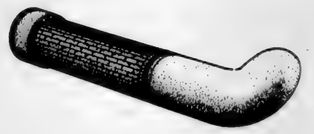


273,131
SURGICAL STAPLER
Douglas G. Nolles, New Canaan; Paul O. Rawson, Easton, and Richard Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 2, 1981, Ser. No. 308,087
U.S. Cl. D24—26

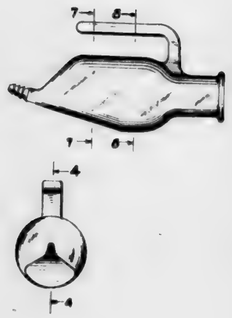




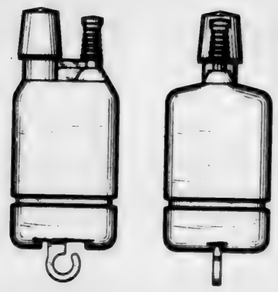
273,132
CORDLESS VIBRATING MASSAGER
Alan Moloff, 6 York Dr., Edison, N.J. 08817
Filed Jan. 18, 1981, Ser. No. 274,763
U.S. Cl. D24—41



273,133
URINAL
Thomas E. Babic, 330 Milliken Ave., and Albert M. Pepe, 334 Ridge Ave., both of Sharpsville, Pa. 16150
Filed Dec. 31, 1981, Ser. No. 336,421
U.S. Cl. D24—54



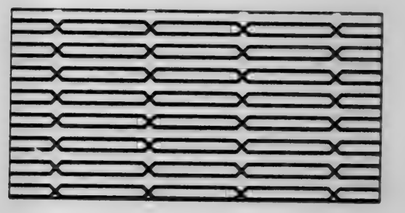
273,134
MEDICAL CONTAINER FOR INJECTABLE SUBSTANCES
Louis T. Pagala, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.
Filed Sep. 4, 1981, Ser. No. 299,308
U.S. Cl. D24—56



273,135
DISPOSABLE DOUCHE BAG
Nadine J. Mestre, 3127 Caahill Blvd., Reno, Nev. 89509
Filed Nov. 6, 1981, Ser. No. 318,996
U.S. Cl. D24—60



273,136
WALL PANEL
Jose Varela, 1725 W. 33rd Pl., Hialeah, Fla. 33012
Filed Mar. 9, 1982, Ser. No. 356,377
U.S. Cl. D25—60



273,137
WALL PANEL
Jose Varela, 1725 W. 33rd Pl., Hialeah, Fla. 33012
Filed Mar. 9, 1982, Ser. No. 356,378
U.S. Cl. D25—60



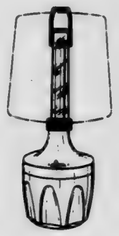
273,138
SUPPORT FOR A CANDLE AND THE LIKE
Donald A. Kaufmann, West Bloomfield, Mich., assignor to Florists' Transworld Delivery Assn., Southfield, Mich.
Continuation-in-part of Ser. No. 140,990, Apr. 17, 1980. This application Aug. 25, 1981, Ser. No. 296,115
U.S. Cl. D26—23



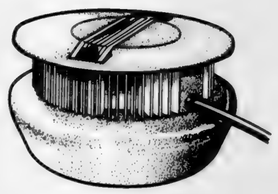
273,139
FISHING LIGHT
Lanny H. Canady, 709 Emerald Garden, North Little Rock, Ark. 72118
Filed Dec. 15, 1980, Ser. No. 216,180
U.S. Cl. D26—61



273,140
TABLE LAMP
Kittson Mann, Kowloon, Hong Kong, assignor to Chung Mei Metal & Plastic Factory Ltd., Kowloon, Hong Kong
Filed Oct. 14, 1981, Ser. No. 311,352
Claims priority, application United Kingdom, Aug. 12, 1981, 1001932
U.S. Cl. D26—93



273,141
HAIR DRYER
Anthony J. Webb, Dorset, England, assignor to F.C.F. Limited, England
Filed Dec. 31, 1980, Ser. No. 221,848
Claims priority, application United Kingdom, Jul. 19, 1980, 995796
U.S. Cl. D28—13



273,142
SHAMPOO SUPPORT DRAIN
Sam A. Briggs, Rte. 1, Box 71AM, Krum, Tex. 76240
Filed Mar. 22, 1982, Ser. No. 360,777
U.S. Cl. D28—20





273,143
CUTICLE DEVICE
Axel Jankewitz, Fürth, Fed. Rep. of Germany, assignor to A. W. Faber-Castell, Nuremberg, Fed. Rep. of Germany
Filed Jul. 16, 1982, Ser. No. 399,053
Claims priority, application Fed. Rep. of Germany, May 11, 1982, 7899
U.S. Cl. D28—57





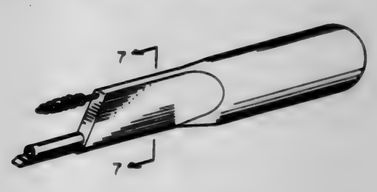
273,144
CUTICLE DEVICE
Axel Jankewitz, Fürth, Fed. Rep. of Germany, assignor to A. W. Faber-Castell, Nuremberg, Fed. Rep. of Germany
Filed Jul. 16, 1982, Ser. No. 399,054
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 7901
U.S. Cl. D28—57



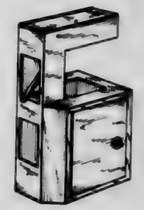
273,145
FACE MASK
Lawrence G. Ponzi, Highland Park, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Dec. 14, 1981, Ser. No. 330,421
U.S. Cl. D29—8



273,146
VACUUM CLEANER INTAKE MEMBER
Grace Farr, 5699 Wedekind Rd., Sparks, Nev. 85431
Filed Sep. 4, 1981, Ser. No. 299,553
U.S. Cl. D32—31



273,147
SERVICE STAND FOR AUTOMOTIVE SERVICE STATION
Landis Iverson, 8411 81st St. South, Cottage Grove, Minn. 55016
Filed Nov. 9, 1981, Ser. No. 319,202
U.S. Cl. D34—6



273,148
COLLAPSIBLE CLEANING CART
Rose L. Lerma, 2895 Freeman Pl., Fremont, Calif. 94536
Filed Oct. 2, 1981, Ser. No. 307,847
U.S. Cl. D34—21



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.F.C.S., Inc.: *See*—
Stevens, Perry; and Brown, Robert E., 4,437,595, Cl. 222-642.000.

A. O. Smith Harvestore Products, Inc.: *See*—
Olson, George E., 4,437,806, Cl. 414-307.000.

A Packaging Service Company, Inc.: *See*—
Szahler, David J., 4,437,566, Cl. 206-1.500.

A. Raymond: *See*—
Andre, Guy, 4,437,633, Cl. 248-68.00R.

A/S Orthana Kemisk Fabrik: *See*—
Balslev, Erik; Hansen, Svenn S.; and Pedersen, Ernst L., 4,438,100, Cl. 424-104.000.

A. Schulman, Inc.: *See*—
Nelson, Wayne F., 4,438,162, Cl. 427-318.000.

Abe, Haruhiko; Harada, Hiroshi; Denda, Masahiko; Nagasawa, Koichi; and Kono, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Plasma treating apparatus. 4,438,368, Cl. 315-39.000.

Abe, Hiroshi, to Asahi Seiko Kabushiki Kaisha. Coin counting and dispensing apparatus. 4,437,478, Cl. 133-5.00R.

Abe, Keizo: *See*—
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Keizo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,438,155, Cl. 427-49.000.

Abe, Takeshi, to Ricoh Co. Ltd. Device of integrating a small amount of flow of fluid for leak detection. 4,437,336, Cl. 73-40.50R.

Abiko, Shuzo: *See*—
Sawada, Takeshi; Yoneda, Ko; Shimmi, Akira; Goto, Hirokazu; and Abiko, Shuzo, 4,438,470, Cl. 360-113.000.

Abraf, Joseph A.; Klokholm, Erik; and Herd, Sigrid R., to International Business Machines Corporation. Zero to low magnetostriction, high coercivity, polycrystalline, Co-Pt magnetic recording media. 4,438,066, Cl. 420-435.000.

Abraham, John K.: *See*—
Pickens, John W.; Abraham, John K.; Mintus, Raymond E.; and Thomas, Millicent H., 4,437,902, Cl. 148-12.00F.

Abrevaya, Albert: *See*—
Goldstein, Joel; and Abrevaya, Albert, 4,437,429, Cl. 119-1.000.

Abrioux, Andre: *See*—
Saint-Leger, Didier J.; and Abrioux, Andre, 4,438,205, Cl. 436-71.000.

Abu-Shumays, Ahmad; Heimer, John C.; and Luchetti, Stephen J., to Varian Associates, Inc. Single-pump multiple stroke proportioning for gradient elution liquid chromatography. 4,437,812, Cl. 417-53.000.

ACF Industries, Inc.: *See*—
Schipper, Dennis J., 4,437,798, Cl. 406-119.000.

Acker, Rolf-Dieter; Rosey, Phillip A.; Hamprecht, Gerhard; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Dihydrothiophenecarboxylates and their use for controlling undesirable plant growth. 4,437,878, Cl. 71-90.000.

Ackerman, Bernard, to Ackrad Laboratories, Inc. Securing device for tube insertable in body cavity. 4,437,463, Cl. 128-207.170.

Ackermann, Ulrich; and Ratsch, Eggo, to Versuchsanstalt f. Deutsche Forschungs-u Luft-u Raumfahrt e.V. Noiseless combustion and plasma cutting arrangement. 4,438,316, Cl. 219-121.0PC.

Ackley, Charles E., Jr.: *See*—
Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., 4,437,559, Cl. 198-397.000.

Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., to R. W. Hartnett Company. Method and apparatus for removing non-rectified capsules from a capsule rectification and transport device. 4,437,559, Cl. 198-397.000.

Ackrad Laboratories, Inc.: *See*—
Ackerman, Bernard, 4,437,463, Cl. 128-207.170.

Acme Highway Products Corp.: *See*—
Puccio, Guy S., 4,437,785, Cl. 404-64.000.

Acos Finos Piratini S.A.: *See*—
Martin, Clovis L., 4,437,835, Cl. 432-103.000.

Acroseal Window Corporation: *See*—
Young, Alfred G.; Slocomb, Leon F., Jr.; and Bugg, Francis V., 4,438,430, Cl. 340-547.000.

Adams, Gary V.; and Schneider, Fred E., to Thiokol Corporation. Inflator for a protective inflatable cushion system. 4,437,681, Cl. 280-733.000.

Adell, Robert, to U.S. Product Development Company. Method of manufacturing edge guards. 4,437,916, Cl. 156-222.000.

Adkins, Joey B., to Issa, Darrell E. Electronic key anti-theft system. 4,438,426, Cl. 340-64.000.

Adler, Peter K., deceased: *See*—
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.

Advanced Micro Devices, Inc.: *See*—
Chuang, Patrick T.; Keswick, Paul D.; and Linden, Jeffrey L., Sr., 4,438,346, Cl. 307-297.000.

Harmon, William J., Jr.; Mick, John R.; and Coleman, Vernon, 4,438,492, Cl. 364-200.000.

Aero Environmental Limited: *See*—
Brooker, Michael F. C.; McKeithen, Steven J.; Attwala, Hashemukrai D.; and Castillo, Antonio L., 4,437,831, Cl. 431-177.000.

Aero-Motive Mfg. Co.: *See*—
Rosenberg, Irwin, 4,437,624, Cl. 242-107.300.

Agency of Industrial Science and Technology: *See*—
Iahii, Yoshiaki; Kuma, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, 4,437,416, Cl. 110-245.000.

Agfa-Gevaert AG: *See*—
Ehgartner, Gabriele; and Vondrovsky, Gabriel, 4,437,749, Cl. 354-214.000.
Engelsmann, Dieter; Hackenberg, Hubert; Lermann, Peter; Wagner, Karl; and Zobel, Siegfried, 4,437,751, Cl. 354-214.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Kunitz, Friedrich-Wilhelm; and Schranz, Karl-Wilhelm, 4,438,195, Cl. 430-566.000.
Pfeifer, Josef; and Rheude, Alfred, 4,438,164, Cl. 428-35.000.

Agosta, A. Richard. Adjustable patient corrective support apparatus. 4,437,702, Cl. 297-284.000.

Ahrens, Max; and Haissig, Manfred, to Boehler Aktiengesellschaft. Method for control of billet stripping. 4,437,509, Cl. 164-454.000.

Aida Castellanos Kwasniak: *See*—
Castellanos Manero, Carlos E., 4,437,252, Cl. 42-89.000.

Air Products and Chemicals, Inc.: *See*—
Newton, Charles L.; and Puini, Dennis L., 4,437,312, Cl. 60-648.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Nomura, Ishii; and Akagi, Motonobu, 4,437,645, Cl. 251-65.000.
Yamazawa, Masayuki, 4,437,423, Cl. 112-292.000.

Aizawa, Hidekuni: *See*—
Miyashita, Takao; Aizawa, Hidekuni; and Takamiya, Toru, 4,437,778, Cl. 400-208.000.

Ajiro, Tamotu: *See*—
Miyamoto, Akira; Shimizu, Senzo; Harada, Masahiro; Ajiro, Tamotu; and Hara, Hideki, 4,438,257, Cl. 528-347.000.

Akademii Nauk Ukrainsko: *See*—
Safonnikov, Anatoly N.; and Antonov, Anatoly V., 4,438,313, Cl. 219-73.100.

Akagi, Motonobu: *See*—
Nomura, Ishii; and Akagi, Motonobu, 4,437,645, Cl. 251-65.000.

Akashi, Akira; Katsuma, Makoto; Kawamura, Masaharu; Kamata, Shigeru; and Saito, Syuichiro, to Canon Kabushiki Kaisha. Safety device for camera and accessory. 4,437,752, Cl. 354-289.000.

Akimoto, Masahiro: *See*—
Nomoto, Reishi; Akimoto, Masahiro; and Takahashi, Masayoshi, 4,437,465, Cl. 128-340.000.

Akita, Yoshio; Maruyama, Toshinori; and Muto, Katsuya, to Nippondenso Co., Ltd. Generation indicating apparatus for vehicle alternators. 4,438,384, Cl. 320-48.000.

Akiyama, Masataka: *See*—
Shimada, Kazuo; Akiyama, Masataka; and Sudo, Masami, 4,438,093, Cl. 424-50.000.

Akzo N.V.: *See*—
Sanders, Adrianus L. M.; Meuleman, Dirk G.; Moelker, Huibert C. T.; van Dedem, Gijsbert W. K.; and van Houdenhoven, Francois E. A., 4,438,108, Cl. 424-183.000.
Zengel, Hans-Georg; Kersten, Hilde; and Magerlein, Helmut, 4,437,960, Cl. 204-181.00C.

Albany International Plastic B.V.: *See*—
van der Ploeg, Dirk C. H.; and Tameris, Hendrikus M., 4,437,787, Cl. 425-84.000.

Albaugh, Neil P.: *See*—
Stitt, Robert M.; and Albaugh, Neil P., 4,438,338, Cl. 250-551.000.

Albert, Donald; and Tremaglio, Anthony M., to Miracle Products, Inc. Switched rectifier disc for Edison sockets. 4,438,344, Cl. 307-146.000.

Alberta Oil Sands Technology and Research Authority: *See*—
Boorman, Philip M.; Chivers, Tristram; Tavares, Donald F.; and Mahadev, Kalabeerappa N., 4,438,218, Cl. 502-220.000.

Albertson, Kurt D.: *See*—
Ashcraft, Charles R.; and Albertson, Kurt D., 4,438,175, Cl. 428-315.500.

Alcon Laboratories, Inc.: *See*—
York, Billie M., Jr., 4,438,272, Cl. 548-308.000.

Aldenhoven, Ghislanus M. A. M., to U.S. Philips Corporation. Mechanism responsive to rotation stoppage, and tape recorder with such mechanism. 4,437,626, Cl. 242-186.000.

Alfano, Robert R.: *See*—
Schiller, Norman H.; and Alfano, Robert R., 4,438,416, Cl. 333-160.000.

Allan, Keith, to FBC Limited. Pesticidal compositions employing amitraz with stabilizer. 4,438,137, Cl. 424-330.000.
Allard, Gilbert. Fishing leader holder. 4,437,258, Cl. 43-57.100.
Allec, Josiane: *See—*
Grollier, Jean-Francois; and Allec, Josiane, 4,438,095, Cl. 424-70.000.
Allen, Lloyd E.; and Riblet, Leslie A., to Mead Johnson & Company. Method for alleviation of extrapyramidal motor disorders. 4,438,119, Cl. 424-251.000.
Allen, Malcolm L.: *See—*
DelGreco, Angela G.; Allen, Malcolm L.; and Jacobsen, Ronald L., 4,438,024, Cl. 252-545.000.
Allied Corporation: *See—*
Greutmann, Hans, 4,437,230, Cl. 29-597.000.
Mallik, Arjun; Koetters, Daniel; and Edelstein, Harold, 4,438,017, Cl. 252-301.170.
Nalewajek, David, 4,438,078, Cl. 423-21.500.
Tajkowski, Edward G., 4,438,026, Cl. 252-545.000.
Allington, Robert W., to ISCO, Inc. Lamp circuit. 4,438,370, Cl. 315-106.000.
Allison, Richard: *See—*
Harrington, Alan L.; Allison, Richard; and Rodov, Vladimir, 4,438,448, Cl. 357-23.000.
Alps Electric Co., Ltd.: *See—*
Hori, Fumihisa, 4,437,777, Cl. 400-154.200.
Alston, Lawrence E., to Polaroid Corporation. Constant light greyscale generator for CRT color camera system. 4,438,453, Cl. 358-78.000.
Aluminium Pechiney: *See—*
Gerphagnon, Jean-Louis; and Wolter, Claude, 4,437,964, Cl. 204-245.000.
Aluminum Company of America: *See—*
van Linden, Jan H. L., 4,437,650, Cl. 266-144.000.
Amano, Kazunori; and Sekiwaga, Youichi, to Toshiba Heating Appliances Co., Ltd. Lamp wick equipment for a combustion apparatus. 4,437,832, Cl. 431-304.000.
American Cyanamid Company: *See—*
Casey, Donald J.; and Huffman, Kenneth R., 4,438,253, Cl. 528-86.000.
American Home Products Corporation: *See—*
Helfer, Joel N.; and King, Phillip W., 4,437,467, Cl. 128-642.000.
Winkley, Michael W.; and Childress, Scott J., 4,438,031, Cl. 260-112.50R.
American Hospital Supply Corporation: *See—*
Borsanyi, Alexander S., 4,437,990, Cl. 210-321.300.
American Microsystems, Incorporated: *See—*
Haque, Yusuf A.; Saletore, Vikram; and Schuler, Jeffrey A., 4,438,354, Cl. 307-493.000.
American Safety Equipment Corporation: *See—*
Wyder, Manfred, 4,437,623, Cl. 242-107.200.
American Standard Inc.: *See—*
Pascoe, Robert D., 4,437,632, Cl. 246-34.00R.
Ameron, Inc.: *See—*
Magarian, Gerald M.; and Friedrich, Ralph S., 4,437,616, Cl. 242-7.020.
AMF Incorporated: *See—*
Brown, Robert L., 4,437,243, Cl. 33-302.000.
Amiel, Abraham J.: *See—*
Nir, Aharon; Amiel, Abraham J.; and Krant, Jonathan M., 4,437,263, Cl. 47-1.00R.
Ammons, Edward A., to Ford Motor Company. Carburetor engine idle speed air bypass. 4,438,049, Cl. 261-42.000.
AMP Incorporated: *See—*
Bianchi, Edward A., 4,437,722, Cl. 339-97.00P.
Eaby, Daniel G.; Long, William B.; and Shuey, John R., 4,437,725, Cl. 339-156.00R.
Ampex Corporation: *See—*
Fawkes, John S.; and Umholtz, Walter F., 4,438,466, Cl. 360-66.000.
Anahara, Meiji; and Omori, Hiroshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. False twisting air nozzle. 4,437,302, Cl. 57-333.000.
Anderson, Harold R.; and Hamilton, Roland M., to United States of America, Air Force. Service platform for a ladder. 4,437,544, Cl. 182-120.000.
Anderson, Inge; and Johansson, Ronny. Building structure. 4,437,285, Cl. 52-481.000.
Andersson, Karl G. B., to Duni Bila AB. Pad with shape adapting properties. 4,438,163, Cl. 428-35.000.
Anding, Norbert: *See—*
Arens, Egidius; Hampe, Christoph; Karlowsky, Ingo; Meyersieck, Manfred; Schwarz, Hans D.; Anding, Norbert; and Leisterer, Reinhard, 4,438,438, Cl. 343-451.000.
Ando, Naoyoshi: *See—*
Ishii, Yoshiaki; Kume, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, 4,437,416, Cl. 110-245.000.
Ando, Tetsuo: *See—*
Tamura, Hisashi; Ito, Ichizo; Hirayama, Masashi; and Ando, Tetsuo, 4,437,350, Cl. 73-861.240.
Andre, Guy, to A. Raymond. Elastic fastening clamp for round bars or cables of various diameters. 4,437,633, Cl. 248-68.00R.
Andrews, Edward W.: *See—*
Collins, Arthur K.; Andrews, Edward W.; and Srinivasan, Nallaswamy, 4,438,495, Cl. 364-414.000.
Antares Engineering, Inc.: *See—*
Gates, Donald C., 4,437,335, Cl. 73-37.900.
Antonov, Anatoly V.: *See—*
Safonnikov, Anatoly N.; and Antonov, Anatoly V., 4,438,313, Cl. 219-73.100.
Anver S.A.: *See—*
Bichet, Lucien, 4,437,921, Cl. 156-475.000.
Aoki, Ryuji: *See—*
Takata, Masahiro; Aoki, Ryuji; and Sato, Takahisa, 4,438,217, Cl. 502-205.000.
Aoki, Tomohiro: *See—*
Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, 4,437,756, Cl. 355-14.00R.
Aonuma, Masashi: *See—*
Umemura, Shizuo; Matsufuji, Akihiro; Aonuma, Masashi; Kitamoto, Tatsuji; and Miyatsuka, Hajime, 4,437,882, Cl. 75-0.50R.
Aoshima, Terutaka: *See—*
Narita, Ryuho; Yamamori, Kenji; Oota, Hiroyuki; and Aoshima, Terutaka, 4,438,324, Cl. 219-441.000.
Aotsu, Hiroaki: *See—*
Sato, Hiroyasu; Yamamoto, Kazuaki; and Aotsu, Hiroaki, 4,438,385, Cl. 322-28.000.
Aoyama, Masahide: *See—*
Sano, Jun; Aoyama, Masahide; and Kubo, Daijiro, 4,438,353, Cl. 307-477.000.
APM Corporation: *See—*
Morse, Milton, 4,438,300, Cl. 179-184.000.
Appleby, Paul E.; and Brinkley, Max D., to Goodyear Tire & Rubber Company, The. Method of curing removable tread belt. 4,437,915, Cl. 156-126.000.
Appor Limited: *See—*
Banks, Stewart, 4,437,585, Cl. 222-181.000.
Aquarium Pharmaceuticals, Inc.: *See—*
Goldstein, Joel; and Abrevaya, Albert, 4,437,429, Cl. 119-1.000.
Araki, Masafumi: *See—*
Ikenoya, Yasuo; Ueda, Shuso; and Araki, Masafumi, 4,437,304, Cl. 60-290.000.
Ikenoya, Yasuo; Araki, Masafumi; and Shimizu, Yozi, 4,437,305, Cl. 60-293.000.
Araki, Masatada; and Tanaka, Yukio, to Nippon Oil and Fats, Co., Ltd. Cutting tool. 4,437,800, Cl. 407-119.000.
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, to Matsushita Electric Industrial Co., Ltd. Electronic parts mounting apparatus. 4,437,232, Cl. 29-740.000.
Aramaki, Minoru; Kita, Yasushi; Nakano, Hishagi; and Moroi, Shiro, to Central Glass Company Limited. Method for preparation of graphite fluoride by contact reaction between carbon and fluorine gas. 4,438,086, Cl. 423-448.000.
Arcair Company: *See—*
Rieppel, Perry J.; and Moore, Paul E., 4,437,649, Cl. 266-48.000.
Arcamone, Federico: *See—*
Suarato, Antonino; Penco, Sergio; Arcamone, Federico; and Casazza, Anna M., 4,438,105, Cl. 424-180.000.
Archer, Wesley L.; Lynn, Vicki A.; and Dallessandro, Susan M., to Dow Chemical Company, The. Photoresist stripper composition and method of use. 4,438,192, Cl. 430-329.000.
Arend, Raymond J.: *See—*
Plattner, Robert F.; Arend, Raymond J.; and VerBerkmoes, John A., 4,437,396, Cl. 99-475.000.
Arens, Egidius; Hampe, Christoph; Karlowsky, Ingo; Meyersieck, Manfred; Schwarz, Hans D.; Anding, Norbert; and Leisterer, Reinhard, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for displaying a battle situation. 4,438,438, Cl. 343-451.000.
Arita, Yoji; and Seo, Yuzo, to Itsubishi Keikinzoku Kogyo Kabushiki Kaisha. Method of controlling aluminum electrolytic cells. 4,437,950, Cl. 204-67.000.
Arkans, Edward J., to Kendall Company, The. Device for applying indicia to an elastic web. 4,437,408, Cl. 101-426.000.
Armantrout, Robert J.; Gerpheide, George E.; and Wilson, Robert F., deceased (by Wilson, Robert D., personal representative), to Wilson, Robert D., personal representative of Robert F. Wilson, deceased. Golf Game simulating apparatus. 4,437,672, Cl. 273-185.00B.
Armiger, Dennis L. Domestic electric generator and steam heating plant. 4,438,340, Cl. 290-2.000.
Armstrong World Industries, Inc.: *See—*
Herweh, John E., 4,438,251, Cl. 528-73.000.
Arpin, Michael D.: *See—*
Leon, Thomas B.; and Arpin, Michael D., 4,438,482, Cl. 362-103.000.
Asada, Hideki: *See—*
Matsui, Kanenobu; Uchiumi, Shinichiro; Takahashi, Mitsuo; Asada, Hideki; and Kurahashi, Masaru, 4,438,041, Cl. 260-464.000.
Asahi Seiko Kabushiki Kaisha: *See—*
Abe, Hiroshi, 4,437,478, Cl. 133-5.00R.
Asai, Setsuro, to Hitachi, Ltd. Absorption cooling and heating system. 4,437,321, Cl. 62-324.200.
Ashcraft, Charles R.; and Albertson, Kurt D., to Mobil Oil Corporation. Synthetic film with a paper-like surface and method of forming same. 4,438,175, Cl. 428-315.500.
Ashiba, Masahiro, to Tokico Ltd. Shock absorber. 4,437,548, Cl. 188-289.000.
Ashland Food Technology Holdings S.A.: *See—*
Becker, Heinz, 4,437,206, Cl. 17-1.00F.
Ashland Oil, Inc.: *See—*
Kovach, Stephen M., 4,437,981, Cl. 208-253.000.

Ashley, William B.: *See—*
Casper, Paul W.; and Ashley, William B., 4,438,348, Cl. 307-310.000.
Astier, Louis. Assembly forming interfitting socket and plug for connection to a circuit in which the socket is mounted, without the circuit opening. 4,438,303, Cl. 200-51.100.
Astle, William H., to Tri Tool, Inc. Tool carrier for portable lathe. 4,437,366, Cl. 82-4.00C.
Astro Machine Corp.: *See—*
Selak, Martin, 4,437,657, Cl. 271-100.000.
Asulab S.A.: *See—*
Dinger, Rudolf; Michel, Jean-Georges; and Leuenberger, Claude-Eric, 4,437,773, Cl. 374-117.000.
Atcor: *See—*
Bardina, Juan; and Gonzalez, Mikel, 4,437,479, Cl. 134-68.000.
Ateliers Suasmeyer SPRL: *See—*
Suasmeyer, Robert; Pluvinage, Alain; and Moensaert, Christian, 4,437,940, Cl. 203-49.000.
Athena Controls Inc.: *See—*
Metz, Bruce E., 4,437,853, Cl. 493-302.000.
Atkinson, Paul J., to Zenith Radio Corporation. Spark gap for line transient protection. 4,438,365, Cl. 313-325.000.
Atlanta Stove Works, Inc.: *See—*
Wysong, Charles F., 4,437,451, Cl. 126-77.000.
Atlantic Richfield Company: *See—*
Peterman, Lee G.; and Staebel, Raymond J., 4,438,069, Cl. 422-62.000.
Attanasio, Michael P. Arrow projecting handbow. 4,437,449, Cl. 124-22.000.
Attwala, Hashmukrai D.: *See—*
Brooker, Michael F. C.; McKerihen, Steven J.; Attwala, Hashmukrai D.; and Cautillo, Antonio L., 4,437,831, Cl. 431-177.000.
Audi NSU Auto Union Aktiengesellschaft: *See—*
Wilmers, Gottlieb, 4,437,644, Cl. 251-11.000.
Auerbach, Abraham: *See—*
Eichelberger, Charles W.; Wojnarowski, Robert J.; and Auerbach, Abraham, 4,438,291, Cl. 136-236.00R.
Ausmus, Donald L. Vehicle for supporting handicapped occupants. 4,437,537, Cl. 180-313.000.
Ausschnitt, Christoper P., to Perkin-Elmer Corp., The. Reusable electrical overlay measurement circuit and process. 4,437,760, Cl. 355-133.000.
Autech Corporation: *See—*
Cullen, Donald L.; and Robertson, John A., 4,438,402, Cl. 324-452.000.
Automobiles Citroen: *See—*
Dore, Jacques, 4,437,331, Cl. 72-360.000.
Automobiles Peugeot: *See—*
Dore, Jacques, 4,437,331, Cl. 72-360.000.
Aviatec, Inc.: *See—*
Garoffolo, Frank, 4,437,573, Cl. 212-263.000.
Ayad, Hafez M., to Union Carbide Corporation. Chewing insect toxicant compositions. 4,438,110, Cl. 424-217.000.
Aykanian, Ardashus A.: *See—*
Richter, Simon J.; and Aykanian, Ardashus A., 4,438,061, Cl. 264-249.000.
Azzariti, Vittorio. Burn treatment. 4,438,099, Cl. 424-93.000.
B. F. Goodrich Company, The: *See—*
Kramer, James H.; Orndorff, Roy L., Jr.; and Stephens, James M., 4,437,688, Cl. 285-95.000.
Baba, Kenji: *See—*
Saito, Yukio; Nogita, Shunsuke; Watanabe, Syoji; and Baba, Kenji, 4,437,992, Cl. 210-603.000.
Babitzka, Rudolf; and Linder, Ernst, to Robert Bosch GmbH. Electrically controlled mechanical positioning device. 4,438,363, Cl. 310-328.000.
Baker International Corporation: *See—*
Bianchi, David C.; and Crowe, Talmadge L., 4,437,517, Cl. 166-120.000.
Cockrell, Darryl W., 4,437,516, Cl. 166-120.000.
Baker, Marvin E. Roll-out flame detector for swimming pool heater fuel gas control. 4,437,829, Cl. 431-21.000.
Baker Oil Tools, Inc.: *See—*
Krause, William F., Jr.; and Hopmann, Mark E., 4,437,522, Cl. 166-382.000.
Baker, Richard W., to United States of America, Interior. Extraction of metal ions from aqueous solution. 4,437,994, Cl. 210-638.000.
Bakker, Arie, to Bamach, B. V. Process for the preparation of a foodstuff consisting of a stuffing rolled in a wrap. 4,438,145, Cl. 426-297.000.
Ball, Larry L.: *See—*
Haskin, John R., deceased, 4,437,739, Cl. 353-27.00R.
Balser, Klaus; Tuebner, Helwig; and Oppermann, Wilhelm, to Bayer Aktiengesellschaft. Process for the production of hydroxyethyl methyl cellulose. 4,438,264, Cl. 536-91.000.
Balslev, Erik; Hansen, Svenn S.; and Pedersen, Ernst L., to A/S Orthana Kemisk Fabrik. Sterilized preserved, stable mucine-containing solutions. 4,438,100, Cl. 424-104.000.
Bamach, B. V.: *See—*
Bakker, Arie, 4,438,145, Cl. 426-297.000.
Banke, Karl-Heinz; Hering, Elisabeth; Lobel, Wilfried; Pollack, Dieter; Wiedemann, Gunter; Grell, Ute; and Schuler, Ingo, to Forschungsinstitut fur Textiltechnologie. Making a fibrillated synthetic-resin strand. 4,438,053, Cl. 264-25.000.
Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Diamondlike flake composites. 4,437,962, Cl. 204-192.00C.
Banks, Stewart, to Appor Limited. Dispensers. 4,437,585, Cl. 222-181.000.
Baran, Paul, to Telebit Corporation. Packetized ensemble modem. 4,438,511, Cl. 370-19.000.
Barber-Colman Company: *See—*
Trost, Wayne C., 4,438,173, Cl. 428-221.000.
Barbereau, Jean-Luc: *See—*
Londos, Rene; and Barbereau, Jean-Luc, 4,437,808, Cl. 414-667.000.
Barbier, Jean-Paul; and Lerouyer, Gilbert, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process of gaseous opalization of light bulbs. 4,438,152, Cl. 427-37.000.
Barbour, William P., to DBS, Inc. Electric data recorder. 4,437,404, Cl. 101-269.000.
Barclay, Andrew C.: *See—*
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,438,212, Cl. 501-73.000.
Bardina, Juan; and Gonzalez, Mikel, to Atcor. Decontamination apparatus for semiconductor wafer handling equipment. 4,437,479, Cl. 134-68.000.
Bareuther, Ernst: *See—*
Pietsch, Hartmut; Turke, Wolfgang; Bareuther, Ernst; Kampf, Fritz; and Bings, Hubert, 4,438,076, Cl. 423-30.000.
Barnabe, Jean-Louis, to Regie Nationale des Usines Renault. Metal alloy with high catalytic activity. 4,437,926, Cl. 156-654.000.
Barnett, William E., to Riker Laboratories, Inc. Anticoagulant substance. 4,438,261, Cl. 536-21.000.
Barniak, Richard L. Drinking vessel with self-contained straws. 4,437,576, Cl. 220-90.400.
Barry, Leon F.: *See—*
Gluck, David G.; and Barry, Leon F., 4,438,166, Cl. 428-113.000.
Bartsch, Wolfgang: *See—*
Rose, Carl H.; Kampe, Wolfgang; Bartsch, Wolfgang; Sponer, Gisbert; and Roesch, Egon, 4,438,116, Cl. 424-250.000.
BASF Aktiengesellschaft: *See—*
Acker, Rolf-Dieter; Rossy, Phillip A.; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,437,878, Cl. 71-90.000.
Brandstetter, Franz; Hambrecht, Juergen; Jung, Rudolf H.; and Lindenschmidt, Gerhard, 4,438,237, Cl. 525-183.000.
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.
Koester, Eberhard; Hack, Joachim; and Steuerwald, Manfred, 4,438,462, Cl. 360-2.000.
Lardon, Hartmut; and Seybold, Guenther, 4,438,282, Cl. 568-58.000.
Oeder, Dieter; Ziegler, Walter; Daeuble, Manfred; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,438,008, Cl. 252-56.00R.
Oppenlaender, Knut; Strickler, Rainer; Seib, Karl; and Naegele, Paul, 4,438,094, Cl. 424-59.000.
Rapp, Guenther; Thomas, Erwin; and Muenster, Rolf, 4,438,084, Cl. 423-387.000.
BASF Wyandotte Corporation: *See—*
Brizgys, Bernardas, 4,438,235, Cl. 524-700.000.
Christman, Donald L.; and Merkl, Bernard A., 4,438,248, Cl. 528-57.000.
Bast, Bernard J., to Bethlehem Steel Corporation. Method for producing a corrugated pipe having a smooth lining of foam plastic. 4,438,056, Cl. 264-45.200.
Bastian Blessing Co., Inc.: *See—*
Plattner, Robert F.; Arend, Raymond J.; and VerBerkmoes, John A., 4,437,396, Cl. 99-475.000.
Battelle Memorial Institute: *See—*
Prost, Jean-Louis, 4,437,470, Cl. 128-679.000.
Siddiqi, Iqbal, 4,438,067, Cl. 422-56.000.
Battle, Billy J., to United States Pipe and Foundry Company. Flexible gauge for inside dimensions. 4,437,242, Cl. 33-178.00B.
Bauer, Eckhart: *See—*
Gruber, Peter; Schmid, Jochen; Lechner, Horst; and Bauer, Eckhart, 4,438,091, Cl. 424-21.000.
Bauer, Wilfried; Cardinaux, Francois; Huguenin, Rene; Pless, Janos; and Sandrin, Edmond, to Sandoz Ltd. Organic compounds. 4,438,103, Cl. 424-177.000.
Baughman, Richard J.; and Ginley, David S., to United States of America, Energy. Photoelectrochemical cell having photoanode with thin boron phosphide coating as a corrosion resistant layer. 4,438,183, Cl. 429-111.000.
Baumgartner, Hans, to Pierburg GmbH & Co., KG. Pneumatically operated servo-motor and control method therefor. 4,437,386, Cl. 91-363.00R.
Baxter Travenol Laboratories, Inc.: *See—*
Wieniewski, Michael F., 4,438,357, Cl. 307-597.000.
Bayer Aktiengesellschaft: *See—*
Balser, Klaus; Tuebner, Helwig; and Oppermann, Wilhelm, 4,438,264, Cl. 536-91.000.
Boberg, Michael; Habich, Dieter; Metzger, Karl G.; and Naab, Paul, 4,438,114, Cl. 424-248.510.
Dorner, Florian, 4,437,582, Cl. 222-94.000.

Grogler, Gerhard; Ganster, Otto; and Recker, Klaus, 4,438,250, Cl. 528-66.000.
Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,438,122, Cl. 424-263.000.
Lantzsch, Reinhard; Marhold, Albrecht; Behrenz, Wolfgang; and Hammann, Ingeborg, 4,438,275, Cl. 549-434.000.
Petersen, Uwe; Stadler, Peter; Lockhoff, Oswald; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,438,260, Cl. 536-13.900.
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,438,060, Cl. 264-206.000.
Schmitz-Josten, Robert; Suling, Carlhans; Podszun, Wolfgang; Bomer, Bruno; Borgardt, Manfred; and Walkowiak, Michael, 4,437,836, Cl. 433-199.000.

BBC Brown, Boveri & Company, Limited: *See*—
Korner, Gerhard; and Rees, Volker, 4,438,308, Cl. 200-148.00A.

Bean, William C.: *See*—
Tao, Thomas M.; and Bean, William C., 4,437,917, Cl. 156-296.000.

Beck, Alexander F.; and Winter, Joseph, to Olin Corporation. Method and apparatus for bonding metal wire to a base metal substrate. 4,437,943, Cl. 204-16.000.

Beck, Martin H.: *See*—
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,437,825, Cl. 425-145.000.

Beck, Robert L. R., to Boeing Company, The. Integral actuator and sequencing valve. 4,437,387, Cl. 91-401.000.

Becker, Hal C. Apparatus for controlled stopper extraction from and reinsertion in sparkling wine bottles. 4,437,360, Cl. 81-3.440.

Becker, Heinz, to Ashland Food Technology Holdings S.A. Multiple reusable tubular casing, and apparatus and process for using same in the production of caseless (skinless) parboil or raw sausages. 4,437,206, Cl. 17-1.00F.

Beckman Instruments, Inc.: *See*—
Glenn, Thomas J.; and Kaye, Wilbur I., 4,437,762, Cl. 356-326.000.
Kaye, Wilbur I., 4,437,763, Cl. 356-326.000.
Stephens, Donald E.; and Sharples, Thomas D., 4,438,070, Cl. 422-70.000.

Bedin, Jean, to Etablissements Larrieubedin "La Girondine". Automatic machine for capping and labelling bottles or like containers. 4,437,289, Cl. 53-64.000.

Beecham Group Limited: *See*—
Corbett, David F.; Southgate, Robert; and Coulton, Steven, 4,438,036, Cl. 260-245.20T.
Ponsford, Roger J.; and Howarth, Thomas T., 4,438,101, Cl. 424-114.000.

Beers, Melvin D.; and Surprenant, Richard P., to General Electric Company. Titanium chelate catalyst for silicone compositions. 4,438,039, Cl. 260-429.500.

Begin, John D.: *See*—
Juengel, Richard O.; Begin, John D.; and Khalaf, John, 4,437,240, Cl. 33-172.00E.

Behrenz, Wolfgang: *See*—
Lantzsch, Reinhard; Marhold, Albrecht; Behrenz, Wolfgang; and Hammann, Ingeborg, 4,438,275, Cl. 549-434.000.

Bell, Allyn R.; Doweyko, Arthur M. P.; and Minatelli, John A., to Uniroyal, Inc. 2-Ethylsulfonyl pyridine 1-oxide derivatives. 4,438,271, Cl. 546-294.000.

Bell Telephone Laboratories, Incorporated: *See*—
Cais, Rudolf E., 4,438,247, Cl. 526-249.000.
Copeland, John A., III; and Miller, Stewart E., 4,438,447, Cl. 357-19.000.
Favin, David L., 4,438,504, Cl. 364-724.000.
Okinaka, Yutaka; Smith, Craig G.; and Smith, Lawrence E., 4,437,948, Cl. 204-52.00R.
Rubin, Harvey, 4,438,298, Cl. 179-175.20R.
Sheng, Tan T.; Sinha, Ashok K.; and Vaidya, Sheila, 4,438,450, Cl. 357-68.000.
Steinberger, Michael L., 4,438,530, Cl. 455-278.000.
Tsang, Won-Tien, 4,438,446, Cl. 357-17.000.

Bendix Corporation, The: *See*—
Leach, Earl A., Jr., 4,438,421, Cl. 336-65.000.
Lewis, David L., 4,437,801, Cl. 409-232.000.

Benicek, Jeanne A.; and Schrader, Rodney W., to S. C. Johnson & Son, Inc. Low solvent laundry pre-spotting composition. 4,438,009, Cl. 252-90.000.

Bennett, Nicholas L. Apparatus and method of reducing trees to firewood. 4,437,368, Cl. 83-13.000.

Benoit, Louis J. Single-ply roofing system. 4,437,283, Cl. 52-410.000.

Beres, Ernest A.: *See*—
Stavitsky, David; and Beres, Ernest A., 4,437,641, Cl. 249-79.000.

Beretta, Pier C., to Fabbrica d'Armi P Beretta S.p.A. Revolver. 4,437,250, Cl. 42-59.000.

Berg, Winfred M., to Winfred M. Berg, Inc. Replacement drive belt. 4,437,849, Cl. 474-256.000.

Bernard, Walter J., to Sprague Electric Company. Stabilization of aluminum electrolytic capacitor foil. 4,437,946, Cl. 204-35.00N.

Best, Gerd; and Dlugosch, Gunter, to Krampe & Co. Fertigung in Bergbaubedarf GmbH. Spraying nozzle arrangement. 4,437,707, Cl. 299-81.000.

Best Lock Corporation: *See*—
Foshee, William R., 4,437,695, Cl. 292-352.000.

Bethlehem Steel Corporation: *See*—
Best, Bernard J., 4,438,056, Cl. 264-45.200.

Bettge, Hans: *See*—
Lippmann, Hans-Joachim; Peche, Gerhard; and Bettge, Hans, 4,438,307, Cl. 200-144.00B.

Bey, Philippe; and Jung, Michel, to Merrell Toraude et Compagnie. α-Halomethyl derivatives of α-amino acids. 4,438,270, Cl. 546-243.000.

Bhise, Vijay S.; and Hoch, Robert, to Halcon SD Group, Inc., The. Process for recovering ethylene oxide from aqueous solutions. 4,437,938, Cl. 203-14.000.

Bhise, Vijay S.; and Hoch, Robert, to Halcon SD Group, Inc., The. Process for separating ethylene oxide from aqueous solutions. 4,437,939, Cl. 203-14.000.

Bhojwani, Arju H.: *See*—
Woebcke, Herman N.; Bhojwani, Arju H.; and Gartside, Robert J., 4,437,979, Cl. 208-153.000.

Bianchi, David C.; and Crowe, Talmadge L., to Baker International Corporation. Slip mechanism for subterreanean wells. 4,437,517, Cl. 166-120.000.

Bianchi, Edward A., to AMP Incorporated. Coaxial cable tap. 4,437,722, Cl. 339-97.00P.

Bianchi, Giuseppe, to Grove Valve and Regulator Company. Line removable valve structure with pipeline support means. 4,437,486, Cl. 137-315.000.

Biax Fiberfilm Corporation: *See*—
Schwarz, Eckhard C. A., 4,438,167, Cl. 428-138.000.

Bichet, Lucien, to Anver S.A. Press for gluing footwear elements. 4,437,921, Cl. 156-475.000.

Biegert Aviation, Inc.: *See*—
Jefferies, James C., 4,437,630, Cl. 244-136.000.

Bienek, Heinz; Finkbeiner, Rudolf; and Wick, Wilhelm, to Steag Kernenergie GmbH. Container and closure means for storage of radioactive material. 4,437,578, Cl. 220-256.000.

Bierkarre, Hartwig; Klinger, Gottfried; Radeloff, Jurgen; and Rust, Bernd-Hendrik, to Jungheinrich Unternehmensuerwaltung KG, Firma. System for monitoring the course and for controlling the braking of a freely movable vehicle, particularly an inductively steered vehicle, and vehicle with such a system. 4,437,533, Cl. 180-168.000.

Bigelow, David E.; and Timmerman, Terry, to Construction Forms, Inc. Discharge valve for concrete pumping apparatus. 4,437,646, Cl. 251-145.000.

Bijttebier, Gaspar A. H.; and Vangheluwe, Jozef, to Bijttebier, Gaspar A. H. Process and apparatus for separating flexible sheets from a stack. 4,437,655, Cl. 271-3.100.

Billingsley, Henry C., to Outboard Marine Corporation. Dual fuel supply system. 4,437,448, Cl. 123-577.000.

Bings, Hubert: *See*—
Pietsch, Hartmut; Turke, Wolfgang; Bareuther, Ernst; Kampf, Fritz; and Bings, Hubert, 4,438,076, Cl. 423-30.000.

Binks Manufacturing Company: *See*—
Garcowski, Theodore, 4,437,614, Cl. 239-691.000.

Birle, Theo. Device for self-acting limitation of speed of ascending divers. 4,437,843, Cl. 441-96.000.

Birmingham Bolt Company: *See*—
White, Claude C., 4,437,795, Cl. 405-259.000.

Bischoff, Bernard K.; Patrick, William J.; and Strudwick, Thomas H., to International Business Machines Corporation. Method for tailoring oxygen precipitate particle density and distribution silicon wafers. 4,437,922, Cl. 156-603.000.

Bissot, Thomas C.; Grot, Walter G.; and Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Membrane, electrochemical cell, and electrolysis process. 4,437,951, Cl. 204-98.000.

Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., to Western Electric Company, Inc. Methods of marking and electrically identifying an article. 4,437,229, Cl. 29-593.000.

Bjerklie, John W.: *See*—
Lallaye, Paul G.; Bjerklie, John W.; and Penty, Robert A., 4,437,217, Cl. 29-157.400.

Blachot, Denis, to Thomson-CSF. Tone control circuit. 4,438,414, Cl. 333-28.00T.

Blackburn, George L. Amino acid preparation and therapy for treatment of stress and injury. 4,438,144, Cl. 424-319.000.

Blocher, Hans-Joachim: *See*—
Koehler, Wolfgang; Blocher, Hans-Joachim; and Weiss, Eberhard, 4,437,528, Cl. 180-9.500.

Blot, Roger, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for welding metal articles. 4,438,319, Cl. 219-137.0PS.

Bluethgen, Bjoern, to Polygram GmbH. Method for encoding analog signals using PCM difference code word for forming a code word of specified length. 4,438,522, Cl. 375-27.000.

Bobb, Lloyd C.; Rankin, Michael; and Ferguson, Gerald D., to United States of America, Navy. Interferometrically tuned laser resonator. 4,438,517, Cl. 372-99.000.

Boberg, Michael; Habich, Dieter; Metzger, Karl G.; and Naab, Paul, to Bayer Aktiengesellschaft. β-Lactam antibiotics. 4,438,114, Cl. 424-248.510.

Bochumer Eisenhutte GmbH & Co. KG: *See*—
Koppers, Manfred; Bohnes, Karlheinz; and Kunzer, Heinz, 4,437,562, Cl. 198-733.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Prins reaction products of diisobutylene, derivatives thereof, organoleptic uses thereof and processes for preparing same. 4,437,476, Cl. 131-276.000.

Bodnar, Michael W.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,437,229, Cl. 29-593.000.

Bodor, Janos: *See*—
Verhagen, Laurentius A. M.; and Bodor, Janos, 4,438,149, Cl. 426-603.000.

Boehler Aktiengesellschaft: *See*—
Ahrens, Max; and Haissig, Manfred, 4,437,509, Cl. 164-454.000.

Boehringer Ingelheim KG: *See*—
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,438,143, Cl. 424-304.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Gaida, Wolfram; and Hoefke, Wolfgang, 4,438,118, Cl. 424-251.000.

Boehringer Mannheim GmbH: *See*—
Deeg, Rolf; Schmitt, Urban; and Ziegenhorn, Joachim, 4,438,204, Cl. 436-67.000.
Ross, Carl H.; Kampe, Wolfgang; Bartsch, Wolfgang; Sponer, Gisbert; and Roesch, Egon, 4,438,116, Cl. 424-250.000.
Wiedemann, Fritz; Kampe, Wolfgang; Dietmann, Karl; and Sponer, Gisbert, 4,438,128, Cl. 424-273.00N.

Bosing Company, The: *See*—
Beck, Robert L. R., 4,437,387, Cl. 91-401.000.
Moorehead, James R., 4,437,627, Cl. 244-54.000.
Roine, Martin W., 4,437,629, Cl. 244-122.00R.

Boever, Jean: *See*—
Ulveling, Leon; Legille, Edouard; and Boever, Jean, 4,437,796, Cl. 406-25.000.

Bohnes, Karlheinz: *See*—
Koppers, Manfred; Bohnes, Karlheinz; and Kunzer, Heinz, 4,437,562, Cl. 198-733.000.

Bolmgren, Jan; and Nilsson, Kenth, to Siemens Aktiengesellschaft. Mosaic recorder with improved transducer. 4,438,441, Cl. 346-140.00R.

Bolze, Georges, to Compagnie Generale des Matieres Nucleaires (Cogema). Method for the physical separation of a metallic phase and scoriae in an induction furnace. 4,437,885, Cl. 75-10.00R.

Bomer, Bruno: *See*—
Schmitz-Josten, Robert; Suling, Carlhans; Podszun, Wolfgang; Bomer, Bruno; Borgardt, Manfred; and Walkowiak, Michael, 4,437,836, Cl. 433-199.000.

Bompard, Bruno; and Bruyere, Alain, to Commissariat a l'Energie Atomique; and Societe J. Brochier & Fils. Process for inserting points in a mandrel. 4,437,221, Cl. 29-429.000.

Bon, Luigi D. Self-sealing actuating device for mounting on a discharge valve of a pressurized container. 4,437,592, Cl. 222-402.120.

Boorman, Philip M.; Chivers, Tristram; Tavares, Donald F.; and Mahadev, Kalabeerappa N., to Alberta Oil Sands Technology and Research Authority. Catalyst for sulphur removal from hydrocarbons. 4,438,218, Cl. 502-220.000.

Boosalis, Frieda: *See*—
Ferrin, Wayne, 4,437,580, Cl. 221-75.000.

Booth, Raymond H.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,437,229, Cl. 29-593.000.

Bordat, Andre, to Constructions Mecaniques de Normandie. Bevel gear power transmitting gear trains. 4,437,355, Cl. 74-385.000.

Boreal Hydraulic Equipment: *See*—
Larose, Andre, 4,437,500, Cl. 144-34.00R.

Borgardt, Manfred: *See*—
Schmitz-Josten, Robert; Suling, Carlhans; Podszun, Wolfgang; Bomer, Bruno; Borgardt, Manfred; and Walkowiak, Michael, 4,437,836, Cl. 433-199.000.

Borsanyi, Alexander S., to American Hospital Supply Corporation. Semipermeable membrane mass transfer apparatus having slotted support members. 4,437,990, Cl. 210-321.300.

Borzym, John J. Tube cutting apparatus. 4,437,374, Cl. 83-454.000.

Bose, Sanjay K., to General Electric Company. Methods, and apparatus, for transmitting high-bit-rate digital data in power line communication media having high harmonic noise content. 4,438,519, Cl. 375-1.000.

Botteghi, Carlo; Gladiali, Serafino G.; Marchetti, Mauro; and Faedda, Giovanni A., to Consiglio Nazionale Delle Ricerche. Steroidal chiral phosphines, methods for their preparation, catalytic systems containing them and catalytic processes in which they are used. 4,438,033, Cl. 260-239.55C.

Bowles Fluidics Corporation: *See*—
Stouffer, Ronald D., 4,437,392, Cl. 98-2.080.

Boyadjieff, George I.; and Campbell, Andrew B., to Varco International, Inc. Positioning of well pipe jack in a rig. 4,437,515, Cl. 166-77.000.

Boyadjieff, George I.; and Picard, Joseph A. R., to Varco International, Inc. Well drilling apparatus. 4,437,524, Cl. 173-43.000.

Boyle, Daniel J., to Champion International Corporation. Spool dispenser. 4,437,618, Cl. 242-71.800.

Boyt, Arthur J., Jr.: *See*—
Thornton, Marvin L.; and Boyt, Arthur J., Jr., 4,437,987, Cl. 210-137.000.

BP Chimie: *See*—
Durand, Daniel C.; and Mangin, Pierre M., 4,438,019, Cl. 502-169.000.

Bradshaw, John: *See*—
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; and Bradshaw, John, 4,438,112, Cl. 424-244.000.

Brahams, Ronald Jay: *See*—
Nall, James B.; and King, Jeffery J., 4,438,227, Cl. 524-33.000.

Brakhage, William L., Jr.; and Taylor, William M., to Cameron Iron Works, Inc. Ram-type blowout preventer. 4,437,643, Cl. 251-1.00A.

Brandenburg, John T.; and Crone, John M., Jr., to Texaco Inc. Alumina catalyst stable at high temperatures. 4,438,219, Cl. 502-333.000.

Brandenstein, Manfred; and Muller, Leo, to SKF Kugellagerfabriken GmbH. Throw-out bearing for clutches, especially for motor vehicles. 4,437,556, Cl. 192-98.000.

Brandenstein, Manfred: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Horling, Peter; Hetterich, Hermann; and Kunkel, Heinrich, 4,437,214, Cl. 29-149.5DP.

Brandes, Wilhelm: *See*—
Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,438,122, Cl. 424-263.000.

Brandl, Hans, to Siemens Aktiengesellschaft. Differential digital modulation and demodulation system with an analog signal-dependent sampling clock. 4,438,523, Cl. 375-30.000.

Brandstetter, Franz; Hambrecht, Juergen; Jung, Rudolf H.; and Lindenschmidt, Gerhard, to BASF Aktiengesellschaft. Thermoplastic molding masses of styrene-acrylonitrile and polyamide. 4,438,237, Cl. 525-183.000.

Bredow, Walter; and Otto, Gerhard, to C. Behrens AG. Tool changer for a revolving cutting press. 4,437,224, Cl. 29-568.000.

Breen, Thomas B., to General Electric Company. Selectable integrating characteristic timer for protective relays. 4,438,476, Cl. 361-96.000.

Brescia, Tony; and Deacon, Ross, to Syroco, Inc. Folding table for wall mounting. 4,437,414, Cl. 108-134.000.

Brinkley, Max D.: *See*—
Appleby, Paul E.; and Brinkley, Max D., 4,437,915, Cl. 156-126.000.

Brite, Alan D. Method of preparing an insecticide containing boric acid. 4,438,090, Cl. 424-7.100.

British Gas Corporation: *See*—
Soper, Douglas C.; and Gould, Brian, 4,437,494, Cl. 138-97.000.

British Petroleum Company Limited, The: *See*—
Kelsey, Jeffrey R., 4,437,892, Cl. 106-15.050.

Brizgys, Bernardas, to BASF Wyandotte Corporation. Tertiary alkanolamines to increase viscosity of filled liquid polymers. 4,438,235, Cl. 524-700.000.

Brocklehurst, Charles E.; and Cooper, Bruce H., to Opelika Manufacturing Corporation. Sheet material cutting method and apparatus. 4,437,369, Cl. 83-18.000.

Bronsky, Robert J.; Clark, Dennis B.; McKeen, Jeffrey A.; and Przybylski, William A., to Michigan Consolidated Gas Company. Shut-off actuating device. 4,437,347, Cl. 73-272.00R.

Brooker, Michael F. C.; McKerihen, Steven J.; Attwals, Hashmukrai D.; and Cautillo, Antonio L., to Aero Environmental Limited. Burner head. 4,437,831, Cl. 431-177.000.

Brooks, Frank W., to Flexiblast Company. Adjustable wire guide. 4,437,601, Cl. 226-199.000.

Brown, David E. Valve piston. 4,437,491, Cl. 137-540.000.

Brown, Fred A., to Rotron, Incorporated. Self-starting, direct current motor with permanent magnets of varied magnetic strength. 4,438,362, Cl. 310-152.000.

Brown, James R.; and Sirons, Karlis A. Conversion of modern shotguns into muzzleloading shotguns. 4,437,249, Cl. 42-51.000.

Brown, Paul, to Husky Injection Molding Systems Ltd. Air ejection of molded containers. 4,438,065, Cl. 264-335.000.

Brown, Robert E.: *See*—
Stevens, Perry; and Brown, Robert E., 4,437,595, Cl. 222-642.000.

Brown, Robert L., to AMF Incorporated. Gyroscopic instrument. 4,437,243, Cl. 33-302.000.

Bruno, Roberto; and Memmi, Massimo, to Zincrokuid S.p.A. Process of making long-life thin metal plate for automobile bodies. 4,437,944, Cl. 204-27.000.

Bruyere, Alain: *See*—
Bompard, Bruno; and Bruyere, Alain, 4,437,221, Cl. 29-429.000.

Buchanan, Michael S.: *See*—
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Buchanan, Michael S., 4,438,220, Cl. 521-55.000.
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Buchanan, Michael S., 4,438,221, Cl. 521-55.000.

Budde, David L.; Carson, David G.; Cornish, Anthony L.; Healer, Brad W.; Johnson, David B.; and Peterson, Craig B., to Intel Corporation. Apparatus of fault-handling in a multiprocessing system. 4,438,494, Cl. 364-200.000.

Budzich, Tadeusz, to Caterpillar Tractor Company. Priority flow control system. 4,437,307, Cl. 60-427.000.

Budzich, Tadeusz, to Caterpillar Tractor Company. Dual input pressure compensated fluid control valve. 4,437,388, Cl. 91-446.000.

Buechler, Lester W. Engraving apparatus and method. 4,438,460, Cl. 358-299.000.

Bugg, Francis V.: *See*—
Young, Alfred G.; Slocomb, Leon F., Jr.; and Bugg, Francis V., 4,438,430, Cl. 340-547.000.

Buhl, Steven N.: *See*—
Engler, Philip V.; and Buhl, Steven N., 4,438,202, Cl. 436-8.000.

Bullen, Lee, to Publishers Equipment Corporation. Reduction of cutoff length for folding mechanisms. 4,437,855, Cl. 493-424.000.

Bullock, Joseph J., III, to Three Sisters Ranch Enterprises. Overcap for spice canister. 4,437,593, Cl. 222-541.000.

Bunri Industry Co., Ltd.: *See*—
Tashiro, Minoru, 4,437,991, Cl. 210-413.000.

Burger, Walter L.: *See*—
Elias, Moenes L.; and Burger, Walter L., 4,437,931, Cl. 156-666.000.

Burgmyer, Patricia L., to Hazeltine Corporation. Dual mode blade antenna. 4,438,437, Cl. 343-770.000.

Buri, Hermann; and Karth, Beat, to Nyffeler, Corti AG. Apparatus for sealing containers. 4,437,292, Cl. 53-357.000.
Burke Company, The: *See—*
Holt, Neil L., 4,437,642, Cl. 249-175.000.
Burkett, John P.: *See—*
Vuckovich, Michael; Wright, Maynard K.; and Burkett, John P., 4,438,382, Cl. 318-744.000.
Burney, Ivan T.: *See—*
Crookston, Ronald W.; and Burney, Ivan T., 4,438,306, Cl. 200-148.00F.
Burr-Brown Research Corporation: *See—*
Smith, Robert E., 4,438,327, Cl. 235-462.000.
Stitt, Robert M.; and Albaugh, Neil P., 4,438,338, Cl. 250-551.000.
Burroughs Corporation: *See—*
Volka, Lubomir J., 4,437,724, Cl. 339-143.00R.
Burroughs Wellcome Co.: *See—*
Stern, Warren C., 4,438,138, Cl. 424-330.000.
Vinegar, Ralph, 4,438,142, Cl. 424-260.000.
Burrus, Billie S.: *See—*
Harris, Lewis K.; and Burrus, Billie S., 4,437,830, Cl. 431-54.000.
Burt, Allan G.: *See—*
Whitehouse, Craig M.; Cox, Nigel; Burt, Allan G.; and Snyder, Daniel R., 4,437,859, Cl. 604-131.000.
Busch, Theodore N., to Caswell International Corporation. Dueling interactive target system. 4,437,671, Cl. 273-372.000.
Buschbom, Floyd E.; and Hansen, Glen D., to Veda, Inc. Support stand. 4,437,637, Cl. 248-163.00A.
Buschgens, Valentin: *See—*
Wittkopp, Helmut; and Buschgens, Valentin, 4,437,328, Cl. 72-110.000.
Bush, Rodney D., to Procter & Gamble Company, The. 4-Vinyl-2-methylenebutanedioic acid compounds. 4,438,246, Cl. 526-298.000.
Butler, Dean S., deceased: *See—*
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.
Butler, Donald R., to Stained Glass Overlay, Inc. Simulated stained and leaded glass windows. 4,438,165, Cl. 428-38.000.
Butler, John L.; Egan, Thomas R.; Rodberg, Kenneth; and Clark, Arthur E., to Raytheon Company. Transducer with tensioned-wire precompression. 4,438,509, Cl. 367-156.000.
Byers, Lance R., to FMC Corporation. Process for oxidizing thallium (I) to thallium (III). 4,438,089, Cl. 423-624.000.
Bykov, Anatoly P.: *See—*
Moskalik, Leonid M.; Ryadchikov, Vladimir E.; Bykov, Anatoly P.; Kulesh, Vladimir P.; Opasov, Stanislav I.; and Orlov, Anatoly A., 4,438,393, Cl. 324-83.00D.
C. Behrens AG: *See—*
Bredow, Walter; and Otto, Gerhard, 4,437,224, Cl. 29-568.000.
C.R. Bard, Inc.: *See—*
Crow, James J., 4,437,464, Cl. 128-303.140.
Cachat, John F., to Park Ohio Industries, Inc. Method and apparatus for inductively heating valve seat inserts. 4,438,310, Cl. 219-10.430.
Cain Encoder Company: *See—*
Wason, Thomas D., 4,438,434, Cl. 340-825.510.
Cais, Rudolf E., to Bell Telephone Laboratories, Incorporated. Preparation of regioregular polyfluoroethylenes and products thereof. 4,438,247, Cl. 526-249.000.
California Institute of Technology: *See—*
Rembaum, Alan; and Yen, Richard C. K., 4,438,239, Cl. 525-54.100.
Calistrat, Michael M., to Koppers Company, Inc. Flexible coupling. 4,437,847, Cl. 464-74.000.
Cameron Iron Works, Inc.: *See—*
Brakhage, William L., Jr.; and Taylor, William M., 4,437,643, Cl. 251-1.00A.
Campagnolo, Tullio. Tube structure for bicycle and motorcycle frames. 4,437,679, Cl. 280-281.00R.
Campbell, Andrew B.: *See—*
Boyadjieff, George I.; and Campbell, Andrew B., 4,437,515, Cl. 166-77.000.
Campbell, Curtis B., to Chevron Research Company. Lubricating oil compositions containing polyether polyamine ethanes. 4,438,022, Cl. 252-51.50R.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Fenrick, Walter J., 4,437,337, Cl. 73-54.000.
Canada, James W.; and Layton, James W., to United States Pipe and Foundry Company. Contoured dunnage cutter. 4,437,501, Cl. 144-136.00R.
Canalizo, Carlos R., to Otis Engineering Corporation. Dewatering apparatus. 4,437,514, Cl. 166-53.000.
Canon Denshi Kabushiki Kaisha: *See—*
Hirano, Hirofumi, 4,437,776, Cl. 400-142.000.
Sewada, Takeshi; Yoneda, Ko; Shinmi, Akira; Goto, Hirokazu; and Abiko, Shuzo, 4,438,470, Cl. 360-113.000.
Canon Kabushiki Kaisha: *See—*
Akashi, Akira; Katsuma, Makoto; Kawamura, Masaharu; Kamata, Shigeru; and Saito, Syuichiro, 4,437,752, Cl. 354-289.000.
Ikemori, Keiji, 4,437,746, Cl. 354-479.000.
Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, 4,437,756, Cl. 355-14.00R.
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,437,757, Cl. 355-15.000.
Momiyama, Kikuo, 4,437,735, Cl. 350-458.000.
Onoda, Shigeyoshi; and Nagaoka, Tateki, 4,437,656, Cl. 271-10.000.
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; and Hosoe, Kazuya, 4,437,743, Cl. 354-402.000.
Sakurayama, Junichi; and Magome, Tamotsu, 4,437,755, Cl. 355-10.000.
Sato, Yasuhisa, 4,437,741, Cl. 354-479.000.
Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Goto, Hirokazu; and Abiko, Shuzo, 4,438,470, Cl. 360-113.000.
Suzuki, Akiyoshi, 4,437,758, Cl. 355-41.000.
Suzuki, Takashi; and Ito, Susumu, 4,437,740, Cl. 354-476.000.
Toyama, Masamichi, 4,437,552, Cl. 192-26.000.
Toyomura, Shigeru, 4,438,431, Cl. 340-663.000.
Cantwell, Hugh F., to Rolls-Royce Limited. Fuel control system for a gas turbine engine. 4,437,303, Cl. 60-39.281.
Capaldi, Nicholas R., to Smiths Industries Public Limited Company. Torquer assemblies for gyroscope apparatus. 4,437,354, Cl. 74-5.460.
Capitol Products Corporation: *See—*
Cribben, James T.; and Ichter, William J., 4,437,284, Cl. 52-456.000.
Carborundum Abrasive Company: *See—*
Parekh, Dhan N.; and Schweyen, Paul R., 4,437,865, Cl. 51-298.000.
Cardell, Max L., to Fiber Industries, Inc. Winding apparatus for filamentary material having means for winding a trailing end of the filamentary material in close order upon a package. 4,437,617, Cl. 242-18.0EW.
Cardinaux, Francois: *See—*
Bauer, Wilfried; Cardinaux, Francois; Huguenin, Rene; Pless, Janos; and Sandrin, Edmond, 4,438,103, Cl. 424-177.000.
Carlisle, Richard S. Hydroponic apparatus and method. 4,437,264, Cl. 47-58.000.
Carlson, Arne H. Bulge forming method and apparatus. 4,437,326, Cl. 72-62.000.
Caron, Christopher D.; and Schaefer, Donald W., to International Business Machines Corporation. Rotary drum for processing sheet materials. 4,437,659, Cl. 271-276.000.
Carr, William F.: *See—*
Dettling, Joseph C.; Carr, William F.; Heck, Ronald M.; and Chen, James M., 4,438,082, Cl. 423-235.000.
Carrier Corporation: *See—*
Ertinger, Richard E., 4,437,322, Cl. 62-504.000.
Carroll, William G.; Farley, Peter; and Marklow, Raymond J., to Imperial Chemical Industries Limited. Polymer-modified polyols. 4,438,252, Cl. 528-75.000.
Carson, David G.: *See—*
Budde, David L.; Carson, David G.; Cornish, Anthony L.; Hosler, Brad W.; Johnson, David B.; and Peterson, Craig B., 4,438,494, Cl. 364-200.000.
Cary, Hall; and Marquard, John F., to Cary, Hall, a part interest. Catenary controller. 4,437,619, Cl. 242-75.510.
Casademont, Ernest: *See—*
Sanchez, Victor; Espenan, Patrick; Casademont, Ernest; and Lafaille, J. Pierre, 4,437,967, Cl. 204-301.000.
Casale, Michael A., to Hewlett-Packard Company. Gas flow controller. 4,437,489, Cl. 137-487.500.
Casazza, Anna M.: *See—*
Suarato, Antonino; Penco, Sergio; Arcamone, Federico; and Casazza, Anna M., 4,438,105, Cl. 424-180.000.
Casey, Donald J.; and Huffman, Kenneth R., to American Cyanamid Company. Poly(glycolic acid)/poly(alkylene glycol) block copolymers and method of manufacturing the same. 4,438,253, Cl. 528-86.000.
Casillo, James H.: *See—*
Wells, Alfred E., Jr.; and Casillo, James H., 4,438,290, Cl. 136-221.000.
Casio Computer Co., Ltd.: *See—*
Ishida, Hideaki; Ishikawa, Tomohisa; Yamana, Koji; and Kayahara, Takehiko, 4,437,378, Cl. 84-1.180.
Mitarai, Tsuyoshi; and Sato, Kunio, 4,437,377, Cl. 84-1.010.
Casper, Paul W.; and Ashley, William B., to Harris Corporation. Temperature compensated avalanche photodiode optical receiver circuit. 4,438,348, Cl. 307-310.000.
Casperson, John R., to Phillips Petroleum Company. Carbon black process. 4,438,087, Cl. 423-450.000.
Castellanos Manero, Carlos E., to Aida Castellanos Kwasniak. Rapid loading device for a revolver. 4,437,252, Cl. 42-89.000.
Castiglioni, Joseph; and Rosenthal, Paul. Heat recovery apparatus. 4,437,513, Cl. 165-154.000.
Caswell International Corporation: *See—*
Busch, Theodore N., 4,437,671, Cl. 273-372.000.
Caterpillar Tractor Company: *See—*
Budzich, Tadeusz, 4,437,307, Cl. 60-427.000.
Budzich, Tadeusz, 4,437,388, Cl. 91-446.000.
Catherwood, Bayard D.: *See—*
Deftos, Leonard J.; and Catherwood, Bayard D., 4,438,208, Cl. 436-542.000.
Cautillo, Antonio L.: *See—*
Brooker, Michael F. C.; McKerihen, Steven J.; Attwala, Hashmukrai D.; and Cautillo, Antonio L., 4,437,831, Cl. 431-177.000.
Cawley, James C.; DiMartino, Michael D.; Fisher, Thomas J.; King, Roger L.; and Uhler, Marcus H., to United States of America, Interior. Power supply for an intrinsically safe circuit. 4,438,473, Cl. 361-18.000.
Cawley, John M., to TII Industries, Inc. Combination power and communication line protection apparatus. 4,438,477, Cl. 361-119.000.
Cazzaniga, Luigi, to Cazzaniga S.p.A. Method and apparatus for indirect measurement of thermal energy. 4,437,771, Cl. 374-39.000.

Cazzaniga S.p.A.: *See—*
Cazzaniga, Luigi, 4,437,771, Cl. 374-39.000.
Cazzulani, Pietro: *See—*
Nardi, Dante; Tajana, Alberto; Motta, Gianni; Cazzulani, Pietro; and Graziani, Gabriele, 4,438,133, Cl. 424-300.000.
Celanese Corporation: *See—*
Taskier, Henry T., 4,438,185, Cl. 429-250.000.
Celotex Corporation, The: *See—*
Frentzel, Richard L., 4,438,018, Cl. 252-356.000.
Gluck, David G.; and Barry, Leon F., 4,438,166, Cl. 428-113.000.
CEM Corporation: *See—*
Collins, Michael J.; Cruse, Bernard W., Jr.; and Goetchius, Ronald J., 4,438,500, Cl. 364-567.000.
Central Glass Company Limited: *See—*
Aramaki, Minoru; Kita, Yasushi; Nakano, Hishagi; and Moroi, Shiro, 4,438,086, Cl. 423-448.000.
Centre National de la Recherche Scientifique: *See—*
Sanchez, Victor; Espenan, Patrick; Casademont, Ernest; and Lafaille, J. Pierre, 4,437,967, Cl. 204-301.000.
Cha, Chang Y.; and McCarthy, Harry E., to Occidental Oil Shale, Inc. Reduction of shale oil pour point. 4,437,519, Cl. 166-259.000.
Chambaz, Bernard; Delapierre, Gilles; and Destannes, Louis, to Commissariat a l'Energie Atomique. Capacitive hygrometer. 4,438,480, Cl. 361-278.000.
Chamberlin, John M.; and Chamberlin, John R. Self-actuating drip valve. 4,437,481, Cl. 137-60.000.
Chamberlin, John R.: *See—*
Chamberlin, John M.; and Chamberlin, John R., 4,437,481, Cl. 137-60.000.
Champion International Corporation: *See—*
Boyle, Daniel J., 4,437,618, Cl. 242-71.800.
Sorenson, John F., 4,437,569, Cl. 206-601.000.
Sorenson, John P., 4,437,570, Cl. 206-601.000.
Chase, Richard A.: *See—*
Simpson, Danny E.; Williams, David M.; Chase, Richard A.; and Grubb, Lawrence B., 4,437,668, Cl. 273-156.000.
Chatas, Angelos T.: *See—*
Richardson, Emmett M.; Chatas, Angelos T.; and Padilla, Joseph R., 4,437,521, Cl. 166-341.000.
Chavez, John P. Football kicking trainer toy. 4,437,661, Cl. 273-55.00R.
Chemische Werke Huels, AG: *See—*
Sielfeld, Gilbert; and Sunder-Plassmann, Paul, 4,438,244, Cl. 526-202.000.
Chemokomplex Vegyipari Gepes Berendezes Export-Import Vallalat: *See—*
Palotai, Jozsef, 4,437,824, Cl. 425-131.100.
Chen, James M.: *See—*
Dettling, Joseph C.; Carr, William F.; Heck, Ronald M.; and Chen, James M., 4,438,082, Cl. 423-235.000.
Chen, Shin H. Metronomic signalling devices and method of tempo signalling. 4,437,381, Cl. 84-484.000.
Chenausky, Peter P.; Newman, Leon A.; and Drinkwater, Erroll H., to United Technologies Corporation. Sure-start waveguide laser. 4,438,514, Cl. 372-64.000.
Chenaux, Bernard, to Gipelec. Sealed passage for a negative terminal through a metal wall, and electric cell using said sealed passage. 4,438,184, Cl. 429-181.000.
Cheng, David H. S.: *See—*
Liu, Henry; Gibson, Donald L.; Cheng, David H. S.; and Rathke, James E., 4,437,799, Cl. 406-198.000.
Cherkofsky, Saul C., to Du Pont de Nemours, E. I., and Company. 2-Substituted thio-4,5-diarylpyrimidines. 4,438,117, Cl. 424-251.000.
Cherry Electrical Products Corporation: *See—*
Kennedy, Maruice E., 4,438,304, Cl. 200-67.00D.
Chester, Arthur W.; McVeigh, Harry A.; and Stover, William A., to Mobil Oil Corporation. Cracking catalyst compositions for reduction of sulfur content in coke. 4,437,978, Cl. 208-120.000.
Chevanne, Sylvain V. L.: *See—*
See, Jacques L. A.; and Chevanne, Sylvain V. L., 4,437,281, Cl. 52-309.100.
Chevron Research Company: *See—*
Campbell, Curtis B., 4,438,022, Cl. 252-51.50R.
Chiang, David; Chu, Mosi; and Manber, Solomon, to MSS Associates. Method of damping a stepping motor. 4,438,379, Cl. 318-685.000.
Chiappetti, Pietro. Vise with interchangeable jaw members. 4,437,654, Cl. 269-283.000.
Chibata, Ichiro; Sumi, Akihiko; Ohtsuki, Osamu; and Izutsu, Nozomu, to Tanabe Seiyaku Co., Ltd. Di-L-cysteine L-malate and process for the production thereof. 4,438,044, Cl. 260-501.120.
Childress, Scott J.: *See—*
Winkley, Michael W.; and Childress, Scott J., 4,438,031, Cl. 260-112.50R.
CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Keresi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.
Chivers, Tristram: *See—*
Boorman, Philip M.; Chivers, Tristram; Tavares, Donald F.; and Mahadev, Kalabeerappa N., 4,438,218, Cl. 502-220.000.
Chow, Alfred W., to SmithKline Beckman Corporation. 1-(3,4-Bis-(3-(lower alkoxycarbonyl)-2-thioureido)-phenyl-1-phenylthylenes. 4,438,135, Cl. 424-300.000.
Christman, Donald L.; and Merki, Bernard A., to BASF Wyandotte Corporation. Trimerization catalysts and organo-mercury compounds as co-catalysts for the preparation of noncellular polyurethane elastomers. 4,438,248, Cl. 528-57.000.
Chu, Mosi: *See—*
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,438,379, Cl. 318-685.000.
Chuang, Patrick T.; Keswick, Paul D.; and Linden, Jeffrey L., Sr., to Advanced Micro Devices, Inc. Regulated substrate bias generator for random access memory. 4,438,346, Cl. 307-297.000.
Chugai Seiyaku Kabushiki Kaisha: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Karushige; and Hata, Shun-ichi, 4,438,115, Cl. 424-250.000.
Ciba-Geigy Corporation: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,437,879, Cl. 71-96.000.
Hubele, Adolf; Eckhardt, Wolfgang; and Riebli, Peter, 4,438,125, Cl. 424-269.000.
Ciro's Touch, Ltd.: *See—*
Ganci, Salvatore, 4,438,102, Cl. 424-130.000.
Citizen Watch Company Limited: *See—*
Miyasaka, Kenji, 4,437,768, Cl. 368-88.000.
Clark, Arthur E.: *See—*
Butler, John L.; Egan, Thomas R.; Rodberg, Kenneth; and Clark, Arthur E., 4,438,509, Cl. 367-156.000.
Clark, Dennis B.: *See—*
Bronsky, Robert J.; Clark, Dennis B.; McKeen, Jeffrey A.; and Przybylski, William A., 4,437,347, Cl. 73-272.00R.
Clark & Vicario Corporation: *See—*
King, Stephen J.; Moffatt, Bruce S.; and Stewart, John C., 4,437,984, Cl. 209-211.000.
Clayton Environmental Consultants, Inc.: *See—*
Hands, David, 4,437,333, Cl. 73-12.000.
Clemens, Donald F.: *See—*
Whitehurst, Brooks M.; and Clemens, Donald F., 4,437,863, Cl. 44-51.000.
Cloutier, Frank L.; Low, Robert N.; and McClelland, Paul H., to Hewlett-Packard Company. Monolithic ink jet print head. 4,438,191, Cl. 430-324.000.
Coates, Cameron W.; and Wilson, Thomas J., to United States of America, Energy. Method for preparing surfaces of metal composites having a brittle phase for plating. 4,437,956, Cl. 204-129.350.
Coca-Cola Company, The: *See—*
Richter, Simon J.; and Aykanian, Ardashus A., 4,438,061, Cl. 264-249.000.
Cockrell, Darryl W., to Baker International Corporation. Combination release mechanism for downhole well apparatus. 4,437,516, Cl. 166-120.000.
Coco, Charles E.: *See—*
Krinski, Thomas L.; and Coco, Charles E., 4,437,893, Cl. 106-80.000.
Codignola, Franco, to S.I.S.A.S. Societa Italina Serie Acetica Sintetica S.p.A. Process for the catalytic hydrogenation of 1-4-butynediol to 1-4 butanediol. 4,438,285, Cl. 568-861.000.
Cogan, Adrian I., to GTE Laboratories Incorporated. Etched-source static induction transistor. 4,437,925, Cl. 156-653.000.
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., to Imperial Chemical Industries PLC. Compositions of melt-processable polymers having improved processability. 4,438,236, Cl. 525-165.000.
Coker, William R., to Nordson Corporation. Pump motor master control. 4,437,581, Cl. 222-54.000.
Colanzi, Franco; and Donn, Vittorio, to RIV-SKF Officine. Support assembly for vehicle wheels. 4,437,536, Cl. 180-254.000.
Colby, Ronald W.; and Spicer, Arnold, to New Generation Foods, Inc. Method for preparing cooked wheat product. 4,438,146, Cl. 426-448.000.
Coleman, John P. Tool for severing lead caning. 4,437,238, Cl. 30-272.00A.
Coleman, Vernon: *See—*
Harmon, William J., Jr.; Mick, John R.; and Coleman, Vernon, 4,438,492, Cl. 364-200.000.
Colgate-Palmolive Company: *See—*
Connors, Stephen T.; and Harvey, Kenneth, 4,437,584, Cl. 222-137.000.
von Schuckmann, Alfred, 4,437,591, Cl. 222-391.000.
Colineau, Joseph; and Maheo, Jean Y., to Thomson-Brandt. Electric circuit for converting an AC voltage into a DC voltage or a voltage variable at a lower frequency. 4,438,375, Cl. 315-408.000.
Collier, David L. Cabinet panel connector. 4,437,280, Cl. 52-285.000.
Collin, Karl-Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Atomizer nozzle for continuous fuel injection. 4,437,314, Cl. 60-738.000.
Collington, Eric W.; Hallett, Peter; and Wallis, Christopher J., to Glaxo Group Limited. Prostanoid compounds and pharmaceutical formulations. 4,438,111, Cl. 424-246.000.
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; and Bradshaw, John, to Glaxo Group Limited. Prostanoid compounds and pharmaceutical formulations. 4,438,112, Cl. 424-244.000.
Collins, Arthur K.; Andrews, Edward W.; and Srinivasan, Nallaswamy, to General Electric Company. Tomography window-level gamma functions. 4,438,495, Cl. 364-414.000.
Collins, Michael J.; Cruse, Bernard W., Jr.; and Goetchius, Ronald J., to CEM Corporation. Rapid volatility analyzer. 4,438,500, Cl. 364-567.000.
Colquhoun, Alexander; and Kohn, Erhard, to Telefunken Electronic GmbH. Variable capacitance diode and method of making the same. 4,438,445, Cl. 357-14.000.
Columbus, Richard L., to Eastman Kodak Company. Mechanically actuated pipette dispenser. 4,437,586, Cl. 222-181.000.

Combustion Engineering, Inc.: *See—*
Harris, Lewis K.; and Burrus, Billie S., 4,437,830, Cl. 431-54.000.
Commandeur, Raymond: *See—*
Mathais, Henri; Commandeur, Raymond; Pontoglio, Achille; and Nebel, Sergio, 4,438,027, Cl. 252-581.000.
Commissariat a l'Energie Atomique: *See—*
Bompard, Bruno; and Bruyere, Alain, 4,437,221, Cl. 29-429.000.
Commissariat a l'Energie Atomique: *See—*
Chambaz, Bernard; Delapierre, Gilles; and Destannes, Louis, 4,438,480, Cl. 361-278.000.
Forrat, Francis, 4,438,337, Cl. 250-436.000.
Testard, Olivier, 4,438,168, Cl. 428-193.000.
Communications Satellite Corporation: *See—*
Uzunoglu, Vasil, 4,438,355, Cl. 307-511.000.
Compagnie Generale de Manutention et de Stockage: *See—*
Londos, Rene; and Barbereau, Jean-Luc, 4,437,808, Cl. 414-667.000.
Compagnie Generale des Matieres Nucleaires (Cogema): *See—*
Bolze, Georges, 4,437,885, Cl. 75-10.00R.
Compagnie Royale Asturienne des Mines: *See—*
Dreulle, Noel; Van Ceulen, Alain; and Eusebe, Claude, 4,437,965, Cl. 204-290.00F.
Compagnucci, Nello B.: *See—*
Reese, Ira W.; and Compagnucci, Nello B., 4,437,213, Cl. 29-33.00K.
Connelly, William L. Portable cooking grill. 4,437,450, Cl. 126-30.000.
Connor, Terrence E. Surfing device. 4,437,842, Cl. 441-65.000.
Connors, Stephen T.; and Harvey, Kenneth, to Colgate-Palmolive Company. Toothpaste dispenser. 4,437,584, Cl. 222-137.000.
Conoco Inc.: *See—*
Grimsley, R. Leroy; and Gawel, Len J., 4,437,794, Cl. 405-224.000.
Wasson, George E., 4,437,982, Cl. 209-5.000.
Consiglio Nazionale Delle Ricerche: *See—*
Botteghi, Carlo; Gladiali, Serafino G.; Marchetti, Mauro; and Faedda, Giovanni A., 4,438,033, Cl. 260-239.55C.
Constant, James N. Computer having plural IC chips with each chip including a transceiver. 4,438,491, Cl. 364-200.000.
Construction Forms, Inc.: *See—*
Bigelow, David E.; and Timmerman, Terry, 4,437,646, Cl. 251-145.000.
Constructions Mecaniques de Normandie: *See—*
Bordat, Andre, 4,437,355, Cl. 74-385.000.
Continental Group, Inc., The: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,437,825, Cl. 425-145.000.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Seitz, Hans; Rach, Heinz-Dieter; Pieper, Henner; and Frerichs, Udo, 4,437,503, Cl. 152-209.00R.
Conwed Corporation: *See—*
Thomalla, Richard O., 4,438,526, Cl. 381-73.000.
Cooper, Bruce H.: *See—*
Brocklehurst, Charles E.; and Cooper, Bruce H., 4,437,369, Cl. 83-18.000.
Cooper, Gordon J., to Westinghouse Electric Corp. Electrified wall panel system. 4,437,716, Cl. 339-4.000.
Copeland, John A., III; and Miller, Stewart E., to Bell Telephone Laboratories, Incorporated. Multilayered optical integrated circuit. 4,438,447, Cl. 357-19.000.
Corbett, David F.; Southgate, Robert; and Coulton, Steven, to Beecham Group Limited. β-Lactam antibiotics their preparation and their use. 4,438,036, Cl. 260-245.20T.
Corbett, Scott S., Jr.: *See—*
Perrott, Lynn F., 4,437,807, Cl. 414-620.000.
Cordier, Jean; and Rollot, Pierre, to Union Siderurgique du Nord et de l'Est de la France. Cooling plate for blast-furnaces. 4,437,651, Cl. 266-193.000.
Cordis Corporation: *See—*
Peers-Trevarton, Charles A., 4,437,474, Cl. 128-784.000.
Saulson, Stanley H.; Schroeppel, Edward A.; and Tarjan, Peter P., 4,437,466, Cl. 128-419.0PS.
Corley, William G., to Ex-Cell-O Corporation. Single pass sizing tool and machine including wear compensation means. 4,437,267, Cl. 51-34.00R.
Cornell Research Foundation, Inc.: *See—*
Meister, Alton; and Williamson, Joanne M., 4,438,124, Cl. 424-270.000.
Cornica, Donald G.: *See—*
Pankratz, Lawrence A.; and Cornica, Donald G., 4,437,498, Cl. 141-89.000.
Corning Glass Works: *See—*
Covington, Arthur K.; and Sibbald, Alastair, 4,437,969, Cl. 204-403.000.
Miller, Roger A., 4,437,870, Cl. 65-12.000.
Rittler, Hermann L., 4,438,210, Cl. 501-4.000.
Cornish, Anthony L.: *See—*
Budde, David L.; Carson, David G.; Cornish, Anthony L.; Hosler, Brad W.; Johnson, David B.; and Peterson, Craig B., 4,438,494, Cl. 364-200.000.
Cosser, Ora. Dice box. 4,437,665, Cl. 273-138.00R.
Cosworth Research and Development Limited: *See—*
Vogel, Alfredo, 4,437,834, Cl. 432-14.000.
Coulter Electronics, Inc.: *See—*
Hogg, Walter R., 4,438,390, Cl. 324-71.100.
Coulton, Steven: *See—*
Corbett, David F.; Southgate, Robert; and Coulton, Steven, 4,438,036, Cl. 260-245.20T.
Covington, Arthur K.; and Sibbald, Alastair, to Corning Glass Works. Offset-gate chemical-sensitive field-effect transistors (OG-CHEMFETS) with electrolytically-programmable selectivity. 4,437,969, Cl. 204-403.000.
Cox, Nigel: *See—*
Whitehouse, Craig M.; Cox, Nigel; Burt, Allan G.; and Snyder, Daniel R., 4,437,859, Cl. 604-131.000.
Crane and Company: *See—*
Crane, Frederick G., Jr., 4,437,935, Cl. 162-103.000.
Crane, Frederick G., Jr., to Crane and Company. Method and apparatus for providing security features in paper. 4,437,935, Cl. 162-103.000.
Cribben, James T.; and Ichter, William J., to Capitol Products Corporation. Snap-on false muntin system. 4,437,284, Cl. 52-456.000.
Criaci, Clem C. Golf club. 4,437,663, Cl. 273-81.200.
Crone, John M., Jr.: *See—*
Brandenburg, John T.; and Crone, John M., Jr., 4,438,219, Cl. 502-333.000.
Crookston, Ronald W.; and Burney, Ivan T., to Westinghouse Electric Corp. Circuit interrupter operating mechanism having a chemical operator with a stationary piston. 4,438,306, Cl. 200-148.00F.
Cross, Skip D. L. Controlled dispersion speaker configuration. 4,437,541, Cl. 181-151.000.
Crow, James J., to C.R. Bard, Inc. Electrosurgical generator safety apparatus. 4,437,464, Cl. 128-303.140.
Crowe, Talmadge L.: *See—*
Bianchi, David C.; and Crowe, Talmadge L., 4,437,517, Cl. 166-120.000.
Cruse, Bernard W., Jr.: *See—*
Collins, Michael J.; Cruse, Bernard W., Jr.; and Goetchius, Ronald J., 4,438,500, Cl. 364-567.000.
Cruse, Lee H., to Foster Manufacturing Company. Quick connect-disconnect coupling for fluid lines. 4,437,647, Cl. 251-149.900.
Csanitz, Herbert; and Weyl, Helmut, to Robert Bosch GmbH. Electrochemical oxygen sensor, particularly for exhaust gases from combustion engines. 4,437,971, Cl. 204-427.000.
Csere, Csaba; and Follmer, William C., to Ford Motor Company. Adaptive air flow meter offset control. 4,437,340, Cl. 73-118.000.
Cullen, Donald L.; and Robertson, John A., to Autech Corporation. Electrostatic transducer for length measurement system. 4,438,402, Cl. 324-452.000.
Curtis, William M.: *See—*
Slocum, Donald H.; Schairbaum, Albert W.; and Curtis, William M., 4,437,274, Cl. 52-105.000.
Cushing, David E.; and Stanley, Philip E., to Honeywell Information Systems Inc. Multiwork memory data storage and addressing technique and apparatus. 4,438,493, Cl. 364-200.000.
Daeuble, Manfred: *See—*
Oeder, Dieter; Ziegler, Walter; Daeuble, Manfred; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,438,008, Cl. 252-56.00R.
Dahnert, Dean L., to Spaceaver Corporation. Movable storage unit controls. 4,437,711, Cl. 312-201.000.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Ishizuka, Tetsuo; Hotta, Hiroshi; and Nishimura, Yoshichika, 4,437,861, Cl. 44-1.00R.
Daimler-Benz Aktiengesellschaft: *See—*
Stolz, Albert; and Mordau, Manfred, 4,437,393, Cl. 98-2.170.
Dainichi-Nippon Cables, Ltd.: *See—*
Okugawa, Michihide, 4,437,996, Cl. 210-718.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Mizukami, Hidekatu; and Machida, Yoshihiro, 4,437,759, Cl. 355-91.000.
Daiwa Seiko Inc.: *See—*
Sakumoto, Akinori, 4,437,621, Cl. 242-84.10J.
Dallesandro, Susan M.: *See—*
Archer, Wesley L.; Lynn, Vicki A.; and Dallesandro, Susan M., 4,438,192, Cl. 430-329.000.
Daluge, Susan M.; and Skoneczny, Paul M. Monoheteroring compounds and their use. 4,438,267, Cl. 544-309.000.
Daly, Charles F.: *See—*
Gulliksen, John E.; Guimond, Roy A.; Daly, Charles F.; and Hamilton, William H., 4,438,483, Cl. 362-183.000.
Dangschat, Rainer, to Siemens Aktiengesellschaft. Transistor pulse drive control circuit. 4,438,345, Cl. 307-270.000.
Daniels, John Y.; and Stevenson, James C., to Springs Industries, Inc. Colored opaque printing of textile fabrics using dyestuffs. 4,438,169, Cl. 428-196.000.
Dart Industries Inc.: *See—*
Elias, Moenes L.; and Burger, Walter L., 4,437,931, Cl. 156-666.000.
Wong, Kwee C., 4,437,927, Cl. 156-666.000.
Wong, Kwee C., 4,437,928, Cl. 156-666.000.
Wong, Kwee C., 4,437,929, Cl. 156-666.000.
Wong, Kwee C., 4,437,930, Cl. 156-666.000.
Wong, Kwee C., 4,437,932, Cl. 156-666.000.
Data General Corporation: *See—*
Kaseta, Robert G., 4,438,380, Cl. 318-696.000.
Datapoint Corporation: *See—*
Tompkins, Elliot N.; and Kline, Sherman S., 4,437,660, Cl. 271-290.000.
Datwyler, Max, to MDC Max Datwyler AG. Methods for producing printing plates, and printing plates produced thereby. 4,437,942, Cl. 204-6.000.

Davey, Ernest A.: *See—*
Hope, Lawrence L.; and Davey, Ernest A., 4,437,966, Cl. 204-298.000.
Davis, Steven J., to Power Spectra, Inc. Bulk semiconductor switch. 4,438,331, Cl. 250-211.00J.
Davis, Walter G., to NesTier Corporation. Removable poultry nest bottoms of variable widths. 4,437,434, Cl. 119-45.00R.
Davy McKee Aktiengesellschaft: *See—*
Moderlak, Helmut; Koschinek, Gunter; Zinser, Rolf; Prehler, Richard; and Kretschmann, Bernd, 4,437,827, Cl. 425-378.00S.
Day Mixing Company: *See—*
Hargis, Richard A., 4,437,767, Cl. 366-287.000.
Dayco Corporation: *See—*
Howerton, Anderson W.; and Foley, Mark P., 4,437,371, Cl. 83-54.000.
DBS, Inc.: *See—*
Barbour, William P., 4,437,404, Cl. 101-269.000.
Deacon, Ross: *See—*
Brescia, Tony; and Deacon, Ross, 4,437,414, Cl. 108-134.000.
DeBardeleben, Martha G. Method and apparatus for training cats to use a toilet bowl. 4,437,430, Cl. 119-1.000.
Deborde, Albert H.; and Volland, Michel F., to Saurer-Diederichs (Societe Anonyme). Apparatus for measuring belt tension. 4,437,352, Cl. 73-862.470.
Deeg, Rolf; Schmitt, Urban; and Ziegenhorn, Joachim, to Boehringer Mannheim GmbH. Determination of glycosilated hemoglobin. 4,438,204, Cl. 436-67.000.
Deere & Company: *See—*
Koning, Richard W., 4,437,399, Cl. 100-4.000.
Kramer, Kenneth D.; and Fletcher, Edward H., 4,437,385, Cl. 91-361.000.
Deftos, Leonard J.; and Catherwood, Bayard D., to University of California, The Regents of the. Region-specific determinants for vitamin K dependent bone protein. 4,438,208, Cl. 436-542.000.
de Groot, Klaas: *See—*
van der Zel, Joseph M.; and de Groot, Klaas, 4,437,191, Cl. 3-1.000.
Deis, Daniel W.; and Kemeny, George A., to Westinghouse Electric Corp. Muzzle arc suppressor for electromagnetic projectile launcher. 4,437,383, Cl. 89-8.000.
Dejoux, Andre; and Desnoulez, Bruno. Wine waiter's corkscrews. 4,437,359, Cl. 81-3.38A.
Delaey, Lucas J., to Leuven Research & Development V.Z.W. Beta alloys with improved properties. 4,437,911, Cl. 148-402.000.
Delapierre, Gilles: *See—*
Chambaz, Bernard; Delapierre, Gilles; and Destannes, Louis, 4,438,480, Cl. 361-278.000.
DelGreco, Angela G.; Allen, Malcolm L.; and Jacobsen, Ronald L., to Procter & Gamble Company, The. Stable liquid detergent compositions. 4,438,024, Cl. 252-545.000.
Della-Moretta, Leonard B. Adjustable two-bar linkage for a four-wheel trailer. 4,437,680, Cl. 280-460.00R.
Delphi Dental Industries B.V.: *See—*
van der Zel, Joseph M.; and de Groot, Klaas, 4,437,191, Cl. 3-1.000.
Delta Dredge and Pump Corporation: *See—*
Kalbac, John F., 4,437,814, Cl. 417-351.000.
Delta Kogyo Co., Ltd.: *See—*
Nishikori, Tsutomu; and Yoshiki, Yasuo, 4,437,703, Cl. 297-362.000.
Delta Limited: *See—*
Geppelt, Elmo W.; and Poore, William H., 4,437,329, Cl. 72-299.000.
Demers, Robert J.; and Schilbe, Rick, to Webster Air Equipment Ltd. Reed valve assembly. 4,437,490, Cl. 137-512.400.
Demus, Dietrich: *See—*
Zaschke, Horst; Schafer, Wolfgang; Deutscher, Hans-Joachim; Demus, Dietrich; and Pelzl, Gerhard, 4,438,268, Cl. 544-315.000.
Denda, Masahiko: *See—*
Abe, Haruhiko; Harada, Hiroshi; Denda, Masahiko; Nagasawa, Koichi; and Kono, Yoshio, 4,438,368, Cl. 315-39.000.
Dengel, Ferdinand: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.
Derbyshire, Francis J.; and Varghese, Philip, to Mobil Oil Corporation. Process for co-processing coal and a paraffinic material. 4,437,972, Cl. 208-8.0LE.
Dergazarian, Thomas E.: *See—*
Meyer, Victor E.; and Dergazarian, Thomas E., 4,438,259, Cl. 528-388.000.
De Sa, Alten J. A., to Geodate Limited. Method for utilizing three-dimensional radiated magnetic field gradients for detecting serving faults in buried cables. 4,438,389, Cl. 324-52.000.
Desbois, Michel, to Rhone-Poulenc Specialites Chimiques. Process for preparation of di- or trifluoromethoxyphenyl ketones or di- or trifluoromethylthiophenyl ketones. 4,438,043, Cl. 260-465.00F.
Desnoulez, Bruno: *See—*
Dejoux, Andre; and Desnoulez, Bruno, 4,437,359, Cl. 81-3.38A.
Dessau, Ralph M.; and Kerr, George T., to Mobil Oil Corporation. Activity enhancement of high silica zeolites. 4,438,215, Cl. 502-71.000.
Destannes, Louis: *See—*
Chambaz, Bernard; Delapierre, Gilles; and Destannes, Louis, 4,438,480, Cl. 361-278.000.
Detroit Stoker Company: *See—*
Reichly, David C., 4,437,452, Cl. 126-182.000.
Dettling, Joseph C.; Carr, William F.; Heck, Ronald M.; and Chen, James M., to Engelhard Corporation. Platinum gold catalyst for removing NO_x and NH_3 from gas streams. 4,438,082, Cl. 423-235.000.
Deutscher, Hans-Joachim: *See—*
Zaschke, Horst; Schafer, Wolfgang; Deutscher, Hans-Joachim; Demus, Dietrich; and Pelzl, Gerhard, 4,438,268, Cl. 544-315.000.
Devale, Donald, to Everpure, Inc. Computer controlled sensor for beverage dispenser. 4,437,499, Cl. 141-95.000.
DeVore, Robert F., to Harsco Corporation. Heat exchanger assembly. 4,437,512, Cl. 165-122.000.
De Young, Simon A.; and Gray, Charles C., to Euclid, Inc. Vehicle axle assembly. 4,437,530, Cl. 180-75.000.
Dickson, Dale A.: *See—*
Sorenson, Paul D.; and Dickson, Dale A., 4,437,468, Cl. 128-660.000.
Diesel Kiki Co., Ltd.: *See—*
Ohie, Tomonori, 4,438,496, Cl. 364-431.050.
Dietmann, Karl: *See—*
Wiedemann, Fritz; Kampe, Wolfgang; Dietmann, Karl; and Sponer, Gisbert, 4,438,128, Cl. 424-273.00N.
Dietsche, Wolfram: *See—*
Oeder, Dieter; Ziegler, Walter; Daeuble, Manfred; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,438,008, Cl. 252-56.00R.
Digital Products Corporation: *See—*
Smith, Fred J., 4,438,296, Cl. 179-6.020.
Dilmaghani, Homayoun: *See—*
Martens, Wilhelm; and Dilmaghani, Homayoun, 4,437,631, Cl. 244-214.000.
DiMartino, Michael D.: *See—*
Cawley, James C.; DiMartino, Michael D.; Fisher, Thomas J.; King, Roger L.; and Uhler, Marcus H., 4,438,473, Cl. 361-18.000.
Dinger, Rudolf; Michel, Jean-Georges; and Leuenberger, Claude-Eric, to Asulab S.A. Quartz thermometer. 4,437,773, Cl. 374-117.000.
Dirlikov, Stoil K.; and Schneider, Connie J., to Dow Chemical Company, The. Polyurethanes derived from 1,4-lactones of 3,6-anhydro-2,3,4,5,6-pentahydroxyhexanoic acid. 4,438,226, Cl. 521-175.000.
Disch, Karlheinz: *See—*
Kiewert, Eva; and Disch, Karlheinz, 4,438,016, Cl. 252-174.250.
Dixon, James M.; and Witt, Geoffrey R., to Penny & Giles Transducers Limited. Airspeed sensing systems. 4,437,343, Cl. 73-182.000.
Djordjevich, Ljubomir; and Sadove, Max S., to Rush-Presbyterian-St. Luke's Medical Center. System for determining characteristics of blood flow. 4,437,469, Cl. 128-672.000.
Dlugosch, Gunter: *See—*
Best, Gerd; and Dlugosch, Gunter, 4,437,707, Cl. 299-81.000.
Dobry, Alan M., to Standard Oil Company (Indiana). Clarification of ammonium polyphosphate solutions. 4,437,997, Cl. 210-727.000.
Dr. Immeyer GmbH: *See—*
Immeyer, Fritz H.; and Wesche, Michael, 4,437,432, Cl. 119-18.000.
Dr.-Ing. Rudolf Hell G.m.b.H.: *See—*
Karius, Helmut, 4,438,374, Cl. 315-362.000.
Dr. Karl Thomae GmbH: *See—*
Gruber, Peter; Schmid, Jochen; Lechner, Horst; and Bauer, Eckhart, 4,438,091, Cl. 424-21.000.
Doev, Vitaly S.; Kotelyansky, Iosif M.; Kravchenko, Valery B.; Monosov, Yakov A.; Shakhunov, Valery A.; and Kopylov, Jury L., to Institut Radiotekhniki I Elektroniki Akademii Nauk SSSR. Method of recording information on a medium in the form of electrical signals. 4,438,443, Cl. 346-153.100.
Donn, Vittorio: *See—*
Colanzi, Franco; and Donn, Vittorio, 4,437,536, Cl. 180-254.000.
Doorakian, George A.; and Paul, Marsha A., to Dow Chemical Company, The. Process for producing epoxy resins. 4,438,254, Cl. 528-89.000.
Dore, Jacques, to Societe Anonyme Automobiles Citroen; and Societe Anonyme Automobiles Peugeot. Apparatus for retaining and installing an interior assembly of a universal joint. 4,437,219, Cl. 29-283.000.
Dore, Jacques, to Automobiles Citroen; and Automobiles Peugeot. Universal transmission coupling and a process for manufacturing such a coupling. 4,437,331, Cl. 72-360.000.
Dorner, Florian, to Bayer Aktiengesellschaft. Device for dispensing paste-like substances. 4,437,582, Cl. 222-94.000.
Dorpmund, Willi, to Graaff KG. Device for locking together stacked objects. 4,437,211, Cl. 24-287.000.
Dorr, Wolfgang; Gradel, Gerhard; and Peeha, Martin, to Kraftwerk Union Aktiengesellschaft. Method for the manufacture of very dense oxidic nuclear fuel bodies. 4,438,050, Cl. 264-0.500.
Dow Chemical Company, The: *See—*
Archer, Wesley L.; Lynn, Vicki A.; and Dallesandro, Susan M., 4,438,192, Cl. 430-329.000.
Dirlikov, Stoil K.; and Schneider, Connie J., 4,438,226, Cl. 521-175.000.
Doorakian, George A.; and Paul, Marsha A., 4,438,254, Cl. 528-89.000.
Meyer, Victor E.; and Dergazarian, Thomas E., 4,438,259, Cl. 528-388.000.
Settineri, William J.; and Hensler, John M., 4,438,242, Cl. 526-62.000.
Solc, Jitka, 4,438,179, Cl. 428-407.000.
Strom, Robert M., 4,438,284, Cl. 568-730.000.
Suh, Kyung W.; Krueger, David C.; and Zehner, Burch E., 4,438,224, Cl. 521-146.000.
Svatek, Katherine H.; Wilson, David A.; and Griffin, Freddie, Jr., 4,438,040, Cl. 260-439.00R.
Weaver, John D., 4,438,088, Cl. 423-466.000.

Doweyko, Arthur M. P.: *See—*
Bell, Allyn R.; Doweyko, Arthur M. P.; and Minatelli, John A., 4,438,271, Cl. 546-254.000.
Doyle, Richard H. Mounting apparatus for a dirt bike. 4,437,597, Cl. 224-42.45R.
Drath, Edwin H. High pressure hose swivel connector. 4,437,690, Cl. 285-272.000.
Dreulle, Noel; Van Ceulen, Alain; and Eusebe, Claude, to Compagnie Royale Asturienne des Mines. Reinforced lead anode for the electrolytic production of zinc from sulphate solution and process for the preparation thereof. 4,437,965, Cl. 204-290.00F.
Drewe, Ulrich; Rappa, Peter; and Werner, Peter, to Robert Bosch GmbH. Linearizing and control circuit for air flow rate meter. 4,437,339, Cl. 73-118.000.
Drinkwater, Erroll H.: *See—*
Chenausky, Peter P.; Newman, Leon A.; and Drinkwater, Erroll H., 4,438,514, Cl. 372-64.000.
Drosdziok, Hermann; Geke, Jurgen; and Germscheid, Hans G., to Henkel Kommanditgesellschaft auf Aktien. Method and agent for passivating iron and steel surfaces. 4,437,898, Cl. 148-6.15R.
DRS Infusion Systems, Inc.: *See—*
Whitehouse, Craig M.; Cox, Nigel; Burt, Allan G.; and Snyder, Daniel R., 4,437,859, Cl. 604-131.000.
D'Sidocky, Richard M., to Goodyear Tire & Rubber Company, The. Reduction of cyclopentadiene from isoprene streams. 4,438,289, Cl. 585-827.000.
Du Pont Canada Inc.: *See—*
Lang, Theodore J.; and Kershaw, Bernard J., 4,438,180, Cl. 428-475.800.
Ducret, Lucien C. Swing saw for cutting metal conduit. 4,437,237, Cl. 30-90.200.
Duering AG: *See—*
Duering, Walter, 4,437,587, Cl. 222-207.000.
Duering, Walter, to Duering AG. Squeeze bottle for producing an arbitrarily directed liquid stream. 4,437,587, Cl. 222-207.000.
Dunham-Bush, Inc.: *See—*
Magee, Dennis A.; and McCubbin, Charles E., 4,437,816, Cl. 417-465.000.
Duni Bila AB: *See—*
Andersson, Karl G. B., 4,438,163, Cl. 428-35.000.
Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, to Foseco Trading A.G. Protection of graphite electrodes. 4,438,515, Cl. 373-88.000.
Dunn, Robert E. Apparatus for supporting a camera against the sternum of the photographer. 4,437,753, Cl. 354-293.000.
Dunning, Reginald: *See—*
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,438,212, Cl. 501-73.000.
Du Pont de Nemours, E. I., and Company: *See—*
Bissot, Thomas C.; Grot, Walter G.; and Resnick, Paul R., 4,437,951, Cl. 204-98.000.
Cherkofsky, Saul C., 4,438,117, Cl. 424-251.000.
Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., 4,438,030, Cl. 260-112.50R.
Oswald, Joseph A., Jr., 4,437,236, Cl. 29-879.000.
Rajagopalan, Parthasarathi, 4,438,120, Cl. 424-256.000.
Schenck, Timothy T., 4,438,228, Cl. 524-109.000.
Smith, Roger A.; and Withers, Michael S., 4,437,952, Cl. 204-98.000.
Durand, Daniel C.; and Mangin, Pierre M., to BP Chimie. Catalyst for the polymerization of olefins based upon magnesium and transition metal. 4,438,019, Cl. 502-169.000.
Durand, Francois; and Smulders, Auguste, to Societe Anonyme Engrenages et Reducteurs. Vertically moving platform supported on legs. 4,437,792, Cl. 405-198.000.
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. 4,438,127, Cl. 424-272.000.
Duro-Dyne Corporation: *See—*
Giannone, Charles, 4,438,314, Cl. 219-98.000.
Duroyon, Herve, to Union Carbide Corporation. Stuffing method. 4,437,209, Cl. 17-49.000.
Dyer, David; and Wise, James L., to Technology Marketing Inc. Method and apparatus for recovering waste energy. 4,437,316, Cl. 62-79.000.
Dynamit Nobel Aktiengesellschaft: *See—*
von Branchel, Helmut; Schreiber, Georg; and Schroeder, Heinz, 4,438,075, Cl. 422-189.000.
E.C.H. Will (GmbH & Co.): *See—*
Wolf, Wolfram, 4,437,560, Cl. 198-457.000.
Eaby, Daniel G.; Long, William B.; and Shuey, John R., to AMP Incorporated. Junction connections for modular wiring systems. 4,437,725, Cl. 339-156.00R.
Eastman Kodak Company: *See—*
Columbus, Richard L., 4,437,586, Cl. 222-181.000.
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,438,278, Cl. 560-205.000.
Ebara Corporation: *See—*
Iwata, Minoru; Murata, Yukio; and Shibata, Tomoyuki, 4,437,811, Cl. 417-8.000.
Ebara Densan, Ltd.: *See—*
Iwata, Minoru; Murata, Yukio; and Shibata, Tomoyuki, 4,437,811, Cl. 417-8.000.
Ebi, Yutaka: *See—*
Jinnai, Koichiro; and Ebi, Yutaka, 4,438,440, Cl. 346-75.000.
Eckhardt, Wolfgang: *See—*
Hubele, Adolf; Eckhardt, Wolfgang; and Riebli, Peter, 4,438,125, Cl. 424-269.000.
Ecklundt, Hinrich: *See—*
Hofgen, Gunter; and Ecklundt, Hinrich, 4,438,435, Cl. 343-7.300.
Eclipse, Inc.: *See—*
Spielman, Lyle S., 4,437,415, Cl. 110-182.500.
Econ Incorporated: *See—*
Foster, Kenneth J., 4,437,277, Cl. 52-202.000.
Edelstein, Harold: *See—*
Mallik, Arjun; Koetters, Daniel; and Edelstein, Harold, 4,438,017, Cl. 252-301.170.
Egami, Tsuneyuki; Kawai, Hisasi; Kohama, Tokio; and Obayashi, Hideki, to Nippon Soken, Inc. Gas flow measuring device. 4,437,345, Cl. 73-204.000.
Egan, Thomas R.: *See—*
Butler, John L.; Egan, Thomas R.; Rodberg, Kenneth; and Clark, Arthur E., 4,438,509, Cl. 367-156.000.
Egger, David L. Screed bar assembly. 4,437,828, Cl. 425-458.000.
Eguchi, Osamu; and Fukui, Tomonori, to Nippondenso Co., Ltd. Air condition control apparatus with indoor and outdoor air selection modes for automobiles. 4,437,391, Cl. 98-2.010.
Eguchi, Takeo: *See—*
Moriya, Ryusuke; Eguchi, Takeo; and Ohba, Takeo, 4,438,465, Cl. 360-22.000.
Ehgartner, Gabriele; and Vondrovsky, Gabriel, to Agfa-Gevaert AG. Film transporting arrangement for cameras. 4,437,749, Cl. 354-214.000.
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., to BASF Aktiengesellschaft. Ω-Cyano-1, Ω-diphenyl-azaalkane derivatives, their preparation and drugs containing them. 4,438,131, Cl. 424-278.000.
Eibert, John, Jr.: *See—*
Nathaniel, Elmer O.; and Eibert, John, Jr., 4,438,003, Cl. 252-12.000.
Eichelberger, Charles W.; and Wojnarowski, Robert J., to General Electric Company. Method for fabrication of electrical resistor. 4,438,158, Cl. 427-101.000.
Eichelberger, Charles W.; Wojnarowski, Robert J.; and Auerbach, Abraham, to General Electric Company. Screen-printable thermocouples. 4,438,291, Cl. 136-236.00R.
Eigl, Franz: *See—*
Hittel, Gerhard; Muhl, Hubertus; Eigl, Franz; and Langer, Werner, 4,437,323, Cl. 66-84.00A.
Eiichi, Nishiura: *See—*
Katsutoshi, Ando; and Eiichi, Nishiura, 4,438,172, Cl. 428-220.000.
Ekdahl, Carl A., to United States of America, Energy. Capacitively-coupled inductive sensor. 4,438,394, Cl. 324-126.000.
Eklund, Claes E. Transporter air chiller. 4,437,320, Cl. 62-236.000.
Elaschuk, John T. Collapsible or folding chair. 4,437,700, Cl. 297-45.000.
Electrolytic Zinc Company of Australasia Limited: *See—*
Newman, Oliver M. G.; Palmer, David J.; and Pammenter, Robert V., 4,437,953, Cl. 204-119.000.
Elias, Luis R.; Madey, John M. J.; and Smith, Todd I., to United States of America, Navy. Short wavelength free electron laser using low energy electrons. 4,438,513, Cl. 372-2.000.
Elias, Moenes L.; and Burger, Walter L., to Dart Industries Inc. Dissolution of metals. 4,437,931, Cl. 156-666.000.
Elkem a/s: *See—*
Krogsrud, Harald, 4,438,516, Cl. 373-97.000.
Elliott, Robert H., Jr., to Zerpol Corporation. Boiler apparatus. 4,437,968, Cl. 204-301.000.
Ellis, Charles W. Stamping device. 4,437,400, Cl. 101-18.000.
Ellison, Joseph: *See—*
Willis, Frederick G.; Radtke, Richard R.; Ellison, Joseph; Fozo, Steven R.; and Kern, Glenn A., 4,438,497, Cl. 364-431.050.
Elmore, James; and West, Robert F., to Stanley Works, The. Molded frame maker mitre box with clamps. 4,437,375, Cl. 83-762.000.
Emerson Electric Co.: *See—*
Halfaker, Thomas C., 4,437,287, Cl. 52-588.000.
Royer, Neal B., 4,438,359, Cl. 310-68.00R.
Emerson, Ralph W., Sr., to Plasmine Corporation, The. Sizing compositions containing a formic acid salt, processes, and paper sized with the compositions. 4,437,894, Cl. 106-238.000.
Enander, Frederick A. Ultrasonic control of filling a container. 4,437,497, Cl. 141-1.000.
Endo, Kazuhiko: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Kawai, Toshiyuki; Yonehara, Sadao; Koiwai, Yoshihisa; and Endo, Kazuhiko, 4,437,883, Cl. 75-0.50C.
Endo, Michio: *See—*
Furukawa, Takashi; and Endo, Michio, 4,437,903, Cl. 148-12.00F.
Endorphin, Inc.: *See—*
Kimball, Charles D.; and Houck, John C., 4,438,104, Cl. 424-177.000.
Engel, Joseph C.: *See—*
Hicks, John M.; and Engel, Joseph C., 4,438,369, Cl. 315-49.000.
Engelhard Corporation: *See—*
Dettling, Joseph C.; Carr, William F.; Heck, Ronald M.; and Chen, James M., 4,438,082, Cl. 423-235.000.
Jefferson, Clinton F., 4,437,455, Cl. 126-417.000.

Engelmann, Dieter; Hackenberg, Hubert; Lermann, Peter; Wagner, Karl; and Zobel, Siegfried, to Agfa-Gevaert AG. Film transport arrangement with perforation wheel for camera. 4,437,751, Cl. 354-214.000.
Engler, Philip V.; and Buhl, Steven N., to Technicon Instruments Corporation. Stable, base serum compositions and preparation thereof. 4,438,202, Cl. 436-8.000.
Erdman, Victor B., to Victory Equipment Limited. Draper pick-up tine. 4,437,296, Cl. 56-400.000.
Erickson, Bruce W.; and Hugli, Tony E., to Research Corporation. Synthetic peptides. 4,438,029, Cl. 260-112.50R.
Erickson, Frederick L. Dual-expansion internal combustion cycle and engine. 4,437,437, Cl. 123-42.000.
Erickson, Roger D., to Honeywell Inc. Electrographic recording apparatus with delayed paper drive termination. 4,438,442, Cl. 346-153.100.
Ertinger, Richard E., to Carrier Corporation. Heat exchanger assembly for a refrigeration system. 4,437,322, Cl. 62-504.000.
Eschenbach, Paul W.; and Goineau, Andre M., to Milliken Research Corporation. Method of making yarn. 4,437,301, Cl. 57-289.000.
Esmil, B.V.: *See—*
Van der Velden, Jan H., 4,438,055, Cl. 264-44.000.
Espenan, Patrick: *See—*
Sanchez, Victor; Espenan, Patrick; Casademont, Ernest; and Lafaille, J. Pierre, 4,437,967, Cl. 204-301.000.
Etablissements Larrieubedin "La Girondine": *See—*
Bedin, Jean, 4,437,289, Cl. 53-64.000.
Etheridge Electric, Inc.: *See—*
Etheridge, J. Eugene, 4,438,383, Cl. 318-799.000.
Etheridge, J. Eugene, to Etheridge Electric, Inc. Rock crusher motor control circuit for preventing relay drop out. 4,438,383, Cl. 318-799.000.
Ethyl Products Company: *See—*
Shay, Joseph J., 4,437,588, Cl. 222-321.000.
Euclid, Inc.: *See—*
De Young, Simon A.; and Gray, Charles C., 4,437,530, Cl. 180-75.000.
Eusebe, Claude: *See—*
Dreulle, Noel; Van Ceulen, Alain; and Eusebe, Claude, 4,437,965, Cl. 204-290.00F.
Everpure, Inc.: *See—*
Devale, Donald, 4,437,499, Cl. 141-95.000.
Evert, Carl A.: *See—*
Skrovanek, Ambroz K.; and Evert, Carl A., 4,438,408, Cl. 330-51.000.
Ex-Cell-O Corporation: *See—*
Corley, William G., 4,437,267, Cl. 51-34.00R.
Exxon Research and Engineering Co.: *See—*
Petkovic-Luton, Ruzica, 4,437,900, Cl. 148-12.00E.
Fabbrica d'Armi P Beretta S.p.A.: *See—*
Beretta, Pier C., 4,437,250, Cl. 42-59.000.
Faedda, Giovanni A.: *See—*
Botteghi, Carlo; Gladiali, Serafino G.; Marchetti, Mauro; and Faedda, Giovanni A., 4,438,033, Cl. 260-239.55C.
Fahrenholtz, Kenneth E.; and Heveran, John E., to Hoffmann-La Roche Inc. Radioimmunoessay for cannabinoids. 4,438,207, Cl. 436-543.000.
Falcon Safety Products, Inc.: *See—*
Schwartz, Lionel H.; Miller, Scott W.; and Severud, Christopher N., Jr., 4,438,479, Cl. 361-213.000.
Fan, Liang-tseng; and Hsu, Edward H., to Kansas State University Research Foundation. Method of filtration using semifluidized beds. 4,438,000, Cl. 210-786.000.
Fancey, Everett G.; Peters, John V.; and Tucker, Russell E., to Nordco Limited. Longline baiting. 4,437,254, Cl. 43-4.000.
Farley, Peter: *See—*
Carroll, William G.; Farley, Peter; and Marklow, Raymond J., 4,438,252, Cl. 528-75.000.
Farmaitalia Carlo Erba S.p.A: *See—*
Suarato, Antonino; Penco, Sergio; Arcamone, Federico; and Casazza, Anna M., 4,438,105, Cl. 424-180.000.
Farr, Glyn P. R., to Lucas Industries Limited. Fluid-pressure-operable relay valves. 4,437,483, Cl. 137-85.000.
Faure, Jean-Paul: *See—*
Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, 4,437,869, Cl. 65-1.000.
Favin, David L., to Bell Telephone Laboratories, Incorporated. Adaptive techniques for automatic frequency determination and measurement. 4,438,504, Cl. 364-724.000.
Fawkes, John S.; and Umboltz, Walter F., to Ampex Corporation. D.C. Controlled adjustable ramp signal generator and method. 4,438,466, Cl. 360-66.000.
FBC Limited: *See—*
Allan, Keith, 4,438,137, Cl. 424-330.000.
Fenrick, Walter J., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Viscoelastometer. 4,437,337, Cl. 73-54.000.
Ferguson, Gerald D.: *See—*
Bobb, Lloyd C.; Rankin, Michael; and Ferguson, Gerald D., 4,438,517, Cl. 372-99.000.
Ferraro, Angelo, to General Electric Company. Low loss snubber for power converters. 4,438,486, Cl. 363-56.000.
Ferris, Wayne, to Bocsalis, Frieda. Dispenser for skewered foods. 4,437,580, Cl. 221-75.000.
Ferry, John M.: *See—*
Ober, John W.; and Ferry, John M., 4,438,428, Cl. 340-521.000.
Festa, Lawrence M. Speaker enclosure. 4,437,539, Cl. 181-145.000.
Fiber Industries, Inc.: *See—*
Cardell, Max L., 4,437,617, Cl. 242-18.0EW.
Powers, Edward J., 4,437,919, Cl. 156-329.000.
Powers, Edward J., 4,438,178, Cl. 428-289.000.
Fiberglass Unlimited, Inc.: *See—*
Latham, Ronald D., 4,437,426, Cl. 114-103.000.
Fichtel & Sachs AG: *See—*
Gimmler, Joachim; and Schoder, Bernd, 4,437,551, Cl. 192-3.280.
Tomm, Dagwin; and Scheer, Erich, 4,437,555, Cl. 192-70.210.
Field, John H., II, to Sigma Instruments, Inc. Synchronous motor system. 4,438,381, Cl. 318-696.000.
Figgie International Inc.: *See—*
Pijlay, Robert E.; and Netteland, Loyal G., 4,437,462, Cl. 128-207.000.
Filippos, Makram I. Swimming wheel apparatus. 4,437,840, Cl. 440-27.000.
Finike Italiana Marposs S.p.A.: *See—*
Possati, Mario, 4,437,239, Cl. 33-143.00L.
Finkbeiner, Rudolf: *See—*
Bienek, Heinz; Finkbeiner, Rudolf; and Wick, Wilhelm, 4,437,578, Cl. 220-256.000.
Finley, Joseph H.; and Liao, Hsiang P., to FMC Corporation. Process for the manufacture of mixed phosphoric acid ester compositions. 4,438,048, Cl. 260-982.000.
Firmenich SA.: *See—*
Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,438,283, Cl. 568-403.000.
Skorianetz, Werner; and Ohloff, Gunther, 4,438,023, Cl. 252-522.00R.
Fischer, Artur. Mounting element for mounting object to support structure. 4,437,804, Cl. 411-59.000.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine system with optional continuous web printing. 4,437,402, Cl. 101-181.000.
Fischer, Victor H., to Thermal Systems Limited. Rotary heat engine. 4,437,308, Cl. 60-514.000.
Fisher, Thomas J.: *See—*
Cawley, James C.; DiMartino, Michael D.; Fisher, Thomas J.; King, Roger L.; and Uhler, Marcus H., 4,438,473, Cl. 361-18.000.
Flannery, William E.; Josephs, Richard M.; Stein, Barry F.; Wang, Tsing-Chow; and Young, Peter L., to Sperry Corporation. Method of making improved tunnel barriers for superconducting Josephson junction devices. 4,437,227, Cl. 29-589.000.
Fleischer, Kenneth H., to International Rectifier Corporation. Solid state relay circuit employing MOSFET power switching devices. 4,438,356, Cl. 307-571.000.
Fletcher, Edward H.: *See—*
Kramer, Kenneth D.; and Fletcher, Edward H., 4,437,385, Cl. 91-361.000.
Flexiblast Company: *See—*
Brooks, Frank W., 4,437,601, Cl. 226-199.000.
Fling, George K., to Vought Corporation. Fluid sealing devices. 4,437,674, Cl. 277-188.00A.
Flint, David L. Apparatus for controlling and releasing pressure of a tool on a workpiece. 4,437,376, Cl. 83-886.000.
Flow Industries, Inc.: *See—*
O'Hanlon, Tom A.; Madonna, Peter L.; and Wallace, Gearld F., 4,437,525, Cl. 175-218.000.
Fluid Operations & Equipment, Inc.: *See—*
Wingate, Clarence W., 4,437,686, Cl. 285-12.000.
FMC Corporation: *See—*
Byers, Lance R., 4,438,089, Cl. 423-624.000.
Finley, Joseph H.; and Liao, Hsiang P., 4,438,048, Cl. 260-982.000.
McEuen, Bruce K.; and Norris, Robert D., 4,438,080, Cl. 423-112.000.
Foissac, Yves; and Hung, Frederic N. B., to Laboratoire d'Etudes et de Recherches Chimiques L.E.R.C. Lattice-type structure, particularly mast support of antenna. 4,437,288, Cl. 52-637.000.
Foley, Mark P.: *See—*
Howerton, Anderson W.; and Foley, Mark P., 4,437,371, Cl. 83-54.000.
Follmer, William C.: *See—*
Caere, Csabe; and Follmer, William C., 4,437,340, Cl. 73-118.000.
Ford Aerospace & Communications Corporation: *See—*
Rubin, Michael D.; and Ho, Pang T., 4,438,411, Cl. 330-289.000.
Ford, Michael A.; and Leather, Brian B., to Perkin-Elmer Limited. Minimizing the effect of spurious photodetector currents in flash spectrofluorimetry. 4,438,329, Cl. 250-459.100.
Ford Motor Company: *See—*
Ammons, Edward A., 4,438,049, Cl. 261-42.000.
Caere, Csabe; and Follmer, William C., 4,437,340, Cl. 73-118.000.
Joy, Robert D., 4,437,349, Cl. 73-861.220.
Willis, Frederick G.; Radtke, Richard R.; Ellison, Joseph; Fozo, Steven R.; and Kern, Glenn A., 4,438,497, Cl. 366-431.050.
Forrat, Francis, to Commissariat a l'Energie Atomique. Apparatus for the purification of water by ultraviolet radiation. 4,438,337, Cl. 250-436.000.
Forrest, Gordon C., to Technicon Instruments Corporation. Test-tube assembly for immunoessays utilizing magnetically attractable particles. 4,438,068, Cl. 422-61.000.
Forschungsinstitut fur Textiltechnologie: *See—*
Benke, Karl-Heinz; Hering, Elisabeth; Lobal, Wilfried; Pollack, Dieter; Wiedemann, Gunter; Grell, Uta; and Schuler, Ingo, 4,438,053, Cl. 264-25.000.

Forsyth Dental Infirmary for Children: *See*—
Taubman, Martin A.; and Smith, Daniel J., 4,438,200, Cl. 435-193.000.
Fortin, Paul; Michaud, Paul; and Pernicka, Martin, to Poudrier Frere Ltee. Control system for cage supported by articulated boom. 4,437,543, Cl. 182-2.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,437,879, Cl. 71-96.000.
Foseco Trading A.G.: *See*—
Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,438,515, Cl. 373-88.000.
Foshee, William R., to Best Lock Corporation. Knob retainer blocker mechanism. 4,437,695, Cl. 292-352.000.
Foster, Kenneth J., to Econ Incorporated. Thermal insulation structure for windows. 4,437,277, Cl. 52-202.000.
Foster Manufacturing Company: *See*—
Cruse, Lee H., 4,437,647, Cl. 251-149.900.
Fox, Hugh M.; and Sutcliffe, Peter H. Output processing system for a digital electronic musical instrument. 4,438,502, Cl. 364-718.000.
Fozo, Steven R.: *See*—
Willis, Frederick G.; Radtke, Richard R.; Ellison, Joseph; Fozo, Steven R.; and Kern, Glenn A., 4,438,497, Cl. 364-431.050.
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Buchanan, Michael S., to Wm. T. Burnett & Co., Inc. Polyurethane foam-filled foam resistant to combustion and method of producing same. 4,438,220, Cl. 521-55.000.
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Buchanan, Michael S., to Wm. T. Burnett & Co., Inc. Polyurethane foam-filled foams and method of producing same. 4,438,221, Cl. 521-55.000.
Fralish, Mark R., to Ingersoll Equipment Co., Inc. Detachable hinge assembly. 4,437,529, Cl. 180-69.00C.
Fram Corporation: *See*—
Hutchins, Charles K.; Thornton, Donald I.; and Peyton, Richard H., 4,437,986, Cl. 210-130.000.
Frama AG: *See*—
Haug, Werner, 4,437,405, Cl. 101-349.000.
Frank, Wolfram: *See*—
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.
FranRica Mfg. Inc.: *See*—
Rica, Albert F.; Hay, Lloyd F.; Heron, John R.; Webber, John R.; and Rechtsteiner, Steven A., 4,437,315, Cl. 62-63.000.
Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See*—
Riecke, Wolfgang D., 4,438,336, Cl. 250-398.000.
Freeman Chemical Corporation: *See*—
Nothnagel, Joseph L., 4,438,072, Cl. 422-133.000.
Freeman Industries, Inc.: *See*—
Freeman, Jonathan P., 4,437,957, Cl. 204-147.000.
Freeman, Jonathan P., to Freeman Industries, Inc. Cathodic or anodic protection system and method for independently protecting different regions of a structure. 4,437,957, Cl. 204-147.000.
Frentzel, Richard L., to Celotex Corporation, The. Metal catalyzed preparation of polyoxyalkylene surfactants for phenolic foam stabilization. 4,438,018, Cl. 252-356.000.
Frerichs, Udo: *See*—
Seitz, Hans; Rach, Heinz-Dieter; Pieper, Henner; and Frerichs, Udo, 4,437,503, Cl. 152-209.00R.
Freymond, Pierre, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Spin-stabilized sabot projectile for overcoming a heterogeneous resistance. 4,437,409, Cl. 102-364.000.
Frick Company: *See*—
Ingram, Walter B., 4,437,813, Cl. 417-53.000.
Frick, Raymond: *See*—
Schwartz, Jeremy; and Frick, Raymond, 4,437,822, Cl. 418-122.000.
Frick, Richard H.: *See*—
Sigl, Wayne C.; and Frick, Richard H., 4,437,860, Cl. 604-385.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Arens, Egidius; Hampe, Christoph; Karlowsky, Ingo; Meyersieck, Manfred; Schwarz, Hans D.; Anding, Norbert; and Leisterer, Reinhard, 4,438,438, Cl. 343-451.000.
Friedrich, Ludwig: *See*—
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.
Friedrich, Ralph S.: *See*—
Magarian, Gerald M.; and Friedrich, Ralph S., 4,437,616, Cl. 242-7.020.
Friedrich Wilh. Schwing GmbH: *See*—
Metzelder, Wolfgang, 4,437,817, Cl. 417-507.000.
Frischen, Franz. Method of producing sheathed cables and/or transducers and a device for carrying out this method. 4,437,914, Cl. 156-54.000.
Frohberger, Paul-Ernst: *See*—
Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,438,122, Cl. 424-263.000.
Fuini, Dennis L.: *See*—
Newton, Charles L.; and Fuini, Dennis L., 4,437,312, Cl. 60-648.000.
Fuji Electric Company, Ltd.: *See*—
Shimstani, Michiro; and Kazama, Toyoki, 4,438,188, Cl. 430-128.000.
Fuji Photo Film Co., Ltd.: *See*—
Kitajima, Masao; Seshimoto, Osamu; Kubotera, Kikuo; and Yamaguchi, Akira, 4,437,970, Cl. 204-412.000.
Satomura, Masato, 4,438,245, Cl. 526-286.000.
Tabei, Masatoshi, 4,438,455, Cl. 358-44.000.
Tersoka, Masanori; Komaki, Takao; and Matsumoto, Seiji, 4,438,333, Cl. 250-327.200.
Umemura, Shizuo; Matsufuji, Akihiro; Aonuma, Masashi; Kitamoto, Tatsuji; and Miyatsuka, Hajime, 4,437,882, Cl. 75-0.50R.
Fujii, Tokuo: *See*—
Gaino, Mitsunori; Iijima, Ikuo; Nishimoto, Shigeru; Ikeda, Kuichiro; and Fujii, Tokuo, 4,438,035, Cl. 260-239.30B.
Fujimori, Yoshitugu; Takabori, Yasuo; Sakano, Hajime; and Ito, Akitoshi, to Sumitomo Naugatuck Co., Ltd.; and Honda Motor Co., Ltd. Thermoplastic composition. 4,438,229, Cl. 524-109.000.
Fujinami, Shosaku: *See*—
Ishii, Yoshiaki; Kume, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, 4,437,416, Cl. 110-245.000.
Fujisawa, Haruhiko: *See*—
Kamei, Hideaki; Yamanaka, Kazuhiko; Fujisawa, Haruhiko; and Oda, Shinichiro, 4,438,468, Cl. 360-92.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, 4,438,113, Cl. 424-246.000.
Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, 4,438,126, Cl. 424-272.000.
Fujita, Fumio: *See*—
Murase, Ichiki; Fujita, Fumio; Ohniahi, Toshihiro; and Tamura, Toshifumi, 4,438,262, Cl. 536-43.000.
Fujita, Takeshi: *See*—
Kawamatsu, Yutaka; and Fujita, Takeshi, 4,438,141, Cl. 424-248.510.
Fujitsu Limited: *See*—
Miura, Kenichi, 4,438,427, Cl. 340-347.0DD.
Oshiki, Mitsumasa; and Kawakami, Susumu, 4,438,471, Cl. 360-125.000.
Fujiu, Takamitsu; Ogino, Makoto; Kariya, Michio; and Ichimura, Takeo, to Nippon Kogaku K.K. Implants of biologically active glass or glass ceramic containing titania. 4,437,192, Cl. 3-1.900.
Fukagawa, Yasuo: *See*—
Kubo, Katsuro; Fukagawa, Yasuo; and Ishikura, Tomoyuki, 4,438,201, Cl. 435-228.000.
Fukao, Masami: *See*—
Suzukamo, Gohfu; Tamura, Mitsuhisa; and Fukao, Masami, 4,438,286, Cl. 568-840.000.
Fukui, Tomonori: *See*—
Eguchi, Osamu; and Fukui, Tomonori, 4,437,391, Cl. 98-2.010.
Fukui, Yutaka; and Kashimura, Tetsuo, to Hitachi, Ltd. Cobalt base alloy. 4,437,913, Cl. 148-408.000.
Fukuoka, Tatsuhiko: *See*—
Nozue, Shigehiro; Fukuoka, Tatsuhiko; and Sugiura, Hideaki, 4,437,215, Cl. 29-149.50R.
Fukuroi, Takeo, to Yoshida Kogyo K.K. Bridge top stop for slide fasteners. 4,437,210, Cl. 24-435.000.
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Kotani, Kozo; and Hosono, Hidekazu, to Sumitomo Chemical Company, Limited. Low density copolymer composition of two ethylene-α-olefin copolymers. 4,438,238, Cl. 525-240.000.
Funk, Gary L., to Phillips Petroleum Company. Control of a catalytic cracking unit. 4,437,977, Cl. 208-113.000.
Furuichi, Katsushi: *See*—
Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, 4,437,756, Cl. 355-14.00R.
Furukawa, Mitsuhiki; Miyahara, Michito; Kitahira, Takashi; Misumi, Kiyohito; Shiroyama, Masaharu; and Wada, Toshiaki, to Nippon Tungsten Co., Ltd.; and Sumitomo Special Metals Co., Ltd. Magnetic head slider material and method for producing the same. 4,438,213, Cl. 501-92.000.
Furukawa, Takashi; and Endo, Michio, to Nippon Steel Corporation. Method for producing two-phase hot rolled steel sheet having high strength and low yield ratio. 4,437,903, Cl. 148-12.00F.
Fusco, John A., deceased: *See*—
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.
Fushida, Akira; and Kato, Yoshiaki, to Mita Industrial Co. Ltd. Photosensitive composition for electrophotography with chloronaphthoquinones. 4,438,187, Cl. 430-81.000.
Futaba Denki Kogyo Kabushiki Kaisha: *See*—
Kawai, Keiichi, 4,437,397, Cl. 99-533.000.
Futamoto, Masaaki: *See*—
Hosoki, Shigeyuki; Futamoto, Masaaki; Kawabe, Ushio; Ishitani, Tohru; and Tamura, Hifumi, 4,438,371, Cl. 315-111.810.
Gaida, Wolfram: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Gaida, Wolfram; and Hoefke, Wolfgang, 4,438,118, Cl. 424-251.000.
Gaino, Mitsunori; Iijima, Ikuo; Nishimoto, Shigeru; Ikeda, Kuichiro; and Fujii, Tokuo, to Tanabe Seiyaku Co., Ltd. Method of preparing benzothiazepine derivatives. 4,438,035, Cl. 260-239.30B.
Galamboa, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara Rt. 4-Oxo-PGI$_2$ compounds, their use in inhibition of thrombii and their production. 4,438,132, Cl. 424-285.000.
Gammill, Ronald B., to Upjohn Company, The. Antiatherosclerotic furochromones. 4,438,274, Cl. 549-387.000.
Ganci, Salvatore, to Ciro's Touch, Ltd. Method of promoting tissue growth. 4,438,102, Cl. 424-130.000.
Ganellin, Charon R.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,438,127, Cl. 424-272.000.
Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., to Du Pont de Nemours, E. I., and Company. Antibodies to immunogenic peptides and their use to purify human fibroblast interferon. 4,438,030, Cl. 260-112.50R.
Ganster, Otto: *See*—
Grogler, Gerhard; Ganster, Otto; and Recker, Klaus, 4,438,250, Cl. 528-66.000.
Gantwerker, Scott; and Leong, Sai, to Quaker Oats Company, The. Process for preparing an instant baby cereal porridge product. 4,438,150, Cl. 426-625.000.
Garcowski, Theodore, to Binks Manufacturing Company. Electrostatic air atomization spray coating system. 4,437,614, Cl. 239-691.000.
Garner, Albert Y., to Monsanto Company. Process for preparing lactam magnesium halides. 4,438,034, Cl. 260-239.30R.
Garoffolo, Frank, to Aviatec, Inc. Boom rack for handling and positioning cargo tie down equipment. 4,437,573, Cl. 212-263.000.
Garrett Corporation, The: *See*—
Morison, Rodney, 4,438,364, Cl. 310-328.000.
Gartside, Robert J.: *See*—
Woebcke, Herman N.; Bhojwani, Arju H.; and Gartside, Robert J., 4,437,979, Cl. 208-153.000.
Gates, Donald C., to Antares Engineering, Inc. Gauge and method of determining the existence of irregularities in a surface of an article. 4,437,335, Cl. 73-37.900.
Gaul, David J.; Hinze, Jay W.; and Perkins, Richard A., to Owens-Corning Fiberglas Corporation. Method for protecting forming bushings. 4,438,518, Cl. 373-39.000.
Gawel, Len J.: *See*—
Grimsley, R. Leroy; and Gawel, Len J., 4,437,794, Cl. 405-224.000.
Gehring, Gerhard, to Siemens Aktiengesellschaft. Device for changing the electrical circuit configuration of integrated semiconductor circuits. 4,438,347, Cl. 307-308.000.
Geiler, Volkmar: *See*—
Mennemann, Karl; Gliemeroth, Georg; and Geiler, Volkmar, 4,438,211, Cl. 501-65.000.
Geissler, Ulrich; and Herwig, Walter, to Hoechst Aktiengesellschaft. Radiation-polymerizable mixture and photopolymerizable copying material prepared therefrom. 4,438,189, Cl. 430-280.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Freewheeling clutch assembly. 4,437,553, Cl. 192-46.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Splined hub assembly for connecting two shafts. 4,437,782, Cl. 403-13.000.
Geke, Jurgen: *See*—
Droedziok, Hermann; Geke, Jurgen; and Germscheid, Hans G., 4,437,898, Cl. 148-6.15R.
Gellert, Jobst U. Tubular elongated injection molding electric heating element with spacer clips. 4,438,325, Cl. 219-536.000.
General Electric Company: *See*—
Beers, Melvin D.; and Surprenant, Richard P., 4,438,039, Cl. 260-429.500.
Bose, Sanjay K., 4,438,519, Cl. 375-1.000.
Breen, Thomas B., 4,438,476, Cl. 361-96.000.
Collins, Arthur K.; Andrews, Edward W.; and Srinivasan, Nallaswamy, 4,438,495, Cl. 364-414.000.
Eichelberger, Charles W.; and Wojnarowski, Robert J., 4,438,158, Cl. 427-101.000.
Eichelberger, Charles W.; Wojnarowski, Robert J.; and Auerbach, Abraham, 4,438,291, Cl. 136-236.00R.
Ferraro, Angelo, 4,438,486, Cl. 363-56.000.
Harnden, John D., Jr.; and Kornrumpf, William P., 4,438,396, Cl. 324-127.000.
Hershberger, Doran D., 4,437,325, Cl. 68-23.700.
Jenkins, Thomas E., 4,437,715, Cl. 312-348.000.
Liu, Ping Y., 4,438,231, Cl. 524-161.000.
Madden, James A., 4,437,327, Cl. 72-94.000.
Mark, Victor; and Hedges, Charles V., 4,438,241, Cl. 525-444.000.
McHugh, James D., 4,438,339, Cl. 290-1.00R.
Nutter, Norman E., 4,437,809, Cl. 415-41.000.
Rosenquist, Niles R.; and Lee, Garland G., 4,438,234, Cl. 524-378.000.
Rosenquist, Niles R., 4,438,255, Cl. 528-176.000.
Taber, Bruce D.; and Wagner, James B., 4,437,313, Cl. 60-665.000.
Tassie, Douglas P., 4,437,384, Cl. 89-37.00A.
Varnovitsky, Marien, 4,438,376, Cl. 318-78.000.
General Equipment Manufacturers: *See*—
Maxwell, Ronald M., 4,437,411, Cl. 108-1.000.
General Foods Corporation: *See*—
O'Rourke, Joseph D.; and Katcher, Jay H., 4,438,148, Cl. 426-579.000.
General Microwave Corporation: *See*—
Hopfer, Samuel, 4,438,415, Cl. 333-81.00A.
General Motors Corporation: *See*—
Winchell, Frank J.; and Winkelmann, Klaus O., 4,437,535, Cl. 180-215.000.

General Tire & Rubber Company, The: *See*—
Griffith, Richard M.; and Shanoski, Henry, 4,438,062, Cl. 264-255.000.
Genshi-Ryoku Daiko Co., Ltd.: *See*—
Nagatsuka, Kenichi, 4,437,202, Cl. 15-320.000.
Gentry, Bobby C., to Southwire Company. Method and apparatus for improved heat treatment of aluminum alloy rod. 4,437,901, Cl. 148-11.50A.
Geodate Limited: *See*—
De Sa, Alten J. A., 4,438,389, Cl. 324-52.000.
Geppelt, Elmo W.; and Poore, William H., to Delta Limited. Method of manufacturing twisted tubes. 4,437,329, Cl. 72-299.000.
Gerety, Robert J.: *See*—
Tabor, Edward; and Gerety, Robert J., 4,438,098, Cl. 424-89.000.
Gerhardus, Ulrich: *See*—
Gorris, Rainer; Hibbel, Josef; Gerhardus, Ulrich; and Scheve, Heinrich, 4,437,864, Cl. 48-62.00R.
Germscheid, Hans G.: *See*—
Droedziok, Hermann; Geke, Jurgen; and Germscheid, Hans G., 4,437,898, Cl. 148-6.15R.
Gerphagnon, Jean-Louis; and Wolter, Claude, to Aluminium Pechiney. Assembly for spot feeding alumina to an electrolytic tank for the production of aluminum. 4,437,964, Cl. 204-245.000.
Gerpheide, George E.: *See*—
Armantrout, Robert J.; Gerpheide, George E.; and Wilson, Robert F., deceased, 4,437,672, Cl. 273-185.00B.
Gesellschaft fur Biotechnologische Forschung mbH: *See*—
Lindorfer, Walter; Wagner, Fritz; and Schulz, Walther, 4,437,993, Cl. 210-631.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Redder, Manfred; Linke, Horst; Grundken, Dieter; and Temme, Helmut, 4,437,564, Cl. 198-834.000.
Stoltefuss, Wilhelm, 4,437,708, Cl. 299-81.000.
Giannone, Charles, to Duro-Dyne Corporation. Weld pin applicator device having automatic reload. 4,438,314, Cl. 219-98.000.
Gibbs, Richard B. Suitcase. 4,437,549, Cl. 190-109.000.
Gibson, Donald L.: *See*—
Liu, Henry; Gibson, Donald L.; Cheng, David H. S.; and Rathke, James E., 4,437,799, Cl. 406-198.000.
Gillespie, Bernard M.; Sarli, Michael S.; and Smith, Kenneth W., to Mobil Oil Corporation. Manufacture of lube base stock oil. 4,437,975, Cl. 208-87.000.
Gilloon, Elinor: *See*—
Schnettler, Shirley I.; and Gilloon, Elinor, 4,437,837, Cl. 434-178.000.
Gilroy, Alfred A., to MacMillan Bloedel Limited. Self protecting spray nozzle. 4,437,611, Cl. 239-453.000.
Gimmler, Joachim; and Schoder, Bernd, to Fichtel & Sachs AG. Hydrodynamic torque converter. 4,437,551, Cl. 192-3.280.
Ginley, David S.: *See*—
Baughman, Richard J.; and Ginley, David S., 4,438,183, Cl. 429-111.000.
Gipelec: *See*—
Chenaux, Bernard, 4,438,184, Cl. 429-181.000.
GK Technologies, Incorporated: *See*—
Kasiewicz, Allen B., 4,437,789, Cl. 405-156.000.
Gladdish, Peter: *See*—
McCormick, Michael A.; and Gladdish, Peter, 4,438,406, Cl. 328-167.000.
Gladiali, Serafino G.: *See*—
Botteghi, Carlo; Gladiali, Serafino G.; Marchetti, Mauro; and Faedda, Giovanni A., 4,438,033, Cl. 260-239.55C.
Glaxo Group Limited: *See*—
Collington, Eric W.; Hallett, Peter; and Wallis, Christopher J., 4,438,111, Cl. 424-246.000.
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; and Bradshaw, John, 4,438,112, Cl. 424-244.000.
Grew, Edward L.; and Wilson, Nigel D. V., 4,438,046, Cl. 260-501.150.
Glenn, Thomas J.; and Kaye, Wilbur I., to Beckman Instruments, Inc. Control of detector gain hysteresis in a single beam spectrophotometer. 4,437,762, Cl. 356-326.000.
Gliemeroth, Georg: *See*—
Mennemann, Karl; Gliemeroth, Georg; and Geiler, Volkmar, 4,438,211, Cl. 501-65.000.
Gloor, Peter, to Hilti Aktiengesellschaft. Milling tool for forming recesses in masonry, concrete and similar material structures. 4,437,526, Cl. 175-346.000.
Gluck, David G.; and Barry, Leon F., to Celotex Corporation, The. Structural laminate and method for making same. 4,438,166, Cl. 428-113.000.
Glynn, Michael H., to Sabre Safety Limited. Breathing apparatus. 4,437,460, Cl. 128-204.260.
Go-Jo Industries, Inc.: *See*—
Potter, Charles, 4,437,589, Cl. 222-327.000.
Godec, Maksimilijan, to Von Duprin, Inc. Thermally responsive latching device and method of modifying a latching device. 4,437,693, Cl. 292-191.000.
Goebel, Mark B.; and Lefebvre, Kenneth E., to Titeflex Corporation. Reusable end fitting. 4,437,689, Cl. 285-246.000.
Goetchius, Ronald J.: *See*—
Collins, Michael J.; Cruse, Bernard W., Jr.; and Goetchius, Ronald J., 4,438,500, Cl. 364-567.000.
Goff, Willis, Jr.; and Jenkins, William M., to International Business Machines Corporation. Replaceable ribbon cartridge. 4,437,779, Cl. 400-208.000.

Gogniat, Paul, to Montres Rado S.A. Timepiece. 4,437,770, Cl. 368-294.000.

Goineau, Andre M.: *See*—
Eschenbach, Paul W.; and Goineau, Andre M., 4,437,301, Cl. 57-289.000.

Gold- und Silber-Scheideanstalt Oberstein Franz Reischauer: *See*—
Stahl, Juergen; Schuster, Wilhelm; and Wegner, Wilhelm, 4,437,212, Cl. 24-698.000.

Goldberg, Jurgen. Method and device for the performance of a supporting function in a passage. 4,437,276, Cl. 52-125.500.

Golde, David W.; and Quan, Shirley G., to University of California, The Regents of the. Unique T-lymphocyte line and products derived therefrom. 4,438,032, Cl. 260-112.00R.

Goldstein, Joel; and Abrevaya, Albert, to Aquarium Pharmaceuticals, Inc. Animal litter. 4,437,429, Cl. 119-1.000.

Goldstein, Seth; and Jones, Robert, to United States of America, Health and Human Services. Method and apparatus for traversing blood vessels. 4,437,857, Cl. 604-53.000.

Gonzalez, Mikel: *See*—
Bardina, Juan; and Gonzalez, Mikel, 4,437,479, Cl. 134-68.000.

Goodman, Robert B., to United Technologies Corporation. Check valve. 4,437,485, Cl. 137-220.000.

Goodyear Tire & Rubber Company, The: *See*—
Appleby, Paul E.; and Brinkley, Max D., 4,437,915, Cl. 156-126.000.
D'Sidocky, Richard M., 4,438,289, Cl. 585-827.000.

Gorman, Richard M. Full gain twist ratchet rifling. 4,437,251, Cl. 42-78.000.

Gorris, Rainer; Hibbel, Josef; Gerhardus, Ulrich; and Scheve, Heinrich, to Karrena GmbH; Ruhrchemi AG; and Ruhrkohle AG. Plant with a reactor container, particularly for the gasification of fossil fuels. 4,437,864, Cl. 48-62.00R.

Gosso, Giancarlo: *See*—
Stabile, Nicolo; Motta, Raimondo; and Gosso, Giancarlo, 4,438,276, Cl. 560-13.000.

Goto, Hirokazu: *See*—
Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Goto, Hirokazu; and Abiko, Shuzo, 4,438,470, Cl. 360-113.000.

Goto, Tokuju: *See*—
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Iahidoshiro, Hiroshi; and Minakata, Matsuo, 4,437,324, Cl. 68-5.00E.

Gottlieb, Norman: *See*—
Williams, Albert V., 4,437,518, Cl. 166-248.000.

Gould, Brian: *See*—
Soper, Douglas C.; and Gould, Brian, 4,437,494, Cl. 138-97.000.

Graaff KG: *See*—
Dorpmund, Willi, 4,437,211, Cl. 24-287.000.

Gradel, Gerhard: *See*—
Dorr, Wolfgang; Gradel, Gerhard; and Peehs, Martin, 4,438,050, Cl. 264-0.500.

Graham, Neil B., to National Research Development Corporation. Hydrogels. 4,438,258, Cl. 528-361.000.

Graiff, L. B.; and Laity, John L., to Shell Oil Company. Antiknock additive compositions and unleaded gasoline containing same. 4,437,436, Cl. 123-1.00A.

Gram Research & Development Co.: *See*—
Mayne, Sherman T., 4,437,999, Cl. 210-748.000.

Granges Metallverken Aktiebolag: *See*—
Jonsson, Karl G., 4,437,216, Cl. 29-157.30A.

Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG: *See*—
Wirz, Burkhardt; and Preuss, Alfred, 4,437,407, Cl. 101-409.000.

Graser, Earl J., to Manville Service Corp. Beverage package and production blank with improved locking features. 4,437,606, Cl. 229-40.000.

Gray, Charles C.: *See*—
De Young, Simon A.; and Gray, Charles C., 4,437,530, Cl. 180-75.000.

Graziani, Gabriele: *See*—
Nardi, Dante; Tajana, Alberto; Motta, Gianni; Cazzulani, Pietro; and Graziani, Gabriele, 4,438,133, Cl. 424-300.000.

Greenberg, Mitchell H. Valve respirator device. 4,437,461, Cl. 128-205.240.

Greenhouse, Walter V. V.: *See*—
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Buchanan, Michael S., 4,438,220, Cl. 521-55.000.
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Buchanan, Michael S., 4,438,221, Cl. 521-55.000.

Gregory, Oran A. Method and apparatus for dismounting trunnion bearings. 4,437,220, Cl. 29-426.500.

Greiner, Harry M., to M.A.N. Roland Druckmaschinen Aktiengesellschaft. System for adjusting printing plates mounted on plate cylinders. 4,437,403, Cl. 101-248.000.

Grell, Ute: *See*—
Benke, Karl-Heinz; Hering, Elisabeth; Lobel, Wilfried; Pollack, Dieter; Wiedemann, Gunter; Grell, Ute; and Schuler, Ingo, 4,438,053, Cl. 264-25.000.

Greutmann, Hans, to Allied Corporation. Motor having insulationless armature connections. 4,437,230, Cl. 29-597.000.

Grew, Edward L.; and Wilson, Nigel D. V., to Glaxo Group Limited. Quaternary ammonium salts. 4,438,046, Cl. 260-501.150.

Grisa, Josef: *See*—
Ehrmann, Oskar; Raschack, Manfred; Grisa, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.

Griffin, Brian P.: *See*—
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., 4,438,236, Cl. 525-165.000.

Griffin, Freddie, Jr.: *See*—
Svatek, Katherine H.; Wilson, David A.; and Griffin, Freddie, Jr., 4,438,040, Cl. 260-439.00R.

Griffith, Richard M.; and Shanoski, Henry, to General Tire & Rubber Company, The. In-mold coating method. 4,438,062, Cl. 264-255.000.

Grimsley, R. Leroy; and Gawel, Len J., to Conoco Inc. Pyramidal offshore structure. 4,437,794, Cl. 405-224.000.

Grinde, James E., to Yamaha Hatsudoki Kabushiki Kaisha. Snow vehicle. 4,437,534, Cl. 180-190.000.

Grogler, Gerhard; Ganster, Otto; and Recker, Klaus, to Bayer Aktiengesellschaft. Suspensions of isocyanato ureas in isocyanate prepolymers, a process for their production and their use in the production of high molecular-weight polyurethane plastics. 4,438,250, Cl. 528-66.000.

Grollier, Jean-Francois; and Allec, Josiane, to Societe Anonyme dite: L'Oreal. New cosmetic compositions for hair or skin conditioning, and the application thereof. 4,438,095, Cl. 424-70.000.

Grot, Walter G.: *See*—
Bisot, Thomas C.; Grot, Walter G.; and Resnick, Paul R., 4,437,951, Cl. 204-98.000.

Grove Valve and Regulator Company: *See*—
Bianchi, Giuseppe, 4,437,486, Cl. 137-315.000.

Grubb, Lawrence B.: *See*—
Simpson, Danny E.; Williams, David M.; Chase, Richard A.; and Grubb, Lawrence B., 4,437,668, Cl. 273-156.000.

Gruber, Peter; Schmid, Jochen; Lechner, Horst; and Bauer, Eckhart, to Dr. Karl Thomae GmbH. Brombexine delayed-release pharmaceutical form. 4,438,091, Cl. 424-21.000.

Grundken, Dieter: *See*—
Redder, Manfred; Linke, Horst; Grundken, Dieter; and Temme, Helmut, 4,437,564, Cl. 198-834.000.

Grynkewich, Gregory W., to Olin Corporation. Phosphorylated and thiophosphorylated poly(oxyalkylated) hydrazines and selected adducts and their use as corrosion inhibitors. 4,438,013, Cl. 252-146.000.

GTE Laboratories Incorporated: *See*—
Cogan, Adrian I., 4,437,925, Cl. 156-653.000.

GTE Products Corporation: *See*—
Hope, Lawrence L.; and Davey, Ernest A., 4,437,966, Cl. 204-298.000.

Gueret, Jean-Louis H., to "L'Oreal". Make of unit comprising a container and an applicator closing the container. 4,437,477, Cl. 132-88.500.

Guhne, Wieland, to Vorwerk & Co. Interholding GmbH. Vacuum cleaner housing. 4,437,204, Cl. 15-325.000.

Guillaume, Paul; and Karinthi, Pierre, to L'air Liquide, Societe Anonyme Pour L'etude et L'exploitation des Procedes Georges Claude. Methods of and apparatus for treating waste products. 4,437,418, Cl. 110-246.000.

Guillon, Michel; Mondet, Jean; Papantoniou, Christos; and Vandenbossche, Claudine, to Societe Anonyme dite: L'Oreal. Salts of acid dyes and copolymers having tertiary amine functions, process for preparing said salts and makeup cosmetic compositions containing them. 4,438,140, Cl. 424-61.000.

Guimond, Roy A.: *See*—
Gulliksen, John E.; Guimond, Roy A.; Daly, Charles F.; and Hamilton, William H., 4,438,483, Cl. 362-183.000.

Gulf Canada Limited: *See*—
Johnson, Herbert S., 4,437,706, Cl. 299-7.000.

Gulf Research & Development Company: *See*—
Habib, Mohammad M.; and Pretzer, Wayne R., 4,438,020, Cl. 252-162.000.

Gulliksen, John E.; Guimond, Roy A.; Daly, Charles F.; and Hamilton, William H., to Koehler Manufacturing Co. Utility handlamp and charging component means therefor. 4,438,483, Cl. 362-183.000.

Guziec, Frank S., Jr., to Thiokol Corporation. 4-Dimethylaminopyridinium chlorochromate. 4,438,269, Cl. 546-9.000.

Gyugyi, Laszlo, to Westinghouse Electric Corp. Static VAR generation for transmission line compensation of subsynchronous resonance. 4,438,386, Cl. 323-210.000.

H & K Computer Corporation: *See*—
Strom, Alan R., 4,438,506, Cl. 364-900.000.

Habib, Mohammad M.; and Pretzer, Wayne R., to Gulf Research & Development Company. Catalyst suitable for preparing aldehydes. 4,438,020, Cl. 252-162.000.

Habich, Dieter: *See*—
Boberg, Michael; Habich, Dieter; Metzger, Karl G.; and Naab, Paul, 4,438,114, Cl. 424-248.510.

Hack, Joachim: *See*—
Koester, Eberhard; Hack, Joachim; and Steuerwald, Manfred, 4,438,462, Cl. 360-2.000.

Hackenberg, Hubert: *See*—
Engelmann, Dieter; Hackenberg, Hubert; Lermann, Peter; Wagner, Karl; and Zobel, Siegfried, 4,437,751, Cl. 354-214.000.

Haeck, Paul J., to Household Manufacturing Inc. Fluid shear coupling apparatus. 4,437,554, Cl. 192-58.00B.

Haga, Kyosuke: *See*—
Nakamura, Keiichi; Haga, Kyosuke; and Mori, Yutaka, 4,437,532, Cl. 180-142.000.

Hague International: *See*—
Lallaye, Paul G.; Bjerklie, John W.; and Penty, Robert A., 4,437,217, Cl. 29-157.400.

Hahn, Geraldine L. Countertop mini-garbage can. 4,437,575, Cl. 220-1.00T.

Hahs, Gregory L., to Optical Radiation Corp. Intraocular lens assembly. 4,437,194, Cl. 3-13.000.

Haissig, Manfred: *See*—
Ahrens, Max; and Haissig, Manfred, 4,437,509, Cl. 164-454.000.

Hajnal, Stephen. Three dimensional camera system. 4,437,745, Cl. 354-117.000.

Halcon SD Group, Inc., The: *See*—
Bhise, Vijay S.; and Hoch, Robert, 4,437,938, Cl. 203-14.000.
Bhise, Vijay S.; and Hoch, Robert, 4,437,939, Cl. 203-14.000.

Hales, Paul D. Remote temperature control activation apparatus. 4,438,295, Cl. 179-2.00A.

Haley, Paul H., to Westinghouse Electric Corp. Ultra-high speed protective relay apparatus and method for providing single pole switching. 4,438,475, Cl. 361-82.000.

Halfaker, Thomas C., to Emerson Electric Co. Ceiling panel. 4,437,287, Cl. 52-588.000.

Halin, Yves R.; and Hersen, Rene M. J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, S.N.E.C.M.A. Device for the detection of the position of the thrust reverser of a turbojet engine. 4,437,783, Cl. 403-27.000.

Hall, John J., Jr. Boring tool having a detachable cutting blade. 4,437,802, Cl. 408-197.000.

Hallett, Peter: *See*—
Collington, Eric W.; Hallett, Peter; and Wallis, Christopher J., 4,438,111, Cl. 424-246.000.
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; and Bradshaw, John, 4,438,112, Cl. 424-244.000.

Halopoff, David, to Holmes-Hally Industries. Protective hasp for padlock. 4,437,692, Cl. 292-57.000.

Hamada, Fumio, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic photosensitive material. 4,438,194, Cl. 430-505.000.

Hamamatsu Corporation: *See*—
Schiller, Norman H.; and Alfano, Robert R., 4,438,416, Cl. 333-160.000.

Hamano, Kiyoshi: *See*—
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, 4,438,277, Cl. 560-119.000.

Hambleton, Thomas P., to International Paper Company. Plastic sack holder. 4,437,634, Cl. 248-97.000.

Hamblin, Andrew. Emergency fire and smoke safety kit. 4,437,568, Cl. 206-223.000.

Hambrecht, Juergen: *See*—
Brandstetter, Franz; Hambrecht, Juergen; Jung, Rudolf H.; and Lindenschmidt, Gerhard, 4,438,237, Cl. 525-183.000.

Hamerlinck, R. Dean. Pressurized container testing apparatus. 4,437,353, Cl. 73-863.810.

Hamilton, Roland M.: *See*—
Anderson, Harold R.; and Hamilton, Roland M., 4,437,544, Cl. 182-120.000.

Hamilton, William H.: *See*—
Gulliksen, John E.; Guimond, Roy A.; Daly, Charles F.; and Hamilton, William H., 4,438,483, Cl. 362-183.000.

Hammann, Ingeborg: *See*—
Lantzsch, Reinhard; Marhold, Albrecht; Behrenz, Wolfgang; and Hammann, Ingeborg, 4,438,275, Cl. 549-434.000.

Hammond, William P. Signal responsive automatic control for audio equipment. 4,438,527, Cl. 381-107.000.

Hampe, Christoph: *See*—
Arens, Egidius; Hampe, Christoph; Karlowsky, Ingo; Meyersieck, Manfred; Schwarz, Hans D.; Anding, Norbert; and Leisterer, Reinhard, 4,438,438, Cl. 343-451.000.

Hamprecht, Gerhard: *See*—
Acker, Rolf-Dieter; Rossy, Phillip A.; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,437,878, Cl. 71-90.000.

Hands, David, to Clayton Environmental Consultants, Inc. Apparatus and method for asbestos fiber release potential. 4,437,333, Cl. 73-12.000.

Handy, Roland J.: *See*—
Tandon, Jagdish C.; Kadekodi, Narayan K.; Ibrahim, Abd-El-Fattah A.; Handy, Roland J.; and Stoffel, James C., 4,438,457, Cl. 358-213.000.

Hansen, Glen D.: *See*—
Buschbom, Floyd E.; and Hansen, Glen D., 4,437,637, Cl. 248-163.00A.

Hansen, Peter: *See*—
Urner-Willie, Marlies; and Hansen, Peter, 4,438,508, Cl. 365-122.000.

Hansen, Svenn S.: *See*—
Balslev, Erik; Hansen, Svenn S.; and Pedersen, Ernst L., 4,438,100, Cl. 424-104.000.

Haque, Yusuf A.; Saletore, Vikram; and Schuler, Jeffrey A., to American Microsystems, Incorporated. Monolithic programmable gain-integrator stage. 4,438,354, Cl. 307-493.000.

Hara, Hideki: *See*—
Miyamoto, Akira; Shimizu, Senzo; Harada, Masahiro; Ajiro, Tamotu; and Hara, Hideki, 4,438,257, Cl. 528-347.000.

Harada, Hiroshi: *See*—
Abe, Haruhiko; Harada, Hiroshi; Denda, Masahiko; Nagasawa, Koichi; and Kono, Yoshio, 4,438,368, Cl. 315-39.000.

Harada, Masahiro: *See*—
Miyamoto, Akira; Shimizu, Senzo; Harada, Masahiro; Ajiro, Tamotu; and Hara, Hideki, 4,438,257, Cl. 528-347.000.

Harada, Tosiharu: *See*—
Mishima, Akio; Okuda, Yoshiro; Harada, Tosiharu; Mukaizaka, Akira; and Imai, Tomoyuki, 4,437,881, Cl. 75-0.5AA.

Harbauer, Werner, to Siemens Aktiengesellschaft. Screwless terminal. 4,437,720, Cl. 339-95.00D.

Harco Corporation: *See*—
Rog, Joseph W.; Waits, Charles G.; and Nicholas, Karl W., 4,438,391, Cl. 324-71.100.

Hardy, John W., to Itek Corporation. Wavefront sensor employing a modulation reticle. 4,438,330, Cl. 250-201.000.

Hargis, Richard A., to Day Mixing Company. Lower support for single screw mixer. 4,437,767, Cl. 366-287.000.

Harmer, George A., to Lucas Industries Limited. Friction lining wear indicators for shoe-drum brakes. 4,437,547, Cl. 188-1.110.

Harmon, William J., Jr.; Mick, John R.; and Coleman, Vernon, to Advanced Micro Devices, Inc. Interruptable microprogram controller for microcomputer systems. 4,438,492, Cl. 364-200.000.

Harnden, John D., Jr.; and Kornrumpf, William P., to General Electric Company. Low cost volt/ampere meter with liquid crystal display. 4,438,396, Cl. 324-127.000.

Harrington, Alan L.; Allison, Richard; and Rodov, Vladimir, to TRW Inc. Zig-zag V-MOS transistor structure. 4,438,448, Cl. 357-23.000.

Harris Corporation: *See*—
Casper, Paul W.; and Ashley, William B., 4,438,348, Cl. 307-310.000.

Harris, Lewis K.; and Burrus, Billie S., to Combustion Engineering, Inc. Burner and pilot valve safety control system. 4,437,830, Cl. 431-54.000.

Harrison, Loren C. Water-sensitive probe valve for use with a gas leak detector. 4,437,482, Cl. 137-67.000.

Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., to Continental Group, Inc., The. Blow molding apparatus. 4,437,825, Cl. 425-145.000.

Harsco Corporation: *See*—
DeVore, Robert F., 4,437,512, Cl. 165-122.000.

Hartman, George D., to Merck & Co., Inc. Triazolopyrazinamines useful as adjuncts to radiation therapy. 4,438,266, Cl. 544-350.000.

Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See*—
Jung, Richard A., 4,437,936, Cl. 201-39.000.

Hartung, Michael H.; Rieck, Richard E.; and Tayler, Gerald E., to International Business Machines Corporation. Method and apparatus for verifying storage apparatus addressing. 4,438,512, Cl. 371-60.000.

Harvey Hubbell Incorporated: *See*—
Skrovanek, Ambroz K.; and Evert, Carl A., 4,438,408, Cl. 330-51.000.

Harvey, Kenneth: *See*—
Connors, Stephen T.; and Harvey, Kenneth, 4,437,584, Cl. 222-137.000.

Hasegawa, Eiichi; and Yamano, Shoji, to Yamato Scale Company, Ltd. Automatic continuous weighing machine. 4,437,561, Cl. 198-504.000.

Hasegawa, Kokichi; and Tokita, Tsugio, to Komori Printing Machinery Co., Ltd. Inking apparatus for an offset press. 4,437,406, Cl. 101-350.000.

Hashimoto, Shunichi: *See*—
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,437,877, Cl. 71-90.000.

Haskin, John R., deceased, to Ball, Larry L., a part interest. Portable map display device. 4,437,739, Cl. 353-27.00R.

Hata, Shun-ichi: *See*—
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Kazushige; and Hata, Shun-ichi, 4,438,115, Cl. 424-250.000.

Hattori, Hiroyuki: *See*—
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,437,757, Cl. 355-15.000.

Haug, Werner, to Frama AG. Apparatus for transferring ink to the ink plate of a metering machine. 4,437,405, Cl. 101-349.000.

Hauser, Karl. Process and apparatus for controlling the cutting feed of band saw machines. 4,437,367, Cl. 83-13.000.

Hawryluk, Raymond; Johnson, Clyde R.; and Masarky, N. Henri, to Union Oil Company of California. Ore roasting with recycle of gases. 4,437,884, Cl. 75-7.000.

Hay, Lloyd F.: *See*—
Rica, Albert F.; Hay, Lloyd F.; Heron, John R.; Webber, John R.; and Rechtsteiner, Steven A., 4,437,315, Cl. 62-63.000.

Hayami, Satohiro: *See*—
Nozawa, Tadao; Yamamoto, Takaaki; Nakayama, Tadashi; Matsumoto, Fumio; and Hayami, Satohiro, 4,437,910, Cl. 148-112.000.

Hayasaka, Tadao; Suzuki, Masahiro; Ozawa, Shigeru; and Takeya, Yoshiaki, to Hitachi Powdered Metals Co., Ltd. Method of the preparation of high density sintered alloys based on iron and copper. 4,437,890, Cl. 75-244.000.

Hayase, Shuzi; and Suzuki, Shuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Photopolymerizable composition based on epoxy compound. 4,437,959, Cl. 204-159.110.

Hayashi, Nobuyuki: *See*—
Ishimaru, Toshiaki; Tsukada, Katsuahige; and Hayashi, Nobuyuki, 4,438,190, Cl. 430-281.000.

Hayashi, Shoichiro: *See*—
Wagu, Masakatsu; Hayashi, Shoichiro; and Kodama, Kouichi, 4,438,106, Cl. 424-180.000.

Hayashi, Yoshihiro: *See*—
Moriya, Shigeru; Yoshida, Akio; Hayashi, Yoshihiro; Kubota, Tatsushi; and Tsuge, Hiroshi, 4,437,683, Cl. 280-804.000.

Hayes, Thomas E., to Johnson Service Company. Mechanical draft controller with vent damper. 4,437,454, Cl. 126-293.000.

Haynes, Charles W., to Joy Manufacturing Company. Dual camming action jaw assembly and power tong. 4,437,363, Cl. 81-57.180.

Hazeltine Corporation: *See—*
Burgmyer, Patricia L., 4,438,437, Cl. 343-770.000.

Headley, James E., deceased: *See—*
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.

Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, to Yoder, Henry Frank, III; Yoder, Donald; Willis, Arthur B., deceased, Title Insurance and Trust Company, executor; Butler, Dean S., deceased; Fusco, John A., deceased; Adler, Peter K., deceased; and Headley, James E., deceased, a part interest. Optical rollfiche reader. 4,437,738, Cl. 353-26.00R.

Heberlein, George J. Self-locking truck sideboard lift and dump mechanism. 4,437,705, Cl. 298-1.00R.

Heberlein Hispano SA: *See—*
Vignon, Louis, 4,437,300, Cl. 57-74.000.

Heck, Ronald M.: *See—*
Dettling, Joseph C.; Carr, William F.; Heck, Ronald M.; and Chen, James M., 4,438,082, Cl. 423-235 000.

Hedges, Charles V.: *See—*
Mark, Victor; and Hedges, Charles V., 4,438,241, Cl. 525-444.000.

Hedrick, Paul L., Jr., to Societe d'Assistance Technique pour Produits Nestle S.A. Foaming creamer and method of making same. 4,438,147, Cl. 426-570.000.

Heider, Merle J., to Jet Co., Inc. Wire roller. 4,437,622, Cl. 242-86.50R.

Heinrich, Hans J.; and Schutt, Dieter, to International Business Machines Corporation. Interrupt pre-processor with dynamic allocation of priority levels to requests queued in an associative CAM. 4,438,489, Cl. 364-200.000.

Heinrich, Horst; Herrmann, Gunter R.; and Schmidt, Manfred, to International Business Machines Corporation. Separator plate for type band printer. 4,437,401, Cl. 101-93.140.

Heinzle, Otto, to Schalungsverleih Heinzle AG. Bracing unit for concrete formwork. 4,437,640, Cl. 249-20.000.

Held, Kurt. Driving device for effecting linear motion. 4,438,360, Cl. 310-83.000.

Helene Curtis Industries, Inc.: *See—*
Preston, John C., 4,438,096, Cl. 424-70.000.

Helfer, Joel N.; and King, Phillip W., to American Home Products Corporation. Apparatus for monitoring fetal heartbeat and the like. 4,437,467, Cl. 128-642.000.

Helfman, Robert. Truss construction. 4,437,273, Cl. 52-93.000.

Helinski, Edward F., to International Business Machines Corporation. Serial ring actuator. 4,438,419, Cl. 335-261.000.

Helmer, John C.: *See—*
Abu-Shumays, Ahmad; Helmer, John C.; and Luchetti, Stephen J., 4,437,812, Cl. 417-53.000.

Henkel Corporation: *See—*
Peerman, Dwight, 4,438,225, Cl. 521-172.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Drosdziok, Hermann; Geke, Jurgen; and Germscheid, Hans G., 4,437,898, Cl. 148-6.15R.
Kiewert, Eva; and Disch, Karlheinz, 4,438,016, Cl. 252-174.250.
Kuhling, Dieter; Huppertzl Josef; Krings, Peter; and Reuter, Herbert, 4,438,012, Cl. 252-131.000.

Hennemann, Lothar: *See—*
Kollmann, Hans-Josef; Hennemann, Lothar; and Hohorst, Wolfgang, 4,437,721, Cl. 339-97.00P.

Hensler, John M.: *See—*
Settineri, William J.; and Hensler, John M., 4,438,242, Cl. 526-62.000.

Heraeus Quarzschmelze GmbH: *See—*
Treber, Norbert, 4,437,727, Cl. 350-96.300.

Herbert, Everett H.: *See—*
Volk, Kurt E., Jr.; Herbert, Everett H.; and Stenner, John W., 4,437,852, Cl. 493-216.000.

Herbert Kannegiesser GmbH & Co.: *See—*
Wiebesiek, Wilhelm, 4,437,247, Cl. 38-143.000.

Herbertz, Toni: *See—*
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,438,060, Cl. 264-206.000.

Herd, Sigrid R.: *See—*
Aboaf, Joseph A.; Klokholm, Erik; and Herd, Sigrid R., 4,438,066, Cl. 420-435.000.

Heredy, Laszlo A.; and Skowronski, Raymund P., to Rockwell International Corporation. Molten salt hydrotreatment process. 4,437,980, Cl. 208-235.000.

Hering, Elisabeth: *See—*
Banke, Karl-Heinz; Hering, Elisabeth; Lobel, Wilfried; Pollack, Dieter; Wiedemann, Gunter; Grell, Ute; and Schuler, Ingo, 4,438,053, Cl. 264-25.000.

Heron, John R.: *See—*
Rica, Albert F.; Hay, Lloyd F.; Heron, John R.; Webber, John R.; and Rechtsteiner, Steven A., 4,437,315, Cl. 62-63.000.

Herrmann, Gunter R.: *See—*
Heinrich, Horst; Herrmann, Gunter R.; and Schmidt, Manfred, 4,437,401, Cl. 101-93.140.

Hersen, Rene M. J.: *See—*
Halin, Yves R.; and Hersen, Rene M. J., 4,437,783, Cl. 403-27.000.

Hershberger, Doran D., to General Electric Company. Laundry machine. 4,437,325, Cl. 68-23.700.

Hertel, Karl R., to Pyro-Gen Corp. Incinerator. 4,437,419, Cl. 110-259.000.

Herweh, John E., to Armstrong World Industries, Inc. Polyurethane polymers comprising macrocyclic crown ethers in the polymer backbone. 4,438,251, Cl. 528-73.000.

Herwig, Walter: *See—*
Geissler, Ulrich; and Herwig, Walter, 4,438,189, Cl. 430-280.000.

Hettche, Albert: *See—*
Oeder, Dieter; Ziegler, Walter; Daeuble, Manfred; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,438,008, Cl. 252-56.00R.

Hetterich, Hermann: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Horling, Peter; Hetterich, Hermann; and Kunkel, Heinrich, 4,437,214, Cl. 29-149.5DP.
Olschewski, Armin; Hetterich, Hermann; and Horling, Peter, 4,437,330, Cl. 72-358.000.

Heveran, John E.: *See—*
Fahrenholtz, Kenneth E.; and Heveran, John E., 4,438,207, Cl. 436-543.000.

Hewlett-Packard Company: *See—*
Casale, Michael A., 4,437,489, Cl. 137-487.500.
Cloutier, Frank L.; Low, Robert N.; and McClelland, Paul H., 4,438,191, Cl. 430-324.000.

Hibbel, Josef: *See—*
Gorris, Rainer; Hibbel, Josef; Gerhardus, Ulrich; and Scheve, Heinrich, 4,437,864, Cl. 48-62.00R.

Hicks, John M.; and Engel, Joseph C., to North American Philips Electric Corp. Unitary light source comprising compact HID lamp and incandescent ballast filament. 4,438,369, Cl. 315-49.000.

Hill, Ira D.: *See—*
Lindauer, Jerome I.; Hill, Ira D.; and Liberman, Arthur L., 4,438,010, Cl. 252-91.000.

Hilti Aktiengesellschaft: *See—*
Gloor, Peter, 4,437,526, Cl. 175-346.000.

Hinds, James J.; Hoeflich, John C.; and Kolodziej, George C., to National Can Corporation. Container defect monitoring system. 4,437,985, Cl. 209-538.000.

Hinn, Werner; and Knight, Mark B., to RCA Corporation. Dual-standard SECAM/PAL color TV receiver with automatic control of operating mode. 4,438,451, Cl. 358-11.000.

Hino, Masatoshi: *See—*
Okada, Yoshio; Terauchi, Takashi; Naoki, Makoto; and Hino, Masatoshi, 4,438,021, Cl. 502-341.000.

Hino, Seiichi: *See—*
Ohta, Takayuki; Yanaga, Yukio; and Hino, Seiichi, 4,438,256, Cl. 528-188.000.

Hinojos, Paul R. Retractable automobile sideguard. 4,437,697, Cl. 293-118.000.

Hinze, Jay W.: *See—*
Gaul, David J.; Hinze, Jay W.; and Perkins, Richard A., 4,438,518, Cl. 373-39.000.

Hiraga, Masaharu: *See—*
Terauchi, Kiyoshi; and Hiraga, Masaharu, 4,437,820, Cl. 418-55.000.

Hirano, Hirofumi, to Canon Denshi Kabushiki Kaisha. Printing mechanism. 4,437,776, Cl. 400-142.000.

Hirano, Takashi: *See—*
Omae, Michinobu; and Hirano, Takashi, 4,437,527, Cl. 177-25.000.

Hiraoka, Tetsuo; and Kobayashi, Takeo, to Sankyo Company Limited. Esters of 7-sulfenyliminocephem-4-carboxylic acids. 4,438,265, Cl. 544-29.000.

Hirayama, Masashi: *See—*
Tamura, Hisashi; Ito, Ichizo; Hirayama, Masashi; and Ando, Tetsuo, 4,437,350, Cl. 73-861.240.

Hirooka, Susumu: *See—*
Masuyama, Masaru; Hirooka, Susumu; and Yamaoka, Nobutatsu, 4,438,214, Cl. 501-136.000.

Hirose, Kikuji: *See—*
Saito, Takao; Morita, Jyun-ichi; Hirose, Kikuji; and Kato, Akitosi, 4,437,947, Cl. 204-35.00R.

Hirota, Eiichi: *See—*
Sakakima, Hiroshi; Satomi, Mitsuo; Senno, Harufumi; and Hirota, Eiichi, 4,437,912, Cl. 148-403.000.

Hitachi Cable Ltd.: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Kelzo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,438,155, Cl. 427-49.000.

Hitachi Chemical Company, Ltd.: *See—*
Ishimaru, Toshiaki; Tsukada, Katsushige; and Hayashi, Nobuyuki, 4,438,190, Cl. 430-281.000.

Hitachi, Ltd.: *See—*
Asai, Setsuro, 4,437,321, Cl. 62-324.200.
Fukui, Yutaka; and Kashimura, Tetsuo, 4,437,913, Cl. 148-408.000.
Hosoki, Shigeyuki; Futamoto, Masaaki; Kawabe, Ushio; Ishitani, Tohru; and Tamura, Hifumi, 4,438,371, Cl. 315-111.810.
Itagaki, Tsuguo, 4,438,528, Cl. 455-182.000.
Kamata, Yasuji, 4,438,366, Cl. 315-1.000.
Kawamura, Sinichiro, 4,438,297, Cl. 179-117.000.
Kikkawa, Ryozo; and Takeshima, Masaki, 4,437,933, Cl. 159-17.00R.
Kobayashi, Mamoru; Ishige, Kanji; Sasaki, Hideaki; Tani, Mitsukiyo; and Kawakami, Yashuhiko, 4,437,603, Cl. 228-4.500.
Saito, Yukio; Nogita, Shunsuke; Watanabe, Syoji; and Baba, Kenji, 4,437,992, Cl. 210-603.000.
Sato, Hiroyasu; Yamamoto, Kazuaki; and Aotsu, Hiroaki, 4,438,385, Cl. 322-28.000.

Sudo, Ryoichi; Shoji, Fusaji; Watanabe, Takeshi; Suzuki, Kenkichi; and Ooue, Michio, 4,437,731, Cl. 350-340.000.
Usuda, Koji, 4,438,449, Cl. 357-41.000.
Watanabe, Yoshio; Yamane, Mikiya; and Tomura, Teruichi, 4,438,373, Cl. 315-334.000.
Yamamoto, Hideharu; and Tsuneno, Hiroshi, 4,437,228, Cl. 29-590.000.

Hitachi Maxell, Ltd.: *See—*
Kamei, Hideaki; Yamanaka, Kazuhiko; Fujisawa, Haruhiko; and Oda, Shinichiro, 4,438,468, Cl. 360-92.000.

Hitachi Powdered Metals Co., Ltd.: *See—*
Hayasaka, Tadao; Suzuki, Masahiro; Ozawa, Shigeru; and Takeya, Yoshiaki, 4,437,890, Cl. 75-244.000.

Hittel, Gerhard; Muhl, Hubertus; Eigl, Franz; and Langer, Werner, to Karl Mayer Textilmaschinen fabrik GmbH. Warp knitting machine with weft insertion magazine and substrate provision arrangement. 4,437,323, Cl. 66-84.00A.

Ho, Pang T.: *See—*
Rubin, Michael D.; and Ho, Pang T., 4,438,411, Cl. 330-289.000.

Hoch, Robert: *See—*
Bhise, Vijay S.; and Hoch, Robert, 4,437,938, Cl. 203-14.000.
Bhise, Vijay S.; and Hoch, Robert, 4,437,939, Cl. 203-14.000.

Hoechst Aktiengesellschaft: *See—*
Geissler, Ulrich; and Herwig, Walter, 4,438,189, Cl. 430-280.000.
Idstein, Hermann, 4,437,754, Cl. 355-3.0TR.
Moraw, Roland, 4,438,321, Cl. 219-216.000.
Rieck, Hans-Peter, 4,438,081, Cl. 423-300.000.

Hoefke, Wolfgang: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Gaida, Wolfram; and Hoefke, Wolfgang, 4,438,118, Cl. 424-251.000.

Hoeflich, John C.: *See—*
Hinds, James J.; Hoeflich, John C.; and Kolodziej, George C., 4,437,985, Cl. 209-538.000.

Hoeke Engineering, N.V.: *See—*
Van der Velden, Jan H., 4,438,055, Cl. 264-44.000.

Hofbauer, Peter, to Volkswagenwerk AG. Fuel injection device. 4,437,443, Cl. 123-446.000.

Hoffelner, Volkwin. Device for generating sound waves at relatively high frequencies. 4,437,428, Cl. 116-137.00R.

Hoffman, Howard O., to Sears, Roebuck and Co. Shelf retainer. 4,437,572, Cl. 211-86.000.

Hoffmann-La Roche Inc.: *See—*
Fahrenholtz, Kenneth E.; and Heveran, John E., 4,438,207, Cl. 436-543.000.

Hofgen, Gunter; and Ecklundt, Hinrich, to International Standard Electric Corporation. Two-way ranging system. 4,438,435, Cl. 343-7.300.

Hogg, Walter R., to Coulter Electronics, Inc. Tandem sensing zones for improved signal-to-noise ratio in particle analyzer. 4,438,390, Cl. 324-71.100.

Hohorst, Wolfgang: *See—*
Kollmann, Hans-Josef; Hennemann, Lothar; and Hohorst, Wolfgang, 4,437,721, Cl. 339-97.00P.

Holden, M. James, to Mobil Oil Corporation. Method and apparatus for measuring and controlling foam sheet blow-up in a thermoformer oven. 4,438,054, Cl. 264-40.600.

Holland, Frank S., to Manchem, Limited. Electrolysis of tin complexes. 4,437,949, Cl. 204-59.00M.

Hollister, Kenneth R.: *See—*
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,438,278, Cl. 560-205.000.

Holmes-Hally Industries: *See—*
Halopoff, David, 4,437,692, Cl. 292-57.000.

Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, to Bayer Aktiengesellschaft. Combating fungi with 1-phenoxy-2-pyridinyl-alkanols. 4,438,122, Cl. 424-263.000.

Holt, Neil L., to Burke Company, The. Lift system for tilt-up walls. 4,437,642, Cl. 249-175.000.

Holyoak, Hugh K. Turtle trap and process of trapping turtles. 4,437,259, Cl. 43-105.000.

Homola, Andrew M.; and Lorenz, Max R., to International Business Machines Corporation. Mono-particle magnetic dispersion in organic polymers for magnetic recording. 4,438,156, Cl. 427-57.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ikenoya, Yasuo; Ueda, Shuso; and Araki, Masafumi, 4,437,304, Cl. 60-290.000.
Ikenoya, Yasuo; Araki, Masafumi; and Shimizu, Yozi, 4,437,305, Cl. 60-293.000.
Ikenoya, Yasuo; Iwashita, Kanau; and Kimura, Hikaru, 4,437,306, Cl. 60-293.000.

Honda Motor Co., Ltd.: *See—*
Fujimori, Yoshitugu; Takabori, Yasuo; Sakano, Hajime; and Ito, Akitoshi, 4,438,229, Cl. 524-109.000.

Honeycomb Panels Patents Association Inc.: *See—*
See, Jacques L. A.; and Chevanne, Sylvain V. L., 4,437,281, Cl. 52-309.100.

Honeywell Inc.: *See—*
Erickson, Roger D., 4,438,442, Cl. 346-153.100.

Honeywell Information Systems Inc.: *See—*
Cushing, David E.; and Stanley, Philip E., 4,438,493, Cl. 364-200.000.
McIver, Chandler H., 4,437,235, Cl. 29-840.000.
Wilder, Richard P., Jr., 4,438,490, Cl. 364-200.000.

Honma, Toshio: *See—*
Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, 4,437,756, Cl. 355-14.00R.

Hope, Lawrence L.; and Davey, Ernest A., to GTE Products Corporation. Sputtering cathode apparatus. 4,437,966, Cl. 204-298.000.

Hopfer, Samuel, to General Microwave Corporation. Digital programmable attenuator. 4,438,415, Cl. 333-81.00A.

Hopmann, Mark E.: *See—*
Krause, William F., Jr.; and Hopmann, Mark E., 4,437,522, Cl. 166-382.000.

Hoppner, Eberhard: *See—*
Schnabl, Karl; Hoppner, Eberhard; and Kastl, Hans, 4,438,399, Cl. 324-220.000.

Hori, Fumihisa, to Alps Electric Co., Ltd. Printer having plural type wheel assembly. 4,437,777, Cl. 400-154.200.

Horii, Masami: *See—*
Ochiai, Kuniaki; Horii, Masami; and Ishii, Hidekazu, 4,437,775, Cl. 400-124.000.

Horling, Peter: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Horling, Peter; Hetterich, Hermann; and Kunkel, Heinrich, 4,437,214, Cl. 29-149.5DP.
Olschewski, Armin; Hetterich, Hermann; and Horling, Peter, 4,437,330, Cl. 72-358.000.

Horvath, Karoly: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.

Hosaka, Akio; Yamamoto, Akito; and Oshiage, Katsunori, to Nissan Motor Co., Ltd. Diagnostic system for detecting fault in fuel system of engine having electronic fuel injection system. 4,437,342, Cl. 73-119.00A.

Hosler, Brad W.: *See—*
Budde, David L.; Carson, David G.; Cornish, Anthony L.; Hosler, Brad W.; Johnson, David B.; and Peterson, Craig B., 4,438,494, Cl. 364-200.000.

Hosoe, Kazuya: *See—*
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; and Hosoe, Kazuya, 4,437,743, Cl. 354-402.000.

Hosoi, Takuji: *See—*
Minami, Ryohei; Okamura, Shozo; Sunami, Yoshihiko; Hosoi, Takuji; and Kanou, Takuo, 4,437,974, Cl. 208-10.000.

Hosokawa, Mikio: *See—*
Ozaki, Nobuo; and Hosokawa, Mikio, 4,437,357, Cl. 74-475.000.

Hosoki, Shigeyuki; Futamoto, Masaaki; Kawabe, Ushio; Ishitani, Tohru; and Tamura, Hifumi, to Hitachi, Ltd. Source of charged particles beam. 4,438,371, Cl. 315-111.810.

Hosono, Hidekazu: *See—*
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Kotani, Kozo; and Hosono, Hidekazu, 4,438,238, Cl. 525-240.000.

Hotta, Hiroshi: *See—*
Ishizuka, Tetsuo; Hotta, Hiroshi; and Nishimura, Yoshichika, 4,437,861, Cl. 44-1.00R.

Houck, John C.: *See—*
Kimball, Charles D.; and Houck, John C., 4,438,104, Cl. 424-177.000.

Household Manufacturing Inc.: *See—*
Haeck, Paul J., 4,437,554, Cl. 192-58.00B.

Hovsepians, Vigen M., to Vivar, Incorporated. Modular furniture with removable outer fabric. 4,437,704, Cl. 297-440.000.

Howarth, Thomas T.: *See—*
Ponsford, Roger J.; and Howarth, Thomas T., 4,438,101, Cl. 424-114.000.

Howe, Robert K.; and Lee, Len F., to Monsanto Company. 2,4-Disubstituted-5-thiazole-carboxylic acids and derivatives. 4,437,875, Cl. 71-90.000.

Howe, Robert K.; and Lee, Len F., to Monsanto Company. 2,4-Disubstituted-5-thiazole-carboxylic acids and derivatives. 4,437,876, Cl. 71-90.000.

Howerton, Anderson W.; and Foley, Mark P., to Dayco Corporation. Method for cutting polymeric belt body. 4,437,371, Cl. 83-54.000.

Howes, John G. B., to Smith and Nephew Associated Companies Limited. Method for sterilizing soft contact lens. 4,438,011, Cl. 252-106.000.

Hoyne Industries, Inc.: *See—*
Righetti, Gaetano, 4,437,268, Cl. 51-327.000.

HRI, Inc.: *See—*
Huibers, Derk T. A.; and Kydd, Paul H., 4,437,973, Cl. 208-10.000.

Hruda, Robert M., to Westinghouse Electric Corp. Electrical shorting switch assembly including a last to open last to close arcing switch. 4,438,302, Cl. 200-17.00R.

Hsu, Edward H.: *See—*
Fan, Liang-tseng; and Hsu, Edward H., 4,438,000, Cl. 210-786.000.

Hubele, Adolf; Eckhardt, Wolfgang; and Riebli, Peter, to Ciba-Geigy Corporation. Arylamine derivatives and use as microbicides. 4,438,125, Cl. 424-269.000.

Huber, Otto, to Lever Brothers Company. Lavatory cleansing block. 4,438,015, Cl. 252-174.240.

Huber, Willi; and Metz, Manfred, to J. Wagner AG. Reversible quick change nozzle holder for spray guns. 4,437,610, Cl. 239-119.000.

Huck Manufacturing Company: *See—*
Smith, Walter J., 4,437,805, Cl. 411-361.000.

Huffman, Kenneth R.: *See—*
Casey, Donald J.; and Huffman, Kenneth R., 4,438,253, Cl. 528-86.000.
Hughes Aircraft Company: *See—*
Landis, Abraham L., 4,438,273, Cl. 549-303.000.
Hugli, Tony E.: *See—*
Erickson, Bruce W.; and Hugli, Tony E., 4,438,029, Cl. 260-112.50R.
Huguenin, Rene: *See—*
Bauer, Wilfried; Cardinaux, Francois; Huguenin, Rene; Pless, Janos; and Sandrin, Edmond, 4,438,103, Cl. 424-177.000.
Huibers, Derk T. A.; and Kydd, Paul H., to HRI, Inc. Coal hydrogenation process with direct coal feed and improved residuum conversion. 4,437,973, Cl. 208-10.000.
Hull, Evan B. Belt buckle. 4,437,598, Cl. 224-163.000.
Hung, Chi-Wen: *See—*
Imai, Tamotsu; and Hung, Chi-Wen, 4,438,288, Cl. 585-379.000.
Hung, Frederic N. B.: *See—*
Foissac, Yves; and Hung, Frederic N. B., 4,437,288, Cl. 52-637.000.
Hunkapiller, Michael W.: *See—*
Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., 4,438,030, Cl. 260-112.50R.
Hunter, Byron A., to Uniroyal, Inc. Blowing agent composition containing zinc formate and metal salt activator. 4,438,223, Cl. 521-92.000.
Huppertzl Josef: *See—*
Kuhling, Dieter; Huppertzl Josef; Krings, Peter; and Reuter, Herbert, 4,438,012, Cl. 252-131.000.
Hurcum, Ivan B., to Westinghouse Brake and Signal Company Limited. Information display apparatus. 4,438,432, Cl. 340-825.350.
Hurst, Jerry C., to Western Electric Co., Inc. Tools for handling magnetic articles. 4,437,362, Cl. 81-43.000.
Husa, Emmett O. Mechanism for tightening and reinforcing the joint of a folding structure. 4,437,480, Cl. 135-74.000.
Husky Injection Molding Systems Ltd.: *See—*
Brown, Paul, 4,438,065, Cl. 264-335.000.
Hutchins, Charles K.; Thornton, Donald I.; and Peyton, Richard H., to Fram Corporation. Separating device and cartridge therefor. 4,437,986, Cl. 210-130.000.
Huyck Corporation: *See—*
Thompson, Charles E., 4,437,496, Cl. 139-383.00A.
I.M.A.-Industria Macchine Automatiche-S.p.A.: *See—*
Romagnoli, Andrea, 4,437,294, Cl. 53-553.000.
Iannelli, Frank M., to Tannetics, Inc. Beverage dispensing device. 4,437,319, Cl. 62-138.000.
Ibrahim, Abd-El-Fattah A.: *See—*
Tandon, Jagdish C.; Kadekodi, Narayan K.; Ibrahim, Abd-El-Fattah A.; Handy, Roland J.; and Stoffel, James C., 4,438,457, Cl. 358-213.000.
Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Head pressure maintenance for gas defrost. 4,437,317, Cl. 62-81.000.
Ichidate, Minoru: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Kawai, Toshiyuki; Yonehara, Sadao; Koiwai, Yoshihisa; and Endo, Kazuhiko, 4,437,883, Cl. 75-0.50C.
Umino, Masahide; Tamura, Eijiro; Karasuno, Isamu; Ichidate, Minoru; and Kubo, Toshihiko, 4,437,891, Cl. 75-251.000.
Ichimura, Takeo: *See—*
Fujiu, Takamitsu; Ogino, Makoto; Kariya, Michio; and Ichimura, Takeo, 4,437,192, Cl. 3-1.900.
Ichter, William J.: *See—*
Cribben, James T.; and Ichter, William J., 4,437,284, Cl. 52-456.000.
ICI Americas Inc.: *See—*
Rutledge, Thomas F., 4,438,037, Cl. 260-385.000.
Idstein, Hermann, to Hoechst Aktiengesellschaft. Apparatus for transferring toner images. 4,437,754, Cl. 355-3.0TR.
IHC Holland N.V.: *See—*
Verboom, Pieter, 4,437,244, Cl. 37-63.000.
Iida, Toshihide: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,437,757, Cl. 355-15.000.
Iijima, Ikuo: *See—*
Gaino, Mitsunori; Iijima, Ikuo; Nishimoto, Shigeru; Ikeda, Kuichiro; and Fujii, Tokuo, 4,438,035, Cl. 260-239.30B.
Iimura, Yoshitaka: *See—*
Yoshieda, Keiichi; and Iimura, Yoshitaka, 4,437,233, Cl. 29-768.000.
Iizuka, Yutaka, to Nippon Kogaku K.K. Lenses capable of close-up photography. 4,437,734, Cl. 350-454.000.
Ikari, Kazuo, to Olympus Optical Co., Ltd. Adjustable diopter type finder optical system. 4,437,750, Cl. 354-155.000.
Ikeda, Kuichiro: *See—*
Gaino, Mitsunori; Iijima, Ikuo; Nishimoto, Shigeru; Ikeda, Kuichiro; and Fujii, Tokuo, 4,438,035, Cl. 260-239.30B.
Ikemori, Keiji, to Canon Kabushiki Kaisha. Photo metering device for single lens reflex camera. 4,437,746, Cl. 354-479.000.
Ikenoya, Yasuo; Ueda, Shuso; and Araki, Masafumi, to Honda Giken Kogyo Kabushiki Kaisha. Structure for controlling operations of secondary air supply means and throttle opener in internal combustion engine for motorcycles. 4,437,304, Cl. 60-290.000.
Ikenoya, Yasuo; Araki, Masafumi; and Shimizu, Yozi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning system for internal combustion engines. 4,437,305, Cl. 60-293.000.
Ikenoya, Yasuo; Iwashita, Kanau; and Kimura, Hikaru, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning device of internal combustion engine. 4,437,306, Cl. 60-293.000.
Illinois Tool Works Inc.: *See—*
Peterson, Francis C., 4,437,784, Cl. 403-408.000.
Imai, Tamotsu, to UOP Inc. Preparation of alcohols. 4,438,287, Cl. 568-909.000.
Imai, Tamotsu; and Hung, Chi-Wen, to UOP Inc. Dehydrogenation of hydrocarbons with a halogen contacting step. 4,438,288, Cl. 585-379.000.
Imai, Tomoyuki: *See—*
Mishima, Akio; Okuda, Yoshiro; Harada, Tosiharu; Mukaizaka, Akira; and Imai, Tomoyuki, 4,437,881, Cl. 75-0.5AA.
Imazaike, Mikiharu. Gear. 4,437,356, Cl. 74-411.000.
IMC Magnetics Corp.: *See—*
Manson, Harry G., 4,438,361, Cl. 310-90.000.
Immeyer, Fritz H.; and Wesche, Michael, to Dr. Immeyer GmbH. Bird-feeding member. 4,437,432, Cl. 119-18.000.
Imperial Chemical Industries Limited: *See—*
Carroll, William G.; Farley, Peter; and Marklow, Raymond J., 4,438,252, Cl. 528-75.000.
Imperial Chemical Industries PLC: *See—*
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., 4,438,236, Cl. 525-165.000.
In Situ Technology, Inc.: *See—*
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,437,520, Cl. 166-261.000.
INA Walzlager Schaeffler KG: *See—*
Speil, Walter, 4,437,439, Cl. 123-90.560.
Inagaki, Masaomi: *See—*
Maruo, Tsunehiro; and Inagaki, Masaomi, 4,438,398, Cl. 324-173.000.
Ingersoll Equipment Co., Inc.: *See—*
Fralish, Mark R., 4,437,529, Cl. 180-69.00C.
Ingersoll-Rand Company: *See—*
Schwartz, Jeremy; and Frick, Raymond, 4,437,822, Cl. 418-122.000.
Ingram, Walter B., to Frick Company. Gas receiving and transmitting system. 4,437,813, Cl. 417-53.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,437,908, Cl. 148-108.000.
Inoue, Kiyoshi, 4,438,312, Cl. 219-69.00W.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of treating a magnetic material. 4,437,908, Cl. 148-108.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and device for conducting machining current to a wire-electrode tool in a wire-cutting electroerosion machine. 4,438,312, Cl. 219-69.00W.
Institut Elektrosvarki Imeni E.O. Patona: *See—*
Safonnikov, Anatoly N.; and Antonov, Anatoly V., 4,438,313, Cl. 219-73.100.
Institut Radiotekhniki I Elektroniki Akademii Nauk SSSR: *See—*
Doev, Vitaly S.; Kotelyansky, Iosif M.; Kravchenko, Valery B.; Monosov, Yakov A.; Shakhunov, Valery A.; and Kopylov, Jury L., 4,438,443, Cl. 346-153.100.
Institute of Gas Technology: *See—*
Sammells, Anthony F.; and St. John, Michael R., 4,437,954, Cl. 204-129.000.
Intel Corporation: *See—*
Budde, David L.; Carson, David G.; Cornish, Anthony L.; Hosler, Brad W.; Johnson, David B.; and Peterson, Craig B., 4,438,494, Cl. 364-200.000.
International Business Machines Corporation: *See—*
Aboaf, Joseph A.; Klokholm, Erik; and Herd, Sigrid R., 4,438,066, Cl. 420-435.000.
Bischoff, Bernard K.; Patrick, William J.; and Strudwick, Thomas H., 4,437,922, Cl. 156-603.000.
Caron, Christopher D.; and Schaefer, Donald W., 4,437,659, Cl. 271-276.000.
Goff, Willie, Jr.; and Jenkins, William M., 4,437,779, Cl. 400-208.000.
Hartung, Michael H.; Rieck, Richard E.; and Tayler, Gerald E., 4,438,512, Cl. 371-60.000.
Heinrich, Hans J.; and Schutt, Dieter, 4,438,489, Cl. 364-200.000.
Heinrich, Horst; Herrmann, Gunter R.; and Schmidt, Manfred, 4,437,401, Cl. 101-93.140.
Helinski, Edward F., 4,438,419, Cl. 335-261.000.
Homola, Andrew M.; and Lorenz, Max R., 4,438,156, Cl. 427-57.000.
Kemlage, Bernard M., 4,437,897, Cl. 148-1.500.
Schaller, Karl H.; and Zimmermann, Volker, 4,438,467, Cl. 360-77.000.
Woodworth, George K., 4,438,472, Cl. 361-13.000.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,437,476, Cl. 131-276.000.
Lindauer, Jerome I.; Hill, Ira D.; and Liberman, Arthur L., 4,438,010, Cl. 252-91.000.
International Harvester Co.: *See—*
Rock, Merlin A., 4,437,295, Cl. 56-10.200.
International Monopoly Association: *See—*
Whang, Kyu B., 4,437,862, Cl. 44-6.000.
International Paper Company: *See—*
Hambleton, Thomas P., 4,437,634, Cl. 248-97.000.
International Rectifier Corporation: *See—*
Fleischer, Kenneth H., 4,438,356, Cl. 307-571.000.
International Standard Electric Corporation: *See—*
Hofgen, Gunter; and Ecklundt, Hinrich, 4,438,435, Cl. 343-7.300.
Parfree, Colin S.; and Worthington, Peter, 4,437,729, Cl. 350-96.230.
Isbell, Joe A. Lawn edging device. 4,437,523, Cl. 172-13.000.

ISCO, Inc.: *See—*
Allington, Robert W., 4,438,370, Cl. 315-106.000.
Ishida, Hideaki; Ishikawa, Tomohisa; Yamana, Koji; and Kayahara, Takehiko, to Casio Computer Co., Ltd. Electronic musical instrument. 4,437,378, Cl. 84-1.180.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,437,200, Cl. 15-306.00A.
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,437,324, Cl. 68-5.00E.
Ishigami, Hideo; and Tohei, Nobuo, to Kabushiki Kaisha Meidensha. Shearing machine. 4,437,372, Cl. 83-320.000.
Ishige, Kanji: *See—*
Kobayashi, Mamoru; Ishige, Kanji; Sasaki, Hideaki; Tani, Mitsukiyo; and Kawakami, Yashuhiko, 4,437,603, Cl. 228-4.500.
Ishii, Hidekazu: *See—*
Ochiai, Kuniaki; Horii, Masami; and Ishii, Hidekazu, 4,437,775, Cl. 400-124.000.
Ishii, Yoshiaki; Kume, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, to Agency of Industrial Science and Technology. Apparatus for pyrolyzing. 4,437,416, Cl. 110-245.000.
Ishikawa, Reiji; Saito, Masaki; Mori, Toshio; and Tamura, Hidemasa, to Sony Corporation. Method of making a rotary ball display device. 4,438,160, Cl. 427-214.000.
Ishikawa, Takeharu: *See—*
Tateishi, Junji; Ishikawa, Takeharu; Nakano, Shozaburo; and Nishiyama, Noboru, 4,437,906, Cl. 148-26.000.
Ishikawa, Tomohisa: *See—*
Ishida, Hideaki; Ishikawa, Tomohisa; Yamana, Koji; and Kayahara, Takehiko, 4,437,378, Cl. 84-1.180.
Ishikura, Tomoyuki: *See—*
Kubo, Katsuro; Fukagawa, Yasuo; and Ishikura, Tomoyuki, 4,438,201, Cl. 435-228.000.
Ishimaru, Toshiaki; Tsukada, Katsushige; and Hayashi, Nobuyuki, to Hitachi Chemical Company, Ltd. Photosensitive resin composition containing unsaturated monomers and unsaturated phosphates. 4,438,190, Cl. 430-281.000.
Ishitani, Tohru: *See—*
Hosoki, Shigeyuki; Futamoto, Masaaki; Kawabe, Ushio; Ishitani, Tohru; and Tamura, Hifumi, 4,438,371, Cl. 315-111.810.
Ishiyama, Shozo, to Konishirokou Photo Industry Co., Ltd. Wide magnification-variable range zoom lens system. 4,437,732, Cl. 350-427.000.
Ishizuka, Tetsuo; Hotta, Hiroshi; and Nishimura, Yoshichika, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Coal-deashing process. 4,437,861, Cl. 44-1.00R.
Isomura, Shigenori; Kobayashi, Akio; Kato, Katsushi; Kowada, Ichiro; and Nishii, Sachio, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electronically controlled fuel injection system. 4,437,446, Cl. 123-492.000.
Issa, Darrell E.: *See—*
Adkins, Joey B., 4,438,426, Cl. 340-64.000.
Itagaki, Tauguo, to Hitachi, Ltd. Channel selection system for an electronic tuner. 4,438,528, Cl. 455-182.000.
Itakura, Hideaki: *See—*
Toyoda, Hiroyasu; Komiya, Hiroyoshi; and Itakura, Hideaki, 4,438,315, Cl. 219-121.0PE.
Itek Corporation: *See—*
Hardy, John W., 4,438,330, Cl. 250-201.000.
Ito, Akitoshi: *See—*
Fujimori, Yoshitugu; Takabori, Yasuo; Sakano, Hajime; and Ito, Akitoshi, 4,438,229, Cl. 524-109.000.
Ito, Ichizo: *See—*
Tamura, Hisashi; Ito, Ichizo; Hirayama, Masashi; and Ando, Tetsuo, 4,437,350, Cl. 73-861.240.
Ito, Shinzo; Kato, Tateshi; Noma, Takumi; Sugimoto, Soichiro; and Toiyama, Seigi, to Nippondenso Co., Ltd. Apparatus for measuring an injection amount. 4,437,341, Cl. 73-119.00A.
Ito, Susumu: *See—*
Suzuki, Takashi; and Ito, Susumu, 4,437,740, Cl. 354-476.000.
Ito, Yoji: *See—*
Nojiri, Tadao; Kanemaru, Kenji; Nishikawa, Takayoshi; Matsuyama, Masahiro; and Ito, Yoji, 4,438,422, Cl. 340-52.00F.
Itsubishi Keikinzoku Kogyo Kabushiki Kaisha: *See—*
Arita, Yoji; and Seo, Yuzo, 4,437,950, Cl. 204-67.000.
Ivanics, Jozsef: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.
Iwai, Sakuya: *See—*
Morohashi, Kazuo; Kajikawa, Teruo; and Iwai, Sakuya, 4,437,918, Cl. 156-322.000.
Iwamoto, Kenzi; and Omata, Katsuhiro, to Nippon Soken, Inc. Apparatus for controlling the flow of exhaust gas in an internal combustion engine with a turbocharger and a catalytic converter. 4,437,311, Cl. 60-602.000.
Iwamoto, Yoshinao; Suzuki, Shizuo; and Shirasaki, Yuichi, to Kokusai Denshin Denwa Co., Ltd. System for detecting a cable buried under the seabed. 4,438,401, Cl. 324-326.000.
Iwashita, Kanau: *See—*
Ikenoya, Yasuo; Iwashita, Kanau; and Kimura, Hikaru, 4,437,306, Cl. 60-293.000.
Iwata, Kazuhide: *See—*
Shibayama, Shigeki; and Iwata, Kazuhide, 4,438,488, Cl. 364-200.000.
Iwata, Minoru; Murata, Yukio; and Shibata, Tomoyuki, to Ebara Corporation; and Ebara Densan, Ltd. Submersible pump with alternate pump operation control means. 4,437,811, Cl. 417-8.000.
Izutsu, Nozomu: *See—*
Chibata, Ichiro; Sumi, Akihiko; Ohtsuki, Osamu; and Izutsu, Nozomu, 4,438,044, Cl. 260-501.120.
J. Wagner AG: *See—*
Huber, Willi; and Metz, Manfred, 4,437,610, Cl. 239-119.000.
Jacobsen, Ronald L.: *See—*
DelGreco, Angela G.; Allen, Malcolm L.; and Jacobsen, Ronald L., 4,438,024, Cl. 252-545.000.
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, to Rhone-Poulenc Specialites Chimiques. Preparation of aromatic/aliphatic nitriles. 4,438,042, Cl. 260-465.00B.
Jagenberg Werke AG: *See—*
Philipp, Helmut; and Kurth, Wilfried, 4,437,370, Cl. 83-23.000.
James River Corporation of Virginia: *See—*
Morse, Erwin E., 4,438,263, Cl. 536-56.000.
James, William. Plate separator construction and method. 4,437,988, Cl. 210-237.000.
Janome Sewing Machine Co., Ltd.: *See—*
Nomoto, Reishi; Akimoto, Masahiro; and Takahashi, Masayoshi, 4,437,465, Cl. 128-340.000.
Janosik, Daniel R., Sr. Sun viewing apparatus. 4,437,736, Cl. 350-538.000.
Jatteau, Michel; Lelong, Pierre H.; and Pergrale, Jean, to U.S. Philips Corporation. Gamma camera comprising a localizing scintillation intensifier. 4,438,334, Cl. 250-363.00S.
Jaunich, Helmut: *See—*
Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,438,515, Cl. 373-88.000.
Jean Walterscheid GmbH: *See—*
Geisthoff, Hubert, 4,437,553, Cl. 192-46.000.
Geisthoff, Hubert, 4,437,782, Cl. 403-13.000.
Jecker, Gilbert, to Rhone-Poulenc Specialites Chimiques. Preparation of titanium/aluminum alloys. 4,437,888, Cl. 75-84.400.
Jefferies, James C., to Biegert Aviation, Inc. Spray boom apparatus for applying chemical dispersants to ocean oil spills. 4,437,630, Cl. 244-136.000.
Jefferson, Clinton F., to Engelhard Corporation. Stabilization of solar films against hi temperature deactivation. 4,437,455, Cl. 126-417.000.
Jeng, David K. H., to Kendall Company, The. Sterile package and method of making. 4,437,567, Cl. 206-210.000.
Jenkins, Thomas E., to General Electric Company. Rack supporting channel and stop. 4,437,715, Cl. 312-348.000.
Jenkins, William M.: *See—*
Goff, Willie, Jr.; and Jenkins, William M., 4,437,779, Cl. 400-208.000.
Jensen, Bruce A., to Phillips Petroleum Company. Fractional distillation process control. 4,438,499, Cl. 364-501.000.
Jerobee Industries, Inc.: *See—*
Weglin, Walter, 4,437,924, Cl. 156-651.000.
Jet Co., Inc.: *See—*
Heider, Merle J., 4,437,622, Cl. 242-86.50R.
Jidosha Kiki Co., Ltd.: *See—*
Ohta, Ryuji, 4,437,390, Cl. 92-84.000.
Jinnai, Koichiro; and Ebi, Yutaka, to Ricoh Company, Ltd. Print-distortion compensating device for the ink jet printing apparatus. 4,438,440, Cl. 346-75.000.
Joachim, Rudolph, to Werner & Pfleiderer. Mixer having two feed worms defining upper and lower mixing regions with an intermediate equilibrium zone. 4,437,766, Cl. 366-287.000.
Jodon Engineering Associates, Inc.: *See—*
Wilson, Scott E., 4,437,338, Cl. 73-116.000.
Johannson, Arne, to Svensk Ideutveckling Handelsbolag. Automatic damper device. 4,437,609, Cl. 236-49.000.
Johansson, Ronny: *See—*
Anderson, Inge; and Johansson, Ronny, 4,437,285, Cl. 52-481.000.
Johnson, Charles R. Exhaust recycle to carburetor of an internal combustion engine. 4,437,447, Cl. 123-568.000.
Johnson, Clyde R.: *See—*
Hawryluk, Raymond; Johnson, Clyde R.; and Masarky, N. Henri, 4,437,884, Cl. 75-7.000.
Johnson, David B.: *See—*
Budde, David L.; Carson, David G.; Cornish, Anthony L.; Hosler, Brad W.; Johnson, David B.; and Peterson, Craig B., 4,438,494, Cl. 364-200.000.
Johnson, Delp W. Insert for foldable concrete building construction with pivot connections, integral lifting bar, and building height control bar. 4,437,272, Cl. 52-64.000.
Johnson, Fred L., Jr., to Texaco Inc. Selective production of monoalkanolamines from alkylene oxides and ammonia over acidic inorganic catalysts. 4,438,281, Cl. 564-477.000.
Johnson, Herbert S., to Gulf Canada Limited. Hydraulic mining of tar sands with submerged jet erosion. 4,437,706, Cl. 299-7.000.
Johnson, James R., to Sor, Inc. Fire resistant pressure switch. 4,438,305, Cl. 200-83.00J.
Johnson & Johnson Baby Products Company: *See—*
Simpson, Danny E.; Williams, David M.; Chase, Richard A.; and Grubb, Lawrence B., 4,437,668, Cl. 273-156.000.
Johnson, Kenneth M., to Singer Company, The. Drive roll monogrammer. 4,437,420, Cl. 112-103.000.
Johnson, Ralph E., to Singer Company, The. Variable pull off for bobbin thread. 4,437,421, Cl. 112-158.00R.
Johnson Service Company: *See—*
Hayes, Thomas E., 4,437,454, Cl. 126-293.000.

Jolly, Walter R.: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,437,825, Cl. 425-145.000.

Jonason, Karl G., to Granges Metallverken Aktiebolag. Method of manufacturing a heat exchanger for cooling and heating purposes. 4,437,216, Cl. 29-157.30A.

Jones, Robert: *See—*
Goldstein, Seth; and Jones, Robert, 4,437,857, Cl. 604-53.000.

Jones, Robert L.; and Wilson, Norman H., to National Research Development Corporation. Prostaglandins. 4,438,136, Cl. 424-309.000.

Jordening, Harold G. Bicycle/wheelchair carrier. 4,437,599, Cl. 224-319.000.

Josephs, Richard M.: *See—*
Flannery, William E.; Josephs, Richard M.; Stein, Barry F.; Wang, Tsing-Chow; and Young, Peter L., 4,437,227, Cl. 29-589.000.

Joy Manufacturing Company: *See—*
Haynes, Charles W., 4,437,363, Cl. 81-57.180.

Joy, Robert D., to Ford Motor Company. Vortex flow meter frequency adjustment. 4,437,349, Cl. 73-861.220.

Juengel, Richard O.; Begin, John D.; and Khalaf, John, to Valeron Corporation, The. Telemetry gage system. 4,437,240, Cl. 33-172.00E.

Jung, Michel: *See—*
Bey, Philippe; and Jung, Michel, 4,438,270, Cl. 546-243.000.

Jung, Richard A., to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Process for utilizing waste heat and for obtaining water gas during the cooling of incandescent coke. 4,437,936, Cl. 201-39.000.

Jung, Rudolf H.: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Jung, Rudolf H.; and Lindenschmidt, Gerhard, 4,438,237, Cl. 525-183.000.

Jungheinrich Unternehmensuerwaltung KG, Firma: *See—*
Bierkarre, Hartwig; Klinger, Gottfried; Radeloff, Jurgen; and Rust, Bernd-Hendrik, 4,437,533, Cl. 180-168.000.

Jungverdorben, Hermann-Josef: *See—*
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,438,060, Cl. 264-206.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Yokoyama, Masao; Kon, Masaharu; and Ota, Hiroshi, 4,437,682, Cl. 280-764.100.

Kabushiki Kaisha Meidensha: *See—*
Ishigami, Hideo; and Tohei, Nobuo, 4,437,372, Cl. 83-320.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Moriya, Shigeru; Yoshida, Akio; Hayashi, Yoshihiro; Kubota, Tatsushi; and Tsuge, Hiroshi, 4,437,683, Cl. 280-804.000.
Moriya, Shigeru; Yoshida, Akio; Matsunami, Muneharu; Kubota, Tatsushi; Tsuge, Hiroshi; and Nishimura, Yuji, 4,437,684, Cl. 280-804.000.

Kabushiki Kaisha Tomoku: *See—*
Ono, Masayuki, 4,437,850, Cl. 493-89.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Anahara, Meiji; and Omori, Hiroshi, 4,437,302, Cl. 57-333.000.

Kaczmarek, Jerome A. Nail driving tool. 4,437,602, Cl. 227-147.000.

Kadekodi, Narayan K.: *See—*
Tandon, Jagdish C.; Kadekodi, Narayan K.; Ibrahim, Abd-El-Fattah A.; Handy, Roland J.; and Stoffel, James C., 4,438,457, Cl. 358-213.000.

Kaga, Takashi, to Tomy Kogyo Co., Inc. Magnetic amusement device. 4,437,262, Cl. 46-242.000.

Kajikawa, Teruo: *See—*
Morohashi, Kazuo; Kajikawa, Teruo; and Iwai, Sakuya, 4,437,918, Cl. 156-322.000.

Kakimoto, Toshihiko, to Nissan Motor Company, Ltd. Fluid-filled engine mount device. 4,437,653, Cl. 267-140.100.

Kakoki Engineering Service Co., Ltd.: *See—*
Nagatsuka, Kenichi, 4,437,202, Cl. 15-320.000.

Kalbac, John F., to Delta Dredge and Pump Corporation. Dredge pump drive system. 4,437,814, Cl. 417-351.000.

Kamata, Shigeru: *See—*
Akashi, Akira; Katsuma, Makoto; Kawamura, Masaharu; Kamata, Shigeru; and Saito, Syuichiro, 4,437,752, Cl. 354-289.000.

Kamata, Yasuji, to Hitachi, Ltd. Cathode-ray tube driving apparatus. 4,438,366, Cl. 315-1.000.

Kamei, Hideaki; Yamanaka, Kazuhiko; Fujisawa, Haruhiko; and Oda, Shinichiro, to Hitachi Maxell, Ltd. Tape cassette transferring machine. 4,438,468, Cl. 360-92.000.

Kamiya, Kazuhiro: *See—*
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tsutomu, 4,438,107, Cl. 424-180.000.

Kamoshita, Katsuzo: *See—*
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,437,877, Cl. 71-90.000.
Takahashi, Junya; Takemoto, Ichiki; Kamoshita, Katsuzo; Yoshida, Ryo; Katoh, Haruhiko; and Sumida, Seizo, 4,437,880, Cl. 71-120.000.

Kampe, Dennis J.; and Sarangapani, Srinivasan, to Union Carbide Corporation. Process for improved activated carbon having an aluminum-heavy metal spinel. 4,438,216, Cl. 502-101.000.

Kampe, Wolfgang: *See—*
Ross, Carl H.; Kampe, Wolfgang; Bartsch, Wolfgang; Sponer, Gisbert; and Roesch, Egon, 4,438,116, Cl. 424-250.000.
Wiedemann, Fritz; Kampe, Wolfgang; Dietmann, Karl; and Sponer, Gisbert, 4,438,128, Cl. 424-273.00N.

Kampf, Fritz: *See—*
Pietsch, Hartmut; Turke, Wolfgang; Bareuther, Ernst; Kampf, Fritz; and Bings, Hubert, 4,438,076, Cl. 423-30.000.

Kanegafuchi Chemical Industry Co., Ltd.: *See—*
Nakagawa, Masao; and Nishida, Tatehiko, 4,438,222, Cl. 521-60.000.

Kaneko, Yasuo: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Kelzo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,438,155, Cl. 427-49.000.

Kanemaru, Kenji: *See—*
Nojiri, Tadao; Kanemaru, Kenji; Nishikawa, Takayoshi; Matsuyama, Masahiro; and Ito, Yoji, 4,438,422, Cl. 340-52.00F.

Kanou, Takuo: *See—*
Minami, Ryohei; Okamura, Shozo; Sunami, Yoshihiko; Hosoi, Takuji; and Kanou, Takuo, 4,437,974, Cl. 208-10.000.

Kansas State University Research Foundation: *See—*
Fan, Liang-tseng; and Hsu, Edward H., 4,438,000, Cl. 210-786.000.

Kaplan, Lester J., to Upjohn Company, The. Analgesic l-oxa-, aza- and thia-spirocyclic compounds. 4,438,130, Cl. 424-274.000.

Kappe, Bernard W.: *See—*
MacFarland, James M.; and Kappe, Bernard W., 4,437,710, Cl. 312-1.000.

Karasuno, Isamu: *See—*
Umino, Masahide; Tamura, Eijiro; Karasuno, Isamu; Ichidate, Minoru; and Kubo, Toshihiko, 4,437,891, Cl. 75-251.000.

Kardinal, Hans J., to Siemens Aktiengesellschaft. Pneumatic mail station for the delivery, pneumatically decelerated reception and transit of pneumatic dispatch cases. 4,437,797, Cl. 406-110.000.

Karinthi, Pierre: *See—*
Guillaume, Paul; and Karinthi, Pierre, 4,437,418, Cl. 110-246.000.

Karius, Helmut, to Dr.-Ing. Rudolf Hell G.m.b.H. Control of electric discharge lamps for scanning purposes. 4,438,374, Cl. 315-362.000.

Kariya, Michio: *See—*
Fujiu, Takamitsu; Ogino, Makoto; Kariya, Michio; and Ichimura, Takeo, 4,437,192, Cl. 3-1.900.

Karjalainen, William G., to Neptune Water Meter Company. Compound liquid flow meter with fast crossover characteristic. 4,437,344, Cl. 73-197.000.

Karl Mayer Textilmaschinen fabrik GmbH: *See—*
Hittel, Gerhard; Muhl, Hubertus; Eigl, Franz; and Langer, Werner, 4,437,323, Cl. 66-84.00A.

Karlowsky, Ingo: *See—*
Arens, Egidius; Hampe, Christoph; Karlowsky, Ingo; Meyersieck, Manfred; Schwarz, Hans D.; Anding, Norbert; and Leisterer, Reinhard, 4,438,438, Cl. 343-451.000.

Karrena GmbH: *See—*
Gorris, Rainer; Hibbel, Josef; Gerhardus, Ulrich; and Scheve, Heinrich, 4,437,864, Cl. 48-62.00R.

Karth, Beat: *See—*
Buri, Hermann; and Karth, Beat, 4,437,292, Cl. 53-357.000.

Kasahara, Shin-ichi: *See—*
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,438,311, Cl. 219-10.49R.

Kasamura, Toshirou: *See—*
Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, 4,437,756, Cl. 355-14.00R.

Kaseta, Robert G., to Data General Corporation. Stepping motor excitation circuitry. 4,438,380, Cl. 318-696.000.

Kashimura, Tetsuo: *See—*
Fukui, Yutaka; and Kashimura, Tetsuo, 4,437,913, Cl. 148-408.000.

Kashiwa, Norio; Morita, Yoshinori; and Suga, Michiharu, to Mitsui Petrochemical Industries, Ltd. Process for producing random ethylene terpolymer. 4,438,243, Cl. 526-125.000.

Kasiewicz, Allen B., to GK Technologies, Incorporated. Method and means for protecting buried cable from rodent damage. 4,437,789, Cl. 405-156.000.

Kastl, Hans: *See—*
Schnabl, Karl; Hoppner, Eberhard; and Kastl, Hans, 4,438,399, Cl. 324-220.000.

Katcher, Jay H.: *See—*
O'Rourke, Joseph D.; and Katcher, Jay H., 4,438,148, Cl. 426-579.000.

Kato, Akitosi: *See—*
Saito, Takao; Morita, Jyun-ichi; Hirose, Kikuji; and Kato, Akitosi, 4,437,947, Cl. 204-35.00R.

Kato, Katsushi: *See—*
Isomura, Shigenori; Kobayashi, Akio; Kato, Katsushi; Kowada, Ichiro; and Nishii, Sachio, 4,437,446, Cl. 123-492.000.

Kato, Kazuhisa; and Yasui, Masaru, to Stanley Electric Co., Ltd. Method of fabricating an amorphous silicon film. 4,438,154, Cl. 427-39.000.

Kato, Tateshi: *See—*
Ito, Shinzo; Kato, Tateshi; Noma, Takumi; Sugimoto, Soichiro; and Toiyama, Seigi, 4,437,341, Cl. 73-119.00A.

Kato, Yoshiaki: *See—*
Fushida, Akira; and Kato, Yoshiaki, 4,438,187, Cl. 430-81.000.

Katoh, Haruhiko: *See—*
Takahashi, Junya; Takemoto, Ichiki; Kamoshita, Katsuzo; Yoshida, Ryo; Katoh, Haruhiko; and Sumida, Seizo, 4,437,880, Cl. 71-120.000.

Katsuma, Makoto: *See—*
Akashi, Akira; Katsuma, Makoto; Kawamura, Masaharu; Kamata, Shigeru; and Saito, Syuichiro, 4,437,752, Cl. 354-289.000.

Katsumata, Yasushi, to Sony Corporation. Active equalizer. 4,438,409, Cl. 330-107.000.

Katsutoshi, Ando; and Eiichi, Nishiura, to Toray Industries, Inc. Heat retaining sheet. 4,438,172, Cl. 428-220.000.

Katz, Jonathon H., to Teradyne, Inc. Test pin. 4,438,397, Cl. 324-158.00P.

Kaufman, Jeffrey L., to Nicholas Proprietary Limited. Preparation of dihydroxyaluminium sodium carbonate. 4,438,085, Cl. 423-419.00P.

Kawabe, Ushio: *See—*
Hosoki, Shigeyuki; Futamoto, Masaaki; Kawabe, Ushio; Ishitani, Tohru; and Tamura, Hifumi, 4,438,371, Cl. 315-111.810.

Kawai, Hisasi: *See—*
Egami, Tsuneyuki; Kawai, Hisasi; Kohama, Tokio; and Obayashi, Hideki, 4,437,345, Cl. 73-204.000.

Kawai, Jyoji, to Mitsubishi Denki Kabushiki Kaisha. Digital phase-shifting circuit. 4,438,487, Cl. 363-129.000.

Kawai, Kazumichi; Kaneko, Yasuo; Abe, Kelzo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, to Hitachi Cable Ltd. Fabrication of composite metal wire. 4,438,155, Cl. 427-49.000.

Kawai, Keiichi, to Futaba Denki Kogyo Kabushiki Kaisha. Automatic pickle injecting apparatus. 4,437,397, Cl. 99-533.000.

Kawai, Toshiyuki: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Kawai, Toshiyuki; Yonehara, Sadao; Koiwai, Yoshihisa; and Endo, Kazuhiko, 4,437,883, Cl. 75-0.50C.

Kawakami, Susumu: *See—*
Oshiki, Mitsumasa; and Kawakami, Susumu, 4,438,471, Cl. 360-125.000.

Kawakami, Yashuhiko: *See—*
Kobayashi, Mamoru; Ishige, Kanji; Sasaki, Hideaki; Tani, Mitsukiyo; and Kawakami, Yashuhiko, 4,437,603, Cl. 228-4.500.

Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, to Canon Kabushiki Kaisha. Double-side image forming apparatus. 4,437,756, Cl. 355-14.00R.

Kawamatsu, Yutaka; and Fujita, Takeshi, to Takeda Chemical Industries, Ltd. Thiazolidine derivatives. 4,438,141, Cl. 424-248.510.

Kawamura, Masaharu: *See—*
Akashi, Akira; Katsuma, Makoto; Kawamura, Masaharu; Kamata, Shigeru; and Saito, Syuichiro, 4,437,752, Cl. 354-289.000.

Kawamura, Sinichiro, to Hitachi, Ltd. Dynamic speaker. 4,438,297, Cl. 179-117.000.

Kawasaki Steel Corporation: *See—*
Tateishi, Junji; Ishikawa, Takeharu; Nakano, Shozaburo; and Nishiyama, Noboru, 4,437,906, Cl. 148-26.000.

Kayahara, Takehiko: *See—*
Ishida, Hideaki; Ishikawa, Tomohisa; Yamana, Koji; and Kayahara, Takehiko, 4,437,378, Cl. 84-1.180.

Kaye, Wilbur I., to Beckman Instruments, Inc. Control of detector gain hysteresis in a single beam spectrophotometer. 4,437,763, Cl. 356-326.000.

Kaye, Wilbur I.: *See—*
Glenn, Thomas J.; and Kaye, Wilbur I., 4,437,762, Cl. 356-326.000.

Kazama, Toyoki: *See—*
Shimatani, Michiro; and Kazama, Toyoki, 4,438,188, Cl. 430-128.000.

Keith, Alec D.; and Snipes, Wallace, to Key Pharmaceuticals, Inc. Polymeric diffusion matrix containing estrogens. 4,438,139, Cl. 424-28.000.

Kekesi, Krisztina: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.

Keller, Wilbur L. Weatherstripping kit for sliding windows. 4,437,266, Cl. 49-493.000.

Kelly, Richard H., to United States of America, Air Force. High illumination flashbulb array with firing sequence control means. 4,437,748, Cl. 354-132.000.

Kelsey, Jeffrey R., to British Petroleum Company Limited, The. Marine antifouling coating composition. 4,437,892, Cl. 106-15.050.

Kemeny, George A.: *See—*
Deis, Daniel W.; and Kemeny, George A., 4,437,383, Cl. 89-8.000.

Kemlage, Bernard M., to International Business Machines Corporation. Fabrication process for a shallow emitter/base transistor using same polycrystalline layer. 4,437,897, Cl. 148-1.500.

Kemmesies, Hartmut, to Siemens Aktiengesellschaft. Integrable demodulator for digital signals modulated onto carriers. 4,438,407, Cl. 329-50.000.

Kendall Company, The: *See—*
Arkans, Edward J., 4,437,408, Cl. 101-426.000.
Jeng, David K. H., 4,437,567, Cl. 206-210.000.

Kennedy, Maruice E., to Cherry Electrical Products Corporation. Double throw snap action switch. 4,438,304, Cl. 200-67.00D.

Kenyon, Keith E. Novel hybrid electric vehicle. 4,438,342, Cl. 290-45.000.

Kern, Glenn A.: *See—*
Willis, Frederick G.; Radtke, Richard R.; Ellison, Joseph; Fozo, Steven R.; and Kern, Glenn A., 4,438,497, Cl. 364-431.050.

Kernforschungszentrum Karlsruhe: *See—*
Koehler, Wolfgang; Blocher, Hans-Joachim; and Weiss, Eberhard, 4,437,528, Cl. 180-9.500.

Kerns, Quentin A.; and Miller, Harold W., to United States of America, Energy. High power radio frequency attenuation device. 4,438,367, Cl. 315-5.410.

Kerr, George T.: *See—*
Dessau, Ralph M.; and Kerr, George T., 4,438,215, Cl. 502-71.000.

Kershaw, Bernard J.: *See—*
Lang, Theodore J.; and Kershaw, Bernard J., 4,438,180, Cl. 428-475.800.

Kersten, Hilde: *See—*
Zengel, Hans-Georg; Kersten, Hilde; and Magerlein, Helmut, 4,437,960, Cl. 204-181.00C.

Keswick, Paul D.: *See—*
Chuang, Patrick T.; Keswick, Paul D.; and Linden, Jeffrey L., Sr., 4,438,346, Cl. 307-297.000.

Key Pharmaceuticals, Inc.: *See—*
Keith, Alec D.; and Snipes, Wallace, 4,438,139, Cl. 424-28.000.

Khalaf, John: *See—*
Juengel, Richard O.; Begin, John D.; and Khalaf, John, 4,437,240, Cl. 33-172.00E.

Kiamil, Sinan B.: *See—*
Potter, William D.; and Kiamil, Sinan B., 4,438,177, Cl. 428-355.000.

Kida, Shuji: *See—*
Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, 4,438,193, Cl. 430-505.000.

Kiewert, Eva; and Disch, Karlheinz, to Henkel Kommanditgesellschaft auf Aktien. Stable aqueous cleaning agents and a process for their production. 4,438,016, Cl. 252-174.250.

Kikkawa, Ryozo; and Takeshima, Masaki, to Hitachi, Ltd. Apparatus for treating radioactive liquid wastes. 4,437,933, Cl. 159-17.00R.

Kikkoman Corporation: *See—*
Nakajima, Motoo; and Mizusawa, Kiyoshi, 4,438,206, Cl. 436-130.000.

Kimball, Charles D.; and Houck, John C., to Endorphin, Inc. Endorphins having placental or pancreatic origin. 4,438,104, Cl. 424-177.000.

Kimberly-Clark Corporation: *See—*
Sigl, Wayne C.; and Frick, Richard H., 4,437,860, Cl. 604-385.000.

Kimura, Hikaru: *See—*
Ikenoya, Yasuo; Iwashita, Kanau; and Kimura, Hikaru, 4,437,306, Cl. 60-293.000.

Kinematic Industries, Inc.: *See—*
Spitz, Melvin P., 4,437,197, Cl. 5-13.000.

King, Jeffery J.: *See—*
Nall, James B.; and King, Jeffery J., 4,438,227, Cl. 524-33.000.

King, Phillip W.: *See—*
Helfer, Joel N.; and King, Phillip W., 4,437,467, Cl. 128-642.000.

King, Roger L.: *See—*
Cawley, James C.; DiMartino, Michael D.; Fisher, Thomas J.; King, Roger L.; and Uhler, Marcus H., 4,438,473, Cl. 361-18.000.

King, Stephen J.; Moffatt, Bruce S.; and Stewart, John C., to Clark & Vicario Corporation. Multiple hydrocyclone apparatus. 4,437,984, Cl. 209-211.000.

Kinnear, Duane W. Fisherman's hand towel and method. 4,437,253, Cl. 43-1.000.

Kinoshita, Takao: *See—*
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; and Hosoe, Kazuya, 4,437,743, Cl. 354-402.000.

Kinyosha Co., Ltd.: *See—*
Suguri, Masayoshi; Yamada, Kazuo; and Nandate, Masaaki, 4,438,063, Cl. 264-311.000.

Kishi, Kenichi: *See—*
Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, 4,438,193, Cl. 430-505.000.

Kishi, Yoshinori: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Kelzo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,438,155, Cl. 427-49.000.

Kita, Yasushi: *See—*
Aramaki, Minoru; Kita, Yasushi; Nakano, Hishagi; and Morol, Shiro, 4,438,086, Cl. 423-448.000.

Kitahira, Takashi: *See—*
Furukawa, Mitsuhiki; Miyahara, Michito; Kitahira, Takashi; Misumi, Kiyohito; Shiroyama, Masaharu; and Wada, Toshiaki, 4,438,213, Cl. 501-92.000.

Kitajima, Masao; Seshimoto, Osamu; Kubotera, Kikuo; and Yamaguchi, Akira, to Fuji Photo Film Co., Ltd. Device for determining ionic activity. 4,437,970, Cl. 204-412.000.

Kitamoto, Tatsuji: *See—*
Umemura, Shizuo; Matsufuji, Akihiro; Aonuma, Masashi; Kitamoto, Tatsuji; and Miyatsuka, Hajime, 4,437,882, Cl. 75-0.50R.

Kitamura, Shuji: *See—*
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Kotani, Kozo; and Hosono, Hidekazu, 4,438,238, Cl. 525-240.000.

Kitrell, John V. Mobile travel trunk. 4,437,676, Cl. 280-78.000.

Klauber, Gerald: *See—*
Petito, Ferdinand C.; and Klauber, Gerald, 4,437,844, Cl. 445-5.000.

Kline Manufacturing Company, The: *See—*
Kline, William L., 4,437,389, Cl. 91-499.000.

Kline, Sherman S.: *See—*
Tompkins, Elliot N.; and Kline, Sherman S., 4,437,660, Cl. 271-290.000.

Kline, William L., to Kline Manufacturing Company, The. Axial piston pump having barrel biasing means. 4,437,389, Cl. 91-499.000.

Klinger, Gottfried: *See—*
Bierkarre, Hartwig; Klinger, Gottfried; Radeloff, Jurgen; and Rust, Bernd-Hendrik, 4,437,533, Cl. 180-168.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Collin, Karl-Heinz, 4,437,314, Cl. 60-738.000.

Klokholm, Erik: *See—*
Aboaf, Joseph A.; Klokholm, Erik; and Herd, Sigrid R., 4,438,066, Cl. 420-435.000.

Kluge, Douglas J. Foamed plastic fishing lure body having a controlled density and a one-piece wire and a method for its manufacture. 4,437,257, Cl. 43-42.450.

Knight, Ernest, Jr.: *See—*
Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., 4,438,030, Cl. 260-112.50R.

Knight, Mark B.: *See—*
Hinn, Werner; and Knight, Mark B., 4,438,451, Cl. 358-11.000.

Knoop, Jack P. Tape roll holder having tab forming device. 4,437,854, Cl. 493-353.000.

Kobayashi, Akio: *See—*
Isomura, Shigenori; Kobayashi, Akio; Kato, Katsushi; Kowada, Ichiro; and Nishii, Sachio, 4,437,446, Cl. 123-492.000.

Kobayashi, Mamoru; Ishige, Kanji; Sasaki, Hideaki; Tani, Mitsukiyo; and Kawakami, Yashuhiko, to Hitachi, Ltd. Automatic wiring machine for printed circuit boards. 4,437,603, Cl. 228-4.500.

Kobayashi, Takeo: *See—*
Hiraoka, Tetsuo; and Kobayashi, Takeo, 4,438,265, Cl. 544-29.000.

Koch, David L. Method and apparatus for diversion of downstream migrating anadromous fish. 4,437,431, Cl. 119-3.000.

Kodama, Kouichi: *See—*
Wagu, Masakatsu; Hayashi, Shoichiro; and Kodama, Kouichi, 4,438,106, Cl. 424-180.000.

Kodama, Toshikazu: *See—*
Yamashita, Kiyofumi; and Kodama, Toshikazu, 4,438,417, Cl. 333-193.000.

Koehler Manufacturing Co.: *See—*
Gulliksen, John E.; Guimond, Roy A.; Daly, Charles F.; and Hamilton, William H., 4,438,483, Cl. 362-183.000.

Koehler, Wolfgang; Blocher, Hans-Joachim; and Weiss, Eberhard, to Kernforschungszentrum Karlsruhe. Vehicle with variable undercarriage geometry. 4,437,528, Cl. 180-9.500.

Koenig, C. Fred, III, to Warner & Swasey Company, The. Chuck with centrifugal force compensation. 4,437,675, Cl. 279-1.00C.

Koester, Eberhard; Hack, Joachim; and Steuerwald, Manfred, to BASF Aktiengesellschaft. Document identification employing exchange-anisotropic magnetic material. 4,438,462, Cl. 360-2.000.

Koetters, Daniel: *See—*
Mallik, Arjun; Koetters, Daniel; and Edelstein, Harold, 4,438,017, Cl. 252-301.170.

Koga, Hirohisa: *See—*
Ohba, Takeo; and Koga, Hirohisa, 4,438,469, Cl. 360-109.000.

Kohama, Tokio: *See—*
Egami, Tsuneyuki; Kawai, Hisasi; Kohama, Tokio; and Obayashi, Hideki, 4,437,345, Cl. 73-204.000.

Kohn, Erhard: *See—*
Colquhoun, Alexander; and Kohn, Erhard, 4,438,445, Cl. 357-14.000.

Koiwai, Yoshihisa: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Kawai, Toshiyuki; Yonehara, Sadao; Koiwai, Yoshihisa; and Endo, Kazuhiko, 4,437,883, Cl. 75-0.50C.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Iwamoto, Yoshinao; Suzuki, Shizuo; and Shirasaki, Yuichi, 4,438,401, Cl. 324-326.000.

Koland, David G., to Whirlpool Corporation. Vacuum cleaner nozzle lift device. 4,437,205, Cl. 15-354.000.

Kolbl, Richard; and Mehlan, Bernd, to Sielaff GmbH & Co. Coin collection for vending machines. 4,437,557, Cl. 194-1.00D.

Kollmann, Hans-Josef; Hennemann, Lothar; and Hohorst, Wolfgang, to Wago Verwaltungsgesellschaft mit beschrankter Haftung. Connection terminal for electrical conductors. 4,437,721, Cl. 339-97.00P.

Kolodziej, George C.: *See—*
Hinds, James J.; Hoeflich, John C.; and Kolodziej, George C., 4,437,985, Cl. 209-538.000.

Komada, Kenya; and Tan, Yui-Kuan, to Ricoh Company, Ltd. Multi-stylus head. 4,438,444, Cl. 346-155.000.

Komaki, Takao: *See—*
Teraoka, Masanori; Komaki, Takao; and Matsumoto, Seiji, 4,438,333, Cl. 250-327.200.

Komiya, Hiroyoshi: *See—*
Toyoda, Hiroyasu; Komiya, Hiroyoshi; and Itakura, Hideaki, 4,438,315, Cl. 219-121.0PE.

Komori Printing Machinery Co., Ltd.: *See—*
Hasegawa, Kokichi; and Tokita, Tsugio, 4,437,406, Cl. 101-350.000.

Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, to Canon Kabushiki Kaisha. Image forming apparatus with cleaning means. 4,437,757, Cl. 355-15.000.

Komura, Hirotsugu: *See—*
Ueguri, Shigeo; Komura, Hirotsugu; and Mizuno, Takaji, 4,438,317, Cl. 219-130.510.

Kon, Masaharu: *See—*
Yokoyama, Masao; Kon, Masaharu; and Ota, Hiroshi, 4,437,682, Cl. 280-764.100.

Kondo, Nobuo: *See—*
Tsuchida, Takashi; Kondo, Nobuo; Okada, Kazukiyo; and Okuda, Yutaka, 4,438,425, Cl. 340-55.000.

Kondow, Makoto: *See—*
Tanaka, Chiaki; Nakashima, Shinobu; and Kondow, Makoto, 4,438,240, Cl. 525-420.000.

Koning, Richard W., to Deere & Company. Twine-wrapping mechanism for mechanism for a large round baler. 4,437,399, Cl. 100-4.000.

Konishirokou Photo Industry Co., Ltd.: *See—*
Ishiyama, Shozo, 4,437,732, Cl. 350-427.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Hamada, Fumio, 4,438,194, Cl. 430-505.000.
Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, 4,438,193, Cl. 430-505.000.

Konno, Kunio: *See—*
Takahashi, Tomowaki; Konno, Kunio; and Sasaya, Toshihiro, 4,437,733, Cl. 350-427.000.

Kono, Yoshio: *See—*
Abe, Haruhiko; Harada, Hiroshi; Denda, Masahiko; Nagasawa, Koichi; and Kono, Yoshio, 4,438,368, Cl. 315-39.000.

Konoplitskaya, Xenya L.: *See—*
Lipatova, Tatyana E.; Vasiichenko, Dmitry V.; Pkhakadze, Georgy A.; and Konoplitskaya, Xenya L., 4,438,249, Cl. 528-61.000.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, to Boehringer Ingelheim KG. 1-Aryloxy-3-alkylamino-2-propanols and pharmaceutical compositions containing them. 4,438,143, Cl. 424-304.000.

Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Gaida, Wolfram; and Hoefke, Wolfgang, 4,438,118, Cl. 424-251.000.

Koppers Company, Inc.: *See—*
Calistrat, Michael M., 4,437,847, Cl. 464-74.000.
Koppers, Manfred; Bohnes, Karlheinz; and Kunzer, Heinz, to Bochumer Eisenhutte GmbH & Co. KG. Chain bucket conveyor. 4,437,562, Cl. 198-733.000.

Kopylov, Jury L.: *See—*
Doev, Vitaly S.; Kotelyansky, Iosif M.; Kravchenko, Valery B.; Monosov, Yakov A.; Shakhunov, Valery A.; and Kopylov, Jury L., 4,438,443, Cl. 346-153.100.

Korant, Bruce D.: *See—*
Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., 4,438,030, Cl. 260-112.50R.

Kormoczy, Peter: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.

Korner, Gerhard; and Rees, Volker, to BBC Brown, Boveri & Company, Limited. Puffer piston circuit breaker. 4,438,308, Cl. 200-148.00A.

Kornrumpf, William P.: *See—*
Harnden, John D., Jr.; and Kornrumpf, William P., 4,438,396, Cl. 324-127.200.

Korzik, James L.; and Wissman, Thomas, to Paradyne Corporation. Rack mountable primary power AC plug. 4,437,717, Cl. 339-17.0LC.

Koschinek, Gunter: *See—*
Moderlak, Helmut; Koschinek, Gunter; Zinsser, Rolf; Prehler, Richard; and Kretschmann, Bernd, 4,437,827, Cl. 425-378.00S.

Kotani, Kozo: *See—*
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Kotani, Kozo; and Hosono, Hidekazu, 4,438,238, Cl. 525-240.000.

Kotelyansky, Iosif M.: *See—*
Doev, Vitaly S.; Kotelyansky, Iosif M.; Kravchenko, Valery B.; Monosov, Yakov A.; Shakhunov, Valery A.; and Kopylov, Jury L., 4,438,443, Cl. 346-153.100.

Koulbanis, Constantin; N'Guyen, Quang L.; Zabotto, Arlette; and Plot, Josiane, to Societe Anonyme dite: L'Oreal. Mixture of vegetable oils based on jojoba oil and cosmetic compositions comprising the mixture. 4,437,895, Cl. 106-245.000.

Kovach, Stephen M., to Ashland Oil, Inc. Immobilization and neutralization of contaminants in crude oil. 4,437,981, Cl. 208-253.000.

Kovacs, Gabor: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.

Kowa Company, Ltd.: *See—*
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tsutomu, 4,438,107, Cl. 424-180.000.

Kowada, Ichiro: *See—*
Isomura, Shigenori; Kobayashi, Akio; Kato, Katsushi; Kowada, Ichiro; and Nishii, Sachio, 4,437,446, Cl. 123-492.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Dorr, Wolfgang; Gradel, Gerhard; and Peehs, Martin, 4,438,050, Cl. 264-0.500.
Schnabl, Karl; Hoppner, Eberhard; and Kastl, Hans, 4,438,399, Cl. 324-220.000.

Kramer, James H.; Orndorff, Roy L., Jr.; and Stephens, James M., to B. F. Goodrich Company, The. Riser pipe joint. 4,437,688, Cl. 285-95.000.

Kramer, Kenneth D.; and Fletcher, Edward H., to Deere & Company. Electrohydraulic valve system. 4,437,385, Cl. 91-361.000.

Krampe & Co. Fertigung in Bergbaubedarf GmbH: *See—*
Best, Gerd; and Dlugosch, Gunter, 4,437,707, Cl. 299-81.000.

Krant, Jonathan M.: *See—*
Nir, Aharon; Amiel, Abraham J.; and Krant, Jonathan M., 4,437,263, Cl. 47-1.00R.

Krause, William F., Jr.; and Hopmann, Mark E., to Baker Oil Tools, Inc. Selective lock for anchoring well tools. 4,437,522, Cl. 166-382.000.

Krautkramer-Branson, Inc.: *See—*
Pittaro, Richard J., 4,437,332, Cl. 73-1.0DV.

Kravchenko, Valery B.: *See—*
Doev, Vitaly S.; Kotelyansky, Iosif M.; Kravchenko, Valery B.; Monosov, Yakov A.; Shakhunov, Valery A.; and Kopylov, Jury L., 4,438,443, Cl. 346-153.100.

Kretschmann, Bernd: *See—*
Moderlak, Helmut; Koschinek, Gunter; Zinsser, Rolf; Prehler, Richard; and Kretschmann, Bernd, 4,437,827, Cl. 425-378.00S.

Kretzschmar, Rolf: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.

Krings, Peter: *See—*
Kuhling, Dieter; Huppertzl Josef; Krings, Peter; and Reuter, Herbert, 4,438,012, Cl. 252-131.000.

Krinski, Thomas L.; and Coco, Charles E., to Ralston Purina Company. Use of soy polysaccharides as a thickening agent for alkali silicate adhesives. 4,437,893, Cl. 106-80.000.

Krishnakumar, Suppayan M.: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,437,825, Cl. 425-145.000.

Kroger, Harry; and Soref, Richard A., to Sperry Corporation. Refractive index temperature sensor. 4,437,761, Cl. 356-44.000.

Krogsrud, Harald, to Elkem a/s. Means for an electrothermal smelting furnace. 4,438,516, Cl. 373-97.000.

Krueger, David C.: *See—*
Suh, Kyung W.; Krueger, David C.; and Zehner, Burch E., 4,438,224, Cl. 521-146.000.

Ksayian, Haig. Hand and/or foot propelled vehicle. 4,437,677, Cl. 280-234.000.

Kubo, Daijiro: *See—*
Sano, Jun; Aoyama, Masahide; and Kubo, Daijiro, 4,438,353, Cl. 307-477.000.

Kubo, Katsuro; Fukagawa, Yasuo; and Ishikura, Tomoyuki, to Sanraku-Ocean Co., Ltd. Amidohydrolase having ability to depantothenylate an antibiotic. 4,438,201, Cl. 435-228.000.

Kubo, Kunimichi; Miyazaki, Yasunosuke; Yoshikawa, Mamoru; and Miyoshi, Mituji, to Nippon Oil Company, Ltd. Vapor phase polymerization apparatus for olefins. 4,438,073, Cl. 422-135.000.

Kubo, Masayoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for product transportation in tire-forming machine. 4,437,920, Cl. 156-406.200.

Kubo, Naoki: *See—*
Nakano, Tadashi; Tamura, Hiroyuki; and Kubo, Naoki, 4,438,079, Cl. 423-87.000.

Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kabushiki Kaisha. Transmission with torque converter and lock up clutch with lubrication and pressurization system. 4,437,358, Cl. 74-867.000.

Kubo, Toshihiko; Ichidate, Minoru; Kawai, Toshiyuki; Yonehara, Sadao; Koiwai, Yoshihisa; and Endo, Kazuhiko, to Sumitomo Metal Industries, Ltd.; and Nippon Oil Co. Ltd. Process for producing metal powder. 4,437,883, Cl. 75-0.50C.

Kubo, Toshihiko: *See—*
Umino, Masahide; Tamura, Eijiro; Karasuno, Isamu; Ichidate, Minoru; and Kubo, Toshihiko, 4,437,891, Cl. 75-251.000.

Kubodera, Noboru: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Kazushige; and Hata, Shun-ichi, 4,438,115, Cl. 424-250.000.

Kubota, Hitoshi: *See—*
Morita, Katuhiro; and Kubota, Hitoshi, 4,437,310, Cl. 60-562.000.

Kubota, Tatsushi: *See—*
Moriya, Shigeru; Yoshida, Akio; Hayashi, Yoshihiro; Kubota, Tatsushi; and Tsuge, Hiroshi, 4,437,683, Cl. 280-804.000.
Moriya, Shigeru; Yoshida, Akio; Matsunami, Muneharu; Kubota, Tatsushi; Tsuge, Hiroshi; and Nishimura, Yuji, 4,437,684, Cl. 280-804.000.

Kubotera, Kikuo: *See—*
Kitajima, Masao; Seshimoto, Osamu; Kubotera, Kikuo; and Yamaguchi, Akira, 4,437,970, Cl. 204-412.000.

Kuhling, Dieter; Huppertzl Josef; Krings, Peter; and Reuter, Herbert, to Henkel Kommanditgesellschaft auf Aktien. Stable aqueous suspension of water-insoluble, calcium-binding aluminosilicates and non-ionic suspending agents. 4,438,012, Cl. 252-131.000.

Kuhlman, Ronald H. Controlled exhaust system for low temperature enclosure. 4,437,868, Cl. 62-411.000.

Kuka Schweissanlagen & Roboter GmbH: *See—*
Zimmer, Ernst, 4,438,309, Cl. 219-86.700.

Kulak, Walter. Universal float lure. 4,437,256, Cl. 43-17.500.

Kulesh, Vladimir P.: *See—*
Moskalik, Leonid M.; Ryadchikov, Vladimir E.; Bykov, Anatoly P.; Kulesh, Vladimir P.; Opasov, Stanislav I.; and Orlov, Anatoly A., 4,438,393, Cl. 324-83.00D.

Kulicke & Soffa Industries, Inc.: *See—*
Razon, Ely; and Vilenski, Dan, 4,437,604, Cl. 228-179.000.

Kulik, Alphonse C., to USM Corporation. Method of articulating a work supporting surface. 4,437,198, Cl. 12-145.000.

Kume, Tsutomu: *See—*
Ishii, Yoshiaki; Kume, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, 4,437,416, Cl. 110-245.000.

Kummer, Jan. Milkmeter measuring the weight of the quantity of milk issued by a cow, and device for taking samples adapted for use with said milkmeter. 4,437,346, Cl. 73-221.000.

Kummer, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,438,143, Cl. 424-304.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Gaida, Wolfram; and Hoefke, Wolfgang, 4,438,118, Cl. 424-251.000.

Kunitz, Friedrich-Wilhelm; and Schranz, Karl-Wilhelm, to Agfa-Gevaert Aktiengesellschaft. Photographic recording material containing a developer compound. 4,438,195, Cl. 430-566.000.

Kunkel, Heinrich: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Horling, Peter; Hetterich, Hermann; and Kunkel, Heinrich, 4,437,214, Cl. 29-149.5DP.

Kunzer, Heinz: *See—*
Koppers, Manfred; Bohnes, Karlheinz; and Kunzer, Heinz, 4,437,562, Cl. 198-733.000.

Kupferdraht-Isolierwerk AG Wildegg: *See—*
Voser, Othmar, 4,438,293, Cl. 174-79.000.

Kurahashi, Masaru: *See—*
Matsui, Kanenobu; Uchiumi, Shinichiro; Takahashi, Mitsuo; Asada, Hideki; and Kurahashi, Masaru, 4,438,041, Cl. 260-464.000.

Kuramochi, Koujiro: *See—*
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,437,358, Cl. 74-867.000.

Kuranishi, Masaaki; and Togo, Yasuhiko, to Sharp Kabushiki Kaisha. Card reader for reading information carried on tag cards. 4,438,328, Cl. 235-181.000.

Kurbjuweit, Hans-Georg: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.

Kureha Kagaku Kabushiki Kaisha: *See—*
Wagu, Masakatsu; Hayashi, Shoichiro; and Kodama, Kouichi, 4,438,106, Cl. 424-180.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Okada, Yoshio; Terauchi, Takashi; Naoki, Makoto; and Hino, Masatoshi, 4,438,021, Cl. 502-341.000.

Kurt H. Volk, Inc.: *See—*
Volk, Kurt E., Jr.; Herbert, Everett H.; and Stenner, John W., 4,437,852, Cl. 493-216.000.

Kurth, Wilfried: *See—*
Philipp, Helmut; and Kurth, Wilfried, 4,437,370, Cl. 83-23.000.

Kydd, Paul H.: *See—*
Huibers, Derk T. A.; and Kydd, Paul H., 4,437,973, Cl. 208-10.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,438,197, Cl. 435-119.000.

Kyushima, Tatsuo: *See—*
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,437,358, Cl. 74-867.000.

Laboratoire d'Etudes et de Recherches Chimiques L.E.R.C.: *See—*
Foissac, Yves; and Hung, Frederic N. B., 4,437,288, Cl. 52-637.000.

LaBruna, Anthony J., to Textron Inc. Positive expulsion fluid storage tanks. 4,437,590, Cl. 222-386.500.

Lafaille, J. Pierre: *See—*
Sanchez, Victor; Espenan, Patrick; Casademont, Ernest; and Lafaille, J. Pierre, 4,437,967, Cl. 204-301.000.

Laing, Karsten; Laing, Oliver; Laing, Nikolaus; and Ludin, Ludwig. Utility water system with a pressureless storage container, particularly for solar installations. 4,437,484, Cl. 137-99.000.

Laing, Nikolaus: *See—*
Laing, Karsten; Laing, Oliver; Laing, Nikolaus; and Ludin, Ludwig, 4,437,484, Cl. 137-99.000.

Laing, Oliver: *See—*
Laing, Karsten; Laing, Oliver; Laing, Nikolaus; and Ludin, Ludwig, 4,437,484, Cl. 137-99.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Barbier, Jean-Paul; and Lerouyer, Gilbert, 4,438,152, Cl. 427-37.000.
Blot, Roger, 4,438,319, Cl. 219-137.0PS.
Guillaume, Paul; and Karinthi, Pierre, 4,437,418, Cl. 110-246.000.

Laity, John L.: *See—*
Graiff, L. B.; and Laity, John L., 4,437,436, Cl. 123-1.00A.

Lallaye, Paul G.; Bjerklie, John W.; and Penty, Robert A., to Hague International. Composite ceramic heat exchange tube. 4,437,217, Cl. 29-157.400.

Lambert, Roger T., to Omnetics, Inc. Flexible pin. 4,437,726, Cl. 339-252.00P.

Landis, Abraham L., to Hughes Aircraft Company. Isoimide containing oligomers. 4,438,273, Cl. 549-303.000.

Lane Company, The: *See—*
Mizelle, Ned W., 4,437,701, Cl. 297-85.000.

Laney, Ralph M. Connector for corrugated tubing. 4,437,691, Cl. 285-353.000.

Lang, Theodore J.; and Kershaw, Bernard J., to Du Pont Canada Inc. Process for coating nylon film with vinylidene chloride copolymers. 4,438,180, Cl. 428-475.800.

Langer, Werner: *See—*
Hittel, Gerhard; Muhl, Hubertus; Eigl, Franz; and Langer, Werner, 4,437,323, Cl. 66-84.00A.

Langstraat, Warren L., to Minnesota Mining and Manufacturing Company. Abrading tool. 4,437,270, Cl. 51-364.000.

Lantero, Oreste J., Jr., to Miles Laboratories, Inc. Immobilization of biocatalysts on granular carbon. 4,438,196, Cl. 435-96.000.
Lantzsch, Reinhard; Marhold, Albrecht; Behrenz, Wolfgang; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating arthropods with novel benzyl esters. 4,438,275, Cl. 549-434.000.
Lardon, Hartmut; and Seybold, Guenther, to BASF Aktiengesellschaft. Preparation of sulfides. 4,438,282, Cl. 568-58.000.
Large, George B., to Stauffer Chemical Company. Tri-mixed alkylsulfonium salts of N-phosphonomethylglycine and their use as plant growth regulators and herbicides. 4,437,874, Cl. 71-87.000.
Larose, Andre, to Boreal Hydraulic Equipment. Tree cutting mechanism in a tree harvester. 4,437,500, Cl. 144-34.00R.
Latham, Ronald D., to Fiberglass Unlimited, Inc. Wing type air foil assembly. 4,437,426, Cl. 114-103.000.
Laurenz, Werner, to Pischinger, Franz. Method and apparatus for detecting knocking combustion. 4,437,334, Cl. 73-35.000.
Layton, James W.: *See—*
Canada, James W.; and Layton, James W., 4,437,501, Cl. 144-136.00R.
Leach, Earl A., Jr., to Bendix Corporation, The. Mounting bracket for a transformer. 4,438,421, Cl. 336-65.000.
Leather, Brian B.: *See—*
Ford, Michael A.; and Leather, Brian B., 4,438,329, Cl. 250-459.100.
Lechner, Horst: *See—*
Gruber, Peter; Schmid, Jochen; Lechner, Horst; and Bauer, Eckhart, 4,438,091, Cl. 424-21.000.
Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, to Societe Vetrotex Saint-Gobain. Method and apparatus for multifilament glass strand. 4,437,869, Cl. 65-1.000.
Lee, Chung J., to Plastics Engineering Company. Fast crystallizing polyalkyleneterephthalate resin compositions. 4,438,233, Cl. 524-299.000.
Lee, Garland G.: *See—*
Rosenquist, Niles R.; and Lee, Garland G., 4,438,234, Cl. 524-378.000.
Lee, Ivan S., to Polysar Limited. Carboxylated acrylate styrene butadiene adhesives. 4,438,232, Cl. 524-272.000.
Lee, Len F.: *See—*
Howe, Robert K.; and Lee, Len F., 4,437,875, Cl. 71-90.000.
Howe, Robert K.; and Lee, Len F., 4,437,876, Cl. 71-90.000.
Lee, Robert D., to Motorola, Inc. Single stage operational amplifier voltage reference. 4,438,388, Cl. 323-313.000.
Leer Manufacturing Company, Inc.: *See—*
Trautsch, Jerrold A., 4,437,412, Cl. 108-56.100.
Lefebvre, Kenneth E.: *See—*
Goebel, Mark B.; and Lefebvre, Kenneth E., 4,437,689, Cl. 285-246.000.
Legille, Edouard: *See—*
Ulveling, Leon; Legille, Edouard; and Boever, Jean, 4,437,796, Cl. 406-25.000.
Lehmann, Hans D.: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.
Leiber, Heinz; and Stegmeier, Alwin, to Robert Bosch GmbH. Electromagnetic activation device. 4,438,420, Cl. 335-275.000.
Leisterer, Reinhard: *See—*
Arens, Egidius; Hampe, Christoph; Karlowsky, Ingo; Meyersieck, Manfred; Schwarz, Hans D.; Anding, Norbert; and Leisterer, Reinhard, 4,438,438, Cl. 343-451.000.
Lelong, Pierre H.: *See—*
Jatteau, Michel; Lelong, Pierre H.; and Pergrale, Jean, 4,438,334, Cl. 250-363.00S.
Lemelson, Jerome H. Measuring instrument and method. 4,437,241, Cl. 33-166.000.
Leon, Thomas B.; and Arpin, Michael D. Illuminating device. 4,438,482, Cl. 362-103.000.
Leong, Sai: *See—*
Gantwerker, Scott; and Leong, Sai, 4,438,150, Cl. 426-625.000.
Lermann, Peter: *See—*
Engelsmann, Dieter; Hackenberg, Hubert; Lermann, Peter; Wagner, Karl; and Zobel, Siegfried, 4,437,751, Cl. 354-214.000.
Lerner, Bernard J. Removal of undesired components from gases. 4,437,867, Cl. 55-233.000.
Lerouyer, Gilbert: *See—*
Barbier, Jean-Paul; and Lerouyer, Gilbert, 4,438,152, Cl. 427-37.000.
Leuenberger, Claude-Eric: *See—*
Dinger, Rudolf; Michel, Jean-Georges; and Leuenberger, Claude-Eric, 4,437,773, Cl. 374-117.000.
Leuven Research & Development V.Z.W.: *See—*
Delaey, Lucas J., 4,437,911, Cl. 148-402.000.
Lever Brothers Company: *See—*
Huber, Otto, 4,438,015, Cl. 252-174.240.
Verhagen, Laurentius A. M.; and Bodor, Janos, 4,438,149, Cl. 426-603.000.
Levine, Alfred B. Multiplex photocopier system with portable scanner. 4,438,459, Cl. 358-258.000.
Levine, Peter A.; and Limberg, Allen L., to RCA Corporation. Electrical compensation for misregistration of striped color filter in a color imager with discrete sampling elements. 4,437,764, Cl. 358-44.000.
Lewis, David L., to Bendix Corporation, The. High torque chuck assembly and collet. 4,437,801, Cl. 409-232.000.
Lewis, Mack A.; and Spencer, Mike R., to Wilson Trailer Co. Monocoque trailer or body side construction. 4,437,699, Cl. 296-181.000.
Liao, Hsiang P.: *See—*
Finley, Joseph H.; and Liao, Hsiang P., 4,438,048, Cl. 260-982.000.
Liberman, Arthur L.: *See—*
Lindauer, Jerome I.; Hill, Ira D.; and Liberman, Arthur L., 4,438,010, Cl. 252-91.000.
Lichtenegger, Siegried, to U.S. Philips Corporation. Detector for an electron microscope. 4,438,332, Cl. 250-310.000.
Lillo, Renaldo C. Sliding door with security apparatus. 4,437,694, Cl. 292-235.000.
Limberg, Allen L.: *See—*
Levine, Peter A.; and Limberg, Allen L., 4,437,764, Cl. 358-44.000.
Limburg, William R.: *See—*
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.
Lindauer, Jerome I.; Hill, Ira D.; and Liberman, Arthur L., to International Flavors & Fragrances Inc. Soap tablet including perfume-containing plastic core and process for preparing same. 4,438,010, Cl. 252-91.000.
Linden, Jeffrey L., Sr.: *See—*
Chuang, Patrick T.; Keswick, Paul D.; and Linden, Jeffrey L., Sr., 4,438,346, Cl. 307-297.000.
Lindenschmidt, Gerhard: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Jung, Rudolf H.; and Lindenschmidt, Gerhard, 4,438,237, Cl. 525-183.000.
Linder, Ernst: *See—*
Babitzka, Rudolf; and Linder, Ernst, 4,438,363, Cl. 310-328.000.
Linderman, Noel. Yoke apparatus. 4,437,709, Cl. 308-219.000.
Lindorfer, Walter; Wagner, Fritz; and Schulz, Walther, to Wintershall AG; and Gesellschaft fur Biotechnologische Forschung mbH. Prevention of penetration of oily hydrocarbons into sand. 4,437,993, Cl. 210-631.000.
Linke, Horst: *See—*
Redder, Manfred; Linke, Horst; Grundken, Dieter; and Temme, Helmut, 4,437,564, Cl. 198-834.000.
Lion Corporation: *See—*
Satsuki, Teruhisa; Ota, Seiiti; and Tabata, Setsuko, 4,438,025, Cl. 252-545.000.
Lipatova, Tatyana E.; Vasiichenko, Dmitry V.; Pkhakadze, Georgy A.; and Konoplitskaya, Xenya L. Biodegradable polyurethane urea acyl semicarbazides for the manufacture of biodegradable alloimplants. 4,438,249, Cl. 528-61.000.
Lippmann, Hans-Joachim; Peche, Gerhard; and Bettge, Hans, to Siemens Aktiengesellschaft. Electric vacuum switch. 4,438,307, Cl. 200-144.00B.
Liquipak International, Inc.: *See—*
Pankratz, Lawrence A.; and Corniea, Donald G., 4,437,498, Cl. 141-89.000.
Liu, Henry; Gibson, Donald L.; Cheng, David H. S.; and Rathke, James E., to University of Missouri, The Curators of the. Pipeline transportation system. 4,437,799, Cl. 406-198.000.
Liu, Ping Y., to General Electric Company. High impact strength, flame retardant polycarbonate composition. 4,438,231, Cl. 524-161.000.
Lobel, Wilfried: *See—*
Banke, Karl-Heinz; Hering, Elisabeth; Lobel, Wilfried; Pollack, Dieter; Wiedemann, Gunter; Grell, Ute; and Schuler, Ingo, 4,438,053, Cl. 264-25.000.
Lockheed Corporation: *See—*
Marmon, Frank E., 4,437,487, Cl. 137-322.000.
Lockhoff, Oswald: *See—*
Petersen, Uwe; Stadler, Peter; Lockhoff, Oswald; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,438,260, Cl. 536-13.900.
Lockwood Technical Inc.: *See—*
Taggart, Thomas D.; and Taggart, Robert E., 4,437,488, Cl. 137-334.000.
Lomas, David A.: *See—*
Vickers, Anthony G.; and Lomas, David A., 4,438,071, Cl. 422-109.000.
Londos, Rene; and Barbereau, Jean-Luc, to Compagnie Generale de Manutention et de Stockage. Apparatus for causing a unit guided on rectilinear rails to move gradually and a forklift equipped with such a unit. 4,437,808, Cl. 414-667.000.
Long, William B.: *See—*
Eaby, Daniel G.; Long, William B.; and Shuey, John R., 4,437,725, Cl. 339-156.00R.
Lonnstrom Oy: *See—*
Vatja, Aulis, 4,437,565, Cl. 198-851.000.
Lord, Douglas W., to Renfro, Julian C. Partially restrained arrangement for the mast and sail of a craft possessing inherent stability. 4,437,424, Cl. 114-91.000.
"L'Oreal": *See—*
Gueret, Jean-Louis H., 4,437,477, Cl. 132-88.500.
Saint-Leger, Didier J.; and Abrioux, Andre, 4,438,205, Cl. 436-71.000.
Lorenz, Max R.: *See—*
Homola, Andrew M.; and Lorenz, Max R., 4,438,156, Cl. 427-57.000.
Louis, Pierre A. G. Support device for helping a person to get out of a bathtub. 4,437,196, Cl. 4-564.000.
Low, Robert N.: *See—*
Cloutier, Frank L.; Low, Robert N.; and McClelland, Paul H., 4,438,191, Cl. 430-324.000.
Lucas Industries Limited: *See—*
Farr, Glyn P. R., 4,437,483, Cl. 137-85.000.

Harmer, George A., 4,437,547, Cl. 188-1.110.
Luchetti, Stephen J.: *See—*
Abu-Shumays, Ahmad; Helmer, John C.; and Luchetti, Stephen J., 4,437,812, Cl. 417-53.000.
Ludin, Ludwig: *See—*
Laing, Karsten; Laing, Oliver; Laing, Nikolaus; and Ludin, Ludwig, 4,437,484, Cl. 137-99.000.
Lynn, Vicki A.: *See—*
Archer, Wesley L.; Lynn, Vicki A.; and Dallessandro, Susan M., 4,438,192, Cl. 430-329.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,437,402, Cl. 101-181.000.
Greiner, Harry M., 4,437,403, Cl. 101-248.000.
Mac Valves, Inc.: *See—*
Neff, James A., 4,438,418, Cl. 335-255.000.
Macaleese, John E., to Stebbins Engineering and Manufacturing Co. Thermally insulated tank structure and method for forming the same. 4,437,279, Cl. 52-247.000.
MacCarthy, Patrick. Yo-yo with twist-resistant string. 4,437,261, Cl. 46-61.000.
MacCraven, Joseph, to Southwire Company. Method for improved heat treatment of elongated aluminum alloy materials. 4,437,904, Cl. 148-13.100.
MacFarland, James M.; and Kappe, Bernard W., to United States of America, Air Force. Inflatable, inert gas-purged, welding chamber. 4,437,710, Cl. 312-1.000.
Machida, Yoshihiro: *See—*
Mizukami, Hidekatu; and Machida, Yoshihiro, 4,437,759, Cl. 355-91.000.
MacMillan Bloedel Limited: *See—*
Gilroy, Alfred A., 4,437,611, Cl. 239-453.000.
Macnak, Philip P.: *See—*
Smoot, George W.; and Macnak, Philip P., 4,438,433, Cl. 340-825.440.
Madden, James A., to General Electric Company. Method and apparatus for circumferentially grooving thin-walled cylindrical metal objects. 4,437,327, Cl. 72-94.000.
Madey, John M. J.: *See—*
Elias, Luis R.; Madey, John M. J.; and Smith, Todd I., 4,438,513, Cl. 372-2.000.
Madonna, Peter L.: *See—*
O'Hanlon, Tom A.; Madonna, Peter L.; and Wallace, Gearld F., 4,437,525, Cl. 175-218.000.
Maeda Industries, Ltd.: *See—*
Ozaki, Nobuo; and Hosokawa, Mikio, 4,437,357, Cl. 74-475.000.
Magarian, Gerald M.; and Friedrich, Ralph S., to Ameron, Inc. Winding fiber reinforced pipe fittings. 4,437,616, Cl. 242-7.020.
Magariyama, Kenichi: *See—*
Terui, Nobuhiko; and Magariyama, Kenichi, 4,437,744, Cl. 354-442.000.
Magee, Dennis A.; and McCubbin, Charles E., to Dunham-Bush, Inc. Variable volume positive displacement rotary pump. 4,437,816, Cl. 417-465.000.
Magerlein, Helmut: *See—*
Zengel, Hans-Georg; Kersten, Hilde; and Magerlein, Helmut, 4,437,960, Cl. 204-181.00C.
Magome, Tamotsu: *See—*
Sakurayama, Junichi; and Magome, Tamotsu, 4,437,755, Cl. 355-10.000.
Maguire, Paul R., to Pleion Corporation. Modular wall panel fastener assembly. 4,437,286, Cl. 52-506.000.
Mahadev, Kalabeerappa N.: *See—*
Boorman, Philip M.; Chivers, Tristram; Tavares, Donald F.; and Mahadev, Kalabeerappa N., 4,438,218, Cl. 502-220.000.
Maheo, Jean Y.: *See—*
Colineau, Joseph; and Maheo, Jean Y., 4,438,375, Cl. 315-408.000.
Malinowski, Christopher W.; and Rinderle, Heinz, to Telefunken Electronic GmbH. Oscillator frequency control loop. 4,438,412, Cl. 331-2.000.
Mallik, Arjun; Koetters, Daniel; and Edelstein, Harold, to Allied Corporation. Scintillation liquid compatible with high performance liquid chromatography solvents. 4,438,017, Cl. 252-301.170.
Mallinckrodt, Inc.: *See—*
Mosier, Larry D., 4,438,209, Cl. 436-542.000.
Mampaeij, Johannes J. Break bollard. 4,437,427, Cl. 114-218.000.
Manber, Solomon: *See—*
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,438,379, Cl. 318-685.000.
Manchem, Limited: *See—*
Holland, Frank S., 4,437,949, Cl. 204-59.00M.
Mandai, Masaaki: *See—*
Shida, Masaharu; Ueda, Makoto; Otawa, Shuji; Mandai, Masaaki; and Sato, Katsuhiko, 4,437,769, Cl. 368-204.000.
Manera, Maxime: *See—*
Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, 4,437,869, Cl. 65-1.000.
Mangels, Ralph W. Self-inflating bedpan. 4,437,195, Cl. 4-456.000.
Mangin, Pierre M.: *See—*
Durand, Daniel C.; and Mangin, Pierre M., 4,438,019, Cl. 502-169.000.
Mankouski, Charles: *See—*
Pardee, Ernest, 4,437,545, Cl. 182-171.000.
Manson, Harry G., to IMC Magnetics Corp. Stepper motor having rotor with limited axial movement. 4,438,361, Cl. 310-90.000.
Manville Service Corp.: *See—*
Graser, Earl J., 4,437,606, Cl. 229-40.000.
Marchadour, Jean-Charles. Machine for crimping in a controlled atmosphere. 4,437,290, Cl. 53-97.000.
Marchetti, Mauro: *See—*
Botteghi, Carlo; Gladiali, Serafino G.; Marchetti, Mauro; and Faedda, Giovanni A., 4,438,033, Cl. 260-239.55C.
Mardkha, Michael M., to Xerox Corporation. TTL Compatible CMOS input buffer. 4,438,352, Cl. 307-475.000.
Marhold, Albrecht: *See—*
Lantzsch, Reinhard; Marhold, Albrecht; Behrenz, Wolfgang; and Hammann, Ingeborg, 4,438,275, Cl. 549-434.000.
Marinoff, Gerald P.; and Teague, W. Dorwin, to Marinoff, Gerald P. Fire escape device. 4,437,546, Cl. 182-233.000.
Mark Products, Inc.: *See—*
Woodall, James C., 4,438,292, Cl. 174-52.00R.
Mark, Victor; and Hedges, Charles V., to General Electric Company. Heat resistant polyarylates. 4,438,241, Cl. 525-444.000.
Marken, John P. Wave power generator. 4,438,343, Cl. 290-53.000.
Marklow, Raymond J.: *See—*
Carroll, William G.; Farley, Peter; and Marklow, Raymond J., 4,438,252, Cl. 528-75.000.
Marmon, Frank E., to Lockheed Corporation. Lightning protected check-type drain valve. 4,437,487, Cl. 137-322.000.
Marquard, John F.: *See—*
Cary, Hall; and Marquard, John F., 4,437,619, Cl. 242-75.510.
Martens, Wilhelm; and Dilmaghani, Homayoun, to Vereinigte Flugtechnische Werke Fokker GmbH. Drive for leading edge flaps of aircraft wings. 4,437,631, Cl. 244-214.000.
Martin, Clovis L., to Acos Finos Piratini S.A.; and Metallgesellschaft Aktiengesellschaft. Method of and apparatus for measuring the rate at which gases are blown into a rotary kiln. 4,437,835, Cl. 432-103.000.
Martin, Henry: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,437,879, Cl. 71-96.000.
Martin, Kenneth L.: *See—*
Woodard, Thomas R.; and Martin, Kenneth L., 4,438,320, Cl. 219-216.000.
Martinmaas, Werner W. Nut wrench. 4,437,364, Cl. 81-179.000.
Martorana, Richard T., to United States of America, Navy. Heat pipe control apparatus. 4,437,510, Cl. 165-32.000.
Maruo, Tsunehiro; and Inagaki, Masaomi, to Sony Corporation. Position detecting signal generator. 4,438,398, Cl. 324-173.000.
Maruyama, Toshinori: *See—*
Akita, Yoshio; Maruyama, Toshinori; and Muto, Katsuya, 4,438,384, Cl. 320-48.000.
Marwil, Stanley J., to Phillips Petroleum Company. Separation of hydrocarbon and alcohol azeotropic mixtures by distillation with anhydrous ammonia. 4,437,941, Cl. 203-50.000.
Masarky, N. Henri: *See—*
Hawryluk, Raymond; Johnson, Clyde R.; and Masarky, N. Henri, 4,437,884, Cl. 75-7.000.
Masonite Corporation: *See—*
Slocum, Donald H.; Schairbaum, Albert W.; and Curtis, William M., 4,437,274, Cl. 52-105.000.
Massachusetts Institute of Technology: *See—*
Saltzer, Jerome H., 4,438,520, Cl. 375-4.000.
Masuyama, Masaru; Hirooka, Susumu; and Yamaoka, Nobutatsu, to Taiyo Yuden Co., Ltd. Semiconductive ceramic materials with a voltage-dependent nonlinear resistance, and process for preparation. 4,438,214, Cl. 501-136.000.
Mathais, Henri; Commandeur, Raymond; Pontoglio, Achille; and Nebel, Sergio, to PCUK Produits Chimiques Ugine Kuhlmann. Chlorinated alkylaromatic based compounds and new liquid dielectrics. 4,438,027, Cl. 252-581.000.
Matsuda, Yuzuru: *See—*
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,438,197, Cl. 435-119.000.
Matsufuji, Akihiro: *See—*
Umemura, Shizuo; Matsufuji, Akihiro; Aonuma, Masashi; Kitamoto, Tatsuji; and Miyatsuka, Hajime, 4,437,882, Cl. 75-0.50R.
Matsui, Kanenobu; Uchiumi, Shinichiro; Takahashi, Mitsuo; Asada, Hideki; and Kurahashi, Masaru, to UBE Industries, Ltd. Process for preparing esters of cyanoacetic acids. 4,438,041, Cl. 260-464.000.
Matsumoto, Fumio: *See—*
Mori, Kensuke; Matsumoto, Hiromi; Suga, Yozo; Nakayama, Tadashi; and Matsumoto, Fumio, 4,437,909, Cl. 148-111.000.
Nozawa, Tadao; Yamamoto, Takaaki; Nakayama, Tadashi; Matsumoto, Fumio; and Hayami, Satohiro, 4,437,910, Cl. 148-112.000.
Matsumoto, Hiromi: *See—*
Mori, Kensuke; Matsumoto, Hiromi; Suga, Yozo; Nakayama, Tadashi; and Matsumoto, Fumio, 4,437,909, Cl. 148-111.000.
Matsumoto, Hiroshi: *See—*
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,437,877, Cl. 71-90.000.
Matsumoto, Seiji: *See—*
Teraoka, Masanori; Komaki, Takao; and Matsumoto, Seiji, 4,438,333, Cl. 250-327.200.
Matsumoto, Toyosaku, to Nippon Gakki Seizo Kabushiki Kaisha. Disk player system having a disk sucking function. 4,438,510, Cl. 369-271.000.
Matsunaga, Isao: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Kazushige; and Hata, Shun-ichi, 4,438,115, Cl. 424-250.000.

Matsunami, Muneharu: *See—*
Moriya, Shigeru; Yoshida, Akio; Matsunami, Muneharu; Kubota, Tatsushi; Tsuge, Hiroshi; and Nishimura, Yuji, 4,437,684, Cl. 280-804.000.

Matsuo, Hideo: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Kelzo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,438,155, Cl. 427-49.000.

Matsuo, Masaaki: *See—*
Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, 4,438,126, Cl. 424-272.000.

Matsuo, Masashi: *See—*
Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, 4,437,445, Cl. 123-491.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,437,232, Cl. 29-740.000.
Sakakima, Hiroshi; Satomi, Mitsuo; Senno, Harufumi; and Hirota, Eiichi, 4,437,912, Cl. 148-403.000.
Sato, Takeshi, 4,438,529, Cl. 455-190.000.

Matsuyama, Kouszou, to Tokyo Shibaura Denki Kabushiki Kaisha. Power supplying apparatus. 4,438,478, Cl. 361-152.000.

Matsuyama, Masahiro: *See—*
Nojiri, Tadao; Kanemaru, Kenji; Nishikawa, Takayoshi; Matsuyama, Masahiro; and Ito, Yoji, 4,438,422, Cl. 340-52.00F.

Matsuyama, Yoshihiro: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Kelzo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,438,155, Cl. 427-49.000.

Mattei, Anthony, to RCA Corporation. Automatically adaptive transversal filter. 4,438,521, Cl. 375-16.000.

Matyas, Tibor: *See—*
Stoller, David A., Jr.; Robertson, James C.; and Matyas, Tibor, 4,437,410, Cl. 105-378.000.

Maxwell, Ronald M., to General Equipment Manufacturers. Multi-position student table. 4,437,411, Cl. 108-1.000.

Mayne, Sherman T., to Gram Research & Development Co. Method of treating contaminated insoluble organic solid material. 4,437,999, Cl. 210-748.000.

Mazzurco, Anthony; and Miller, Richard L., to Mazzurco, Anthony. Self-orientating fluid container device. 4,437,636, Cl. 248-137.000.

McAnespie, Don: *See—*
Russ, Stephen; and McAnespie, Don, 4,437,612, Cl. 239-556.000.

McAvoy, Thomas R., to Minnesota Mining and Manufacturing Company. Surface treating pad having a renewable surface. 4,437,271, Cl. 51-400.000.

McCarthy, Harry E.: *See—*
Cha, Chang Y.; and McCarthy, Harry E., 4,437,519, Cl. 166-259.000.

McClelland, Paul H.: *See—*
Cloutier, Frank L.; Low, Robert N.; and McClelland, Paul H., 4,438,191, Cl. 430-324.000.

McClenahan, Charles R., to United States of America, Air Force. Current transformer high voltage probe utilizing copper sulfate water resistor. 4,438,395, Cl. 324-127.000.

McCormick, Michael A.; and Gladdish, Peter, to Rolls-Royce Limited. Signal processing means acting as a frequency range translator and as a filter. 4,438,406, Cl. 328-167.000.

McCubbin, Charles E.: *See—*
Magee, Dennis A.; and McCubbin, Charles E., 4,437,816, Cl. 417-465.000.

McCue, John P., to Philip Morris Industrial Incorporated. Electrosensitive recording materials with heterogeneous surface topology. 4,438,170, Cl. 428-207.000.

McEuen, Bruce K.; and Norris, Robert D., to FMC Corporation. Process for oxidizing thallium (I) to thallium (III). 4,438,080, Cl. 423-112.000.

McGrann, Harold J.; Orn, John F.; and Pallaver, Matthew C., to Sperry Corporation. Control stick force transducer. 4,437,351, Cl. 73-862.050.

McGraw, Isaac R., to Pennwalt Corporation. Use of clotrimazole to treat herpes labialis. 4,438,129, Cl. 424-273.00R.

McGraw, Isaac R., to Pennwalt Corporation. Use of tolnaftate to treat herpes labialis. 4,438,134, Cl. 424-300.000.

McGraw, Thomas F. Continuous trickle-down distillation unit for producing hydrated alcohol. 4,437,937, Cl. 202-160.000.

McHugh, James D., to General Electric Company. Low axial stiffness thrust bearing. 4,438,339, Cl. 290-1.00R.

McIver, Chandler H., to Honeywell Information Systems Inc. Integrated circuit package. 4,437,235, Cl. 29-840.000.

McKeen, Jeffrey A.: *See—*
Bronsky, Robert J.; Clark, Dennis B.; McKeen, Jeffrey A.; and Przybylski, William A., 4,437,347, Cl. 73-272.00R.

McKerihen, Steven J.: *See—*
Brooker, Michael F. C.; McKerihen, Steven J.; Attwala, Hashmukrai D.; and Cautillo, Antonio L., 4,437,831, Cl. 431-177.000.

McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S. Apparatus and method for bending glass sheets. 4,437,871, Cl. 65-104.000.

McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S. Apparatus for bending and tempering glass sheets. 4,437,872, Cl. 65-104.000.

McMullen, John K. Pump, and an apparatus incorporating the pump for infusing liquid medicine. 4,437,815, Cl. 417-418.000.

McVeigh, Harry A.: *See—*
Chester, Arthur W.; McVeigh, Harry A.; and Stover, William A., 4,437,978, Cl. 208-120.000.

MDC Max Datwyler AG: *See—*
Datwyler, Max, 4,437,942, Cl. 204-6.000.

Mead Johnson & Company: *See—*
Allen, Lloyd E.; and Riblet, Leslie A., 4,438,119, Cl. 424-251.000.

Mederer, Gerhard. Reciprocating piston engine. 4,437,438, Cl. 123-48.00B.

Medical Engineering Corporation: *See—*
Trick, Robert E.; and Weeks, Vaughan B., 4,437,457, Cl. 128-1.00R.

Medtronic, Inc.: *See—*
Sorenson, Paul D.; and Dickson, Dale A., 4,437,468, Cl. 128-660.000.
White, David L., 4,437,475, Cl. 128-785.000.

Meeder, Raymond L., to Siemens Gammasonics, Inc. Detector head mounting apparatus. 4,438,335, Cl. 250-363.00S.

Mehlan, Bernd: *See—*
Kolbl, Richard; and Mehlan, Bernd, 4,437,557, Cl. 194-1.00D.

Meister, Alton; and Williamson, Joanne M., to Cornell Research Foundation, Inc. Cysteine delivery system. 4,438,124, Cl. 424-270.000.

Meltsch, Hans J.; and Rost, Jan, to Siemens Aktiengesellschaft. Cable sleeve with an entrance socket of shrinkable material. 4,438,294, Cl. 174-88.00R.

Memmi, Massimo: *See—*
Bruno, Roberto; and Memmi, Massimo, 4,437,944, Cl. 204-27.000.

Menioux, Claude C. F., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Rotary alternating piston gas generator. 4,437,441, Cl. 123-213.000.

Mennemann, Karl; Gliemeroth, Georg; and Geiler, Volkmar, to Schott Glaswerke. Optical and ophthalmic glass with refractive indices $nd > 1.58$, Abbe numbers > 45 and densities < 2.75 g/cm^3. 4,438,211, Cl. 501-65.000.

Meny, Allan H.; and Palmer, Dennis L. Protecting means. 4,437,793, Cl. 405-212.000.

Merck & Co., Inc.: *See—*
Hartman, George D., 4,438,266, Cl. 544-350.000.
Smith, Robert L., 4,438,123, Cl. 424-270.000.

Merkl, Bernard A.: *See—*
Christman, Donald L.; and Merkl, Bernard A., 4,438,248, Cl. 528-57.000.

Merrell Dow Pharmaceuticals Inc.: *See—*
Sjoerdsma, Albert, 4,437,873, Cl. 71-67.000.

Merrell Toraude et Compagnie: *See—*
Bey, Philippe; and Jung, Michel, 4,438,270, Cl. 546-243.000.

Merrigan, Michael A., to United States of America, Energy. Heat collector. 4,437,456, Cl. 126-433.000.

Mertz, Frank D., to Red-Ray Manufacturing Company, Inc. Infrared radiating burner article. 4,437,833, Cl. 431-329.000.

Merz, Johann, to Zahnradfabrik Friedrichshafen, AG. Controllable vane pump. 4,437,819, Cl. 418-26.000.

Mesdan S.p.A.: *See—*
Truzzi, Ferdinando; and Premi, Mauro, 4,437,298, Cl. 57-22.000.
Truzzi, Ferdinando; and Premi, Mauro, 4,437,299, Cl. 57-22.000.

Mesta Machine Company: *See—*
Petros, Andrew J., 4,437,223, Cl. 29-564.300.

Metallgesellschaft AG: *See—*
Pietsch, Hartmut; Turke, Wolfgang; Bareuther, Ernst; Kampf, Fritz; and Bings, Hubert, 4,438,076, Cl. 423-30.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Martin, Clovis L., 4,437,835, Cl. 432-103.000.

Metz, Bruce E., to Athena Controls Inc. Seam sealing device and technique. 4,437,853, Cl. 493-302.000.

Metz, Manfred: *See—*
Huber, Willi; and Metz, Manfred, 4,437,610, Cl. 239-119.000.

Metzelder, Wolfgang, to Friedrich Wilh. Schwing GmbH. Two cylinder viscous material pump. 4,437,817, Cl. 417-507.000.

Metzger, Karl G.: *See—*
Boberg, Michael; Habich, Dieter; Metzger, Karl G.; and Naab, Paul, 4,438,114, Cl. 424-248.510.
Petersen, Uwe; Stadler, Peter; Lockhoff, Oswald; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,438,260, Cl. 536-13.900.

Meuleman, Dirk G.: *See—*
Sanders, Adrianus L. M.; Meuleman, Dirk G.; Moelker, Huibert C. T.; van Dedem, Gijsbert W. K.; and van Houdenhoven, Francois E. A., 4,438,108, Cl. 424-183.000.

Meyer, Victor E.; and Dergazarian, Thomas E., to Dow Chemical Company, The. (Vinylaryl)alkyl polysulfide polymers. 4,438,259, Cl. 528-388.000.

Meyersieck, Manfred: *See—*
Arens, Egidius; Hampe, Christoph; Karlowsky, Ingo; Meyersieck, Manfred; Schwarz, Hans D.; Anding, Norbert; and Leisterer, Reinhard, 4,438,438, Cl. 343-451.000.

Michaud, Paul: *See—*
Fortin, Paul; Michaud, Paul; and Pernicka, Martin, 4,437,543, Cl. 182-2.000.

Michel, Jean-Georges: *See—*
Dinger, Rudolf; Michel, Jean-Georges; and Leuenberger, Claude-Eric, 4,437,773, Cl. 374-117.000.

Michigan Consolidated Gas Company: *See—*
Bronsky, Robert J.; Clark, Dennis B.; McKeen, Jeffrey A.; and Przybylski, William A., 4,437,347, Cl. 73-272.00R.

Mick, John R.: *See—*
Harmon, William J., Jr.; Mick, John R.; and Coleman, Vernon, 4,438,492, Cl. 364-200.000.

Midland-Ross Corporation: *See—*
Russ, Stephen; and McAnespie, Don, 4,437,612, Cl. 239-556.000.

Miles Laboratories, Inc.: *See—*
Lantero, Oreste J., Jr., 4,438,196, Cl. 435-96.000.

Miller, Harold W.: *See—*
Kerns, Quentin A.; and Miller, Harold W., 4,438,367, Cl. 315-5.410.

Miller, Richard L.: *See—*
Mazzurco, Anthony; and Miller, Richard L., 4,437,636, Cl. 248-137.000.

Miller, Roger A., to Corning Glass Works. Optical waveguide fiber cooler. 4,437,870, Cl. 65-12.000.

Miller, Ronald L. Geometric game. 4,437,667, Cl. 273-153.00S.

Miller, Scott W.: *See—*
Schwartz, Lionel H.; Miller, Scott W.; and Severud, Christopher N., Jr., 4,438,479, Cl. 361-213.000.

Miller, Stewart E.: *See—*
Copeland, John A., III; and Miller, Stewart E., 4,438,447, Cl. 357-19.000.

Milliken Research Corporation: *See—*
Eschenbach, Paul W.; and Goineau, Andre M., 4,437,301, Cl. 57-289.000.

Milnes, Kenneth B. Carpet seaming tape activator. 4,438,323, Cl. 219-243.000.

Milsmann, Manfred: *See—*
Weder, Hans G.; Zumbuhl, Otmar; Schwendener, Reto; and Milsmann, Manfred, 4,438,052, Cl. 264-4.600.

Minakata, Matsuo: *See—*
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,437,324, Cl. 68-5.00E.

Minami, Ryohei; Okamura, Shozo; Sunami, Yoshihiko; Hosoi, Takuji; and Kanou, Takuo, to Sumitomo Metal Industries, Ltd. Coal liquefaction process. 4,437,974, Cl. 208-10.000.

Minatelli, John A.: *See—*
Bell, Allyn R.; Doweyko, Arthur M. P.; and Minatelli, John A., 4,438,271, Cl. 546-294.000.

Minemura, Norihiro: *See—*
Yamaguchi, Taturo; and Minemura, Norihiro, 4,438,151, Cl. 427-36.000.

Minnesota Mining and Manufacturing Company: *See—*
Langstraat, Warren L., 4,437,270, Cl. 51-364.000.
McAvoy, Thomas R., 4,437,271, Cl. 51-400.000.

Minolta Camera Kabushiki Kaisha: *See—*
Taniguchi, Nobuyuki, 4,437,742, Cl. 354-21.000.

Mintus, Raymond E.: *See—*
Pickens, John W.; Abraham, John K.; Mintus, Raymond E.; and Thomas, Millicent H., 4,437,902, Cl. 148-12.00F.

Miracle Products, Inc.: *See—*
Albert, Donald; and Tremaglio, Anthony M., 4,438,344, Cl. 307-146.000.

Misawa, Yoshihiko: *See—*
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,437,232, Cl. 29-740.000.

Mishima, Akio; Okuda, Yoshiro; Harada, Tosiharu; Mukaizaka, Akira; and Imai, Tomoyuki, to Toda Kogyo Corp. Acicular ferromagnetic alloy particles and process for producing said particles. 4,437,881, Cl. 75-0.5AA.

Misumi, Kiyohito: *See—*
Furukawa, Mitsuhiki; Miyahara, Michito; Kitahira, Takashi; Misumi, Kiyohito; Shiroyama, Masaharu; and Wada, Toshiaki, 4,438,213, Cl. 501-92.000.

Mita Industrial Co. Ltd.: *See—*
Fushida, Akira; and Kato, Yoshiaki, 4,438,187, Cl. 430-81.000.

Mitarai, Tsuyoshi; and Sato, Kunio, to Casio Computer Co., Ltd. Digital electronic musical instrument. 4,437,377, Cl. 84-1.010.

Mitomo, Mamoru; Moriyoshi, Yusuke; Sakai, Toshikazu; and Osaka, Toshiaki, to National Institute for Researches in Inorganic Materials. Process for producing a translucent β-sialon sintered product. 4,438,051, Cl. 264-1.200.

Mitsubishi Chemical Industries, Limited: *See—*
Ohta, Takayuki; Yanaga, Yukio; and Hino, Seiichi, 4,438,256, Cl. 528-188.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Abe, Haruhiko; Harada, Hiroshi; Denda, Masahiko; Nagasawa, Koichi; and Kono, Yoshio, 4,438,368, Cl. 315-39.000.
Kawai, Jyoji, 4,438,487, Cl. 363-129.000.
Ogawa, Hitoshi, 4,437,821, Cl. 418-104.000.
Ueguri, Shigeo; Komura, Hirotsugu; and Mizuno, Takaji, 4,438,317, Cl. 219-130.510.

Mitsubishi Gas Chemical Co., Ltd.: *See—*
Miyamoto, Akira; Shimizu, Senzo; Harada, Masahiro; Ajiro, Tamotu; and Hara, Hideki, 4,438,257, Cl. 528-347.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Kubo, Masayoshi, 4,437,920, Cl. 156-406.200.

Mitsubishi Kakoki Kaisha Ltd.: *See—*
Nagatsuka, Kenichi, 4,437,202, Cl. 15-320.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Miwa, Naoto; and Nakajima, Hiroshi, 4,438,199, Cl. 435-190.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Kashiwa, Norio; Morita, Yoshinori; and Suga, Michiharu, 4,438,243, Cl. 526-125.000.

Miura, Hirohisa; Satou, Hiroshi; and Natsume, Toshio, to Toyota Jidosha Kabushiki Kaisha. Process for manufacture of metallic magnesium. 4,437,886, Cl. 75-67.00R.

Miura, Kenichi, to Fujitsu Limited. Decoder and method utilizing partial and redundant decoding. 4,438,427, Cl. 340-347.0DD.

Miura, Yasuyuki: *See—*
Shiseki, Yutaka; Yagi, Junichi; and Miura, Yasuyuki, 4,438,358, Cl. 310-51.000.

Miwa, Naoto; and Nakajima, Hiroshi, to Mitsubishi Petrochemical Co., Ltd.; and Unitika Ltd. Measuring composition. 4,438,199, Cl. 435-190.000.

Miyahara, Michito: *See—*
Furukawa, Mitsuhiki; Miyahara, Michito; Kitahira, Takashi; Misumi, Kiyohito; Shiroyama, Masaharu; and Wada, Toshiaki, 4,438,213, Cl. 501-92.000.

Miyake, Yasuhiko: *See—*
Kawai, Kazumichi; Kaneko, Yasuo; Abe, Kelzo; Matsuo, Hideo; Kishi, Yoshinori; Miyake, Yasuhiko; and Matsuyama, Yoshihiro, 4,438,155, Cl. 427-49.000.

Miyamoto, Akira; Shimizu, Senzo; Harada, Masahiro; Ajiro, Tamotu; and Hara, Hideki, to Mitsubishi Gas Chemical Co., Ltd. Process for preparing polyamide with molten dicarboxylic acid component. 4,438,257, Cl. 528-347.000.

Miyamoto, Koichi: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,437,757, Cl. 355-15.000.

Miyamoto, Yoshiaki, to Nippon Oil Seal Industry Co., Ltd. Sealing device. 4,437,673, Cl. 277-65.000.

Miyamoto, Yoshimi, to Nippondenso Company Limited. Connector for automotive ignition devices. 4,437,719, Cl. 339-91.00R.

Miyasaka, Kenji, to Citizen Watch Company Limited. Movement structure for an electronic timepiece. 4,437,768, Cl. 368-88.000.

Miyashita, Takao; Aizawa, Hidekuni; and Takamiya, Toru, to Sony Corporation. Tape cassette having means for adjusting a tape segment length for a thermal printer. 4,437,778, Cl. 400-208.000.

Miyatsuka, Hajime: *See—*
Umemura, Shizuo; Matsufuji, Akihiro; Aonuma, Masashi; Kitamoto, Tatsuji; and Miyatsuka, Hajime, 4,437,882, Cl. 75-0.50R.

Miyazaki, Yasunosuke: *See—*
Kubo, Kunimichi; Miyazaki, Yasunosuke; Yoshikawa, Mamoru; and Miyoshi, Mituji, 4,438,073, Cl. 422-135.000.

Miyoshi, Mituji: *See—*
Kubo, Kunimichi; Miyazaki, Yasunosuke; Yoshikawa, Mamoru; and Miyoshi, Mituji, 4,438,073, Cl. 422-135.000.

Mizelle, Ned W., to Lane Company, The. Rocker-blocking device for rocking chair having projectable/rectractable footrest. 4,437,701, Cl. 297-85.000.

Mizukami, Hidekatu; and Machida, Yoshihiro, to Dainippon Screen Seizo Kabushiki Kaisha. Contact printer. 4,437,759, Cl. 355-91.000.

Mizuno, Takaji: *See—*
Ueguri, Shigeo; Komura, Hirotsugu; and Mizuno, Takaji, 4,438,317, Cl. 219-130.510.

Mizusawa, Kiyoshi: *See—*
Nakajima, Motoo; and Mizusawa, Kiyoshi, 4,438,206, Cl. 436-130.000.

Mizutani, Yoshihisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of forming SOS devices by selective laser treatment and reactive formation of isolation regions. 4,437,225, Cl. 29-576.00B.

Mobil Oil Corporation: *See—*
Ashcraft, Charles R.; and Albertson, Kurt D., 4,438,175, Cl. 428-315.500.
Chester, Arthur W.; McVeigh, Harry A.; and Stover, William A., 4,437,978, Cl. 208-120.000.
Derbyshire, Francis J.; and Varghese, Philip, 4,437,972, Cl. 208-8.0LE.
Dessau, Ralph M.; and Kerr, George T., 4,438,215, Cl. 502-71.000.
Gillespie, Bernard M.; Sarli, Michael S.; and Smith, Kenneth W., 4,437,975, Cl. 208-87.000.
Holden, M. James, 4,438,054, Cl. 264-40.600.
Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,437,976, Cl. 208-97.000.
Richardson, Emmett M.; Chatas, Angelos T.; and Padilla, Joseph R., 4,437,521, Cl. 166-341.000.
Steiner, Robert H.; and Touhsaent, Robert E., 4,438,176, Cl. 428-349.000.
Tsui, Tien-Fung, 4,438,077, Cl. 423-7.000.

Moderlak, Helmut; Koschinek, Gunter; Zinsser, Rolf; Prehler, Richard; and Kretschmann, Bernd, to Davy McKee Aktiengesellschaft. Spinning manifold with serial nozzle blocks. 4,437,827, Cl. 425-378.00S.

Moelker, Huibert C. T.: *See—*
Sanders, Adrianus L. M.; Meuleman, Dirk G.; Moelker, Huibert C. T.; van Dedem, Gijsbert W. K.; and van Houdenhoven, Francois E. A., 4,438,108, Cl. 424-183.000.

Moenaert, Christian: *See—*
Sussmeyer, Robert; Pluvinage, Alain; and Moenaert, Christian, 4,437,940, Cl. 203-49.000.

Moffatt, Bruce S.: *See—*
King, Stephen J.; Moffatt, Bruce S.; and Stewart, John C., 4,437,984, Cl. 209-211.000.

Molded Fiber Glass Companies: *See—*
Mollman, Robert E.; and Silva, Ralph, 4,438,059, Cl. 264-105.000.

Mollan, Raymond A. B., to National Research Development Corporation. Orthopedic diagnostic procedures and apparatus therefor. 4,437,473, Cl. 128-773.000.

Mollman, Robert E.; and Silva, Ralph, to Molded Fiber Glass Companies. Electrically conductive fiber glass articles and sheets. 4,438,059, Cl. 264-105.000.

Momiyama, Kikuo, to Canon Kabushiki Kaisha. Inverted telephoto type wide angle objective of large relative aperture. 4,437,735, Cl. 350-458.000.
Monacelli, Walter J., to Plastics Engineering Company. Bis-(maleamic acid) derivatives of triamines. 4,438,280, Cl. 562-457.000.
Monarch Wine Co., Inc.: *See—*
Zaltsman, Efim, 4,437,291, Cl. 53-319.000.
Mondet, Jean: *See—*
Guillon, Michel; Mondet, Jean; Papantoniou, Christos; and Vandenbossche, Claudine, 4,438,140, Cl. 424-61.000.
Monosov, Yakov A.: *See—*
Doev, Vitaly S.; Kotelyansky, Iosif M.; Kravchenko, Valery B.; Monosov, Yakov A.; Shakhunov, Valery A.; and Kopylov, Jury L., 4,438,443, Cl. 346-153.100.
Monsanto Company: *See—*
Garner, Albert Y., 4,438,034, Cl. 260-239.30R.
Howe, Robert K.; and Lee, Len F., 4,437,875, Cl. 71-90.000.
Howe, Robert K.; and Lee, Len F., 4,437,876, Cl. 71-90.000.
Montres Rado S.A.: *See—*
Gogniat, Paul, 4,437,770, Cl. 368-294.000.
Moore, Paul E.: *See—*
Rieppel, Perry J.; and Moore, Paul E., 4,437,649, Cl. 266-48.000.
Moorehead, James R., to Boeing Company, The. Integrated power plant installation system. 4,437,627, Cl. 244-54.000.
Moraw, Roland, to Hoechst Aktiengesellschaft. Fixing device for copier. 4,438,321, Cl. 219-216.000.
Mordau, Manfred: *See—*
Stolz, Albert; and Mordau, Manfred, 4,437,393, Cl. 98-2.170.
Mori, Kazuhiro: *See—*
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,437,232, Cl. 29-740.000.
Mori, Kensuke; Matsumoto, Hiromi; Suga, Yozo; Nakayama, Tadashi; and Matsumoto, Fumio, to Nippon Steel Corporation. Process for producing a grain-oriented silicon steel sheet or strip having excellent magnetic properties. 4,437,909, Cl. 148-111.000.
Mori, Toshihito: *See—*
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tautomu, 4,438,107, Cl. 424-180.000.
Mori, Toshio: *See—*
Ishikawa, Reiji; Saito, Masaki; Mori, Toshio; and Tamura, Hidemasa, 4,438,160, Cl. 427-214.000.
Mori, Yutaka: *See—*
Nakamura, Keiichi; Haga, Kyosuke; and Mori, Yutaka, 4,437,532, Cl. 180-142.000.
Morishima, Masayuki: *See—*
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,438,311, Cl. 219-10.49R.
Morison, Rodney, to Garrett Corporation, The. Piezoelectric actuator. 4,438,364, Cl. 310-328.000.
Morita, Jun: *See—*
Okuda, Kuniteru; and Morita, Jun, 4,437,493, Cl. 138-45.000.
Morita, Jyun-ichi: *See—*
Saito, Takao; Morita, Jyun-ichi; Hirose, Kikuji; and Kato, Akitosi, 4,437,947, Cl. 204-35.00R.
Morita, Katuhiro; and Kubota, Hitoshi, to Nissan Motor Company, Limited. Tandem master cylinder with a pressure regulating valve for an automotive vehicle brake system. 4,437,310, Cl. 60-562.000.
Morita, Yoshinori: *See—*
Kashiwa, Norio; Morita, Yoshinori; and Suga, Michiharu, 4,438,243, Cl. 526-125.000.
Moriya, Ryusuke; Eguchi, Takeo; and Ohba, Takeo, to Sony Corporation. Tracking control system for an information signal recording and reproducing apparatus. 4,438,465, Cl. 360-22.000.
Moriya, Shigeru; Yoshida, Akio; Hayashi, Yoshihiro; Kubota, Tatsushi; and Tsuge, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Automatic seatbelt system. 4,437,683, Cl. 280-804.000.
Moriya, Shigeru; Yoshida, Akio; Matsunami, Muneharu; Kubota, Tatsushi; Tsuge, Hiroshi; and Nishimura, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Automatic seatbelt system. 4,437,684, Cl. 280-804.000.
Moriyoshi, Yusuke: *See—*
Mitomo, Mamoru; Moriyoshi, Yusuke; Sakai, Toshikazu; and Osaka, Toshiaki, 4,438,051, Cl. 264-1.200.
Morohashi, Kazuo; Kajikawa, Teruo; and Iwai, Sakuya, to Nippon Oil Company Ltd. Method of making a carpet tile. 4,437,918, Cl. 156-322.000.
Moroi, Shiro: *See—*
Aramaki, Minoru; Kita, Yasushi; Nakano, Hishagi; and Moroi, Shiro, 4,438,086, Cl. 423-448.000.
Morrisroe, John P. Artificial seaweed. 4,437,786, Cl. 405-24.000.
Morse, Erwin E., to James River Corporation of Virginia. Cellulose granules and process for producing the same. 4,438,263, Cl. 536-56.000.
Morse, Milton, to APM Corporation. Protective cover for telephone push button array. 4,438,300, Cl. 179-184.000.
Morwing, Bo A., to Telefonaktiebolaget L M Ericsson. Device for sampling and holding the carrier frequency of short duration pulses. 4,438,392, Cl. 324-79.00R.
Mosier, Larry D., to Mallinckrodt, Inc. Radioimmunoassay for fibrinopeptide A. 4,438,209, Cl. 436-542.000.
Moskalik, Leonid M.; Ryadchikov, Vladimir E.; Bykov, Anatoly P.; Kulesh, Vladimir P.; Opasov, Stanislav I.; and Orlov, Anatoly A. Phase-metering device. 4,438,393, Cl. 324-83.00D.
Motorola, Inc.: *See—*
Lee, Robert D., 4,438,388, Cl. 323-313.000.
Murphy, Earl R., 4,438,436, Cl. 343-16.00M.
Ryan, Carl R., 4,438,413, Cl. 332-16.00R.
Selinko, George J., 4,437,718, Cl. 339-61.00M.
Smoot, George W.; and Macnak, Philip P., 4,438,433, Cl. 340-825.440.
Motta, Gianni: *See—*
Nardi, Dante; Tajana, Alberto; Motta, Gianni; Cazzulani, Pietro; and Graziani, Gabriele, 4,438,133, Cl. 424-300.000.
Motta, Raimondo: *See—*
Stabile, Nicolo; Motta, Raimondo; and Gosso, Giancarlo, 4,438,276, Cl. 560-13.000.
Moylan, John J. Mechanically programmable chess play indicator. 4,437,666, Cl. 273-141.00R.
MSS Associates: *See—*
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,438,379, Cl. 318-685.000.
Muacevic, Gojko: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,438,143, Cl. 424-304.000.
Mueller, Claus D.: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.
Muenster, Rolf: *See—*
Rapp, Guenther; Thomas, Erwin; and Muenster, Rolf, 4,438,084, Cl. 423-387.000.
Muhl, Hubertus: *See—*
Hittel, Gerhard; Muhl, Hubertus; Eigl, Franz; and Langer, Werner, 4,437,323, Cl. 66-84.00A.
Muilwijk, Dirk, to U.S. Philips Corporation. Receiver for angle-modulated carrier signals. 4,438,524, Cl. 375-80.000.
Mukaizaka, Akira: *See—*
Mishima, Akio; Okuda, Yoshiro; Harada, Tosiharu; Mukaizaka, Akira; and Imai, Tomoyuki, 4,437,881, Cl. 75-0.5AA.
Muller, Bernard L.: *See—*
Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,438,283, Cl. 568-403.000.
Muller, Leo: *See—*
Brandenstein, Manfred; and Muller, Leo, 4,437,556, Cl. 192-98.000.
Munscher, Wolfgang, to Siemens Aktiengesellschaft. Data display device. 4,438,458, Cl. 358-254.000.
Murakami, Naoyuki; and Zyo, Hiroshi, to Murakami, Naoyuki. Loudspeaker. 4,437,540, Cl. 181-147.000.
Murase, Ichiki; Fujita, Fumio; Ohnishi, Toshihiro; and Tamura, Toshifumi, to Sumitomo Chemical Company, Limited. Highly dielectric polysaccharides. 4,438,262, Cl. 536-43.000.
Murata, Masayoshi: *See—*
Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, 4,438,113, Cl. 424-246.000.
Murata, Yukio: *See—*
Iwata, Minoru; Murata, Yukio; and Shibata, Tomoyuki, 4,437,811, Cl. 417-8.000.
Murphy, Earl R., to Motorola Inc. Millimeter wave monopulse comparator circuit. 4,438,436, Cl. 343-16.00M.
Muto, Katsuya: *See—*
Akita, Yoshio; Maruyama, Toshinori; and Muto, Katsuya, 4,438,384, Cl. 320-48.000.
Myers, James F.; and Thoemke, Lloyd C. Double secondary seal for floating roof tanks. 4,437,577, Cl. 220-224.000.
Myers, Paul A., to Raymark Industries, Inc. Fused metallic friction materials. 4,438,004, Cl. 252-12.000.
Naab, Paul: *See—*
Boberg, Michael; Habich, Dieter; Metzger, Karl G.; and Naab, Paul, 4,438,114, Cl. 424-248.510.
Nabata, Hiroyuki: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Kazushige; and Hata, Shun-ichi, 4,438,115, Cl. 424-250.000.
Naegele, Paul: *See—*
Oppenlaender, Knut; Strickler, Rainer; Seib, Karl; and Naegele, Paul, 4,438,094, Cl. 424-59.000.
Naftulin, Henry. Apparatus for collecting fluids. 4,437,472, Cl. 128-767.000.
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. 2-(2-Fluoro-4-halo-5-substituted phenyl) hydantoins and use. 4,437,877, Cl. 71-90.000.
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Kazushige; and Hata, Shun-ichi, to Chugai Seiyaku Kabushiki Kaisha. Compositions and methods for treating diseases in circulatory organs. 4,438,115, Cl. 424-250.000.
Nagaoka, Tateki: *See—*
Onoda, Shigeyoshi; and Nagaoka, Tateki, 4,437,656, Cl. 271-10.000.
Nagasawa, Koichi: *See—*
Abe, Haruhiko; Harada, Hiroshi; Denda, Masahiko; Nagasawa, Koichi; and Kono, Yoshio, 4,438,368, Cl. 315-39.000.
Nagatsuka, Kenichi, to Mitsubishi Kakoki Kaisha Ltd.; Kakoki Engineering Service Co., Ltd.; and Genshi-Ryoku Daiko Co., Ltd. Automatic wall cleaning machine. 4,437,202, Cl. 15-320.000.
Naitoh, Hiromitsu: *See—*
Nitto, Hajime; and Naitoh, Hiromitsu, 4,437,905, Cl. 148-16.000.

Nakae, Kiyohiko: *See—*
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Kotani, Kozo; and Hosono, Hidekazu, 4,438,238, Cl. 525-240.000.
Nakagawa, Masao; and Nishida, Tatehiko, to Kanegafuchi Chemical Industry Co., Ltd. Heat resistant expandable plastic particles and molded articles produced therefrom. 4,438,222, Cl. 521-60.000.
Nakagawa, Satoshi: *See—*
Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, 4,438,193, Cl. 430-505.000.
Nakajima, Hiroshi: *See—*
Miwa, Naoto; and Nakajima, Hiroshi, 4,438,199, Cl. 435-190.000.
Nakajima, Motoo; and Mizusawa, Kiyoshi, to Kikkoman Corporation. Method for determination of formaldehyde. 4,438,206, Cl. 436-130.000.
Nakajima, Yoshinori, to Ricoh Co., Ltd. Input signal control device. 4,438,507, Cl. 364-900.000.
Nakamura, Keiichi; Haga, Kyosuke; and Mori, Yutaka, to Toyoda Koki Kabushiki Kaisha. Steering force controller for a power steering device. 4,437,532, Cl. 180-142.000.
Nakamura, Nobuo: *See—*
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,438,197, Cl. 435-119.000.
Nakano, Hirofumi: *See—*
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,438,197, Cl. 435-119.000.
Nakano, Hishagi: *See—*
Aramaki, Minoru; Kita, Yasushi; Nakano, Hishagi; and Moroi, Shiro, 4,438,086, Cl. 423-448.000.
Nakano, Shozaburo: *See—*
Tateishi, Junji; Ishikawa, Takeharu; Nakano, Shozaburo; and Nishiyama, Noboru, 4,437,906, Cl. 148-26.000.
Nakano, Tadashi; Tamura, Hiroyuki; and Kubo, Naoki, to Sumitomo Metal Mining Company Limited. Method for manufacture of arsenious anhydride. 4,438,079, Cl. 423-87.000.
Nakashima, Shinobu: *See—*
Tanaka, Chiaki; Nakashima, Shinobu; and Kondow, Makoto, 4,438,240, Cl. 525-420.000.
Nakayama, Tadashi: *See—*
Mori, Kensuke; Matsumoto, Hiromi; Suga, Yozo; Nakayama, Tadashi; and Matsumoto, Fumio, 4,437,909, Cl. 148-111.000.
Nozawa, Tadao; Yamamoto, Takaaki; Nakayama, Tadashi; Matsumoto, Fumio; and Hayami, Satohiro, 4,437,910, Cl. 148-112.000.
Nalewajek, David, to Allied Corporation. Recovery of gadolinium and gallium oxides. 4,438,078, Cl. 423-21.500.
Nall, James B.; and King, Jeffery J., to Brahams, Ronald Jay. Composition and method of masking. 4,438,227, Cl. 524-33.000.
Namekata, Kiyokazu: *See—*
Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, 4,437,756, Cl. 355-14.00R.
Nandate, Masaaki: *See—*
Suguri, Masayoshi; Yamada, Kazuo; and Nandate, Masaaki, 4,438,063, Cl. 264-311.000.
Naoki, Makoto: *See—*
Okada, Yoshio; Terauchi, Takashi; Naoki, Makoto; and Hino, Masatoshi, 4,438,021, Cl. 502-341.000.
Nardi, Dante; Tajana, Alberto; Motta, Gianni; Cazzulani, Pietro; and Graziani, Gabriele, to Recordati S.A. Therapeutically effective derivatives of cystine. 4,438,133, Cl. 424-300.000.
Narita, Ryuho; Yamamori, Kenji; Oota, Hiroyuki; and Aoshima, Terutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric rice cooker. 4,438,324, Cl. 219-441.000.
Narozny, Ronald S., to Thomas & Betts Corporation. Three-row connector for mass terminating flat cable. 4,437,723, Cl. 339-99.00R.
Nathaniel, Elmer O.; and Eibert, John, Jr. Skating surface. 4,438,003, Cl. 252-12.000.
National Can Corporation: *See—*
Hinds, James J.; Hoeflich, John C.; and Kolodziej, George C., 4,437,985, Cl. 209-538.000.
National Institute for Researches in Inorganic Materials: *See—*
Mitomo, Mamoru; Moriyoshi, Yusuke; Sakai, Toshikazu; and Osaka, Toshiaki, 4,438,051, Cl. 264-1.200.
National Research Development Corporation: *See—*
Graham, Neil B., 4,438,258, Cl. 528-361.000.
Jones, Robert L.; and Wilson, Norman H., 4,438,136, Cl. 424-309.000.
Mollan, Raymond A. B., 4,437,473, Cl. 128-773.000.
Pham, Duc T., 4,437,635, Cl. 248-122.000.
Shirley, Martin W., 4,438,097, Cl. 424-88.000.
National Starch and Chemical Corporation: *See—*
Tessler, Martin M.; and Neigel, Dennis V., 4,438,047, Cl. 260-513.00R.
Natsume, Toshio: *See—*
Miura, Hirohisa; Satou, Hiroshi; and Natsume, Toshio, 4,437,886, Cl. 75-67.00R.
Naylor, Carter G.: *See—*
Nieh, Edward C. Y.; and Naylor, Carter G., 4,438,045, Cl. 260-501.130.
NCR Corporation: *See—*
Romano-Moran, Roberto, 4,438,157, Cl. 427-93.000.
Nebel, Sergio: *See—*
Mathais, Henri; Commandeur, Raymond; Pontoglio, Achille; and Nebel, Sergio, 4,438,027, Cl. 252-581.000.
Neff, James A., to Mac Valves, Inc. Low-wattage solenoid. 4,438,418, Cl. 335-255.000.
Negosta, Edward. Mail box signal. 4,437,607, Cl. 232-35.000.
Neigel, Dennis V.: *See—*
Tessler, Martin M.; and Neigel, Dennis V., 4,438,047, Cl. 260-513.00R.
Nelson, Jeffrey. Implement for measuring skin temperatures. 4,437,471, Cl. 128-736.000.
Nelson, Peter: *See—*
Turro, Jerome; and Nelson, Peter, 4,437,265, Cl. 49-57.000.
Nelson, Philip E.; and Takada, Norihisa, to Purdue Research Foundation. Method for controlling consistency of tomato products. 4,437,934, Cl. 159-47.100.
Nelson, Wayne F., to A. Schulman, Inc. Modified ionomer blend and application thereof. 4,438,162, Cl. 427-318.000.
Neptune Water Meter Company: *See—*
Karjalainen, William G., 4,437,344, Cl. 73-197.000.
NesTier Corporation: *See—*
Davis, Walter G., 4,437,434, Cl. 119-45.00R.
Netteland, Loyal G.: *See—*
Piljay, Robert E.; and Netteland, Loyal G., 4,437,462, Cl. 128-207.000.
New Generation Foods, Inc.: *See—*
Colby, Ronald W.; and Spicer, Arnold, 4,438,146, Cl. 426-448.000.
Newman, Leon A.: *See—*
Chenausky, Peter P.; Newman, Leon A.; and Drinkwater, Erroll H., 4,438,514, Cl. 372-64.000.
Newman, Oliver M. G.; Palmer, David J.; and Pammenter, Robert V., to Electrolytic Zinc Company of Australasia Limited. Process for solution control in an electrolytic zinc plant circuit. 4,437,953, Cl. 204-119.000.
Newton, Charles L.; and Fuini, Dennis L., to Air Products and Chemicals, Inc. Recovery of power from vaporization of liquefied natural gas. 4,437,312, Cl. 60-648.000.
NGK Spark Plug Co., Ltd.: *See—*
Suzuki, Shin; and Sato, Toshihiko, 4,437,440, Cl. 123-145.00A.
N'Guyen, Quang L.: *See—*
Koulbanis, Constantin; N'Guyen, Quang L.; Zabotto, Arlette; and Plot, Josiane, 4,437,895, Cl. 106-245.000.
Nicholas, Karl W.: *See—*
Rog, Joseph W.; Waits, Charles G.; and Nicholas, Karl W., 4,438,391, Cl. 324-71.100.
Nicholas Proprietary Limited: *See—*
Kaufman, Jeffrey L., 4,438,085, Cl. 423-419.00P.
Nicholson, Raymond; and Parker, Donald O. Coin detector apparatus. 4,437,558, Cl. 194-97.00R.
Nieh, Edward C. Y.; and Naylor, Carter G., to Texaco Inc. Amphoteric surfactants. 4,438,045, Cl. 260-501.130.
Nigmela, Tapio. Means for making a ski trail. 4,437,245, Cl. 37-222.000.
Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See—*
Ohashi, Shigeo, 4,437,728, Cl. 350-96.200.
Nijhof, W. A. J., to U. S. Industries, Inc. Poultry broiler cage. 4,437,433, Cl. 119-18.000.
Nilsson, Kenth: *See—*
Bolmgren, Jan; and Nilsson, Kenth, 4,438,441, Cl. 346-140.00R.
Nippin Shokubai Kagako Kogyo Co., Ltd.: *See—*
Takata, Masahiro; Aoki, Ryuji; and Sato, Takahisa, 4,438,217, Cl. 502-205.000.
Nippon Electric Co., Ltd.: *See—*
Shoji, Masashi, 4,438,349, Cl. 307-362.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Matsumoto, Toyosaku, 4,438,510, Cl. 369-271.000.
Okumura, Takatoshi, 4,437,379, Cl. 84-1.220.
Nippon Gijutsu Boeki Co., Ltd.: *See—*
Yazawa, Nobuharu; and Sakaguchi, Yasunori, 4,438,405, Cl. 328-152.000.
Nippon Kogaku K.K.: *See—*
Fujiu, Takamitsu; Ogino, Makoto; Kariya, Michio; and Ichimura, Takeo, 4,437,192, Cl. 3-1.900.
Iizuka, Yutaka, 4,437,734, Cl. 350-454.000.
Ohno, Masato; and Ohsawa, Keiji, 4,437,747, Cl. 354-126.000.
Takahashi, Tomowaki; Konno, Kunio; and Sasaya, Toshihiro, 4,437,733, Cl. 350-427.000.
Terui, Nobuhiko; and Magariyama, Kenichi, 4,437,744, Cl. 354-442.000.
Nippon Oil Company, Ltd.: *See—*
Kubo, Kunimichi; Miyazaki, Yasunosuke; Yoshikawa, Mamoru; and Miyoshi, Mituji, 4,438,073, Cl. 422-135.000.
Kubo, Toshihiko; Ichidate, Minoru; Kawai, Toshiyuki; Yonehara, Sadao; Koiwai, Yoshihisa; and Endo, Kazuhiko, 4,437,883, Cl. 75-0.50C.
Morohashi, Kazuo; Kajikawa, Teruo; and Iwai, Sakuya, 4,437,918, Cl. 156-322.000.
Nippon Oil and Fats, Co., Ltd.: *See—*
Araki, Masatada; and Tanaka, Yukio, 4,437,800, Cl. 407-119.000.
Nippon Oil Seal Industry Co., Ltd.: *See—*
Miyamoto, Yoshiaki, 4,437,673, Cl. 277-65.000.
Nippon Soken, Inc.: *See—*
Egami, Tsuneyuki; Kawai, Hisasi; Kohama, Tokio; and Obayashi, Hideki, 4,437,345, Cl. 73-204.000.
Iwamoto, Kenzi; and Omata, Katsuhiro, 4,437,311, Cl. 60-602.000.
Nippon Steel Corporation: *See—*
Furukawa, Takashi; and Endo, Michio, 4,437,903, Cl. 148-12.00F.
Mori, Kensuke; Matsumoto, Hiromi; Suga, Yozo; Nakayama, Tadashi; and Matsumoto, Fumio, 4,437,909, Cl. 148-111.000.
Nitto, Hajime; and Naitoh, Hiromitsu, 4,437,905, Cl. 148-16.000.

Nozawa, Tadao; Yamamoto, Takaaki; Nakayama, Tadashi; Matsumoto, Fumio; and Hayami, Satohiro, 4,437,910, Cl. 148-112.000.
Ozawa, Masaichi, 4,437,620, Cl. 242-83.000.
Saito, Takao; Morita, Jyun-ichi; Hirose, Kikuji; and Kato, Akitosi, 4,437,947, Cl. 204-35.00R.
Sato, Takashi; and Ozawa, Tsutomu, 4,437,907, Cl. 148-31.550.

Nippon Tungsten Co., Ltd.: *See—*
Furukawa, Mitsuhiki; Miyahara, Michito; Kitahira, Takashi; Misumi, Kiyohito; Shiroyama, Masaharu; and Wada, Toshiaki, 4,438,213, Cl. 501-92.000.

Nippondenso Co., Ltd.: *See—*
Akita, Yoshio; Maruyama, Toshinori; and Muto, Katsuya, 4,438,384, Cl. 320-48.000.
Eguchi, Osamu; and Fukui, Tomonori, 4,437,391, Cl. 98-2.010.
Isomura, Shigenori; Kobayashi, Akio; Kato, Katsushi; Kowada, Ichiro; and Nishii, Sachio, 4,437,446, Cl. 123-492.000.
Ito, Shinzo; Kato, Tateshi; Noma, Takumi; Sugimoto, Soichiro; and Toiyama, Seigi, 4,437,341, Cl. 73-119.00A.
Miyamoto, Yoshimi, 4,437,719, Cl. 339-91.00R.
Nojiri, Tadao; Kanemaru, Kenji; Nishikawa, Takayoshi; Matsuyama, Masahiro; and Ito, Yoji, 4,438,422, Cl. 340-52.00F.
Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, 4,437,445, Cl. 123-491.000.
Tsuchida, Takashi; Kondo, Nobuo; Okada, Kazukiyo; and Okuda, Yutaka, 4,438,425, Cl. 340-55.000.
Yasui, Toshio, 4,438,424, Cl. 340-52.00H.

Nir, Aharon; Amiel, Abraham J.; and Krant, Jonathan M., to Yeda Research & Development Co. Ltd. System for heat storage particularly for using in agriculture. 4,437,263, Cl. 47-1.00R.

Nishida, Tatehiko: *See—*
Nakagawa, Masao; and Nishida, Tatehiko, 4,438,222, Cl. 521-60.000.

Nishii, Sachio: *See—*
Isomura, Shigenori; Kobayashi, Akio; Kato, Katsushi; Kowada, Ichiro; and Nishii, Sachio, 4,437,446, Cl. 123-492.000.

Nishikawa, Takayoshi: *See—*
Nojiri, Tadao; Kanemaru, Kenji; Nishikawa, Takayoshi; Matsuyama, Masahiro; and Ito, Yoji, 4,438,422, Cl. 340-52.00F.

Nishikori, Tsutomu; and Yoshiki, Yasuo, to Toyo Kogyo Co., Ltd.; and Delta Kogyo Co., Ltd. Seat back reclining mechanism. 4,437,703, Cl. 297-362.000.

Nishimoto, Shigeru: *See—*
Gaino, Mitsunori; Iijima, Ikuo; Nishimoto, Shigeru; Ikeda, Kuichiro; and Fujii, Tokuo, 4,438,035, Cl. 260-239.30B.

Nishimura, Masaaki: *See—*
Shibata, Takashi; and Nishimura, Masaaki, 4,438,525, Cl. 381-63.000.

Nishimura, Yoshichika: *See—*
Ishizuka, Tetsuo; Hotta, Hiroshi; and Nishimura, Yoshichika, 4,437,861, Cl. 44-1.00R.

Nishimura, Yuji: *See—*
Moriya, Shigeru; Yoshida, Akio; Matsunami, Muneharu; Kubota, Tatsushi; Tsuge, Hiroshi; and Nishimura, Yuji, 4,437,684, Cl. 280-804.000.

Nishiyama, Noboru: *See—*
Tateishi, Junji; Ishikawa, Takeharu; Nakano, Shozaburo; and Nishiyama, Noboru, 4,437,906, Cl. 148-26.000.

Nissan Motor Co., Ltd.: *See—*
Hosaka, Akio; Yamamoto, Akito; and Oshiage, Katsunori, 4,437,342, Cl. 73-119.00A.
Kakimoto, Toshihiko, 4,437,653, Cl. 267-140.100.
Morita, Katuhiro; and Kubota, Hitoshi, 4,437,310, Cl. 60-562.000.
Nozawa, Koji, 4,437,550, Cl. 192-324.000.
Yamaguchi, Hiroshi, 4,437,442, Cl. 123-417.000.
Yasuhara, Seishi, 4,437,444, Cl. 123-458.000.

Nitschke, John S.: *See—*
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,437,871, Cl. 65-104.000.
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,437,872, Cl. 65-104.000.

Nitschke, Norman C.: *See—*
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,437,871, Cl. 65-104.000.
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,437,872, Cl. 65-104.000.

Nitto, Hajime; and Naitoh, Hiromitsu, to Nippon Steel Corporation. Process for continuously annealing a cold-rolled low carbon steel strip. 4,437,905, Cl. 148-16.000.

Nogita, Shunsuke: *See—*
Saito, Yukio; Nogita, Shunsuke; Watanabe, Syoji; and Baba, Kenji, 4,437,992, Cl. 210-603.000.

Nojiri, Tadao; Kanemaru, Kenji; Nishikawa, Takayoshi; Matsuyama, Masahiro; and Ito, Yoji, to Nippondenso Co., Ltd. Warning method and system for vehicles. 4,438,422, Cl. 340-52.00F.

Noma, Takumi: *See—*
Ito, Shinzo; Kato, Tateshi; Noma, Takumi; Sugimoto, Soichiro; and Toiyama, Seigi, 4,437,341, Cl. 73-119.00A.

Nomadic Structures, Inc.: *See—*
Zeigler, Theodore R., 4,437,275, Cl. 52-109.000.

Nomoto, Reishi; Akimoto, Masahiro; and Takahashi, Masayoshi, to Janome Sewing Machine Co., Ltd. Medical treatment sewing machine. 4,437,465, Cl. 128-340.000.

Nomura, Isshi; and Akagi, Motonobu, to Aisin Seiki Kabushiki Kaisha. Electrically driven flow control valve assembly. 4,437,645, Cl. 251-65.000.

Nordco Limited: *See—*
Fancey, Everett G.; Peters, John V.; and Tucker, Russell E., 4,437,254, Cl. 43-4.000.

Nordin, Ivan C.: *See—*
Schweiss, Dietrich; and Nordin, Ivan C., 4,438,092, Cl. 424-273.00P.

Nordmeyer, Robert A.: *See—*
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.

Nordson Corporation: *See—*
Coker, William R., 4,437,581, Cl. 222-54.000.
Sprague, Clyde D., 4,437,594, Cl. 222-544.000.

Norris, Robert D.: *See—*
McEuen, Bruce K.; and Norris, Robert D., 4,438,080, Cl. 423-112.000.

North American Philips Electric Corp.: *See—*
Hicks, John M.; and Engel, Joseph C., 4,438,369, Cl. 315-49.000.

Nothnagel, Joseph L., to Freeman Chemical Corporation. Continuous stream mixer having variable dwell time chamber with auger. 4,438,072, Cl. 422-133.000.

Nozawa, Koji, to Nissan Motor Company, Limited. Industrial vehicle driving apparatus. 4,437,550, Cl. 192-324.000.

Nozawa, Tadao; Yamamoto, Takaaki; Nakayama, Tadashi; Matsumoto, Fumio; and Hayami, Satohiro, to Nippon Steel Corporation. Process for producing grain-oriented electromagnetic steel sheet. 4,437,910, Cl. 148-112.000.

Nozue, Shigehiro; Fukuoka, Tatsuhiko; and Sugiura, Hideaki, to Taiho Kogyo Co., Ltd. Thrust bearing with tapered lands. 4,437,215, Cl. 29-149.50R.

Nuodex Inc.: *See—*
Petronella, Joseph, 4,438,038, Cl. 260-414.000.

Nutter, Norman E., to General Electric Company. Turning gear interlock. 4,437,809, Cl. 415-41.000.

Nyffeler, Corti AG: *See—*
Buri, Hermann; and Karth, Beat, 4,437,292, Cl. 53-357.000.

Oak Industries Inc.: *See—*
Van Zeeland, Anthony J., 4,438,301, Cl. 200-16.00C.

Obayashi, Hideki: *See—*
Egami, Tsuneyuki; Kawai, Hisasi; Kohama, Tokio; and Obayashi, Hideki, 4,437,345, Cl. 73-204.000.

Ober, John W.; and Ferry, John M., to Omnitronics Research Corporation. Multiple function personal security alarm. 4,438,428, Cl. 340-521.000.

Obitz, Daniel, to Synthelabo. Isoquinoline amidoxime derivatives. 4,438,121, Cl. 424-258.000.

Obland, Donald R. Drug dispensing apparatus and removal tool. 4,437,579, Cl. 221-25.000.

O'Brian, Edward D.; and Phelan, Charles, to O'Brian, Edward D. Folding structure employing a Sarrus linkage. 4,437,413, Cl. 108-111.000.

O'Brien, Michael B. Insulation support hanger. 4,437,282, Cl. 52-407.000.

Occidental Oil Shale, Inc.: *See—*
Cha, Chang Y.; and McCarthy, Harry E., 4,437,519, Cl. 166-259.000.

Ochiai, Kuniaki; Horii, Masami; and Ishii, Hidekazu, to Tokyo Electric Co., Ltd. Dot printer head. 4,437,775, Cl. 400-124.000.

O'Connor, Rodney J., to Romec Environmental Research & Development, Inc. Dribble ring. 4,437,583, Cl. 222-108.000.

Oda, Shinichiro: *See—*
Kamei, Hideaki; Yamanaka, Kazuhiko; Fujisawa, Haruhiko; and Oda, Shinichiro, 4,438,468, Cl. 360-92.000.

Odaka, Kentaro, to Sony Corporation. Method for editing of PCM signal and apparatus thereof. 4,438,464, Cl. 360-13.000.

Oeder, Dieter; Ziegler, Walter; Daeuble, Manfred; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, to BASF Aktiengesellschaft. Lubricant, containing esterified ethylene/acrylic acid or ethylene/-maleic acid copolymers as the active ingredient, for moulding chlorine-containing thermoplastics. 4,438,008, Cl. 252-56.00R.

Officine Meccaniche Savi Antonio S.p.A.: *See—*
Savi, Antonio, 4,437,398, Cl. 99-587.000.

Ogawa, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Shaft seal for pump means. 4,437,821, Cl. 418-104.000.

Ogawa, Tadatoshi: *See—*
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Kotani, Kozo; and Hosono, Hidekazu, 4,438,238, Cl. 525-240.000.

Ogino, Makoto: *See—*
Fujiu, Takamitsu; Ogino, Makoto; Kariya, Michio; and Ichimura, Takeo, 4,437,192, Cl. 3-1.900.

Ogita, Koichi, to Yokota Co., Ltd. Curtain drawer arrangement. 4,437,506, Cl. 160-331.000.

Oh, Indong. Protrusio cup. 4,437,193, Cl. 3-1.912.

O'Hanlon, Tom A.; Madonna, Peter L.; and Wallace, Gearld F., to Flow Industries, Inc. Hand held water drilling apparatus. 4,437,525, Cl. 175-218.000.

Ohashi, Shigeo, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Photoswitch. 4,437,728, Cl. 350-96.200.

Ohba, Takeo; and Koga, Hirohisa, to Sony Corporation. Deflectable transducer mounting assembly. 4,438,469, Cl. 360-109.000.

Ohba, Takeo: *See—*
Moriya, Ryusuke; Eguchi, Takeo; and Ohba, Takeo, 4,438,465, Cl. 360-22.000.

Ohie, Tomonori, to Diesel Kiki Co., Ltd. Electronic fuel injection feedback control method for internal combustion engines. 4,438,496, Cl. 364-431.050.

Ohloff, Gunther: *See—*
Skorianetz, Werner; and Ohloff, Gunther, 4,438,023, Cl. 252-522.00R.

Ohlsson, Ingemar; and Wolf, Sten J. L. Ear-cap. 4,437,538, Cl. 181-129.000.

Ohmura, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Thin sheet sorting apparatus. 4,437,571, Cl. 209-551.000.

Ohnishi, Toshihiro: *See—*
Murase, Ichiki; Fujita, Fumio; Ohnishi, Toshihiro; and Tamura, Toshifumi, 4,438,262, Cl. 536-43.000.

Ohno, Masato; and Ohsawa, Keiji, to Nippon Kogaku K.K. Device for mounting an electronic flash unit. 4,437,747, Cl. 354-126.000.

Ohsawa, Keiji: *See—*
Ohno, Masato; and Ohsawa, Keiji, 4,437,747, Cl. 354-126.000.

Ohta, Ryuji, to Jidosha Kiki Co., Ltd. Power-servo booster. 4,437,390, Cl. 92-84.000.

Ohta, Takayuki; Yanaga, Yukio; and Hino, Seiichi, to Mitsubishi Chemical Industries, Limited. Copolyamide acid and copolyimide. 4,438,256, Cl. 528-188.000.

Ohtsuki, Osamu: *See—*
Chibata, Ichiro; Sumi, Akihiko; Ohtsuki, Osamu; and Izutsu, Nozomu, 4,438,044, Cl. 260-501.120.

Okada, Kazukiyo: *See—*
Tsuchida, Takashi; Kondo, Nobuo; Okada, Kazukiyo; and Okuda, Yutaka, 4,438,425, Cl. 340-55.000.

Okada, Yoshio; Terauchi, Takashi; Naoki, Makoto; and Hino, Masatoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Catalyst for dehydrocoupling of toluene or xylene. 4,438,021, Cl. 502-341.000.

Okamura Corporation: *See—*
Suzuki, Hideo, 4,438,318, Cl. 219-137.0PS.

Okamura, Shozo: *See—*
Minami, Ryohei; Okamura, Shozo; Sunami, Yoshihiko; Hosoi, Takuji; and Kanou, Takuo, 4,437,974, Cl. 208-10.000.

Okinaka, Yutaka; Smith, Craig G.; and Smith, Lawrence E., to Bell Telephone Laboratories, Incorporated. Copper plating procedure. 4,437,948, Cl. 204-52.00R.

Okubo, Shuji: *See—*
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,438,197, Cl. 435-119.000.

Okuda, Kuniteru; and Morita, Jun. Constant flow control valve. 4,437,493, Cl. 138-45.000.

Okuda, Yoshiro: *See—*
Mishima, Akio; Okuda, Yoshiro; Harada, Tosiharu; Mukaizaka, Akira; and Imai, Tomoyuki, 4,437,881, Cl. 75-0.5AA.

Okuda, Yutaka: *See—*
Tsuchida, Takashi; Kondo, Nobuo; Okada, Kazukiyo; and Okuda, Yutaka, 4,438,425, Cl. 340-55.000.

Okugawa, Michihide, to Dainichi-Nippon Cables, Ltd. Process for treating cyanic liquid containing copper(I) cyanide complex ion. 4,437,996, Cl. 210-718.000.

Okumura, Hiroshi: *See—*
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,438,311, Cl. 219-10.49R.

Okumura, Takatoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument of waveform memory readout type. 4,437,379, Cl. 84-1.220.

Oleck, Stephen M.; and Wilson, Robert C., Jr., to Mobil Oil Corporation. Two-stage hydrocarbon dewaxing hydrotreating process. 4,437,976, Cl. 208-97.000.

Olin Corporation: *See—*
Beck, Alexander F.; and Winter, Joseph, 4,437,943, Cl. 204-16.000.
Grynkewich, Gregory W., 4,438,013, Cl. 252-146.000.
Pryor, Michael J.; and Tyler, Derek E., 4,437,508, Cl. 164-418.000.

Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Horling, Peter; Hetterich, Hermann; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Non-machining method of manufacturing a solid-bottomed or internally flanged bearing race. 4,437,214, Cl. 29-149.5DP.

Olschewski, Armin; Hetterich, Hermann; and Horling, Peter, to SKF Kugellagerfabriken GmbH. Method of making a thin-walled bearing bushing. 4,437,330, Cl. 72-358.000.

Olson, Floyd V. Particle spreader apparatus. 4,437,613, Cl. 239-688.000.

Olson, George E., to A. O. Smith Harvestore Products, Inc. Overload mechanism for the system of a bottom silo unloader. 4,437,806, Cl. 414-307.000.

Olson, Raymond E., to Profold, Inc. Bottom sheet feed system. 4,437,658, Cl. 271-125.000.

Olympus Optical Co., Ltd.: *See—*
Ikari, Kazuo, 4,437,750, Cl. 354-155.000.
Sato, Eiichi; Shimizu, Akira; and Yanagisawa, Kazuhisa, 4,438,186, Cl. 430-53.000.

Omae, Michinobu; and Hirano, Takashi, to Yamato Scale Company, Ltd. Combination weighing machine. 4,437,527, Cl. 177-25.000.

Omata, Katsuhiro: *See—*
Iwamoto, Kenzi; and Omata, Katsuhiro, 4,437,311, Cl. 60-602.000.

Omnetics, Inc.: *See—*
Lambert, Roger T., 4,437,726, Cl. 339-252.00P.

Omnitronics Research Corporation: *See—*
Ober, John W.; and Ferry, John M., 4,438,428, Cl. 340-521.000.

Omori, Hiroshi: *See—*
Anahara, Meiji; and Omori, Hiroshi, 4,437,302, Cl. 57-333.000.

Omron Tateisi Electronics Company: *See—*
Uchida, Yasuo, 4,438,326, Cl. 235-379.000.

Ono, Hironobu: *See—*
Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, 4,437,445, Cl. 123-491.000.

Ono, Masayuki, to Kabushiki Kaisha Tomoku. Process of manufacturing of reinforced corrugated cardboard type packaging container. 4,437,850, Cl. 493-89.000.

Onoda, Shigeyoshi; and Nagaoka, Tateki, to Canon Kabushiki Kaisha. Sheet feeding device. 4,437,656, Cl. 271-10.000.

Oota, Hiroyuki: *See—*
Narita, Ryuho; Yamamori, Kenji; Oota, Hiroyuki; and Aoshima, Terutaka, 4,438,324, Cl. 219-441.000.

Ooue, Michio: *See—*
Sudo, Ryoichi; Shoji, Fusaji; Watanabe, Takeshi; Suzuki, Kenkichi; and Ooue, Michio, 4,437,731, Cl. 350-340.000.

Opasov, Stanislav I.: *See—*
Moskalik, Leonid M.; Ryadchikov, Vladimir E.; Bykov, Anatoly P.; Kulesh, Vladimir P.; Opasov, Stanislav I.; and Orlov, Anatoly A., 4,438,393, Cl. 324-83.00D.

Opelika Manufacturing Corporation: *See—*
Brocklehurst, Charles E.; and Cooper, Bruce H., 4,437,369, Cl. 83-18.000.

Oppenlaender, Knut; Strickler, Rainer; Seib, Karl; and Naegele, Paul, to BASF Aktiengesellschaft. Cosmetic formulations containing oxyethylated diphenylamines as sun screen agents. 4,438,094, Cl. 424-59.000.

Oppermann, Wilhelm: *See—*
Balser, Klaus; Tuebner, Helwig; and Oppermann, Wilhelm, 4,438,264, Cl. 536-91.000.

Optical Radiation Corp.: *See—*
Hahs, Gregory L., 4,437,194, Cl. 3-13.000.

Oriol, Marcel. Installation for monitoring an endless cloth conveyor belt. 4,437,563, Cl. 198-810.000.

Orlov, Anatoly A.: *See—*
Moskalik, Leonid M.; Ryadchikov, Vladimir E.; Bykov, Anatoly P.; Kulesh, Vladimir P.; Opasov, Stanislav I.; and Orlov, Anatoly A., 4,438,393, Cl. 324-83.00D.

Orn, John F.: *See—*
McGrann, Harold J.; Orn, John F.; and Pallaver, Matthew C., 4,437,351, Cl. 73-862.050.

Orndorff, Roy L., Jr.: *See—*
Kramer, James H.; Orndorff, Roy L., Jr.; and Stephens, James M., 4,437,688, Cl. 285-95.000.

Orne, Laurence E. Variable gain amplifier. 4,438,410, Cl. 330-278.000.

O'Rourke, Joseph D.; and Katcher, Jay H., to General Foods Corporation. Process for making an improved dry instant pudding mix. 4,438,148, Cl. 426-579.000.

Osaka, Toshiaki: *See—*
Mitomo, Mamoru; Moriyoshi, Yusuke; Sakai, Toshikazu; and Osaka, Toshiaki, 4,438,051, Cl. 264-1.200.

Oshiage, Katsunori: *See—*
Hosaka, Akio; Yamamoto, Akito; and Oshiage, Katsunori, 4,437,342, Cl. 73-119.00A.

Oshiki, Mitsumasa; and Kawakami, Susumu, to Fujitsu Limited. Magnetic head for perpendicular magnetic recording system. 4,438,471, Cl. 360-125.000.

Oswald, Joseph A., Jr., to Du Pont de Nemours, E. I., and Company. Solder bonding process. 4,437,236, Cl. 29-879.000.

Ota, Hiroshi: *See—*
Yokoyama, Masao; Kon, Masaharu; and Ota, Hiroshi, 4,437,682, Cl. 280-764.100.

Ota, Seiiti: *See—*
Satsuki, Teruhisa; Ota, Seiiti; and Tabata, Setsuko, 4,438,025, Cl. 252-545.000.

Otawa, Shuji: *See—*
Shida, Masaharu; Ueda, Makoto; Otawa, Shuji; Mandai, Masaaki; and Sato, Katsuhiko, 4,437,769, Cl. 368-204.000.

Otis Engineering Corporation: *See—*
Canalizo, Carlos R., 4,437,514, Cl. 166-53.000.

Otto, Gerhard: *See—*
Bredow, Walter; and Otto, Gerhard, 4,437,224, Cl. 29-568.000.

Outboard Marine Corporation: *See—*
Billingsley, Henry C., 4,437,448, Cl. 123-577.000.

Owens-Corning Fiberglas Corporation: *See—*
Gaul, David J.; Hinze, Jay W.; and Perkins, Richard A., 4,438,518, Cl. 373-39.000.
Yeager, Raymond W.; and Weitzman, Mark R., 4,437,542, Cl. 181-290.000.

Oxon Italia S.p.A.: *See—*
Stabile, Nicolo; Motta, Raimondo; and Gosso, Giancarlo, 4,438,276, Cl. 560-13.000.

Ozaki, Nobuo; and Hosokawa, Mikio, to Maeda Industries, Ltd. Double lever assembly for bicycle speed control. 4,437,357, Cl. 74-475.000.

Ozawa, Masaichi, to Nippon Steel Corporation. Method and apparatus for gathering rings or wire rods into coils. 4,437,620, Cl. 242-83.000.

Ozawa, Shigeru: *See—*
Hayasaka, Tadao; Suzuki, Masahiro; Ozawa, Shigeru; and Takeya, Yoshiaki, 4,437,890, Cl. 75-244.000.

Ozawa, Tsutomu: *See—*
Sato, Takashi; and Ozawa, Tsutomu, 4,437,907, Cl. 148-31.550.

Ozen Co., Ltd.: *See—*
Shiseki, Yutaka; Yagi, Junichi; and Miura, Yasuyuki, 4,438,358, Cl. 310-51.000.

Pace Incorporated: *See—*
Sylvia, Frank, 4,438,322, Cl. 219-236.000.

Packer, Lawrence G.; and Schlossmacher, Edward J., to Standard Oil Company (Indiana). Fiber-grade terephthalic acid recovered from the effluent from paraxylene oxidation in acetic acid and the catalytic hydrogenation of the oxidation effluent in the presence of metallic platinum family metals. 4,438,279, Cl. 562-416.000.

Padilla, Joseph R.: *See—*
Richardson, Emmett M.; Chatas, Angelos T.; and Padilla, Joseph R., 4,437,521, Cl. 166-341.000.

Paice, Derek A., to Westinghouse Electric Corp. Current limiter and VAR generator utilizing a superconducting coil. 4,438,474, Cl. 361-58.000.

Palacios-Mendoza, Eliodoro. Method of recovering silver from solid and liquid photographic waste. 4,437,889, Cl. 75-118.00P.

Pallaver, Matthew C.: *See—*
McGrann, Harold J.; Orn, John F.; and Pallaver, Matthew C., 4,437,351, Cl. 73-862.050.

Palmer, David J.: *See—*
Newman, Oliver M. G.; Palmer, David J.; and Pammenter, Robert V., 4,437,953, Cl. 204-119.000.

Palmer, Dennis L.: *See—*
Meny, Allan H.; and Palmer, Dennis L., 4,437,793, Cl. 405-212.000.

Palotai, Jozsef, to Chemokomplex Vegyipari Gepes Berendezes Export-Import Vallalat. Apparatus for making particleboard by a continuous extruding technique of particulated materials. 4,437,824, Cl. 425-131.100.

Pammenter, Robert V.: *See—*
Newman, Oliver M. G.; Palmer, David J.; and Pammenter, Robert V., 4,437,953, Cl. 204-119.000.

Pankratz, Lawrence A.; and Cornica, Donald G., to Liquipak International, Inc. Carton filling apparatus. 4,437,498, Cl. 141-89.000.

Papantoniou, Christos: *See—*
Guillon, Michel; Mondet, Jean; Papantoniou, Christos; and Vandenbossche, Claudine, 4,438,140, Cl. 424-61.000.

Papazian, Harold A., to United States of America, Air Force. Method of determining battery life. 4,438,182, Cl. 429-91.000.

Parsdyne Corporation: *See—*
Korzik, James L.; and Wissman, Thomas, 4,437,717, Cl. 339-17.0LC.

Pardee, Ernest, to Mankouski, Charles. Step ladder. 4,437,545, Cl. 182-171.000.

Parekh, Dhan N.; and Schweyen, Paul R., to Carborundum Abrasive Company. Flexible backing material for use in coated abrasives. 4,437,865, Cl. 51-298.000.

Parfree, Colin S.; and Worthington, Peter, to International Standard Electric Corporation. Optical fibre cables. 4,437,729, Cl. 350-96.230.

Paris Manufacturing Company, Inc.: *See—*
Sanko, John R., 4,437,246, Cl. 38-25.000.

Park Ohio Industries, Inc.: *See—*
Cachat, John F., 4,438,310, Cl. 219-10.430.

Park, Seung M. Emergency signal transceiver for disabled car. 4,438,429, Cl. 340-539.000.

Parker, Donald O.: *See—*
Nicholson, Raymond; and Parker, Donald O., 4,437,558, Cl. 194-97.00R.

Parry, Richard J.: *See—*
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,438,212, Cl. 501-73.000.

Partanen, John F. Synthetic asphalt mixtures and processes for making them. 4,437,896, Cl. 106-273.00R.

Pascoe, Robert D., to American Standard Inc. Reset apparatus for railroad track circuits. 4,437,632, Cl. 246-34.00R.

Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Zuchtriegel, Anton, 4,438,372, Cl. 315-224.000.

Patrick, William J.: *See—*
Bischoff, Bernard K.; Patrick, William J.; and Strudwick, Thomas H., 4,437,922, Cl. 156-603.000.

Patt, Steven L., to Varian Associates, Inc. Method for suppression of acoustic ringing in NMR measurements. 4,438,400, Cl. 324-312.000.

Paul, Marsha A.: *See—*
Doorakian, George A.; and Paul, Marsha A., 4,438,254, Cl. 528-89.000.

Paul, Volker: *See—*
Holmwood, Graham; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,438,122, Cl. 424-263.000.

Paul Wurth S.A.: *See—*
Ulveling, Leon; Legille, Edouard; and Boever, Jean, 4,437,796, Cl. 406-25.000.

PCUK Produits Chimiques Ugine Kuhlmann: *See—*
Mathais, Henri; Commandeur, Raymond; Pontoglio, Achille; and Nebel, Sergio, 4,438,027, Cl. 252-581.000.

Pearce, Eric W. J., to Rolls-Royce Limited. Cooled vane for a gas turbine engine. 4,437,810, Cl. 415-115.000.

Peche, Gerhard: *See—*
Lippmann, Hans-Joachim; Peche, Gerhard; and Bettge, Hans, 4,438,307, Cl. 200-144.00B.

Pedersen, Ernst L.: *See—*
Balslev, Erik; Hansen, Svenn S.; and Pedersen, Ernst L., 4,438,100, Cl. 424-104.000.

Peehs, Martin: *See—*
Dorr, Wolfgang; Gradel, Gerhard; and Peehs, Martin, 4,438,050, Cl. 264-0.500.

Peerman, Dwight, to Henkel Corporation. Polyester polyols from bishydroxymethyl tricyclo compounds and caprolactone and polyurethanes based thereon. 4,438,225, Cl. 521-172.000.

Peers-Trevarton, Charles A., to Cordis Corporation. Method for making multiconductor coil and the coil made thereby. 4,437,474, Cl. 128-784.000.

Pelz, David T. Golf practice putting track. 4,437,669, Cl. 273-186.00C.

Pelzl, Gerhard: *See—*
Zaschke, Horst; Schafer, Wolfgang; Deutscher, Hans-Joachim; Demus, Dietrich; and Pelzl, Gerhard, 4,438,268, Cl. 544-315.000.

Penco, Sergio: *See—*
Suarato, Antonino; Penco, Sergio; Arcamone, Federico; and Casazza, Anna M., 4,438,105, Cl. 424-180.000.

Pennwalt Corporation: *See—*
McGraw, Isaac R., 4,438,129, Cl. 424-273.00R.
McGraw, Isaac R., 4,438,134, Cl. 424-300.000.

Penny & Giles Transducers Limited: *See—*
Dixon, James M.; and Witt, Geoffrey R., 4,437,343, Cl. 73-182.000.

Penty, Robert A.: *See—*
Lallaye, Paul G.; Bjerklie, John W.; and Penty, Robert A., 4,437,217, Cl. 29-157.400.

Pergrale, Jean: *See—*
Jatteau, Michel; Lelong, Pierre H.; and Pergrale, Jean, 4,438,334, Cl. 250-363.00S.

Perkin-Elmer Corp., The: *See—*
Ausschnitt, Christoper P., 4,437,760, Cl. 355-133.000.

Perkin-Elmer Limited: *See—*
Ford, Michael A.; and Leather, Brian B., 4,438,329, Cl. 250-459.100.

Perkins, Richard A.: *See—*
Gaul, David J.; Hinze, Jay W.; and Perkins, Richard A., 4,438,518, Cl. 373-39.000.

Pernicka, Martin: *See—*
Fortin, Paul; Michaud, Paul; and Pernicka, Martin, 4,437,543, Cl. 182-2.000.

Perrott, Lynn F., to Corbett, Scott S., Jr. Wheeled trailer frame carrying unit attachment for lift truck. 4,437,807, Cl. 414-620.000.

Pestlin, Norman F.: *See—*
Temple, Eugene A.; and Pestlin, Norman F., 4,437,453, Cl. 126-271.20R.

Peterman, Lee G.; and Staebel, Raymond J., to Atlantic Richfield Company. System for temperature control of a Claus sulfur unit thermal reactor. 4,438,069, Cl. 422-62.000.

Peters, Albin: *See—*
Wiczer, Max; and Peters, Albin, 4,437,664, Cl. 273-121.00A.

Peters, John V.: *See—*
Fancey, Everett G.; Peters, John V.; and Tucker, Russell E., 4,437,254, Cl. 43-4.000.

Petersen, Uwe; Stadler, Peter; Lockhoff, Oswald; Zeiler, Hans-Joachim; and Metzger, Karl G., to Bayer Aktiengesellschaft. Sisomicin compounds. 4,438,260, Cl. 536-13.900.

Peterson, Craig B.: *See—*
Budde, David L.; Carson, David G.; Cornish, Anthony L.; Hosler, Brad W.; Johnson, David B.; and Peterson, Craig B., 4,438,494, Cl. 364-200.000.

Peterson, Francis C., to Illinois Tool Works Inc. Adjustable shim system. 4,437,784, Cl. 403-408.000.

Petito, Ferdinand C.; and Klauber, Gerald, to United States of America, Army. Method of making organic-retina (pyroelectric) vidicon. 4,437,844, Cl. 445-5.000.

Petkovic-Luton, Ruzica, to Exxon Research and Engineering Co. Thermal mechanical treatment for enhancing high temperature properties of cast austenitic steel structures. 4,437,900, Cl. 148-12.00E.

Petronella, Joseph, to Nuodex Inc. Process for the production of oil-soluble metal salts. 4,438,038, Cl. 260-414.000.

Petros, Andrew J., to Mesta Machine Company. Apparatus for debanding coiled strip. 4,437,223, Cl. 29-564.300.

Petrovich, Vojislav. Froth flotation method for recovering zirconium minerals. 4,437,983, Cl. 209-166.000.

Peyton, Richard H.: *See—*
Hutchins, Charles K.; Thornton, Donald I.; and Peyton, Richard H., 4,437,986, Cl. 210-130.000.

Pfeifer, Josef; and Rheude, Alfred, to Agfa-Gevaert Aktiengesellschaft. Containers for X-ray films or the like. 4,438,164, Cl. 428-35.000.

Pham, Duc T., to National Research Development Corporation. Pantograph linkage system. 4,437,635, Cl. 248-122.000.

Phelan, Charles: *See—*
O'Brian, Edward D.; and Phelan, Charles, 4,437,413, Cl. 108-111.000.

Philip Morris Industrial Incorporated: *See—*
McCue, John P., 4,438,170, Cl. 428-207.000.

Philipp, Harald, to Tektronix, Inc. Signal sampling system. 4,438,404, Cl. 328-63.000.

Philipp, Helmut; and Kurth, Wilfried, to Jagenberg Werke AG. Method for the operation of a cross-cutting apparatus. 4,437,370, Cl. 83-23.000.

Phillips, Jeffrey; and Takei, Hiroshi, to United Chemi-Con, Inc. Double layer capacitor. 4,438,481, Cl. 361-433.000.

Phillips Petroleum Company: *See—*
Casperson, John R., 4,438,087, Cl. 423-450.000.
Funk, Gary L., 4,437,977, Cl. 208-113.000.
Jensen, Bruce A., 4,438,499, Cl. 364-501.000.
Marwil, Stanley J., 4,437,941, Cl. 203-50.000.
Pollock, Lyle W., 4,438,161, Cl. 427-215.000.
Wilt, Mason S., 4,438,074, Cl. 422-135.000.

Picard, Joseph A. R.: *See—*
Boyadjieff, George I.; and Picard, Joseph A. R., 4,437,524, Cl. 173-43.000.

Pickens, John W.; Abraham, John K.; Mintus, Raymond E.; and Thomas, Millicent H., to Republic Steel Corporation. Batch-annealed dual-phase steel. 4,437,902, Cl. 148-12.00F.

Pickett, Trammell. Camera adapter. 4,437,730, Cl. 350-257.000.

Pieper, Henner: *See—*
Seitz, Hans; Rach, Heinz-Dieter; Pieper, Henner; and Frerichs, Udo, 4,437,503, Cl. 152-209.00R.

Pierburg GmbH & Co., KG: *See—*
Baumgartner, Hans, 4,437,386, Cl. 91-363.00R.

Pietsch, Hartmut; Turke, Wolfgang; Bareuther, Ernst; Kampf, Fritz; and Bings, Hubert, to Metallgesellschaft AG; and Vereinigte Aluminum-Werke AG. Method of extracting gold and silver from an ore. 4,438,076, Cl. 423-30.000.

Piljay, Robert E.; and Netteland, Loyal G., to Figgie International Inc. Pneumatic head harness. 4,437,462, Cl. 128-207.000.

Pilkington Brothers P.L.C.: *See—*
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,438,212, Cl. 501-73.000.

Pinkhasov, Eduard, to Welbilt Electronics Die Corporation. Method of and apparatus for the vapor deposition of material upon a substrate. 4,438,153, Cl. 427-37.000.

Pischinger, Franz: *See—*
Laurenz, Werner, 4,437,334, Cl. 73-35.000.

Pissiotas, Georg: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,437,879, Cl. 71-96.000.

Pittaro, Richard J., to Krautkramer-Branson, Inc. Ultrasonic thickness measuring instrument. 4,437,332, Cl. 73-1.0DV.

Pkhakadze, Georgy A.: *See—*
Lipatova, Tatyana E.; Vasiichenko, Dmitry V.; Pkhakadze, Georgy A.; and Konoplitskaya, Xenya L., 4,438,249, Cl. 528-61.000.

Plasmine Corporation, The: *See—*
Emerson, Ralph W., Sr., 4,437,894, Cl. 106-238.000.

Plastics Engineering Company: *See—*
Lee, Chung J., 4,438,233, Cl. 524-299.000.
Monacelli, Walter J., 4,438,280, Cl. 562-457.000.

Plattner, Robert F.; Arend, Raymond J.; and VerBerkmoes, John A., to Bastian Blessing Co., Inc. Air heated sandwich bin. 4,437,396, Cl. 99-475.000.

Pleion Corporation: *See—*
Maguire, Paul R., 4,437,286, Cl. 52-506.000.

Pless, Janos: *See—*
Bauer, Wilfried; Cardinaux, Francois; Huguenin, Rene; Pless, Janos; and Sandrin, Edmond, 4,438,103, Cl. 424-177.000.

Plot, Josiane: *See—*
Koulbanis, Constantin; N'Guyen, Quang L.; Zabotto, Arlette; and Plot, Josiane, 4,437,895, Cl. 106-245.000.

Pluvinage, Alain: *See—*
Sussmeyer, Robert; Pluvinage, Alain; and Moenaert, Christian, 4,437,940, Cl. 203-49.000.

Pocock, John F. E.: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,437,825, Cl. 425-145.000.

Podszun, Wolfgang: *See—*
Schmitz-Josten, Robert; Suling, Carlhans; Podszun, Wolfgang; Bomer, Bruno; Borgardt, Manfred; and Walkowiak, Michael, 4,437,836, Cl. 433-199.000.

Polaroid Corporation: *See—*
Alston, Lawrence E., 4,438,453, Cl. 358-78.000.

Pollack, Dieter: *See—*
Banke, Karl-Heinz; Hering, Elisabeth; Lobel, Wilfried; Pollack, Dieter; Wiedemann, Gunter; Grell, Ute; and Schuler, Ingo, 4,438,053, Cl. 264-25.000.

Pollock, Lyle W., to Phillips Petroleum Company. Iron-containing refractory balls for retorting oil shale. 4,438,161, Cl. 427-215.000.

Polygram GmbH: *See—*
Bluethgen, Bjoern, 4,438,522, Cl. 375-27.000.

Polysar Limited: *See—*
Lee, Ivan S., 4,438,232, Cl. 524-272.000.
Schwarz, Herbert F., 4,438,230, Cl. 524-151.000.

Ponsford, Roger J.; and Howarth, Thomas T., to Beecham Group Limited. Antibiotics. 4,438,101, Cl. 424-114.000.

Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., to Eastman Kodak Company. Polymerizable ethylenically unsaturated amide compounds. 4,438,278, Cl. 560-205.000.

Pontoglio, Achille: *See—*
Mathais, Henri; Commandeur, Raymond; Pontoglio, Achille; and Nebel, Sergio, 4,438,027, Cl. 252-581.000.

Poore, William H.: *See—*
Geppelt, Elmo W.; and Poore, William H., 4,437,329, Cl. 72-299.000.

Portec, Inc.: *See—*
Stoller, David A., Jr.; Robertson, James C.; and Matyas, Tibor, 4,437,410, Cl. 105-378.000.

Possati, Mario, to Finike Italiana Marposs S.p.A. Gauge for the dimensional checking of a mechanical piece. 4,437,239, Cl. 33-143.00L.

Potter, Charles, to Go-Jo Industries, Inc. Dispensing cartridge. 4,437,589, Cl. 222-327.000.

Potter, William D.; and Kiamil, Sinan B., to Smith and Nephew Associated Companies Ltd. Cured pressure sensitive adhesives. 4,438,177, Cl. 428-355.000.

Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., to Pilkington Brothers P.L.C. Fluorine-free calcium-aluminosilicate glasses. 4,438,212, Cl. 501-73.000.

Poudrier Frere Ltee: *See—*
Fortin, Paul; Michaud, Paul; and Pernicka, Martin, 4,437,543, Cl. 182-2.000.

Power Spectra, Inc.: *See—*
Davis, Steven J., 4,438,331, Cl. 250-211.00J.

Powers, Edward J., to Fiber Industries, Inc. Adhesive topcoated polyester material and process for incorporating same into rubber. 4,437,919, Cl. 156-329.000.

Powers, Edward J., to Fiber Industries, Inc. Adhesive activated polyester fibrous material. 4,438,178, Cl. 428-289.000.

Powers, Kerns H., to RCA Corporation. Transcoder for sampled television signals. 4,438,452, Cl. 358-13.000.

Prehler, Richard: *See—*
Moderlak, Helmut; Koschinek, Gunter; Zinaser, Rolf; Prehler, Richard; and Kretschmann, Bernd, 4,437,827, Cl. 425-378.00S.

Premi, Mauro: *See—*
Truzzi, Ferdinando; and Premi, Mauro, 4,437,298, Cl. 57-22.000.
Truzzi, Ferdinando; and Premi, Mauro, 4,437,299, Cl. 57-22.000.

Preston, John C., to Helene Curtis Industries, Inc. Pearlescent shampoo. 4,438,096, Cl. 424-70.000.

Pretzer, Wayne R.: *See—*
Habib, Mohammad M.; and Pretzer, Wayne R., 4,438,020, Cl. 252-162.000.

Preuss, Alfred: *See—*
Wirz, Burkhardt; and Preuss, Alfred, 4,437,407, Cl. 101-409.000.

Pridy, Whetstine B. Portable oil well turbine collar removing device. 4,437,218, Cl. 29-240.000.

Procter & Gamble Company, The: *See—*
Bush, Rodney D., 4,438,246, Cl. 526-298.000.
DelGreco, Angela G.; Allen, Malcolm L.; and Jacobsen, Ronald L., 4,438,024, Cl. 252-545.000.

Profold, Inc.: *See—*
Olson, Raymond E., 4,437,658, Cl. 271-125.000.

Prost, Jean-Louis, to Battelle Memorial Institute. Process and apparatus for measuring blood pressure. 4,437,470, Cl. 128-679.000.

Pryor, Michael J.; and Tyler, Derek E., to Olin Corporation. Continuous lubrication casting molds. 4,437,508, Cl. 164-418.000.

Przybylski, William A.: *See—*
Bronsky, Robert J.; Clark, Dennis B.; McKeen, Jeffrey A.; and Przybylski, William A., 4,437,347, Cl. 73-272.00R.

Publishers Equipment Corporation: *See—*
Bullen, Lee, 4,437,855, Cl. 493-424.000.

Puccio, Guy S., to Acme Highway Products Corp. Elastomeric sealing member. 4,437,785, Cl. 404-64.000.

Purdue Research Foundation: *See—*
Nelson, Philip E.; and Takada, Norihisa, 4,437,934, Cl. 159-47.100.

Pweblo, Harry. Pollution harness. 4,437,866, Cl. 55-85.000.

Pyro-Gen Corp.: *See—*
Hertel, Karl R., 4,437,419, Cl. 110-259.000.

Quaker Oats Company, The: *See—*
Gantwerker, Scott; and Leong, Sai, 4,438,150, Cl. 426-625.000.

Quan, Shirley G.: *See—*
Golde, David W.; and Quan, Shirley G., 4,438,032, Cl. 260-112.00R.

R. W. Hartnett Company: *See—*
Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., 4,437,559, Cl. 198-397.000.

Rach, Heinz-Dieter: *See—*
Seitz, Hans; Rach, Heinz-Dieter; Pieper, Henner; and Frerichs, Udo, 4,437,503, Cl. 152-209.00R.

Radeloff, Jurgen: *See—*
Bierkarre, Hartwig; Klinger, Gottfried; Radeloff, Jurgen; and Rust, Bernd-Hendrik, 4,437,533, Cl. 180-168.000.

Radtke, Richard R.: *See—*
Willis, Frederick G.; Radtke, Richard R.; Ellison, Joseph; Fozo, Steven R.; and Kern, Glenn A., 4,438,497, Cl. 364-431.050.

Ragaly, Istvan, to Robert Bosch GmbH. Speed limiting rotary coupling. 4,437,846, Cl. 464-36.000.

Rajagopalan, Parthasarathi, to Du Pont de Nemours, E. I., and Company. Pyridoindolobenzodiazepine tranquilizers. 4,438,120, Cl. 424-256.000.

Ralston Purina Company: *See—*
Krinski, Thomas L.; and Coco, Charles E., 4,437,893, Cl. 106-80.000.

Ramme, Hubertus. Viewer simulating television receiver. 4,437,248, Cl. 40-364.000.

Rankin, Michael: *See—*
Bobb, Lloyd C.; Rankin, Michael; and Ferguson, Gerald D., 4,438,517, Cl. 372-99.000.

Rapp, Guenther; Thomas, Erwin; and Muenster, Rolf, to BASF Aktiengesellschaft. Manufacture of hydroxylammonium salts. 4,438,084, Cl. 423-387.000.

Rapps, Peter: *See—*
Drews, Ulrich; Rapps, Peter; and Werner, Peter, 4,437,339, Cl. 73-118.000.

Raschack, Manfred: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.

Rasmussen, Byron C. Screen and method of eye examination using same. 4,437,737, Cl. 351-237.000.

Rathke, James E.: *See—*
Liu, Henry; Gibson, Donald L.; Cheng, David H. S.; and Rathke, James E., 4,437,799, Cl. 406-198.000.

Ratsch, Eggo: *See—*
Ackermann, Ulrich; and Ratsch, Eggo, 4,438,316, Cl. 219-121.0PC.
Ravner, Harold: *See—*
Wohltjen, Henry; Sniegoski, Paul J.; and Ravner, Harold, 4,438,203, Cl. 436-60.000.
Raymark Industries, Inc.: *See—*
Myers, Paul A., 4,438,004, Cl. 252-12.000.
Raytheon Company: *See—*
Butler, John L.; Egan, Thomas R.; Rodberg, Kenneth; and Clark, Arthur E., 4,438,509, Cl. 367-156.000.
Razon, Ely; and Vilenski, Dan, to Kulicke & Soffa Industries, Inc. Method of making fine wire interconnections. 4,437,604, Cl. 228-179.000.
RCA Corporation: *See—*
Hinn, Werner; and Knight, Mark B., 4,438,451, Cl. 358-11.000.
Levine, Peter A.; and Limberg, Allen L., 4,437,764, Cl. 358-44.000.
Mattei, Anthony, 4,438,521, Cl. 375-16.000.
Powers, Kerns H., 4,438,452, Cl. 358-13.000.
Shanley, Robert L., II, 4,438,454, Cl. 358-31.000.
Stavitsky, David; and Beres, Ernest A., 4,437,641, Cl. 249-79.000.
Rechtsteiner, Steven A.: *See—*
Rica, Albert F.; Hay, Lloyd F.; Heron, John R.; Webber, John R.; and Rechtsteiner, Steven A., 4,437,315, Cl. 62-63.000.
Recker, Klaus: *See—*
Grogler, Gerhard; Ganster, Otto; and Recker, Klaus, 4,438,250, Cl. 528-66.000.
Recordati S.A.: *See—*
Nardi, Dante; Tajana, Alberto; Motta, Gianni; Cazzulani, Pietro; and Graziani, Gabriele, 4,438,133, Cl. 424-300.000.
Recycled Paper Bedding, Inc.: *See—*
Whiteman, Patrick W., 4,437,615, Cl. 241-24.000.
Red-Ray Manufacturing Company, Inc.: *See—*
Mertz, Frank D., 4,437,833, Cl. 431-329.000.
Redder, Manfred; Linke, Horst; Grundken, Dieter; and Temme, Helmut, to Gewerkschaft Eisenhutte Westfalia. Conveyor drive frame. 4,437,564, Cl. 198-834.000.
Reed, Dorian. Fish detecting system. 4,437,255, Cl. 43-17.000.
Rees, Volker: *See—*
Korner, Gerhard; and Rees, Volker, 4,438,308, Cl. 200-148.00A.
Reese, Ira W.; and Compagnucci, Nello B., to Transamerica DeLaval Inc. Means for tenon-forming a shroud to a turbine rotor. 4,437,213, Cl. 29-33.00K.
Regie Nationale des Usines Renault: *See—*
Barnabe, Jean-Louis, 4,437,926, Cl. 156-654.000.
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, to Bayer Aktiengesellschaft. Process for producing cross-sectionally stable, hygroscopic fibers and filaments having a core-jacket structure. 4,438,060, Cl. 264-206.000.
Rembaum, Alan; and Yen, Richard C. K., to California Institute of Technology. Microsphere coated substrate containing reactive aldehyde groups. 4,438,239, Cl. 525-54.100.
Renaudin, Jean-Pierre: *See—*
Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, 4,437,869, Cl. 65-1.000.
Renfro, Julian C.: *See—*
Lord, Douglas W., 4,437,424, Cl. 114-91.000.
Reppelin, Michel: *See—*
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,438,042, Cl. 260-465.00B.
Republic Geothermal, Inc.: *See—*
Rex, Robert W., 4,437,995, Cl. 210-714.000.
Republic Steel Corporation: *See—*
Pickens, John W.; Abraham, John K.; Mintus, Raymond E.; and Thomas, Millicent H., 4,437,902, Cl. 148-12.00F.
Reschly, David C., to Detroit Stoker Company. Rotary continuous ash discharge stoker. 4,437,452, Cl. 126-182.000.
Research Corporation: *See—*
Erickson, Bruce W.; and Hugli, Tony E., 4,438,029, Cl. 260-112.50R.
Research Foundation for Microbial Diseases of Osaka University, The: *See—*
Shimada, Kazuo; Akiyama, Masataka; and Sudo, Masami, 4,438,093, Cl. 424-50.000.
Resnick, Paul R.: *See—*
Bissot, Thomas C.; Grot, Walter G.; and Resnick, Paul R., 4,437,951, Cl. 204-98.000.
Reuter, Herbert: *See—*
Kuhling, Dieter; Huppertzl Josef; Krings, Peter; and Reuter, Herbert, 4,438,012, Cl. 252-131.000.
Rex, Robert W., to Republic Geothermal, Inc. Treatment of geothermal brine sulfate-rich fluids to facilitate the precipitation of silica. 4,437,995, Cl. 210-714.000.
Reynolds, Graeme E. Clamp for hydraulic hose bundles. 4,437,791, Cl. 405-195.000.
Rheude, Alfred: *See—*
Pfeifer, Josef; and Rheude, Alfred, 4,438,164, Cl. 428-35.000.
Rhone-Poulenc Specialites Chimiques: *See—*
Desbois, Michel, 4,438,043, Cl. 260-465.00F.
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,438,042, Cl. 260-465.00B.
Jecker, Gilbert, 4,437,888, Cl. 75-84.400.
Riblet, Leslie A.: *See—*
Allen, Lloyd E.; and Riblet, Leslie A., 4,438,119, Cl. 424-251.000.
Rica, Albert F.; Hay, Lloyd F.; Heron, John R.; Webber, John R.; and Rechtsteiner, Steven A., to FranRica Mfg. Inc. Flexible bag cooling arrangement. 4,437,315, Cl. 62-63.000.
Richardson, Emmett M.; Chatas, Angelos T.; and Padilla, Joseph R., to Mobil Oil Corporation. Subsea wellhead connection assembly and methods of installation. 4,437,521, Cl. 166-341.000.
Richter, Simon J.; and Aykanian, Ardashus A., to Coca-Cola Company, The. Tube inserting machine. 4,438,061, Cl. 264-249.000.
Ricoh Co. Ltd.: *See—*
Abe, Takeshi, 4,437,336, Cl. 73-40.50R.
Jinnai, Koichiro; and Ebi, Yutaka, 4,438,440, Cl. 346-75.000.
Komada, Kenya; and Tan, Yui-Kuan, 4,438,444, Cl. 346-155.000.
Nakajima, Yoshinori, 4,438,507, Cl. 364-900.000.
Riebli, Peter: *See—*
Hubele, Adolf; Eckhardt, Wolfgang; and Riebli, Peter, 4,438,125, Cl. 424-269.000.
Rieck, Hans-Peter, to Hoechst Aktiengesellschaft. Process for the purification of cyclic chlorophosphazenes. 4,438,081, Cl. 423-300.000.
Rieck, Richard E.: *See—*
Hartung, Michael H.; Rieck, Richard E.; and Tayler, Gerald E., 4,438,512, Cl. 371-60.000.
Riecke, Wolfgang D., to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Corpuscular radiation device for producing an irradiation pattern on a workpiece. 4,438,336, Cl. 250-398.000.
Rieppel, Perry J.; and Moore, Paul E., to Arcair Company. Exothermic cutting electrode. 4,437,649, Cl. 266-48.000.
Righetti, Gaetano, to Hoyne Industries, Inc. Beveling apparatus. 4,437,268, Cl. 51-327.000.
Riker Laboratories, Inc.: *See—*
Barnett, William E., 4,438,261, Cl. 536-21.000.
Rinderle, Heinz: *See—*
Malinowski, Christopher W.; and Rinderle, Heinz, 4,438,412, Cl. 331-2.000.
Rittler, Hermann L., to Corning Glass Works. Transparent colorless glass-ceramics especially suitable for use as stove windows. 4,438,210, Cl. 501-4.000.
RIV-SKF Officine: *See—*
Colanzi, Franco; and Donn, Vittorio, 4,437,536, Cl. 180-254.000.
Roach, Bobbie R. Tree ornament container. 4,437,713, Cl. 312-259.000.
Robert Bosch GmbH: *See—*
Babitzka, Rudolf; and Linder, Ernst, 4,438,363, Cl. 310-328.000.
Csanitz, Herbert; and Weyl, Helmut, 4,437,971, Cl. 204-427.000.
Drews, Ulrich; Rapps, Peter; and Werner, Peter, 4,437,339, Cl. 73-118.000.
Leiber, Heinz; and Stegmeier, Alwin, 4,438,420, Cl. 335-275.000.
Ragaly, Istvan, 4,437,846, Cl. 464-36.000.
Stumpe, Werner, 4,437,504, Cl. 152-427.000.
Roberts, Roy D., to Texaco Inc. Environmentally safe process for disposing of toxic inorganic CN-containing sludge. 4,437,417, Cl. 110-346.000.
Robertson, James C.: *See—*
Stoller, David A., Jr.; Robertson, James C.; and Matyas, Tibor, 4,437,410, Cl. 105-378.000.
Robertson, John A.: *See—*
Cullen, Donald L.; and Robertson, John A., 4,438,402, Cl. 324-452.000.
Rock, Merlin A., to International Harvester Co. Automatic header height control. 4,437,295, Cl. 56-10.200.
Rockwell International Corporation: *See—*
Heredy, Laszlo A.; and Skowronski, Raymund P., 4,437,980, Cl. 208-235.000.
Soclof, Sidney I., 4,437,226, Cl. 29-577.00R.
Rockwood, Stephen D.; and Sander, Robert K., to United States of America, Energy. Device and method for separating oxygen isotopes. 4,437,958, Cl. 204-157.10R.
Rodberg, Kenneth: *See—*
Butler, John L.; Egan, Thomas R.; Rodberg, Kenneth; and Clark, Arthur E., 4,438,509, Cl. 367-156.000.
Rodgers, Patricia. Drapery closure. 4,437,505, Cl. 160-126.000.
Rodov, Vladimir: *See—*
Harrington, Alan L.; Allison, Richard; and Rodov, Vladimir, 4,438,448, Cl. 357-23.000.
Roesch, Egon: *See—*
Ross, Carl H.; Kampe, Wolfgang; Bartsch, Wolfgang; Sponer, Gisbert; and Roesch, Egon, 4,438,116, Cl. 424-250.000.
Rog, Joseph W.; Waits, Charles G.; and Nicholas, Karl W., to Harco Corporation. Electrical survey apparatus and method with spinner-type conductor supply. 4,438,391, Cl. 324-71.100.
Rohatin, Frederick. Turn-on control system for voltage drop compensators. 4,438,387, Cl. 323-260.000.
Roine, Martin W., to Boeing Company, The. Seat structure having an adjustable seat back and support shelf especially for accommodating parachute packs. 4,437,629, Cl. 244-122.00R.
Rokop Corporation: *See—*
Rokop, Joseph; and Rokop, Nikolaus, 4,437,899, Cl. 148-9.00R.
Rokop, Joseph; and Rokop, Nikolaus, to Rokop Corporation. Metal billet cutting apparatus and method. 4,437,899, Cl. 148-9.00R.
Rokop, Nikolaus: *See—*
Rokop, Joseph; and Rokop, Nikolaus, 4,437,899, Cl. 148-9.00R.
Rollot, Pierre: *See—*
Cordier, Jean; and Rollot, Pierre, 4,437,651, Cl. 266-193.000.
Rolls-Royce Limited: *See—*
Cantwell, Hugh F., 4,437,303, Cl. 60-39.281.
McCormick, Michael A.; and Gladdish, Peter, 4,438,406, Cl. 328-167.000.
Pearce, Eric W. J., 4,437,810, Cl. 415-115.000.

Romagnoli, Andrea, to I.M.A.-Industria Macchine Automatiche-S.p.A. Volumetric batching device for providing predetermined batches of a fluent material. 4,437,294, Cl. 53-553.000.
Roman, Daniel J.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,437,229, Cl. 29-593.000.
Romano-Moran, Roberto, to NCR Corporation. Process for forming MNOS dual dielectric structure. 4,438,157, Cl. 427-93.000.
Romec Environmental Research & Development, Inc.: *See—*
O'Connor, Rodney J., 4,437,583, Cl. 222-108.000.
Rose, John B.: *See—*
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., 4,438,236, Cl. 525-165.000.
Rosenberg, Irwin, to Aero-Motive Mfg. Co. Positioning reel. 4,437,624, Cl. 242-107.300.
Rosenquist, Niles R.; and Lee, Garland G., to General Electric Company. Compositions comprising a thermoplastic resin and a vinyl ether mold release agent. 4,438,234, Cl. 524-378.000.
Rosenquist, Niles R., to General Electric Company. Acyloxy terminated copolyester-carbonates. 4,438,255, Cl. 528-176.000.
Rosenthal, Manfred: *See—*
Weber, Wendelin; and Rosenthal, Manfred, 4,437,780, Cl. 400-642.000.
Rosenthal, Paul: *See—*
Castiglioni, Joseph; and Rosenthal, Paul, 4,437,513, Cl. 165-154.000.
Ross, Carl H.; Kampe, Wolfgang; Bartsch, Wolfgang; Sponer, Gisbert; and Roesch, Egon, to Boehringer Mannheim GmbH. Quinoxalinyloxy-amino-propanol compounds with blood pressure lowering and β-blocking properties, their use and pharmaceutical compositions containing them. 4,438,116, Cl. 424-250.000.
Ross, Henry M. Magnetic, force-limited apparatus for tenderizing meat. 4,437,207, Cl. 17-25.000.
Rossy, Phillip A.: *See—*
Acker, Rolf-Dieter; Rossy, Phillip A.; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,437,878, Cl. 71-90.000.
Rost, Jan: *See—*
Meltsch, Hans J.; and Rost, Jan, 4,438,294, Cl. 174-88.00R.
Rotron, Incorporated: *See—*
Brown, Fred A., 4,438,362, Cl. 310-152.000.
Routh, Donald E.; and Sharma, Gian C., to United States of America, National Aeronautics and Space Administration. Method for sequentially processing a multi-level interconnect circuit in a vacuum chamber. 4,437,961, Cl. 204-192.0EC.
Royer, Neal B., to Emerson Electric Co. Dynamoelectric machine structure and method. 4,438,359, Cl. 310-68.00R.
Rubin, Harvey, to Bell Telephone Laboratories, Incorporated. System for accessing and testing subscriber loops. 4,438,298, Cl. 179-175.20R.
Rubin, Michael D.; and Ho, Pang T., to Ford Aerospace & Communications Corporation. Temperature compensating method and apparatus for thermally stabilizing amplifier devices. 4,438,411, Cl. 330-289.000.
Ruhrchemi AG: *See—*
Gorris, Rainer; Hibbel, Josef; Gerhardus, Ulrich; and Scheve, Heinrich, 4,437,864, Cl. 48-62.00R.
Ruhrkohle AG: *See—*
Gorris, Rainer; Hibbel, Josef; Gerhardus, Ulrich; and Scheve, Heinrich, 4,437,864, Cl. 48-62.00R.
Ruklic, William. Tamper-resistant bottle cap. 4,437,574, Cl. 215-247.000.
Rush-Presbyterian-St. Luke's Medical Center: *See—*
Djordjevich, Ljubomir; and Sadove, Max S., 4,437,469, Cl. 128-672.000.
Russ, Stephen; and McAnespie, Don, to Midland-Ross Corporation. Flotation nozzle. 4,437,612, Cl. 239-556.000.
Rust, Bernd-Hendrik: *See—*
Bierkarre, Hartwig; Klinger, Gottfried; Radeloff, Jurgen; and Rust, Bernd-Hendrik, 4,437,533, Cl. 180-168.000.
Rutledge, Thomas F., to ICI Americas Inc. Oxidation of aromatic compounds to quinones by use of sodium hypochlorite. 4,438,037, Cl. 260-385.000.
Ryadchikov, Vladimir E.: *See—*
Moskalik, Leonid M.; Ryadchikov, Vladimir E.; Bykov, Anatoly P.; Kulesh, Vladimir P.; Opasov, Stanislav I.; and Orlov, Anatoly A., 4,438,393, Cl. 324-83.00D.
Ryan, Carl R., to Motorola Inc. Serial minimum shift keyed modulator including notch and bandpass filters. 4,438,413, Cl. 332-16.00R.
S. C. Johnson & Son, Inc.: *See—*
Benicek, Jeanne A.; and Schrader, Rodney W., 4,438,009, Cl. 252-90.000.
S.I.A.C.O. Limited: *See—*
Shaw, George, 4,437,269, Cl. 51-358.000.
S.I.S.A.S. Societa Italina Serie Acetica Sintetica S.p.A.: *See—*
Codignola, Franco, 4,438,285, Cl. 568-861.000.
Sabre Safety Limited: *See—*
Glynn, Michael H., 4,437,460, Cl. 128-204.260.
Sadove, Max S.: *See—*
Djordjevich, Ljubomir; and Sadove, Max S., 4,437,469, Cl. 128-672.000.
Safonnikov, Anatoly N.; and Antonov, Anatoly V., to Institut Elektrosvarki Imeni E.O. Patona; and Akademii Nauk Ukrainsko. Electroslag welding method. 4,438,313, Cl. 219-73.100.
St. John, Michael R.: *See—*
Sammells, Anthony F.; and St. John, Michael R., 4,437,954, Cl. 204-129.000.
Saint-Leger, Didier J.; and Abrioux, Andre, to "L'Oreal". Process for sampling and analysis by thin layer chromatography. 4,438,205, Cl. 436-71.000.
Saito, Masaki: *See—*
Ishikawa, Reiji; Saito, Masaki; Mori, Toshio; and Tamura, Hidemasa, 4,438,160, Cl. 427-214.000.
Saito, Syuichiro: *See—*
Akashi, Akira; Katsuma, Makoto; Kawamura, Masaharu; Kamata, Shigeru; and Saito, Syuichiro, 4,437,752, Cl. 354-289.000.
Saito, Takao; Morita, Jyun-ichi; Hirose, Kikuji; and Kato, Akitosi, to Nippon Steel Corporation. Cold rolled steel strip having an excellent phosphatizing property and process for producing the same. 4,437,947, Cl. 204-35.00R.
Saito, Yukio; Nogita, Shunsuke; Watanabe, Syoji; and Baba, Kenji, to Hitachi, Ltd. Process for controlling an aeration tank in an activated sludge sewage treatment. 4,437,992, Cl. 210-603.000.
Saizi, Mituhiro: *See—*
Yanagiuchi, Shigenobu; and Saizi, Mituhiro, 4,438,505, Cl. 364-900.000.
Sakaguchi, Yasunori: *See—*
Yazawa, Nobuharu; and Sakaguchi, Yasunori, 4,438,405, Cl. 328-152.000.
Sakai, Kazushige: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Kazushige; and Hata, Shun-ichi, 4,438,115, Cl. 424-250.000.
Sakai, Masaaki; and Yoshihiro, Mitsugu, to Sony Corporation. Stop control circuit for brushless DC motor. 4,438,377, Cl. 318-254.000.
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; and Hosoe, Kazuya, to Canon Kabushiki Kaisha. Signal processing system. 4,437,743, Cl. 354-402.000.
Sakai, Toshikazu: *See—*
Mitomo, Mamoru; Moriyoshi, Yusuke; Sakai, Toshikazu; and Osaka, Toshiaki, 4,438,051, Cl. 264-1.200.
Sakakima, Hiroshi; Satomi, Mitsuo; Senno, Harufumi; and Hirota, Eiichi, to Matsushita Electric Industrial Co., Ltd. Amorphous magnetic alloys. 4,437,912, Cl. 148-403.000.
Sakamaki, Hisashi: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,437,757, Cl. 355-15.000.
Sakamoto, Hitoshi, to Sony Corporation. Tracking control system. 4,438,463, Cl. 360-10.200.
Sakano, Hajime: *See—*
Fujimori, Yoshitugu; Takabori, Yasuo; Sakano, Hajime; and Ito, Akitoshi, 4,438,229, Cl. 524-109.000.
Sakumoto, Akinori, to Daiwa Seiko Inc. Handle folding device for fishing reel. 4,437,621, Cl. 242-84.10J.
Sakurayama, Junichi; and Magome, Tamotsu, to Canon Kabushiki Kaisha. Liquid handling apparatus for an electrostatic copier. 4,437,755, Cl. 355-10.000.
Salenbo, Sten A. Method and apparatus for handling and setting up large size slit-boxes. 4,437,851, Cl. 493-124.000.
Saletore, Vikram: *See—*
Haque, Yusuf A.; Saletore, Vikram; and Schuler, Jeffrey A., 4,438,354, Cl. 307-493.000.
Saltzer, Jerome H., to Massachusetts Institute of Technology. System for regenerating a data word on a communications ring. 4,438,520, Cl. 375-4.000.
Sammells, Anthony F.; and St. John, Michael R., to Institute of Gas Technology. Fuels production by photoelectrolysis of water and photooxidation of soluble biomass materials. 4,437,954, Cl. 204-129.000.
Sampson, Jacob. Meat tenderizer. 4,437,208, Cl. 17-26.000.
Samulski, Thaddeus V. Luminescent decay time techniques for temperature measurement. 4,437,772, Cl. 374-129.000.
Sanborn, Philip A., Jr., to W. R. Grace & Co., Cryovac Div. Method and apparatus for making a recloasble package. 4,437,293, Cl. 53-412.000.
Sanchez, Victor; Espenan, Patrick; Casademont, Ernest; and Lafaille, J. Pierre, to Centre National de la Recherche Scientifique. Apparatus for electrophoretically fractionating a solution. 4,437,967, Cl. 204-301.000.
Sanden Corporation: *See—*
Terauchi, Kiyoshi; and Hiraga, Masaharu, 4,437,820, Cl. 418-55.000.
Sander, Robert K.: *See—*
Rockwood, Stephen D.; and Sander, Robert K., 4,437,958, Cl. 204-157.10R.
Sanders, Adrianus L. M.; Meuleman, Dirk G.; Moelker, Huibert C. T.; van Dedem, Gijsbert W. K.; and van Houdenhoven, Francois E. A., to Akzo N.V. Anti-thromboticum based on polysaccharides, and pharmaceutical compositions. 4,438,108, Cl. 424-183.000.
Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,437,200, Cl. 15-306.00A.
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,437,324, Cl. 68-5.00E.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Apparatus for continuous dehydration. 4,437,200, Cl. 15-306.00A.
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, to Sando Iron Works Co., Ltd. Apparatus for treating a cloth continuously with the use of low-temperature plasma. 4,437,324, Cl. 68-5.00E.

Sandoz Ltd.: *See—*
Bauer, Wilfried; Cardinaux, Francois; Huguenin, Rene; Pless, Janos; and Sandrin, Edmond, 4,438,103, Cl. 424-177.000.

Sandrin, Edmond: *See—*
Bauer, Wilfried; Cardinaux, Francois; Huguenin, Rene; Pless, Janos; and Sandrin, Edmond, 4,438,103, Cl. 424-177.000.

Sanko, John R., to Paris Manufacturing Company, Inc. Pressing and creasing apparatus. 4,437,246, Cl. 38-25.000.

Sankyo Company Limited: *See—*
Hiraoka, Tetsuo; and Kobayashi, Takeo, 4,438,265, Cl. 544-29.000.
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, 4,438,277, Cl. 560-119.000.

Sano, Jun; Aoyama, Masahide; and Kubo, Daijiro, to Tokyo Shibaura Denki Kabushiki Kaisha. I^2L Circuit with a variable injector current source. 4,438,353, Cl. 307-477.000.

Sanraku-Ocean Co., Ltd.: *See—*
Kubo, Katsuro; Fukagawa, Yasuo; and Ishikura, Tomoyuki, 4,438,201, Cl. 435-228.000.

Sanyo Electric Co., Ltd.: *See—*
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,438,311, Cl. 219-10.49R.

Sarangapani, Srinivasan: *See—*
Kampe, Dennis J.; and Sarangapani, Srinivasan, 4,438,216, Cl. 502-101.000.

Sarli, Michael S.: *See—*
Gillespie, Bernard M.; Sarli, Michael S.; and Smith, Kenneth W., 4,437,975, Cl. 208-87.000.

Sasaki, Hideaki: *See—*
Kobayashi, Mamoru; Ishige, Kanji; Sasaki, Hideaki; Tani, Mitsukiyo; and Kawakami, Yashuhiko, 4,437,603, Cl. 228-4.500.

Sasaki, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic imaging apparatus. 4,437,348, Cl. 73-625.000.

Sasaya, Toshihiro: *See—*
Takahashi, Tomowaki; Konno, Kunio; and Sasaya, Toshihiro, 4,437,733, Cl. 350-427.000.

Sato, Eiichi; Shimizu, Akira; and Yanagisawa, Kazuhisa, to Olympus Optical Company Limited. Electrophotographic process and photosensitive screen for use in such process. 4,438,186, Cl. 430-53.000.

Sato, Hiroyasu; Yamamoto, Kazuaki; and Aotsu, Hiroaki, to Hitachi, Ltd. Automatic voltage regulation system for AC generator. 4,438,385, Cl. 322-28.000.

Sato, Katsuhiko: *See—*
Shida, Masaharu; Ueda, Makoto; Otawa, Shuji; Mandai, Masaaki; and Sato, Katsuhiko, 4,437,769, Cl. 368-204.000.

Sato, Kunio: *See—*
Mitarai, Tsuyoshi; and Sato, Kunio, 4,437,377, Cl. 84-1.010.

Sato, Takahisa: *See—*
Takata, Masahiro; Aoki, Ryuji; and Sato, Takahisa, 4,438,217, Cl. 502-205.000.

Sato, Takashi; and Ozawa, Tsutomu, to Nippon Steel Corporation. Amorphous alloy for use as a core. 4,437,907, Cl. 148-31.550.

Sato, Takeshi, to Matsushita Electric Industrial Co., Ltd. TV Tuner circuit. 4,438,529, Cl. 455-190.000.

Sato, Tomoyasu: *See—*
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,438,197, Cl. 435-119.000.

Sato, Toshihiko: *See—*
Suzuki, Shin; and Sato, Toshihiko, 4,437,440, Cl. 123-145.00A.

Sato, Yasuhisa, to Canon Kabushiki Kaisha. Light measuring device for a single lens reflex camera. 4,437,741, Cl. 354-479.000.

Satoh, Susumu: *See—*
Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, 4,438,126, Cl. 424-272.000.

Satomi, Mitsuo: *See—*
Sakakima, Hiroshi; Satomi, Mitsuo; Senno, Harufumi; and Hirota, Eiichi, 4,437,912, Cl. 148-403.000.

Satomura, Masato, to Fuji Photo Film Co., Ltd. Polymers containing aromatic sulfonic acid ester or amide groups. 4,438,245, Cl. 526-286.000.

Satou, Hiroshi: *See—*
Miura, Hirohisa; Satou, Hiroshi; and Natsume, Toshio, 4,437,886, Cl. 75-67.00R.

Satsuki, Teruhisa; Ota, Seiiti; and Tabata, Setsuko, to Lion Corporation. Detergent compositions. 4,438,025, Cl. 252-545.000.

Saulson, Stanley H.; Schroeppel, Edward A.; and Tarjan, Peter P., to Cordis Corporation. Cardiac pacer with improved battery system, output circuitry, and emergency operation. 4,437,466, Cl. 128-419.0PS.

Saurer-Diederichs (Societe Anonyme): *See—*
Deborde, Albert H.; and Volland, Michel F., 4,437,352, Cl. 73-862.470.

Savi, Antonio, to Officine Meccaniche Savi Antonio S.p.A. Rotating-drum machine for peeling tomatoes. 4,437,398, Cl. 99-587.000.

Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Goto, Hirokazu; and Abiko, Shuzo, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Magnetic head of magnetic reluctance effect type and a method for making the same. 4,438,470, Cl. 360-113.000.

Schaefer, Donald W.: *See—*
Caron, Christopher D.; and Schaefer, Donald W., 4,437,659, Cl. 271-276.000.

Schafer, Wolfgang: *See—*
Zaschke, Horst; Schafer, Wolfgang; Deutscher, Hans-Joachim; Demus, Dietrich; and Pelzl, Gerhard, 4,438,268, Cl. 544-315.000.

Schairbaum, Albert W.: *See—*
Slocum, Donald H.; Schairbaum, Albert W.; and Curtis, William M., 4,437,274, Cl. 52-105.000.

Schaller, Karl H.; and Zimmermann, Volker, to International Business Machines Corporation. Magnetic disk track following servo burst amplitude drop compensation. 4,438,467, Cl. 360-77.000.

Schalungsverleih Heinzle AG: *See—*
Heinzle, Otto, 4,437,640, Cl. 249-20.000.

Scheer, Erich: *See—*
Tomm, Dagwin; and Scheer, Erich, 4,437,555, Cl. 192-70.210.

Scheibenpflug, Konrad, to Siemens Aktiengesellschaft. Arrangement for fastening a monitor to a text station. 4,437,638, Cl. 248-282.000.

Schenck, Timothy T., to Du Pont de Nemours, E. I., and Company. Filled and plasticized blends of linear low density polyethylene. 4,438,228, Cl. 524-109.000.

Scheve, Heinrich: *See—*
Gorris, Rainer; Hibbel, Josef; Gerhardus, Ulrich; and Scheve, Heinrich, 4,437,864, Cl. 48-62.00R.

Schievelbein, Vernon H.; and Zabczuk, Paul, to Texaco Inc. Surfactant flooding solution. 4,438,002, Cl. 252-8.55D.

Schiffarth, Josef: *See—*
Dunkelmann, Dietger; Jaunich, Helmut; and Schiffarth, Josef, 4,438,515, Cl. 373-88.000.

Schilbe, Rick: *See—*
Demers, Robert J.; and Schilbe, Rick, 4,437,490, Cl. 137-512.400.

Schiller, Norman H.; and Alfano, Robert R., to Hamamatsu Corporation. Picosecond delay device. 4,438,416, Cl. 333-160.000.

Schipper, Dennis J., to ACF Industries, Inc. Valve for discharge outlet and actuating means therefore. 4,437,798, Cl. 406-119.000.

Schlecht, Annegret: *See—*
Wulf, Peter; and Schlecht, Annegret, 4,437,199, Cl. 15-49.00R.

Schleimann-Jensen, C. Arne, to TII Industries, Inc. Method for manufacturing a gas-filled discharge tube for use as transient protection. 4,437,845, Cl. 445-39.000.

Schlossmacher, Edward J.: *See—*
Packer, Lawrence G.; and Schlossmacher, Edward J., 4,438,279, Cl. 562-416.000.

Schmer, Gottfried, to Trimedyne, Inc. Biochemically active matrix for use in a bio-artificial organ. 4,438,198, Cl. 435-178.000.

Schmid, Jochen: *See—*
Gruber, Peter; Schmid, Jochen; Lechner, Horst; and Bauer, Eckhart, 4,438,091, Cl. 424-21.000.

Schmidt, Manfred: *See—*
Heinrich, Horst; Herrmann, Gunter R.; and Schmidt, Manfred, 4,437,401, Cl. 101-93.140.

Schmitt, Urban: *See—*
Deeg, Rolf; Schmitt, Urban; and Ziegenhorn, Joachim, 4,438,204, Cl. 436-67.000.

Schmittmann, Hans-Bernd; and Thier, Alfons, to Wiersma, Charles M.; and Wiersma, Jack G., by said Alfons Thier. Fire retardant and compounds based thereon. 4,438,028, Cl. 252-609.000.

Schmitz-Josten, Robert; Suling, Carlhans; Podazun, Wolfgang; Bomer, Bruno; Borgardt, Manfred; and Walkowiak, Michael, to Bayer Aktiengesellschaft. Photopolymerizable dental compositions. 4,437,836, Cl. 433-199.000.

Schnabl, Karl; Hoppner, Eberhard; and Kastl, Hans, to Kraftwerk Union Aktiengesellschaft. Eddy current testing device for metal tubes or pipes having a quick release coupling with a bayonet lock. 4,438,399, Cl. 324-220.000.

Schneider, Connie J.: *See—*
Dirlikov, Stoil K.; and Schneider, Connie J., 4,438,226, Cl. 521-175.000.

Schneider, Fred J.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,437,229, Cl. 29-593.000.

Schneiter, Fred E.: *See—*
Adams, Gary V.; and Schneiter, Fred E., 4,437,681, Cl. 280-733.000.

Schnettler, Shirley I.; and Gilloon, Elinor. Educational aid and method of using same. 4,437,837, Cl. 434-178.000.

Schoder, Bernd: *See—*
Gimmler, Joachim; and Schoder, Bernd, 4,437,551, Cl. 192-3.280.

Schott Glaswerke: *See—*
Mennemann, Karl; Gliemeroth, Georg; and Geiler, Volkmar, 4,438,211, Cl. 501-65.000.

Schrader, Rodney W.: *See—*
Benicek, Jeanne A.; and Schrader, Rodney W., 4,438,009, Cl. 252-90.000.

Schranz, Karl-Wilhelm: *See—*
Kunitz, Friedrich-Wilhelm; and Schranz, Karl-Wilhelm, 4,438,195, Cl. 430-566.000.

Schreiber, Georg: *See—*
von Branchel, Helmut; Schreiber, Georg; and Schroeder, Heinz, 4,438,075, Cl. 422-189.000.

Schroeder, Heinz: *See—*
von Branchel, Helmut; Schreiber, Georg; and Schroeder, Heinz, 4,438,075, Cl. 422-189.000.

Schroeder, Jon M., to Schroeder, Jon M. Electronic component bonding tape. 4,438,181, Cl. 428-571.000.

Schroeppel, Edward A.: *See—*
Saulson, Stanley H.; Schroeppel, Edward A.; and Tarjan, Peter P., 4,437,466, Cl. 128-419.0PS.

Schuermeyer, Fritz L. Gallium arsenide MIS integrated circuits. 4,438,351, Cl. 307-450.000.

Schule, Sheldon D. Automatic animal feeder. 4,437,435, Cl. 119-51.130.

Schuler, Ingo: *See—*
Banke, Karl-Heinz; Hering, Elisabeth; Lobel, Wilfried; Pollack, Dieter; Wiedemann, Gunter; Grell, Ute; and Schuler, Ingo, 4,438,053, Cl. 264-25.000.

Schuler, Jeffrey A.: *See—*
Haque, Yusuf A.; Saletore, Vikram; and Schuler, Jeffrey A., 4,438,354, Cl. 307-493.000.

Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., to Firmenich SA. Process for the preparation of hydroxy-ketones. 4,438,283, Cl. 568-403.000.

Schultz, Barry J. Vehicular suspension. 4,437,678, Cl. 280-276.000.

Schultz, Daryl A. Drilling bit bearings. 4,437,774, Cl. 384-92.000.

Schulz, Walther: *See—*
Lindorfer, Walter; Wagner, Fritz; and Schulz, Walther, 4,437,993, Cl. 210-631.000.

Schuster, Wilhelm: *See—*
Stahl, Juergen; Schuster, Wilhelm; and Wegner, Wilhelm, 4,437,212, Cl. 24-698.000.

Schutt, Dieter: *See—*
Heinrich, Hans J.; and Schutt, Dieter, 4,438,489, Cl. 364-200.000.

Schutz, Carl-Heinz: *See—*
Weber, Richard A.; and Schutz, Carl-Heinz, 4,437,652, Cl. 266-275.000.

Schwartz, Jeremy; and Frick, Raymond, to Ingersoll-Rand Company. Radial sealing means for use with, and in combination with, a slotted rotor. 4,437,822, Cl. 418-122.000.

Schwartz, Lionel H.; Miller, Scott W.; and Severud, Christopher N., Jr., to Falcon Safety Products, Inc. Self-contained anti-static adapter for compressed gas dust blowing devices. 4,438,479, Cl. 361-213.000.

Schwartz, Marcus, to United States of America, Navy. Position and restraint system for aircrewman. 4,437,628, Cl. 244-122.0AG.

Schwarz, Eckhard C. A., to Biax Fiberfilm Corporation. Novel porous fabric. 4,438,167, Cl. 428-138.000.

Schwarz, Hans D.: *See—*
Arens, Egidius; Hampe, Christoph; Karlowsky, Ingo; Meyersieck, Manfred; Schwarz, Hans D.; Anding, Norbert; and Leisterer, Reinhard, 4,438,438, Cl. 343-451.000.

Schwarz, Herbert F., to Polysar Limited. Carboxylated nitrile rubber/PVC/nylon flux blends. 4,438,230, Cl. 524-151.000.

Schweiss, Dietrich; and Nordin, Ivan C., to Warner-Lambert Company. 5-Amino-N-(3-chloro- 2-methyl-, or 2-fluorophenyl)-1,3-dimethyl-1H-pyrazole-4-carboxamides and use as an anti-convulsant. 4,438,092, Cl. 424-273.00P.

Schweitzer, Edmund O., Jr. Fault indicator with combined trip and reset winding. 4,438,403, Cl. 324-133.000.

Schwendener, Reto: *See—*
Weder, Hans G.; Zumbuhl, Otmar; Schwendener, Reto; and Milsmann, Manfred, 4,438,052, Cl. 264-4.600.

Schweyen, Paul R.: *See—*
Parekh, Dhan N.; and Schweyen, Paul R., 4,437,865, Cl. 51-298.000.

Scientific Circuitry, Inc.: *See—*
Shepter, Joseph J., 4,438,350, Cl. 307-440.000.

Scott, John W.: *See—*
Sells, Mary A.; and Scott, John W., 4,437,945, Cl. 204-35.00N.

Scott, Robert J., to Union Carbide Corporation. Nonionic surfactants for automatic dishwasher detergents. 4,438,014, Cl. 252-174.210.

Sears, Roebuck and Co.: *See—*
Hoffman, Howard O., 4,437,572, Cl. 211-86.000.

See, Jacques L. A.; and Chevanne, Sylvain V. L., to Honeycomb Panels Patents Association Inc. Wall construction prefabricated from self-connectable elements. 4,437,281, Cl. 52-309.100.

Seeger, Hans-Peter, to Ystral GmbH. Dispersion turbine. 4,437,765, Cl. 366-264.000.

Seeley, Robert J. Molding machine. 4,437,507, Cl. 164-173.000.

Seib, Karl: *See—*
Oppenlaender, Knut; Strickler, Rainer; Seib, Karl; and Naegele, Paul, 4,438,094, Cl. 424-59.000.

Seigneurin, Laurent: *See—*
Jacques, Roland; Reppelin, Michel; and Seigneurin, Laurent, 4,438,042, Cl. 260-465.00B.

Seiko Instruments & Electronics Ltd.: *See—*
Shida, Masaharu; Ueda, Makoto; Otawa, Shuji; Mandai, Masaaki; and Sato, Katsuhiko, 4,437,769, Cl. 368-204.000.

Seitz, Hans; Rach, Heinz-Dieter; Pieper, Henner; and Frerichs, Udo, to Continental Gummi-Werke Aktiengesellschaft. Tread configuration for pneumatic vehicle tires. 4,437,503, Cl. 152-209.00R.

Seitz, Werner: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.

Seitzer, Philip W.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,437,229, Cl. 29-593.000.

Sekel, Stephen M.; Strange, Rodney G.; and Verrinder, Robert F., to Tektronix, Inc. Power supply output monitoring method and apparatus. 4,438,498, Cl. 364-483.000.

Sekiwaga, Youichi: *See—*
Amano, Kazunori; and Sekiwaga, Youichi, 4,437,832, Cl. 431-304.000.

Selak, Martin, to Astro Machine Corp. Suction cup apparatus for feeding a sheet from the bottom of a stack. 4,437,657, Cl. 271-100.000.

Selinko, George J., to Motorola Inc. Non-hermetically sealed stackable chip carrier package. 4,437,718, Cl. 339-61.00M.

Sells, Mary A.; and Scott, John W., to Sprague Electric Company. Process for anodizing aluminum foil. 4,437,945, Cl. 204-35.00N.

Senno, Harufumi: *See—*
Sakakima, Hiroshi; Satomi, Mitsuo; Senno, Harufumi; and Hirota, Eiichi, 4,437,912, Cl. 148-403.000.

Seo, Yuzo: *See—*
Arita, Yoji; and Seo, Yuzo, 4,437,950, Cl. 204-67.000.

Seshimoto, Osamu: *See—*
Kitajima, Masao; Seshimoto, Osamu; Kubotera, Kikuo; and Yamaguchi, Akira, 4,437,970, Cl. 204-412.000.

Settineri, William J.; and Hensler, John M., to Dow Chemical Company, The. Retardation of polymer buildup in monovinyl aromatic suspension polymerization using sulfur trioxide as reactor coating. 4,438,242, Cl. 526-62.000.

Severud, Christopher N., Jr.: *See—*
Schwartz, Lionel H.; Miller, Scott W.; and Severud, Christopher N., Jr., 4,438,479, Cl. 361-213.000.

Seybold, Guenther: *See—*
Lardon, Hartmut; and Seybold, Guenther, 4,438,282, Cl. 568-58.000.

Shaffer, Jesse S., to U.S. Philips Corporation. Combined AC and DC etching of aluminum foil. 4,437,955, Cl. 204-129.400.

Shakhunov, Valery A.: *See—*
Doev, Vitaly S.; Kotelyansky, Iosif M.; Kravchenko, Valery B.; Monosov, Yakov A.; Shakhunov, Valery A.; and Kopylov, Jury L., 4,438,443, Cl. 346-153.100.

Shanley, Robert L., II, to RCA Corporation. Adjustable coring circuit permitting coring extinction. 4,438,454, Cl. 358-31.000.

Shanoski, Henry: *See—*
Griffith, Richard M.; and Shanoski, Henry, 4,438,062, Cl. 264-255.000.

Sharma, Gian C.: *See—*
Routh, Donald E.; and Sharma, Gian C., 4,437,961, Cl. 204-192.0EC.

Sharp Kabushiki Kaisha: *See—*
Kuranishi, Masaaki; and Togo, Yasuhiko, 4,438,328, Cl. 235-181.000.
Yanagiuchi, Shigenobu; and Saizi, Mituhiro, 4,438,505, Cl. 364-900.000.

Sharples, Thomas D.: *See—*
Stephens, Donald E.; and Sharples, Thomas D., 4,438,070, Cl. 422-70.000.

Shaw, George, to S.I.A.C.O. Limited. Abrasive and polishing sheets. 4,437,269, Cl. 51-358.000.

Shay, Joseph J., to Ethyl Products Company. Accumulative pressure pump. 4,437,588, Cl. 222-321.000.

Shell Oil Company: *See—*
Graiff, L. B.; and Laity, John L., 4,437,436, Cl. 123-1.00A.

Sheng, Tan T.; Sinha, Ashok K.; and Vaidya, Sheila, to Bell Telephone Laboratories, Incorporated. Solid state device with conductors having chain-shaped grain structure. 4,438,450, Cl. 357-68.000.

Shepter, Joseph J., to Scientific Circuitry, Inc. Logic circuit building block and systems constructed from same. 4,438,350, Cl. 307-440.000.

Sheridan, John P. Solar energy absorption and distribution system with full solar, solar assist, and fireplace heat exchanger modes. 4,437,511, Cl. 165-485.000.

Shibata, Takashi; and Nishimura, Masaaki, to Sony Corporation. Reverberation apparatus. 4,438,525, Cl. 381-63.000.

Shibata, Tomoyuki: *See—*
Iwata, Minoru; Murata, Yukio; and Shibata, Tomoyuki, 4,437,811, Cl. 417-8.000.

Shibayama, Shigeki; and Iwata, Kazuhide, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing system with a slave computer using data registers as the sole operand store. 4,438,488, Cl. 364-200.000.

Shida, Masaharu; Ueda, Makoto; Otawa, Shuji; Mandai, Masaaki; and Sato, Katsuhiko, to Seiko Instruments & Electronics Ltd. Electronic timepiece. 4,437,769, Cl. 368-204.000.

Shimada, Kazuo; Akiyama, Masataka; and Sudo, Masami, to Research Foundation for Microbial Diseases of Osaka University, The. Oral composition containing dextranase and α-1,3 glucanase and a method for preventing and suppressing oral diseases using the same. 4,438,093, Cl. 424-50.000.

Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,437,848, Cl. 474-82.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,437,848, Cl. 474-82.000.

Shimatani, Michiro; and Kazama, Toyoki, to Fuji Electric Company, Ltd. Method for producing photosensitive film for electrophotography. 4,438,188, Cl. 430-128.000.

Shimizu, Akira: *See—*
Sato, Eiichi; Shimizu, Akira; and Yanagisawa, Kazuhisa, 4,438,186, Cl. 430-53.000.

Shimizu, Senzo: *See—*
Miyamoto, Akira; Shimizu, Senzo; Harada, Masahiro; Ajiro, Tamotu; and Hara, Hideki, 4,438,257, Cl. 528-347.000.

Shimizu, Yozi: *See—*
Ikenoya, Yasuo; Araki, Masafumi; and Shimizu, Yozi, 4,437,305, Cl. 60-293.000.

Shinmi, Akira: *See—*
Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Goto, Hirokazu; and Abiko, Shuzo, 4,438,470, Cl. 360-113.000.

Shinoda, Nobuhiko: *See—*
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; and Hosoe, Kazuya, 4,437,743, Cl. 354-402.000.

Shirahata, Kunikatsu: *See—*
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,438,197, Cl. 435-119.000.

Shirasaki, Yuichi: *See—*
Iwamoto, Yoshinao; Suzuki, Shizuo; and Shirasaki, Yuichi, 4,438,401, Cl. 324-326.000.

Shirley, Martin W., to National Research Development Corporation. Coccidiosis vaccines. 4,438,097, Cl. 424-88.000.

Shiroyama, Masaharu: *See—*
Furukawa, Mitsuhiki; Miyahara, Michito; Kitahira, Takashi; Misumi, Kiyohito; Shiroyama, Masaharu; and Wada, Toshiaki, 4,438,213, Cl. 501-92.000.

Shiseki, Yutaka; Yagi, Junichi; and Miura, Yasuyuki, to Ozen Co., Ltd. Means for suppressing vibration and noise in a device driven by a small electric motor. 4,438,358, Cl. 310-51.000.

Shoji, Fusaji: *See—*
Sudo, Ryoichi; Shoji, Fusaji; Watanabe, Takeshi; Suzuki, Kenkichi; and Ooue, Michio, 4,437,731, Cl. 350-340.000.

Shoji, Masashi, to Nippon Electric Co., Ltd. Hysteresis circuit having a stable output free from noise superposed on input signal. 4,438,349, Cl. 307-362.000.

Shook, William B., to Thurston, Inc. Assembly for mounting a water bottle cage on a cycle frame. 4,437,596, Cl. 224-39.000.

Shreve, James S., to United States of America, Army. Self-survey means. 4,438,439, Cl. 343-449.000.

Shuey, John R.: *See—*
Eaby, Daniel G.; Long, William B.; and Shuey, John R., 4,437,725, Cl. 339-156.00R.

Sibbald, Alastair: *See—*
Covington, Arthur K.; and Sibbald, Alastair, 4,437,969, Cl. 204-403.000.

Siddiqi, Iqbal, to Battelle Memorial Institute. Test strips for analyzing dissolved substances. 4,438,067, Cl. 422-56.000.

Sielaff GmbH & Co.: *See—*
Kolbl, Richard; and Mehlan, Bernd, 4,437,557, Cl. 194-1.00D.

Sielfeld, Gilbert; and Sunder-Plassmann, Paul, to Chemische Werke Huels, AG. Process for the production of polymers and copolymers of vinyl chloride. 4,438,244, Cl. 526-202.000.

Siemens Aktiengesellschaft: *See—*
Bolmgren, Jan; and Nilsson, Kenth, 4,438,441, Cl. 346-140.00R.
Brandl, Hans, 4,438,523, Cl. 375-30.000.
Dangschat, Rainer, 4,438,345, Cl. 307-270.000.
Gehring, Gerhard, 4,438,347, Cl. 307-308.000.
Harbauer, Werner, 4,437,720, Cl. 339-95.00D.
Kardinal, Hans J., 4,437,797, Cl. 406-110.000.
Kemmesies, Hartmut, 4,438,407, Cl. 329-50.000.
Lippmann, Hans-Joachim; Peche, Gerhard; and Bettge, Hans, 4,438,307, Cl. 200-144.00B.
Meltsch, Hans J.; and Rost, Jan, 4,438,294, Cl. 174-88.00R.
Munscher, Wolfgang, 4,438,458, Cl. 358-254.000.
Scheibenpflug, Konrad, 4,437,638, Cl. 248-282.000.

Siemens Gammasonics, Inc.: *See—*
Meeder, Raymond L., 4,438,335, Cl. 250-363.00S.

Sigl, Wayne C.; and Frick, Richard H., to Kimberly-Clark Corporation. Disposable diaper with elasticized leg openings. 4,437,860, Cl. 604-385.000.

Sigma Instruments, Inc.: *See—*
Field, John H., II, 4,438,381, Cl. 318-696.000.

Silva, Ralph: *See—*
Mollman, Robert E.; and Silva, Ralph, 4,438,059, Cl. 264-105.000.

Simon, Lillian D. Card game. 4,437,670, Cl. 273-296.000.

Simonidesz, Vilmos: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.

Simpson, Danny E.; Williams, David M.; Chase, Richard A.; and Grubb, Lawrence B., to Johnson & Johnson Baby Products Company. Puzzle post toy. 4,437,668, Cl. 273-156.000.

Singer Company, The: *See—*
Johnson, Kenneth M., 4,437,420, Cl. 112-103.000.
Johnson, Ralph E., 4,437,421, Cl. 112-158.00R.

Sinha, Ashok K.: *See—*
Sheng, Tan T.; Sinha, Ashok K.; and Vaidya, Sheila, 4,438,450, Cl. 357-68.000.

Siplast Siegerlander GmbH: *See—*
Weihe, Rolf; and Weihe, Georg, 4,437,781, Cl. 402-8.000.

Sirons, Karlis A.: *See—*
Brown, James R.; and Sirons, Karlis A., 4,437,249, Cl. 42-51.000.

Sjoerdsma, Albert, to Merrell Dow Pharmaceuticals Inc. Method of inhibiting algae. 4,437,873, Cl. 71-67.000.

SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; and Muller, Leo, 4,437,556, Cl. 192-98.000.
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Horling, Peter; Hetterich, Hermann; and Kunkel, Heinrich, 4,437,214, Cl. 29-149.5DP.
Olschewski, Armin; Hetterich, Hermann; and Horling, Peter, 4,437,330, Cl. 72-358.000.

Skonezny, Paul M.: *See—*
Daluge, Susan M.; and Skonezny, Paul M., 4,438,267, Cl. 544-309.000.

Skorianetz, Werner; and Ohloff, Gunther, to Firmenich SA. Oxygenated tricyclic derivatives of norbornane and use of same as perfuming ingredients. 4,438,023, Cl. 252-522.00R.

Skowronski, Raymund P.: *See—*
Heredy, Laszlo A.; and Skowronski, Raymund P., 4,437,980, Cl. 208-235.000.

Skrovanek, Ambroz K.; and Evert, Carl A., to Harvey Hubbell Incorporated. Signal attenuating apparatus. 4,438,408, Cl. 330-51.000.

Slavetskas, Deborah. Hemi-sling. 4,437,459, Cl. 128-94.000.

Slocomb, Leon F., Jr.: *See—*
Young, Alfred G.; Slocomb, Leon F., Jr.; and Bugg, Francis V., 4,438,430, Cl. 340-547.000.

Slocum, Donald H.; Schairbaum, Albert W.; and Curtis, William M., to Masonite Corporation. Building panel. 4,437,274, Cl. 52-105.000.

Smith, Craig G.: *See—*
Okinaka, Yutaka; Smith, Craig G.; and Smith, Lawrence E., 4,437,948, Cl. 204-52.00R.

Smith, Daniel J.: *See—*
Taubman, Martin A.; and Smith, Daniel J., 4,438,200, Cl. 435-193.000.

Smith, Fred J., to Digital Products Corporation. Multimessage automatic telephone polling methods and apparatus. 4,438,296, Cl. 179-6.020.

Smith, Jay, III: *See—*
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.

Smith, Kenneth W.: *See—*
Gillespie, Bernard M.; Sarli, Michael S.; and Smith, Kenneth W., 4,437,975, Cl. 208-87.000.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,438,127, Cl. 424-272.000.

Smith, Lawrence E.: *See—*
Okinaka, Yutaka; Smith, Craig G.; and Smith, Lawrence E., 4,437,948, Cl. 204-52.00R.

Smith and Nephew Associated Companies Limited: *See—*
Howes, John G. B., 4,438,011, Cl. 252-106.000.
Potter, William D.; and Kiamil, Sinan B., 4,438,177, Cl. 428-355.000.

Smith, Robert B. Variable air volume building ventilation system. 4,437,608, Cl. 236-13.000.

Smith, Robert E., to Burr-Brown Research Corporation. Bar code reading system and method. 4,438,327, Cl. 235-462.000.

Smith, Robert L., to Merck & Co., Inc. Ophthalmic compositions of carbonic anhydrase inhibitors for topical application in the treatment of elevated intraocular pressure. 4,438,123, Cl. 424-270.000.

Smith, Roger A.; and Withers, Michael S., to Du Pont de Nemours, E. I., and Company. Coextruded multilayer cation exchange membranes. 4,437,952, Cl. 204-98.000.

Smith, Todd I.: *See—*
Elias, Luis R.; Madey, John M. J.; and Smith, Todd I., 4,438,513, Cl. 372-2.000.

Smith, Walter J., to Huck Manufacturing Company. Multigrip fastener. 4,437,805, Cl. 411-361.000.

SmithKline Beckman Corporation: *See—*
Chow, Alfred W., 4,438,135, Cl. 424-300.000.

Smiths Industries Public Limited Company: *See—*
Capaldi, Nicholas R., 4,437,354, Cl. 74-5.460.

Smoot, George W.; and Macnak, Philip P., to Motorola, Inc. Multiaddress pager with a call storage and priority paging option. 4,438,433, Cl. 340-825.440.

Smulders, Auguste: *See—*
Durand, Francois; and Smulders, Auguste, 4,437,792, Cl. 405-198.000.

Sniegoski, Paul J.: *See—*
Wohltjen, Henry; Sniegoski, Paul J.; and Ravner, Harold, 4,438,203, Cl. 436-60.000.

Snipes, Wallace: *See—*
Keith, Alec D.; and Snipes, Wallace, 4,438,139, Cl. 424-28.000.

Snowden, Roger L.: *See—*
Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,438,283, Cl. 568-403.000.

Snyder, Carl E., Jr.; and Tamborski, Christ, to United States of America, Air Force. Perfluorinated aliphatic polyalkylether lubricant with an additive composed of an aromatic phosphine substituted with perfluoroalkylether groups. 4,438,006, Cl. 252-49.900.

Snyder, Carl E., Jr.; and Tamborski, Christ, to United States of America, Air Force. Perfluorinated aliphatic polyalkylether lubricant with an additive composed of an aromatic phosphine substituted with perfluoroalkylether groups. 4,438,007, Cl. 252-49.900.

Snyder, Daniel R.: *See—*
Whitehouse, Craig M.; Cox, Nigel; Burt, Allan G.; and Snyder, Daniel R., 4,437,859, Cl. 604-131.000.

Societa' Pneumatici Pirelli S.p.A.: *See—*
Vespasiani, Alberto, 4,437,297, Cl. 57-9.000.

Societe Anonyme Automobiles Citroen: *See—*
Dore, Jacques, 4,437,219, Cl. 29-283.000.

Societe Anonyme Automobiles Peugeot: *See—*
Dore, Jacques, 4,437,219, Cl. 29-283.000.

Societe Anonyme dite: Alsthom-Atlantique: *See—*
Valibouse, Bernard, 4,437,989, Cl. 210-242.300.

Societe Anonyme dite: L'Oreal: *See—*
Grollier, Jean-Francois; and Allec, Josiane, 4,438,095, Cl. 424-70.000.
Guillon, Michel; Mondet, Jean; Papantoniou, Christos; and Vandenbossche, Claudine, 4,438,140, Cl. 424-61.000.

Koulbanis, Constantin; N'Guyen, Quang L.; Zabotto, Arlette; and Plot, Josiane, 4,437,895, Cl. 106-245.000.

Societe Anonyme Engrenages et Reducteurs: *See—*
Durand, Francois; and Smulders, Auguste, 4,437,792, Cl. 405-198.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Hedrick, Paul L., Jr., 4,438,147, Cl. 426-570.000.

Societe J. Brochier & Fils: *See—*
Bompard, Bruno; and Bruyere, Alain, 4,437,221, Cl. 29-429.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, S.N.E.C.M.A.: *See—*
Halin, Yves R.; and Hersen, Rene M. J., 4,437,783, Cl. 403-27.000.
Menioux, Claude C. F., 4,437,441, Cl. 123-213.000.

Societe Vetrotex Saint-Gobain: *See—*
Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, 4,437,869, Cl. 65-1.000.

Soclof, Sidney I., to Rockwell International Corporation. Process for producing NPN type lateral transistor with minimal substrate operation interference. 4,437,226, Cl. 29-577.00R.

Solc, Jitka, to Dow Chemical Company, The. Resin particles with magnetic particles bonded to surface. 4,438,179, Cl. 428-407.000.

Sony Corporation: *See—*
Ishikawa, Reiji; Saito, Masaki; Mori, Toshio; and Tamura, Hidemasa, 4,438,160, Cl. 427-214.000.
Katsumata, Yasushi, 4,438,409, Cl. 330-107.000.
Maruo, Tsunehiro; and Inagaki, Masaomi, 4,438,398, Cl. 324-173.000.
Miyashita, Takao; Aizawa, Hidekuni; and Takamiya, Toru, 4,437,778, Cl. 400-208.000.
Moriya, Ryusuke; Eguchi, Takeo; and Ohba, Takeo, 4,438,465, Cl. 360-22.000.
Odaka, Kentaro, 4,438,464, Cl. 360-13.000.
Ohba, Takeo; and Koga, Hirohisa, 4,438,469, Cl. 360-109.000.
Sakai, Masaaki; and Yoshihiro, Mitsugu, 4,438,377, Cl. 318-254.000.
Sakamoto, Hitoshi, 4,438,463, Cl. 360-10.200.
Shibata, Takashi; and Nishimura, Masaaki, 4,438,525, Cl. 381-63.000.
Yoshinaka, Tadaaki, 4,438,456, Cl. 358-148.000.

Soong, Tsai C. String load apportioned racket. 4,437,662, Cl. 273-73.00D.

Soper, Douglas C.; and Gould, Brian, to British Gas Corporation. Mains insertion. 4,437,494, Cl. 138-97.000.

Sor, Inc.: *See—*
Johnson, James R., 4,438,305, Cl. 200-83.00J.

Soref, Richard A.: *See—*
Kroger, Harry; and Soref, Richard A., 4,437,761, Cl. 356-44.000.

Sorenson, John F., to Champion International Corporation. Shipping carton with case knife protection for inner cartons. 4,437,569, Cl. 206-601.000.

Sorenson, John F., to Champion International Corporation. Shipping carton with case knife protection for inner cartons. 4,437,570, Cl. 206-601.000.

Sorenson, Paul D.; and Dickson, Dale A., to Medtronic, Inc. Ultrasound scanning system with semi-independent transducer array. 4,437,468, Cl. 128-660.000.

Southgate, Robert: *See—*
Corbett, David F.; Southgate, Robert; and Coulton, Steven, 4,438,036, Cl. 260-245.20T.

Southwire Company: *See—*
Gentry, Bobby C., 4,437,901, Cl. 148-11.50A.
MacCraven, Joseph, 4,437,904, Cl. 148-13.100.

Spacesaver Corporation: *See—*
Dahnert, Dean L., 4,437,711, Cl. 312-201.000.

Speaker, Richard L. Spaghetti and food cooker. 4,437,395, Cl. 99-355.000.

Speil, Walter, to INA Walzlager Schaeffler KG. Valve tappet. 4,437,439, Cl. 123-90.560.

Spencer, Mike R.: *See—*
Lewis, Mack A.; and Spencer, Mike R., 4,437,699, Cl. 296-181.000.

Sperry Corporation: *See—*
Flannery, William E.; Josephs, Richard M.; Stein, Barry F.; Wang, Tsing-Chow; and Young, Peter L., 4,437,227, Cl. 29-589.000.
Kroger, Harry; and Soref, Richard A., 4,437,761, Cl. 356-44.000.
McGrann, Harold J.; Orn, John F.; and Pallaver, Matthew C., 4,437,351, Cl. 73-862.050.

Spicer, Arnold: *See—*
Colby, Ronald W.; and Spicer, Arnold, 4,438,146, Cl. 426-448.000.

Spielman, Lyle S., to Eclipse, Inc. Burner block assembly for industrial furnaces. 4,437,415, Cl. 110-182.500.

Spitz, Melvin P., to Kinematic Industries, Inc. Folding sofa-bed mechanism. 4,437,197, Cl. 5-13.000.

Sponer, Gisbert: *See—*
Ross, Carl H.; Kampe, Wolfgang; Bartsch, Wolfgang; Sponer, Gisbert; and Roesch, Egon, 4,438,116, Cl. 424-250.000.
Wiedemann, Fritz; Kampe, Wolfgang; Dietmann, Karl; and Sponer, Gisbert, 4,438,128, Cl. 424-273.00N.

Sprague, Clyde D., to Nordson Corporation. Retainable closure. 4,437,594, Cl. 222-544.000.

Sprague Electric Company: *See—*
Bernard, Walter J., 4,437,946, Cl. 204-35.00N.
Sells, Mary A.; and Scott, John W., 4,437,945, Cl. 204-35.00N.

Sprague, Robert A.: *See—*
Turner, William D.; and Sprague, Robert A., 4,438,461, Cl. 358-302.000.

Springs Industries, Inc.: *See—*
Daniels, John Y.; and Stevenson, James C., 4,438,169, Cl. 428-196.000.

Srinivasan, Nallaswamy: *See—*
Collins, Arthur K.; Andrews, Edward W.; and Srinivasan, Nallaswamy, 4,438,495, Cl. 364-414.000.

Stabile, Nicolo; Motta, Raimondo; and Gosso, Giancarlo, to Oxon Italia S.p.A. Process for synthesizing N-isopropyl-N'-o-carbomethoxyphenylsulphamide. 4,438,276, Cl. 560-13.000.

Stadler, Istvan: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.

Stadler, Peter: *See—*
Petersen, Uwe; Stadler, Peter; Lockhoff, Oswald; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,438,260, Cl. 536-13.900.

Staebel, Raymond J.: *See—*
Peterman, Lee G.; and Staebel, Raymond J., 4,438,069, Cl. 422-62.000.

Stahl, Juergen; Schuster, Wilhelm; and Wegner, Wilhelm, to Gold- und Silber-Scheideanstalt Oberstein Franz Reischauer. Clasp for garments, in particular furs. 4,437,212, Cl. 24-698.000.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Gaida, Wolfram; and Hoefke, Wolfgang, to Boehringer Ingelheim KG. Substituted imidazo[1,2-a]pyrimidines and pharmaceutical compositions containing them. 4,438,118, Cl. 424-251.000.

Stahle, Helmut: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,438,143, Cl. 424-304.000.

Stained Glass Overlay, Inc.: *See—*
Butler, Donald R., 4,438,165, Cl. 428-38.000.

Stallman, Richard C. Outboard jet drive steering mechanism. 4,437,841, Cl. 440-42.000.

Stamicarbon B.V.: *See—*
Willems, Michael H.; and Vermijs, Winfried J. W., 4,438,083, Cl. 423-266.000.

Standard Oil Company (Indiana): *See—*
Dobry, Alan M., 4,437,997, Cl. 210-727.000.
Packer, Lawrence G.; and Schlossmacher, Edward J., 4,438,279, Cl. 562-416.000.

Stanley Electric Co., Ltd.: *See—*
Kato, Kazuhisa; and Yasui, Masaru, 4,438,154, Cl. 427-39.000.

Stanley, Philip E.: *See—*
Cushing, David E.; and Stanley, Philip E., 4,438,493, Cl. 364-200.000.

Stanley Works, The: *See—*
Elmore, James; and West, Robert F., 4,437,375, Cl. 83-762.000.

Stauffer Chemical Company: *See—*
Large, George B., 4,437,874, Cl. 71-87.000.

Staver, Paul L. Trailer mounted log splitter. 4,437,502, Cl. 144-193.00A.

Stavitsky, David; and Beres, Ernest A., to RCA Corporation. Mold for recorded disc. 4,437,641, Cl. 249-79.000.

Steag Kernenergie GmbH: *See—*
Bienek, Heinz; Finkbeiner, Rudolf; and Wick, Wilhelm, 4,437,578, Cl. 220-256.000.

Stebbins Engineering and Manufacturing Co.: *See—*
Macaleese, John E., 4,437,279, Cl. 52-247.000.

Steckel, Lester M.; and Thomsen, Valeria J. Tattooing gun. 4,437,361, Cl. 81-9.220.

Stegmeier, Alwin: *See—*
Leiber, Heinz; and Stegmeier, Alwin, 4,438,420, Cl. 335-275.000.

Stein, Alvin W. Self-adjusting self-locking hanger for pictures and the like. 4,437,639, Cl. 248-558.000.

Stein, Barry F.: *See—*
Flannery, William E.; Josephs, Richard M.; Stein, Barry F.; Wang, Tsing-Chow; and Young, Peter L., 4,437,227, Cl. 29-589.000.

Steinberger, Michael L., to Bell Telephone Laboratories, Incorporated. Adaptive cross-polarization interference cancellation system. 4,438,530, Cl. 455-278.000.

Steiner, Robert H.; and Touhsaent, Robert E., to Mobil Oil Corporation. Thermoplastic coated films with anti-static properties. 4,438,176, Cl. 428-349.000.

Stempel, John H. Chalkboard with hinged chalk rail. 4,437,839, Cl. 434-417.000.

Stenner, John W.: *See—*
Volk, Kurt E., Jr.; Herbert, Everett H.; and Stenner, John W., 4,437,852, Cl. 493-216.000.

Stephens, Donald E.; and Sharples, Thomas D., to Beckman Instruments, Inc. Packed column thermal reactor for an analytical instrument. 4,438,070, Cl. 422-70.000.

Stephens, James M.: *See—*
Kramer, James H.; Orndorff, Roy L., Jr.; and Stephens, James M., 4,437,688, Cl. 285-95.000.

Stern, Warren C., to Burroughs Wellcome Co. Reduction of cholesterol with meta-chloro α-t-butylaminopropiophenone. 4,438,138, Cl. 424-330.000.

Steuerwald, Manfred: *See—*
Koester, Eberhard; Hack, Joachim; and Steuerwald, Manfred, 4,438,462, Cl. 360-2.000.

Stevens, Perry; and Brown, Robert E., to A.F.C.S., Inc. Feeding apparatus for fish and other animals. 4,437,595, Cl. 222-642.000.

Stevenson, James C.: *See—*
Daniels, John Y.; and Stevenson, James C., 4,438,169, Cl. 428-196.000.

Stewart, John C.: *See—*
King, Stephen J.; Moffatt, Bruce S.; and Stewart, John C., 4,437,984, Cl. 209-211.000.

Stier, Bernhard, to VDO Adolf Schindling AG. Device for producing an optical or acoustic shift instruction. 4,438,423, Cl. 340-52.00R.

Stitt, Robert M.; and Albaugh, Neil P., to Burr-Brown Research Corporation. Low profile optical coupling for an optoelectronic module. 4,438,338, Cl. 250-551.000.

Stockhaus, Klaus: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Gaida, Wolfram; and Hoefke, Wolfgang, 4,438,118, Cl. 424-251.000.

Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., to In Situ Technology, Inc. Method for minimizing subsidence effects during production of coal in situ. 4,437,520, Cl. 166-261.000.

Stoffel, James C.: *See—*
Tandon, Jagdish C.; Kadekodi, Narayan K.; Ibrahim, Abd-El-Fattah A.; Handy, Roland J.; and Stoffel, James C., 4,438,457, Cl. 358-213.000.

Stoller, David A., Jr.; Robertson, James C.; and Matyas, Tibor, to Portec, Inc. Pivotal slidable vehicle end enclosure. 4,437,410, Cl. 105-378.000.

Stoltefuss, Wilhelm, to Gewerkschaft Eisenhutte Westfalia. Cutting devices for mining and tunnelling machines. 4,437,708, Cl. 299-81.000.

Stolz, Albert; and Mordau, Manfred, to Daimler-Benz Aktiengesellschaft. Assembly compartment arranged between an engine compartment or trunk and a splash panel of a motor vehicle. 4,437,393, Cl. 98-2.170.

Stone & Webster Engineering Corp.: *See—*
Woebcke, Herman N.; Bhojwani, Arju H.; and Gartside, Robert J., 4,437,979, Cl. 208-153.000.

Storr, Rudolf, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Continuous wire feed arrangement for stapling apparatus. 4,437,600, Cl. 226-108.000.

Stouffer, Ronald D., to Bowles Fluidics Corporation. Sweeping air stream apparatus and method. 4,437,392, Cl. 98-2.080.

Stover, William A.: *See—*
Chester, Arthur W.; McVeigh, Harry A.; and Stover, William A., 4,437,978, Cl. 208-120.000.

Strange, Rodney G.: *See—*
Sekel, Stephen M.; Strange, Rodney G.; and Verrinder, Robert F., 4,438,498, Cl. 364-483.000.

Straub, Gerald J. Movable truck bumper. 4,437,696, Cl. 293-118.000.

Strickler, Rainer: *See—*
Oppenlaender, Knut; Strickler, Rainer; Seib, Karl; and Naegele, Paul, 4,438,094, Cl. 424-59.000.

Strom, Alan R., to H & K Computer Corporation. Message waiting light control system. 4,438,506, Cl. 364-900.000.

Strom, Robert M., to Dow Chemical Company, The. Catalysts for oxidative coupling of phenols. 4,438,284, Cl. 568-730.000.

Struck, Gordon K. Portable bar-cabinet. 4,437,714, Cl. 312-281.000.

Strudwick, Thomas H.: *See—*
Bischoff, Bernard K.; Patrick, William J.; and Strudwick, Thomas H., 4,437,922, Cl. 156-603.000.

Stumpe, Werner, to Robert Bosch GmbH. Tire-pressure regulating system. 4,437,504, Cl. 152-427.000.

Suarato, Antonino; Penco, Sergio; Arcamone, Federico; and Casazza, Anna M., to Farmaitalia Carlo Erba S.p.A. 4'-Iododerivatives of anthracycline glycosides. 4,438,105, Cl. 424-180.000.

Sudo, Masami: *See—*
Shimada, Kazuo; Akiyama, Masataka; and Sudo, Masami, 4,438,093, Cl. 424-50.000.

Sudo, Ryoichi; Shoji, Fusaji; Watanabe, Takeshi; Suzuki, Kenkichi; and Ooue, Michio, to Hitachi, Ltd. Liquid crystal display device. 4,437,731, Cl. 350-340.000.

Sueishi, Motoharu: *See—*
Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, 4,437,445, Cl. 123-491.000.

Suga, Michiharu: *See—*
Kashiwa, Norio; Morita, Yoshinori; and Suga, Michiharu, 4,438,243, Cl. 526-125.000.

Suga, Yozo: *See—*
Mori, Kensuke; Matsumoto, Hiromi; Suga, Yozo; Nakayama, Tadashi; and Matsumoto, Fumio, 4,437,909, Cl. 148-111.000.

Sugimoto, Soichiro: *See—*
Ito, Shinzo; Kato, Tateshi; Noma, Takumi; Sugimoto, Soichiro; and Toiyama, Seigi, 4,437,341, Cl. 73-119.00A.

Sugiura, Fumitoshi: *See—*
Suzuki, Akira; and Sugiura, Fumitoshi, 4,438,001, Cl. 252-8.700.

Sugiura, Hideaki: *See—*
Nozue, Shigehiro; Fukuoka, Tatsuhiko; and Sugiura, Hideaki, 4,437,215, Cl. 29-149.50R.

Suguri, Masayoshi; Yamada, Kazuo; and Nandate, Masaaki, to Kinyosha Co., Ltd. Press roll and manufacturing method therefor. 4,438,063, Cl. 264-311.000.

Suh, Kyung W.; Krueger, David C.; and Zehner, Burch E., to Dow Chemical Company, The. Method for the preparation of styrene polymer foam and foam prepared thereby. 4,438,224, Cl. 521-146.000.

Suling, Carlhans: *See—*
Schmitz-Josten, Robert; Suling, Carlhans; Podszun, Wolfgang; Bomer, Bruno; Borgardt, Manfred; and Walkowiak, Michael, 4,437,836, Cl. 433-199.000.

Sumi, Akihiko: *See—*
Chibata, Ichiro; Sumi, Akihiko; Ohtsuki, Osamu; and Izutsu, Nozomu, 4,438,044, Cl. 260-501.120.

Sumida, Seizo: *See—*
Takahashi, Junya; Takemoto, Ichiki; Kamoshita, Katsuzo; Yoshida, Ryo; Katoh, Haruhiko; and Sumida, Seizo, 4,437,880, Cl. 71-120.000.

Sumitomo Chemical Company, Limited: *See—*
Fukushima, Nobuo; Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Kotani, Kozo; and Hosono, Hidekazu, 4,438,238, Cl. 525-240.000.
Murase, Ichiki; Fujita, Fumio; Ohnishi, Toshihiro; and Tamura, Toshifumi, 4,438,262, Cl. 536-43.000.
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,437,877, Cl. 71-90.000.
Suzukamo, Gohfu; Tamura, Mitsuhisa; and Fukao, Masami, 4,438,286, Cl. 568-840.000.
Takahashi, Junya; Takemoto, Ichiki; Kamoshita, Katsuzo; Yoshida, Ryo; Katoh, Haruhiko; and Sumida, Seizo, 4,437,880, Cl. 71-120.000.

Sumitomo Metal Industries, Ltd.: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Kawai, Toshiyuki; Yonehara, Sadao; Koiwai, Yoshihisa; and Endo, Kazuhiko, 4,437,883, Cl. 75-0.50C.
Minami, Ryohei; Okamura, Shozo; Sunami, Yoshihiko; Hosoi, Takuji; and Kanou, Takuo, 4,437,974, Cl. 208-10.000.
Umino, Masahide; Tamura, Eijiro; Karasuno, Isamu; Ichidate, Minoru; and Kubo, Toshihiko, 4,437,891, Cl. 75-251.000.

Sumitomo Metal Mining Company Limited: *See—*
Nakano, Tadashi; Tamura, Hiroyuki; and Kubo, Naoki, 4,438,079, Cl. 423-87.000.

Sumitomo Naugatuck Co., Ltd.: *See—*
Fujimori, Yoshitugu; Takabori, Yasuo; Sakano, Hajime; and Ito, Akitoshi, 4,438,229, Cl. 524-109.000.

Sumitomo Special Metals Co., Ltd.: *See—*
Furukawa, Mitsuhiki; Miyahara, Michito; Kitahira, Takashi; Misumi, Kiyohito; Shiroyama, Masaharu; and Wada, Toshiaki, 4,438,213, Cl. 501-92.000.

Sunami, Yoshihiko: *See—*
Minami, Ryohei; Okamura, Shozo; Sunami, Yoshihiko; Hosoi, Takuji; and Kanou, Takuo, 4,437,974, Cl. 208-10.000.

Suncor, Inc.: *See—*
Yong, Raymond N., 4,437,998, Cl. 210-728.000.

Sunder-Plassmann, Paul: *See—*
Sielfeld, Gilbert; and Sunder-Plassmann, Paul, 4,438,244, Cl. 526-202.000.

Sundseth, Jarl. Air filters. 4,438,057, Cl. 264-46.500.

Sung, Rodney L.: *See—*
Zoleski, Benjamin H.; and Sung, Rodney L., 4,438,005, Cl. 252-33.400.

Surprenant, Richard P.: *See—*
Beers, Melvin D.; and Surprenant, Richard P., 4,438,039, Cl. 260-429.500.

Sussmeyer, Robert; Pluvinage, Alain; and Moenaert, Christian, to Ateliers Sussmeyer SPRL. Process for automatic and continuous vaporization and condensation. 4,437,940, Cl. 203-49.000.

Sutcliffe, Peter H.: *See—*
Fox, Hugh M.; and Sutcliffe, Peter H., 4,438,502, Cl. 364-718.000.

Suzukamo, Gohfu; Tamura, Mitsuhisa; and Fukao, Masami, to Sumitomo Chemical Company, Limited. Substituted esters and alcohols. 4,438,286, Cl. 568-840.000.

Suzuki, Akira; and Sugiura, Fumitoshi, to Takemotoyushi Co. Ltd. Oiling agent for treating synthetic fibers. 4,438,001, Cl. 252-8.700.

Suzuki, Akiyoshi, to Canon Kabushiki Kaisha. Alignment apparatus. 4,437,758, Cl. 355-41.000.

Suzuki, Hideo, to Okamura Corporation. Method and device for automatically controlling welding conditions for use in an arc welding machine. 4,438,318, Cl. 219-137.0PS.

Suzuki, Kenkichi: *See—*
Sudo, Ryoichi; Shoji, Fusaji; Watanabe, Takeshi; Suzuki, Kenkichi; and Ooue, Michio, 4,437,731, Cl. 350-340.000.

Suzuki, Masahiro: *See—*
Hayasaka, Tadao; Suzuki, Masahiro; Ozawa, Shigeru; and Takeya, Yoshiaki, 4,437,890, Cl. 75-244.000.

Suzuki, Osamu; Yamaguchi, Kunio; and Yamamoto, Meguru, to Toyooko Kogyo Kabushiki Kaisha. Pneumatic-hydraulic system for hydraulic actuator. 4,437,309, Cl. 60-547.100.

Suzuki, Shin; and Sato, Toshihiko, to NGK Spark Plug Co., Ltd. Auxiliary combustion chamber preheating device. 4,437,440, Cl. 123-145.00A.

Suzuki, Shizuo: *See—*
Iwamoto, Yoshinao; Suzuki, Shizuo; and Shirasaki, Yuichi, 4,438,401, Cl. 324-326.000.

Suzuki, Shuichi: *See—*
Hayase, Shuzi; and Suzuki, Shuichi, 4,437,959, Cl. 204-159.110.

Suzuki, Takashi; and Ito, Susumu, to Canon Kabushiki Kaisha. Quick return beam splitter for a single lens reflex camera. 4,437,740, Cl. 354-476.000.

Suzuki, Yukio: *See—*
Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, 4,437,445, Cl. 123-491.000.

Svatek, Katherine H.; Wilson, David A.; and Griffin, Freddie, Jr., to Dow Chemical Company, The. Process for making aminopolycarboxylic acid chelates of iron. 4,438,040, Cl. 260-439.00R.

Svensk Ideutveckling Handelsbolag: *See—*
Johannson, Arne, 4,437,609, Cl. 236-49.000.

Sylvia, Frank, to Pace Incorporated. Ceramic coated electric heater assembly for tools. 4,438,322, Cl. 219-236.000.

Synthelabo: *See—*
Obitz, Daniel, 4,438,121, Cl. 424-258.000.

Syroco, Inc.: *See—*
Brescia, Tony; and Deacon, Ross, 4,437,414, Cl. 108-134.000.

Szahler, David J., to A Packaging Service Company, Inc. Child proof container. 4,437,566, Cl. 206-1.500.

Szekely, Istvan: *See—*
Galambos, Gaza; Simonidesz, Vilmos; Szekely, Istvan; Ivanics, Jozsef; Kekesi, Krisztina; Kovacs, Gabor; Stadler, Istvan; Kormoczy, Peter; and Horvath, Karoly, 4,438,132, Cl. 424-285.000.

Tabata, Setsuko: *See—*
Satsuki, Teruhisa; Ota, Seiiti; and Tabata, Setsuko, 4,438,025, Cl. 252-545.000.

Tabei, Masatoshi, to Fuji Photo Film Co., Ltd. Solid-state color imager with three layer four story structure. 4,438,455, Cl. 358-44.000.

Taber, Bruce D.; and Wagner, James B., to General Electric Company. HRSG Damper control. 4,437,313, Cl. 60-665.000.

Tabor, Edward; and Gerety, Robert J., to United States of America, Health and Human Services. Heat treatment of a non-A, non-B hepatitis agent to prepare a vaccine. 4,438,098, Cl. 424-89.000.

Taggart, Robert E.: *See—*
Taggart, Thomas D.; and Taggart, Robert E., 4,437,488, Cl. 137-334.000.

Taggart, Thomas D.; and Taggart, Robert E., to Lockwood Technical Inc. Solenoid valve for hot melt material. 4,437,488, Cl. 137-334.000.

Taiho Kogyo Co., Ltd.: *See—*
Nozue, Shigehiro; Fukuoka, Tatsuhiko; and Sugiura, Hideaki, 4,437,215, Cl. 29-149.50R.

Taiyo Yuden Co., Ltd.: *See—*
Masuyama, Masaru; Hirooka, Susumu; and Yamaoka, Nobutatsu, 4,438,214, Cl. 501-136.000.

Tajana, Alberto: *See—*
Nardi, Dante; Tajana, Alberto; Motta, Gianni; Cazzulani, Pietro; and Graziani, Gabriele, 4,438,133, Cl. 424-300.000.

Tajkowski, Edward G., to Allied Corporation. Solvent dewatering composition. 4,438,026, Cl. 252-545.000.

Takabori, Yasuo: *See—*
Fujimori, Yoshitugu; Takabori, Yasuo; Sakano, Hajime; and Ito, Akitoshi, 4,438,229, Cl. 524-109.000.

Takada, Norihisa: *See—*
Nelson, Philip E.; and Takada, Norihisa, 4,437,934, Cl. 159-47.100.

Takagi, Mitiro: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Kazushige; and Hata, Shun-ichi, 4,438,115, Cl. 424-250.000.

Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, to Toyota Jidosha Kabushiki Kaisha; and Nippondenso Co., Ltd. Method and apparatus for controlling the fuel feeding rate of an internal combustion engine. 4,437,445, Cl. 123-491.000.

Takahashi, Junya; Takemoto, Ichiki; Kamoshita, Katsuzo; Yoshida, Ryo; Katoh, Haruhiko; and Sumida, Seizo, to Sumitomo Chemical Company, Limited. N'-Phenyl-N-methylurea derivatives. 4,437,880, Cl. 71-120.000.

Takahashi, Keiichi: *See—*
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, 4,438,197, Cl. 435-119.000.

Takahashi, Masayoshi: *See—*
Nomoto, Reishi; Akimoto, Masahiro; and Takahashi, Masayoshi, 4,437,465, Cl. 128-340.000.

Takahashi, Mitsuo: *See—*
Matsui, Kanenobu; Uchiumi, Shinichiro; Takahashi, Mitsuo; Asada, Hideki; and Kurahashi, Masaru, 4,438,041, Cl. 260-464.000.

Takahashi, Tomowaki; Konno, Kunio; and Sasaya, Toshihiro, to Nippon Kogaku K.K. Zoom lens. 4,437,733, Cl. 350-427.000.

Takamiya, Toru: *See—*
Miyashita, Takao; Aizawa, Hidekuni; and Takamiya, Toru, 4,437,778, Cl. 400-208.000.

Takasugi, Hisashi: *See—*
Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, 4,438,113, Cl. 424-246.000.

Takata, Masahiro; Aoki, Ryuji; and Sato, Takahisa, to Nippin Shokubai Kagako Kogyo Co., Ltd. Catalyst for oxidation of propylene. 4,438,217, Cl. 502-205.000.

Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, to Fujisawa Pharmaceutical Co., Ltd. 7-Acylaminocephalosporanic acid derivatives. 4,438,113, Cl. 424-246.000.

Takeda Chemical Industries, Ltd.: *See—*
Kawamatsu, Yutaka; and Fujita, Takeshi, 4,438,141, Cl. 424-248.510.

Takei, Hiroshi: *See—*
Phillips, Jeffrey; and Takei, Hiroshi, 4,438,481, Cl. 361-433.000.

Takemoto, Ichiki: *See—*
Takahashi, Junya; Takemoto, Ichiki; Kamoshita, Katsuzo; Yoshida, Ryo; Katoh, Haruhiko; and Sumida, Seizo, 4,437,880, Cl. 71-120.000.

Takemotoyushi Co. Ltd.: *See—*
Suzuki, Akira; and Sugiura, Fumitoshi, 4,438,001, Cl. 252-8.700.

Takeshima, Masaki: *See—*
Kikkawa, Ryozo; and Takeshima, Masaki, 4,437,933, Cl. 159-17.00R.

Takeya, Yoshiaki: *See—*
Hayasaka, Tadao; Suzuki, Masahiro; Ozawa, Shigeru; and Takeya, Yoshiaki, 4,437,890, Cl. 75-244.000.

Taki, Yasuo: *See—*
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,437,232, Cl. 29-740.000.

Tamborski, Christ: *See—*
Snyder, Carl E., Jr.; and Tamborski, Christ, 4,438,006, Cl. 252-49.900.
Snyder, Carl E., Jr.; and Tamborski, Christ, 4,438,007, Cl. 252-49.900.

Tameris, Hendrikus M.: *See—*
van der Ploeg, Dirk C. H.; and Tameris, Hendrikus M., 4,437,787, Cl. 425-84.000.

Tamura, Eijiro: *See—*
Umino, Masahide; Tamura, Eijiro; Karasuno, Isamu; Ichidate, Minoru; and Kubo, Toshihiko, 4,437,891, Cl. 75-251.000.

Tamura, Hidemasa: *See—*
Ishikawa, Reiji; Saito, Masaki; Mori, Toshio; and Tamura, Hidemasa, 4,438,160, Cl. 427-214.000.

Tamura, Hifumi: *See—*
Hosoki, Shigeyuki; Futamoto, Masaaki; Kawabe, Ushio; Ishitani, Tohru; and Tamura, Hifumi, 4,438,371, Cl. 315-111.810.

Tamura, Hiroyuki: *See—*
Nakano, Tadashi; Tamura, Hiroyuki; and Kubo, Naoki, 4,438,079, Cl. 423-87.000.

Tamura, Hisashi; Ito, Ichizo; Hirayama, Masashi; and Ando, Tetsuo, to Yokogawa Hokushin Electric Corporation. Vortex flow metering apparatus. 4,437,350, Cl. 73-861.240.

Tamura, Mitsuhisa: *See—*
Suzukamo, Gohfu; Tamura, Mitsuhisa; and Fukao, Masami, 4,438,286, Cl. 568-840.000.

Tamura, Toshifumi: *See—*
Murase, Ichiki; Fujita, Fumio; Ohnishi, Toshihiro; and Tamura, Toshifumi, 4,438,262, Cl. 536-43.000.

Tan, Yui-Kuan: *See—*
Komada, Kenya; and Tan, Yui-Kuan, 4,438,444, Cl. 346-155.000.

Tanabe Seiyaku Co., Ltd.: *See—*
Chibata, Ichiro; Sumi, Akihiko; Ohtsuki, Osamu; and Izutsu, Nozomu, 4,438,044, Cl. 260-501.120.
Gaino, Mitsunori; Iijima, Ikuo; Nishimoto, Shigeru; Ikeda, Kuichiro; and Fujii, Tokuo, 4,438,035, Cl. 260-239.30B.

Tanaka, Akihiro: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Tanaka, Akihiro, 4,438,109, Cl. 424-180.000.

Tanaka, Chiaki; Nakashima, Shinobu; and Kondow, Makoto, to Toray Industries, Incorporated. Polyamide elastomer. 4,438,240, Cl. 525-420.000.

Tanaka, Hidetoshi: *See—*
Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, 4,437,756, Cl. 355-14.00R.

Tanaka, Itsuo: *See—*
Sando, Yoshikazu; Goto, Tokuju; Tanaka, Itsuo; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,437,324, Cl. 68-5.00E.

Tanaka, Minoru: *See—*
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, 4,438,277, Cl. 560-119.000.

Tanaka, Souhei: *See—*
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,437,232, Cl. 29-740.000.

Tanaka, Tosio, to Tokyo Shibaura Denki Kabushiki Kaisha. Motor drive apparatus. 4,438,378, Cl. 318-280.000.

Tanaka, Yoshio. Expanding process. 4,438,058, Cl. 264-51.000.

Tanaka, Yukio: *See—*
Araki, Masatada; and Tanaka, Yukio, 4,437,800, Cl. 407-119.000.

Tandon, Jagdish C.; Kadekodi, Narayan K.; Ibrahim, Abd-El-Fattah A.; Handy, Roland J.; and Stoffel, James C., to Xerox Corporation. High resolution imager employing staggered sensor structure. 4,438,457, Cl. 358-213.000.

Tani, Mitsukiyo: *See—*
Kobayashi, Mamoru; Ishige, Kanji; Sasaki, Hideaki; Tani, Mitsukiyo; and Kawakami, Yashuhiko, 4,437,603, Cl. 228-4.500.

Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Camera capable of automatically responding to data coded on film. 4,437,742, Cl. 354-21.000.

Tannetics, Inc.: *See—*
Iannelli, Frank M., 4,437,319, Cl. 62-138.000.

Tantalo, Anthony T. Fuel saving device for increasing fuel mileage on a moving vehicle. 4,437,698, Cl. 296-1.00S.

Tao, Thomas M.; and Bean, William C. Control of bulk in air laid fibrous webs. 4,437,917, Cl. 156-296.000.

Tarjan, Peter P.: *See—*
Saulson, Stanley H.; Schroeppel, Edward A.; and Tarjan, Peter P., 4,437,466, Cl. 128-419.0PS.

Tashiro, Minoru, to Bunri Industry Co., Ltd. Filter apparatus. 4,437,991, Cl. 210-413.000.

Taskier, Henry T., to Celanese Corporation. Hydrophilic polymer coated microporous membranes capable of use as a battery separator. 4,438,185, Cl. 429-250.000.

Tassie, Douglas P., to General Electric Company. Gun mount. 4,437,384, Cl. 89-37.00A.

Tateishi, Arthur K. Directional air flow fan. 4,437,394, Cl. 98-40.00V.

Tateishi, Junji; Ishikawa, Takeharu; Nakano, Shozaburo; and Nishiyama, Noboru, to Kawasaki Steel Corporation. Flux composition

for electro-slag over-lay welding of a cylindrical vessel with a strip electrode. 4,437,906, Cl. 148-26.000.
Tauber, Randolph T.: *See—*
Tauber, Robert T.; and Tauber, Randolph T., 4,437,838, Cl. 434-363.000.
Tauber, Robert T.; and Tauber, Randolph T., to TTK Communication Products. Apparatus for preparing examinations. 4,437,838, Cl. 434-363.000.
Taubman, Martin A.; and Smith, Daniel J., to Forsyth Dental Infirmary for Children. Method for the preparation of glucosylranferase. 4,438,200, Cl. 435-193.000.
Tavares, Donald F.: *See—*
Boorman, Philip M.; Chivers, Tristram; Tavares, Donald F.; and Mahadev, Kalabeerappa N., 4,438,218, Cl. 502-220.000.
Tayler, Gerald E.: *See—*
Hartung, Michael H.; Rieck, Richard E.; and Tayler, Gerald E., 4,438,512, Cl. 371-60.000.
Taylor, Julian S. Poppet check valve. 4,437,492, Cl. 137-543.130.
Taylor, William M.: *See—*
Brakhage, William L., Jr.; and Taylor, William M., 4,437,643, Cl. 251-1.00A.
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Induction heating cooking apparatus. 4,438,311, Cl. 219-10.49R.
Teague, W. Dorwin: *See—*
Marinoff, Gerald P.; and Teague, W. Dorwin, 4,437,546, Cl. 182-233.000.
Technicon Instruments Corporation: *See—*
Engler, Philip V.; and Buhl, Steven N., 4,438,202, Cl. 436-8.000.
Forrest, Gordon C., 4,438,068, Cl. 422-61.000.
Technology Marketing Inc.: *See—*
Dyer, David; and Wise, James L., 4,437,316, Cl. 62-79.000.
Techsight Corporation: *See—*
Weber, Hermann, 4,438,159, Cl. 427-162.000.
Teijin Limited: *See—*
Yamaguchi, Taturo; and Minemura, Norihiro, 4,438,151, Cl. 427-36.000.
Tektronix, Inc.: *See—*
Philipp, Harald, 4,438,404, Cl. 328-63.000.
Sekel, Stephen M.; Strange, Rodney G.; and Verrinder, Robert F., 4,438,498, Cl. 364-483.000.
Telebit Corporation: *See—*
Baran, Paul, 4,438,511, Cl. 370-19.000.
Telefonaktiebolaget L M Ericsson: *See—*
Morwing, Bo A., 4,438,392, Cl. 324-79.00R.
Telefunken Electronic GmbH: *See—*
Colquhoun, Alexander; and Kohn, Erhard, 4,438,445, Cl. 357-14.000.
Malinowski, Christopher W.; and Rinderle, Heinz, 4,438,412, Cl. 331-2.000.
Temme, Helmut: *See—*
Redder, Manfred; Linke, Horst; Grundken, Dieter; and Temme, Helmut, 4,437,564, Cl. 198-834.000.
Temple, Eugene A.; and Pestlin, Norman F. Plastic pipe heater. 4,437,453, Cl. 126-271.20R.
Teradyne, Inc.: *See—*
Katz, Jonathon H., 4,438,397, Cl. 324-158.00P.
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, to Sankyo Company, Limited. Hydronaphthalene derivatives. 4,438,277, Cl. 560-119.000.
Teraoka, Masanori; Komaki, Takao; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Noise erasing apparatus for stimulable phosphor sheet. 4,438,333, Cl. 250-327.200.
Terauchi, Kiyoshi; and Hiraga, Masaharu, to Sanden Corporation. Scroll type fluid compressor unit with axial end surface sealing means. 4,437,820, Cl. 418-55.000.
Terauchi, Takashi: *See—*
Okada, Yoshio; Terauchi, Takashi; Naoki, Makoto; and Hino, Masatoshi, 4,438,021, Cl. 502-341.000.
Terry, Ruel C.: *See—*
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,437,520, Cl. 166-261.000.
Terui, Nobuhiko; and Magariyama, Kenichi, to Nippon Kogaku K.K. Automatic exposure control apparatus for camera. 4,437,744, Cl. 354-442.000.
Tessler, Martin M.; and Neigel, Dennis V., to National Starch and Chemical Corporation. Process for the preparation of an aqueous 3-chloro-2-sulfopropionic acid reagent. 4,438,047, Cl. 260-513.00R.
Testard, Olivier, to Commissariat a l'Energie Atomique. Composite heat shield. 4,438,168, Cl. 428-193.000.
Texaco Inc.: *See—*
Brandenburg, John T.; and Crone, John M., Jr., 4,438,219, Cl. 502-333.000.
Johnson, Fred L., Jr., 4,438,281, Cl. 564-477.000.
Nieh, Edward C. Y.; and Naylor, Carter G., 4,438,045, Cl. 260-501.130.
Roberts, Roy D., 4,437,417, Cl. 110-346.000.
Schievelbein, Vernon H.; and Zabczuk, Paul, 4,438,002, Cl. 252-8.55D.
Zoleski, Benjamin H.; and Sung, Rodney L., 4,438,005, Cl. 252-33.400.
Texas Instruments Incorporated: *See—*
Woodard, Thomas R.; and Martin, Kenneth L., 4,438,320, Cl. 219-216.000.
Textron Inc.: *See—*
LaBruna, Anthony J., 4,437,590, Cl. 222-386.500.
Tezuka, Akitomi. Rice-body shaping device for rolled sushi. 4,437,826, Cl. 425-182.000.
Thermal Systems Limited: *See—*
Fischer, Victor H., 4,437,308, Cl. 60-514.000.
Thermo Electric Co., Inc.: *See—*
Wells, Alfred E., Jr.; and Casillo, James H., 4,438,290, Cl. 136-221.000.
Thier, Alfons: *See—*
Schmittmann, Hans-Bernd; and Thier, Alfons, 4,438,028, Cl. 252-609.000.
Thiokol Corporation: *See—*
Adams, Gary V.; and Schneiter, Fred E., 4,437,681, Cl. 280-733.000.
Guziec, Frank S., Jr., 4,438,269, Cl. 546-9.000.
Thoemke, Lloyd C.: *See—*
Myers, James F.; and Thoemke, Lloyd C., 4,437,577, Cl. 220-224.000.
Thomalla, Richard O., to Conwed Corporation. Automatic volume and frequency controlled sound masking system. 4,438,526, Cl. 381-73.000.
Thomas & Betts Corporation: *See—*
Narozny, Ronald S., 4,437,723, Cl. 339-99.00R.
Thomas, Donald K., Jr. Wall partition locking system. 4,437,278, Cl. 52-239.000.
Thomas, Erwin: *See—*
Rapp, Guenther; Thomas, Erwin; and Muenster, Rolf, 4,438,084, Cl. 423-387.000.
Thomas, Millicent H.: *See—*
Pickens, John W.; Abraham, John K.; Mintus, Raymond E.; and Thomas, Millicent H., 4,437,902, Cl. 148-12.00F.
Thompson, Charles E., to Huyck Corporation. Papermakers fabrics having equalized warp sew-up. 4,437,496, Cl. 139-383.00A.
Thomsen, Valeria J.: *See—*
Steckel, Lester M.; and Thomsen, Valeria J., 4,437,361, Cl. 81-9.220.
Thomson-Brandt: *See—*
Colineau, Joseph; and Maheo, Jean Y., 4,438,375, Cl. 315-408.000.
Thomson-CSF: *See—*
Blachot, Denis, 4,438,414, Cl. 333-28.00T.
Thorn, Brent: *See—*
Thorn, E. R.; and Thorn, Brent, 4,437,648, Cl. 254-93.00R.
Thorn, E. R.; and Thorn, Brent, to Van F. Belknap Co. Belt tensioning tool. 4,437,648, Cl. 254-93.00R.
Thornton, Donald I.: *See—*
Hutchins, Charles K.; Thornton, Donald I.; and Peyton, Richard H., 4,437,986, Cl. 210-130.000.
Thornton, Jack L. Truss assembling gantry. 4,437,234, Cl. 29-798.000.
Thornton, Marvin L.; and Boyt, Arthur J., Jr. Anaerobic digester gas collection and storage systems. 4,437,987, Cl. 210-137.000.
Three Sisters Ranch Enterprises: *See—*
Bullock, Joseph J., III, 4,437,593, Cl. 222-541.000.
Thurston, Inc.: *See—*
Shook, William B., 4,437,596, Cl. 224-39.000.
Thyssen Aktiengesellschaft Vorm.August Thyssen-Hutte: *See—*
Weber, Richard A.; and Schutz, Carl-Heinz, 4,437,652, Cl. 266-275.000.
Tigane, Rein K., to Upravlenie Sanitarno-Tekhnicheskikh Rabot. Rotary machine with an axially moving partition. 4,437,823, Cl. 418-219.000.
TII Industries, Inc.: *See—*
Cawley, John M., 4,438,477, Cl. 361-119.000.
Schleimann-Jensen, C. Arne, 4,437,845, Cl. 445-39.000.
Timmerman, Terry: *See—*
Bigelow, David E.; and Timmerman, Terry, 4,437,646, Cl. 251-145.000.
Titeflex Corporation: *See—*
Goebel, Mark B.; and Lefebvre, Kenneth E., 4,437,689, Cl. 285-246.000.
Toda Kogyo Corp.: *See—*
Mishima, Akio; Okuda, Yoshiro; Harada, Tosiharu; Mukaizaka, Akira; and Imai, Tomoyuki, 4,437,881, Cl. 75-0.5AA.
Togo, Yasuhiko: *See—*
Kuranishi, Masaaki; and Togo, Yasuhiko, 4,438,328, Cl. 235-181.000.
Tohei, Nobuo: *See—*
Ishigami, Hideo; and Tohei, Nobuo, 4,437,372, Cl. 83-320.000.
Tohyama, Yashikuni: *See—*
Kawakubo, Kazuo; Furuichi, Katsushi; Namekata, Kiyokazu; Tanaka, Hidetoshi; Tohyama, Yashikuni; Kasamura, Toshirou; Aoki, Tomohiro; and Honma, Toshio, 4,437,756, Cl. 355-14.00R.
Toiyama, Seigi: *See—*
Ito, Shinzo; Kato, Tateshi; Noma, Takumi; Sugimoto, Soichiro; and Toiyama, Seigi, 4,437,341, Cl. 73-119.00A.
Tokico Ltd.: *See—*
Ashiba, Masahiro, 4,437,548, Cl. 188-289.000.
Tokita, Tsugio: *See—*
Hasegawa, Kokichi; and Tokita, Tsugio, 4,437,406, Cl. 101-350.000.
Tokyo Electric Co., Ltd.: *See—*
Ochiai, Kuniaki; Horii, Masami; and Ishii, Hidekazu, 4,437,775, Cl. 400-124.000.
Tokyo Sanyo Electric Co., Ltd.: *See—*
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,438,311, Cl. 219-10.49R.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hayase, Shuzi; and Suzuki, Shuichi, 4,437,959, Cl. 204-159.110.
Matsuyama, Kouszou, 4,438,478, Cl. 361-152.000.
Mizutani, Yoshihisa, 4,437,225, Cl. 29-576.00B.
Narita, Ryuho; Yamamori, Kenji; Oota, Hiroyuki; and Aoshima, Terutaka, 4,438,324, Cl. 219-441.000.
Ohmura, Hideo, 4,437,571, Cl. 209-551.000.
Sano, Jun; Aoyama, Masahide; and Kubo, Daijiro, 4,438,353, Cl. 307-477.000.
Sasaki, Hiroshi, 4,437,348, Cl. 73-625.000.
Shibayama, Shigeki; and Iwata, Kazuhide, 4,438,488, Cl. 364-200.000.
Tanaka, Tosio, 4,438,378, Cl. 318-280.000.
Yamaguchi, Tetsuo, 4,437,380, Cl. 84-1.260.
Yamashita, Kiyofumi; and Kodama, Toshikazu, 4,438,417, Cl. 333-193.000.
Tomim, William L. On-line telephone troubleshooting apparatus. 4,438,299, Cl. 179-175.30F.
Tomita, Fusao; Matsuda, Yuzuru; Shirahata, Kunikatsu; Takahashi, Keiichi; Nakano, Hirofumi; Sato, Tomoyasu; Okubo, Shuji; and Nakamura, Nobuo, to Kyowa Hakko Kogyo Co., Ltd. Compound DC-38-V and process for production thereof. 4,438,197, Cl. 435-119.000.
Tomm, Dagwin; and Scheer, Erich, to Fichtel & Sachs AG. Multiple disk clutch with spring control lift. 4,437,555, Cl. 192-70.210.
Tompkins, Elliot N.; and Kline, Sherman S., to Datapoint Corporation. Word processor—controlled printer output scanner mechanism. 4,437,660, Cl. 271-290.000.
Tomura, Teruichi: *See—*
Watanabe, Yoshio; Yamane, Mikiya; and Tomura, Teruichi, 4,438,373, Cl. 315-334.000.
Tomy Kogyo Co., Inc.: *See—*
Kaga, Takashi, 4,437,262, Cl. 46-242.000.
Toray Industries, Inc.: *See—*
Katsutoshi, Ando; and Eiichi, Nishiura, 4,438,172, Cl. 428-220.000.
Tanaka, Chiaki; Nakashima, Shinobu; and Kondow, Makoto, 4,438,240, Cl. 525-420.000.
Torres, Julio B. Stop control mechanism for feeding a material to a work performing machine. 4,437,422, Cl. 112-272.000.
Toshiba Heating Appliances Co., Ltd.: *See—*
Amano, Kazunori; and Sekiwaga, Youichi, 4,437,832, Cl. 431-304.000.
Touhsaent, Robert E.: *See—*
Steiner, Robert H.; and Touhsaent, Robert E., 4,438,176, Cl. 428-349.000.
Toyama, Masamichi, to Canon Kabushiki Kaisha. Spring clutch device. 4,437,552, Cl. 192-26.000.
Toyo Kogyo Co., Ltd.: *See—*
Nishikori, Tsutomu; and Yoshiki, Yasuo, 4,437,703, Cl. 297-362.000.
Toyo Umpanki Co., Ltd.: *See—*
Urabe, Sumio, 4,437,531, Cl. 180-79.100.
Toyoda, Hiroyasu; Komiya, Hiroyoshi; and Itakura, Hideaki, to VLSI Technology Research Association. High selectivity plasma etching apparatus. 4,438,315, Cl. 219-121.0PE.
Toyoda Koki Kabushiki Kaisha: *See—*
Nakamura, Keiichi; Haga, Kyosuke; and Mori, Yutaka, 4,437,532, Cl. 180-142.000.
Toyomura, Shigeru, to Canon Kabushiki Kaisha. Electronic device having warning means. 4,438,431, Cl. 340-663.000.
Toyooko Kogyo Kabushiki Kaisha: *See—*
Suzuki, Osamu; Yamaguchi, Kunio; and Yamamoto, Meguru, 4,437,309, Cl. 60-547.100.
Toyota Jidosha Kabushiki Kaisha: *See—*
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,437,358, Cl. 74-867.000.
Miura, Hirohisa; Satou, Hiroshi; and Natsume, Toshio, 4,437,886, Cl. 75-67.00R.
Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, 4,437,445, Cl. 123-491.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Isomura, Shigenori; Kobayashi, Akio; Kato, Katsushi; Kowada, Ichiro; and Nishii, Sachio, 4,437,446, Cl. 123-492.000.
Moriya, Shigeru; Yoshida, Akio; Hayashi, Yoshihiro; Kubota, Tatsushi; and Tsuge, Hiroshi, 4,437,683, Cl. 280-804.000.
Moriya, Shigeru; Yoshida, Akio; Matsunami, Muneharu; Kubota, Tatsushi; Tsuge, Hiroshi; and Nishimura, Yuji, 4,437,684, Cl. 280-804.000.
Transamerica DeLaval Inc.: *See—*
Reese, Ira W.; and Compagnucci, Nello B., 4,437,213, Cl. 29-33.00K.
Traunecker, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,438,143, Cl. 424-304.000.
Trautsch, Jerrold A., to Leer Manufacturing Company, Inc. Folding pallet. 4,437,412, Cl. 108-56.100.
Treber, Norbert, to Heraeus Quarzschmelze GmbH. Quartz glass envelope tube. 4,437,727, Cl. 350-96.300.
Treiber, Hans J.: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.
Tremaglio, Anthony M.: *See—*
Albert, Donald; and Tremaglio, Anthony M., 4,438,344, Cl. 307-146.000.
Tri Tool, Inc.: *See—*
Astle, William H., 4,437,366, Cl. 82-4.00C.
Trick, Robert E.; and Weeks, Vaughan B., to Medical Engineering Corporation. Artificial sphincter with improved pressure control valve. 4,437,457, Cl. 128-1.00R.
Trimedyne, Inc.: *See—*
Schmer, Gottfried, 4,438,198, Cl. 435-178.000.
Trop, Timothy N. Buoyancy compensator. 4,437,790, Cl. 405-186.000.
Trost, Wayne C., to Barber-Colman Company. Triaxial fabric. 4,438,173, Cl. 428-221.000.
Truzzi, Ferdinando; and Premi, Mauro, to Mesdan S.p.A. Apparatus for joining textile threads with the aid of compressed air, for mounting on an automatic winding machine. 4,437,298, Cl. 57-22.000.
Truzzi, Ferdinando; and Premi, Mauro, to Mesdan S.p.A. Apparatus for joining textile threads with the aid of compressed air. 4,437,299, Cl. 57-22.000.
TRW Inc.: *See—*
Harrington, Alan L.; Allison, Richard; and Rodov, Vladimir, 4,438,448, Cl. 357-23.000.
Tsang, Won-Tien, to Bell Telephone Laboratories, Incorporated. Double barrier double heterostructure laser. 4,438,446, Cl. 357-17.000.
Tsuchida, Takashi; Kondo, Nobuo; Okada, Kazukiyo; and Okuda, Yutaka, to Nippondenso Co., Ltd. Multiple signal transmitting apparatus for automobiles. 4,438,425, Cl. 340-55.000.
Tsuchiya, Tsutomu: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Tanaka, Akihiro, 4,438,109, Cl. 424-180.000.
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tsutomu, 4,438,107, Cl. 424-180.000.
Tsuge, Hiroshi: *See—*
Moriya, Shigeru; Yoshida, Akio; Hayashi, Yoshihiro; Kubota, Tatsushi; and Tsuge, Hiroshi, 4,437,683, Cl. 280-804.000.
Moriya, Shigeru; Yoshida, Akio; Matsunami, Muneharu; Kubota, Tatsushi; Tsuge, Hiroshi; and Nishimura, Yuji, 4,437,684, Cl. 280-804.000.
Tsui, Tien-Fung, to Mobil Oil Corporation. Two stage selective oxidative leach method to separately recover uranium and refractory uranium-mineral complexes. 4,438,077, Cl. 423-7.000.
Tsujita, Yoshio: *See—*
Terahara, Akira; Hamano, Kiyoshi; Tsujita, Yoshio; and Tanaka, Minoru, 4,438,277, Cl. 560-119.000.
Tsukada, Katsushige: *See—*
Ishimaru, Toshiaki; Tsukada, Katsushige; and Hayashi, Nobuyuki, 4,438,190, Cl. 430-281.000.
Tsuneno, Hiroshi: *See—*
Yamamoto, Hideharu; and Tsuneno, Hiroshi, 4,437,228, Cl. 29-590.000.
Tsutsumi, Shigeru. Injection molding process for synthetic resin and its apparatus. 4,438,064, Cl. 264-328.150.
TTK Communication Products: *See—*
Tauber, Robert T.; and Tauber, Randolph T., 4,437,838, Cl. 434-363.000.
Tucker, John G.; and Wells, Hugh A., to Western Electric Co., Inc. Methods of and apparatus for pumping solder. 4,437,605, Cl. 228-180.00R.
Tucker, Russell E.: *See—*
Fancey, Everett G.; Peters, John V.; and Tucker, Russell E., 4,437,254, Cl. 43-4.000.
Tuebner, Helwig: *See—*
Balser, Klaus; Tuebner, Helwig; and Oppermann, Wilhelm, 4,438,264, Cl. 536-91.000.
Tuites, Richard C.: *See—*
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,438,278, Cl. 560-205.000.
Turke, Wolfgang: *See—*
Pietsch, Hartmut; Turke, Wolfgang; Bareuther, Ernst; Kampf, Fritz; and Binga, Hubert, 4,438,076, Cl. 423-30.000.
Turner, William D.; and Sprague, Robert A., to Xerox Corporation. Integrated input/output scanner for electronic document processing. 4,438,461, Cl. 358-302.000.
Turro, Jerome; and Nelson, Peter. Safety guard. 4,437,265, Cl. 49-57.000.
Ty, Perla J. Separator disc and hypodermic syringe incorporating the same and method. 4,437,858, Cl. 604-90.000.
Tyler, Derek E.: *See—*
Pryor, Michael J.; and Tyler, Derek E., 4,437,508, Cl. 164-418.000.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,437,317, Cl. 62-81.000.
UBE Industries, Ltd.: *See—*
Matsui, Kanenobu; Uchiumi, Shinichiro; Takahashi, Mitsuo; Asada, Hideki; and Kurahashi, Masaru, 4,438,041, Cl. 260-464.000.
Uchida, Yasuo, to Omron Tateisi Electronics Company. System for performing transactions. 4,438,326, Cl. 235-379.000.
Uchiumi, Shinichiro: *See—*
Matsui, Kanenobu; Uchiumi, Shinichiro; Takahashi, Mitsuo; Asada, Hideki; and Kurahashi, Masaru, 4,438,041, Cl. 260-464.000.
Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, to Fujisawa Pharmaceutical Co., Ltd. Lower alkanoic acid derivatives of 2-oxo-benzoxazolines and aldose reductase inhibiting compositions thereof. 4,438,126, Cl. 424-272.000.

Ueda, Kazuo: *See—*
Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, 4,437,445, Cl. 123-491.000.

Ueda, Makoto: *See—*
Shida, Masaharu; Ueda, Makoto; Otawa, Shuji; Mandai, Masaaki; and Sato, Katsuhiko, 4,437,769, Cl. 368-204.000.

Ueda, Shuso: *See—*
Ikenoya, Yasuo; Ueda, Shuso; and Araki, Masafumi, 4,437,304, Cl. 60-290.000.

Ueguri, Shigeo; Komura, Hirotsugu; and Mizuno, Takaji, to Mitsubishi Denki Kabushiki Kaisha. Pulse arc welding machine. 4,438,317, Cl. 219-130.510.

Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, to Konishiroku Photo Industry Co., Ltd. Silver halide photosenaitive color photographic material. 4,438,193, Cl. 430-505.000.

Uhler, Marcus H.: *See—*
Cawley, James C.; DiMartino, Michael D.; Fisher, Thomas J.; King, Roger L.; and Uhler, Marcus H., 4,438,473, Cl. 361-18.000.

Ulveling, Leon; Legille, Edouard; and Boever, Jean, to Paul Wurth S.A. Pneumatic transport procedure and apparatus. 4,437,796, Cl. 406-25.000.

Umehara, Yozaburo. Method of manufacturing tape guides for recording and/or reproducing apparatus. 4,437,222, Cl. 29-527.400.

Umemura, Shizuo; Matsufuji, Akihiro; Aonuma, Masashi; Kitamoto, Tatsuji; and Miyatsuka, Hajime, to Fuji Photo Film Co., Ltd. Ferromagnetic powder treated with an organic silane compound. 4,437,882, Cl. 75-0.50R.

Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Tanaka, Akihiro, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Tylosin derivatives. 4,438,109, Cl. 424-180.000.

Umezawa, Hamao: *See—*
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tsutomu, 4,438,107, Cl. 424-180.000.

Umezawa, Kazumi: *See—*
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 4,437,757, Cl. 355-15.000.

Umezawa, Sumio: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Tanaka, Akihiro, 4,438,109, Cl. 424-180.000.
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tsutomu, 4,438,107, Cl. 424-180.000.

Umholtz, Walter F.: *See—*
Fawkes, John S.; and Umholtz, Walter F., 4,438,466, Cl. 360-66.000.

Umino, Masahide; Tamura, Eijiro; Karasuno, Isamu; Ichidate, Minoru; and Kubo, Toshihiko, to Sumitomo Metal Industries, Ltd. Oil-atomized low-alloy steel powder. 4,437,891, Cl. 75-251.000.

Unden, Nils H. Air flow direction indicator. 4,437,425, Cl. 114-102.000.

Union Carbide Corporation: *See—*
Ayad, Hafez M., 4,438,110, Cl. 424-217.000.
Duroyon, Herve, 4,437,209, Cl. 17-49.000.
Kampe, Dennis J.; and Sarangapani, Srinivasan, 4,438,216, Cl. 502-101.000.
Scott, Robert J., 4,438,014, Cl. 252-174.210.
Zupancic, Ronald L., 4,437,231, Cl. 29-623.200.

Union Oil Company of California: *See—*
Hawryluk, Raymond; Johnson, Clyde R.; and Masarky, N. Henri, 4,437,884, Cl. 75-7.000.

Union Siderurgique du Nord et de l'Est de la France: *See—*
Cordier, Jean; and Rollot, Pierre, 4,437,651, Cl. 266-193.000.

Uniroyal, Inc.: *See—*
Bell, Allyn R.; Doweyko, Arthur M. P.; and Minatelli, John A., 4,438,271, Cl. 546-294.000.
Hunter, Byron A., 4,438,223, Cl. 521-92.000.
Wefer, John M., 4,438,171, Cl. 428-215.000.

United Chemi-Con, Inc.: *See—*
Phillips, Jeffrey; and Takei, Hiroshi, 4,438,481, Cl. 361-433.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See—*
White, Robert A.; and Yell, Ralph W., 4,438,503, Cl. 364-721.000.

U. S. Industries, Inc.: *See—*
Nijhof, W. A. J., 4,437,433, Cl. 119-18.000.

United States of America
Air Force: *See—*
Anderson, Harold R.; and Hamilton, Roland M., 4,437,544, Cl. 182-120.000.
Kelly, Richard H., 4,437,748, Cl. 354-132.000.
MacFarland, James M.; and Kappe, Bernard W., 4,437,710, Cl. 312-1.000.
McClenahan, Charles R., 4,438,395, Cl. 324-127.000.
Papazian, Harold A., 4,438,182, Cl. 429-91.000.
Snyder, Carl E., Jr.; and Tamborski, Christ, 4,438,006, Cl. 252-49.900.
Snyder, Carl E., Jr.; and Tamborski, Christ, 4,438,007, Cl. 252-49.900.

Army: *See—*
Petito, Ferdinand C.; and Klauber, Gerald, 4,437,844, Cl. 445-5.000.
Shreve, James S., 4,438,439, Cl. 343-449.000.

Energy: *See—*
Baughman, Richard J.; and Ginley, David S., 4,438,183, Cl. 429-111.000.
Coates, Cameron W.; and Wilson, Thomas J., 4,437,956, Cl. 204-129.350.
Ekdahl, Carl A., 4,438,394, Cl. 324-126.000.
Kerns, Quentin A.; and Miller, Harold W., 4,438,367, Cl. 315-5.410.
Merrigan, Michael A., 4,437,456, Cl. 126-433.000.
Rockwood, Stephen D.; and Sander, Robert K., 4,437,958, Cl. 204-157.10R.
Vuckovich, Michael; Wright, Maynard K.; and Burkett, John P., 4,438,382, Cl. 318-744.000.

Health and Human Services: *See—*
Goldstein, Seth; and Jones, Robert, 4,437,857, Cl. 604-53.000.
Tabor, Edward; and Gerety, Robert J., 4,438,098, Cl. 424-89.000.

Interior: *See—*
Baker, Richard W., 4,437,994, Cl. 210-638.000.
Cawley, James C.; DiMartino, Michael D.; Fisher, Thomas J.; King, Roger L.; and Uhler, Marcus H., 4,438,473, Cl. 361-18.000.

National Aeronautics and Space Administration: *See—*
Banks, Bruce A., 4,437,962, Cl. 204-192.00C.
Routh, Donald E.; and Sharma, Gian C., 4,437,961, Cl. 204-192.0EC.
Waters, William J., 4,437,923, Cl. 156-630.000.

Navy: *See—*
Bobb, Lloyd C.; Rankin, Michael; and Ferguson, Gerald D., 4,438,517, Cl. 372-99.000.
Elias, Luis R.; Madey, John M. J.; and Smith, Todd I., 4,438,513, Cl. 372-2.000.
Martorana, Richard T., 4,437,510, Cl. 165-32.000.
Schwartz, Marcus, 4,437,628, Cl. 244-122.0AG.
Wohltjen, Henry; Sniegoski, Paul J.; and Ravner, Harold, 4,438,203, Cl. 436-60.000.

U.S. Philips Corporation: *See—*
Aldenhoven, Ghislanus M. A. M., 4,437,626, Cl. 242-186.000.
Jatteau, Michel; Lelong, Pierre H.; and Pergrale, Jean, 4,438,334, Cl. 250-363.00S.
Lichtenegger, Siegried, 4,438,332, Cl. 250-310.000.
Muilwijk, Dirk, 4,438,524, Cl. 375-80.000.
Shaffer, Jesse S., 4,437,955, Cl. 204-129.400.
Urner-Willie, Marlies; and Hansen, Peter, 4,438,508, Cl. 365-122.000.
Weber, Wendelin; and Rosenthal, Manfred, 4,437,780, Cl. 400-642.000.

United States Pipe and Foundry Company: *See—*
Battle, Billy J., 4,437,242, Cl. 33-178.00B.
Canada, James W.; and Layton, James W., 4,437,501, Cl. 144-136.00R.

U.S. Product Development Company: *See—*
Adell, Robert, 4,437,916, Cl. 156-222.000.

United Technologies Corporation: *See—*
Chenausky, Peter P.; Newman, Leon A.; and Drinkwater, Erroll H., 4,438,514, Cl. 372-64.000.
Goodman, Robert B., 4,437,485, Cl. 137-220.000.

Unitika Ltd.: *See—*
Miwa, Naoto; and Nakajima, Hiroshi, 4,438,199, Cl. 435-190.000.

University of California, The Regents of the: *See—*
Deftos, Leonard J.; and Catherwood, Bayard D., 4,438,208, Cl. 436-542.000.
Golde, David W.; and Quan, Shirley G., 4,438,032, Cl. 260-112.00R.

University of Missouri, The Curators of the: *See—*
Liu, Henry; Gibson, Donald L.; Cheng, David H. S.; and Rathke, James E., 4,437,799, Cl. 406-198.000.

University of Surrey: *See—*
Zonsveld, Johannes J., 4,437,495, Cl. 138-144.000.

UOP Inc.: *See—*
Imai, Tamotsu, 4,438,287, Cl. 568-909.000.
Imai, Tamotsu; and Hung, Chi-Wen, 4,438,288, Cl. 585-379.000.
Vickers, Anthony G.; and Lomas, David A., 4,438,071, Cl. 422-109.000.

Upjohn Company, The: *See—*
Gammill, Ronald B., 4,438,274, Cl. 549-387.000.
Kaplan, Lester J., 4,438,130, Cl. 424-274.000.

Upravlenie Sanitarno-Tekhnicheskikh Rabot: *See—*
Tigane, Rein K., 4,437,823, Cl. 418-219.000.

Upsher, Michael S. Laryngoscope. 4,437,458, Cl. 128-11.000.

Urabe, Sumio, to Toyo Umpanki Co., Ltd. Electrical power steering system. 4,437,531, Cl. 180-79.100.

Urban Systems Streetscape, Inc.: *See—*
Winden, Joseph, 4,438,484, Cl. 362-267.000.

Urner-Willie, Marlies; and Hansen, Peter, to U.S. Philips Corporation. Magneto-optical memory element. 4,438,508, Cl. 365-122.000.

USM Corporation: *See—*
Kulik, Alphonse C., 4,437,198, Cl. 12-145.000.

Usuda, Koji, to Hitachi, Ltd. Field effect semiconductor device having a protective diode with reduced internal resistance. 4,438,449, Cl. 357-41.000.

Uzunoglu, Vasil, to Communications Satellite Corporation. Phase canceller for carrier recovery network. 4,438,355, Cl. 307-511.000.

Vaidya, Sheila: *See—*
Sheng, Tan T.; Sinha, Ashok K.; and Vaidya, Sheila, 4,438,450, Cl. 357-68.000.

Valencia, Jose. Book index markers. 4,437,685, Cl. 281-42.000.

Valeron Corporation, The: *See—*
Juengel, Richard O.; Begin, John D.; and Khalaf, John, 4,437,240, Cl. 33-172.00E.

Valibouse, Bernard, to Societe Anonyme dite: Alsthom-Atlantique. Apparatus for collecting substances floating on an expanse of liquid. 4,437,989, Cl. 210-242.300.

Valli, Alberto. Peritoneal catheter device for dialysis. 4,437,856, Cl. 604-29.000.

Van F. Belknap Co.: *See—*
Thorn, E. R.; and Thorn, Brent, 4,437,648, Cl. 254-93.00R.

Van Ceulen, Alain: *See—*
Dreulle, Noel; Van Ceulen, Alain; and Eusebe, Claude, 4,437,965, Cl. 204-290.00F.

van Dedem, Gijsbert W. K.: *See—*
Sanders, Adrianus L. M.; Meuleman, Dirk G.; Moelker, Huibert C. T.; van Dedem, Gijsbert W. K.; and van Houdenhoven, Francois E. A., 4,438,108, Cl. 424-183.000.

Vandenbossche, Claudine: *See—*
Guillon, Michel; Mondet, Jean; Papantoniou, Christos; and Vandenbossche, Claudine, 4,438,140, Cl. 424-61.000.

Van Der Meulen, Leonard. Arrangement for perforating or cutting foils. 4,437,373, Cl. 83-346.000.

van der Ploeg, Dirk C. H.; and Tameris, Hendrikus M., to Albany International Plastic B.V. Plastic cheese mold. 4,437,787, Cl. 425-84.000.

Van der Velden, Jan H., to Eamil, B.V.; and Hoeke Engineering, N.V. Method of making a ceramic article and articles made by the method. 4,438,055, Cl. 264-44.000.

van der Zel, Joseph M.; and de Groot, Klaas, to Delphi Dental Industries B.V. Implant of ceramic material. 4,437,191, Cl. 3-1.000.

Vangheluwe, Jozef: *See—*
Bijttebier, Gaspar A. H.; and Vangheluwe, Jozef, 4,437,655, Cl. 271-3.100.

van Houdenhoven, Francois E. A.: *See—*
Sanders, Adrianus L. M.; Meuleman, Dirk G.; Moelker, Huibert C. T.; van Dedem, Gijsbert W. K.; and van Houdenhoven, Francois E. A., 4,438,108, Cl. 424-183.000.

van Linden, Jan H. L., to Aluminum Company of America. Briquette melting apparatus. 4,437,650, Cl. 266-144.000.

VanSickle, Eugene R. Coil adapter reel. 4,437,625, Cl. 242-129.000.

Van Zeeland, Anthony J., to Oak Industries Inc. Movable member membrane switch. 4,438,301, Cl. 200-16.00C.

Varco International, Inc.: *See—*
Boyadjieff, George I.; and Campbell, Andrew B., 4,437,515, Cl. 166-77.000.
Boyadjieff, George I.; and Picard, Joseph A. R., 4,437,524, Cl. 173-43.000.

Varghese, Philip: *See—*
Derbyshire, Francis J.; and Varghese, Philip, 4,437,972, Cl. 208-8.0LE.

Varian Associates, Inc.: *See—*
Abu-Shumays, Ahmad; Helmer, John C.; and Luchetti, Stephen J., 4,437,812, Cl. 417-53.000.
Patt, Steven L., 4,438,400, Cl. 324-312.000.

Varnovitsky, Marlen, to General Electric Company. Variable slip controller for an AC motor. 4,438,376, Cl. 318-78.000.

Vaseen, Vesper A.: *See—*
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,437,520, Cl. 166-261.000.

Vasiichenko, Dmitry V.: *See—*
Lipatova, Tatyana E.; Vasiichenko, Dmitry V.; Pkhakadze, Georgy A.; and Konoplitskaya, Xenya L., 4,438,249, Cl. 528-61.000.

Vatja, Aulis, to Lonnstrom Oy. Conveyor chain. 4,437,565, Cl. 198-851.000.

VDO Adolf Schindling AG: *See—*
Stier, Bernhard, 4,438,423, Cl. 340-52.00R.

Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Storr, Rudolf, 4,437,600, Cl. 226-108.000.

Veda, Inc.: *See—*
Buschbom, Floyd E.; and Hansen, Glen D., 4,437,637, Cl. 248-163.00A.

VerBerkmoes, John A.: *See—*
Plattner, Robert F.; Arend, Raymond J.; and VerBerkmoes, John A., 4,437,396, Cl. 99-475.000.

Verboom, Pieter, to IHC Holland N.V. Method for sucking up soil or sludge by means of a suction hopper dredge as well as a suction dredge for applying the method. 4,437,244, Cl. 37-63.000.

Vereinigte Aluminum-Werke AG: *See—*
Pietsch, Hartmut; Turke, Wolfgang; Bareuther, Ernst; Kampf, Fritz; and Binga, Hubert, 4,438,076, Cl. 423-30.000.

Vereinigte Flugtechnische Werke Fokker GmbH: *See—*
Martens, Wilhelm; and Dilmaghani, Homayoun, 4,437,631, Cl. 244-214.000.

Verhagen, Laurentius A. M.; and Bodor, Janos, to Lever Brothers Company. Spreadable water-in-oil emulsion based on a high-melting butterfat fraction and a liquid oil. 4,438,149, Cl. 426-603.000.

Vermija, Winfried J. W.: *See—*
Willems, Michael H.; and Vermija, Winfried J. W., 4,438,083, Cl. 423-266.000.

Verrinder, Robert F.: *See—*
Sekel, Stephen M.; Strange, Rodney G.; and Verrinder, Robert F., 4,438,498, Cl. 364-483.000.

Versuchsanstalt f. Deutsche Forschungs-u Luft-u Raumfahrt e.V: *See—*
Ackermann, Ulrich; and Ratsch, Eggo, 4,438,316, Cl. 219-121.0PC.

Vespasiani, Alberto, to Societa' Pneumatici Pirelli S.p.A. Apparatus for producing metallic cords in layers. 4,437,297, Cl. 57-9.000.

Vickers, Anthony G.; and Lomas, David A., to UOP Inc. Fluid catalyst regeneration apparatus. 4,438,071, Cl. 422-109.000.

Victory Equipment Limited: *See—*
Erdman, Victor B., 4,437,296, Cl. 56-400.000.

Vignon, Louis, to Heberlein Hispano SA. Device for the continuous spinning of textile yarns. 4,437,300, Cl. 57-74.000.

Vilenski, Dan: *See—*
Razon, Ely; and Vilenski, Dan, 4,437,604, Cl. 228-179.000.

Vinegar, Ralph, to Burroughs Wellcome Co. Pharmaceutical combination. 4,438,142, Cl. 424-260.000.

Vivar, Incorporated: *See—*
Hovsepians, Vigen M., 4,437,704, Cl. 297-440.000.

VLSI Technology Research Association: *See—*
Toyoda, Hiroyasu; Komiya, Hiroyoshi; and Itakura, Hideaki, 4,438,315, Cl. 219-121.0PE.

Vogel, Alfredo, to Cosworth Research and Development Limited. Method of and apparatus for treating granular material. 4,437,834, Cl. 432-14.000.

Voigt, William C. Efficiency switching-mode power supply. 4,438,485, Cl. 363-21.000.

Volk, Kurt E., Jr.; Herbert, Everett H.; and Stenner, John W., to Kurt H. Volk, Inc. Method of producing mailer with self contained reply envelope. 4,437,852, Cl. 493-216.000.

Volka, Lubomir J., to Burroughs Corporation. Flat ribbon cable shield. 4,437,724, Cl. 339-143.00R.

Volkswagenwerk AG: *See—*
Hofbauer, Peter, 4,437,443, Cl. 123-446.000.

Volland, Michel F.: *See—*
Deborde, Albert H.; and Volland, Michel F., 4,437,352, Cl. 73-862.470.

Volna, William M. Spindle squaring tool. 4,437,803, Cl. 409-218.000.

Von Duprin, Inc.: *See—*
Godec, Maksimilijan, 4,437,693, Cl. 292-191.000.

von Branchel, Helmut; Schreiber, Georg; and Schroeder, Heinz, to Dynamit Nobel Aktiengesellschaft. Process and apparatus for the production and maintenance of a fluidized layer in heterogeneous systems. 4,438,075, Cl. 422-189.000.

Vondrovsky, Gabriel: *See—*
Ehgartner, Gabriele; and Vondrovsky, Gabriel, 4,437,749, Cl. 354-214.000.

von Schuckmann, Alfred, to Colgate-Palmolive Company. Dispenser for, in particular, pasty substances. 4,437,591, Cl. 222-391.000.

Vorwerk & Co. Interholding GmbH: *See—*
Guhne, Wieland, 4,437,204, Cl. 15-325.000.
Wulf, Peter; and Schlecht, Annegret, 4,437,199, Cl. 15-49.00R.

Voser, Othmar, to Kupferdraht-Isolierwerk AG Wildegg. Cable with impregnated fiber strength member for non-slip clamping. 4,438,293, Cl. 174-79.000.

Vought Corporation: *See—*
Fling, George K., 4,437,674, Cl. 277-188.00A.

Vuckovich, Michael; Wright, Maynard K.; and Burkett, John P., to United States of America, Energy. Three phase AC motor controller. 4,438,382, Cl. 318-744.000.

W. R. Grace & Co., Cryovac Div.: *See—*
Sanborn, Philip A., Jr., 4,437,293, Cl. 53-412.000.

Wada, Toshiaki: *See—*
Furukawa, Mitsuhiki; Miyahara, Michito; Kitahira, Takashi; Misumi, Kiyohito; Shiroyama, Masaharu; and Wada, Toshiaki, 4,438,213, Cl. 501-92.000.

Wagner, Fritz: *See—*
Lindorfer, Walter; Wagner, Fritz; and Schulz, Walther, 4,437,993, Cl. 210-631.000.

Wagner, James B.: *See—*
Taber, Bruce D.; and Wagner, James B., 4,437,313, Cl. 60-665.000.

Wagner, Karl: *See—*
Engelsmann, Dieter; Hackenberg, Hubert; Lermann, Peter; Wagner, Karl; and Zobel, Siegfried, 4,437,751, Cl. 354-214.000.

Wago Verwaltungsgesellschaft mit beschrankter Haftung: *See—*
Kollmann, Hans-Joeef; Hennemann, Lothar; and Hohorst, Wolfgang, 4,437,721, Cl. 339-97.00P.

Wagu, Masakatsu; Hayashi, Shoichiro; and Kodama, Kouichi, to Kureha Kagaku Kabushiki Kaisha. Inclusion compound of eicosapentaenoic acid or docosahexaenoic acid with cyclodextrin. 4,438,106, Cl. 424-180.000.

Waits, Charles G.: *See—*
Rog, Joseph W.; Waits, Charles G.; and Nicholas, Karl W., 4,438,391, Cl. 324-71.100.

Walbrohl, Heinz T. Method and apparatus for the advancing of a sliding form. 4,437,788, Cl. 405-146.000.

Walkowiak, Michael: *See—*
Schmitz-Josten, Robert; Suling, Carlhans; Podszun, Wolfgang; Bomer, Bruno; Borgardt, Manfred; and Walkowiak, Michael, 4,437,836, Cl. 433-199.000.

Wallace, Gearld F.: *See—*
O'Hanlon, Tom A.; Madonna, Peter L.; and Wallace, Gearld F., 4,437,525, Cl. 175-218.000.

Wallis, Christopher J.: *See—*
Collington, Eric W.; Hallett, Peter; and Wallis, Christopher J., 4,438,111, Cl. 424-246.000.
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; and Bradshaw, John, 4,438,112, Cl. 424-244.000.

Walter, Lothar: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Horling, Peter; Hetterich, Hermann; and Kunkel, Heinrich, 4,437,214, Cl. 29-149.5DP.

Wang, Tsing-Chow: *See—*
Flannery, William E.; Josephs, Richard M.; Stein, Barry F.; Wang, Tsing-Chow; and Young, Peter L., 4,437,227, Cl. 29-589.000.

Warner-Lambert Company: *See—*
Schweiss, Dietrich; and Nordin, Ivan C., 4,438,092, Cl. 424-273.00P.

Warner & Swasey Company, The: *See—*
Koenig, C. Fred, III, 4,437,675, Cl. 279-1.00C.

Wason, Thomas D., to Cain Encoder Company. Self-sequencing data bus allocation system. 4,438,434, Cl. 340-825.510.

Wasson, George E., to Conoco Inc. Separation of clay from coal. 4,437,982, Cl. 209-5.000.

Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tsutomu, to Kowa Company, Ltd.; and Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Aminoglycosides and use thereof. 4,438,107, Cl. 424-180.000.

Watanabe, Syoji: *See—*
Saito, Yukio; Nogita, Shunsuke; Watanabe, Syoji; and Baba, Kenji, 4,437,992, Cl. 210-603.000.

Watanabe, Takao: *See—*
Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, 4,438,126, Cl. 424-272.000.

Watanabe, Takeshi: *See—*
Sudo, Ryoichi; Shoji, Fusaji; Watanabe, Takeshi; Suzuki, Kenkichi; and Ooue, Michio, 4,437,731, Cl. 350-340.000.

Watanabe, Yoshio; Yamane, Mikiya; and Tomura, Teruichi, to Hitachi, Ltd. Low pressure metal vapor discharge lamp. 4,438,373, Cl. 315-334.000.

Waters, William J., to United States of America, National Aeronautics and Space Administration. Multicolor printing plate joining. 4,437,923, Cl. 156-630.000.

Weatherston, Roger C. Oil-free rotary compressor. 4,437,818, Cl. 418-9.000.

Weaver, John D., to Dow Chemical Company, The. Preparation of antimony trifluorodichloride and fluorination of fluorinatable hydrocarbons and halocarbons therewith. 4,438,088, Cl. 423-466.000.

Webber, John R.: *See—*
Rica, Albert F.; Hay, Lloyd F.; Heron, John R.; Webber, John R.; and Rechtsteiner, Steven A., 4,437,315, Cl. 62-63.000.

Weber, Harold J. Antilatchup pseudorandom binary sequence generator. 4,438,501, Cl. 364-717.000.

Weber, Hermann, to Techsight Corporation. Coating process. 4,438,159, Cl. 427-162.000.

Weber, Richard A.; and Schutz, Carl-Heinz, to Thyssen Aktiengesellschaft Vorm.August Thyssen-Hutte. Vessel for the treatment of molten metal. 4,437,652, Cl. 266-275.000.

Weber, Wendelin; and Rosenthal, Manfred, to U.S. Philips Corporation. Cylindrical platen printer with improved paper guide. 4,437,780, Cl. 400-642.000.

Webster Air Equipment Ltd.: *See—*
Demers, Robert J.; and Schilbe, Rick, 4,437,490, Cl. 137-512.400.

Weder, Hans G.; Zumbuhl, Otmar; Schwendener, Reto; and Milsmann, Manfred, to Weder, Hans Georg. Process and device for producing bilayer vesicles. 4,438,052, Cl. 264-4.600.

Weder, Hans Georg: *See—*
Weder, Hans G.; Zumbuhl, Otmar; Schwendener, Reto; and Milsmann, Manfred, 4,438,052, Cl. 264-4.600.

Weeks, Vaughan B.: *See—*
Trick, Robert E.; and Weeks, Vaughan B., 4,437,457, Cl. 128-1.00R.

Wefer, John M., to Uniroyal, Inc. Coextruded product of AES-thermoplastic graft copolymer. 4,438,171, Cl. 428-215.000.

Weglin, Walter, to Jerobee Industries, Inc. Method of making fine-line die. 4,437,924, Cl. 156-651.000.

Wegner, Wilhelm: *See—*
Stahl, Juergen; Schuster, Wilhelm; and Wegner, Wilhelm, 4,437,212, Cl. 24-698.000.

Weihe, Georg: *See—*
Weihe, Rolf; and Weihe, Georg, 4,437,781, Cl. 402-8.000.

Weihe, Rolf; and Weihe, Georg, to Siplast Siegerlander GmbH. Ring binder. 4,437,781, Cl. 402-8.000.

Weiss, Eberhard: *See—*
Koehler, Wolfgang; Blocher, Hans-Joachim; and Weiss, Eberhard, 4,437,528, Cl. 180-9.500.

Weiss, Stefan: *See—*
Oeder, Dieter; Ziegler, Walter; Daeuble, Manfred; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,438,008, Cl. 252-56.00R.

Weitzman, Mark R.: *See—*
Yeager, Raymond W.; and Weitzman, Mark R., 4,437,542, Cl. 181-290.000.

Welbilt Electronics Die Corporation: *See—*
Pinkhasov, Eduard, 4,438,153, Cl. 427-37.000.

Wells, Alfred E., Jr.; and Casillo, James H., to Thermo Electric Co., Inc. Fast response thermocouple surface probe. 4,438,290, Cl. 136-221.000.

Wells, Hugh A.: *See—*
Tucker, John G.; and Wells, Hugh A., 4,437,605, Cl. 228-180.00R.

Werjefelt, Bertil R. L. Environmental control system and method. 4,437,318, Cl. 62-93.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Freymond, Pierre, 4,437,409, Cl. 102-364.000.

Werner, Peter: *See—*
Drews, Ulrich; Rapps, Peter; and Werner, Peter, 4,437,339, Cl. 73-118.000.

Werner & Pfleiderer: *See—*
Joachim, Rudolph, 4,437,766, Cl. 366-287.000.

Wesche, Michael: *See—*
Immeyer, Fritz H.; and Wesche, Michael, 4,437,432, Cl. 119-18.000.

West, Robert F.: *See—*
Elmore, James; and West, Robert F., 4,437,375, Cl. 83-762.000.

Western Electric Company, Inc.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,437,229, Cl. 29-593.000.
Hurst, Jerry C., 4,437,362, Cl. 81-43.000.
Tucker, John G.; and Wells, Hugh A., 4,437,605, Cl. 228-180.00R.

Westinghouse Brake and Signal Company Limited: *See—*
Hurcum, Ivan B., 4,438,432, Cl. 340-825.350.

Westinghouse Electric Corp.: *See—*
Cooper, Gordon J., 4,437,716, Cl. 339-4.000.
Crookston, Ronald W.; and Burney, Ivan T., 4,438,306, Cl. 200-148.00F.
Deis, Daniel W.; and Kemeny, George A., 4,437,383, Cl. 89-8.000.
Gyugyi, Laszlo, 4,438,386, Cl. 323-210.000.
Haley, Paul H., 4,438,475, Cl. 361-82.000.
Hruda, Robert M., 4,438,302, Cl. 200-17.00R.
Paice, Derek A., 4,438,474, Cl. 361-58.000.

Weston, David. Production of aluminum metal from alumina bauxites and clays by firstly producing a purified aluminum monochloride. 4,437,887, Cl. 75-68.00B.

Weyl, Helmut: *See—*
Csanitz, Herbert; and Weyl, Helmut, 4,437,971, Cl. 204-427.000.

Whang, Kyu B., to International Monopoly Association. Water-proof briquette and method for production thereof. 4,437,862, Cl. 44-6.000.

Whewell, Bruce R. Polyester antistatic laminate materials. 4,438,174, Cl. 428-247.000.

Whirlpool Corporation: *See—*
Koland, David G., 4,437,205, Cl. 15-354.000.

White, Claude C., to Birmingham Bolt Company. Mine roof anchor assembly. 4,437,795, Cl. 405-259.000.

White Consolidated Industries, Inc.: *See—*
Zalewski, Gerald F., 4,437,201, Cl. 15-316.00R.

White, David L., to Medtronic, Inc. Transvenous cardiovascular integrated lead anchoring sleeve, protector, and permanent lead introducer stop gap. 4,437,475, Cl. 128-785.000.

White, Robert A.; and Yell, Ralph W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Waveform synthesizers. 4,438,503, Cl. 364-721.000.

Whitehouse, Craig M.; Cox, Nigel; Burt, Allan G.; and Snyder, Daniel R., to DRS Infusion Systems, Inc. Hydraulic syringe drive. 4,437,859, Cl. 604-131.000.

Whitehurst, Brooks M.; and Clemens, Donald F. Peat fuel slurry. 4,437,863, Cl. 44-51.000.

Whiteman, Patrick W., to Recycled Paper Bedding, Inc. Process for preparing animal bedding. 4,437,615, Cl. 241-24.000.

Wick, Wilhelm: *See—*
Bienek, Heinz; Finkbeiner, Rudolf; and Wick, Wilhelm, 4,437,578, Cl. 220-256.000.

Wicnienski, Michael F., to Baxter Travenol Laboratories, Inc. Level sensitive reset circuit for digital logic. 4,438,357, Cl. 307-597.000.

Wico Corporation: *See—*
Wiczer, Max; and Peters, Albin, 4,437,664, Cl. 273-121.00A.

Wiczer, Max; and Peters, Albin, to Wico Corporation. Pin ball game with oscillating shooter. 4,437,664, Cl. 273-121.00A.

Wiebesiek, Wilhelm, to Herbert Kannegiesser GmbH & Co. Apparatus for feeding laundry to an ironing machine. 4,437,247, Cl. 38-143.000.

Wiedemann, Fritz; Kampe, Wolfgang; Dietmann, Karl; and Sponer, Gisbert, to Boehringer Mannheim GmbH. Cardioactive aryloxypropanolamines. 4,438,128, Cl. 424-273.00N.

Wiedemann, Gunter: *See—*
Banke, Karl-Heinz; Hering, Elisabeth; Lobel, Wilfried; Pollack, Dieter; Wiedemann, Gunter; Grell, Ute; and Schuler, Ingo, 4,438,053, Cl. 264-25.000.

Wiersma, Charles M.: *See—*
Schmittmann, Hans-Bernd; and Thier, Alfons, 4,438,028, Cl. 252-609.000.

Wiersma, Jack G.: *See—*
Schmittmann, Hans-Bernd; and Thier, Alfons (said Alfons Thier assors. to), 4,438,028, Cl. 252-609.000.

Wilder, Richard P., Jr., to Honeywell Information Systems Inc. Clock control of a central processing unit from a monitor interface unit. 4,438,490, Cl. 364-200.000.

Wilhelm Hegenscheidt Gesellschaft mbH: *See—*
Wittkopp, Helmut; and Buschgens, Valentin, 4,437,328, Cl. 72-110.000.

Wilkinson, George F., Jr.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,437,229, Cl. 29-593.000.

Willems, Michael H.; and Vermijs, Winfried J. W., to Stamicarbon B.V. Process for preparing magnesium nitrate hexahydrate and for thermally stabilizing ammonium nitrate using magnesium nitrate hexahydrate. 4,438,083, Cl. 423-266.000.

Wm. T. Burnett & Co., Inc.: *See—*
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Buchanan, Michael S., 4,438,220, Cl. 521-55.000.
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Buchanan, Michael S., 4,438,221, Cl. 521-55.000.

Williams, Aileen: *See—*
Williams, Albert V., 4,437,518, Cl. 166-248.000.

Williams, Albert V., to Gottlieb, Norman; and Williams, Aileen. Apparatus and method for improving the productivity of an oil well. 4,437,518, Cl. 166-248.000.

Williams, David M.: *See—*
Simpson, Danny E.; Williams, David M.; Chase, Richard A.; and Grubb, Lawrence B., 4,437,668, Cl. 273-156.000.

Williamson, Joanne M.: *See—*
Meister, Alton; and Williamson, Joanne M., 4,438,124, Cl. 424-270.000.

Willis, Arthur B., deceased: *See—*
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.

Willis, Frederick G.; Radtke, Richard R.; Ellison, Joseph; Fozo, Steven R.; and Kern, Glenn A., to Ford Motor Company. Adaptive strategy to control internal combustion engine. 4,438,497, Cl. 364-431.050.

Wilmers, Gottlieb, to Audi NSU Auto Union Aktiengesellschaft. Electrically operable valve. 4,437,644, Cl. 251-11.000.

Wilson, David A.: *See—*
Svatek, Katherine H.; Wilson, David A.; and Griffin, Freddie, Jr., 4,438,040, Cl. 260-439.00R.

Wilson, James H. Waterproof assembly or sealing an aperture housing a conduit. 4,437,687, Cl. 285-42.000.

Wilson, Nigel D. V.: *See—*
Grew, Edward L.; and Wilson, Nigel D. V., 4,438,046, Cl. 260-501.150.

Wilson, Norman H.: *See—*
Jones, Robert L.; and Wilson, Norman H., 4,438,136, Cl. 424-309.000.

Wilson, Robert C., Jr.: *See—*
Oleck, Stephen M.; and Wilson, Robert C., Jr., 4,437,976, Cl. 208-97.000.

Wilson, Robert D.: *See—*
Armantrout, Robert J.; Gerpheide, George E.; and Wilson, Robert F., deceased, 4,437,672, Cl. 273-185.00B.

Wilson, Robert D., personal representative: *See—*
Armantrout, Robert J.; Gerpheide, George E.; and Wilson, Robert F., deceased, 4,437,672, Cl. 273-185.00B.

Wilson, Robert F., deceased: *See—*
Armantrout, Robert J.; Gerpheide, George E.; and Wilson, Robert F., deceased, 4,437,672, Cl. 273-185.00B.

Wilson, Scott E., to Jodon Engineering Associates, Inc. Spark plug microwave adapter. 4,437,338, Cl. 73-116.000.

Wilson, Thomas J.: *See—*
Coates, Cameron W.; and Wilson, Thomas J., 4,437,956, Cl. 204-129.350.

Wilson Trailer Co.: *See—*
Lewis, Mack A.; and Spencer, Mike R., 4,437,699, Cl. 296-181.000.

Wilt, Mason S., to Phillips Petroleum Company. Continuous polymerization reactor. 4,438,074, Cl. 422-135.000.

Winchell, Frank J.; and Winkelmann, Klaus O., to General Motors Corporation. Three-track motorcycle with cambering main frame. 4,437,535, Cl. 180-215.000.

Winden, Joseph, to Urban Systems Streetscape, Inc. Lighting bollard for use in an urban environment. 4,438,484, Cl. 362-267.000.

Winfred M. Berg, Inc.: *See—*
Berg, Winfred M., 4,437,849, Cl. 474-256.000.

Wingate, Clarence W., to Fluid Operations & Equipment, Inc. Adjustable and repairable flow diverter for food processing equipment. 4,437,686, Cl. 285-12.000.

Winkelmann, Klaus O.: *See—*
Winchell, Frank J.; and Winkelmann, Klaus O., 4,437,535, Cl. 180-215.000.

Winkley, Michael W.; and Childress, Scott J., to American Home Products Corporation. N-(Alkylsulfonyl)-L-proline amide and N-(alkylsulfonyl)-2-carboxylic acid amide-indoline derivatives. 4,438,031, Cl. 260-112.50R.

Winter, Joseph: *See—*
Beck, Alexander F.; and Winter, Joseph, 4,437,943, Cl. 204-16.000.

Winterbotham, Harold. Method of an apparatus for varying the load on an A.C. generator. 4,438,341, Cl. 290-44.000.

Wintershall AG: *See—*
Lindorfer, Walter; Wagner, Fritz; and Schulz, Walther, 4,437,993, Cl. 210-631.000.

Wirz, Burkhardt; and Preuss, Alfred, to Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG. Device for controlling the clamping of printing plates in correct register on the plate cylinder of an offset printing machine. 4,437,407, Cl. 101-409.000.

Wise, James L.: *See—*
Dyer, David; and Wise, James L., 4,437,316, Cl. 62-79.000.

Wisner, John A. Cleaning head for wall washing machines. 4,437,203, Cl. 15-322.000.

Wissinger, John W. Cabinet system. 4,437,712, Cl. 312-246.000.

Wissman, Thomas: *See—*
Korzik, James L.; and Wissman, Thomas, 4,437,717, Cl. 339-17.0LC.

Withers, Michael S.: *See—*
Smith, Roger A.; and Withers, Michael S., 4,437,952, Cl. 204-98.000.

Witt, Geoffrey R.: *See—*
Dixon, James M.; and Witt, Geoffrey R., 4,437,343, Cl. 73-182.000.

Wittkopp, Helmut; and Buschgens, Valentin, to Wilhelm Hegenscheidt Gesellschaft mbH. Crankshaft glaze or smooth rolling machine. 4,437,328, Cl. 72-110.000.

Woebcke, Herman N.; Bhojwani, Arju H.; and Gartside, Robert J., to Stone & Webster Engineering Corp. Solids quench boiler and process. 4,437,979, Cl. 208-153.000.

Wohltjen, Henry; Sniegoski, Paul J.; and Ravner, Harold, to United States of America, Navy. Method and apparatus for determination of lubricant stability. 4,438,203, Cl. 436-60.000.

Wojnarowski, Robert J.: *See—*
Eichelberger, Charles W.; and Wojnarowski, Robert J., 4,438,158, Cl. 427-101.000.
Eichelberger, Charles W.; Wojnarowski, Robert J.; and Auerbach, Abraham, 4,438,291, Cl. 136-236.00R.

Wolf, Sten J. L.: *See—*
Ohlsson, Ingemar; and Wolf, Sten J. L., 4,437,538, Cl. 181-129.000.

Wolf, Wolfram, to E.C.H. Will (GmbH & Co.). Apparatus for changing the direction of transport of paper stacks or the like. 4,437,560, Cl. 198-457.000.

Wolter, Claude: *See—*
Gerphagnon, Jean-Louis; and Wolter, Claude, 4,437,964, Cl. 204-245.000.

Wong, Kwee C., to Dart Industries Inc. Dissolution of metals utilizing a lactone. 4,437,927, Cl. 156-666.000.

Wong, Kwee C., to Dart Industries Inc. Dissolution of metals utilizing a glycol ether. 4,437,928, Cl. 156-666.000.

Wong, Kwee C., to Dart Industries Inc. Dissolution of metals utilizing pyrrolidone. 4,437,929, Cl. 156-666.000.

Wong, Kwee C., to Dart Industries Inc. Dissolution of metals utilizing ε-caprolactam. 4,437,930, Cl. 156-666.000.

Wong, Kwee C., to Dart Industries Inc. Dissolution of metals utilizing a furan derivative. 4,437,932, Cl. 156-666.000.

Woodall, James C., to Mark Products, Inc. Waterproof housing assembly for geophones. 4,438,292, Cl. 174-52.00R.

Woodard, Thomas R.; and Martin, Kenneth L., to Texas Instruments Incorporated. Thermal printing apparatus having a thermal printhead substrate with special geometry for bi-directional printing. 4,438,320, Cl. 219-216.000.

Woodworth, George K., to International Business Machines Corporation. Active arc suppression for switching of direct current circuits. 4,438,472, Cl. 361-13.000.

Worthington, Peter: *See—*
Parfree, Colin S.; and Worthington, Peter, 4,437,729, Cl. 350-96.230.

Wright, Maynard K.: *See—*
Vuckovich, Michael; Wright, Maynard K.; and Burkett, John P., 4,438,382, Cl. 318-744.000.

Wuerzer, Bruno: *See—*
Acker, Rolf-Dieter; Rossy, Phillip A.; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,437,878, Cl. 71-90.000.

Wulf, Peter; and Schlecht, Annegret, to Vorwerk & Co. Interholding GmbH. Carpet cleaning device. 4,437,199, Cl. 15-49.00R.

Wuppermann, Dirk: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.

Wyder, Manfred, to American Safety Equipment Corporation. Integrated weblocker with program pawl retractor. 4,437,623, Cl. 242-107.200.

Wysong, Charles F., to Atlanta Stove Works, Inc. Stove with catalytic combustor and bypass. 4,437,451, Cl. 126-77.000.

Xerox Corporation: *See—*
Mardkha, Michael M., 4,438,352, Cl. 307-475.000.
Tandon, Jagdish C.; Kadekodi, Narayan K.; Ibrahim, Abd-El-Fattah A.; Handy, Roland J.; and Stoffel, James C., 4,438,457, Cl. 358-213.000.
Turner, William D.; and Sprague, Robert A., 4,438,461, Cl. 358-302.000.

Yaari, Yigal Y. Screwdriver. 4,437,365, Cl. 81-436.000.

Yagi, Junichi: *See—*
Shiseki, Yutaka; Yagi, Junichi; and Miura, Yasuyuki, 4,438,358, Cl. 310-51.000.

Yamada, Kazuo: *See—*
Suguri, Masayoshi; Yamada, Kazuo; and Nandate, Masaaki, 4,438,063, Cl. 264-311.000.

Yamaguchi, Akira: *See—*
Kitajima, Masao; Seshimoto, Osamu; Kubotera, Kikuo; and Yamaguchi, Akira, 4,437,970, Cl. 204-412.000.

Yamaguchi, Hiroshi, to Nissan Motor Company, Limited. Automotive vehicle engine control system. 4,437,442, Cl. 123-417.000.

Yamaguchi, Kunio: *See—*
Suzuki, Osamu; Yamaguchi, Kunio; and Yamamoto, Meguru, 4,437,309, Cl. 60-547.100.

Yamaguchi, Takashi: *See—*
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tsutomu, 4,438,107, Cl. 424-180.000.

Yamaguchi, Taturo; and Minemura, Norihiro, to Teijin Limited. Process for durably modifying a shaped synthetic polymer article. 4,438,151, Cl. 427-36.000.

Yamaguchi, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Musical envelope-producing device. 4,437,380, Cl. 84-1.260.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Grinde, James E., 4,437,534, Cl. 180-190.000.

Yamamori, Kenji: *See—*
Narita, Ryuho; Yamamori, Kenji; Oota, Hiroyuki; and Aoshima, Terutaka, 4,438,324, Cl. 219-441.000.

Yamamoto, Akito: *See—*
Hosaka, Akio; Yamamoto, Akito; and Oshiage, Katsunori, 4,437,342, Cl. 73-119.00A.
Yamamoto, Hideharu; and Tsuneno, Hiroshi, to Hitachi, Ltd. Method of mounting a silicon pellet on a ceramic substrate. 4,437,228, Cl. 29-590.000.
Yamamoto, Kazuaki: *See—*
Sato, Hiroyasu; Yamamoto, Kazuaki; and Aotsu, Hiroaki, 4,438,385, Cl. 322-28.000.
Yamamoto, Meguru: *See—*
Suzuki, Osamu; Yamaguchi, Kunio; and Yamamoto, Meguru, 4,437,309, Cl. 60-547.100.
Yamamoto, Takaaki: *See—*
Nozawa, Tadao; Yamamoto, Takaaki; Nakayama, Tadashi; Matsumoto, Fumio; and Hayami, Satohiro, 4,437,910, Cl. 148-112.000.
Yamana, Koji: *See—*
Ishida, Hideaki; Ishikawa, Tomohisa; Yamana, Koji; and Kayahara, Takehiko, 4,437,378, Cl. 84-1.180.
Yamanaka, Kazuhiko: *See—*
Kamei, Hideaki; Yamanaka, Kazuhiko; Fujisawa, Haruhiko; and Oda, Shinichiro, 4,438,468, Cl. 360-92.000.
Yamane, Mikiya: *See—*
Watanabe, Yoshio; Yamane, Mikiya; and Tomura, Teruichi, 4,438,373, Cl. 315-334.000.
Yamano, Shoji: *See—*
Hasegawa, Eiichi; and Yamano, Shoji, 4,437,561, Cl. 198-504.000.
Yamaoka, Nobutatsu: *See—*
Masuyama, Masaru; Hirooka, Susumu; and Yamaoka, Nobutatsu, 4,438,214, Cl. 501-136.000.
Yamashita, Kiyofumi; and Kodama, Toshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Filter circuit utilizing a surface acoustic wave filter. 4,438,417, Cl. 333-193.000.
Yamato Scale Company, Ltd.: *See—*
Hasegawa, Eiichi; and Yamano, Shoji, 4,437,561, Cl. 198-504.000.
Omae, Michinobu; and Hirano, Takashi, 4,437,527, Cl. 177-25.000.
Yamazaki, Tamotsu: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Yamazaki, Tamotsu; Nabata, Hiroyuki; Sakai, Kazushige; and Hata, Shun-ichi, 4,438,115, Cl. 424-250.000.
Yamazawa, Masayuki, to Aisin Seiki Kabushiki Kaisha. Thread trimming device for a sewing machine. 4,437,423, Cl. 112-292.000.
Yanaga, Yukio: *See—*
Ohta, Takayuki; Yanaga, Yukio; and Hino, Seiichi, 4,438,256, Cl. 528-188.000.
Yanagisawa, Kazuhisa: *See—*
Sato, Eiichi; Shimizu, Akira; and Yanagisawa, Kazuhisa, 4,438,186, Cl. 430-53.000.
Yanagiuchi, Shigenobu; and Saizi, Mituhiro, to Sharp Kabushiki Kaisha. Electronic dictionary and language interpreter with auto-search key for deriving a full-length word and its associated translation word based on a partial word entered. 4,438,505, Cl. 364-900.000.
Yasuhara, Seishi, to Nissan Motor Company Ltd. Fuel injection pump for a diesel engine. 4,437,444, Cl. 123-458.000.
Yasui, Masaru: *See—*
Kato, Kazuhisa; and Yasui, Masaru, 4,438,154, Cl. 427-39.000.
Yasui, Toshio, to Nippondenso Co., Ltd. Electric apparatus for a vehicle safety device. 4,438,424, Cl. 340-52.00H.
Yazawa, Nobuharu; and Sakaguchi, Yasunori, to Nippon Gijutsu Boeki Co., Ltd. Frequency discriminating device. 4,438,405, Cl. 328-152.000.
Yeager, Raymond W.; and Weitzman, Mark R., to Owens-Corning Fiberglas Corporation. Acoustical wall panel and mounting system. 4,437,542, Cl. 181-290.000.
Yeda Research & Development Co. Ltd.: *See—*
Nir, Aharon; Amiel, Abraham J.; and Krant, Jonathan M., 4,437,263, Cl. 47-1.00R.
Yell, Ralph W.: *See—*
White, Robert A.; and Yell, Ralph W., 4,438,503, Cl. 364-721.000.
Yen, Richard C. K.: *See—*
Rembaum, Alan; and Yen, Richard C. K., 4,438,239, Cl. 525-54.100.
Yeoman, David R. Apparatus for electrolyzing water. 4,437,963, Cl. 204-229.000.
Yerushalmi, Yaakov. Bomb disposal device. 4,437,382, Cl. 86-1.00B.
Yoder, Donald: *See—*
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.
Yoder, Henry Frank, III: *See—*
Headley, James E. R.; Limburg, William R.; Nordmeyer, Robert A.; and Smith, Jay, III, 4,437,738, Cl. 353-26.00R.
Yokogawa Hokushin Electric Corporation: *See—*
Tamura, Hisashi; Ito, Ichizo; Hirayama, Masashi; and Ando, Tetsuo, 4,437,350, Cl. 73-861.240.
Yokota Co., Ltd.: *See—*
Ogita, Koichi, 4,437,506, Cl. 160-331.000.
Yokoyama, Masao; Kon, Masaharu; and Ota, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Outrigger for use in wheel-type vehicle. 4,437,682, Cl. 280-764.100.
Yoneda, Ko: *See—*
Sawada, Takeshi; Yoneda, Ko; Shinmi, Akira; Goto, Hirokazu; and Abiko, Shuzo, 4,438,470, Cl. 360-113.000.
Yonehara, Sadao: *See—*
Kubo, Toshihiko; Ichidate, Minoru; Kawai, Toshiyuki; Yonehara, Sadao; Koiwai, Yoshihisa; and Endo, Kazuhiko, 4,437,883, Cl. 75-0.50C.
Yong, Raymond N., to Suncor, Inc. Method for treating oil sands extraction plant tailings. 4,437,998, Cl. 210-728.000.
York, Billie M., Jr., to Alcon Laboratories, Inc. Spiro-(fluoren-9,4'-imidazolidine)-2',5'-diones. 4,438,272, Cl. 548-308.000.
Yoshida, Akio: *See—*
Moriya, Shigeru; Yoshida, Akio; Hayashi, Yoshihiro; Kubota, Tatsushi; and Tsuge, Hiroshi, 4,437,683, Cl. 280-804.000.
Moriya, Shigeru; Yoshida, Akio; Matsunami, Muneharu; Kubota, Tatsushi; Tsuge, Hiroshi; and Nishimura, Yuji, 4,437,684, Cl. 280-804.000.
Yoshida Kogeisha: *See—*
Yoshida, Takashi, 4,437,260, Cl. 46-1.00R.
Yoshida Kogyo K. K.: *See—*
Yoshieda, Keiichi; and Iimura, Yoshitaka, 4,437,233, Cl. 29-768.000.
Yoshida Kogyo K.K.: *See—*
Fukuroi, Takeo, 4,437,210, Cl. 24-435.000.
Yoshida, Ryo: *See—*
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,437,877, Cl. 71-90.000.
Takahashi, Junya; Takemoto, Ichiki; Kamoshita, Katsuzo; Yoshida, Ryo; Katoh, Haruhiko; and Sumida, Seizo, 4,437,880, Cl. 71-120.000.
Yoshida, Shuzo: *See—*
Takahashi, Hiroshi; Suzuki, Yukio; Matsuo, Masashi; Ono, Hironobu; Yoshida, Shuzo; Ueda, Kazuo; and Sueishi, Motoharu, 4,437,445, Cl. 123-491.000.
Yoshida, Takashi, to Yoshida Kogeisha. Domino toppling toy. 4,437,260, Cl. 46-1.00R.
Yoshieda, Keiichi; and Iimura, Yoshitaka, to Yoshida Kogyo K. K. Fastener slider holding device. 4,437,233, Cl. 29-768.000.
Yoshihiro, Mitsugu: *See—*
Sakai, Masaaki; and Yoshihiro, Mitsugu, 4,438,377, Cl. 318-254.000.
Yoshikawa, Mamoru: *See—*
Kubo, Kunimichi; Miyazaki, Yasunosuke; Yoshikawa, Mamoru; and Miyoshi, Mituji, 4,438,073, Cl. 422-135.000.
Yoshiki, Yasuo: *See—*
Nishikori, Tsutomu; and Yoshiki, Yasuo, 4,437,703, Cl. 297-362.000.
Yoshinaka, Tadaaki, to Sony Corporation. Time base corrector. 4,438,456, Cl. 358-148.000.
Yoshioka, Akiteru: *See—*
Takaya, Takao; Takasugi, Hisashi; Murata, Masayoshi; and Yoshioka, Akiteru, 4,438,113, Cl. 424-246.000.
Young, Alfred G.; Slocomb, Leon F., Jr.; and Bugg, Francis V., to Acroseal Window Corporation. Alarm system. 4,438,430, Cl. 340-547.000.
Young, Peter L.: *See—*
Flannery, William E.; Josephs, Richard M.; Stein, Barry F.; Wang, Tsing-Chow; and Young, Peter L., 4,437,227, Cl. 29-589.000.
Young, Rodney C.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,438,127, Cl. 424-272.000.
Ystral GmbH: *See—*
Seeger, Hans-Peter, 4,437,765, Cl. 366-264.000.
Zabczuk, Paul: *See—*
Schievelbein, Vernon H.; and Zabczuk, Paul, 4,438,002, Cl. 252-8.55D.
Zabotto, Arlette: *See—*
Koulbanis, Constantin; N'Guyen, Quang L.; Zabotto, Arlette; and Plot, Josiane, 4,437,895, Cl. 106-245.000.
Zahnradfabrik Friedrichshafen, AG: *See—*
Merz, Johann, 4,437,819, Cl. 418-26.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; and Tanaka, Akihiro, 4,438,109, Cl. 424-180.000.
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; Mori, Toshihito; Umezawa, Hamao; Umezawa, Sumio; and Tsuchiya, Tsutomu, 4,438,107, Cl. 424-180.000.
Zalewski, Gerald F., to White Consolidated Industries, Inc. Soot blower. 4,437,201, Cl. 15-316.00R.
Zaltsman, Efim, to Monarch Wine Co., Inc. Method and apparatus for stoppering modified bottles with a one-piece corking means. 4,437,291, Cl. 53-319.000.
Zaschke, Horst; Schafer, Wolfgang; Deutscher, Hans-Joachim; Demus, Dietrich; and Pelzl, Gerhard. Liquid crystal substances. 4,438,268, Cl. 544-315.000.
Zehner, Burch E.: *See—*
Suh, Kyung W.; Krueger, David C.; and Zehner, Burch E., 4,438,224, Cl. 521-146.000.
Zeigler, Theodore R., to Nomadic Structures, Inc. Collapsible self-supporting structures. 4,437,275, Cl. 52-109.000.
Zeiler, Hans-Joachim: *See—*
Petersen, Uwe; Stadler, Peter; Lockhoff, Oswald; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,438,260, Cl. 536-13.900.
Zengel, Hans-Georg; Kersten, Hilde; and Magerlein, Helmut, to Akzo, N.V. Method for the crosslinking of cathodically depositable coating agents. 4,437,960, Cl. 204-181.00C.
Zenith Radio Corporation: *See—*
Atkinson, Paul J., 4,438,365, Cl. 313-325.000.
Zerpol Corporation: *See—*
Elliott, Robert H., Jr., 4,437,968, Cl. 204-301.000.
Ziegenhorn, Joachim: *See—*
Deeg, Rolf; Schmitt, Urban; and Ziegenhorn, Joachim, 4,438,204, Cl. 436-67.000.
Ziegler, Walter: *See—*
Oeder, Dieter; Ziegler, Walter; Daeuble, Manfred; Dietache, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,438,008, Cl. 252-56.00R.

Zimmer, Ernst, to Kuka Schweissanlagen & Roboter GmbH. Tool holder for manipulator arm. 4,438,309, Cl. 219-86.700.
Zimmermann, Frank: *See—*
Ehrmann, Oskar; Raschack, Manfred; Gries, Josef; Kretzschmar, Rolf; Lehmann, Hans D.; Friedrich, Ludwig; Wuppermann, Dirk; Zimmermann, Frank; Seitz, Werner; Treiber, Hans J.; Dengel, Ferdinand; Frank, Wolfram; Kurbjuweit, Hans-Georg; and Mueller, Claus D., 4,438,131, Cl. 424-278.000.
Zimmermann, Volker: *See—*
Schaller, Karl H.; and Zimmermann, Volker, 4,438,467, Cl. 360-77.000.
Zincroksid S.p.A.: *See—*
Bruno, Roberto; and Memmi, Massimo, 4,437,944, Cl. 204-27.000.
Zinsser, Rolf: *See—*
Moderlak, Helmut; Koschinek, Gunter; Zinsser, Rolf; Prehler, Richard; and Kretschmann, Bernd, 4,437,827, Cl. 425-378.00S.
Zobel, Siegfried: *See—*
Engelsmann, Dieter; Hackenberg, Hubert; Lermann, Peter; Wagner, Karl; and Zobel, Siegfried, 4,437,751, Cl. 354-214.000.
Zoleski, Benjamin H.; and Sung, Rodney L., to Texaco Inc. Marine diesel engine lubricant of improved spreadability. 4,438,005, Cl. 252-33.400.
Zonsveld, Johannes J., to University of Surrey. Pipes and pipe coatings. 4,437,495, Cl. 138-144.000.
Zuchtriegel, Anton, to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH. Multiple low-pressure discharge lamp operating circuit. 4,438,372, Cl. 315-224.000.
Zumbuhl, Otmar: *See—*
Weder, Hans G.; Zumbuhl, Otmar; Schwendener, Reto; and Millsmann, Manfred, 4,438,052, Cl. 264-4.600.
Zupancic, Ronald L., to Union Carbide Corporation. Method of making an electrochemical cell having a safety vent closure. 4,437,231, Cl. 29-623.200.
Zyo, Hiroshi: *See—*
Murakami, Naoyuki; and Zyo, Hiroshi, 4,437,540, Cl. 181-147.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aldrich, Robert G., to Halomet, Incorporated. Separation of high grade magnetite from fly ash. Re. 31,540, Cl. 209-172.500.

Antonious, Anthony J. Golf glove. Re. 31,538, Cl. 2-161.00A.

Garden State Engine & Equipment Co., Inc.: *See*—
Spalluto, Frank P., Re. 31,539, Cl. 212-160.000.

Halomet, Incorporated: *See*—
Aldrich, Robert G., Re. 31,540, Cl. 209-172.500.

Spalluto, Frank P., to Garden State Engine & Equipment Co., Inc. Remote-control device for a crane. Re. 31,539, Cl. 212-160.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Air-Flo Manufacturing Co., Inc.: *See*—
Musso, Charles S., Jr., B1 4,266,731, Cl. 239-676.000.

Ceel-Co.: *See*—
Helling, Robert W., B1 3,560,287, Cl. 156-218.000.

Del Fabro, Remigio. Stirrup machine. B1 3,991,600, 3-20-84, Cl. 72-203.000.

Gardner, Conrad O. Feedback modulation of exhaust gases in internal combustion engines. B1 3,788,284, 3-20-84, Cl. 123-571.000.

Helling, Robert W., to Ceel-Co. Method and apparatus for protecting insulated pipe. B1 3,560,287, 3-20-84, Cl. 156-218.000.

Kal Kan Foods, Inc.: *See*—
Palmer, Hugh C., B1 3,808,340, Cl. 426-92.000.

Logothetis, Richard. Variable spot stage light. B1 4,338,654, 3-20-84, Cl. 362-268.000.

Musso, Charles S., Jr., to Air-Flo Manufacturing Co., Inc. Dump spreader. B1 4,266,731, 3-20-84, Cl. 239-676.000.

Ohlhausen, Howard G. Method for protecting nonporous substrates and for rendering them water repellent. B1 3,579,540, 3-20-84, Cl. 523-169.000.

Palmer, Hugh C., to Kal Kan Foods, Inc. Meat coated product. B1 3,808,340, 3-20-84, Cl. 426-92.000.

LIST OF DESIGN PATENTEES

A/S Vestfrost: *See*—
Damkjaer, Erling, 273,114, Cl. D15-88.000.

A. W. Faber-Castell: *See*—
Jankewitz, Axel, 273,143, Cl. D28-57.000.
Jankewitz, Axel, 273,144, Cl. D28-57.000.

Adams Hard-Facing Company, Inc.: *See*—
Wetmore, Halsey J., 273,085, Cl. D8-354.000.

American Hospital Supply Corporation: *See*—
Ponsi, Lawrence G., 273,145, Cl. D29-8.000.

Anderson, Franklin R., to Custom Molders, Inc. Vegetable holder. 273,088, 3-20-84, Cl. D8-395.000.

Arcair Company: *See*—
Johnson, David E.; McCall, Kenneth E.; and Coughlin, William J., 273,097, Cl. D12-36.000.

Astra-Syntex Scandinavia Aktiebolag: *See*—
Lunden, Hans-Goran; and Ternerot, Nils-Ake W., 273,093, Cl. D9-389.000.

Automatic Liquid Packaging, Inc.: *See*—
Pagels, Louis T., 273,134, Cl. D24-56.000.

Babic, Thomas E.; and Pepe, Albert M. Urinal. 273,133, 3-20-84, Cl. D24-54.000.

Barnsfather, Gebus: *See*—
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,115, Cl. D15-148.000.
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,116, Cl. D15-148.000.

Batts, John H.; and Duester, Everett L., to John Thomas Batts, Inc. Sleepwear hanger. 273,072, 3-20-84, Cl. D6-254.000.

Batts, John H.; and Duester, Everett L., to John Thomas Batts, Inc. Sleepwear hanger. 273,073, 3-20-84, Cl. D6-254.000.

BEGHIN-SAY S.A.: *See*—
Minost, Henry, 273,064, Cl. D6-96.000.

Bell, Melvin C. Detent coupled drill bit chuck or the like. 273,077, 3-20-84, Cl. D8-10.000.

Benedict, Mellen-Thomas. Glass cutter. 273,082, 3-20-84, Cl. D8-98.000.

Bodfish, Nigel F., to Gill-Mentor Limited. Handle for a kitchen tool. 273,076, 3-20-84, Cl. D7-395.000.

Boreback, Stig B. Head for a tool for applying and removing cycle tires. 273,078, 3-20-84, Cl. D8-31.000.

Bradberry, Benjamin C. Turning block for glass panels or the like. 273,080, 3-20-84, Cl. D8-71.000.

Brancher, Rodney: *See*—
Welsch, John H.; and Brancher, Rodney, 273,070, Cl. D6-192.000.

Breger, Carl-Arne, to Telefonaktiebolaget L M Ericsson. Telephone instrument. 273,107, 3-20-84, Cl. D14-53.000.

Breger, Carl-Arne, to Telefonaktiebolaget L M Ericsson. Telephone instrument. 273,108, 3-20-84, Cl. D14-53.000.

Breger, Carl-Arne, to Telefonaktiebolaget L M Ericsson. Combined control device and display unit for telephone exchange. 273,109, 3-20-84, Cl. D14-58.000.

Briggs, Sam A. Shampoo support drain. 273,142, 3-20-84, Cl. D28-20.000.

Brinson, Geneva L.: *See*—
Brinson, James, Jr., 273,054, Cl. D2-376.000.

Brinson, James, Jr., to Brinson, Geneva L. Hunting glove. 273,054, 3-20-84, Cl. D2-376.000.

Brown Group Recreational Products, Inc.: *See*—
Ziegler, William H., 273,100, Cl. D12-111.000.

Bustos, Rafael T., to Leggett & Platt, Incorporated. Display booth. 273,065, 3-20-84, Cl. D6-132.000.

Cabco Research Ltd.: *See*—
Cousins, George, 273,104, Cl. D13-24.000.

Canady, Lanny H. Fishing light. 273,139, 3-20-84, Cl. D26-61.000.

Canon Kabushiki Kaisha: *See*—
Hirata, Takashi; Hirose, Kunio; and Katayama, Hirohiko, 273,111, Cl. D14-101.000.
Hirata, Takashi; and Fushimoto, Hideo, 273,118, Cl. D18-7.000.

Chung Mei Metal & Plastic Factory Ltd.: *See*—
Mann, Kittson, 273,140, Cl. D26-93.000.

Clausen, Mery; and Szaroletta, William K., to Clausen, Mery. Stenographic ruler. 273,094, 3-20-84, Cl. D10-71.000.

Cole, Albert, to Thermoforce Limited. Louvre opener. 273,089, 3-20-84, Cl. D8-400.000.

Coleman, Neil F. Unitary water ski rope handle and reel. 273,086, 3-20-84, Cl. D8-358.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hoshino, Kiyoshi, 273,125, Cl. D21-150.000.

Cooper Inks, Peggy L. Flag. 273,096, 3-20-84, Cl. D11-175.000.

Coughlin, William J.: *See*—
Johnson, David E.; McCall, Kenneth E.; and Coughlin, William J., 273,097, Cl. D12-36.000.

Cousins, George, to Cabco Research Ltd. Electrical plug or socket cover. 273,104, 3-20-84, Cl. D13-24.000.

Craft, John S. Playing surface for a game board. 273,124, 3-20-84, Cl. D21-34.000.

Custom Molders, Inc.: *See*—
Anderson, Franklin R., 273,088, Cl. D8-395.000.

Damkjaer, Erling, to A/S Vestfrost. Combined microwave oven and refrigerant unit. 273,114, 3-20-84, Cl. D15-88.000.

Davis, Robert P.: *See*—
Katz, Ira R.; and Davis, Robert P., 273,057, Cl. D3-71.000.

Duester, Everett L.: *See*—
Batts, John H.; and Duester, Everett L., 273,072, Cl. D6-254.000.
Batts, John H.; and Duester, Everett L., 273,073, Cl. D6-254.000.

Evans, James G. Shelf unit. 273,067, 3-20-84, Cl. D6-186.000.

F.C.F. Limited: *See*—
Webb, Anthony J., 273,141, Cl. D28-13.000.

Farr, Grace. Vacuum cleaner intake member. 273,146, 3-20-84, Cl. D32-31.000.

Florists' Transworld Delivery Assn.: *See*—
Kaufmann, Donald A., 273,138, Cl. D26-23.000.

Fryklund, Gilbert G.: *See*—
Sliwkowski, Joseph; Fryklund, Gilbert G.; and Parker, Vance A., 273,112, Cl. D14-103.000.

Fushimoto, Hideo: *See*—
Hirata, Takashi; and Fushimoto, Hideo, 273,118, Cl. D18-7.000.

Gannett Co., Inc.: *See*—
Gore, Fred M., 273,123, Cl. D20-6.000.

Gatward, Douglas K. Sheet material dispenser. 273,063, 3-20-84, Cl. D6-96.000.

Genaro, Donald M.; and Tilley, Alvin R., to Teletype Corporation. Teleprinter keyboard and telephone. 273,110, 3-20-84, Cl. D14-58.000.

Gill-Mentor Limited: *See*—
Bodfish, Nigel F., 273,076, Cl. D7-395.000.

GKN Kent Alloys Limited: *See*—
Woodward, Richard R., 273,102, Cl. D12-209.000.

Goff, Aldwin K. Rocking chair. 273,061, 3-20-84, Cl. D6-49.000.

Gore, Fred M., to Gannett Co., Inc. Newspaper vending rack or similar article. 273,123, 3-20-84, Cl. D20-6.000.

Green, David T.; Rawson, Paul O.; and Yagami, Richard, to United States Surgical Corporation. Surgical stapler. 273,130, 3-20-84, Cl. D24-26.000.

Hamilton Sorter Co., Inc.: *See*—
Yauger, Jon A., 273,069, Cl. D6-192.000.

Hartman, Kenneth: *See*—
Knox, Robert M.; Hartman, Kenneth; and Worby, Harold, 273,129, Cl. D24-8.000.

Hartmann Luggage Company: *See*—
Katz, Ira R.; and Davis, Robert P., 273,057, Cl. D3-71.000.

Hayden, Shawn A. Turning utensil for barbecues. 273,075, 3-20-84, Cl. D7-106.000.

Helmac Products Corporation: *See*—
McKay, Nicholas D., 273,058, Cl. D4-23.100.
McKay, Nicholas D., 273,059, Cl. D4-23.100.

Henkel, Daniel P., to Square D Company. Electrical outlet cover plate and closure therefor. 273,084, 3-20-84, Cl. D8-353.000.

Hirata, Takashi; Hirose, Kunio; and Katayama, Hirohiko, to Canon Kabushiki Kaisha. Combined data input terminal and acoustic coupler. 273,111, 3-20-84, Cl. D14-101.000.

Hirata, Takashi; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 273,118, 3-20-84, Cl. D18-7.000.

Hirose, Kunio: *See*—
Hirata, Takashi; Hirose, Kunio; and Katayama, Hirohiko, 273,111, Cl. D14-101.000.

Hoshino, Kiyoshi: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hoshino, Kiyoshi, 273,125, Cl. D21-150.000.

Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, to Reliance Electric Company. Variable speed belt drive. 273,115, 3-20-84, Cl. D15-148.000.

Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, to Reliance Electric Company. Variable speed belt drive. 273,116, 3-20-84, Cl. D15-148.000.

HurletronAltair, Inc.: *See*—
Knoll, Russell D., 273,113, Cl. D14-116.000.

Ibaraki, Howard, to Orion Industries, Inc. Buffer. 273,079, 3-20-84, Cl. D8-62.000.

Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Loudspeaker. 273,106, 3-20-84, Cl. D14-30.000.

Imai, Hirotaka, to Pioneer Electronic Corporation. Cassette tape recorder. 273,105, 3-20-84, Cl. D14-6.000.

Imperial, Raymond E. Threshold seal for a door astragal. 273,090, 3-20-84, Cl. D8-400.000.

Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hoshino, Kiyoshi, 273,125, Cl. D21-150.000.

Ito, Katsumi, to Shachihata Industrial Co., Ltd. Stamp. 273,120, 3-20-84, Cl. D18-15.000.

Iverson, Landis. Service stand for automotive service station. 273,147, 3-20-84, Cl. D34-6.000.

Jankewitz, Axel, to A. W. Faber-Castell. Cuticle device. 273,143, 3-20-84, Cl. D28-57.000.

Jankewitz, Axel, to A. W. Faber-Castell. Cuticle device. 273,144, 3-20-84, Cl. D28-57.000.

Jansen, Rudolph A.: *See*—
Turza, Peter J.; Jansen, Rudolph A.; and Turza, Frank P., 273,126, Cl. D21-234.000.

John Thomas Batts, Inc.: *See*—
Batts, John H.; and Duester, Everett L., 273,072, Cl. D6-254.000.
Batts, John H.; and Duester, Everett L., 273,073, Cl. D6-254.000.

Johnson, David E.; McCall, Kenneth E.; and Coughlin, William J., to Arcair Company. All position tractor for mounting a tool such as a welding, cutting or gouging torch. 273,097, 3-20-84, Cl. D12-36.000.

Johnson, Dennis O.: *See*—
Johnson, Janet B.; and Johnson, Dennis O., 273,087, Cl. D8-382.000.

Johnson, Janet B.; and Johnson, Dennis O. Geodesic dome connector. 273,087, 3-20-84, Cl. D8-382.000.

Kabushiki Kaisha Sato: *See*—
Sato, Yo; and Kashiwaba, Tadao, 273,122, Cl. D18-19.000.

Kasagi, Taro; and Tamada, Kenji, to Silver Seiko Limited. Typewriter for European languages. 273,117, 3-20-84, Cl. D18-1.000.

Kashiwaba, Tadao: *See*—
Sato, Yo; and Kashiwaba, Tadao, 273,122, Cl. D18-19.000.

Katayama, Hirohiko: *See*—
Hirata, Takashi; Hirose, Kunio; and Katayama, Hirohiko, 273,111, Cl. D14-101.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage design. 273,057, 3-20-84, Cl. D3-71.000.

Kaufmann, Donald A., to Florists' Transworld Delivery Assn. Support for a candle and the like. 273,138, 3-20-84, Cl. D26-23.000.

Kiser, Cecil M., Jr. Motorcycle cruise control. 273,101, 3-20-84, Cl. D12-174.000.

Kneale, Edward H., III. Table or similar article. 273,066, 3-20-84, Cl. D6-179.000.

Knoll, Russell D., to HurletronAltair, Inc. Optical scanner housing or similar article. 273,113, 3-20-84, Cl. D14-116.000.

Knox, Robert M.; Hartman, Kenneth; and Worby, Harold, to Meridia 12 Corporation. Acupuncture point locator. 273,129, 3-20-84, Cl. D24-8.000.

Koch, Kevin E. Trailer. 273,099, 3-20-84, Cl. D12-105.000.

Kretz, Edward J., to Owens-Illinois, Inc. Bottle. 273,092, 3-20-84, Cl. D9-389.000.

Krome, Edward F., Jr.: *See*—
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,115, Cl. D15-148.000.
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,116, Cl. D15-148.000.

Kurosaki, Mutsuo, to Nifco Inc. Hole plug or the like. 273,091, 3-20-84, Cl. D8-499.000.

Lee, Spencer. Simulative umbrella. 273,055, 3-20-84, Cl. D3-6.000.

Leggett & Platt, Incorporated: *See*—
Bustos, Rafael T., 273,065, Cl. D6-132.000.

Lennon, Richard C. Boat seat box console or similar article. 273,056, 3-20-84, Cl. D3-40.000.

Lerma, Rose L. Collapsible cleaning cart. 273,148, 3-20-84, Cl. D34-21.000.

Levine, Arthur L. Sharpening stone holder for knife sharpener. 273,081, 3-20-84, Cl. D8-93.000.

Lewellen, Richard R., to Nordson Corporation. Fluid material application controller. 273,103, 3-20-84, Cl. D13-12.000.

Lunden, Hans-Goran; and Ternerot, Nils-Ake W., to Astra-Syntex Scandinavia Aktiebolag. Pill dispenser. 273,093, 3-20-84, Cl. D9-389.000.

Mann, Kittson, to Chung Mei Metal & Plastic Factory Ltd. Table lamp. 273,140, 3-20-84, Cl. D26-93.000.

Martin, John H. Combined desk and seat unit. 273,060, 3-20-84, Cl. D6-6.000.

Mathieu, Kenneth G. Removable canoe-carried cooler. 273,074, 3-20-84, Cl. D7-77.000.

McCall, Kenneth E.: *See*—
Johnson, David E.; McCall, Kenneth E.; and Coughlin, William J., 273,097, Cl. D12-36.000.

McKay, Nicholas D., to Helmac Products Corporation. Lint remover. 273,058, 3-20-84, Cl. D4-23.100.

McKay, Nicholas D., to Helmac Products Corporation. Lint remover. 273,059, 3-20-84, Cl. D4-23.100.

Mead Corporation, The: *See*—
Noonan, Daniel T., 273,119, Cl. D18-13.000.
Spamer, William S., 273,068, Cl. D6-188.000.

Meister, Robert L. Swimmer's towable diving plane. 273,127, 3-20-84, Cl. D21-236.000.

Meridia 12 Corporation: *See*—
Knox, Robert M.; Hartman, Kenneth; and Worby, Harold, 273,129, Cl. D24-8.000.

Mestre, Nadine J. Disposable douche bag. 273,135, 3-20-84, Cl. D24-60.000.

Metropolitan Wire Corporation: *See*—
Welsch, John H.; and Brancher, Rodney, 273,070, Cl. D6-192.000.

Minost, Henry, to BEGHIN-SAY S.A. Towel dispenser. 273,064, 3-20-84, Cl. D6-96.000.

Moloff, Alan. Cordless vibrating massager. 273,132, 3-20-84, Cl. D24-41.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Hoshino, Kiyoshi, to Combi Co., Ltd. Animal figure toy. 273,125, 3-20-84, Cl. D21-150.000.

Nifco Inc.: *See*—
Kurosaki, Mutsuo, 273,091, Cl. D8-499.000.

LIST OF DESIGN PATENTEES

Noiles, Douglas G.; Rawson, Paul O.; and Yagami, Richard, to United States Surgical Corporation. Surgical stapler. 273,131, 3-20-84, Cl. D24-26.000.

Noonan, Daniel T., to Mead Corporation, The. Ink jet printer. 273,119, 3-20-84, Cl. D18-13.000.

Nordson Corporation: *See—*
Lewellen, Richard R., 273,103, Cl. D13-12.000.

Ohhashi, Teruhiko, to Suzuki Motor Co. Ltd. Automobile. 273,098, 3-20-84, Cl. D12-90.000.

Orion Industries, Inc.: *See—*
Ibaraki, Howard, 273,079, Cl. D8-62.000.

Owens-Illinois, Inc.: *See—*
Kretz, Edward J., 273,092, Cl. D9-389.000.

Pagels, Louis T., to Automatic Liquid Packaging, Inc. Medical container for injectable substances. 273,134, 3-20-84, Cl. D24-56.000.

Parker, Vance A.: *See—*
Sliwkowski, Joseph; Fryklund, Gilbert G.; and Parker, Vance A., 273,112, Cl. D14-103.000.

Pepe, Albert M.: *See—*
Babic, Thomas E.; and Pepe, Albert M., 273,133, Cl. D24-54.000.

Pioneer Electronic Corporation: *See—*
Imai, Hirotaka, 273,105, Cl. D14-6.000.

Pioneer Kabushiki Kaisha: *See—*
Iijima, Takekazu, 273,106, Cl. D14-30.000.

Ponsi, Lawrence G., to American Hospital Supply Corporation. Face mask. 273,145, 3-20-84, Cl. D29-8.000.

Rawson, Charles E. Luggage monogramming machine. 273,121, 3-20-84, Cl. D18-15.000.

Rawson, Paul O.: *See—*
Green, David T.; Rawson, Paul O.; and Yagami, Richard, 273,130, Cl. D24-26.000.
Noiles, Douglas G.; Rawson, Paul O.; and Yagami, Richard, 273,131, Cl. D24-26.000.

Reliance Electric Company: *See—*
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,115, Cl. D15-148.000.
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,116, Cl. D15-148.000.

Richardson, James E., to Waterbury Companies, Inc. Soap dispenser. 273,062, 3-20-84, Cl. D6-95.000.

Roddick, Robert T. Handle for a toilet seat or the like. 273,128, 3-20-84, Cl. D23-71.000.

Sato, Yo; and Kashiwaba, Tadao, to Kabushiki Kaisha Sato. Hand operated label applying machine. 273,122, 3-20-84, Cl. D18-19.000.

Schulze, Herbert C. Visual marker. 273,095, 3-20-84, Cl. D10-109.000.

Shachihata Industrial Co., Ltd.: *See—*
Ito, Katsumi, 273,120, Cl. D18-15.000.

Silver Seiko Limited: *See—*
Kasagi, Taro; and Tamada, Kenji, 273,117, Cl. D18-1.000.

Sliwkowski, Joseph; Fryklund, Gilbert G.; and Parker, Vance A., to Telesis Corporation of Delaware, Inc. Display console. 273,112, 3-20-84, Cl. D14-103.000.

Sloane, Irving. Wood working plane. 273,083, 3-20-84, Cl. D8-101.000.

Spamer, William S., to Mead Corporation, The. Dispenser for cans or bottles. 273,068, 3-20-84, Cl. D6-188.000.

Square D Company: *See—*
Henkel, Daniel P., 273,084, Cl. D8-353.000.

Stark, Lucille. Pillow. 273,071, 3-20-84, Cl. D6-201.000.

Suzuki Motor Co. Ltd.: *See—*
Ohhashi, Teruhiko, 273,098, Cl. D12-90.000.

Szaroletta, William K.: *See—*
Clausen, Mery; and Szaroletta, William K., 273,094, Cl. D10-71.000.

Tamada, Kenji: *See—*
Kasagi, Taro; and Tamada, Kenji, 273,117, Cl. D18-1.000.

Telefonaktiebolaget L M Ericsson: *See—*
Breger, Carl-Arne, 273,107, Cl. D14-53.000.
Breger, Carl-Arne, 273,108, Cl. D14-53.000.
Breger, Carl-Arne, 273,109, Cl. D14-58.000.

Telesis Corporation of Delaware, Inc.: *See—*
Sliwkowski, Joseph; Fryklund, Gilbert G.; and Parker, Vance A., 273,112, Cl. D14-103.000.

Teletype Corporation: *See—*
Genaro, Donald M.; and Tilley, Alvin R., 273,110, Cl. D14-58.000.

Ternerot, Nils-Ake W.: *See—*
Lunden, Hans-Goran; and Ternerot, Nils-Ake W., 273,093, Cl. D9-389.000.

Thermoforce Limited: *See—*
Cole, Albert, 273,089, Cl. D8-400.000.

Tilley, Alvin R.: *See—*
Genaro, Donald M.; and Tilley, Alvin R., 273,110, Cl. D14-58.000.

Turza, Frank P.: *See—*
Turza, Peter J.; Jansen, Rudolph A.; and Turza, Frank P., 273,126, Cl. D21-234.000.

Turza, Peter J.; Jansen, Rudolph A.; and Turza, Frank P. Golf putting target. 273,126, 3-20-84, Cl. D21-234.000.

United States Surgical Corporation: *See—*
Green, David T.; Rawson, Paul O.; and Yagami, Richard, 273,130, Cl. D24-26.000.
Noiles, Douglas G.; Rawson, Paul O.; and Yagami, Richard, 273,131, Cl. D24-26.000.

Varela, Jose. Wall panel. 273,136, 3-20-84, Cl. D25-80.000.

Varela, Jose. Wall panel. 273,137, 3-20-84, Cl. D25-80.000.

Waterbury Companies, Inc.: *See—*
Richardson, James E., 273,062, Cl. D6-95.000.

Webb, Anthony J., to F.C.F. Limited. Hair dryer. 273,141, 3-20-84, Cl. D28-13.000.

Welsch, John H.; and Brancher, Rodney, to Metropolitan Wire Corporation. Work table top. 273,070, 3-20-84, Cl. D6-192.000.

Wetmore, Halsey J., to Adams Hard-Facing Company, Inc. Spacer for fertilizer tubing. 273,085, 3-20-84, Cl. D8-354.000.

Woodward, Richard R., to GKN Kent Alloys Limited. Wheel. 273,102, 3-20-84, Cl. D12-209.000.

Worby, Harold: *See—*
Knox, Robert M.; Hartman, Kenneth; and Worby, Harold, 273,129, Cl. D24-8.000.

Yagami, Richard: *See—*
Green, David T.; Rawson, Paul O.; and Yagami, Richard, 273,130, Cl. D24-26.000.
Noiles, Douglas G.; Rawson, Paul O.; and Yagami, Richard, 273,131, Cl. D24-26.000.

Yauger, Jon A., to Hamilton Sorter Co., Inc. Furniture top. 273,069, 3-20-84, Cl. D6-192.000.

Ziegler, William H., to Brown Group Recreational Products, Inc. Power assisted bicycle. 273,100, 3-20-84, Cl. D12-111.000.

LIST OF PLANT PATENTEES

B. V. Handelskweke M. C. van Staaveren, M. C.: *See—*
van Andel, Jacob, 5,208, Cl. 68.000.

B. V. Handelskwekerij, M. C. van Staaveten: *See—*
van Andel, Jacob, 5,207, Cl. 68.000.

Darby, Robert H. Hibiscus plant named "Anne Arundel". 5,209, 3-20-84, Cl. 68.000.

van Andel, Jacob, to B. V. Handelskwekerij, M. C. van Staaveren. Alstroemeria named Stalilas. 5,207, 3-20-84, Cl. 68.000.

van Andel, Jacob, to B. V. Handelskweke M. C. van Staaveren, M. C. Alstroemeria cultivar named Stalluc. 5,208, 3-20-84, Cl. 68.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 20, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
161 A Re.31,538

CLASS 3
1 4,437,191
1.9 4,437,192
1.912 4,437,193
13 4,437,194

CLASS 4
456 4,437,195
564 4,437,196

CLASS 5
13 4,437,197

CLASS 12
145 4,437,198

CLASS 15
49 R 4,437,199
306 A 4,437,200
316 R 4,437,201
320 4,437,202
322 4,437,203
325 4,437,204
354 4,437,205

CLASS 17
1 F 4,437,206
25 4,437,207
26 4,437,208
49 4,437,209

CLASS 24
287 4,437,211
435 4,437,210
698 4,437,212

CLASS 29
33 K 4,437,213
149.5 DP 4,437,214
149.5 R 4,437,215
157.3 A 4,437,216
157.4 4,437,217
240 4,437,218
283 4,437,219
426.5 4,437,220
429 4,437,221
527.4 4,437,222
564.3 4,437,223
568 4,437,224
576 B 4,437,225
577 R 4,437,226
589 4,437,227
590 4,437,228
593 4,437,229
597 4,437,230
623.2 4,437,231
740 4,437,232
768 4,437,233
798 4,437,234
840 4,437,235
879 4,437,236

CLASS 30
90.2 4,437,237
272 A 4,437,238

CLASS 33
143 L 4,437,239
166 4,437,241
172 E 4,437,240
178 B 4,437,242
302 4,437,243

CLASS 37
63 4,437,244
222 4,437,245

CLASS 38
25 4,437,246
143 4,437,247

CLASS 40
364 4,437,248

CLASS 42
51 4,437,249
59 4,437,250
78 4,437,251
89 4,437,252

CLASS 43
1 4,437,253
4 4,437,254
17 4,437,255
17.5 4,437,256
42.45 4,437,257
57.1 4,437,258
105 4,437,259

CLASS 44
1 R 4,437,861
6 4,437,862
51 4,437,863

CLASS 46
1 R 4,437,260
61 4,437,261
242 4,437,262

CLASS 47
1 R 4,437,263
58 4,437,264

CLASS 48
62 R 4,437,864

CLASS 49
57 4,437,265
493 4,437,266

CLASS 51
34 R 4,437,267
298 4,437,865
327 4,437,268
358 4,437,269
364 4,437,270
400 4,437,271

CLASS 52
64 4,437,272
93 4,437,273
105 4,437,274
109 4,437,275
125.5 4,437,276
202 4,437,277
239 4,437,278
247 4,437,279
285 4,437,280
309.1 4,437,281
407 4,437,282
410 4,437,283
456 4,437,284
481 4,437,285
506 4,437,286
588 4,437,287
637 4,437,288

CLASS 53
64 4,437,289
97 4,437,290
319 4,437,291
357 4,437,292
412 4,437,293
553 4,437,294

CLASS 55
85 4,437,866
233 4,437,867

CLASS 56
10.2 4,437,295
400 4,437,296

CLASS 57
9 4,437,297
22 4,437,298
4,437,299
74 4,437,300
289 4,437,301
333 4,437,302

CLASS 60
39.281 4,437,303
290 4,437,304
293 4,437,305
4,437,306
427 4,437,307
514 4,437,308
547.1 4,437,309
562 4,437,310
602 4,437,311
648 4,437,312
665 4,437,313
738 4,437,314

CLASS 62
63 4,437,315
79 4,437,316
81 4,437,317
93 4,437,318
138 4,437,319
236 4,437,320
324.2 4,437,321
411 4,437,868
504 4,437,322

CLASS 65
1 4,437,869
12 4,437,870
104 4,437,871
4,437,872

CLASS 66
84 A 4,437,323

CLASS 68
5 E 4,437,324
23.7 4,437,325

CLASS 71
67 4,437,873
87 4,437,874
90 4,437,875
4,437,876
4,437,877
4,437,878
96 4,437,879
120 4,437,880

CLASS 72
62 4,437,326
94 4,437,327
110 4,437,328
203 B1 3,991,600
299 4,437,329
358 4,437,330
360 4,437,331

CLASS 73
1 DV 4,437,332
12 4,437,333
35 4,437,334
37.9 4,437,335
40.5 R 4,437,336
54 4,437,337
116 4,437,338
118 4,437,339
4,437,340
119 A 4,437,341
4,437,342
182 4,437,343
197 4,437,344
204 4,437,345
221 4,437,346
272 R 4,437,347
625 4,437,348
861.22 4,437,349
861.24 4,437,350
862.05 4,437,351
862.47 4,437,352
863.81 4,437,353

CLASS 74
5.46 4,437,354
385 4,437,355
411 4,437,356
475 4,437,357
867 4,437,358

CLASS 75
0.5 AA 4,437,881
0.5 C 4,437,883
0.5 R 4,437,882
7 4,437,884
10 R 4,437,885
67 R 4,437,886
68 B 4,437,887
84.4 4,437,888
118 P 4,437,889
244 4,437,890
251 4,437,891

CLASS 81
3.38 A 4,437,359
3.44 4,437,360
9.22 4,437,361
43 4,437,362
57.18 4,437,363
179 4,437,364
436 4,437,365

CLASS 82
4 C 4,437,366

CLASS 83
13 4,437,367
4,437,368
18 4,437,369
23 4,437,370
54 4,437,371
320 4,437,372
346 4,437,373
454 4,437,374
762 4,437,375
886 4,437,376

CLASS 84
1.01 4,437,377
1.18 4,437,378
1.22 4,437,379
1.26 4,437,380
484 4,437,381

CLASS 86
1 B 4,437,382

CLASS 89
8 4,437,383
37 A 4,437,384

CLASS 91
361 4,437,385
363 R 4,437,386
401 4,437,387
446 4,437,388
499 4,437,389

CLASS 92
84 4,437,390

CLASS 98
2.01 4,437,391
2.08 4,437,392
2.17 4,437,393
40 V 4,437,394

CLASS 99
355 4,437,395
475 4,437,396
533 4,437,397
587 4,437,398

CLASS 100
4 4,437,399

CLASS 101
18 4,437,400
93.14 4,437,401
181 4,437,402
248 4,437,403
269 4,437,404
349 4,437,405
350 4,437,406
409 4,437,407
426 4,437,408

CLASS 102
364 4,437,409

CLASS 105
378 4,437,410

CLASS 106
15.05 4,437,892
80 4,437,893
238 4,437,894
245 4,437,895
273 R 4,437,896

CLASS 108
1 4,437,411
56.1 4,437,412
111 4,437,413
134 4,437,414

CLASS 110
182.5 4,437,415
245 4,437,416
246 4,437,418
259 4,437,419
346 4,437,417

CLASS 112
103 4,437,420
158 R 4,437,421
272 4,437,422
292 4,437,423

CLASS 114
91 4,437,424
102 4,437,425
103 4,437,426
218 4,437,427

CLASS 116
137 R 4,437,428

CLASS 119
1 4,437,429
4,437,430
3 4,437,431
18 4,437,432
4,437,433
45 R 4,437,434
51.13 4,437,435

CLASS 123
1 A 4,437,436
42 4,437,437
48 B 4,437,438
90.56 4,437,439
145 A 4,437,440
213 4,437,441
417 4,437,442
446 4,437,443
458 4,437,444
491 4,437,445
492 4,437,446
568 4,437,447
571 B1 3,788,284
577 4,437,448

CLASS 124
22 4,437,449

CLASS 126
30 4,437,450
77 4,437,451
182 4,437,452
271.2 R 4,437,453
293 4,437,454
417 4,437,455
433 4,437,456

CLASS 128
1 R 4,437,457
11 4,437,458
94 4,437,459
204.26 4,437,460
205.24 4,437,461
207 4,437,462
207.17 4,437,463
303.14 4,437,464
340 4,437,465
419 PS 4,437,466
642 4,437,467
660 4,437,468
672 4,437,469
679 4,437,470
736 4,437,471
767 4,437,472
773 4,437,473
784 4,437,474
785 4,437,475

CLASS 131
276 4,437,476

CLASS 132
88.5 4,437,477

CLASS 133
5 R 4,437,478

CLASS 134
68 4,437,479

CLASS 138
74 4,437,480

CLASS 136
221 4,438,290
236 R 4,438,291

CLASS 137
60 4,437,481
67 4,437,482
85 4,437,483
99 4,437,484
220 4,437,485
315 4,437,486
322 4,437,487
334 4,437,488
487.5 4,437,489
512.4 4,437,490
540 4,437,491
563.13 4,437,492

CLASS 138
45 4,437,493
97 4,437,494
144 4,437,495

CLASS 139
383 A 4,437,496

CLASS 141
1 4,437,497
89 4,437,498
95 4,437,499

CLASS 144
34 R 4,437,500
136 R 4,437,501
193 A 4,437,502

CLASS 148
1.5 4,437,897
6.15 R 4,437,898
9 R 4,437,899
11.5 A 4,437,901
12 E 4,437,900
12 F 4,437,902
4,437,903
13.1 4,437,904
16 4,437,905
26 4,437,906
31.55 4,437,907
108 4,437,908
111 4,437,909
112 4,437,910
402 4,437,911
403 4,437,912
408 4,437,913

CLASS 152
209 R 4,437,503
427 4,437,504

CLASS 156
54 4,437,914
126 4,437,915
218 B1 3,560,287
222 4,437,916
296 4,437,917
322 4,437,918
329 4,437,919
406.2 4,437,920
475 4,437,921
603 4,437,922
630 4,437,923
651 4,437,924
653 4,437,925
654 4,437,926
666 4,437,927
4,437,928
4,437,929
4,437,930
4,437,931
4,437,932

CLASS 159
17 R 4,437,933
47.1 4,437,934

CLASS 160
126 4,437,505
331 4,437,506

CLASS 162
103 4,437,935

CLASS 164
173 4,437,507
418 4,437,508
454 4,437,509

CLASS 165
32 4,437,510
122 4,437,512
154 4,437,513
485 4,437,511

CLASS 166
53 4,437,514

77 4,437,515
120 4,437,516
4,437,517
248 4,437,518
259 4,437,519
261 4,437,520
341 4,437,521
382 4,437,522

CLASS 172

13 4,437,523

CLASS 173

43 4,437,524

CLASS 174

52 R 4,438,292
79 4,438,293
88 R 4,438,294

CLASS 175

218 4,437,525
346 4,437,526

CLASS 177

25 4,437,527

CLASS 179

2 A 4,438,295
6.02 4,438,296
117 4,438,297
175.2 R 4,438,298
175.3 F 4,438,299
184 4,438,300

CLASS 180

9.5 4,437,528
69 C 4,437,529
75 4,437,530
79.1 4,437,531
142 4,437,532
168 4,437,533
190 4,437,534
215 4,437,535
254 4,437,536
313 4,437,537

CLASS 181

129 4,437,538
145 4,437,539
147 4,437,540
151 4,437,541
290 4,437,542

CLASS 182

2 4,437,543
120 4,437,544
171 4,437,545
233 4,437,546

CLASS 188

1.11 4,437,547
289 4,437,548

CLASS 190

109 4,437,549

CLASS 192

3.28 4,437,551
26 4,437,552
46 4,437,553
58 B 4,437,554
70.21 4,437,555
98 4,437,556
324 4,437,550

CLASS 194

1 D 4,437,557
97 R 4,437,558

CLASS 198

397 4,437,559
457 4,437,560
504 4,437,561
733 4,437,562
810 4,437,563
834 4,437,564
851 4,437,565

CLASS 200

16 C 4,438,301
17 R 4,438,302
51.1 4,438,303
67 D 4,438,304
83 J 4,438,305
144 B 4,438,307
148 A 4,438,308
148 F 4,438,306

CLASS 201

39 4,437,936

CLASS 202

160 4,437,937

CLASS 203

14 4,437,938
4,437,939
49 4,437,940
50 4,437,941

CLASS 204

6 4,437,942
16 4,437,943
27 4,437,944
35 N 4,437,945
4,437,946
35 R 4,437,947
52 R 4,437,948
59 M 4,437,949
67 4,437,950
98 4,437,951
4,437,952
119 4,437,953
129 4,437,954
129.35 4,437,956
129.4 4,437,955
147 4,437,957
157.1 R 4,437,958
159.11 4,437,959
181 C 4,437,960
192 C 4,437,962
192 EC 4,437,961
229 4,437,963
245 4,437,964
290 F 4,437,965
298 4,437,966
301 4,437,967
4,437,968
403 4,437,969
412 4,437,970
427 4,437,971

CLASS 206

1.5 4,437,566
210 4,437,567
223 4,437,568
601 4,437,569
4,437,570

CLASS 208

8 LE 4,437,972
10 4,437,973
4,437,974
87 4,437,975
97 4,437,976
113 4,437,977
120 4,437,978
153 4,437,979
235 4,437,980
253 4,437,981

CLASS 209

5 4,437,982
166 4,437,983
172.5 Re.31,540
211 4,437,984
538 4,437,985
551 4,437,571

CLASS 210

130 4,437,986
137 4,437,987
237 4,437,988
242.3 4,437,989
321.3 4,437,990
413 4,437,991
603 4,437,992
631 4,437,993
638 4,437,994
714 4,437,995
718 4,437,996
727 4,437,997
728 4,437,998
748 4,437,999
786 4,438,000

CLASS 211

86 4,437,572

CLASS 212

160 Re.31,539
263 4,437,573

CLASS 215

247 4,437,574

CLASS 219

10.43 4,438,310
10.49 R 4,438,311
69 W 4,438,312
73.1 4,438,313
86.7 4,438,309
98 4,438,314
121 PC 4,438,316
121 PE 4,438,315
130.51 4,438,317
137 PS 4,438,318
4,438,319
216 4,438,320
4,438,321
236 4,438,322
243 4,438,323
441 4,438,324
536 4,438,325

CLASS 220

1 T 4,437,575
90.4 4,437,576
224 4,437,577
256 4,437,578

CLASS 221

25 4,437,579
75 4,437,580

CLASS 222

54 4,437,581
94 4,437,582
108 4,437,583
137 4,437,584
181 4,437,585
4,437,586
207 4,437,587
321 4,437,588
327 4,437,589
386.5 4,437,590
391 4,437,591
402.12 4,437,592
541 4,437,593
544 4,437,594
642 4,437,595

CLASS 224

39 4,437,596
42.45 R 4,437,597
163 4,437,598
319 4,437,599

CLASS 226

108 4,437,600
199 4,437,601

CLASS 227

147 4,437,602

CLASS 228

4.5 4,437,603
179 4,437,604
180 R 4,437,605

CLASS 229

40 4,437,606

CLASS 232

35 4,437,607

CLASS 235

181 4,438,328
379 4,438,326
462 4,438,327

CLASS 236

13 4,437,608
49 4,437,609

CLASS 239

119 4,437,610
453 4,437,611
556 4,437,612
676 B1 4,266,731
688 4,437,613
691 4,437,614

CLASS 241

24 4,437,615

CLASS 242

7.02 4,437,616
18 EW 4,437,617
71.8 4,437,618
75.51 4,437,619
83 4,437,620
84.1 J 4,437,621
86.5 R 4,437,622
107.2 4,437,623
107.3 4,437,624
129 4,437,625
186 4,437,626

CLASS 244

54 4,437,627
122 AG 4,437,628
122 R 4,437,629
136 4,437,630
214 4,437,631

CLASS 246

34 R 4,437,632

CLASS 248

68 R 4,437,633
97 4,437,634
122 4,437,635
137 4,437,636
163 A 4,437,637
282 4,437,638
558 4,437,639

CLASS 249

20 4,437,640
79 4,437,641
175 4,437,642

CLASS 250

201 4,438,330
211 J 4,438,331
310 4,438,332
327.2 4,438,333
363 S 4,438,334
4,438,335
398 4,438,336
436 4,438,337
459.1 4,438,329
551 4,438,338

CLASS 251

1 A 4,437,643
11 4,437,644
65 4,437,645
145 4,437,646
149.9 4,437,647

CLASS 252

8.55 D 4,438,002
8.7 4,438,001
12 4,438,003
4,438,004
33.4 4,438,005
49.9 4,438,006
4,438,007
51.5 R 4,438,022
56 R 4,438,008
90 4,438,009
91 4,438,010
106 4,438,011
131 4,438,012
146 4,438,013
162 4,438,020
174.21 4,438,014
174.24 4,438,015
174.25 4,438,016
301.17 4,438,017
356 4,438,018
522 R 4,438,023
545 4,438,024
4,438,025
4,438,026
581 4,438,027
609 4,438,028

CLASS 254

93 R 4,437,648

CLASS 260

112 R 4,438,032
112.5 R 4,438,029
4,438,030
4,438,031
239.3 B 4,438,035
239.3 R 4,438,034
239.55 C 4,438,033
245.2 T 4,438,036
385 4,438,037
414 4,438,038
429.5 4,438,039
439 R 4,438,040
464 4,438,041
465 B 4,438,042
465 F 4,438,043
501.12 4,438,044
501.13 4,438,045
501.15 4,438,046
513 R 4,438,047
982 4,438,048

CLASS 261

42 4,438,049

CLASS 264

0.5 4,438,050
1.2 4,438,051
4.6 4,438,052
25 4,438,053
40.6 4,438,054
44 4,438,055
45.2 4,438,056
46.5 4,438,057
51 4,438,058
105 4,438,059
206 4,438,060
249 4,438,061
255 4,438,062
311 4,438,063
328.15 4,438,064
335 4,438,065

CLASS 266

48 4,437,649
144 4,437,650
193 4,437,651
275 4,437,652

CLASS 267

140.1 4,437,653

CLASS 269

283 4,437,654

CLASS 271

3.1 4,437,655
10 4,437,656
100 4,437,657
125 4,437,658
276 4,437,659
290 4,437,660

CLASS 273

55 R 4,437,661
73 D 4,437,662
81.2 4,437,663
121 A 4,437,664
138 R 4,437,665
141 R 4,437,666
153 S 4,437,667
156 4,437,668
185 B 4,437,672
186 C 4,437,669
296 4,437,670
372 4,437,671

CLASS 277

65 4,437,673
188 A 4,437,674

CLASS 279

1 C 4,437,675

CLASS 280

78 4,437,676
234 4,437,677
276 4,437,678
281 R 4,437,679
460 R 4,437,680
733 4,437,681
764.1 4,437,682
804 4,437,683
4,437,684

CLASS 281

42 4,437,685

CLASS 285

12 4,437,686
42 4,437,687
95 4,437,688
246 4,437,689
272 4,437,690
353 4,437,691

CLASS 290

1 R 4,438,339
2 4,438,340
44 4,438,341
45 4,438,342
53 4,438,343

CLASS 292

57 4,437,692
191 4,437,693
235 4,437,694
352 4,437,695

CLASS 293

118 4,437,696
4,437,697

CLASS 296

1 S 4,437,698
181 4,437,699

CLASS 297

45 4,437,700
85 4,437,701
284 4,437,702
362 4,437,703
440 4,437,704

CLASS 298

1 R 4,437,705

CLASS 299

7 4,437,706
81 4,437,707
4,437,708

CLASS 307

146 4,438,344
270 4,438,345
297 4,438,346
308 4,438,347
310 4,438,348
362 4,438,349
440 4,438,350
450 4,438,351
475 4,438,352
477 4,438,353
493 4,438,354
511 4,438,355
571 4,438,356
597 4,438,357

CLASS 308

219 4,437,709

CLASS 310

51 4,438,358
68 R 4,438,359
83 4,438,360
90 4,438,361
152 4,438,362
328 4,438,363
4,438,364

CLASS 312

1 4,437,710
201 4,437,711
246 4,437,712
259 4,437,713
281 4,437,714
348 4,437,715

CLASS 313

325 4,438,365

CLASS 315

1 4,438,366
5.41 4,438,367
39 4,438,368
49 4,438,369
106 4,438,370
111.81 4,438,371
224 4,438,372
334 4,438,373
362 4,438,374
408 4,438,375

CLASS 318

78 4,438,376
254 4,438,377
280 4,438,378
685 4,438,379
696 4,438,380
4,438,381
744 4,438,382
799 4,438,383

CLASS 320

48 4,438,384

CLASS 322

28 4,438,385

CLASS 323

210 4,438,386
260 4,438,387
313 4,438,388

CLASS 324

52 4,438,389
71.1 4,438,390
4,438,391
79 R 4,438,392
83 D 4,438,393
4,438,394
126 4,438,395
127 4,438,396
4,438,396
133 4,438,403
158 P 4,438,397
173 4,438,398
220 4,438,399
312 4,438,400
326 4,438,401
452 4,438,402

CLASS 328

63 4,438,404
152 4,438,405
167 4,438,406

CLASS 329

30 4,438,407

CLASS 330

51 4,438,408
107 4,438,409
278 4,438,410
289 4,438,411

CLASS 331

2 4,438,412

CLASS 332

16 R 4,438,413

CLASS 333

28 T 4,438,414
81 A 4,438,415
160 4,438,416
193 4,438,417

CLASS 335

255 4,438,418
261 4,438,419
275 4,438,420

CLASS 336

65 4,438,421

CLASS 339

4 4,437,716
17 LC 4,437,717
61 M 4,437,718
91 R 4,437,719
95 D 4,437,720
97 P 4,437,721
4,437,722
99 R 4,437,723
143 R 4,437,724
156 R 4,437,725

252 P 4,437,726

CLASS 340

52 F 4,438,422
52 H 4,438,424
52 R 4,438,423
55 4,438,425
64 4,438,426
347 DD 4,438,427
521 4,438,428
539 4,438,429
547 4,438,430
663 4,438,431
825.35 4,438,432
825.44 4,438,433
825.51 4,438,434

CLASS 343

7.3 4,438,435
16 M 4,438,436
449 4,438,439
451 4,438,438
770 4,438,437

CLASS 346

75 4,438,440
140 R 4,438,441
153.1 4,438,442
4,438,443
155 4,438,444

CLASS 350

96.20 4,437,728
96.23 4,437,729
96.3 4,437,727
257 4,437,730
340 4,437,731
427 4,437,732
4,437,733
454 4,437,734
458 4,437,735
538 4,437,736

CLASS 351

237 4,437,737

CLASS 353

26 R 4,437,738
27 R 4,437,739

CLASS 354

21 4,437,742
117 4,437,745
126 4,437,747
132 4,437,748
155 4,437,750
214 4,437,749
4,437,751
289 4,437,752
293 4,437,753
402 4,437,743
442 4,437,744
476 4,437,740
479 4,437,741
4,437,746

CLASS 355

3 TR 4,437,754
10 4,437,755
14 R 4,437,756
15 4,437,757
41 4,437,758
91 4,437,759
133 4,437,760

CLASS 356

44 4,437,761
326 4,437,762
4,437,763

CLASS 357

14 4,438,445
17 4,438,446
19 4,438,447
23 4,438,448
41 4,438,449
68 4,438,450

CLASS 358

11 4,438,451
13 4,438,452
31 4,438,454
44 4,437,764
4,438,455
78 4,438,453
148 4,438,456
213 4,438,457
254 4,438,458
258 4,438,459
299 4,438,460
302 4,438,461

CLASS 360

2 4,438,462
10.2 4,438,463
13 4,438,464
22 4,438,465
66 4,438,466
77 4,438,467
92 4,438,468
109 4,438,469
113 4,438,470
125 4,438,471

CLASS 361

13 4,438,472
18 4,438,473
58 4,438,474
82 4,438,475
96 4,438,476
119 4,438,477
152 4,438,478
213 4,438,479
278 4,438,480
433 4,438,481

CLASS 362

103 4,438,482
183 4,438,483
267 4,438,484
268 B1 4,338,654

CLASS 363

21 4,438,485
56 4,438,486
129 4,438,487

CLASS 364

200 4,438,488
4,438,489
4,438,490
4,438,491
4,438,492
4,438,493
4,438,494
414 4,438,495
431.05 4,438,496
4,438,497
483 4,438,498
501 4,438,499
567 4,438,500
717 4,438,501
718 4,438,502
721 4,438,503
724 4,438,504
900 4,438,505
4,438,506
4,438,507

CLASS 365

122 4,438,508

CLASS 366

264 4,437,765
287 4,437,766
4,437,767

CLASS 367

156 4,438,509

CLASS 368

88 4,437,768
204 4,437,769
294 4,437,770

CLASS 369

271 4,438,510

CLASS 370

19 4,438,511

CLASS 371

60 4,438,512

CLASS 372

2 4,438,513
64 4,438,514
99 4,438,517

CLASS 373

39 4,438,518
88 4,438,515
97 4,438,516

CLASS 374

39 4,437,771
117 4,437,773
129 4,437,772

CLASS 375

1 4,438,519
4 4,438,520
16 4,438,521
27 4,438,522
30 4,438,523
80 4,438,524

CLASS 381

63 4,438,525
73 4,438,526
107 4,438,527

CLASS 384

92 4,437,774

CLASS 400

124 4,437,775
142 4,437,776
154.2 4,437,777
208 4,437,778
4,437,779
642 4,437,780

CLASS 402

8 4,437,781

CLASS 403

13 4,437,782
27 4,437,783
408 4,437,784

CLASS 404

64 4,437,785

CLASS 405

24 4,437,786
146 4,437,788
156 4,437,789
186 4,437,790
195 4,437,791
198 4,437,792
212 4,437,793
224 4,437,794
259 4,437,795

CLASS 406

25 4,437,796
110 4,437,797
119 4,437,798
198 4,437,799

CLASS 407

119 4,437,800

CLASS 408

197 4,437,802

CLASS 409

218 4,437,803
232 4,437,801

CLASS 411

59 4,437,804
361 4,437,805

CLASS 414

307 4,437,806
620 4,437,807
667 4,437,808

CLASS 415

41 4,437,809
115 4,437,810

CLASS 417

8 4,437,811
53 4,437,812
4,437,813
351 4,437,814
418 4,437,815
465 4,437,816
507 4,437,817

CLASS 418

9 4,437,818
26 4,437,819
55 4,437,820
104 4,437,821
122 4,437,822
219 4,437,823

CLASS 420

435 4,438,066

CLASS 422

56 4,438,067
61 4,438,068
62 4,438,069
70 4,438,070
109 4,438,071
133 4,438,072
135 4,438,073
4,438,074
189 4,438,075

CLASS 423

7 4,438,077
21.5 4,438,078
30 4,438,076
87 4,438,079
112 4,438,080
235 4,438,082
266 4,438,083
300 4,438,081
387 4,438,084
419 P 4,438,085
448 4,438,086
450 4,438,087
466 4,438,088
624 4,438,089

CLASS 424

7.1 4,438,090
21 4,438,091
28 4,438,139
50 4,438,093
59 4,438,094
61 4,438,140
70 4,438,095
4,438,096
88 4,438,097
89 4,438,098
93 4,438,099
104 4,438,100
114 4,438,101
130 4,438,102
177 4,438,103
4,438,104
180 4,438,105
4,438,106
4,438,107
4,438,109
183 4,438,108
217 4,438,110
244 4,438,112
246 4,438,111
4,438,113
248.51 4,438,114
4,438,141
250 4,438,115
4,438,116
251 4,438,117
4,438,118
4,438,119
256 4,438,120
258 4,438,121
260 4,438,142
263 4,438,122
269 4,438,125
270 4,438,123
4,438,124
272 4,438,126
4,438,127
273 N 4,438,128
273 P 4,438,092
273 R 4,438,129
274 4,438,130
278 4,438,131
285 4,438,132
300 4,438,133
4,438,134
304 4,438,135
309 4,438,143
319 4,438,136
330 4,438,144
4,438,137
4,438,138

CLASS 425

84 4,437,787
131.1 4,437,824
145 4,437,825
182 4,437,826
378 S 4,437,827
458 4,437,828

CLASS 426

92 B1 3,808,340
297 4,438,145
448 4,438,146
570 4,438,147
579 4,438,148
603 4,438,149
625 4,438,150

CLASS 427

36 4,438,151
37 4,438,152
4,438,153
39 4,438,154
49 4,438,155
57 4,438,156
93 4,438,157
101 4,438,158
162 4,438,159
214 4,438,160
215 4,438,161
318 4,438,162

CLASS 428

35 4,438,163
4,438,164
138 4,438,165
113 4,438,166
138 4,438,167
193 4,438,168
196 4,438,169
207 4,438,170
215 4,438,171
220 4,438,172
221 4,438,173
247 4,438,174
289 4,438,175
315.5 4,438,176
349 4,438,177
407 4,438,179
475.8 4,438,180
571 4,438,181

CLASS 429

91 4,438,182
111 4,438,183
181 4,438,184
250 4,438,185

CLASS 430

53 4,438,186
81 4,438,187
128 4,438,188
280 4,438,189
281 4,438,190
324 4,438,191
329 4,438,192
505 4,438,193
4,438,194
566 4,438,195

CLASS 431

21 4,437,829
54 4,437,830
177 4,437,831
304 4,437,832
329 4,437,833

CLASS 432

14 4,437,834
103 4,437,835

CLASS 433

199 4,437,836

CLASS 434

178 4,437,837
363 4,437,838
417 4,437,839

CLASS 435

96 4,438,196
119 4,438,197
178 4,438,198
190 4,438,199
193 4,438,200
228 4,438,201

CLASS 436

8 4,438,202
60 4,438,203
67 4,438,204
71 4,438,205
130 4,438,206
542 4,438,208
4,438,209
543 4,438,207

CLASS 440

27 4,437,840
42 4,437,841

CLASS 441

65 4,437,842
96 4,437,843

CLASS 445

5 4,437,844
39 4,437,845

CLASS 455

182 4,438,528
190 4,438,529
278 4,438,530

CLASS 464

36 4,437,846
74 4,437,847

CLASS 474

82 4,437,848
256 4,437,849

CLASS 493

89 4,437,850
124 4,437,851
216 4,437,852
302 4,437,853
353 4,437,854
424 4,437,855

CLASS 501

4 4,438,210
65 4,438,211
73 4,438,212
92 4,438,213
136 4,438,214

CLASS 502

71 4,438,215
101 4,438,216
169 4,438,019
205 4,438,217
220 4,438,218
333 4,438,219
341 4,438,021

CLASS 521

55 4,438,220
4,438,221
60 4,438,222
92 4,438,223
146 4,438,224
172 4,438,225
175 4,438,226
589 — B1 3,579,540

CLASS 524

33 4,438,227
109 4,438,228
4,438,229
151 4,438,230
161 4,438,231
272 4,438,232
299 4,438,233
378 4,438,234
700 4,438,235

CLASS 525

54.1 4,438,239
165 4,438,236
183 4,438,237
240 4,438,238
420 4,438,240
444 4,438,241

CLASS 526

62 4,438,242
125 4,438,243
202 4,438,244
249 4,438,247
286 4,438,245
298 4,438,246

CLASS 528

57 4,438,248
61 4,438,249
66 4,438,250
73 4,438,251
75 4,438,252
86 4,438,253
89 4,438,254
176 4,438,255
188 4,438,256
347 4,438,257
361 4,438,258
388 4,438,259

CLASS 536

13.9 4,438,260
21 4,438,261
43 4,438,262
56 4,438,263
91 4,438,264

CLASS 544

29 4,438,265
309 4,438,267
315 4,438,268
350 4,438,266

CLASS 546

9 4,438,269
243 4,438,270
294 4,438,271

CLASS 548

308 4,438,272

CLASS 549

303 4,438,273
387 4,438,274
434 4,438,275

CLASS 560

13 4,438,276
119 4,438,277
205 4,438,278

CLASS 562

416 4,438,279
457 4,438,280

CLASS 564

477 4,438,281

CLASS 568

58 4,438,282
403 4,438,283
730 4,438,284
840 4,438,286
861 4,438,285
909 4,438,287

CLASS 585

379 4,438,288
827 4,438,289

CLASS 604

29 4,437,856
53 4,437,857
90 4,437,858
131 4,437,859
385 4,437,860

CLASSIFICATION OF DESIGNS

D2—	376	273,054			273,070		358	273,086		209	273,102		7	273,118		56	273,134
D3—	6	273,055		201	273,071		382	273,087	D13—	12	273,103		13	273,119		60	273,135
	40	273,056		254	273,072		395	273,088		24	273,104		15	273,120	D25—	80	273,136
	71	273,057			273,073		400	273,089	D14—	6	273,105			273,121			273,137
D4—	23.1	273,058	D7—	77	273,074			273,090		30	273,106		19	273,122	D26—	23	273,138
		273,059		106	273,075		499	273,091		53	273,107	D20—	6	273,123		61	273,139
D6—	6	273,060		395	273,076	D9—	389	273,092			273,108	D21—	34	273,124		93	273,140
	49	273,061	D8—	10	273,077			273,093		58	273,109		150	273,125	D28—	13	273,141
	95	273,062		31	273,078	D10—	71	273,094			273,110		234	273,126		20	273,142
	96	273,063		62	273,079		109	273,095		101	273,111		236	273,127		57	273,143
		273,064		71	273,080	D11—	175	273,096		103	273,112	D23—	71	273,128			273,144
	132	273,065		93	273,081	D12—	36	273,097		116	273,113	D24—	8	273,129			273,145
	179	273,066		98	273,082		90	273,098	D15—	88	273,114		26	273,130	D29—	8	273,145
	186	273,067		101	273,083		105	273,099		148	273,115			273,131	D32—	31	273,146
	188	273,068		353	273,084		111	273,100			273,116		41	273,132	D34—	6	273,147
	192	273,069		354	273,085		174	273,101	D18—	1	273,117		56	273,133		21	273,148

CLASSIFICATION OF PLANTS

P.—	68	5,207			5,208			5,209									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,437,242		4,438,239		4,437,549		4,437,730		4,438,071	23 :	4,437,217
	4,437,316		4,438,331		4,437,568		4,437,984		4,438,096	24 :	Re.31,538
	4,437,501		4,438,343		4,437,595		4,438,018		4,438,146		4,437,203
	4,437,795		4,438,346		4,437,597		4,438,139		4,438,150		4,437,275
4 :	4,437,195		4,438,356		4,437,738		4,438,166		4,438,173		4,437,392
	4,437,351		4,438,364		4,437,753		4,438,261		4,438,231		4,437,404
	4,437,630		4,438,448		4,437,762		4,438,280		4,438,279		4,437,607
	4,437,697		4,438,461		4,437,763		4,438,296		4,438,287		4,437,668
	4,437,896		4,438,466		4,437,828		4,438,348		4,438,288		4,437,713
	4,438,413		4,438,485		4,438,022		4,438,390		4,438,299		4,437,813
	4,438,436		4,438,491		4,438,070		4,438,433		4,438,301		4,437,847
6 :	4,437,193		4,438,492		4,438,156	13 :	4,437,220		4,438,304		4,437,857
	4,437,194		4,438,511		4,438,159		4,437,259		4,438,335		4,438,098
	4,437,197		4,438,513		4,438,165		4,437,410		4,438,357		4,438,220
	4,437,218	8 :	4,437,261		4,438,181		4,437,434		4,438,365		4,438,221
	4,437,234		4,437,319		4,438,208		4,437,487		4,438,367		4,438,322
	4,437,266		4,437,320		4,438,273		4,437,581		4,438,403		4,438,340
	4,437,272		4,437,659		4,438,342		4,437,594		4,438,481		4,438,355
	4,437,278		4,437,705		4,438,352		4,437,901		3,379,340		4,438,408
	4,437,286		3,560,287		4,438,354		4,437,904	18 :	4,437,437		4,438,430
	4,437,315	9 :	4,437,237		4,438,411		4,438,061		4,437,454		4,438,459
	4,437,353		4,437,375		4,438,427	15 :	4,437,318		4,437,554	25 :	4,437,198
	4,437,366		4,437,485		4,438,482		4,437,666		4,437,693		4,437,277
	4,437,413		4,437,508	08 :	4,437,360	17 :	4,437,208		4,437,695		4,437,313
	4,437,479		4,437,573		4,437,464		4,437,274		4,437,774		4,437,365
	4,437,488		4,437,588		4,437,579		4,437,325		4,437,934		4,437,510
	4,437,509		4,437,760		4,437,661		4,437,381		4,438,004		4,437,544
	4,437,515		4,437,802		4,438,182		4,437,408		4,438,119		4,437,598
	4,437,518		4,437,852		4,438,442		4,437,415		4,438,196		4,437,689
	4,437,524		4,437,859	09 :	4,437,332		4,437,448		4,438,234		4,437,761
	4,437,593		4,437,979		4,437,461		4,437,453		4,438,241		4,437,809
	4,437,599		4,438,013		4,437,467		4,437,469		4,438,255		4,437,894
	4,437,616		4,438,171		4,437,943		4,437,472		4,438,361		4,437,925
	4,437,623		4,438,253		4,438,271		4,437,499		4,438,454		4,437,935
	4,437,642		4,438,350		4,438,346		4,437,558	19 :	4,437,295		4,437,946
	4,437,654		4,438,514	10 :	4,437,489		4,437,567		4,437,349		4,437,966
	4,437,680	01 :	4,437,344		4,437,710		4,437,572		4,437,385		4,438,144
	4,437,685		4,437,451		4,437,853		4,437,574		4,437,399		4,438,170
	4,437,692		4,437,961		4,437,951		4,437,657		4,437,502		4,438,200
	4,437,706	04 :	4,437,235		4,438,117		4,437,664		4,437,622		4,438,254
	4,437,723		4,437,251		4,438,120		4,437,690		4,437,689		4,438,330
	4,437,812		4,438,327		4,438,228		4,437,784		4,437,816		4,438,380
	4,437,841		4,438,338	11 :	4,437,238		4,437,786		4,437,987		4,438,381
	4,437,842	05 :	4,438,512	12 :	4,437,252		4,437,790	20 :	4,437,388		4,438,397
	4,437,854	06 :	4,437,226		4,437,327		4,437,801		4,437,737		4,438,410
	4,437,858		4,437,343		4,437,424		4,437,806		4,438,000		4,438,453
	4,437,874		4,437,420		4,437,466		4,437,837		4,438,305		4,438,483
	4,437,980		4,437,417		4,437,474		4,437,893		4,438,506		4,438,490
	4,437,990		4,437,422		4,437,481		4,437,954	21 :	4,437,715		4,438,493
	4,437,995		4,437,458		4,437,575		4,437,983		4,437,919		4,438,501
	4,438,032		4,437,482		4,437,658		4,437,985		4,437,981		4,438,509
	4,438,080		4,437,505		4,437,717		4,437,997		4,436,178		4,438,520
	4,438,227		4,437,539		4,437,718		4,438,069	22 :	4,437,606	26 :	4,437,340

4,437,255	33 : 4,437,825	4,437,449	4,438,142	41 : 4,438,499	4,437,516
4,437,267	4,438,263	4,437,459	4,438,169	4,437,280	4,437,517
4,437,273	34 : Re.31,539	4,437,462	4,438,267	4,437,807	4,437,521
4,437,317	4,437,213	4,437,507	4,438,295	4,437,994	4,437,522
4,437,333	4,437,241	4,437,545	4,438,434	4,438,191	4,437,583
4,437,335	4,437,256	4,437,546	4,438,500	4,438,404	4,437,643
4,437,338	4,437,420	4,437,576	39 : 4,437,230	4,438,494	4,437,660
4,437,340	4,437,421	4,437,586	4,437,231	4,438,498	4,437,669
4,437,347	4,437,430	4,437,590	4,437,249	42 : 4,437,201	4,437,674
4,437,374	4,437,455	4,437,634	4,437,307	4,437,223	4,437,779
4,437,396	4,437,463	4,437,636	4,437,376	4,437,227	4,437,791
4,437,411	4,437,476	4,437,662	4,437,388	4,437,229	4,437,805
4,437,452	4,437,497	4,437,686	4,437,389	4,437,236	4,437,839
4,437,535	4,437,513	4,437,698	4,437,447	4,437,246	4,437,855
4,437,624	4,437,577	4,437,702	4,437,530	4,437,253	4,438,002
4,437,648	4,437,641	4,437,724	4,437,542	4,437,284	4,438,040
4,437,667	4,437,677	4,437,745	4,437,566	4,437,312	4,438,045
4,437,696	4,437,764	4,437,785	4,437,589	4,437,362	4,438,074
4,437,716	4,437,789	4,437,818	4,437,596	4,437,383	4,438,077
4,437,739	4,437,793	4,437,849	4,437,601	4,437,429	4,438,088
4,437,916	4,437,822	4,437,865	4,437,602	4,437,491	4,438,219
4,438,049	4,437,833	4,437,870	4,437,614	4,437,559	4,438,272
4,438,092	4,437,840	4,437,897	4,437,619	4,437,604	4,438,281
4,438,130	4,437,900	4,437,922	4,437,625	4,437,628	4,438,292
4,438,179	4,437,938	4,437,963	4,437,639	4,437,632	4,438,320
4,438,192	4,437,939	4,437,988	4,437,649	4,437,650	4,438,388
4,438,226	4,437,948	4,438,005	4,437,675	4,437,663	49 : 4,437,672
4,438,235	4,437,972	4,438,014	4,437,688	4,437,712	4,437,681
4,438,242	4,437,973	4,438,026	4,437,691	4,437,722	4,438,223
4,438,248	4,437,975	4,438,039	4,437,767	4,437,725	50 : 4,437,384
4,438,259	4,437,976	4,438,054	4,437,866	4,437,736	51 : 4,437,207
4,438,274	4,437,978	4,438,066	4,437,871	4,437,772	4,437,471
4,438,284	4,438,010	4,438,078	4,437,872	4,437,838	4,437,511
4,438,418	4,438,017	4,438,102	4,437,873	4,437,867	4,437,541
4,438,484	4,438,029	4,438,124	4,437,902	4,437,884	4,437,615
4,438,497	4,438,030	4,438,153	4,437,915	4,437,899	4,437,670
27 : 4,437,205	4,438,037	4,438,158	4,437,923	4,437,952	4,437,844
4,437,257	4,438,038	4,438,175	4,437,927	4,437,968	4,437,937
4,437,270	4,438,047	4,438,176	4,437,928	4,437,982	4,438,203
4,437,271	4,438,048	4,438,202	4,437,929	4,438,020	4,438,383
4,437,283	4,438,080	4,438,210	4,437,930	4,438,031	4,438,439
4,437,468	4,438,082	4,438,278	4,437,931	4,438,056	4,438,472
4,437,475	4,438,089	4,438,291	4,437,932	4,438,123	53 : 4,437,326
4,437,498	4,438,148	4,438,302	4,437,957	4,438,129	4,437,387
4,437,534	4,438,185	4,438,314	4,437,962	4,438,134	4,437,435
4,437,569	4,438,207	4,438,339	4,438,006	4,438,135	4,437,480
4,437,570	4,438,215	4,438,362	4,438,007	4,438,251	4,437,525
4,437,613	4,438,247	4,438,376	4,438,024	4,438,266	4,437,627
4,437,637	4,438,290	4,438,379	4,438,059	4,438,306	4,437,629
4,437,671	4,438,298	4,438,387	4,438,062	4,438,323	4,437,714
4,437,726	4,438,300	4,438,396	4,438,147	4,438,369	4,437,748
4,437,803	4,438,400	4,438,415	4,438,157	4,438,382	4,437,924
4,438,225	4,438,446	4,438,416	4,438,162	4,438,386	4,438,104
4,438,526	4,438,447	4,438,419	4,438,216	4,438,473	4,438,198
28 : 4,437,287	4,438,450	4,438,421	4,438,224	4,438,474	3,788,284
4,437,709	4,438,452	4,438,437	4,438,246	4,438,475	55 : 4,437,412
29 : 4,437,371	4,438,479	4,438,457	4,438,289	4,438,476	4,437,419
4,437,537	4,438,504	4,438,477	4,438,310	4,438,517	4,437,457
4,437,647	4,438,530	4,438,486	4,438,351	4,438,521	4,437,529
4,437,798	35 : 4,437,456	4,438,519	4,438,391	44 : 4,437,986	4,437,608
4,437,799	4,437,958	4,266,731	4,438,402	45 : 4,437,293	4,437,618
4,437,814	4,438,183	4,338,654	4,438,426	4,437,301	4,437,646
4,437,875	4,438,269	37 : 4,437,395	4,438,428	4,437,319	4,437,687
4,437,876	4,438,394	4,437,426	4,438,460	4,437,369	4,437,694
4,438,003	4,438,395	4,437,496	4,438,518	4,437,955	4,437,711
4,438,034	36 : Re.31,540	4,437,580	40 : 4,437,329	47 : 4,437,523	4,437,860
4,438,209	4,437,264	4,437,605	4,437,492	4,437,829	4,437,868
4,438,359	4,437,265	4,437,617	4,437,794	4,437,945	4,437,917
4,438,527	4,437,279	4,437,701	4,437,830	4,437,956	4,438,009
31 : 4,437,361	4,437,282	4,437,863	4,437,941	48 : 4,437,363	4,438,072
4,437,676	4,437,291	4,437,999	4,437,977	4,437,436	4,438,167
4,438,370	4,437,322	4,438,110	4,438,087	4,437,512	4,438,233
32 : 4,437,364	4,437,400	4,438,138	4,438,161	4,437,514	4,438,495
4,437,431	4,437,414				

DESIGN PATENTS

05 : 273,139	273,080	273,134	26 : 273,058	273,135	40 : 273,085
06 : 273,055	273,086	273,145	273,059	273,146	273,101
273,077	273,136	18 : 273,071	273,067	34 : 273,110	42 : 273,070
273,079	273,137	273,090	273,072	273,132	273,084
273,094	13 : 273,054	273,115	273,073	36 : 273,081	273,100
273,121	273,061	273,127	273,074	37 : 273,082	273,133
273,128	273,065	19 : 273,056	273,138	273,088	45 : 273,116
273,148	273,068	21 : 273,096	27 : 273,087	39 : 273,069	47 : 273,057
09 : 273,062	17 : 273,113	25 : 273,066	273,147	273,092	48 : 273,119
273,130	273,126	273,075	29 : 273,124	273,097	273,123
273,131	273,129	273,112	32 : 273,095	273,103	273,142
12 : 273,060					

PLANT PATENTS

19 : 5,209					

U.S. GOVERNMENT PRINTING OFFICE : O—1984

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM
ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

Route to:

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

Vol. 1040 Number 4

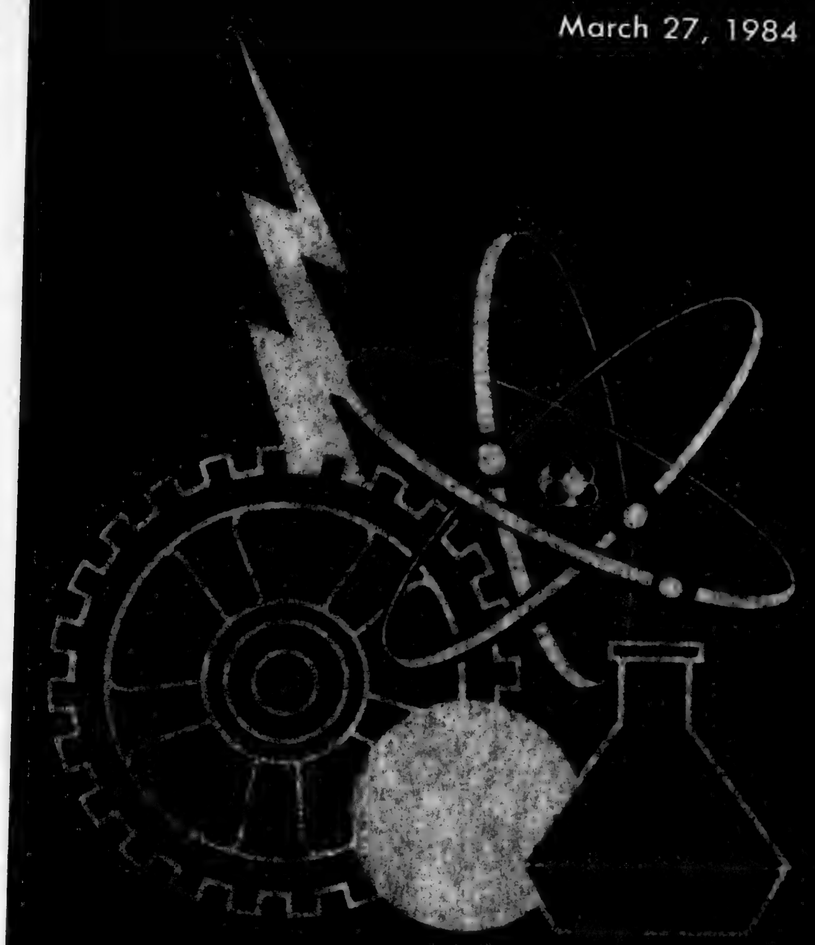
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 27, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
March 27, 1984 Volume 1040 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1040 OG 32
Reissue Applications Filed	1040 OG 32
Requests for Reexaminations Filed	1040 OG 32
Recordation of Trade Name	1040 OG 32
Errata	1040 OG 32
PTO Status	1040 OG 34
Telephone and Location Directory	1040 OG 35
Patent Certificates of Correction	1040 OG 49
Disclaimers	1040 OG 49
Dedication	1040 OG 49
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1040 OG 50
Condition of Patent Applications	1040 OG 51
Reexaminations	1391
Reissue Patents Granted (31,541)	1395
Plant Patents Granted (5,210)	1397
Patents Granted	
General and Mechanical (4,438,531)	1399
Chemical (4,439,201)	1627
Electrical (4,439,630)	1745
Design Patents Granted (273,149)	1829
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 48
Classification of	
Patents (Including Reissues and Reexaminations)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs and Plants	PI 58
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Jan. 30, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,889,054, Re. S.N. 496,273, Filed May 19, 1983, Cl. 358/83, ROW GRABBING SYSTEM, Robert H. Nagel, et al., Owner of Record: *IDR, Inc., a corp. of N.Y.,* Attorney or Agent: Lawrence G. Kurland, et al., Ex. Gp.: 233

4,217,820, Re. S.N. 567,326, Filed Dec. 30, 1983, Cl. 101/93.05, APPARATUS FOR PRINTING ON TRANSPARENCY SLIDES, Johannes Lorsch, Owner of Record: *Inventor,* Attorney or Agent: Donald A. Kettlestrings, Ex. Gp.: 337

4,304,085, Re. S.N. 556,796, Filed Dec. 1, 1983, Cl. 53/435, COCKTAIL FILLING MACHINE AND METHOD, Edward E. Ross, Owner of Record: *Del Monte Corp., San Francisco, Calif.,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 171

4,308,919, Re. S.N. 567,900, Filed Jan. 3, 1984, Cl. 172/240, HINGE-TYPE OFFSET WHEEL HARROW, Samuel J. Coughran, Jr., Owner of Record: *Rome Industries, Inc., Cedartown, Ga.,* Attorney or Agent: George M. Hopkins, Ex. Gp.: 334

4,371,879, Re. S.N. 555,295, Filed Nov. 25, 1983, Cl. 346/135.1, METALIZED RECORDING CARRIER FOR RECORDING INSTRUMENTS, AND METHOD OF ITS MANUFACTURE, Richard Hohn, et al., Owner of Record: *Robert Bosch, GmbH., Stuttgart, Germany,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 211

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No publications this issue.

Department of the Treasury
United States Customs Service
(T.D. 84–38)
19 CFR Part 133

Recordation of Trade Name: Zahnradfabrik Friedrichshafen, AG.

Agency: Customs Service, Department of the Treasury

Action: Notice of Recordation

Summary: On Oct. 27, 1983, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "ZAHNRADFABRIK FRIEDRICHSHAFEN, AG." was published in the Federal Register (48 FR 49723). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views, or arguments submitted in opposition to the recordation and received not later than Dec. 27, 1983. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "ZAHNRADFABRIK FRIEDRICHSHAFEN, AG." is recorded as the trade named used by Zahnradfabrik Friedrichshafen, AG., a corporation organized under the laws of West Germany, located at D-7990 Friedrichshafen 1, West Germany. The trade name is used in connection with the following merchandise manufactured and distributed throughout the world: gear units for machines; machine parts; brake testing stands; testing instruments and parts for land vehicles.

Date: Feb. 6, 1984

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Avenue, N.W., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Jan. 31, 1984. *Director, Entry Procedures and Penalties Division.*

Errata

"All reference to Patent No. D270816 to William A. Hays, et al., of Colo. for 'HOUSING FOR OPTICAL ELECTRONIC DISTANCE MEASURING INSTRUMENT' appearing in the Official Gazette of Oct. 4, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,378,811 to Ronald Levitan of Transvaal, South Africa for 'SURGICAL DEVICE' appearing in the Official Gazette of Apr. 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,379,180 to John E. Baglin, et al., of N.Y. for 'METHODS FOR MAKING GRADED INDEX ANTIREFLECTIVE SURFACES' appearing in the Official Gazette of Apr. 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,385,051 to Yoshikazu Oka, et al., of Japan for 'BICYCLE COMPOUNDS, THEIR PRODUCTION AND USE' appearing in the Official Gazette of May 24, 1983 should be deleted since on patent was granted."

"All reference to Patent No. 4,391,333 to George I. Boyadjieff of Calif. for 'WELL CASING JACK MECHANISM' appearing in the Official Gazette of July 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,392,456 to Robert E. Davis of Ill. for 'PREVENTION OF FOULING IN INTERNAL COMBUSTION ENGINES AND THEIR EXHAUST SYSTEMS AND IMPROVED GASOLINE COMPOSITIONS' appearing in the Official Gazette of July 12, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,394,979 to Bertil Brandt of Sweden for 'WEAR AND ABRASION RESISTANT WALL STRUCTURE, PARTICULARLY FOR MILLS FOR GRINDING A CHARGE COMPRISING MAGNETIC MATERIAL' appearing in the Official Gazette of July 26, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,402,520 to Gerd Ziegler of Germany for 'ROLLER SKATE OR THE LIKE WITH BRAKE ATTACHMENT' appearing in the Official Gazette of Sept. 6, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,403,422 to Norman Sperling, et al., of Mass. for 'STAR FINDER' appearing in the Official Gazette of Sept. 13, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,404,976 to Lawrence L. Stewart, Jr. of Va. for 'LOW DELIVERY CIGARETTE' appearing in the Official Gazette of Sept. 20, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,408,858 to James K. Lee of N.Y. for 'ELECTROMAGNETIC ACTUATOR HAVING A COMPLIANT ARMATURE' appearing in the Official Gazette of Oct. 11, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,409,546 to Carl Shulman of N.J. for 'MERCURY PROBE AND METHOD' appearing in the Official Gazette of Oct. 11, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,409,719 to Rudolf R. M. Muller of Germany for 'METHOD OF PIERCING AND RIVETING FASTENER TO PANEL' appearing in the Official Gazette of Oct. 18, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,409,759 to Shinji Sekiya, et al., of Japan for 'WAFER ATTRACTING AND FIXING DEVICE' appearing in the Official Gazette of Oct. 18, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,410,039 to Jack J. Dewald of La. for 'UNITIZED WELL TESTING APPARATUS FOR USE IN HOSTILE ENVIRONMENTS' appearing in the Official Gazette of Oct. 18, 1983, should be deleted since no patent was granted."

"All reference to Patent No. 4,410,092 to Toshihiko Satake of Japan for 'AUTOMATIC CONTROL DEVICE FOR A BOUNDARY PLATE OF A GRAIN SEPARATOR' appearing in the Official Gazette of Oct. 18, 1983 should be deleted since no patent was granted."

"All refe rence to Patent No. 4,410,745 to John G. Victor of Ill. for 'ETHANOL EXTRACTION PROCESS' appearing in the Official Gazette of Oct. 18, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,411,986 to Thomas I. Abbott of N.Y. for 'RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED CROSSOVER' appearing in the Official Gazette of Oct. 25, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,413,053 to Thomas I. Abbott of N.Y. for 'RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED CROSSOVER' appearing in the Official Gazette of Nov. 1, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,418,212 to Marguerite S. Chang, et al., of Md. for 'SYNTHESIS OF DIMETHYLMETHYLENE DINITRAMINE' appearing in the Official Gazette of Nov. 29, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,419,022 to Robert T. Ely of Pa. for 'NONCONTRACT TEMPERATURE SENSING METHOD AND APPARATUS FOR LADLE PREHEATING' appearing in the Official Gazette of Dec. 6, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,421,013 to James L. Hansen of Neb. for 'AERATION FAN MOUNTING SYSTEM' appearing in the Official Gazette of Dec. 20, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,421,018 to Gunter G. Pryputsch, et al., of Canada for 'FORCED CONVECTION OVEN' appearing in the Official Gazette of Dec. 20, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,421,907 to Lawrence R. Schmidt of N.Y. for 'A METHOD FOR MAKING POLYETHERIMIDE' appearing in the Official Gazette of Dec. 20, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,423,217 to Laurent Duc, et al., of Switzerland for 'PROCESS FOR THE PRODUCTION OF HETEROCYLIC THIO COMPOUNDS' appearing in the Official Gazette of Dec. 27, 1983 should be deleted since no patent was granted."

Status of PTO Services

The following is an update of the status of PTO services for February 1984:

Service Item	FY 1984 Performance Goal (Calendar Days)	Actual	Comment
Filing Receipts:			
Patents	22	28	Problems due to conversion to the new computer system.
Trademarks	30	45	
Patent/Trademark Copies:			
Window Coupons	5	92% within 5 days	
Mail Coupons	29	99% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		Jan. 16, 1984	
Certified Copies:			
Trademark Registrations	30	10	
Applications-As-Filed	20	97% within 15 days	
File-Wrapper/Contents	N/A	99% within 7 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	13	
Filing Reg. Certificates	3	3	
Assignments:			
Patents	25	14	
Trademarks	25	13	
Avg. Days from Issue Fee Payment to Issue Date	90-100	92	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Patent Copies Available	Issue Date	Avg. 3 days late	Problems being resolved.
Trademark Copies Available	Issue Date	On schedule	
Trademark Official Gazette:			
In Bookstore	Issue Date	Avg. 1.5 days late	
Mailed	Issue Date	Avg. 1.5 days late	
Trademark Regs. Mailed	Issue Date	Avg. 7 days late	Due to new printing contractor start-up.

* Figures include mail processing and delivery time.

IMPROVEMENTS TO SERVICES

- *Patent and Trademark Search Rooms* — Our photocopier vendor has replaced all photocopiers with twenty-six new ones.
- *Telephone and Location Directory* — Following is an updated directory of current telephone and location information by PTO organization. This replaces the directory published in the Official Gazette of Nov. 29, 1983.

REMINDER

- *Patent and Trademark Copy Orders* — When ordering other than utility patents, it is imperative that the following alpha prefix is included with the number:

T —Trademark Registration
D —Design Patent
R —Reissue Patent
PP —Plant Patent
DT—Defensive Publication

Additionally, please remember to put your name and mailing address (or box number) on all coupons.

Mar. 6, 1984.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Telephone and Location Directory

OFFICE OF THE ASSISTANT SECRETARY AND COMMISSIONER OF PATENTS AND TRADEMARKS

Assistant Secretary and Commissioner Gerald J. Mossinghoff rm 11E10 CP3..... 557-3071
Administrative Secretary Pat Schmitt rm 11E10 CP3..... 557-3071
Special Assistant to the Commissioner Barbara Luxenburg rm 11E10 CP3... 557-3071
Secretary Ruth A. Nyblod rm 11E10 CP3..... 557-3071
Deputy Assistant Secretary and Deputy Commissioner Donald J. Quigg rm 11D27 CP3. 557-3961
Secretary Nancy D. Creel rm 11D27 CP3..... 557-3961
Assistant Commissioner for Patents Rene D. Tegtmeyer rm 11A13 CP3..... 557-3811
Secretary Marjorie D. Benjamin rm 11A13 CP3..... 557-3811
Assistant Commissioner for Trademarks Margaret M. Laurence rm 11C17 CP3..... 557-3061
Secretary Sheila G. Pellman rm 11C17 CP3..... 557-3061
Assistant Commissioner for Administration Theresa A. Brelsford rm 11C34 CP3... 557-2290
Secretary Debra Ginther rm 11C34 CP3..... 557-2290
Assistant Commissioner for Finance & Planning Bradford R. Huther rm 11D27 CP3. 557-1572
Secretary Vickie T. Bryant rm 11D27 CP3..... 557-1572
Assistant Commissioner for External Affairs Michael K. Kirk rm 11C04 CP3..... 557-3065
Secretary Carla Bowman rm 11C04 CP3..... 557-3065

OFFICE OF THE SOLICITOR

Solicitor Joseph F. Nakamura rm 12C14-16 CG2..... 557-4035
Secretary Mary Jo Green rm 12C08 CG2..... 557-4035
Deputy Solicitor Jere W. Sears rm 12C02 CG2..... 557-4035
Secretary Olga M. Suarez rm 12C08 CG2..... 557-4035
Receptionist Karla Fischer rm 12C08 CG2..... 557-4035
Paralegal Specialist Kathleen Clopper rm 12C12 CG2..... 557-4035
Associate and Assistant Solicitors:
John W. Dewhirst rm 12D02 CG2..... 557-4035
Robert D. Edmonds rm 12C04 CG2..... 557-4035
Thomas E. Lynch rm 12B18 CG2..... 557-4035
Thomas P. Pavelko rm 12C06 CG2..... 557-4035
Harris A. Pitlick rm 12D04 CG2..... 557-4035
John F. Pitrelli rm 12C10 CG2..... 557-4035
Fred W. Sherling rm 12B14 CG2..... 557-4035
Henry W. Tarring rm 12B16 CG2..... 557-4035
Secretaries:
Shirley Brown rm 12D01/12C11 CG2..... 557-4035
Susan D. Hughes rm 12C05 CG2..... 557-4035
Theresa Boggs rm 12C08 CG2..... 557-4035
Melissa Carter rm 12C08 CG2..... 557-4035
Law Library Pamela Bennett rm 12D08 CG2..... 557-4052
Tsa Henderson rm 12D08 CG2..... 557-4052
Government Employee Inventions O. A. Neumann rm 12B12 CG2..... 557-4035

OFFICE OF ENROLLMENT AND DISCIPLINE

Director William Feldman rm 11E14 CP4..... 557-2012
Secretary Donna P. Campel rm 11D37 CP4..... 557-2012
Harry I. Moatz rm 11E12 CP4..... 557-3337
Marian E. Ford rm 11E14 CP4..... 557-1728
Patricia M. Jordan rm 11E14 CP4..... 557-1728

3/14/84

BOARD OF PATENT INTERFERENCES
Members of the Board:
Chairman Ian A. Calvert rm 10B14 CG2..... 557-4000
Secretary Wanda Banks rm 10C01 CG2.....557-4009
James R. Boler rm 10C12 CG2..... 557-4018
Donald D. Forrer rm 10C16 CG2..... 557-4020
Ronald H. Smith rm 10C08 CG2..... 557-4016
Norman G. Torchin rm 10B14 CG2..... 557-4013
Stanley M. Urynowicz Jr. rm 10C14 CG2..... 557-4019
Lorraine A. Weinberger rm 10C10 CG2..... 557-4017
Interlocutory:
Michael Sofocleous rm 10C06 CG2..... 557-4007
Robert J. Webster rm 10C04 CG2..... 557-4007
Service Branch and Record Information Center rm 10C01 CG2..... 557-4007
Clerk of Board Charles R. Houpe rm 10C01 A-CG2..... 557-4007
Deputy Clerk of Board Nannie B. Henry rm 10C03 CG2..... 557-4007

BOARD OF APPEALS
Examiners-in-Chief:
Chairman Fred C. Mattern Jr. rm 10D10 CG2
Secretary Carolyn E. Lynch rm 10D10 CG2..... 557-4072
Rodney D. Bennett rm 10D04 CG2..... 557-4064
Richard G. Besha rm 10A07 CG2..... 557-4066
Gerald H. Bjorge rm 12B04 CG2..... 557-4025
Samuel H. Blech rm 10A02 CG2..... 557-4070
Jerry D. Craig rm 10C20 CG2..... 557-4058
Melvin Goldstein rm 10D08 CG2..... 557-4057
John Goolkasian rm 10A14 CG2..... 557-4066
Paul J. Henon rm 10C22 CG2..... 557-4058
Murray Katz rm 10A20 CG2..... 557-4062
Michael J. Keenan rm 10B04 CG2..... 557-4065
William F. Lindquist rm 10C18 CG2..... 557-4021
Charles N. Lovell rm 10B05 CG2..... 557-4070
Fred E. McKelvey rm 12B10 CG2..... 557-4025
Evelyn K. Merker rm 10D06 CG2..... 557-4079
A. Donald Messenheimer rm 10D02 CG2..... 557-4061
Gordon K. Milestone rm 10A10 CG2..... 557-4062
Mark E. Nusbaum rm 10A04 CG2..... 557-4059
Lutrelle F. Parker rm 10A08 CG2..... 557-4068
Irving R. Pellman rm 10A16 CG2..... 557-4068
Verlin R. Pendegrass rm 10B02 CG2..... 557-4065
Eugene C. Rzucidlo rm 10B06 CG2..... 557-4060
James A. Seidleck rm 10A18 CG2..... 557-4060
Saul I. Serota rm 12B02 CG2..... 557-4023
Richard A. Spencer Jr. rm 10A12 CG2..... 557-4067
Robert F. Stahl rm 10A06 CG2..... 557-4067
Authur J. Steiner rm 10B03 CG2..... 557-4094
Brereton Sturtevant rm 10A22 CG2..... 557-4089
Sherman D. Winters rm 12D06 CG2..... 557-4059
Clerk of Board T. Maxine Duvall rm 10C09 CG2..... 557-4101
Deputy Clerk Eunice Price rm 10C09 CG2..... 557-4101
Docket Section Shirley Jefferys rm 10C09 CG2..... 557-4101
Docket Clerk Groups 120-140-160 Donald Harris Sr. rm 10C09 CG2..... 557-4108
Docket Clerk Groups 110-210-220-230-240-250-290 Mary E. Thomas rm 10C09 CG2. 557-4109
Docket Clerk Groups 170-310-320-330-340-350 Mabel Neal rm 10C09 CG2.... 557-4106

3/14/84

OFFICE OF QUALITY REVIEW
Director James D. Trammell rm 10A11 CP2..... 557-3564
Secretary Vicky Enos rm 10A11 CP2..... 557-3564

OFFICE OF ASSISTANT COMMISSIONER FOR PATENTS
Assistant Commissioner Rene D. Tegtmeyer rm 11A13 CP3..... 557-3811
Secretary Marjorie D. Benjamin rm 11A13 CP3..... 557-3811
Special Assistant R. Franklin Burnett rm 11A13 CP3..... 557-3054
Secretary Sherry D. Brinkley rm 11A13 CP3..... 557-3054
Paralegal Specialist Nancy A. Gillen rm 11A13 CP3..... 557-3054
Manual of Patent Examining Procedure Editor Louis O. Maassel rm 11A13 CP3..... 557-3070
Special Program Examination Unit rm 10D04 CP3..... 557-8384
Deputy Assistant Commissioner James E. Denny rm 11A09 CP3..... 557-4279
Secretary Darla Karn rm 11A09 CP3..... 557-4279
Patent Programs Administrator Edward E. Kubasiewicz rm 11A09 CP3..... 557-4279
Petitions Examiner David L. Stewart rm 9D01 CP3..... 557-2621
Petitions Information rm 9D01 CP3..... 557-2621

Office of Patent Program and Documentation Control
Director Richard H. Rouck rm 9D19 CP3..... 557-3955
Secretary Marva Lawhorn rm 11A09 CP3..... 557-3955
Program Analyst Carolyn Arrington rm 10B16 CP3..... 557-5143
Patent Training Joan Earyes rm 1240A CP6..... 557-2086
Paper Correlating Office JoAnn Harris rm 10D10 CP3..... 557-5140
Margaret Seward rm 10D10 CP3..... 557-5139
Palm Coordinator Rolf G. Hille rm 10B20 CP3..... 557-5146
Automation Affairs Jay P. Lucas rm 10B15 CP3..... 557-5142

PATENT DOCUMENTATION ORGANIZATIONS
Administrator for Documentation William S. Lawson rm 313 CM2..... 557-0400
Secretary Lynn W. Smith rm 313 CM2..... 557-0400
Data Base Administrator Philip K. Olson rm 313 CM2..... 557-0400
Patent Depository Library Program Manager Carole A. Phillips rm 313 CM2... 557-0400
Office of Documentation Planning & Support Director James W. Shores rm 313 CM2..... 557-0400
Secretary Ruth L. Gaskins rm 313 CM2..... 557-0400
Documentation Practice & Systems Division (Acting) Director George A. Chadwick III rm 313 CM2..... 557-0400
Practices and System Analysis Staff rm 313 CM2..... 557-0400
Data Managment Branch (Vacant) rm 306 CM2..... 557-5907
Information Resources Branch Geraldine Dozier rm 308 CM2..... 557-5103
Patent Index rm 314 CM2..... 557-3951
Reclassification/File Integrity Branch Chiquita Clark (Acting) rm 348 Bldg 159 WNY..... 453-4000
Secretary Cynthia Carter rm 348 Bldg 159 WNY..... 453-4000
Technical Operations Joseph N. Green rm 300 CM2..... 557-5108
Preprocessing Section Cornell Boney rm 1G07 CS4..... 557-0173
Data Preparation and Control Section Carolyn Bush rm 348 Bldg 159 WNY..... 453-4019
Final Processing Section..... 453-4005
Unit I Janice Burse rm 348 Bldg 159 WNY..... 453-4013
Unit II Jerry Redmond rm 348 Bldg 159 WNY..... 453-4014
Unit III & IV Jeanette Gatling rm 348 Bldg 159 WNY..... 453-4011
Misc Transfer PO 14 Processing Cornell Boney rm 1G07 CS4..... 557-0173

3/14/84

Reclassification Support Unit Head Delora Dillard rm 348 Bldg 159 WNY. 453-4018
Foreign Patent Reclassification Section Patricia Walker rm 348 Bldg 159 WNY..... 453-4010
File Integrity Processing
Unit I Chiquita Clark rm 348 Bldg 159 WNY..... 453-4009
Unit II Virginia Fletcher rm 348 Bldg 159 WNY..... 453-4008
Unit III Naomi Sorrell rm 348 Bldg 159 WNY..... 453-4012
New Document Processing Branch Marcia A. Smith rm 344 CM2..... 557-5110
Preprocessing Section Inez Roberts rm 338 CM2..... 557-5116
Final Processing Section Duane K. Davis rm 340 CM2..... 557-5114
Special Processing Section Jewell Christian rm 344 CM2..... 557-5112
Weekly Issue Section Natalie Jackson rm 300 CM2..... 557-5117

Chemical Classification Group Director Delmar Metheny rm 902 CM2..... 557-3814
Secretary Sandra Crawford rm 902 CM2..... 557-3814
Unit I Donald J. Hoffman rm 933 CM2..... 557-3821
Unit II Leslie Wolf rm 928 CM2..... 557-3791
Unit III Daniel M. Pritchett rm 905 CM2..... 557-1677

Electrical Classification Group Director Eugene E. Young rm 1D07 CS4..... 557-0117
Secretary Gloria J. Henderson rm 1D06 CS4..... 557-0117
Unit I Gary G. Solyst rm 1E02 CS4..... 557-0157
Unit II Earl C. Folsom rm 1D11 CS4..... 557-0168
Unit III Kendall J. Dood rm 1F01 CS4..... 557-0160

Mechanical Classification Group Director Edward J. Earls rm 1D05 CS4..... 557-0107
Secretary Deborah Brasel rm 1D07 CS4..... 557-0107
Unit I Donald P. Rooney rm 1D03 CS4..... 557-0182
Unit II Robert Craig rm 1F05 CS4..... 557-0140
Unit III John W. Will rm 1D01 CS4..... 557-0101

Office of International Patent Classification Director Thomas Lomont rm 108 CS4.. 557-0667
Secretary Robin Ryan rm 108 CS4..... 557-0667

Scientific Library Program Manager Henry Rosicky 2nd Floor CP34 557-2955
Secretary Nadine Tabor 2nd Floor CP34..... 557-2955
Staff Assistant Joan Mavity 2nd Floor CP 34..... 557-2957
Scientific Literature Branch Peter Sofchak 2nd Floor CP34..... 557-2955
Collections Development Marguerite Terbush 2nd Floor CP34..... 557-3092
Technical Services Section Jesse Gibson rm 2C02 CP3..... 557-2961
User Services Section Dora Weinstein 2nd Floor CP34..... 557-2957
Interlibrary Loans 2nd Floor CP34..... 557-2957
Reference Service 2nd Floor CP34..... 557-2957
Circulation 2nd Floor CP34..... 557-2957
Computer Searching 2nd Floor CP34..... 557-2957
Translations Branch Peter Sofchak 1st Floor CP6..... 557-3193
Receptionist Carol Releford 1st Floor CP6..... 557-3193
Foreign Patents Branch Barry Balthrop 2nd Floor CP34..... 557-2970
Reference Service Bernard Hamilton 2nd Floor CP34..... 557-3545
Bindery Unit Ronald Knickerbocker FERN..... 557-1530
Copy Services Section Lendora Robertson 2nd Floor CP34..... 557-3545
Patent Information Services Section Mae Moore 2nd Floor CP34..... 557-2280
Microfilm Inventory Control System Beverly Brooks 2nd Floor CP34..... 557-2280

3/14/84

CHEMICAL EXAMINING GROUPS

110 General Metallurgical, Inorganic, Petroleum and Electrical Chemistry and Engineering rm 10C17 CP3..... 557-3606
Director Dennis E. Talbert rm 10C17 CP3..... 557-1360
Secretary Constance L. Morgan rm 10C17 CP3..... 557-1360
Clerk Phyllis Sisk rm 10C17 CP3..... 557-3606
111 Metallurgy Metal Treatment Stock Material and Lubricant Compositions L. Dewayne Rutledge rm 10C17 CP3..... 557-3578
112 Electrochemistry Winston A. Douglas rm 10C17 CP3..... 557-2517
113 Inorganic Chemistry; Refractories Plastics Luminescent & Barrier Layer Compositions Edward S. Meros rm 10C17 CP3..... 557-3597
114 Semiconductor Fabrication and Batteries Brian E. Hearn rm 10C17 CP3..... 557-3592
116 Carbon Compounds Mineral Oils and Fuels Delbert E. Gantz rm 10C17 CP3..... 557-9181

120 General Organic Chemistry rm 9C13 CP2..... 557-3920
Director Charles E. Van Horn rm 9A09 CP2..... 557-3637
Secretary Linda M. Feducia rm 9A09 CP2..... 557-3637
Clerk Kathryn Perry rm 9C13 CP2..... 557-3920
Chemical Library rm 8C22 CP2.....
121 Heterocyclic Compounds and Miscellaneous Esters Henry R. Jiles rm 9C13 CP2.. 557-3920
122 Heterocyclic Compounds and Mercaptans Donald G. Daus rm 9C13 CP2..... 557-3920
123 Bioaffecting Compounds & Compositions Donald B. Moyer rm 9C13 CP2..... 557-3920
124 Amide Amine Azo Halo Hydrocarbons Heavy Metal and Silicon Compounds Charles F. Warren rm 9C13 CP2..... 557-3920
125 Medicines Poisons Cosmetics Albert T. Meyers rm 9C13 CP2..... 557-3920
126 Herbicides and Organic Acids Esters Oxy and Oxo Compounds Natalie Trousof rm 9C13 CP2..... 557-3920

140 High Polymer Chemistry, Plastics and Molding rm 7C17 CP3..... 557-2421
Director James O. Thomas, Jr. rm 7C17 CP3..... 557-3800
Secretary Sharon C. Graham rm 7C17 CP3..... 557-3800
Clerk Ellen Scott rm 7C17 CP3..... 557-2421
142 Mixed High Polymers, Aqueous Systems, Radiation John C. Bleutge rm 7C17 CP3.. 557-3745
143 Natural Resins, Urethanes, Condensation, Type Proteins John Kight III rm 7C17 CP3..... 557-3804
144 Addition Type Carbohydrates Joseph L. Schofer rm 7C17 CP3..... 557-3807
147 General Molding and Treating Donald E. Czaja rm 7C17 CP3..... 557-2473

160 Coating, Laminating and Photography rm 6C17 CP3..... 557-3694
Director Samih N. Zaharna rm 6C17 CP3..... 557-3547
Secretary Anne A. Willey rm 6C17 CP3..... 557-3547
Clerk Vera Thomas rm 6C17 CP3..... 557-3694
161 Adhesive Bonding, Misc Chemical Manufacturing, Coating Metal or Coating Edward Kimlin rm 6C17 CP3..... 557-3697
162 Coating Processes Norman Morgenstern rm 6C17 CP3..... 557-1952
164 Miscellaneous Articles and Stock Material George F. Lesmes rm 6C17 CP3..... 557-1897
166 Photography Processes Compositions & Articles & Special Utility Compositions John Kittle rm 6C17 CP3..... 557-1960

3/14/84

170 Specialized Chemical Industries and Chemical Engineering rm 5C17 CP3..... 557-3677
Director Robert F. White rm 5C17 CP3..... 557-3680
Secretary Lynn M. Herbert rm 5C17 CP3..... 557-3680
Clerk Ruth W. Lyles rm 5C17 CP3..... 557-3677
171 Packaging, Manufacturing and Sheet Material Associating Robert L. Spruill rm 5C17 CP3..... 557-3677
172 Food, Technology and Analytical Chemistry Raymond N. Jones rm 5C17 CP3..... 557-3677
173 Specialized Chemical Arts S. Leon Bashore rm 5C17 CP3..... 557-3677
174 Microbiology and Genetic Engineering Thomas Wiseman rm 5C17 CP3..... 557-3677
176 Phase Separation Involving Liquids Sorption or Diffusion Charles N. Hart rm 5C17 CP3..... 557-3677
177 Residual Phase Separation, Phase Change Chemical Apparatus Misc Indust Process Frank W. Lutter rm 5C17 CP3..... 557-3677

ELECTRICAL EXAMINING GROUPS

210 Industrial Electronics Physics and Related Elements rm 9C17 CP4..... 557-2887
Director Samuel W. Engle rm 9D19 CP4..... 557-2488
Secretary Teresa E. Dugan rm 9D19 CP4..... 557-2488
Clerk Charles B. Blake rm 9C17 CP4..... 557-2887
211 Acoustics Photography Motion Pictures Photocopying Optics Music Eletrostatic Capacitors L. Thomas Hix rm 9C17 CP4..... 557-2903
212 Electrical Generator Motor Structure Power Supply and Regulations Systems Battery and Capacitor Charging Automatic Switches J. D. Miller rm 9C17 CP4... 557-5050
213 Electric Furnances Heating Welding Resistors Bruce A. Reynolds rm 9C17 CP4... 557-5070
214 Telephony Telegraphy Registers Code Converters Single Generator Systems (Vacant) rm 9C17 CP4..... 557-2887
215 Photocopying, Conductors and Inductors Insulators Printed Circuits, Panel Board Joseph V. Truhe rm 9C17 CP4..... 557-5070
216 Weighing Scales, Electrical Transmission and Interconnection Circuit Makers and Breakers Recorders and Electrical Protection Systems Elliott A. Goldberg rm 9C17 CP4..... 557-2887
217 Electric Motor Systems Prime Mover Dynamo Plants Elevators Music Electric Horology Computers and Data Processing Systems Gene Z. Rubinson rm 9C17 CP4.. 557-5080

220/290 Special Laws Administration and Designs rm 10D19 CP4..... 557-2478
Director Kenneth L. Cage rm 10D19 CP4..... 557-2877
Secretary Diana J. Langer rm 10D19 CP4..... 557-2877
Clerk Cecelia J. Krider rm 10C17 CP4..... 557-2478
Licensing and Review Edward M. Drazdowsky rm 10C24 CP4..... 557-2167
221 Mechanical Richard E. Schafer rm 10C17 CP4..... 557-2894
222 Electrical M. R. Wilbur rm10C17 CP4..... 557-2897
223 Chemical B. R. Padgett rm10C17 CP4..... 557-2037
290 Designs rm3C17 CP3..... 557-2476
Clerical and Services Section Stella Reid rm 3C17 CP3..... 557-2476
291 Industrial Arts Wallace R. Burke rm 3B18 CP3..... 557-2172
292 Household Personal and Fine Arts (Vacant) rm 3B36 CP3..... 557-2265

3/14/84

230 Information Transmission Processing Storage and Retrieval..... 557-2878
Director Earl Levy rm 11C17 CP4..... 557-5088
Secretary Laura Dorsey rm 11C17 CP4..... 557-5088
Clerk Katherine A. Nelson rm 11C17 CP4..... 557-2878
231 Television, Facsimile and Image Analysis John C. Martin rm 11C17 CP4..... 557-2801
232 General and Special Purpose Data Processing System (Measuring Testing & Monitoring) James D. Thomas rm 11C17 CP4..... 557-2881
233 Radio, Pulse Communications Multiplexing and Computer System Robert L. Griffin rm 11C17 CP4..... 557-2801
234 Miscellaneous Signaling and Speech Synthesis John W. Caldwell rm 11C17 CP4... 557-2863
235 Information Storage and Retrieval System Bernard Konick rm 11C17 CP4..... 557-2867
236 General and Special Purpose Data Processing System Including Control Error Detection and Miscellaneous Applications Jerry Smith rm 11A01 CP4..... 557-2871
237 General & Special Purpose Data Processing System including Vehicle Control & Navigation G. D. Shaw rm 11C17 CP4..... 557-2881

240 Receptacles, Cleaning, Winding and Measuring rm 7C17 CP4..... 557-2900
Director Gerald M. Forlenza rm 7D19 CP4..... 557-2906
Secretary Deborah P. Leeper rm 7D19 CP4..... 557-2906
Clerk Doretha A. Bailey rm 7C17 CP4..... 557-2900
241 Receptacles, Packages William I. Price rm 7C17 CP4..... 557-3214
242 Fluid Treating, Presses, Foods Treating, General Cleaning, Agitating, Centrifuges Harvey C. Hornsby rm 7C17 CP4..... 557-3451
243 Plumbing Fixtures, Conduits, Cleaning by Fluid Fluent Material Handling, Electrical Switches, Impellers, Rotary Fluid Motors or Pumps Stephen Marcus rm 7C17 CP4..... 557-7617
244 Measuring and Testing Gerald Goldberg rm 7C17 CP4..... 557-2913
245 Textile Machinery, Flexible Shaft Couplings, Pushing and Pulling, Winding and Reeling, Web Feeding, Bearings Stuart S. Levy rm 7C17 CP4..... 557-3451
246 Thermal and Fluid Level Measuring and Testing, Geometric Instruments, Indicators, Image Projection, Sound Recordings, Joint Packing Charles Frankfort rm 7C17 CP4..... 557-7617

250 Electronic Systems and Devices rm 8C17 CP4..... 557-2671
Director Samuel S. Matthews rm 8C17 CP4..... 557-2671
Secretary Maclovia E. Sanchez rm 8D19 CP4..... 557-2671
Clerk JoAnn Davis rm 8C17 CP4..... 557-2671
251 Electric Lamp and Discharge Devices and Circuits Fiber Optic Devices and Systems David K. Moore rm 8C17 CP4..... 557-2671
252 Electrical Measuring and Testing Amplifiers Michael J. Lynch rm 8C17 CP4..... 557-2671
253 Semiconductor Devices Andrew J. James rm 8C17 CP4..... 557-2671
254 Oscillators, Modulators, Demodulators, Antennas, Miscellanous Vacuum Tube and Semicondutor Circuits and Systems Stanley D. Miller rm 8C17 CP4..... 557-2671
255 Lasers, Optical Measuring and Testing Systems, Photocell Circuits and Systems William L. Sikes rm 8C17 CP4..... 557-2671
256 Transmission Lines, Taners, Radiant Energy Systems Alfred E. Smith rm 8C17 CP4..... 557-2671
257 Optical Systems and Elements, Vision Testing and Correction John K. Corbin rm 8C17 CP4..... 557-2671

3/14/84

MECHANICAL EXAMINING GROUPS

310 Handing and Transporting Media rm 3C17 CP3..... 557-3211
Director Bobby R. Gray rm 6C17 CP4..... 557-2921
Secretary Betty Rasmussen rm 6C17 CP4..... 557-2921
Clerk Margaret Stevens rm 6C17 CP4..... 557-3211
311 Dispensing Vending Coin Handling and Elevators Joseph J. Rolla rm 6C17 CP4... 557-3311
312 Assorting Vehicles and Railways Equipment Robert B. Reeves rm 6C17 CP4..... 557-3204
313 Fire Extinguishing, Fluid Spraying, Handling Implements John J. Love rm 6C17 CP4..... 557-3305
314 Brakes, Spring and Sheet Feeding Bruce H. Stoner rm 6C17 CP4..... 557-3303
315 Aeronautics, Boats, Ships, and Marine Equipment T.M. Blix rm 6C17 CP4..... 557-3222
316 Land and Motor Vehicles Joseph F. Peters Jr. rm 6C17 CP4..... 557-3205
317 Material or Article Handling, Power Driven Conveyors Robert J. Spar rm 6C17 CP4..... 557-3301

320 Material Shaping Article Manufacturing Tools rm 5D17 CP4..... 557-3320
Director Stephen G. Kunin rm 5D19 CP4..... 557-1890
Secretary Iyone L. Miles rm 5D19 CP4..... 557-3371
Clerk Vivian C. Harris rm 5D21 CP4..... 557-3371
321 Metal Deforming, Turning and Woodworking Francis S. Husar rm 5B02 CP4..... 557-3321
322 Electrical Connectors, Gear Cutting, Milling and Chucks Gil Weidenfield rm 5E02 CP4..... 557-3317
323 Abrading, Workholders and Tools Fred R. Schmidt rm 5D01 CP4..... 557-3357
324 Cutting, Cutlery Tools and Book Making Edward R. Kazenske rm 5D13 CP4..... 557-3357
325 Metal Founding, Fishing and Vermin Trapping and Welding Nicholas P. Godici rm 5E16 CP4..... 557-3317
326 Metal Working, Comminution and Wire Working Howard N. Goldberg rm 5B30 CP4... 557-3125

330 Amusement, Husbandry Personal Treatment Information rm 4C17 CP4..... 557-3330
Director Richard E. Aegerter rm 4D17 CP4..... 557-3330
Secretary Theresa R. Godfrey rm 4D19 CP4..... 557-3330
Clerk Clara S. Desmukes rm 4C17 CP4..... 557-3131
331 Plants, Plant Culture, Toys, Earth Working Robert A. Hafer rm 4A13 CP4..... 557-3131
332 Tobacco, Exercising Toiletry Richard J. Apley rm 4A07 CP4..... 557-3137
333 Dentistry, Animal Husbandry, Harvesting and Sign Exhibiting Louis G. Mancene rm 4D01 CP4..... 557-3131
334 Amusement Games Education Richard C. Pinkham rm 4B02 CP4..... 557-3137
335 Surgery Diagnostic Kyle L. Howell rm 4E02 CP4..... 557-3144
336 Surgery Instruments, Medicators and Receptors C. Fred Rosenbaum rm 4B22 CP4.. 557-3144
337 Printing, Typewriting and Excavating Edgar S. Burr rm 4E16 CP4..... 557-3501

340 Heat Power and Fluid Engineering rm 3C17 CP4..... 557-3340
Director Donley J. Stocking rm 3C17 CP4..... 557-3340
Secretary Sherry K. Bratlie rm 3C17 CP4..... 557-3340
Clerk Mary M. Reed rm 3C17 CP4..... 557-3128
341 Power Plants, Fluid Motors Robert E. Garrett rm 3C17 CP4..... 557-0900
342 Internal Combustion Engines Charles J. Myhre rm 3C17 CP4..... 557-0900
343 Combustion Power, Plant Reaction, Motors, Pumps, Rotary Expansible Chamber Devices and Plural Expansible Chamber Type Motors Carlton R. Croyle rm 3C17 CP4..... 557-3464
344 Heat Generation, Drying, Vaporizing, Ventilation, Refrigeration Albert J. Makay rm 3C17 CP4..... 557-0900
345 Stoves and Combustion Samuel Scott rm 3C17 CP4..... 557-3468
346 Heat Exchangers, Rotary Engines and Power Plant William R. Cline rm 3C17 CP4..... 557-5721
347 Fluid Handling and Valves Martin P. Schwadron rm 3C17 CP4..... 557-3401

3/14/84

350 General Constructions, Petroleum and Mining Engineering, Gearing, Joints and Fasteners, Textiles rm 4C17 CP3..... 557-3000
Director Al Lawrence Smith rm 4C17 CP3..... 557-3000
Secretary Carol M. Sinclair rm 4C17 CP3..... 557-3000
Clerk Joyce G. Hill rm 4C17 CP3..... 557-3002
351 Joints and Connections, Pipe Couplings, Fences, Earth & Hydraulic Engineering Cornelius J. Husar rm 4C17 CP3..... 557-1300
352 Gearing, Machine Elements, Power Transmissions Leslie A. Braun rm 4C17 CP3... 557-1300
353 Textile and Leather Manufacture, Apparel, Textiles Werner H. Schroeder rm 4C17 CP3..... 557-3411
354 Building Structures and Components Price C. Faw, Jr. rm 4C17 CP3..... 557-0570
355 Supports, Racks, Fire Escapes, Scaffolds, Flexible Partitions Ramon S. Britts rm 4C17 CP3..... 557-0540
356 Petroleum, Mining and Highway Engineering James A. Leppink rm 4C17 CP3..... 557-0540
357 Tables, Chairs, Cabinets, Windows, Doors, Buckles, Buttons, Clasps William E. Lyddane rm 4C17 CP3..... 557-0540
358 Fasteners, Locks, Closure Fasteners, Beds Gary L. Smith rm 4C17 CP3..... 557-1300

OFFICE OF THE ASSISTANT COMMISSIONER FOR EXTERNAL AFFAIRS

Assistant Commissioner Michael K. Kirk rm 11C04 CP3..... 557-3065
Secretary Carla Bowman rm 11C04 CP3..... 557-3065
Congressional Liaison Anita Huffman rm 11C04 CP3..... 557-1310
Office of Public Affairs
Director William O. Craig rm 1D01 CP3..... 557-3428
Public Information Specialist Oscar G. Mastin rm 1D01 CP3..... 557-3428
Office of Legislation and International Affairs
Director (Vacant) rm 11C04 CP3..... 557-3065

OFFICE OF THE ASSISTANT COMMISSIONER FOR TRADEMARKS

Assistant Commissioner Margaret M. Laurence rm 11C17 CP3..... 557-3061
Secretary Sheila G. Pellman rm 11C17 CP3..... 557-3061
Executive Assistant Paula T. Hairston rm 11C17 CP3..... 557-3916
Staff Assistant Ellen J. Seeherman rm 11C17 CP3..... 557-7467
Budget Analyst Maude Williams rm 11C17 CP3..... 557-2222
Paralegal Specialist Keturah E. Patrick rm 11C23 CP3..... 557-2221

3/14/84

TRADEMARK TRIAL AND APPEAL BOARD
Members of the Board:
Chairman Daniel L. Skoler rm 1008 CS5..... 557-3551
David B. Allen 1008 CS5..... 557-3551
Robert F. Cissel 1008 CS5..... 557-3551
Louise E. Fruge 1008 CS5..... 557-3551
Gary D. Krugman 1008 CS5..... 557-3551
Janet E. Rice 1008 CS5..... 557-3551
J. David Sams 1008 CS5..... 557-3551
Rany L. Simms 1008 CS5..... 557-3551
Attorney-Examiners:
Marc A. Bergsman 1008 CS5..... 557-3551
Beth A. Chapman 1008 CS5..... 557-3551
G. Douglas Hohein 1008 CS5..... 557-3551
T. Jeffrey Quinn 1008 CS5..... 557-3551
Paralegal Specialist Gladys R. Springer 1008 CS5..... 557-3551
Clerk of the Board Evelyn R. Lopez 1008 CS5..... 557-3551
Deputy Clerk Erma S. Brown 1008 CS5..... 557-3551

TRADEMARK EXAMINING OPERATION
Director Mark M. Newman rm 3C06 CP2..... 557-3268
Secretary Marlyn S. Holt rm 3C06 CP2..... 557-3268
Deputy Director Patricia M. Davis rm 3C06 CP2..... 557-3268
Secretary Betty B. Andrews rm 3C06 CP2..... 557-3268
Procedure & Special Projects Attorney Carlisle Walters rm 3C06 CP2... 557-3268
Petitions & Classification Attorney Michael J. Hynak rm 3C06 CP2..... 557-3883
Trademark Law Offices:
Managing Attorney Law Office I Charles J. Condro rm 2C28 CP2..... 557-3273
Lead Attorney Joseph H. Webb
Secretary Arnette McGill
Managing Attorney Law Office II John C. Demos rm 2C24 CP2..... 557-3277
Lead Attorney (Vacant)
Secretary Doshie Day
Managing Attorney Law Office III Myra Kurzbard rm 2C22 CP2..... 557-9560
Lead Attorney (Vacant)
Secretary Linda Bates
Managing Attorney Law Office IV Robert Anderson rm 3C13 CP2..... 557-9550
Lead Attorney David M. Soroka
Secretary Patsy McDermott
Managing Attorney Law Office V Paul Fahrenkopf rm 2C11 CP2..... 557-5380
Lead Attorney Donald Fingeret
Secretary Ravonne Lee
Managing Attorney Law Office VI Ronald E. Wolfington rm 3C27 CP2..... 557-2937
Lead Attorney Robert M. Feeley
Lead Attorney Christopher Sidoti
Secretary Myrtle L. Robinson
Managing Attorney Law Office VII Peter Harab rm 4C13 CP2..... 557-5237
Lead Attorney David Shallant
Secretary (Vacant)
Managing Attorney Law Office VIII Sidney Moskowitz rm 4C14 CP2..... 557-5242
Lead Attorney Michael E. Bodson
Secretary Nakita Dates
Trademark Services Division Doreane Poteat rm 4D23 CP2..... 557-5249
Classification Team Edward Hayes rm 4C28 CP2..... 557-5249
IKE & Assembly Team Portia Taylor rm 4D29 CP2..... 557-5253
Post-Registration Supervisor Catherine R. Hill rm 4C24 CP2..... 557-1986
Publication & Issue Supervisor Donald Perritt rm 4C23 CP2..... 557-5247
Search Room Supervisor Leon Jackson rm 2C06 CP2..... 557-3281
Affidavit Examiners rm 4C24 CP2..... 557-1988
Renewal Examiners rm 4C24 CP2..... 557-1988

3/14/84

OFFICE OF THE ASSISTANT COMMISSIONER FOR ADMINISTRATION
Assistant Commissioner Theresa A. Brelsford rm 11C34 CP3..... 557-2290
Secretary Debra Ginther rm 11C34 CP3..... 557-2290
Deputy Assistant Commissioner for Administration Wesley H. Gewehr rm 11C34 CP3. 557-3055
Secretary Tresea Robinette rm 11C34 CP3..... 557-3055
Program Analyst Joan S. Griffey rm 11C34 CP3..... 557-2290

Office of General Services
Director John D. Hassett Lobby CP1..... 557-0183
Secretary Peggy Fewell Lobby CP1..... 557-0183
Deputy G. William Richardson Lobby CP1..... 557-0183
Correspondence and Mail Division Alvin Durham rm 1A03 CP2..... 557-2932
Deputy Willie Bowman rm 1A03 CP2..... 557-1689
Outgoing Mail Branch Lawrence Ford rm 1A05 CP2..... 557-3233
Incoming Mail Branch Sallye Rayford rm 1B03 CP2..... 557-3232
Correspondence Branch Mary Allen rm 1A03 CP2..... 557-3226
Facilities Management Division William Frye Lobby CP1..... 557-7870
Records and Property Management Branch Janice Pickering (Acting) Lobby CP6..... 557-0410
Space and Telecommunications Branch Ed Bogdan rm 509 CP1..... 557-0183
Office Services Division Constant G. Fearing Lobby CP1..... 557-1219
Procurement and Travel Branch Janice Carter Lobby CP1..... 557-1218
Support Services Branch Chief Luther Campbell FERN..... 557-3560
Transportation Unit Wallace Hall FERN..... 557-1531
File Information Unit Jacqueline Waldo (Acting) Lobby CP4..... 557-2977

Office of Patent and Trademark Services
Director Frank V. Caesar rm 7D25 CP2..... 557-3236
Secretary Norma L. Watson (Acting) rm 7D25 CP2..... 557-3236
Deputy Michael Baggage rm 7D25 CP2..... 557-3236
Public Service Center C. Griffen rm 2C24 CP3..... 557-5168
Secretary Juanita G. Baker rm 2C24 CP3..... 557-5168
Patent Search Division Bernard Thomas rm 1A03 CP3..... 557-2219
Secretary Barbara Evans rm 1A03 CP3..... 557-2276
Patent Search Room rm 1A03 CP3..... 557-2277
Micrographics Branch (Commerce) Al Mundy..... 377-4968
Micrographics Branch (Crystal) Calvin Pullen..... 557-3079
Program Control Division (Vacant)..... 557-3236
PCT International Services Mary E. Turowski rm 7A04 CP2..... 557-2003
Examination Services Division Peggy Dubose rm 7E30 CP2..... 557-3256
Secretary Rebecca Faulkins rm 7E30 CP2..... 557-3717
Application Branch
Classification and Routing Unit John H. Crawley rm 7C12 CP2..... 557-3855
Administrative Examination Unit M. Montgomery rm 7C10 CP2..... 557-3254
Special Handling Unit Arthur Stephens rm 7C20 CP2..... 557-3831
Data Input, Quality Control, and Assembly Unit Everette Oliver rm 7E28 CP2..... 557-3716
Re-Examination Pre-processing Unit Lucille T. Batchelor rm 7C10 CP2..... 557-1562
Assignment Branch Emmanuel J. DeMesme, rm 7D13 CP2..... 557-3266
Deputy Annie Harrell rm 7D13 CP2..... 557-3266
Secretary Voilet A. McCoy rm 7D13 CP2..... 557-3266
Examination Unit Virginia Clark rm 7D13 CP2..... 557-3247
Digest and Recording Unit Fred L. Bennett rm 7D13 CP2..... 557-3259
Title Unit Patricia A. Alexander rm 2C32 CP4..... 557-3826
Certification Branch Aberdeen Cutler 1627 DOC..... 377-2270
Certification Section Lannie Anderson 1627 DOC..... 377-4849
Input Records and Control Mary Grose 1627 DOC..... 377-3359
Microfiche and Printing Catherine Jones 1627 DOC..... 377-4401
Court and Documentation Gladys Dorsey rm7D19 CP2..... 557-1560

3/14/84

Office of Personnel
Personnel Officer Aaron W. Deitch rm 920 CM2..... 557-2662
Assistant to the Personnel Officer Hugh N. Major rm 926 CM2..... 557-2662
Secretary Mildred Jeter rm 926 CM2..... 557-2662
Classification and Employment Division Thomas H. Neuhauser rm 925 CM2.. 557-1244
Employee Relations Division William H. Crout rm 921 CM2..... 557-3643
Employee Development Division Mary Anna Culkin rm 320 CM2..... 557-3431
Operations Division Beverly Boykin rm 900 CM2..... 557-1208

Office of Publications
Director Stanley J. Bania rm 6C07 CP2..... 557-3794
Secretary Gloria J. Coffey rm 6C07 CP2,..... 557-3794
Deputy Director Richard A. Bawcombe rm 6C07 CP2..... 557-9737
Publishing Division Ruth C. Mason rm 6C17 CP2..... 557-3283
Deputy Manager Sylvia F. Martin 6C17 CP2..... 557-6388
Allowed Files and Assembly Branch Yvette E. Simms rm 6C30 CP2..... 557-6395
Production Control Branch Willard D. Ireland rm 6C14 CP2..... 557-6412
Editorial Branch Marthina Thompson rm 6C06 CP2..... 557-6393
Data Base Query Section Gail Wooten rm 6C06 CP2..... 557-6392
Patent Copy Inspection Section Annie Kelly rm 6C06 CP2..... 557-6390
Drafting Branch Burton P. Shields rm 6C30 CP2..... 557-6404
Statistical Analysis Division Michael Stellabotte rm 6C07 CP2 557-1963
Data Base Inspection Branch Melvinia Gary rm 6C10 CP2..... 557-6416
Certificates of Corrections Branch Delores Cherry rm 7C18 CP2..... 557-0709
Technical Development Division Edwin P. Hall (Acting) rm 6C07 CP2..... 557-1992

Office of Equal Employement Programs
Director R. Jacqueline Dees rm 9D35 CP3..... 557-3030
Secretary Denise Walker rm 9D32 CP3..... 557-3036
Affirmative Actions Division Chief Henry J. Ford rm 9D33 CP3..... 557-3029
Complaints Division Chief Rhoda K. Kluge rm 9D31 CP3..... 557-3029
EEO Specialist (Complaints) Charles E. Deskins rm 9E11 CP3..... 557-3029
EEO Clerk (Complaints) Robin Mitchell rm 9D32 CP3..... 557-3037

Office of Management and Organization
Director Sara E. Bjorge rm 927 CM2..... 557-5825
Secretary (Vacant) rm 927 CM2..... 557-5825
Team Leaders
Alvin Dorsey rm 927 CM2..... 557-5825
Jean E. Buckhout rm 927 CM2..... 557-5825

3/14/84

OFFICE OF THE ASSISTANT COMMISSIONER FOR FINANCE AND PLANNING
Assistant Commissioner Bradford R. Huther rm 11D27 CP3..... 557-1572
Secretary Vickie T. Bryant rm 11D27 CP3..... 557-1572

Office of Budget, Planning and Evaluation
Director James R. Lynch rm 2C32 CP3..... 557-3875
Chief, Execution and Control Division Harold E. Buswell 2C32 CP3..... 557-3875
Chief, Programs and Budget Division Aris G. Harrison rm 2C32 CP3..... 557-3875

Office of Finance
Director Leonard L. Nahme rm 2C32 CP3..... 557-3051
Secretary Virginia R. Clark rm 2C32 CP3..... 557-3051
Deputy Director L. Jack Ell rm 2C32 CP3..... 557-3051
Accounting and Cost Analysis Division Thomas L. Gass rm 2C33 CP3..... 557-2983
Fee Accounting Division Frank S. Lane Sr. rm 1B01 CP2..... 557-3230
Deposit Account Branch Delores H. Riley (Acting) rm 1B01 CP2..... 557-3227

Administrator for Automation
Administrator J. Howard Bryant rm 1108 CP6..... 557-6000
Secretary Terry D'Amico rm 1108 CP6..... 557-6024
Director Automation Program Control Group
A. J. Barsanti rm 1108 CP6..... 557-6009
Secretary Donna Powers rm 1108 CP6..... 557-6010
Director, Plan, Administration and Support
Douglas F. Cunha rm 1108 CP6..... 557-6015
Director, Automation Plan Control
Sanford Zarkin rm 1108 CP6..... 557-6016

Office of Technology, Assessment and Forecast
Director John Terapane rm 1225 CP6..... 557-4114
Secretary Judy Dickie rm 1225 CP6..... 557-4114

Office of Automation Concepts Implementation
Director Don W. LeCrone rm 1142 CP6..... 557-6156
Secretary Audrey Jackson rm 1142 CP6..... 557-6157

Office of Image and Information System
Director L Liddle rm 1142 CP6..... 557-6154
Secretary Debbi Blackwell rm 1142 CP6..... 557-6154

Office of Search Systems
Director Donald P. Stein rm 1108 CP6..... 557-6024

3/14/84

Office of ADP
Director William J. Maykrantz rm 5D05 CP2..... 557-3646
Program Assistant Sylvia A. Huffman rm 5D05 CP2..... 557-3646
Deputy Director John F. Fancovic rm 5D05 CP2..... 557-3646
ADP Systems Technology Division John J. Cochran rm 5D05 CP2..... 557-3646
ADP Trademarks & Administration Division Raymond R. Rahn rm 5D05 CP2... 557-6330
ADP Operations Division Donald Tynes rm 100 North CM1..... 557-1071
Production Control Branch Betty J. Wilson rm 100 North CM1..... 557-1071
Commputer Operations Branch Louise Hill rm 100 North CM1..... 557-1071
ADP Patent Division Raymond R. Rahn (Acting) rm 5D05 CP2..... 557-6332

CM1	Crystal Mall 1, 1911 Jefferson Davis Highway
CM2	Crystal Mall 2, 1921 Jefferson Davis Highway
CP1	Crystal Plaza 1, 2001 Jefferson Davis Highway
CP2	Crystal Plaza 2, 2011 Jefferson Davis Highway
CP3	Crystal Plaza 3, 2021 Jefferson Davis Highway
CP4	Crystal Plaza 4, 2121 Jefferson Davis Highway
CP6	Crystal Plaza 6, 2221 Jefferson Davis Highway
CP34	Crystal Plaza 34, 2021 Jefferson Davis Highway
CS4	Crystal Square 4, 1745 Jefferson Davis Highway
CS5	Crystal Square 5, 1755 Jefferson Davis Highway
CG2	Crystal Gateway 2, 1225 Jefferson Davis Highway
EADS	1232 South Eads Street
FERN	1411 South Fern Street
WNY	Washington Navy Yard, 2 & M. Street, S.E., Bldg. 159

3/14/84

PATENT NOTICES

Certificates of Correction for the Week of Mar. 27, 1984

Re. 31,376	4,382,969	4,402,020	4,416,565
D. 270,975	4,383,064	4,402,313	4,416,958
3,655,201	4,383,095	4,402,868	4,417,289
3,947,363	4,383,119	4,402,986	4,417,474
4,030,657	4,384,990	4,403,307	4,417,478
4,056,586	4,385,223	4,403,995	4,417,714
4,074,352	4,385,912	4,404,399	4,418,151
4,202,681	4,386,096	4,404,897	4,418,201
4,239,993	4,386,454	4,405,531	4,418,704
4,269,867	4,386,609	4,406,687	4,419,185
4,294,849	4,387,092	4,406,789	4,419,417
4,296,930	4,388,738	4,408,821	4,419,558
4,309,421	4,389,046	4,409,139	4,420,097
4,328,682	4,389,714	4,409,300	4,420,274
4,333,734	4,390,020	4,409,431	4,420,342
4,338,873	4,392,595	4,410,500	4,420,616
4,349,794	4,393,785	4,410,639	4,421,984
4,352,134	4,394,461	4,410,845	4,422,550
4,353,448	4,394,841	4,411,935	4,423,584
4,354,665	4,395,456	4,411,979	4,423,719
4,369,493	4,395,915	4,412,928	4,424,155
4,372,224	4,397,001	4,413,105	4,424,412
4,375,519	4,397,022	4,413,130	4,424,492
4,379,876	4,399,284	4,415,364	4,424,894
4,380,620	4,400,317	4,416,295	4,426,409
4,380,966	4,400,374	4,416,482	

Disclaimers

4,071,572.—*Wayne S. Amato,* Syracuse; *Bhaskar Bandyopadhyay,* Camillus; *Robert Herbert Fitch,* Syracuse; and *Bruce Edward Kurtz,* Marcellus, all of N.Y. CYCLIC ETHYLENE OXYHYDROCHLORINATION PROCESS WITH REDUCED HYDROCARBON EMISSIONS. Patent dated Jan. 31, 1978. Disclaimer filed Dec. 8, 1983, by the assignee, *The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency.*

Hereby enters this disclaimer to claim 1 of said patent.

4,279,326.—*Sam W. Meineke* and *Harold Nedell,* Bellaire, Tex. EXHAUST MUFFLER. Patent dated July 21, 1981. Disclaimer filed Jan. 24, 1984, by the assignee, *Meineke Discount Muffler Shops, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,318,026.—*Ralph J. D'Amato,* Lancaster, Pa. METHOD OF MAKING A GRID FOR A CATHODE-RAY TUBE ELECTRON GUN. Patent dated Mar. 2, 1982. Disclaimer filed Jan. 30, 1984, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,351,533.—*John A. Moore,* Peoria, Ill. FACE SEAL WITH ROTATABLE SEAL RING. Patent dated Sept. 28, 1982. Disclaimer filed Feb. 10, 1984, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to all claims of said patent.

4,385,721.—*Robert C. Olsen,* Cupertino and *James R. Jensen,* Fremont, Calif. TRAY CORNER STRUCTURE. Patent dated May 31, 1983. Disclaimer filed Jan. 23, 1984, by the assignee, *Container Corp. of America.*

Hereby enters this disclaimer to the sole claim of said patent.

Dedication

4,162,278.—*Albrecht H. Granzow,* Franklin Township, Somerset County, N.J. FLAME RETARDANT POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING A PENTAERYTHRITYL PHOSPHONATE. Patent dated July 24, 1979. Dedication filed Dec. 14, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates to the Public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 18, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-28-82
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-16-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-05-83
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-26-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-16-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-03-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-01-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-06-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	3-17-82
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-30-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-04-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-21-82
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-04-76
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-20-81
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during February 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,302,213 to 3,307,199, inclusive

Plant Patents ..... Numbers 2,707 to 2,722 inclusive

REEXAMINATIONS

MARCH 27, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,381,046 (180th)
JET AND ROCKET FUEL
Charles A. Cohen, Westfield, and Clifford W. Muessig, Roselle, both of N.J., assignors to Esso Research and Engineering Company
Reexamination Request No. 90/000,115, Nov. 27, 1981.
Reexamination Certificate for Patent No. 3,381,046, issued Apr. 30, 1968, Ser. No. 577,563, Aug. 15, 1966.
Int. Cl.³ C07C *5/03, 5/22*
U.S. Cl. 585—253

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **14** is confirmed.

Claims **1–13, 15** and **16**, having been finally determined to be unpatentable, are cancelled.

14. A process for the production of an improved fuel which may be used in jet and rocket engines which comprises:
(a) hydrogenating an endo dimer of an alicyclic conjugated diene selected from the group consisting of cyclopentadiene, methylcyclopentadiene, and mixtures thereof to at least the dihydrogenated derivatives;
(b) thermally treating said dihydrogenated dimer thereby converting at least a portion of endo isomer to its exo isomer;
(c) and hydrogenating the said exo dihydro isomer to the exo tetrahydro isomer.

B1 3,976,622 (181st)
PROCESS FOR THE PRODUCTION OF POLYISOCYANATES WITH A BIURET STRUCTURE
Kuno Wagner; Johannes Eimer; Joachim Zirner, all of Leverkusen; Rainer Raab, Odenthal, and Dietrich Liebsch, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 441,778, Feb. 12, 1974, Pat. No. 3,903,127.
Reexamination Request No. 90/000,334, Mar. 1, 1983.
Reexamination Certificate for Patent No. 3,976,622, issued Aug. 24, 1976, Ser. No. 578,557, May 19, 1975.
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1973, 2308015
Int. Cl.³ C08G *18/79*
U.S. Cl. 528—67

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

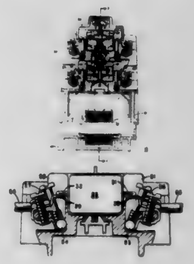
Claims **2** and **3**, having been finally determined to be unpatentable, are cancelled.

Claim **1** is determined to be patentable as amended:

Claims **4** and **5**, dependent on amended claims, are determined to be patentable.

1. In the production of a polyurethane resin wherein a polyisocyanate is reacted with an active hydrogen containing material, the improvement wherein said polyisocyanate has a biuret structure and a maximum viscosity of 50,000 cP at 20° C. and is produced by a process comprising
A. reacting (1) excess quantities of [an organic] *hexamethylene* diisocyanate [having aliphatically bound isocyanate groups] with (2) a biuretizing agent selected from the group consisting of water and organic compounds which convert organic isocyanates into the corresponding biurets at elevated temperatures, the substituents of said organic compounds being inert in the biuretization process and not forming a constituent of the biuret, at a temperature of from 60° to 250° C., and
B. removing excess [unreacted] *hexamethylene* diisocyanate, said process characterized in that the [organic] *hexamethylene* diisocyanate and biuretizing agent are used in proportions corresponding to a molar ratio of diisocyanate to monofunctional biuretizing agent of at least 11:1.

B1 4,184,134 (182nd)
ELECTRICAL SWITCHING APPARATUS HAVING CONVERTIBLE CONTACT STRUCTURE
Hugh Kane, Chagrin Falls, and Bruce A. Oellerich, Mentor, both of Ohio, assignors to GTE Products Corp., Waltham, Mass.
Reexamination Request No. 90/000,323, Feb. 4, 1983.
Reexamination Certificate for Patent No. 4,184,134, issued Jan. 15, 1980, Ser. No. 933,320, Aug. 14, 1978.
Int. Cl.³ H01H *1/58*
U.S. Cl. 335—198



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **2**, having been finally determined to be unpatentable, are cancelled.

Claims **3** and **4** are determined to be patentable as amended:

Claims **5–10**, dependent on amended claims, are determined to be patentable.

New claims **11–19** are added and determined to be patentable.

3. An electrical switching apparatus [in accordance with claim **2**] *having a convertible contact module for selectively providing normally open or normally closed contact operation comprising*
supporting structure;
a contact actuator mounted in said supporting structure and reciprocally movable with respect thereto;
a convertible contact module having first and second contact terminals on the exterior thereof, said convertible contact module being removably mounted in said supporting structure in engagement with said contact actuator in either of two

positions respectively providing normally open and normally closed contact conditions between said contact terminals;

first and second conductive members mounted on said supporting structure, each having a contact region for making contact with a contact terminal of the convertible contact module when the convertible contact module is mounted in the supporting structure in either of said two positions;

holding means for releasably holding the convertible contact module in the supporting structure in either of said two positions with the contact terminals of the convertible contact module making electrical contact with the contact regions of the conductive members; and

first and second connecting means on said first and second conductive members, respectively, for permitting external connections to said conductive members, each connecting means being spaced from the associated contact region and from the holding means whereby when said convertible contact module is released by said holding means, removed from the supporting structure, and changed from one position to the other; the connecting means and external connections made thereto do not interfere with release and movement of the convertible contact module and are not disturbed;

wherein

said contact actuator is reciprocally movable between two spaced positions;

said convertible contact module includes

a housing,

said contact terminals being mounted on said housing at opposite sides thereof and extending outwardly from said housing, said contact terminals passing through the housing to the interior thereof, and

contact elements within said housing engaging said contact actuator when the convertible contact module is mounted in the supporting structure in either first or second respectively inverted positions, the convertible contact module being in a normally open condition with the contact elements providing an open circuit between the contact terminals when mounted in one position and being in a normally closed condition with the contact elements providing a closed circuit between the contact terminals when mounted in the other position; and

said contact actuator moves the contact elements to produce a closed circuit between the contact terminals of a convertible contact module in the normally open condition upon movement from one spaced position to the other spaced position, and moves the contact elements to produce an open circuit between the contact terminals of a convertible contact module in the normally closed condition upon movement from the one spaced position to the other spaced position;

and wherein

the portion of each contact terminal of the convertible contact module exterior of the housing has generally flat planar opposite surfaces, and the corresponding surfaces of the two contact terminals lie generally in the same plane; and

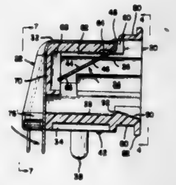
the contact regions of the two conductive members lie generally in the same plane whereby when the convertible contact module is mounted in the supporting structure in either of the two inverted positions, a surface of each contact terminal is in electrical contact with a contact region of a conductive member.

B1 4,210,376 (183rd)

ELECTRICAL CONNECTOR RECEPTACLE

Donald W. K. Hughes, Mechanicsburg, and Ronald W. Myers, Landisburg, both of Pa., assignors to Amp Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 967,441, Dec. 12, 1978.
Reexamination Request No. 90/000,100, Nov. 4, 1981.
Reexamination Certificate for Patent No. 4,210,376, issued Jul. 1, 1980, Ser. No. 14,442, Feb. 23, 1979.
Int. Cl.³ H01R *23/72, 23/10, 23/56*
U.S. Cl. 339—17 LC



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 4, 6, 8,** and **9** are determined to be patentable as amended:

Claims **2, 3, 5, 7,** and **10,** dependent on amended claims, are determined to be patentable.

1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors in side-by-side spaced-apart relationship, each of said conductors comprising a contact spring *portion* extending from one of said internal sidewalls at a location adjacent to said plug-receiving end diagonally into said opening and towards the opposite internal sidewall, and each conductor having a lead portion extending from said plug-receiving end *transversely* through said housing [between] *from* said one internal sidewall [and] *to the exterior of* the adjacent external sidewall and *along said adjacent external sidewall* towards said rearward end, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact spring portions of said conductors, said connector receptacle being characterized in that:

said plug-receiving end has a circumferentially continuous frame portion which surrounds *said* plug-receiving opening,

conductor-receiving aperture means [extending] *extends* through said adjacent *external* sidewall to said one internal sidewall, said conductor-receiving aperture means being spaced from said plug-receiving end and adjacent to said frame portion, said conductor-receiving aperture means communicating with said plug-receiving opening,

said conductors [extending] *extend* through said conductor-receiving aperture means, said contact springs extending into said plug-receiving opening from said conductor-receiving aperture means, *and*

a plurality of side-by-side channels in said adjacent external sidewall [extending] *extend* from said conductor-receiving aperture means to said rearward end, said lead portions of said conductors *also* extending across said adjacent external sidewall and being in said channels, said conductors extending from said adjacent external sidewall across said rearward end and having end portions which extend beyond the other one of said external sidewalls,

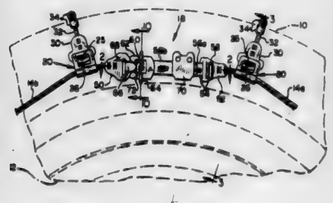
every other one of said conductors extending substantially normally from said adjacent external sidewall across said rearward end, the remaining conductors extending obliquely away from said adjacent external sidewall and across said rearward end whereby said end portions of said conductors are offset from each other.

B1 4,321,956 (184th)

BELT ATTACHMENT FOR TIRE CHAINS

René J. Martinelli, Clackamas, Oreg., assignor to Burns Bros., Portland, Oreg.

Continuation-in-part of Ser. No. 3,273, Jan. 15, 1979, Pat. No. 4,280,545.
Reexamination Request No. 90/000,373, May 2, 1983.
Reexamination Certificate for Patent No. 4,321,956, issued Mar. 30, 1982, Ser. No. 122,195, Feb. 19, 1980.
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—222



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **2** is confirmed.

Claim **1** is determined to be patentable as amended:

1. In a tire chain,

a tire chain lateral member adapted to extend adjacent a lateral side of a vehicle tire,

a first lug secured to a first end of said lateral member,

a second lug secured to a second end of said lateral member, said second lug having a slot,

a belt having a first end secured to said first lug,

and a buckle for location along said lateral side of said vehicle tire, said buckle having an aperture therethrough and a hook on one end thereof turned back at an acute angle [to] *outwardly away from* a laterally outwardly facing side of said buckle, wherein said hook is adapted for reception through the slot in said second lug when said tire chain is secured to said tire,

a loop of said belt between first and second ends thereof extending through the aperture of said buckle from the inwardly facing side of said buckle adjacent the lateral side of said tire, said buckle including a slidable member passing through said loop for holding said loop in releasably secured relation to said buckle when the second end of said belt is drawn up,

wherein the second end of said belt extends from said buckle toward said first end when said tire chain is secured to said tire while being movable laterally outwardly for rotating said buckle and rapidly releasing said hook from said second lug to release said tire chain from said tire.

B1 4,337,117 (185th)

DECAY RESISTANT MATERIAL

Warren J. Bodendorf, Montgomery, and Alphonse R. Presto, Holyoke, both of Mass., assignors to Texon Inc., South Hadley, Mass.

Reexamination Request No. 90/000,294, Nov. 22, 1982.
Reexamination Certificate for Patent No. 4,337,117, issued Jun. 29, 1982, Ser. No. 177,779, Aug. 13, 1980.
Int. Cl.³ D21H *5/22*
U.S. Cl. 162—161

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1-3,** having been finally determined to be unpatentable, are cancelled.

Claim **4** is determined to be patentable as amended:

Claim **5,** dependent on an amended claim, is determined to be patentable.

New claims **6-17** are added and determined to be patentable.

6. A process for manufacturing a wet laid, synthetic fibrous sheet material resistant to decay by microbial organisms, according to papermaking techniques and comprising the steps of:

a. forming a furnish by the steps in the sequence listed and which consist essentially of:

1. providing a dispersion of fibers consisting essentially of cellulosic fibers,

2. adding a cationic polymer in an amount sufficient to retain greater than 99% of the amount of metal quinolinolate added in step 3. below in said sheet material during formation,

3. adding an anionic metal-quinolinolate emulsion providing from 0.375 to 0.9 parts by weight metal quinolinolate based on 100 parts by weight fiber, and

4. adding a polymer colloid in an amount sufficient to prevent coagulation of the binder added in step C by said metal quinolinolate,

b. forming the furnish into a web,

c. saturating the web with a binder, and

d. drying the web to form a fibrous sheet with fibers and quinolinolate uniformly distributed throughout the binder and where the amount of metal quinolinolate retained in the sheet material is greater than 99% of the amount of metal quinolinolate included in the furnish.

9. A process for manufacturing a wet laid, synthetic fibrous sheet material resistant to decay by microbial organisms, according to papermaking techniques and comprising the steps of:

a. forming a furnish by the steps in the sequence listed and which consist essentially of:

1. providing a dispersion of fibers consisting essentially of cellulosic fibers,

2. adding a cationic polymer in an amount sufficient to retain greater than 99% of the amount of metal quinolinolate added in step 3. below in said sheet material during formation,

3. adding an anionic metal-quinolinolate emulsion providing from 0.375 to 0.9 parts by weight metal quinolinolate based on 100 parts by weight fiber, and

4. adding a polymer colloid in an amount between 5 to 12 parts by weight based on 100 parts by weight fiber,

b. forming the furnish into a web,

c. saturating the web with a binder, and

d. drying the web to form a fibrous sheet with fibers and quinolinolate uniformly distributed throughout the binder and where the amount of metal quinolinolate retained in the sheet material is greater than 99% of the amount of metal quinolinolate included in the furnish.

13. A process for manufacturing a wet laid, synthetic fibrous

sheet material resistant to decay by microbial organisms according to papermaking techniques and comprising the steps of:

a. forming furnish by the steps in the sequence listed and which consist essentially of:

1. providing a dispersion of fibers consisting essentially of cellulosic fibers,

2. adding a cationic polyelectrolyte polymer in an amount from 0.4 to 2.0 parts by weight based on 100 parts by weight fiber, the amount of cationic polyelectrolyte polymer being sufficient to retain greater than 99% of the amount of copper-8-quinolinolate in step 3. below in said sheet material during formation,

3. adding an anionic copper-8-quinolinolate emulsion providing from 0.375 to 0.9 parts by weight copper-8-quinolinolate based on 100 parts by weight fiber,

4. adding a polymer colloid in an amount from 5 to 12 parts by weight based on 100 parts by weight fiber,

b. forming the furnish into a web,

c. saturating the web with a binder, and

d. drying the web to form a fibrous sheet with fibers and copper-8-quinolinolate uniformly distributed throughout the binder and where the amount of copper-8-quinolinolate retained in the sheet material is greater than 99% of the copper-8-quinolinolate included in the furnish.

B1 4,344,132 (186th)

SERIAL STORAGE INTERFACE APPARATUS FOR COUPLING A SERIAL STORAGE MECHANISM TO A DATA PROCESSOR INPUT/OUTPUT BUS

Jerry D. Dixon, Boca Raton; Robert H. Farrell, Coral Springs, and Francis R. Koperda, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Reexamination Request No. 90/000,332, Feb. 18, 1983.
Reexamination Certificate for Patent No. 4,344,132, issued Aug. 10, 1982, Ser. No. 103,782, Dec. 14, 1979.
Filed Feb. 18, 1983, Ser. No. 103,782
Int. Cl.³ G06F *3/00, 5/06*
U.S. Cl. 364—200

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 5,** and **10** are determined to be patentable as amended:

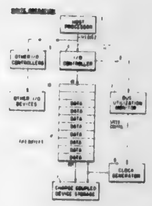
Claims **2–4, 6–9,** and **11–16,** dependent on amended claims, are determined to be patentable.

5. Serial storage interface apparatus for coupling a serial storage mechanism to an input/output (I/O) bus of a data processor and comprising:

address circuitry receiving address information from the input/output bus for performing an address comparison operation for locating the proper starting address storage location in the serial storage mechanism;

a first-in-first-out (FIFO) buffer storage mechanism;

first data transfer circuitry for coupling the FIFO buffer storage mechanism to the data processor I/O bus;



second data transfer circuitry for coupling the FIFO buffer storage mechanism to the serial storage mechanism;

bus utilization monitoring circuitry responsive to the data transfer activity of the first data transfer circuitry for generating signals representing values of I/O bus availability;

and speed control circuitry responsive to the signals representing values of I/O bus availability for causing the serial storage mechanism to operate at different speeds for different values of I/O bus availability [to the serial storage interface apparatus] *during data transfer operations and responsive to a compare signal from the address circuitry for causing the serial storage mechanism to operate at a high speed and maintain the high speed for the entire comparison operation for locating the proper starting address in the serial storage.*

REISSUES

MARCH 27, 1984

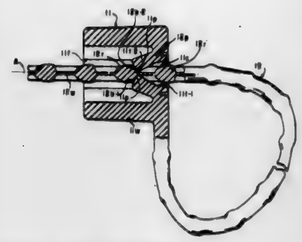
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,541

WEBBED HARNESSING DEVICE

William E. Wood, Hudson, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Original No. 4,137,606, dated Feb. 6, 1979, Ser. No. 801,448, May 27, 1977. Application for reissue Mar. 24, 1980, Ser. No. 132,732
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—16 PB **11 Claims**



9. A harnessing device comprising

a locking head having a channel therethrough,

a webbed strap attached to said head and having rungs joined to one another by centrally depressed, stretchable webbing,

said strap being stretched with the spacing between rungs controlled by the extent of stretching of said strap and the stretching causing a reduction in the thinness of said webbing by a prescribed amount according to the extent to which the strap is stretched, said rungs having a profile controlled by stretching a plurality of segments, including perpendicular segments that are caused to depart from their initial perpendicularity by an amount that is controlled by the extent to which the strap is stretched,

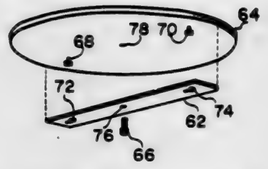
said locking head further including a locking pawl in said head for securing said strap therein.

Re. 31,542

SAFETY ATTACHMENT FOR LAWN MOWERS

Glenn C. Hetrick, 2045 E. Parkway Dr., Altoona, Pa. 16602

Original No. 4,171,608, dated Oct. 23, 1979, Ser. No. 853,045, Nov. 21, 1977. Continuation-in-part of Ser. No. 729,113, Oct. 4, 1976, abandoned. Application for reissue Oct. 10, 1980, Ser. No. 196,086
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—295 **45 Claims**



30. A cutting structure adapted to be mounted for rotary movement with a drive shaft, comprising:

a substantially rigid disc portion carried by the drive shaft; and

a cutter bar portion carried by the disc portion on one face thereof, the cutter bar portion extending in a material cutting mode across the disc portion without the ends of said cutter bar portion extending beyond the peripheral edge of the disc portion.

Re. 31,543

CURABLE COMPOSITIONS

Howard M. Bank, Freeland, and Keith W. Michael, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Original No. 3,971,747, dated Jul. 27, 1976, Ser. No. 567,148, Apr. 11, 1975. Application for reissue Sep. 27, 1982, Ser. No. 423,752
Int. Cl.³ C08K *3/40*; C08G *77/06*
U.S. Cl. 523—435 **33 Claims**

1. A method of preparing compositions containing silicon-oxygen-carbon bonds comprising reacting under substantially anhydrous conditions

A. an organosilicon compound containing at least one ≡SiOH group with

B. a compound containing at least one epoxy group, *no hydroxyl groups and selected from the group consisting of aliphatic, cycloaliphatic and hetrocyclic epoxy reactants, silylated epoxides and polyglycidyl ethers of novalac condensation products,* said reaction being carried out in the presence of a catalytic amount of

C. an aluminum compound selected from the group consisting of

a. $Al(OR)_3$ in which R is either a hydrogen atom or *is* selected from the group consisting of alkyl radicals contaning from 1 to 20 inclusive carbon atoms or aryl and aryl-containing hydrocarbon radicals containing from 6 to 24 inclusive carbon atoms;

(b) $Al(OR)_n(OCR')_{3-n}$ (O)

in which R is as previously defined, R′ is selected from the group consisting of the hydrogen atom, alkyl radicals containing from 1 to 30 inclusive carbon atoms and aryl or aryl-containing radicals of at least 6 carbon atoms, n having a value of from 0 to 2 and condensates of such compounds;

c. aluminum salts of the formula

$$H^+Al^-(OR)_4$$

in which R is as previously defined;

d. aluminosiloxy compounds of the formula

$$\equiv Al.OSiR_3^2$$

in which R^2 is selected from the group consisting of —OR radicals in which R is as defined,

$$-OCR'$$
$$\|$$
$$O$$

radicals in which R′ is as defined, monovalent hydrocarbon or halohydrocarbon radicals containing from 1 to 30 inclusive carbon atoms, and siloxane moieties of the formula

$$-OSiO_{3-n}$$
$$|$$
$$R_n^3$$

in which R^3 is selected from the group consisting of OR radicals in which R is as defined,

$$-OCR'$$
$$\parallel$$
$$O$$

radicals in which R′ is as defined and monovalent hydrocarbon or halohydrocarbon radicals containing from 1 to 30 inclusive carbon atoms, and a has a value of from 1 to 3; the remaining aluminum valences being satisfied by —OAl=, —OR

$$-OCR'$$
$$\parallel$$
$$O$$

or $-OSiR_3^2$ bonding, R, R′ and R^2 being as previously defined; and

e. aluminum chelates formed by reacting compounds (a), (b) or (c) with sequestering agents in which the coordinating atoms are oxygen.

Re. 31,544

CURRENT UNIT FOR ARC WELDING

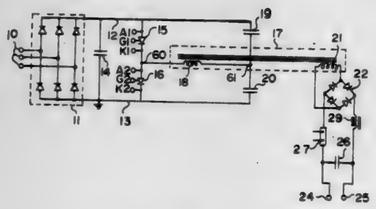
John B. G. Hedberg, Hanover, N.H., assignor to Thermal Dynamics Corporation, West Labanon, N.H.

Original No. 4,159,409, dated Jun. 26, 1979, Ser. No. 891,821, Mar. 30, 1978. Division of Ser. No. 795,501, May 10, 1977, abandoned. Application for reissue Sep. 19, 1980, Ser. No. 188,785

Claims priority, application United Kingdom, May 12, 1976, 19532/76

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—130.21 **10 Claims**



2. An arc welding current supply unit arranged to be fed with alternating current voltage and to provide direct current for welding electrodes, said unit including a controlled frequency converter operating with a half period which is less than the average duration of the current and voltage transients caused by short circuits through droplets of the weld material and adapted to be connected to the welding electrodes through a transformer, a control device for controlling said converter in a manner such that the arc power remains substantially unchanged irrespective of changes in load caused by the welding operation, wherein current pulses are formed in the secondary winding of the transformer by alternatingly charging and discharging at least one capacitor which is connected in series with said primary winding of said transformer and which is discharged therethrough, a direct current voltage intermediate source, and switching means responsive to said control device for connecting said at least one capacitor to said intermediate source for charging and discharging said capacitor; and wherein said control device further comprises means for controlling said switching means to altenatingly charge and discharge said at least one capacitor at a frequency which is substantially inversely proportional to the square of said voltage applied to said current supply unit.

Re. 31,545

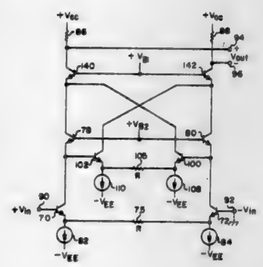
FEED-FORWARD AMPLIFIER

Patrick A. Quinn, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Original No. 4,146,844, dated Mar. 27, 1979, Ser. No. 846,743, Oct. 31, 1977. Application for reissue Jan. 22, 1981, Ser. No. 227,286

Int. Cl.³ H03F *1/26, 3/45*

U.S. Cl. 330—149 **8 Claims**



6. A feed forward amplifier comprising:

an emitter-coupled pair of input transistors having a predetermined resistance in the emitter path thereof;

a first pair of transistors connected in common-base configuration, the emitters of which are connected to respective collectors of said input transistors;

an emitter-coupled pair of correction transistors having a predetermined resistance in the emitter path thereof so as to match the gain of said correction transistors with said input transistors, the bases of said correction transistors being connected to respective collectors of said input transistors and the collectors thereof being cross-coupled to the respective collectors of said first pair of common-base transistors to provide collector-current summing nodes; and

a second pair of transistors connected in common base configuration to provide an output signal, the emitters of which are connected to respective collector current summing nodes.

PLANT PATENTS

GRANTED MARCH 27, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,210

ALMOND × PEACH HYBRID ROOTSTOCK TREE (HANSEN 2168)

Carl J. Hansen, deceased, late of Citrus Heights, Calif. (by Betty C. Hansen, successor), assignor to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 16, 1982, Ser. No. 408,612

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond × peach hybrid rootstock tree substantially as illustrated and described, particularly characterized by a high percentage of successful reproductions from hardwood cuttings, by a deep rooting, adventitious root system providing excellent anchorage, by immunity to root-knot nematode infections, *Meloidygyne incognita acrita* and *M. javanica*, and by a tree generally resembling the Hansen 536 but slightly more vigorous, roots from cuttings more consistently, and with tree branches which have more green and less red color of the developing leaves and shoots.

5,211

NECTARINE TREE, "SUMMER RED"

Donald J. Jost, 9633 S. Rio Vista Ave., Reedley, Calif. 93654

Filed Dec. 3, 1982, Ser. No. 446,851

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree which bears generally yellow-fleshed, clingstone fruit of large and uniform size and characterized as to novelty by bearing fruit which ripens a minimum of four days before the Flamekist variety of nectarine tree, an unpatented variety developed by the U.S. Department of Agriculture, and by a skin which has at full maturity a waxy and bright finish and extensive red coloration, typically spreading over from 60 to 90 percent of its surface area, with the suture coloration blending into the general skin coloration.

5,212

RAPHIOLEPIS INDICA CV. MONRUCE

William B. Usrey, Glendora, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.

Filed Aug. 26, 1982, Ser. No. 411,825

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct selection of Raphiolepis as substantially shown and described herein, that is characterized by a dense growth habit; a compact inflorescence; flowers double and with large spreading light pink petals.

PATENTS

GRANTED MAR. 27, 1984

ERRATA

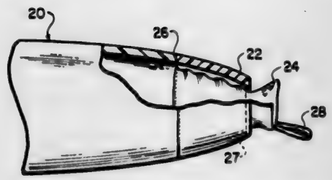
For CLASS	See PATENT NO.
070–057	4,438,550
297–304	4,438,978
414–042	4,439,097
414–043	4,439,098
414–045	4,439,099
414–115	4,439,100
414–126	4,439,101
414–633	4,439,102
406–099	4,439,200
502–167	4,439,348
502–180	4,439,349
502–527	4,439,350

PATENTS

GRANTED MARCH 27, 1984

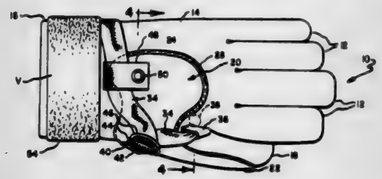
GENERAL AND MECHANICAL

4,438,531
LOW FRICTION MEANS TO FACILITATE PUTTING ON AN UNDERWATER DIVING SUIT
Richard W. Long, and Robert T. Stinton, both of San Diego, Calif., assignors to Diving Unlimited International, Inc., San Diego, Calif.
Filed Apr. 28, 1982, Ser. No. 372,479
Int. Cl.³ A62B *17/00*; B63C *11/04*
U.S. Cl. 2—2.1 R **6 Claims**



1. In an underwater diving suit having an opening therein to permit a diver to insert a portion of the diver's body therethrough when putting on the suit, said opening having tight fitting exposed rubber sealing means adjacent thereto for sealing the interior of the diving suit against leakage, the improvement comprising:
a tubular skirt of flexible low friction material affixed at one of its ends to the interior of said diving suit adjacent said exposed rubber sealing means, said skirt being of sufficient length to substantially cover said exposed rubber sealing means when said unit is being put on;
whereby the diver's body portion slides along said skirt shielded from said exposed rubber sealing means with frictional drag substantially reduced when the diver puts on the diving suit;
said skirt being manually retractable into the diving suit after the diving suit is put on to permit said exposed rubber sealing means to directly engage the diver's body portion and thereby seal the interior of the diving suit against leakage.

4,438,532
PROTECTIVE GLOVE
Alexander F. Campanella, 22 15th St., Buffalo, N.Y. 14213, and J. David Bannon, 246 Bryant St., Buffalo, N.Y. 14222
Filed May 23, 1983, Ser. No. 497,055
Int. Cl.³ A41D *13/10*
U.S. Cl. 2—16 **10 Claims**



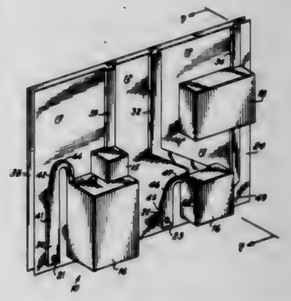
1. A protective glove, comprising:
at least one finger stall portion enclosing the fingers;
an intermediate portion enclosing the hand;
a cuff portion enclosing the wrist;
a thumb stall portion enclosing the thumb;
a rigid thumb protecting member secured to the glove and spanning the metacarpal phalangeal joint of the thumb; and
means secured to the protecting member and located in the first web space between the thumb and index finger applying a substantially outward force to the thumb's metacarpal phalangeal joint.

4,438,533
INTERLINING FOR GARMENTS AND METHOD FOR THE MANUFACTURE THEREOF
Josef Hefele, Gräfelfing, Fed. Rep. of Germany, assignor to Kufner Textilwerke KG, Fed. Rep. of Germany
Filed May 27, 1981, Ser. No. 267,658
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3021039
Int. Cl.³ A41D *1/00*
U.S. Cl. 2—97 **50 Claims**



1. In a garment having an interlining for stiffening parts of the garment, an improved interlining which imparts bulk and a smooth hand feel to the garment, said interlining comprising:
(a) an interlining backing material,
(b) textile flock fibres having a fibre length of 0.5 to 2.0 mm,
(c) a flock binder comprising a screen like applied print applied to the interlining backing material for anchoring the flock fibres, the flock binder consisting of a polymer material at least part of which is cross-linked.

4,438,534
PASSIVE DISPENSER
George B. Keyes, and Randall G. Richards, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio
Filed Mar. 3, 1982, Ser. No. 354,485
Int. Cl.³ E03G *9/02*
U.S. Cl. 4—227 **7 Claims**



1. A passive dispenser for containing a quantity of a first solution and a quantity of a second solution and for co-dispensing a predetermined volume of said solutions into a body of liquid in which said dispenser is placed, in response to the level of said body of liquid being lowered from a first elevation to a second elevation, the dispenser comprising:
a first product chamber, said product chamber containing a water-soluble cake forming, upon dissolution, the first solution;
a vent conduit extending upwardly from the top of the first chamber;

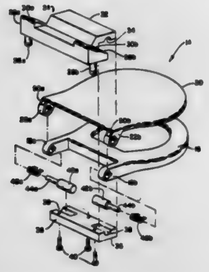
a first refill/discharge pathway providing fluid communication between said body of liquid and said first product chamber, said pathway being a siphon conduit;
a second product chamber, said second product chamber being separate and apart from said first product chamber;
a third product chamber above the second chamber, which chambers are separate and apart one from the other;
a water-soluble cake being contained in at least one of said second and third product chambers forming, upon dissolution, the second solution;
a conduit to provide fluid communication between the second chamber and the third chamber, said conduit entering the second chamber proximate the bottom thereof;
vent conduits extending upwardly from the respective tops of said second and third product chambers; and
a second refill/discharge pathway providing fluid communication between said body of liquid and said second product chamber, said second refill/discharge pathway being a siphon conduit, whereby in response to the level of said body of liquid being lowered from a first elevation to a second elevation, solution contained within the second and the third chambers is dispensed into the body of liquid, and solution contained within the first chamber is dispensed into said body of liquid.

4,438,535

SEAT AND COVER ASSEMBLY FOR A TOILET BOWL

Candelario Paredes, 6608 Briarhaven Dr., Dallas, Tex. 75240

Continuation of Ser. No. 190,374, Sep. 24, 1980, Pat. No. 4,342,124. This application May 13, 1982, Ser. No. 377,805
The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.
Int. Cl.³ A47K *13/00*
U.S. Cl. 4—234 **9 Claims**



1. A seat and cover assembly for a toilet bowl, said assembly comprising a seat member, a cover member for said seat member, means for mounting said seat member and said cover member relative to said bowl for pivotal movement between an upright position and a lowered position, spring means operatively engaging said seat member and said cover member for biasing said seat member towards said cover member and said cover member towards said seat member in all positions of said members, and means for quick-releasably securing said cover member in said upright position.

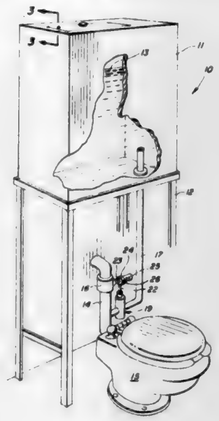
4,438,536

HIGH PRESSURE TOILET WATER FEEDER CONVERSATION TANK

Alfredo Rivera, 1266 Olmstead Ave., Apt. 2-F, Bronx, N.Y. 10462

Filed Dec. 11, 1981, Ser. No. 330,029
Int. Cl.³ E03D *1/02*
U.S. Cl. 4—343 **1 Claim**

1. A high pressure toilet water feeder conservation tank assembly, comprising in combination, a tank for storing used water, a drain pipe from said tank being connected at its lower end to a fresh water supply pipe of a toilet, a high pressure valve connected along said fresh water supply pipe, a handle pivotally extending from said high pressure valve for flushing operation thereof, a control valve along said drain pipe comprising a cylinder connected across said drain pipe and a piston slidable in said cylinder for regulating the flow of used water



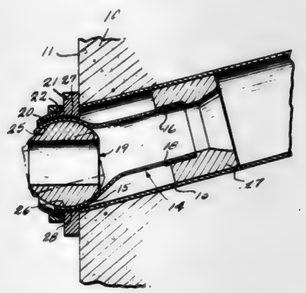
through said cylinder, a connecting arm between said piston and handle, and means for adjustably coupling said connecting arm along said handle, whereby the proportion of tank water used per flush is increased by coupling the connecting arm closer to the free end of the handle and decreased by coupling the connecting arm closer to the pivoted end of the handle.

4,438,537

LIQUID DIRECTIONAL FLOW APPARATUS

Damon R. Bickle, 6 Rustic St., Kenmore, Queensland, Australia (4069)

Continuation-in-part of Ser. No. 352,566, Feb. 26, 1982, abandoned. This application Apr. 20, 1982, Ser. No. 370,067
Claims priority, application Australia, Mar. 2, 1981, PE7792
Int. Cl.³ E04H *3/16, 3/18*
U.S. Cl. 4—492 **4 Claims**



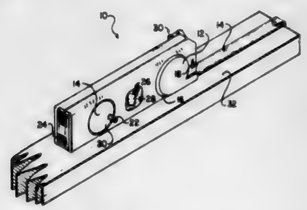
1. A liquid directional flow apparatus including:
an elongate mounting tube having an inner portion engageable in an outlet pipe of a swimming pool and an outer portion which is enlarged relative to the inner portion and wherein the outer portion has a side wall that curves outwardly and then inwardly relative to the longitudinal axis of the elongate mounting tube; an eyeball shaped nozzle having a channel extending therethrough which is mounted in the outer portion of the mounting tube and wherein the outer surface of the nozzle has a curvature at least substantially complementary to the inner surface of the outer portion whereby said nozzle may be pivoted relative to said mounting tube; and
an inner clamping ring having a curved inner surface engageable with a curved outer surface of said outer portion of the mounting tube and pivotable thereto during installation; and
locking means engageable with said inner clamping ring to orient the inner clamping ring in a direction substantially parallel to the plane of an outer wall of the swimming pool when the liquid directional flow apparatus is installed in said outlet pipe to enable the eyeball nozzle to be oriented in a direction substantially normal to the plane of said outer wall.

4,438,538

COMBINATION TOOL FOR CARPENTRY

Peter Larsen, 2186 Montgomery, Cardif by the Sea, Calif. 92007

Filed Aug. 26, 1981, Ser. No. 296,338
Int. Cl.³ B25F *1/00*; G01B *19/00*
U.S. Cl. 7—164 **14 Claims**



1. A carpentry tool comprising:
a housing of generally elongated rectangular configuration having at least two orthogonally-related, straight-edged sides and at least one substantially planar face;
fixed abutment means extending from said planar surface adjacent one end thereof, said abutment means defining a plane facing the other end of said housing and being transversely perpendicular to said planar surface and defining a T-square with pivot points at either end thereof coincident with the intersection of the ends of said abutment with the edges of said planar surface;
planar fixed indicia along at least one side of said housing cooperatively arranged with one of said pivot points on the opposite side of said housing to indicate and establish an angle with respect to an external elongated member when said pivot point is an engagement with the sides of the external member; and
orthogonally related bubble level elements fixed to said housing;
whereby when one of said pivot points is engaged with the edge of a structural member mounted at an angle with respect to the horizontal and the applicable bubble is centered, the existing angle or pitch of said structural member with respect to horizontal may be determined directly from said indicia.

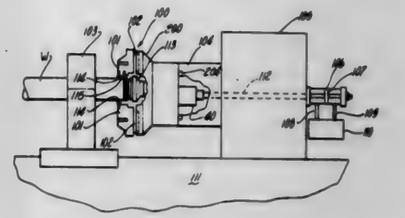
4,438,539

ACTUATOR FOR GENERATING TOOL HEAD

Raymond A. Stephens, Sterling Heights, Mich., assignor to The Valeron Corporation, Troy, Mich.

Filed Nov. 13, 1981, Ser. No. 321,251
Int. Cl.³ B23G *1/26*
U.S. Cl. 10—120.5 R **18 Claims**

1. Apparatus for moving an output member in response to movement of an input member comprising:
first and second members;
means coupling at least one of the first and second members to the input member for providing relative linear movement between the first and second members in response to movement by the input member;
means for imparting rotary movement to the second member in response to the relative linear movement, the means for imparting rotary movement comprising at least one helical



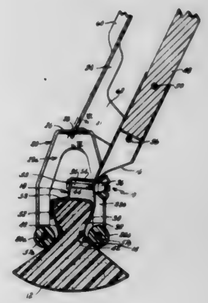
key protruding from one of the first and second members and at least one helical slot in the other of the first and second members matingly engaging at least a portion of the at least one helical key; and
means for imparting linear movement to the output member in response to a rotary movement by the second member.

4,438,540

WRINGABLE MOP ASSEMBLY

Walter H. Senour, Ada, Mich., assignor to Amway Corporation, Ada, Mich.

Filed Nov. 20, 1981, Ser. No. 323,392
Int. Cl.³ A47L *13/46*
U.S. Cl. 15—119 A **3 Claims**



1. A sponge mop comprising:
a sponge;
a channel pinchingly securing said sponge and including a first aperture;
mounting means adapted to receive a mop handle and defining a pair of second apertures;
a clamp including a pair of ears extending through said pair of second apertures to hingedly connect said clamp to said mounting means;
drawing means for drawing said clamp toward said mounting means to secure said channel between said clamp and said mounting means, whereby said clamp pivots about said ears as said drawing means draws said clamp toward said mounting means;
a detent tab extending from one of said clamp and said mounting means into said first aperture in said channel to prevent said channel from shifting laterally with respect to said mounting means and said clamp;
a bridge movable relative said sponge and carrying a pair of parallel wringer members disposed on opposite sides of said sponge, said bridge defining a third aperture; and

a wringer handle pivotally mounted to said mounting means and including a tab extending through said third aperture in said bridge, whereby as said wringer handle is pivoted with respect to said mounting means, said wringer handle pivots with respect to said bridge about said tab forcing said bridge to move relative said sponge to cause said wringer members to wring said sponge.

4,438,541

TOOTHBRUSH WITH HEAT SHRUNK SYNTHETIC FILAMENTS

Joseph Jacob, 1035 Washington St., Wooster, Ohio 44691, and Charles J. Love, 1221 Tower Bldg., Lorain, Ohio 44053

Division of Ser. No. 946,608, Oct. 2, 1978, abandoned. This application May 13, 1982, Ser. No. 377,793

Int. Cl.³ A46B *9/04*

U.S. Cl. 15—167 R **3 Claims**



1. A toothbrush having a base and a plurality of bristles, each of which is composed of a heat shrunk synthetic filament held in a single composite inverted U-shaped configuration by two lengths of straight, substantially parallel, closely spaced side legs and a return bend, the side legs and return bend of each bristle being contracted to a reduced size from being heat shrunk while held over a form rail so as to form tightly adjacent filaments with a tight return bend, whereby each bristle acts as a dry scoop to cut into and scarf away dental plaque.

4,438,542

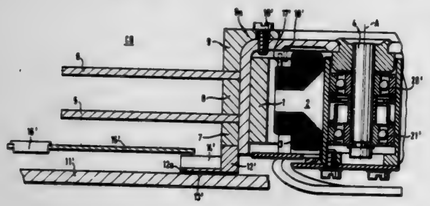
DISK STORAGE DRIVE

Bernhard Schuh, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,584

Int. Cl.² G11B *5/012*

U.S. Cl. 360—97.000 **10 Claims**



1. In a digital information-storage apparatus of the type having a read and/or write head which inscribes information bits onto, and/or reads them from, at least one data storage disk which is rotated at high speed relative to such head by means of a rotary disk-holding structure configured to be accommodated in the large central aperture of such disk and transmit rotation thereto,

the combination with said rotary disk-holding structure of a brushless d.c. reluctance-torque motor, said brushless d.c. reluctance-torque motor comprising

a stator,

a rotor,

said rotor being coupled to said rotary disk-holding structure to transmit rotation thereto,

said rotor being a permanent-magnet rotor,

said stator having a stator winding which when energized by d.c. current establishes a stator field which in cooperation with said rotor produces an electromagnetic-torque component having a magnitude which is a variable function of rotor angular position and which, at predetermined angular positions of said rotor, is of zero magnitude, and thus incapable of starting the rotor from said predetermined positions,

whereby if, when the motor is shut off, the rotor were to come to a complete stop in said predetermined positions, it could not thereafter be restarted by mere application of current to the stator winding,

said rotor and stator being separated from each other by an air gap and together forming a magnetic circuit whose reluctance is a function of the angular position of said rotor thereby producing a reluctance-torque component, the reluctance-torque component varying as a function of rotor angular position and having a magnitude which is of non-zero value at said predetermined rotor angular positions at which the electromagnetic-torque component is of zero value,

said non-zero value of said reluctance-torque component at said predetermined angular positions precluding the rotor from becoming stuck at said predetermined positions during start-up of the motor,

an angular position detector detecting the angular position of said rotor, and

means controlling flow of current through said stator winding in dependence upon the operation of said angular position detector to cause said stator field to alternate, in dependence upon rotor angular position, between two stator-field orientations which are 180 electrical degrees opposite to each other.

4,438,543

WINDSHIELD WIPER DEVICE

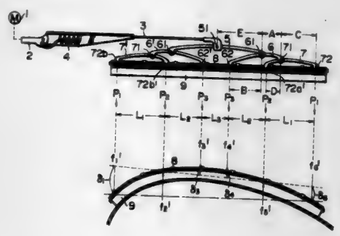
Hiroki Noguchi, Oobu; Akira Fukami, and Naomi Miyazaki, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 27, 1981, Ser. No. 287,122

Claims priority, application Japan, Sep. 18, 1980, 55-129558; Nov. 6, 1980, 55-156302

Int. Cl.³ B60S *1/04*

U.S. Cl. 15—250.42 **1 Claim**



1. A windshield wiper device comprising:

a blade rubber formed of a resilient material;

a backing holding said blade rubber in place;

an arm;

drive means for driving said arm;

a primary lever pivotally attached at its central portion to an end of said arm;

a pair of secondary levers pivotally attached to opposite ends of said primary lever, each of said secondary levers having a third support claw at one end for supporting said backing;

a pair of yokes, one pivotally attached to the other end of each of said secondary levers, respectively, each of said yokes having at opposite ends first and second support claws for supporting said backing, each said first support claw being disposed outwardly from the center of said blade rubber with respect to said second support claw; and

a spring for loading said arm to force said blade rubber against the surface of a windshield of a vehicle,

wherein said primary lever, said pair of secondary levers and said pair of yokes are arranged such that the load applied to said blade rubber is selected to satisfy the following relations (1) and (2):

$$L_1 > L_2 > L_3 \quad (1)$$ and

$$W_1 < W_2 < W_3 > W_4 > W_5 \quad (2)$$

where

$$W_1 = \frac{\frac{1}{2}(P_2 - f_2) + P_1 - f_1}{L_1},$$

$$W_2 = \frac{\frac{1}{2}(P_3 - f_3) + \frac{1}{2}(P_2 - f_2)}{L_2},$$

$$W_3 = \frac{P_3 - \frac{1}{2}(f_3 + f_4)}{L_3},$$

$$W_4 = \frac{\frac{1}{2}(P_3 - f_4) + \frac{1}{2}(P_2 - f_5)}{L_2},$$

$$W_5 = \frac{\frac{1}{2}(P_2 - f_5) + P_1 - f_6}{L_1},$$

L_1: spacing interval between said first and second support claws of each of said yokes;

L_2: spacing interval between each of said second support claws and a closest one of said third support claws,

L_3: spacing interval between said third support claws,

P_1: load applied to said first support claws,

P_2: load applied to said second support claws,

P_3: load applied to the third support claws, and

f_1-f_6: reactions applied by said backing.

4,438,544

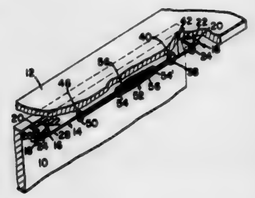
LOOPED ROD SAFETY STOP

Russell W. Waldo, Mendota Heights, Minn., and Cardel E. Miller, Hudson, Wis., assignors to Ideal Security Hardware Corporation, Saint Paul, Minn.

Filed Jan. 8, 1982, Ser. No. 338,169

Int. Cl.³ E05F *5/08*

U.S. Cl. 16—85 **4 Claims**



1. Apparatus for checking the unrestricted opening of a door hingedly mounted in a frame, comprising:

(a) a first elongated element having one end thereof mounted at the door and carrying, spaced from said mounted end, a member having an aperture formed therethrough;

(b) a second elongated element having one end thereof mounted at the frame and carrying, spaced from said mounted end, a member having an aperture formed therethrough;

(c) wherein said aperture in said member carried by said first element is significantly larger than dimensions of said second element in a plane normal to an axis of elongation of said second element, and said aperture in said member carried by said second element is significantly larger than dimensions of said first element in a plane normal to an axis of elongation of said first element;

(d) wherein said first element is received in said aperture in said member carried by said second element and said second element is received in said aperture in said member carried by said first element for relative axial movement of said first element and said second element;

(e) wherein said first element and said second element comprise generally linearly extending wire forms, and wherein said member of said first element and said member of said second element comprise looped extensions of said first element and said second element integrally formed therewith at ends of said first element and said second element opposite said ends by which said first element and said second element are mounted to the door and frame respectively; and and

(f) a wire spring enclosing said first element and said second element intermediate said member of said first element and said member of said second element and having a pair of shoulders, each axially engaging one of said member of said first element and said member of said second element, said wire spring having opposite axial end coils, and wherein each of said coils is sufficiently large wherein it cannot pass through a corresponding aperture defined by one of said looped extensions, said wire spring includes a plurality of intermediate coils and wherein said looped extensions define planes angled relative to one another so that as said looped extensions engage said end coils and compress said spring, said coils are urged away from the door.

4,438,545

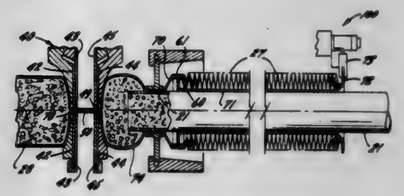
STUFFING METHOD AND APPARATUS

Vytautas Kupcikevicius, and Vytas A. Raudys, both of Chicago, Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 12, 1981, Ser. No. 273,278

Int. Cl.³ A22C *11/00*

U.S. Cl. 17—49 **23 Claims**



1. A method of stuffing a flowable product into casing lengths deshirred from a shirred casing supply having a closed first tie end comprising the steps of:

a. stuffing a desired amount of the product into the casing supply while applying a holdback force to the casing to achieve a desired stuffed pressure;

b. constricting the encased product with closely spaced first tie and second tie gates to close the second tie end of the encased product;

c. prior to completion of the constricting step creating slack in the casing supply so that the stuffed product displaced during constricting is forced into the slack casing and the encased product pressure is not substantially increased;

d. separating the first tie and second tie constricting gates while gripping the casing more tightly with the second tie gate than with the first tie gate so that the product displaced during separating is displaced into the slack casing and the encased product pressure is not substantially increased; and

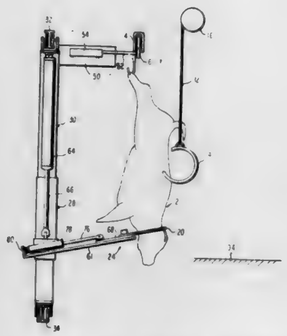
e. applying second tie and first tie clips, severing the casing therebetween and releasing the gates.

4,438,546

HEAD HOLDING METHOD AND APPARATUS FOR A HIDE PULLER

William F. Couture, Amarillo, Tex., assignor to Iowa Beef Processors, Inc., Dakota City, Nebr.

Filed Sep. 28, 1981, Ser. No. 306,637
Int. Cl.[3] A22B 5/16
U.S. Cl. 17—50 24 Claims



19. A method of holding down the head of an animal carcass while the hide of the carcass is pulled hindwardly of the carcass by a hide puller, comprising the steps of,

supporting the carcass,

moving the carcass on trolleys on a horizontal rail,

engaging the neck of a carcass on the support with a jaw assembly which includes a pair of jaws which are movable from an open position to a closed position,

said engaging step being performed by placing said jaws in said open position, positioning the neck of a carcass between said jaws, and moving said jaws with an actuator to a closed position to entrap the neck of a carcass therebetween,

moving said jaw assembly in a direction which is generally parallel to said rail, said step of moving the jaw assembly being performed by engaging the trolley with an interlock member which is connected to the jaw assembly so that the jaw assembly is driven forwardly by forward movement of the trolley, and

pulling the hide of the carcass in a hindward direction while said jaws deter movement of the head of the carcass.

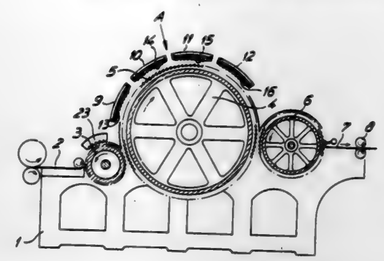
4,438,547

CARDING ELEMENT FOR A CARDING MACHINE

Karl H. Schmolke, Neuweiler; Joachim Finsterbusch, Backnang, and Walter Loffler, Neubulach, all of Fed. Rep. of Germany, assignors to Hollingsworth GmbH, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,335
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3112491; Oct. 28, 1981, 3142780
Int. Cl.[3] D01G 15/24, 15/88
U.S. Cl. 19—98 6 Claims

1. In a carding machine having a main cylinder with saw-tooth wire wound therearound and at least three carding elements each comprising a plurality of saw-tooth wire sections arranged in parallel relationship on a fixed support and forming a card clothing cooperating with said main cylinder, the improvement wherein the saw-tooth wire sections of a first and second of said carding elements are positioned at an acute angle with respect to a diameter plane of said main cylinder with the pitch of the wire sections of said first carding element in a direction opposite that of the pitch of the wire sections of said second carding element, and wherein the saw-tooth wire



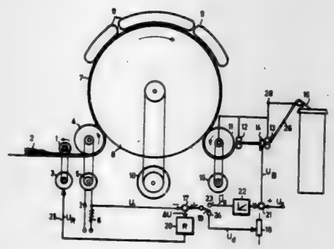
sections of said third carding elements are positioned parallel to a diameter plane of said main cylinder.

4,438,548

METHOD AND APPARATUS FOR CONTROLLING FLUCTUATIONS IN SLIVER WEIGHT ON CARDS, CARDING MACHINES AND THE LIKE

Werner Grunder, Moenchaltorf, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

PCT No. PCT/CH80/00117, § 371 Date Aug. 7, 1981, § 102(e) Date Aug. 7, 1981, PCT Pub. No. WO81/02029, PCT Pub. Date Jul. 23, 1981
PCT Filed Sep. 30, 1980, Ser. No. 293,221
Claims priority, application Switzerland, Jan. 17, 1980, 392/80
Int. Cl.[3] D01H 5/38
U.S. Cl. 19—105 16 Claims



1. A method for controlling fluctuations in sliver weight on a device for processing a fiber sliver, wherein a fibrous material is fed to a card, or the like and is withdrawn as a sliver, comprising the steps of measuring the torque or the power of at least one rotating part of the card, or the like, upon which a fiber material is leveled and distributed and producing a control signal indicative thereof; and controlling the rate at which said fibrous material is fed as a function of said control signal in a manner that said torque, or said power, is held to a control value.

4,438,549

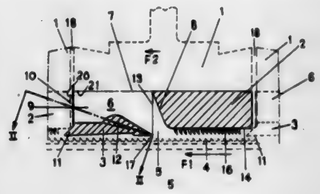
ARRANGEMENT OF FITTINGS FOR FLATS IN A CARDING MACHINE

Keijo Silander, Styrestagatan 8, SE 60229 Norrkoeping, Sweden

Filed Jan. 13, 1982, Ser. No. 339,248
Int. Cl.[3] D01G 15/32
U.S. Cl. 19—107 14 Claims

1. A carding machine for carding and for removing contaminants from a fibrous material, comprising a rotatably supported carding cylinder rotationally driven in a forward direction at a first speed and having first carding means on the peripheral

surface thereof, a flat supported adjacent the peripheral surface of said carding cylinder for movement in said forward direction at a second speed less than said first speed and having second carding means on a first surface thereof which faces said carding cylinder, means defining a first opening in said first surface of said flat, a second surface provided on said flat and having a second opening therein, said second opening communicating with the ambient air surrounding said carding machine, means defining a passageway through said flat which communicates with said first opening and with said second opening, said passageway extending away from said first open-



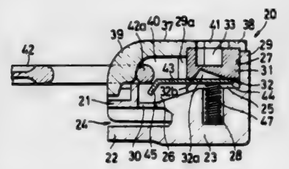
ing at least partly in said forward direction, and means on said flat defining a filter at a location remote from said first opening for filtering the air flowing through said passageway, said first carding means, in response to rotation of said carding cylinder at said first speed, entraining air situated between said carding cylinder and said flat and causing it to flow in said forward direction and into said first opening and said passageway and through said filter, contaminants from said fibrous material being carried by said air flow into said passageway, being filtered from said air flow by said filter and being thus retained in said passageway in said flat.

4,438,550

LOCKABLE SLIDER FOR SLIDE FASTENERS

Kiyoshi Oda, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 356,232
Claims priority, application Japan, Mar. 16, 1981, 56-35304[U]
Int. Cl.[3] E05B 67/38
U.S. Cl. 70—57 6 Claims



1. A lockable slider for a slide fastener including a pair of coupling element rows to which the lockable slider is adapted to be locked by a separate key, the lockable slider comprising:

(a) a slider body having a Y-shaped guide channel for the passage of the pair of coupling element rows, an upwardly opening forward bore, an upwardly opening rearward recess communicating with said forward bore, and an aperture in said rearward recess in communication with said guide channel;

(b) a cylindrical plug turntable by the separate key and engageable with its outer end, said plug being rotatably received in said forward bore and rotatable for 360° in either direction from any starting position, and having at the inner end a cam face including a recessed central portion and a continuous flat peripheral portion of constant height surrounding said central portion;

(c) a cover mounted on said slider body and enclosing said forward bore, said cover having a keyhole in registry with said forward bore;

(d) a pull tab pivotably connected to said cover;

(e) a locking member supported within said forward bore and said rearward recess and having the fore end held beneath said cylindrical plug for sliding movement along said cam face, and being movable into and out of said recessed central portion in response to rotation of said cylindrical plug in either direction, and having at the rear end, a locking pawl movable into and out of said guide channel through said aperture for engagement between coupling elements; and

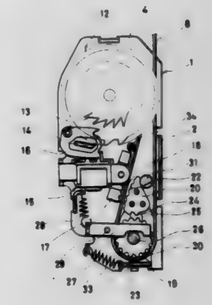
(f) a spring member within said forward bore immediately under the fore end of said locking member and urging the fore end of said locking member against said cylindrical plug so that the fore end of said locking member is held by said spring member against diametrically opposite portions of said flat continuous portion to hold said pawl retracted, and is held by said spring member against the bottom of said recessed central portion to hold said pawl in an extended position.

4,438,551

LOCKING DEVICE FOR VEHICLE SEAT BELT WEBBING

Hironobu Imai, Chigasaki, Japan, assignor to NSK-Warner K.K., Japan

Filed Feb. 3, 1982, Ser. No. 345,413
Claims priority, application Japan, Feb. 27, 1981, 56-26804[U]
Int. Cl.[3] A62B 35/02; B65H 75/48
U.S. Cl. 24—68 SB 5 Claims



1. A locking device for vehicle seat belt webbing, comprising a housing; a clamp member fixedly secured on the housing; a swing arm swingably supported on the housing; a swing clamp integrally secured on the swing arm having first and second surfaces which make an acute angle and being displaceable between a first position where the swing clamp permits free passage of the webbing and a second position where the webbing is clamped between the clamp member and the first surface so as to restrain the webbing from movement; guide means adapted to guide the swing clamp along the second surface thereof between the first position and the second position; a drum rotatably mounted on a shaft; which extends between slots formed in the swing arm, and displaceable while being guided by the slots between a non-engagement position where the drum is disengaged from the swing clamp and an engagement position where the drum is engaged with the swing clamp and prevented from rotation; and the drum being displaceable from the non-engagement position to the engagement position when a tensile force of at least a predetermined value is applied to the webbing and, when a further tensile force is exerted on the webbing, the swing arm moving toward the clamp member and the second surface of the swing clamp being guided by the guide means so that the swing clamp

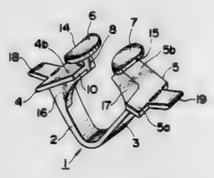
moves together with the drum which is at the engagement position, from the first position to the second position.

4,438,552

PLASTIC FASTENER

Nobuaki Omata, Hiroshima, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Dec. 10, 1981, Ser. No. 329,487
Claims priority, application Japan, Dec. 12, 1980, 55-174736
Int. Cl.[3] A44B *17/00*
U.S. Cl. 24—297 4 Claims



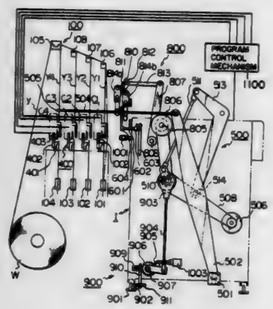
1. A one piece plastic fastener comprising: a resilient insertion leg formed of a pair of leg pieces joined integrally to each other in the general shape of the letter V and each provided on the outer side thereof with an engaging part, a flange formed of a pair of plate-shaped pieces disposed at the free ends of said leg pieces, and a head portion consisting of a pair of head pieces disposed at the leading ends of shanks extended upwardly from said plate-shaped pieces, said head portions initially being spaced apart in predetermined orientation, said head pieces being interengageable by a twisting movement of said head pieces past each other to lock behind one another in reverse orientation, said head pieces being urged toward each other by said resilient leg, whereby separation of said head pieces causes movement of said leg pieces toward each other.

4,438,553

FULL AUTOMATIC LEASING MACHINE FOR A WARP BEAM CONTAINING WARPS OF DIFFERENT COLORS

Shoichi Hamada, Otsu, Japan, assignor to Todo Seisakusho Ltd., Japan

Filed Feb. 10, 1981, Ser. No. 233,195
Int. Cl.[3] D02H *9/00*; D03J *1/13*
U.S. Cl. 28—184 12 Claims



1. A fully automatic leasing machine for a warp beam containing warps of different colors, comprising:

a warp grouping mechanism located at a position downstream of said warp beam in the processing direction of said warps, and adapted for grouping said warps into warp sheets of different colors and releasably holding ends of said warps in said warp sheets, said warp sheets being disposed in substantially parallel planes which are spaced apart and extend in the width direction of said machine;

a number of warp dividing units equal in number to the number of warp sheets, each dividing unit being associated with a respective warp sheet and being movable along its associated warp sheet in said width direction of said machine;

a respective warp dividing unit driving mechanism for each said warp dividing unit, each said warp dividing unit driving mechanism including a main shaft driven for continuous rotation, means for converting said rotation of said main shaft into movement of its respective said warp dividing unit along its said associated warp sheet, and means for selectively disabling said converting means;

a respective warp separating mechanism arranged on each said warp dividing unit, and including first and second cooperating needles for separating individual warps from said associated warp sheet, first operating means for operating said needles, and a first single revolution clutch assembly which when energized operationally couples said operating means to said main shaft of said warp dividing unit driving mechanism;

a respective warp flipping mechanism accompanying each said warp separating mechanism, and including a warp flipping carrier for flipping said each warp separated from said associated warp sheet, second operating means for operating said warp flipping carrier, and a second single revolution clutch assembly which when energized operationally couples said second operating means to said main shaft of said warp dividing unit driving mechanism;

a program control mechanism for energizing said first and second single revolution clutch assemblies on each said warp dividing unit in accordance with a desired stripe design;

a warp leasing unit arranged on the downstream side of said warp dividing units in an arrangement movable in the width direction of said machine;

a warp passing mechanism arranged on said warp leasing unit, and including a crank shaft driven for constant rotation and a hook which is operationally coupled to said crank shaft and reciprocates horizontally between said warp leasing unit and said warp dividing units in order to pass said each warp which is engaged by a said first warp flipping mechanism through a gap between a pair of warp leasing cords stretched in the width direction of said machine;

a leasing cord shifting mechanism arranged on said warp leasing unit, and including a pair of lifter rods which are operationally coupled to said crank shaft of said warp passing mechanism and to said warp leasing cords in order to alternately locate said warp leasing cords at different respective levels every time one of said warps has been passed through said gap;

a second warp flipping mechanism arranged on said warp leasing unit, and including a flipping bar operationally coupled to said crank shaft of said warp passing mechanism;

a warp end fixing mechanism arranged on said warp leasing unit including a pair of rolls of bonding tape which, as said leasing unit travels in the width direction of said machine, are delivered from said rolls and fixedly hold therebetween each said warp passed through said gap, said flipping bar flipping each said warp passed through said gap towards said warp end fixing mechanism;

a warp leasing unit driving mechanism accompanying said warp leasing unit, and including means for converting rotation of said crank shaft of said warp passing mechanism into movement of said warp leasing unit in said width direction of said machine; and

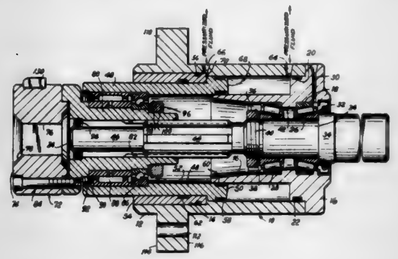
a synchronized driving mechanism including a photoelectric sensor for detecting movement of any said warp dividing unit in said width direction of said machine, and means connected to said photoelectric sensor for disabling said converting means of said warp leasing unit dividing mechanism when no warp dividing unit moves in said width direction of said machine.

4,438,554

RAM DRIVE CHUCK

Joseph Sciola, 98 Glenwood Dr., North Heldon, N.J. 07058, and Gabor Nagy, 98 W. First St., Clifton, N.J. 07011

Filed May 18, 1981, Ser. No. 265,034
Int. Cl.[3] B23P *5/00*; B65H *17/02*
U.S. Cl. 29—57 5 Claims



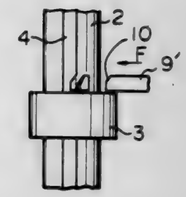
1. In a ram drive chuck for the driven rotation of workpieces and including a housing and a drive shaft supported for rotation in said housing, the improvements comprising, workpiece driving means which are operable to drivingly engage, support and rotate a workpiece, means slidably supporting said workpiece driving means at least in part within said housing, means rotatably supporting said workpiece driving means at least in part within said housing, said workpiece driving means being slidably drivingly engaged by said drive shaft for driven rotation of the workpiece driving means by the drive shaft, said workpiece driving means being slidable relative to said housing between an extended workpiece driving means position wherein the workpiece driving means are operable to drivingly engage, support and rotate an appropriately positioned workpiece, and a retracted workpiece driving means position wherein the same are not operable to drivingly engage, support and rotate said appropriately positioned workpiece whereby, with a workpiece appropriately positioned relative to said ram drive chuck and said workpiece drive means disposed in the retracted position thereof, the workpiece drive means may be slided to the extended position thereof to drivingly engage, support and rotate said workpiece and, thereafter, slided to the retracted position thereof to disengage from said workpiece, said workpiece drive means comprising a drive socket which is shaped and sized complementally with regard to an end of said workpiece whereby, movement of said workpiece into said extended position thereof is effective to engage said workpiece end in said drive socket for support and rotation of said workpiece, said workpiece drive means and said chuck drive shaft being relatively arranged and disposed so that said drive shaft extends substantially into said workpiece drive means drive socket when said workpiece drive means are in the retracted position thereof whereby, said workpiece end will be forced from said drive socket upon movement of said workpiece drive means from the respective extended to retracted positions thereof thus insuring workpiece end-workpiece drive means disengagement.

4,438,555

METHOD OF FIXING AN ANNULAR ELEMENT ON A SHAFT

Chiaki Tsumuki; Katsuhiko Ueda, both of Aichi; Hitoshi Nakamura, Toyota; Toshiyuki Nakura, Okazaki, and Kazuhiko Tsuda, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 9, 1982, Ser. No. 356,347
Claims priority, application Japan, Sep. 22, 1980, 55-130587
Int. Cl.[3] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—505 5 Claims



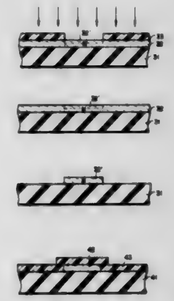
1. Method for fixing an annular element onto a shaft, said element having a through hole into which said shaft is loosely inserted, said method comprising the steps of: forming an axially extending groove on an outer wall of said shaft and forming an axially extending projection on an inner surface of said hole of said element over the whole length thereof, said groove and said projection having respective cross sections being adapted so as to loosely fit together; inserting said shaft into said hole while engaging said projection with said groove so as to prevent a relative rotating motion; and after determining the axial position of said element relative to said shaft, deforming said outer wall of said shaft adjacent to said groove at two positions near the terminating ends of said projection so that said outer wall protrudes into said groove, thereby fixing said element onto said shaft.

4,438,556

METHOD OF FORMING DOPED POLYCRYSTALLINE SILICON PATTERN BY SELECTIVE IMPLANTATION AND PLASMA ETCHING OF UNDOPED REGIONS

Shigeru Komatsu, Yokohama, and Michio Nakamura, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 21, 1981, Ser. No. 332,973
Claims priority, application Japan, Jan. 12, 1981, 56-2988; Apr. 9, 1981, 56-53393
Int. Cl.[3] H01L *21/302, 21/225*; C23F *1/02*
U.S. Cl. 29—576 B 16 Claims



1. A process of forming a polycrystalline silicon pattern which comprises the steps of:

selectively ion-implanting an impurity with high concentra-

tion into the region of a polycrystalline silicon layer, which is to remain as a polycrystalline silicon pattern; and

plasma-etching the whole of said polycrystalline silicon layer, thereby etching off the areas other than said region into which said impurity is ion-implanted with high concentration.

4,438,557

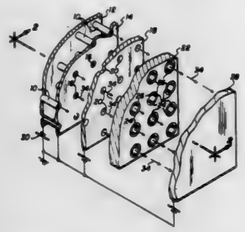
METHOD OF USING AN AREAL ARRAY OF TUBULAR ELECTRON SOURCES

Donald L. Parker; Wilbur A. Porter, and Robert C. Rogers, all of College Station, Tex., assignors to Woodland International Corporation, Panama, Panama

Division of Ser. No. 34,984, May 1, 1979, Pat. No. 4,333,035. This application Jan. 27, 1982, Ser. No. 343,023

Int. Cl.³ H01J *21/263, 37/00;* **G01N** *23/00*

U.S. Cl. 29—576 B **1 Claim**



1. A method for irradiating a semiconductor body with a plurality of electron beams for use in the fabrication of integrated circuits, comprising the steps of:

generating a plurality of parallel electron beams within an evacuated zone which contains said semiconductor body, said electron beams directed toward said semiconductor body; and

simultaneously deflecting said electron beams to cause each of said electron beams to track a predetermined pattern on said semiconductor body.

4,438,558

LAMINATED CORE MANUFACTURING APPARATUS

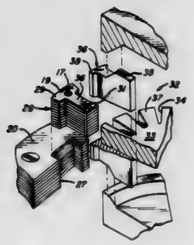
Yoshiaki Mitsui, c/o Mitsui Mfg., Co., Ltd., 980-1 Komine, Yahatanishi-ku Kitakyushu-shi, Japan

Continuation of Ser. No. 30,445, Apr. 16, 1979, Pat. No. 4,280,275, which is a division of Ser. No. 819,480, Jul. 27, 1977, Pat. No. 4,149,309. This application Aug. 9, 1981, Ser. No. 232,653

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ H02K *15/085, 15/02*

U.S. Cl. 29—732 **5 Claims**



1. Apparatus for manufacturing a dynamoelectric machine wound core from a plurality of stacks of teeth having a shank portion and a head portion, and stacked yoke laminations each having an annular array of radially inwardly opening recesses, said stacked teeth being arranged in an annular array to define an annular tooth core arrangement having a plurality of winding slots, said stacked yoke laminations defining an annular yoke core, said apparatus comprising:

jig means defining a core bar and an annular array of individual locking pieces disposed coaxially about said core bar;

means for forcibly urging said locking pieces radially inwardly toward said core bar, said locking pieces defining urging means for engaging the base portions of the stacked teeth to urge said base portions forcibly against said core bar for temporarily retaining said stacked teeth accurately in annularly spaced relationship thereon to define therebetween an annular array of winding slots in which a dynamoelectric winding may be wound to define a wound tooth core assembly, said wound tooth core assembly being constructed to be disposed coaxially within said yoke core with the head portions of said retained stacked teeth of the wound tooth core assembly being rigidly interlocked with said yoke core in said yoke core recesses to define a rigid, strong dynamoelectric machine core upon removal of the entire jig means.

4,438,559

APPARATUS FOR AUTOMATICALLY MOUNTING NON-LEAD ELECTRONIC COMPONENTS ON PRINTED-CIRCUIT

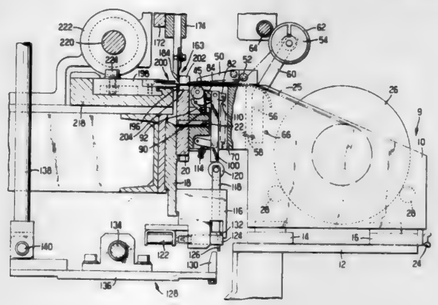
Koichi Asai, Nagoya; Kunio Oe, Chiryu, and Mamoru Tuda, Okazaki, all of Japan, assignors to Fuji Machine Mfg. Co. Ltd., Chiryu, Japan

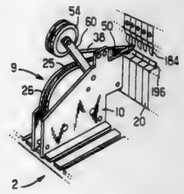
Filed Jun. 25, 1981, Ser. No. 277,105

Claims priority, application Japan, Jun. 27, 1980, 55-88326; Aug. 6, 1980, 55-108613; Aug. 9, 1980, 55-109587; Aug. 20, 1980, 55-114274

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—740 **10 Claims**





1. An apparatus for automatically mounting on a workpiece electronic components having no leads, and thereby forming an electronic circuit on the workpiece, which comprises:

a supply assembly including a plurality of tape cartridges disposed on a support means and being equally spaced along a line of transfer of the electronic components, said tape cartridges accommodating a corresponding number of electronic component carrying tapes to store and supply different types of said electronic components, each of said carrying tapes including a strip member which has a multiplicity of longitudinally spaced mutually independent apertures in which said electronic components of a respective type are stored, said apertures being covered with a covering tape disposed over said strip member;

a transfer assembly disposed on said support means including a transfer member having a plurality of grippers disposed along said line of transfer to hold a leading portion of said carrying tapes accommodated in said respective tape cartridges, and further including drive means disposed on said support means and being adapted to move in an intermittent manner said transfer member along said line of transfer for sequential alignment with component supply portions of said plurality of tape cartridges, the distance of each movement of said transfer member being equal to the spacing of said component supply portions;

tape feed assemblies disposed on said support means, said feed assemblies provided adjacent and corresponding to said plurality of tape cartridges, each of said tape feed assemblies being activated when one of said grippers is stopped in alignment with one of said component supply portions of said respective tape cartridges, and thereby feeding in an intermittent manner said carrying tape across said line of transfer with said covering tape facing up, the distance of each feeding movement of said carrying tape being equal to the spacing of said multiplicity of apertures;

covering tape separating assemblies disposed on said support means, said separating assemblies provided adjacent and corresponding to said plurality of tape cartridges, for separating said covering tape from said carrying tape and thereby uncovering at least a leading one of said multiplicity of apertures;

carrying tape severing assemblies, disposed on said support means and between each of said component supply portions of said tape cartridges and said grippers, for cutting off said leading portion of said carrying tape which includes said uncovered leading aperture, and which is held in said grippers, the cut-off leading portion constituting a unit carrying tape;

a loading assembly disposed on said support means, said loading assembly equipped with a pick-up member, for picking up with said pick-up member said component from said uncovered aperture in said unit carrying tape which has been transferred by said transfer member to a specified position, and mounting said component on said workpiece; and

a positioning assembly disposed on said support means for establishing desired relative positions between said pick-up member and said workpiece before said component is mounted on the workpiece by said loading assembly.

4,438,560

METHOD FOR PRODUCING MULTIPLANE CIRCUIT BOARDS

Günter Kisters, Issum, Fed. Rep. of Germany, assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed May 27, 1981, Ser. No. 267,654

Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020196

Int. Cl.³ H05K *3/36*

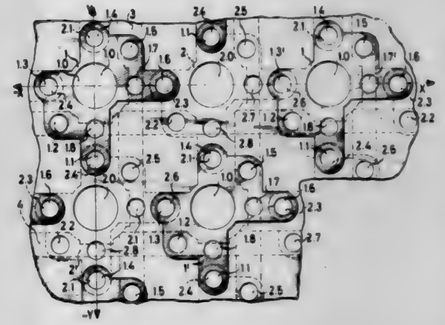
U.S. Cl. 29—830 **10 Claims**

1. Method of producing multiplane circuit boards, characterized by the fact that a planar member A is prepared first on a layer of suitable carrier material, said planar member A having connecting areas disposed in rows on said planar member A, each of said areas having an insertion position, six interlinking positions and two interrupting positions, said interlinking positions, based on the center point of the insertion position of each connecting area, having the coordinates −8R, O; 12R, O; O, 8R; O, −12R; −6R, −6R; 6R , 6R, and said interrupting positions having the coordinates 7R, O and O, −7R, with R being any selectable standard grid spacing, and said rows of connecting areas having between each other a spacing of 2OR and adjacent insertion positions in one row having between each other a spacing of 4OR;

that a planar member B is prepared, said planar member B per se having the same pattern as planar member A, however, with the two planar members A and B being arranged one on top of the other in a manner such that the connecting areas of planar member B bridge the spacing between those of planar member A, so that associated connecting positions of the connecting areas on the two planar members A and B coincide when viewed from the top;

that a planar member C is prepared, said planar member C being provided with trains of conductors parallel to the X-axis with a spacing of 2OR between said trains of conductors; that said planar member C is disposed in relation to planar members A and B in a way such that the center lines of each of their trains of conductors coincide with the imaginary connecting line through the center points of the associated connecting positions with the coordinates −6R and −6R;

that a planar member D is prepared, said planar member D being provided with trains of conductors extending parallel to the Y-axis and having a spacing of 2OR between



each other, and said planar member D being disposed in relation to planar members A and B in a way such that the center lines of each of their trains of conductors coincide with the imaginary connecting line through the center points of the associated connecting positions with coordinates 6R and 6R;

that the planar members A, B, C and D disposed as defined above are combined to form one mechanical unit, if necessary with the use of an intermediately arranged, suitable insulating material such as prepregs;

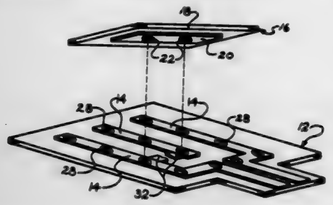
that one or a plurality of such units are provided with a pattern of conductor trains conforming with the desired circuit;

that defined connecting positions are provided with bores in accordance with the circuit diagram, said bores being provided in a manner known per se with a metal coating applied to their walls;

that bores are provided in the insertion positions determined by the circuit diagram, said bores being provided with metallized walls also; and furthermore,

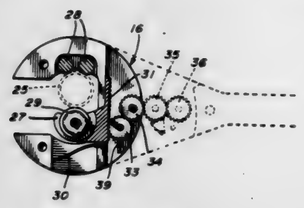
that the trains of conductors on the planar members C and D are separated into partial pieces insulated against each other, by means of bores provided in the interrupting positions determined by the circuit diagram.

4,438,561
METHOD OF REWORKING PRINTED CIRCUIT BOARDS
Richard W. Mueller, Santa Clara, Calif., assignor to Rogers Corporation, Rogers, Conn.
Filed Oct. 1, 1981, Ser. No. 307,197
Int. Cl.³ H05K 3/20
U.S. Cl. 29—831 7 Claims



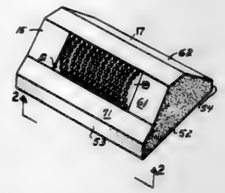
1. A method of connecting electrically unconnected conductors on a printed circuit element with conductors on a flexible circuit element, including the steps of:
forming said flexible circuit element having a nonconductive substrate and a predetermined circuit pattern;
defining at least two through holes in said circuit pattern;
aligning said flexible circuit with respect to said printed circuit element with said circuit pattern facing said unconnected conductors, said circuit pattern being aligned with the unconnected conductors on the printed circuit element with said at least two through holes aligned with different ones of said unconnected conductors;
adhering said flexible circuit element to said printed circuit element with an electrically nonconductive adhesive between said circuit pattern and said unconnected conductors; and
establishing electrically conductive paths in said at least two through holes in contact with said conductors on the printed circuit element and with said circuit pattern on said flexible circut element to electrically interconnect said conductors.

4,438,562
MANUAL PIPE CUTTER
Aurele Courty, 471 Ste. Madeleine St., Montreal, Canada H3K 2K8
Filed Aug. 6, 1982, Ser. No. 405,943
Int. Cl.³ B23D 21/06
U.S. Cl. 30—99 11 Claims



1. A manual pipe cutter comprising a body including a cutting head portion having a pipe passage extending therethrough, a cutting head rotatable in the cutting head portion substantially around the pipe passage, a cutter-pressing jaw mounted on the cutting head and displaceable in a predetermined direction transversely across relative to the pipe passage, a toothed rack fixedly secured to the cutter-pressing jaw and displaceable bodily with the latter and endwise in said predetermined direction, a ratchet and gear system connected to the toothed rack and constructed and arranged to move and hold the latter relative to operative displacement of the cutter-pressing jaw in said predetermined direction, and a manual actuator mounted on said body, connected to the ratchet and gear system and constructed and arranged to actuate the same and produce the operative displacement of the cutter-pressing jaw in said predetermined direction.

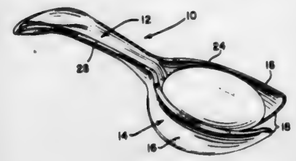
4,438,563
HAND-HELD CUTTING TOOL
David D. Turner, 7845 NE. Bayshore Ct., Miami, Fla. 33138
Continuation-in-part of Ser. No. 240,082, Mar. 3, 1981, abandoned. This application Dec. 10, 1982, Ser. No. 433,161
Int. Cl.³ B26B 1/04, 3/08
U.S. Cl. 30—156 11 Claims



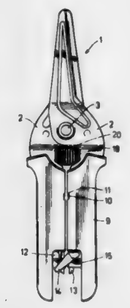
1. A hand-held cutting tool comprising:
(A) a housing with a top wall, spaced end walls, and a front and rear wall, said housing defining a bottom to rest in planar relation on a surface and said bottom having an open mouth of predetermined dimension,
shaft holding means in the housing defining an axis,
(B) a blade cartridge in the housing, said cartridge comprising,
a shaft, a plurality of blade members on the shaft, and a plurality of spacer means on the shaft, said blade members and spacer means being arranged along said shaft in staggered relation with respect to one another,
said shaft being secured in said housing by said shaft holding means,
said plurality of blade members being swingable on the shaft and each being of a common size and shape and each having a cutting edge,
each of said spacer means including a blade member orienting means and each one of said blades being captivated by the orienting means of one of said spacer means for swinging movement about the shaft so that each of the spacer means may be selectively rotated to swing its associated blade members about the shaft between a first position and a second position;
each of said blade members being of a size and shape such that the cutting edge is exposed beneath the bottom of the tool housing when in the first position and each of the blade members is completely within the housing when the blade member is in the second position;
said housing including stop means to stop swinging movement of the blade members at each of the two positions.

4,438,564
EGG SCOOP OR SPOON
Harold P. Ashton, Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 9, 1976, Ser. No. 703,718
The portion of the term of this patent subsequent to Aug. 16, 1994, has been disclaimed.
Int. Cl.³ A47J 43/28
U.S. Cl. 30—324 3 Claims

1. An egg spoon suitable for the introduction of eggs into or the removal of eggs from a body of fluid comprising a handle member integrally formed as a part of a spoon bowl and protruding therefrom, said bowl including a bifurcated and concave wall configuration having frontal edges and an interconnected back wall which is of a substantially vertical disposition and wherein said bifurcated and concave wall configuration and said back wall include bottom edges positioned in the same plane, and wherein said bifurcated and concave wall configuration includes upper edges, said upper edges sloping in an upward direction from said frontal edges toward said back wall in such fashion that the imaginary, forward, geometrical extension of said plane makes an acute angle with the imaginary, forward, geometrical extension of said upper edges thereby forming the slope of such upper edges.

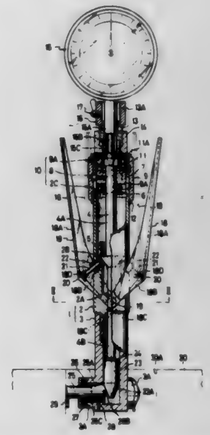


4,438,565
HANDLE FOR A HAND TOOL
John A. Hough, Auckland, New Zealand, assignor to Hough Industries Limited, Auckland, New Zealand
Filed Jun. 18, 1980, Ser. No. 160,484
Claims priority, application New Zealand, Jun. 20, 1979, 190779
Int. Cl.³ B25G 1/00
U.S. Cl. 30—341 14 Claims



1. In a hand tool having at least one shank and attached handle, the improvement comprising:
an infill member enclosing and having means to interlock with the shank, and
a sheath of uniform thickness having a recess and enclosing both the shank and the interlocked infill member and having means to be fixed to either,
wherein said infill member has a narrow portion at one end, parallel to the longitudinal axis of the handle, which extends across the recess in the sheath to provide an eye through which an attachment means may pass in order to be pivotally attached to the handle.

4,438,566
INNER DIAMETER MEASURING INSTRUMENT
Hideo Sakata; Ichiro Mizuno, and Masao Nakahara, all of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1982, Ser. No. 369,777
Claims priority, application Japan, Apr. 30, 1981, 56-62770[U]; Apr. 30, 1981, 56-65705
Int. Cl.³ G01B 5/12
U.S. Cl. 33—178 R 11 Claims

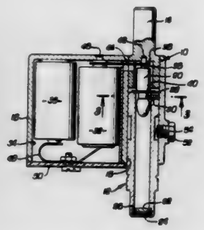


1. An inner diameter measuring instrument wherein a spindle is axially movably incorporated in a cylindrical main body and measuring elements are made linearly movable in radial directions perpendicular to said spindle in response to the movement of said spindle, wherein the improvement comprises: a movable member movable in the axial direction of said spindle; a spring provided between said movable member and said spindle, said spring being biased in a direction for causing said measuring elements to project in radial directions with respect to said spindle; a control member rotatably mounted on said main body; an interlocking mechanism for transmitting the rotation of said control member to said movable member to cause axial movement of said movable member; and control means for moving said spindle in a predetermined direction against the action of said spring, said control means being rotatably secured to said main body.

4,438,567
CENTER LOCATOR FOR ALIGNMENT OF WORK TO MACHINE SPINDLE
Antti P. Raiha, Rte. #1, Box 512, Sandpoint, Id. 83864
Filed Dec. 7, 1981, Ser. No. 327,923
Int. Cl.³ G01C 1/00
U.S. Cl. 33—286 2 Claims

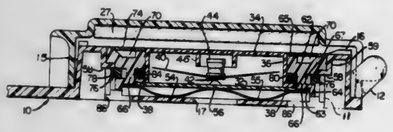
1. A center locator for use with a drill press or like tool having a rotatable spindle and a chuck or other tool holder attached to an end of the spindle:
(a) a case or housing of electrically conductive material having a shank for coaxial connection to said chuck or tool holder;
(b) said case having a bore aligned with the shank axis;
(c) a barrel part guidingly mounted in said case bore for angular movement about said shank and bore axis, as well as for axial movement therein, said barrel part being made of electrically conductive material;
(d) said barrel part having an annular groove;
(e) a retractable hollow screw mounted on the case and cooperable with said annular groove for limiting axial movement of said barrel part;

(f) An incandescent lamp having a bulb part extending into the inner end of the barrel and having a flange of electrically conductive material in engagement with the said end of the barrel part, said lamp having a contact button located beyond the inner end of the barrel;
(g) means cooperable with the lamp bulb for holding the lamp to the barrel, comprising three relatively soft plastic screws adjustable to center the lamp at the axis;
(h) a magnifying lens accommodated in the opposite outer end of the barrel and fitted against a shoulder in the barrel;



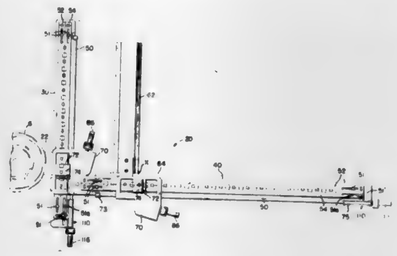
(i) a resilient O-ring frictionally fitted in the barrel releasably to hold the lens in place;
(j) said lens having pattern means imprinted or otherwise formed thereon;
(k) spring contact means carried by the case for engagement with said lamp contact button upon axial movement of said barrel;
(l) a coiled contact spring in said screw and in continuous wiping contact with said barrel part; and
(m) batteries carried by the case and imposing an electrical potential between the case and said spring contact means.

4,438,568
RECREATIONAL COMPASS
Melvin G. Kramer, and Marlin Iden, both of Riverton, Wyo., assignors to The Brunton Company, Riverton, Wyo.
Continuation-in-part of Ser. No. 129,907, Mar. 13, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,208
Int. Cl.³ G01C *17/20, 17/12*
U.S. Cl. 33—348 **18 Claims**



1. In a compass having a base member and a compass needle journaled in a transparent casing, said casing provided with an outer peripheral wall portion and top and bottom wall portions, said base member including an upstanding annular housing wall, the improvement comprising:
retention means operative to resiliently mount said casing within said housing wall of said base member including first and second complementary locking means each including a pair of generally ring-like, radially expandible and contractable members on said retention means, an external shoulder on said peripheral wall portion of said casing and an internal shoulder on said housing wall of said base member, said ring-like members of said first and second complementary locking means being movable past said external and internal shoulders to expand outwardly behind said shoulder into yielding engagement with said peripheral wall portion of said casing and housing wall of said base member, respectively, whereby to retain said casing against removal from said housing wall while permitting said retention means to be manually rotated by overcoming the frictional engagement of said ring-like member betwen said retention means and said housing wall.

4,438,569
DRAFTING MACHINE
Walter Weglin, Bellevue, Wash., assignor to Robert J. Gillespie, Seattle, Wash.
Filed Sep. 30, 1982, Ser. No. 428,726
Int. Cl.³ B43L *13/00*
U.S. Cl. 33—438 **26 Claims**

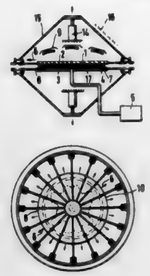


1. A drafting machine for use with a drafting table having a drawing surface, which comprises:
a protractor head adapted to be movably mounted on a drafting table such as to permit horizontal and vertical movement of the protractor head along the drawing surface of the drafting table;
an elongated first mounting means rotatably mounted on the protractor head and having an elongated first reference scale, the longitudinal axis of the first reference scale being parallel to the longitudinal axis of the first mounting bar;
an elongated second mounting means slidably mounted on the first mounting means with the longitudinal axis of the second mounting means being perpendicular to the longitudinal axis of the first mounting means, the second mounting means having an elongated second reference scale, the longitudinal axis of the second reference scale being parallel to the longitudinal axis of the second mounting means;
first and second elongated straight edges, said first straight edge being slidably mounted with respect to the second mounting means and the second straight edge, the longitudinal axis of the first straight edge being parallel to the first mounting means and being perpendicular to the longitudinal axis of the second mounting means and to the second straight edge, the first straight edge being alignable with the reference scale of the second mounting means; and
said second straight edge being mounted on the second mounting means so as to be slidably mounted with respect to the first mounting means, the longitudinal axis of the second straight edge being perpendicular to the longitudinal axis of the first mounting means, the second straight edge being alignable with the first reference scale.

4,438,570
SYSTEM FOR DRYING AND EXPANDING OF FLAT MATERIALS SUCH AS LEATHER
Jiri Dokoupil, Hochstr. 9, 6251 Gückingen, Fed. Rep. of Germany
Filed Mar. 13, 1981, Ser. No. 241,543
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010003
Int. Cl.³ F26B *3/34, 23/04*
U.S. Cl. 34—1 **10 Claims**

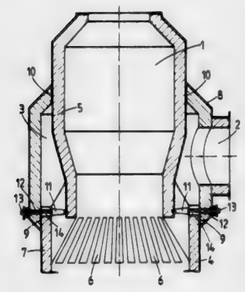
1. Process for increasing the surface and for drying of flat materials such as leather pieces and hides comprising:
placing the flat material between two foils impervious to air;

connecting the space between the two foils to a vacuum; and
applying forces substantially disposed in the plane of the



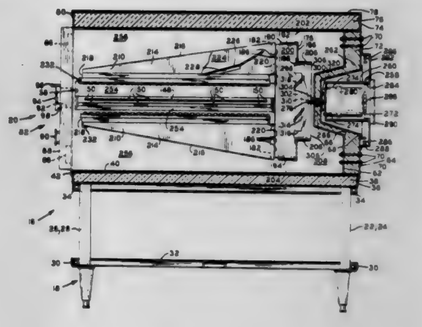
two foils for expanding the surface area of the two foils and of the flat material.

4,438,571
ARRANGEMENT FOR DRY COOLING OF COKE
Wilhelm Jakobi, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany
Filed Dec. 7, 1981, Ser. No. 328,102
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1981, 3100168
Int. Cl.³ F26B *17/12*
U.S. Cl. 34—65 **10 Claims**



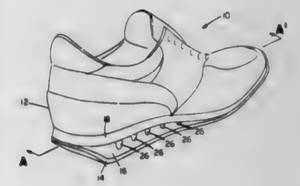
1. An arrangement for dry cooling of coke, comprising means forming a prechamber for a coke to be cooled and having a substantially cylindrical prechamber wall with an axis; cooling means arranged below said prechamber forming means and having a substantially cylindrical cooler wall, an upper portion of said cooler wall surrounding a lower portion of said prechamber wall; means for connecting said prechamber walls with said cooler wall and including a plurality of connecting members spaced from each other and connecting said walls with each other so that a cooling gaseous medium can pass between said connecting members; throttling means arranged between said connecting members and actuated from outside of said walls; and actuating means extending substantially radially through said cooler wall from outside inwardly of the latter so as to actuate said throttling means.

4,438,572
HEAT DUCT SUPPORT ASSEMBLY FOR A FOOD PREPARATION OVEN AND METHOD
Daniel S. Kaminski, Fort Wayne, Ind., assignor to Lincoln Manufacturing Co., Inc., Fort Wayne, Ind.
Filed Jun. 9, 1982, Ser. No. 386,610
Int. Cl.³ F26B *15/18*
U.S. Cl. 34—218 **9 Claims**



1. In a food preparation oven having therein mounted a plenum with a plurality of openings therethrough, and a plurality of heat ducts horizontally disposed from and in communication with said plenum through respective ones of said openings, each of said heat ducts including a plurality of jets positioned therein to direct hot air onto food to be cooked, a support assembly for said heat ducts, comprising:
two stud members, a first one projecting from a side of said oven and a second one projecting from an opposite side of said oven,
an elongated bracket being horizontally disposed between said oven opposite sides and supporting remote ends of said heat ducts,
a pair of bracket supports being connected to respective ends of said bracket adjacent respective ones of said oven opposite sides,
said bracket supports each having a slot therein engaging a respective stud member, whereby said bracket is removably supported by said studs between said oven opposite sides, and
means for supporting opposite ends of said heat ducts over respective ones of said plenum openings.

4,438,573
VENTILATED ATHLETIC SHOE
George P. McBarron, Attleboro, Mass., assignor to Stride Rite International, Ltd., Cambridge, Mass.
Filed Jul. 8, 1981, Ser. No. 281,315
Int. Cl.³ A43B *7/06, 13/20*
U.S. Cl. 36—3 B **8 Claims**



1. In an athletic shoe for ventilating the user's foot, having inside said shoe a resilient slipsole above an insole board, and outside said shoe a resilient outsole assembly underneath said insole board, said outsole assembly containing at least one

transverse first air channel open at its ends through the side walls of said outsole assembly to the surrounding air, a system for conveying air from said first air channel into said inside of said shoe comprising:

at least one air reservoir cut vertically into said outsole assembly and spaced from the perimeter of said outsole assembly, said reservoir being closed at its top and its bottom and open through its side wall to said first air channel;

at least one air slot cut longitudinally into said outsole assembly and spaced from the perimeter of said outsole assembly, said air slot being open in one section to said side wall of said air reservoir;

at least one first air hole cut vertically into the top of said outsole assembly at a point spaced from said air reservoir, said first air hole open to said air slot;

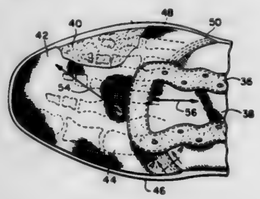
at least one second air hole cut vertically into said insole board said second air hole being arranged to communicate with said first air hole;

at least one second air channel cut horizontally into the bottom of said slipsole, said second air channel being arranged to communicate with said second air hole; and

at least two third air holes cut vertically into said slipsole said third air holes arranged to communicate with said second air channel and with the inside of said shoe,

whereby said surrounding air will flow through said first air channel into said air reservoir where a volume of air is held, then into said air slot, then into said first air hole, then into said second air hole, then into said second air channel, then into said third air holes and then into the inside of said shoe to ventilate said user's foot, the force of said user's foot against the ground will enhance the flow of air into said inside of said shoe, and the user's foot will be cushioned from shock.

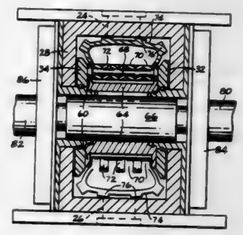
4,438,574
ATHLETIC SHOE WITH TWO-PIECE UPPER FOREPART SECTION
Jeffrey O. Johnson, Raymond, N.H., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 26, 1982, Ser. No. 362,061
Int. Cl.³ A43B *23/00, 5/00*
U.S. Cl. 36—45 **31 Claims**



1. In an athletic shoe comprising a sole and an upper attached to the sole the improvement comprising:

a multi-layered forepart section of the upper for extending around the forepart portion of the foot of a wearer of the athletic shoe, said forepart section including an inner layer of stretchable and moldable material and an outer layer of breathable, flexible and nonstretchable material extending about said inner layer of material, said inner and outer layers being permanently attached to said shoe, a major portion of the inner layer being unconnected to the outer layer whereby the inner layer is free to stretch a degree limited by the extent of the outer layer of nonstretchable material to accommodate and mold to the forepart of the foot of the wearer.

4,438,575
CONTINUOUS EXCAVATING APPARATUS
Jonas L. Roe, Santa Cruz, Calif., assignor to Terradyne Limited, Georgetown, Cayman Islands
Continuation of Ser. No. 93,020, Nov. 9, 1979, abandoned. This application Oct. 20, 1981, Ser. No. 313,155
Int. Cl.³ E02F *5/06*
U.S. Cl. 37—4 **2 Claims**



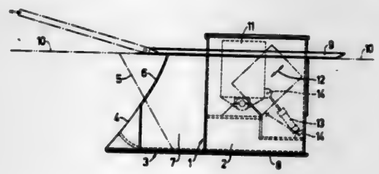
1. Continuous excavating apparatus comprising:

an endless excavating bucket line having a plurality of excavating buckets each with teeth for digging;

a boom for carrying said bucket line including at its free end a pair of sprockets mounted for rotation on said boom;

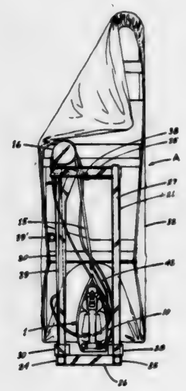
a plurality of hinge pins commonly connected to adjacent buckets so that both buckets may freely rotate on a pin and, an enlarged end piece at each end of said hinge pins, adapted to contact said pair of sprockets, in operation, and to roll with rolling friction on them to cause the rotation of the center portion of the hinge pins.

4,438,576
VIBRATING DITCHER PLOW
Ove V. Lundström, Box 76, Vuollerim, Sweden S-96030
PCT No. PCT/SE80/00294, § 371 Date Jul. 20, 1981, § 102(e) Date Jul. 20, 1981, PCT Pub. No. WO81/01433, PCT Pub. Date May 28, 1981
PCT Filed Nov. 19, 1980, Ser. No. 285,108
Claims priority, application Sweden, Nov. 19, 1979, 7909545
Int. Cl.³ E02F *5/02*
U.S. Cl. 37—98 **8 Claims**



1. A device for ditching a drain in soil, comprising a body which is intended to be advanced in the ground, said body having a substantially V-shaped vertical cross-section with the base of the V pointed downward and substantially smooth lower sides, the body at least in the direction of advancement having a forward portion with a pointed end closed vertically along the height of the body, the forward portion having a generally V-shaped horizontal cross-section, the body being provided with vibrator means for producing striking forces, said vibrator means being adapted to subject the body to at least downward directed striking forces, and said forces maintaining the body pressed down while the body is advanced through the soil masses, the height of the body being greater than the depth of the ditch such that the soil masses are pressed aside substantially laterally and compacted.

4,438,577
IRONING APPARATUS SUPPORT
Edwin E. Foster; Wilbur A. Foster, and Thomas E. Foster, all of Austin, Tex., assignors to Majik-Ironers, Inc., Austin, Tex.
Filed Apr. 20, 1981, Ser. No. 255,888
Int. Cl.³ D06F *71/00*
U.S. Cl. 38—107 **13 Claims**



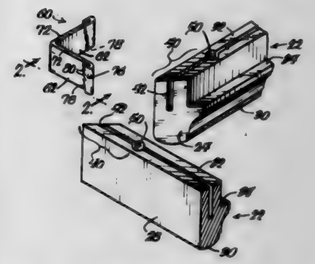
1. Ironing apparatus for supporting a hand iron above the ironing surface of an ironing board and characterized by a base for supportive disposition upon a supporting surface, at least one upright post member extending upwardly from said base, means for securing an ironing board in a use position proximate said post member with said ironing surface horizontally disposed for ironing thereon, an articulated linkage swingably inter-engaged at one end with said post member and extendable by articulation to positions over said ironing surface, securement means pivotally interconnecting the other, post-remote end of said linkage with said iron for permitting movement of said iron between first and second orientations respectively in and out of contact with said ironing surface, said linkage being swingable about said post member and providing articulation when said iron is in said first orientation for freely permitting relocation of said iron to desired positions over said linkage surface, and means associated with said linkage for preventing articulation when said iron is in said second orientation to maintain said iron out of contact with said ironing surface.

4,438,578
PICTURE FRAME AND CORNER BRACKET ASSEMBLY
Malcolm Logan, Barrington, Ill., assignor to Logan Graphic Products, Inc., Wauconda, Ill.
Filed Apr. 21, 1983, Ser. No. 487,316
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152 **6 Claims**

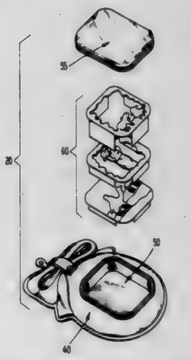
1. Components for constructing a picture frame, said components comprising:

a plurality of frame sections for being assembled into a picture frame in which two of said frame sections are adapted to be oriented at an angle to form a corner of the assembled frame at the adjacent ends of the two sections, each said frame section having an end portion at each end containing material that is deformable under the imposition of a localized force, each said frame section end portion defining a channel opening rearwardly when the frame section is assembled with the other frame sections to form the frame, said channel extending from the end of said frame section along said frame section end portion, each said frame section end portion further defining a cavity communicating with said channel and an adjacent deformable bearing surface comprising said deformable material; and

a bracket adapted to be disposed within the channels of said two frame sections when oriented to form a corner of the assembled frame, said bracket having two legs disposed at an angle substantially identical to the angle formed by said two frame sections at said frame corner, each said bracket leg having a first portion adapted to be received in one of said frame section channels, each said bracket leg having a second portion with an engaging member for being received in one of said frame section cavities, said engaging member defining an engaging wall to engage said frame section deformable bearing surface, said frame section bearing surface and said bracket engaging wall being oriented at angles relative to the length of the frame section whereby, when the bracket legs are aligned in registry with the channels of said two frame sections disposed to form the corner of the assembled frame, relative movement between the bracket and the frame sections can be effected to dispose the bracket within the channels and to cause the engaging wall of each bracket leg to deform the associated frame section bearing surface and force the two frame sections together at the corner.



4,438,579
THREE-DIMENSIONAL PICTURE WITH INTERCHANGEABLE SCENES
Robert W. Engel, 2745 Provincetowne Dr., Toledo, Ohio 43613
Filed May 2, 1983, Ser. No. 490,521
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—160 **13 Claims**



1. A kit for creating a three-dimensional picture comprising in combination

a frame with inner sides which, together with a backplate, make an interior angle, said inner sides circumscribing a window which establishes a length and a breadth of a display;

a plurality of substantially planar scenes, each scene having

a central adornable area shaped to fit within said window and at least two bendably resilient hinges extending between zero and the depth of the display beyond opposing straight edges of said adornable area and adapted to bend backward along said edges and mate with corresponding inner sides; said plurality including

(a) a remote scene with the shallowest hinges, the smallest adornable area, and sized to stack behind all other scenes,

(b) a nearest scene with the deepest hinges, the largest adornable area, adapted for cut out, and sized to stack in front of all other scenes,

(c) any other scene having hinges of intermediate depth and intermediate adornable area, adapted for cut out, and sized to stack between said remote scene and said nearest scene in order according to hinge depth and size of adornable area;

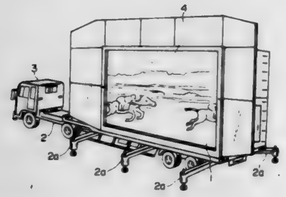
whereby the three-dimensional picture is created by removably inserting said scenes into said window in order, the remote scene first, the nearest scene last, with hinges bent backward, butted against said backplate, and frictionally engaging other hinges or said inner sides, thereby setting the depths of the scenes and anchoring the scenes in said window.

4,438,580

STACKING TYPE MOVABLE LARGE DISPLAY DEVICE

Masamura Yamaji; Shozo Fujita; Shunichi Futatsuishi, and Takashi Takushima, all of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,587
Claims priority, application Japan, Jul. 20, 1981, 56-114143
Int. Cl.³ G09F *21/04*
U.S. Cl. 40—590 **5 Claims**



1. A display device, comprising: a plurality of movable display blocks each having a display area segment with said plurality of display blocks being stackable one onto another such that together, said display area segments of said plurality of display blocks form a predetermined display area surface, a lowermost one of said display blocks being secured to a trailer having supporting outriggers, remaining ones of said display blocks being detachably secured to respective trailers, means for detachably securing said display blocks to each other when said display blocks are assembled to form said predetermined display area surface.

4,438,581

BENCH REST DEVICE FOR HANDGUNS

Bernard A. LaValle, 627 E. Queen Ave., Spokane, Wash. 99207

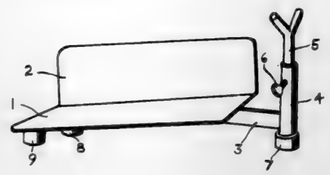
Filed May 20, 1982, Ser. No. 380,413
Int. Cl.³ F41C *29/00*
U.S. Cl. 42—94 **1 Claim**

1. A bench rest device for handguns comprising:

(a) a rigid, rectangular, inclined surface base having top and bottom surfaces and front and rear ends;

(b) a vertical surface affixed along the side edge of said inclined surface;

(c) a sleeve securely affixed to the center of the raised end of said inclined surface;



(d) a sliding yoked shaft within said sleeve, secured by means of a set screw; and

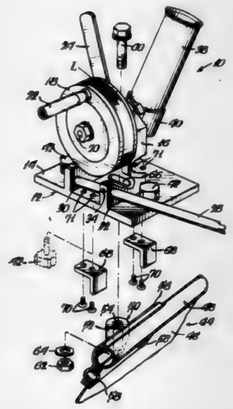
(e) tripodal feet portions for stability upon a surface.

4,438,582

DOWNRIGGER SYSTEM MOUNTING ARRANGEMENT

Michael G. Lummis, Portage, Mich., assignor to Pacific Atlantic Products, Ltd., Kalamazoo, Mich.

Filed Jan. 29, 1982, Ser. No. 344,212
Int. Cl.³ A01K *89/00*
U.S. Cl. 43—27.4 **8 Claims**



1. A downrigger system for trolling adapted to be mounted on a boat, comprising:

a frame assembly having a base portion,

a reel rotatably mounted on said frame assembly for dispensing a downrigger line,

first mounting means on the base portion adapted to cooperate with said frame assembly for use in releasably attaching said system to a mounting plate affixed to said boat, and

second mounting means on the same base portion adapted to cooperate with said frame assembly for use in releasably attaching said system to an oarlock affixed to said boat,

said second mounting means comprising fastener means adapted to extend through the base portion of said frame assembly and said oarlock for attaching the downrigger system to said boat,

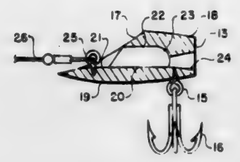
said frame assembly defining an elongated opening through which said fastener means extends for accommodating adjustable mounting of said downrigger system.

4,438,583

FISHING LURE

Raymond B. Sullivan, 443 Kendry, Bloomfield Hills, Mich. 48013

Filed Jun. 28, 1982, Ser. No. 392,925
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.06 **9 Claims**



1. A fishing lure for casting and trolling comprising:

(a) a body with longitudinal flow passage within the interior of the body, said flow passage having adjoining ingress and center portions, the axes of said portions aligned with the longitudinal axis of the body, and an egress portion adjoining the center portion, the axis of the egress portion offset from and oblique to the axis of the center portion, and a baffle at the junction of the center and egress portions;

(b) a means for attaching a fishing line to the body;

(c) at least one hook attached to the body; and

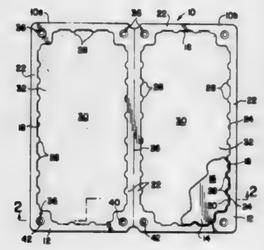
(d) a means for attaching the hook to the body.

4,438,584

TRAP FOR RATS, MICE, AND OTHER VERMIN

Stanley Z. Baker, Mayfield Heights, and Benjamin H. Baker, Chesterland, both of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio

Continuation of Ser. No. 53,381, Jun. 29, 1979, abandoned. This application Jan. 11, 1982, Ser. No. 338,621
Int. Cl.³ A01M *23/00*
U.S. Cl. 43—58 **4 Claims**



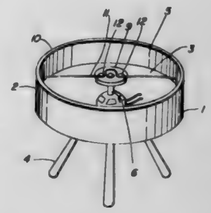
1. A trap for vermin comprised of a generally flat support formed of a non-porous, thin sheet material, said support having at least one positioning surface, at least one indented portion having a given depth below said positioning surface, and a relatively thick layer of pressure sensitive adhesive material contained within said indented portion having a thickness of at least 1/16 inch, a plastic flow temperature above 120° F. and an upper surface; said indented portion having a greater depth than the thickness of said layer of adhesive and said positioning surface being spaced above said adhesive layer upper surface.

4,438,585

INSECT EXTERMINATING DEVICE

B. Dale Slatton, Sheridan, Ill., assignor to Ernest Kettelson, Joliet, Ill., a part interest

Continuation-in-part of Ser. No. 242,751, Mar. 11, 1981, abandoned, which is a continuation of Ser. No. 89,842, Oct. 10, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 339,942
Int. Cl.³ A01M *01/04, 01/06*
U.S. Cl. 43—113 **7 Claims**



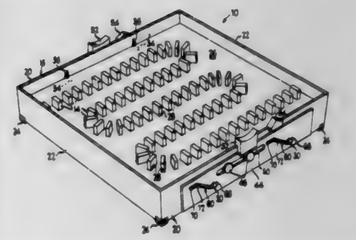
1. An insect exterminating device, comprising support means, a length of flexible material supported by said support means for rotation in a first annular zone of rotation, intermittent rotary drive means to rotate said length of flexible material in said first annular zone of rotation for a pre-determined period of time, then stop rotation for a predetermined period of time, and then re-start rotation for a pre-determined period of time, wherein said intermittent rotary drive means includes an electric motor, thermal means operatively associated with said motor to provide a temperature rise of a pre-determined amount after a pre-determined period of time of operation of said motor, and stitch means operatively associated with said thermal means to sequentially disconnect said motor from its power source when said pre-determined temperature rise is reached and reconnect said motor to its power source when said temperature has lowered to a pre-determined pre-existing level.

4,438,586

GAME DEVICE WITH TEMPLATE FOR ARRANGING OBJECTS

John R. Wildman, North Riverside, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 25, 1982, Ser. No. 342,360
Int. Cl.³ A63F *7/00*
U.S. Cl. 46—1 R **11 Claims**



1. A game device for arranging objects in a predetermined configuration, comprising:

a plurality of objects;

a frame,

a template removably mounted in said frame, said template including a plurality of openings that receive said objects,

said openings arranged in said predetermined configuration; and

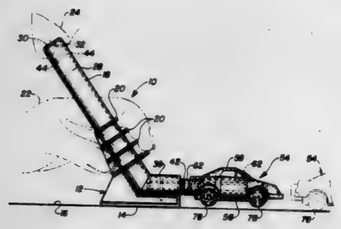
means for moving said template from a first position supporting said objects to a second position spaced from said objects including a finger engaging member and a grasping member, said moving means being actuated by squeezing said finger engaging member and grasping member together.

4,438,587

BLOWGUN TOY CAR LAUNCHER

Joseph A. Marino, Whitehouse, N.J., assignor to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Nov. 26, 1982, Ser. No. 444,677
Int. Cl.³ A63H *29/16*
U.S. Cl. 46—44 **6 Claims**



1. A blowgun toy car launcher and car comprising in combination,

a. a base having a bottom surface arranged to be disposed and manually held preferably upon a horizontal supporting surface,

b. a mouthpiece tube extending from said base at an upwardly and rearwardly extending angle and having an outer end adapted to be engaged by the mouth of a person so as to blow air into said tube and launch said toy car,

c. a launching tube extending forwardly from said base and lower end of said mouthpiece tube and having an outer end directed away from said mouthpiece tube and in an opposite direction from said tube,

d. air-conducting means within said base extending between and communicating with the ends of said tubes which are connected to said base to establish a through passage between said outer ends of said mouthpiece tube and launching tube,

e. a toy car having front and rear ends and freely rotatable wheels thereon, and

f. a longitudinal cavity in said car closed at the forward end thereof and opening to the rear end thereof and generally complementary in shape to at least the outer end of said launching tube and adapted to slidably coengage the exterior of said launching tube for support thereby and projection therefrom, whereby when said mouthpiece tube has air blown into it under pressure said air will act against the closed forward end of said longitudinal cavity in said toy car to project said car from said launching tube for rolling movement along said supporting surface.

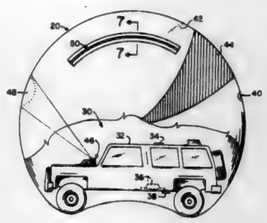
4,438,588

REMOTE CONTROL BALL

John E. Martin, 5 Belfast Rd., Timonium, Md. 21093

Filed Sep. 29, 1982, Ser. No. 427,890
Int. Cl.³ A63H *17/28*
U.S. Cl. 46—228 **6 Claims**

1. In a system of hollow ball and vehicle with wheels, steering and a power circuit for same, and means for remotely controlling steering and forward-reverse direction of the vehicle, the improvement comprising: means for increasing wheel traction on the ball inner surface comprising: said ball being inflatable and of soft flexible material which when the ball is partially inflated can wrap partially around said wheels for increasing traction area, means for indicating forward orientation of said vehicle for purposes of said remote control, including said ball being at least in part light-conductive, means for illuminating said light conductive part of said ball when said



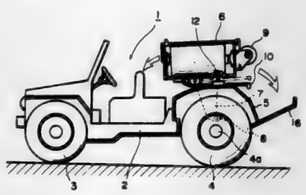
light conductive part is at a particular location generally ahead of said vehicle, said means for illuminating comprising a light on a forward part of said vehicle, and said means for indicating also indicating rotation of said ball and comprising means for modulating said illuminating when the ball is rotating.

4,438,589

MOVING TOY WITH MOVABLE BATTERY RECEPTACLE

Yukimitsu Matsushiro, Tokyo, Japan, assignor to Kabushiki Kaisha Matsushiro, Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,499
Claims priority, application Japan, Mar. 9, 1982, 57-33100[U]
Int. Cl.³ A63H *17/00*
U.S. Cl. 46—251 **6 Claims**



1. A moving toy having a body, a battery receptacle, and movable means for shifting the center of gravity of the toy by shifting the position of the battery receptacle relative to the body, comprising:

a stop lever which allows the battery receptacle to pivot and be supported at any angle of inclination,

a downward projecting stopper which is provided on an intermediate portion of the stop lever,

a spring positioned between the battery receptacle and the stop lever for the purpose of urging the stop lever into contact with a rear portion of the body,

a groove provided within the fixed range of movement of the stopper, located on a surface of a rear portion of the body, and

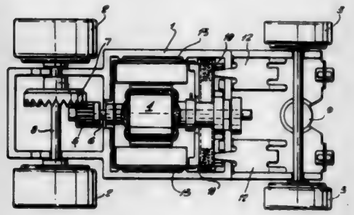
a front groove in a front part of the rear portion of the body and rear groove in a rear part thereof, each being slightly deeper than the first-mentioned groove.

4,438,590

ELECTRIC MOTOR TOY CAR

Cheuk-Ming Lee, Hong Kong, Hong Kong, assignor to The Refined Industry Company, Limited, Kowloon, Hong Kong

Filed Sep. 22, 1982, Ser. No. 421,550
Claims priority, application United Kingdom, Nov. 11, 1981, 8133986
Int. Cl.³ A63H *17/00*
U.S. Cl. 46—257 **2 Claims**



1. A toy car for use with a slotted or slotless track; said toy car comprising:

a chassis,

a motor for driving a set of wheels,

a terminal strip for picking up current from a wire in said track,

a wiper mounted to contact said terminal strip and to contact said motor so that current passes from said track wire via said terminal strip and said wiper to said motor,

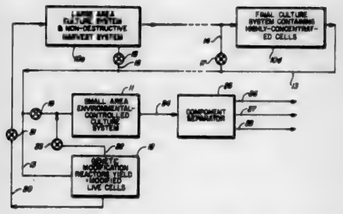
said wiper comprising a thin metal plate, one end of said wiper is bent at an angle of approximately 90° to the body of said plate, said bent end portion defining a cut-out portion to receive one end of said terminal strip and a tail projecting from the angle for contacting an electric brush of said motor and a lug bent at approximately 90° to the body of said plate on the other end of said plate to engage a projection on said chassis, so that said wiper is held in position on said chassis.

4,438,591

ALGAL CELL GROWTH, MODIFICATION AND HARVESTING

John O. Kessler, Tucson, Ariz., assignor to The University of Arizona Foundation, Tucson, Ariz.

Continuation-in-part of Ser. No. 118,585, Feb. 4, 1980, Pat. No. 4,324,067. This application Feb. 10, 1982, Ser. No. 347,550
The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed.
Int. Cl.³ A01G *7/00*
U.S. Cl. 47—1.4 **28 Claims**



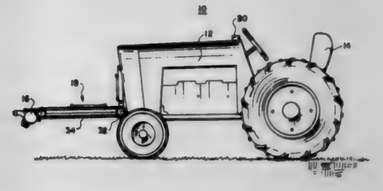
1. A system for growing, enhancing the growth of and harvesting algal cells which multiply by cell division, comprising at least one relatively large area cell growth liquid containing reservoir in which said cells are initially disposed for multiplication by cell division, said reservoir being exposed to prevailing outdoor environmental conditions and being provided with a concentrated cell harvest zone adjacent the top surface of the liquid contained therein, cell migration means for effecting self-locomoted migration of the cells in said reservoir to said harvest zone, a relatively small area cell growth liquid containing reservoir, transfer means for transferring concentrated cells from said harvest zone to said small area cell growth liquid containing reservoir, and environmental control means for controlling the environmental conditions to which the cells in said small area liquid containing reservoir are exposed.

4,438,592

WICK BAR LIFT

Kenneth J. Myers, 1017 Elk St., Beatrice, Nebr. 68310

Filed May 14, 1982, Ser. No. 378,184
Int. Cl.³ A01C *15/00*
U.S. Cl. 47—1.5 **3 Claims**



1. Apparatus comprising:

a vehicle;

lift arm means having first and second ends separated from each other by a lift arm length;

mounting bracket means for pivotally mounting the first end of said lift arm means to the vehicle for pivotal motion in a vertical plane about a first horizontal pivot axis;

hydraulic cylinder means mounted at one of its ends to said mounting bracket means at a first location at a first distance from said first horizontal pivot axis and mounted at its second end to said lift arm at a second distance from the first horizontal pivotal axis for pivoting said lift arm in said vertical plane about said first pivotal axis to selectively raise and lower the second end of said lift arm in relation to the extension and retraction of the arm of said hydraulic cylinder means;

means for mounting said hydraulic cylinder means for pivotal motion in a vertical plane in relation to the pivotal motion in the vertical plane of said lift arm means;

the ratio of said second distance to said length of said lift arm and said predetermined extensional retraction of said arm of said hydraulic cylinder means being sufficient to move the second end of said lift arm only within a range of no more than 60 inches above the ground;

wick bar means for containing a liquid;

said wick bar means including a horizontally elongated wick application surface for wetting a horizontally elongated surface with liquid;

said surface having a vertical arc length from its center of no more than 180 degrees;

means for pivotally mounting said wick bar means to the second end of said lift arm about a second horizontal pivotal axis;

a first sprocket wheel having its center of rotation aligned with said first pivotal axis;

a second sprocket wheel mounted to said lift arm means;

flexible means connecting said first and second sprocket wheels for causing said second sprocket wheel to rotate when said first sprocket wheel rotates; and

means connecting said second sprocket wheel and said wick bar means for causing said wick bar means to be pivoted about said second horizontal pivotal axis.

4,438,593

ANTI-FUNGAL PERFORMANCE IN PELLETED SEEDS THROUGH USE OF HYDROPHOBES

George L. McNew, Hastings on the Hudson, N.Y., and Norman W. Thomas, Warren, N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 782,645, Mar. 30, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,735
Int. Cl.³ A01C *1/06*; A01N *43/36*, *47/28*, *61/00*
U.S. Cl. 47—57.6 22 Claims

1. A seed possessing a continuous, adherent coating composition thereon comprising:

(a) an anti-fungal agent specifically effective against soil-borne phytopathogenic fungi in an amount of from about 0.1 to 5% by weight based on the weight of the coating composition;

(b) a particulate non-phytotoxic hydrophobe present in an amount of about 0.5 to about 30% by weight based on the weight of the coating composition; and

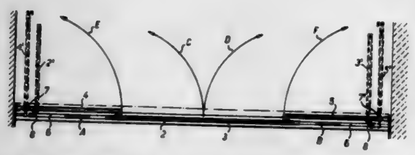
(c) a non-phytotoxic binder present in an amount at least sufficient to maintain the mechanical integrity of the coating until the pelleted seeds are planted.

4,438,594

BALANCED SLIDING DOOR STRUCTURE

Helmut H. Bunzl, Zumikon, Switzerland, assignor to AG für Türautomaten, Dübendorf, Switzerland

Filed Jan. 7, 1982, Ser. No. 337,588
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101725
Int. Cl.³ E05D *15/22*
U.S. Cl. 49—177 12 Claims



1. Balanced sliding door structure having

an upper support rail (19),

a lower guide track (6, 46),

at least one sliding door (2, 3) suspended from the support rail and having a lower guide element (30) engaging lower guide track,

the door including a door frame (10, 11) and a swing door panel (2a) hinged to the frame and movable about a vertical swing axis,

wherein,

the door frame includes a horizontal frame element (10) suspended from the support rail, and a vertical frame element (11) secured thereto and carrying said lower guide element (30);

a hinge means (8) secured to the vertical frame element and to the door element to permit relative swinging movement of the door element with respect to the frame and thus permit relative sliding of the entire door along the rail as well as swinging of the door element;

and means are provided for prestressing the vertical frame element (11) with respect to the horizontal frame element (10) to balance the weight of the door element when supported only by the hinge means (8), comprising

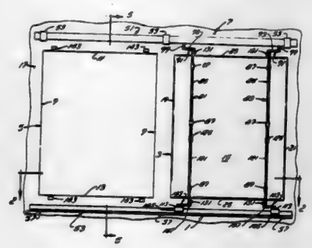
a metal angle (12) having a corner (23') positioned in the vicinity of the hinge means (8) secured to both said frame elements (10, 11) and applying a force component thereon which is counter the weight of the door element as applied to the vertical frame element by the hinge means, said angle (12) being fitted in the horizontal frame element (10) and secured to the frame by a fulcrum or pivot bolt (14) positioned adjacent the corner region (23) of the angle.

4,438,595

PLUG DOOR ASSEMBLY

John A. MacDonald, Beaconsfield, Canada, assignor to Railtech Ltd., Canada

Continuation-in-part of Ser. No. 156,631, Jun. 5, 1980. This application May 31, 1983, Ser. No. 498,037
Claims priority, application Canada, Apr. 2, 1980, 349,055
Int. Cl.³ E05D *15/10*
U.S. Cl. 49—219 4 Claims



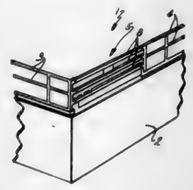
1. A door assembly comprising a door for closing an opening in a wall, first rail means mounted on the wall over the opening for use in longitudinally moving the door between an open position alongside the opening and adjacent the wall and an intermediate position opposite the opening; mounting means movably mounting the door on the first rail means; the mounting means including at least a pair of vertical crankshafts rotatably mounted on the outer face of the door, the crankshafts extending past the upper and lower ends of the door; a low friction elongated carriage member slidably mounted on the rail means over the opening, the [crankshaft]crankshafts being pivotally mounted in spaced journals provided in the carriage, one of the journals being in the form of an elongated slot such that the crankshaft received by the slot can travel along the longitudinal axis of the elongated carriage relative to the other crankshaft or shafts; second rail means provided under the opening on the wall; and guide means on the lower ends of the crankshafts cooperating with said second rail means under the opening for guiding the door; said mounting means including means for laterally moving the door between the intermediate position opposite the opening and a closed position within the opening and a closed position within the opening in the plane of the wall; and locking means on the mounting means for cooperating with locking means on the wall to lock the door within the opening.

4,438,596

REMOVABLE BARRIER ASSEMBLY

Johnnie Jones, 4066 Ranchero Dr., Dorr, Mich. 49323; Joseph A. Einig, 2215 108th St., Byron Center, Mich. 49315, and Arthur T. Ackerson, 3879 40th St., Grandville, Mich. 49418

Filed Feb. 22, 1982, Ser. No. 351,318
Int. Cl.³ E06B *3/32*
U.S. Cl. 49—463 16 Claims



1. A removable safety barrier, comprising:

a barrier rail means for preventing passage through a given area bounded by a first and second support means, said rail means being elongated and having a first and second end;

a retaining means for releasably supporting said first end of said barrier rail means and limiting the movement thereof;

a latching means for removably supporting said second end of said barrier rail means, said latching means having a releasing means allowing said second end of said barrier rail means normally to be restrained by said latching means, said latching means also including release means for releasing said barrier rail means when said release means is activated, and said latching means also having a stationary support element;

said barrier means normally being positioned and supported by said stationary support element and not in contact with or supported by said releasing means;

said stationary support element comprises a back wall, a bottom wall and a lip;

said back wall and said lip extending upward from said bottom wall to define a U-shaped support area;

said releasing element comprises a top wall extending outward from said back wall and a gate pivotally connected to said top wall;

said lip extending upward from said bottom wall a distance less than said back wall extends from said bottom wall, thereby defining a gap between said lip and said top wall;

said gate spanning said gap between said lip and said top wall so that said gate abuts said lip when said gate is in a closed position;

said gate pivotally opening only inwardly of said release element;

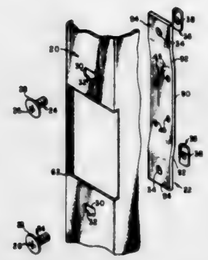
such that said barrier means may be passed through said gap between said lip and said top wall, supported in said support area and then confined within said safety latch by said gate, whereby said retaining means and said latching means will support said barrier rail means when subjected to a force from any direction.

4,438,597

ADJUSTABLE HINGE MOUNT

Michael J. Maggart, Cherry Hill, N.J., assignor to Eljo Products, Inc., Pennsauken, N.J.

Filed Nov. 27, 1981, Ser. No. 325,210
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—501 9 Claims



1. An adjustable hinge mount for hingeably connected bodies such as a door and doorframe, the door to be rotatably attached to the frame by a hinge having hinge leaves, at least one leaf to be rigidly attached to a mounting bracket and the bracket to be adjustably attached to the body of at least one of the door and doorframe, the mount comprising:

a body defining an enclosed area;

a mounting bracket positionable against the body within the enclosed area, the mounting bracket having means for rigidly attaching the hinge leaf thereto, the enclosed area having a cavity encompassing the mounting bracket as well as clearance for a span of vertical and horizontal movement of the mounting bracket; and,

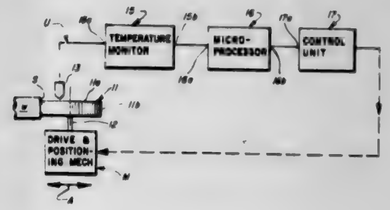
a plurality of mounting bolts for adjustably attaching the mounting bracket to the body, the bolts extending through the mounting bracket and through the body via adjustment holes in said body, the adjustment holes having a periphery larger than the bolts to allow a span of vertical and horizontal movement, notches in the periphery of the adjustment holes dimensioned to rest against the bolts, indicating a known alignment of the mounting bracket with respect to the body, the bolts operable to rigidly attach the mounting bracket to the body at the known alignment and at alignments within the span of vertical and horizontal movement.

4,438,598

SURFACE TEMPERATURE CONTROL APPARATUS

Clinton J. Wohlmuth, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Nov. 30, 1981, Ser. No. 325,975
Int. Cl.³ B24B *49/14*
U.S. Cl. 51—165.73 8 Claims



1. An apparatus for controlling the temperature of a rotating first surface when in frictional engagement with a second surface, said apparatus comprising a rotating member provided with the first surface; a thermal sensing element mounted on said member and rotatable therewith as a unit, said sensing element having a first section exposed on the member first surface and being adapted to engage the second surface, and a second section exposed on the exterior of said member remote from the exposed first section, said second section defining a predetermined circular path during rotation of said member; first means for effecting rotation of said first member while the first and second surfaces are in frictional engagement; second means for effecting adjustment of the first and second surfaces from a frictional engagement; and a temperature detecting means having a fixedly mounted segment disposed in predetermined proximity to the circular path of said second section, said detecting means being operatively connected to said second means whereby adjustment of at least one of the frictionally engaged surfaces relative to the other is responsive to the temperature detected by the detecting means segment from the exposed second section of the thermal sensing element.

4,438,599

VIBRATION DAMPER FOR MACHINE-CARRIED WORKPIECE

Joseph T. Kamman, and Mark D. Kohring, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 28, 1981, Ser. No. 334,964
Int. Cl.³ B24B *41/06*
U.S. Cl. 51—238 S 2 Claims

1. A vibration damper for machine-carried workpieces, comprising:

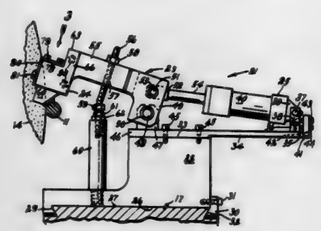
(a) a work contact shoe;

(b) a shoe holder;

(c) a pair of elastomeric elements oppositely disposed be-

tween said shoe and said holder, wherein said elements are preloaded in opposition to each other;

(d) means for mounting said shoe holder to a machine base; and



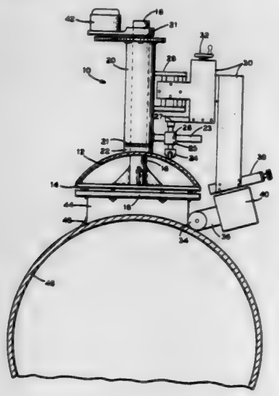
(e) means for preloading said shoe against a workpiece in a direction transverse to the preload direction of said opposed elastomeric elements.

4,438,600

GRINDING, WELDING AND CUTTING APPARATUS

Paul J. Berbakov, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 14, 1981, Ser. No. 301,788
Int. Cl.³ B24B *17/00, 21/16;* B23Q *35/00;* B23K *7/10*
U.S. Cl. 51—241 S **5 Claims**



1. An apparatus for controlling movement of a metal working tool along a seam interconnecting a nozzle section and a shell section comprising:

a mounting plate removably mountable on the end of a nozzle section away from the joinder of a nozzle and a shell for holding the apparatus parallel to the axis of the nozzle;

a shaft fixedly attached to said mounting plate near the center of said mounting plate and perpendicular thereto;

a cam having a generally saddle-shaped upper cam surface shaped such that said upper cam surface reproduces the seam interconnecting a nozzle section and a shell section, and such that seams formed by different nozzle and shell intersections are reproduced by said cam surface along corresponding paths of said cam surface located at different distances from the center of said cam;

a rotatable sleeve concentrically disposed about said shaft having a length substantially the same as that of said shaft, for transmitting axial rotation to the metalworking tool;

a horizontal arm fixedly attached to said sleeve;

a cam follower assembly attached to and depending from said horizontal arm and contacting said cam, said cam follower being adjustable along the length of said horizontal arm;

a floating assembly fixedly attached to said sleeve above said cam follower to reproduce the up and down motion induced in said sleeve when said cam follower assembly rotates along said cam;

a positioning assembly fixedly attached to said floating assembly, said positioning assembly including a positioning crank for making vertical adjustments of said positioning assembly and a radial positioning device for making radial adjustment of said positioning device, said adjustments permitting adjustments of said positioning assembly so that the apparatus can accommodate workpieces having different diameters;

means for working along the seam attached to the lower end of said positioning assembly; including power means for operating said work means; and

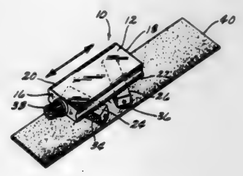
means for rotating said sleeve and attached elements axially about the shaft, attached to said sleeve for rotation therewith.

4,438,601

SANDPAPER CLEANING DEVICE

Alvin O. Olson, 546-9th St., SE., Mason City, Iowa 50401

Continuation of Ser. No. 251,353, Apr. 6, 1981, abandoned. This application Mar. 9, 1983, Ser. No. 473,679
Int. Cl.³ B24B *55/00*
U.S. Cl. 51—262 A **2 Claims**



1. A cleaning tool for cleaning sandpaper, comprising,

an elongated horizontally disposed handle having a horizontal longitudinal axis, opposite parallel side portions, and a horizontally disposed bottom portion,

first and second longitudinally spacd apart brackets secured to and spanning said handle adjacent said bottom portion, said brackets being angularly disposed with respect to each other and with respect to said longitudinal axis, and

a horizontally disposed cylindrically shaped roller wire brush being parallel to said bottom portion and having a freely rotatable axle mounted on each of said brackets,

each of said brackets being of a channel construction including spaced apart parallel ears and an integral connecting web, said parallel ears adapted to receive said roller brush axle, said parallel ears being perpendicular to the longitudinal axis of said brush axle,

said brackets and said rollers extending beyond the side portions of said handle, and comprising the only structure on said bottom portion.

4,438,602

LENS CARRIER ASSEMBLY FOR AUTOMATIC LENS BLOCKING

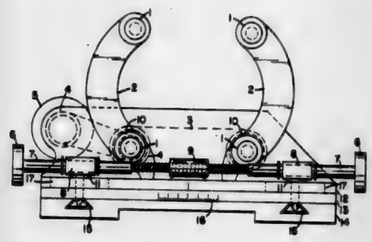
Charles S. Lannom, Box 270, Grinnell, Iowa 50112

Filed Jun. 25, 1981, Ser. No. 277,159
Int. Cl.³ E05F *11/00*
U.S. Cl. 51—277 **3 Claims**

1. A carrier assembly for positioning a finished uncut lens for blocking, said assembly being adapted for securement to the vertically movable portion of a vertexometer and comprising:

(a) a base having a top portion, a bottom portion and means for removably attaching said base to the vertically movable portion of a vertexometer, said base portions being constructed and arranged for movement fore and aft with respect to the vertexometer;

(b) means on said base for holding a lens in a position above said base top portion, said lens holding means including a pair of spaced-apart, arcuate-shaped arms, each of said arms extending upwardly from said base top portion and being biased towards the other arm, and means for allowing rotative movement of a lens held between said arms,



said means for allowing rotative movement of the lens including a plurality of rollers mounted on said arms, said plurality of rollers being constructed and arranged to rotate simultaneously with a lens held therebetween; and

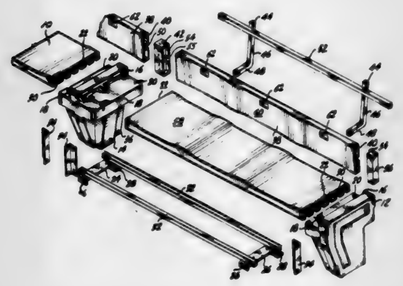
(c) means on said base for decentering the lens a predetermined value in accordance with an optical prescription, said means including means for moving said base top portion laterally with respect to said base bottom portion, thereby causing a simultaneous lateral decentering of the lens.

4,438,603

STADIUM SEATING

Martin J. Durkan, Jr., 17705 153rd Ave. SE., Renton, Wash. 98055

Filed Jun. 24, 1982, Ser. No. 391,553
Int. Cl.³ E04H *3/12*
U.S. Cl. 52—8 **18 Claims**



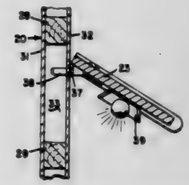
1. In combination with a gradine comprising a generally vertical surface abutting a generally horizontal surface, a modular seating assembly comprising; a plurality of integrally formed plastic pedestals attached in spaced array along said gradine, and an integrally formed plastic seat section extending between adjacent pedestals, said seat section interfitting in respectively congruent recesses in the upper portions of said pedestals, and each pedestal being attached to said gradine by bracket means affixed both to the sides of said pedestals and to the generally vertical surface of said gradine, rearwardly of said pedestal.

4,438,604

INTERIOR DECORATION SYSTEM

Lawrence E. McGourty, Jr.; Gabriel Audette, and Jean M. Audette, all of c/o Woodcraft Industries, Ltd., 7 High St., Hudson, Mass. 01749

Filed Jun. 19, 1981, Ser. No. 275,252
Int. Cl.³ A47B *5/00*
U.S. Cl. 52—28 **9 Claims**



1. Interior decoration system, comprising:

(a) a panel located adjacent a structural wall,

(b) a plurality of vertically-spaced first brackets mounted on the structural wall,

(c) a plurality of vertically-spaced second brackets mounted on the rear surface of the panel and locking with the first brackets to hold the panel in fixed relationship to the structural wall, a plurality of shelves being mounted on the front surface of the panel, each shelf having a plurality of male elements that removably lock into female elements, and

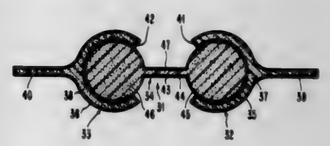
(d) a lighting fixture mounted on the undersurface of each shelf, an electrical outlet being located at the front surface of the panel for connection to the lighting fixture, the lighting fixture including an electrical connector having prongs mounted on the undersurface of the shelf, the male members and the electrical connector being mounted adjacent one edge of the shelf, the male members and the prongs of the electrical connector extending at an acute angle to the undersurface of the shelf.

4,438,605

CONTINUOUS, MOVEABLE THERMAL BARRIER SYSTEM

Paul V. DeLucia, Rte. 82, R.D. 6, Box 85, Hopewell Junction, N.Y. 12533

Filed Oct. 19, 1981, Ser. No. 312,713
Int. Cl.³ E04B *1/344;* A47G *5/00*
U.S. Cl. 52—71 **10 Claims**



1. A hinge assembly for use in a continuous moveable, paneled, thermal barrier system, enabling the panels of the system to be moved from in-use position to out-of-the-way storage or open position, said assembly being constructed in such manner as to maintain high thermal insulating efficiency thereby greatly increasing the overall thermal insulating efficiency of the system, said assembly and, further, which permits pivotal motion about two parallel axes, comprising:

a pair of separate, spaced apart elongated hinge members of thermal insulating material, each of whose configuation is that of a hollow shell thereby creating an air space which serves to increase thermal insulating efficiency, said shell including at least a generally open socket, the angle of the opening being less than 180°; and,

an elongated hinge member of thermal insulating material whose configuration is that of a hollow shell thereby creating an air space which serves to increase thermal insulating efficiency, said shell including at least a pair of opposed interconnecting inserts;

said inserts adapted to be pressure sealed within a respective one of said sockets while being capable of relative angular movement therein, thereby providing a continuity of thermal insulating performance at the interconnection of adjacent panels of the system while permitting relative pivotal motion therebetween and about two parallel axes.

4,438,606

SHELTER FOR PROTECTING LARGE-SIZE OBJECTS

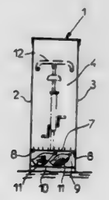
Andre-Marie Chardon, Aux amphores, Courcelles, 89570 Neuvy-Sautour, and Philippe Guibert, 2 Place des Magnolias, 77680 Roissy en Brie, both of France

Filed Jul. 31, 1981, Ser. No. 289,054

Claims priority, application European Pat. Off., Apr. 1, 1981, NR 81400523.7

Int. Cl.³ E04L *1/12*

U.S. Cl. 52—79.1 **11 Claims**



1. A shelter for protecting large size objects, comprising:

a structure having a shape adapted to the shape of the objects it is to contain and formed of two spaced vertical, longitudinal walls, and a rear wall connecting said vertical, longitudinal walls;

a cover fitting over said walls;

a front face, a door pivoted on said face for closing said shelter;

a flat flooring defining with said walls a lower compartment, said flooring being constituted by a removable sheet metal; and

in said compartment, a heavy mass whose weight bears onto the walls of the shelter in order considerably to increase the total weight of the shelter and prevent easy handling thereof.

4,438,607

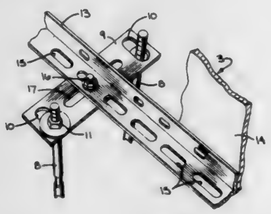
METHOD AND APPARATUS FOR LEVELING A STORAGE STRUCTURE

Delmer R. Nelson, Cordova, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Mar. 29, 1982, Ser. No. 362,919

Int. Cl.³ E02D *27/00*

U.S. Cl. 52—126.1 **5 Claims**



1. In a storage structure, a foundation, a plurality of pairs of anchor elements embedded in the foundation in circumferentially spaced relation, the upper ends of said anchor elements projecting above said foundation, a support member connected to the upper ends of each pair of anchor members, means for adjusting the height of each of the support members with respect to the corresponding anchor elements to thereby enable the support member to be leveled, a plurality of generally curved wall sections mounted on the support members and arranged in circular configuration, each section having a generally horizontal member supported on said support members, one of said members having a plurality of first elongated slots and the other of said members having a plurality of second elongated slots disposed at an angle to said first slots, and a plurality of connectors extending through aligned first and second slots to connect the sections to the support members, said first and second slots permitting both radial and circumferential adjustment of said sections relative to said support members.

4,438,608

STAIRTREAD FOR SPIRAL STAIRCASE

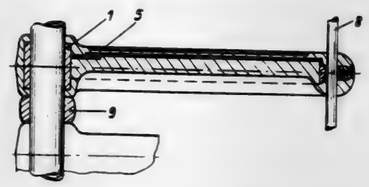
Wilfried Hamm, Im Wiesengrund 28, 4330 Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,911

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 8005300[U]

Int. Cl.³ E04F *11/02, 11/08*

U.S. Cl. 52—187 **3 Claims**



1. In a staircase of the spiral type having individual treads projecting radially from a vertical support column, the improvement to such treads wherein each tread comprises:

(a) a frame having radially extending sides with inner and outer ends, a tubular sleeve welded to the inner ends of said sides, an outer segment welded to the outer ends of said frame sides, said sides and segment being of T-shaped cross section with the stem of the T oriented horizontally and welded to said sleeve at said inner ends of said sides,

(b) a formed steel plate welded to upper marginal edges of said T-shaped sides and having downwardly bent marginal side portions welded to margianl edges of said stems of said T-shaped frame sides, said plate being perforated,

(c) a polyurethane foam covering means encasing said frame sides and said steel plate to define thickened and rounded marginal portions along said radially extending frame sides, said polyurethane foam means defining downwardly open radially extending slots adjacent said edges, and

(d) carpeting provided on the upwardly facing surface of said polyurethane covering and marginal edges of said carpeting received in said slots, said polyurethane covering means being recessed to receive said carpeting.

4,438,609

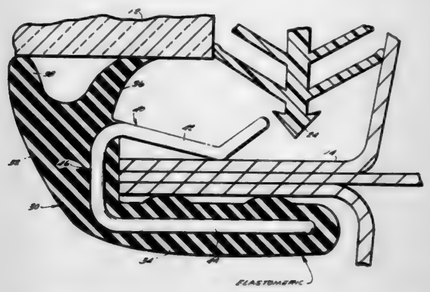
URETHANE BONDED WINDSHIELD DAM

Erik I. Nielson, Oakville, and Robert B. Hope, Downsview, both of Canada, assignors to Schlegel Corporation, Rochester, N.Y.

Filed Jan. 30, 1981, Ser. No. 229,848

Int. Cl.³ E06B *3/62, 7/16*

U.S. Cl. 52—208 **12 Claims**



1. A method of installing windows in vehicles provided with body cavities for receiving windows and flanges therein for supporting such windows consisting of the step of

placing an elongated trim provided with a pair of window engaging ribs onto the flange located within the body cavity in which the window is to be sealed so that the window engaging ribs face outwardly away from the body cavity,

placing a bead of adhesive material about the periphery of the window,

positioning the window within the body cavity,

and pressing the window into contact with one of the two ribs while deflecting the other rib thereby forming said other rib into an internal dam for controlling the flow of the adhesive as the window is pressed into place thereby substantially preventing adhesive from flowing outwardly from the body cavity along the interior surface of the window and selaing between the outer peripheral edge of the window and the body cavity.

4,438,610

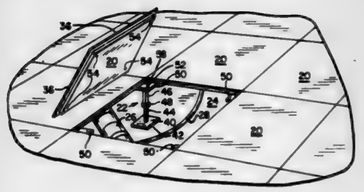
CLAMPED ACCESS FLOOR PANEL ASSEMBLY

James T. Fifer, #1001 1200 Boylston Ave., Seattle, Wash. 98101

Filed Apr. 14, 1982, Ser. No. 368,371

Int. Cl.³ E04B *5/43*

U.S. Cl. 52—263 **14 Claims**



1. A corner clamped access floor panel assembly for mounting an access floor at a spaced distance above a base floor, the assembly comprising in combination:

(a) a plurality of panel supporting pedestals positioned at spaced intervals on the base floor and extending upwardly to substantially a common height, each pedestal including a panel-supporting surface adjacent its upper end;

(b) a plurality of polygonal panels arranged side by side in rows, each panel being supported at each corner by the panel supporting surface of one of the pedestals, each panel having a top surface and a clamp surface spaced below the top surface and overlying the support plate,

(c) rotatable clamping means releasably interengaging the support plate and clamp surface for releasably locking the panels on the pedestal,

(d) a rotary drive tool connector on the clamping means facing the top surface of the panel, and

(e) a drive tool access hole through the top surface in substantially vertical alignment with the connector for rotating the clamping means between an operative position locking the panels on the pedestal and a release position unlocking the panels from the pedestal.

4,438,611

STUD FASTENERS AND WALL STRUCTURES EMPLOYING SAME

George E. Bryant, Renton, Wash., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 31, 1982, Ser. No. 364,079

Int. Cl.³ E04B *2/30, 2/40*

U.S. Cl. 52—309.2 **24 Claims**



1. A fastener comprising a substantially flat elongated strip having at least one leg depending therefrom, an arm joined with and extending out from said elongated strip, and an L-shaped member comprising substantially flat first and second legs, said first leg depending from said arm and said second leg extending out from said first leg and away from said elongated strip, said first leg and each of said legs depending from said elongated strip being on the same side of said elongated strip.

4,438,612

SYSTEM FOR THE MUTUAL ANCHORING OF TWO WALLS

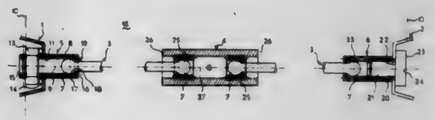
Alain Bernard, Marcq-en-Baroeul, and Robert Chedeville, Sailly-lez-Lannoy, both of France, assignors to Couturier S.A., Croix, France

Filed Oct. 27, 1981, Ser. No. 315,471

Claims priority, application France, Apr. 14, 1981, 81 07851

Int. Cl.³ E04B *2/00*

U.S. Cl. 52—427 **14 Claims**



1. A system for mutually anchoring two spaced-apart walls comprising a tie-rod extending between said walls, said tie-rod comprising two sections and tensioning means connecting the two sections end-to-end and means for connecting opposite ends of said tie-rod respectively to said walls, said latter connecting means comprising integral balls on opposite ends of said tie-rod, a tubular sleeve at each end of said tie-rod, said sleeve being open at one end to receive the tie-rod and having

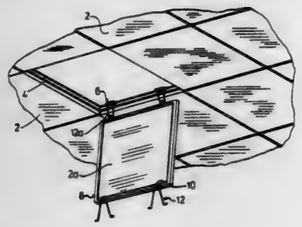
internally a socket to receive the ball at the respective end of the tie rod, said socket presenting around said opening of said sleeve an annular restriction of interior spherical form to constitute a bearing for said ball at the respective end of the tie-rod, said sleeve having moreover a threaded portion, and an anchoring member for anchoring said sleeve to the respective wall, said anchoring member having threads engaging said threaded portion of said sleeve to unite said sleeve with said anchoring member.

4,438,613

SUSPENDED CEILING PANEL SYSTEM

Roy A. Hintsa, Etobicoke, and Tonu Orav, Thornhill, both of Canada, assignors to Decoustics Limited, Rexdale, Canada

Filed Jun. 25, 1981, Ser. No. 277,166
Int. Cl.³ E04B 5/52
U.S. Cl. 52—484 **26 Claims**



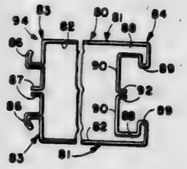
3. A suspended ceiling system comprising a plurality of grid support members, a plurality of ceiling panels each having a body member and a reinforcing edge secured about the top edge of the panel and extending down the side edge thereof, spring means hingedly secured to each of said panels and releasably secured to one of said grid members, wherein said spring means maintains said panel in position against said grid members in one position and in a second position said spring means is selectively disengagable for suspending a ceiling panel generally perpendicular to said grid members, said grid members have a downwardly extending alignment stud which cooperates with the reinforced edge of said panels to accurately align panels with the grid members when positioned thereagainst, said panels including a decorative cover on the lower surface of the panel which extends upwardly along the edges of the panel, whereby when two adjacent panels are secured to the grid members the alignment stud therebetween is not visible due to the decorative cover of said panels extending upwardly along the edges thereof.

4,438,614

DEMOUNTABLE INTERIOR PARTITION SYSTEM AND COMPONENTS THEREFOR

Richard L. Raith, Solon, Ohio, and Joseph A. Davenport, Portland, Oreg., assignors to Hauserman, Inc., Cleveland, Ohio

Division of Ser. No. 882,668, Mar. 2, 1978, Pat. No. 4,251,968. This application Dec. 11, 1980, Ser. No. 215,540
Int. Cl.³ E04C 1/10
U.S. Cl. 52—580 **5 Claims**



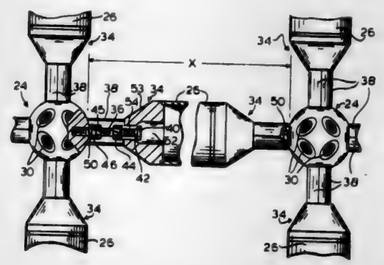
1. A panel for a partition system comprising opposite face plates each forming a face and each being bent inwardly at least at one of its vertical edges and, inwardly recessed from the face, then upon itself to form a double thickness vertically outwardly extending flange recessed from the face, the inwardly bent portion then terminating in an also outwardly extending connecting flange parallel to but offset from the face of each said plate, said face plates at their other ends being bent inwardly to define a relatively deep female channel having inturned edge restrictions, and wherein said first and second connecting flanges of one of said face plates abut the corresponding first and second connecting flanges of the other of said face plates.

4,438,615

ORBA-HUB

Wendel R. Wendel, Plainview, N.Y., assignor to Space Structures International Corp., Plainview, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,801
Int. Cl.³ F04H 12/06; F16B 7/18
U.S. Cl. 52—648 **6 Claims**



1. A strut assembly for joining first and second hubs in a space frame including in combination a strut member, first and second bolt means projecting from said strut member, first and second bore sections of said strut member, first and second bore openings of lesser diameter than said bolt means communicating respectively with said first and second bore sections, first conical shoulder means joining said first bore opening and said first bore sections, second conical shoulder means joining said second bore opening and said second bore section, said first and second bolt means respectively projecting in loose fit configuration through said respective bore openings and into respective bore sections, a spherical bearing surfaced nut on the end of each of said bolt means within each said respective bore section engaging said respective conical shoulder, first and second hub abutting means fixed in position on said first and second bolt means respectively providing a known preset spacing therebetween and in which a respective cylindrical collar member surrounding respective bolt means with ends thereof respectively abutting said strut member and a respective hub to provide a compressive load transfer path.

4,438,616

SPACE FRAMES

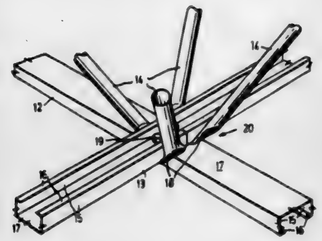
Edwin T. Codd, 87 Albert St., Brisbane, Queensland, 4000, Australia

PCT No. PCT/AU81/00089, § 371 Date Feb. 1, 1982, § 102(e) Date Feb. 1, 1982, PCT Pub. No. WO82/00311, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 13, 1981, Ser. No. 354,081
Claims priority, application Australia, Jul. 11, 1980, PE4480
Int. Cl.³ E04H 12/00
U.S. Cl. 52—650 **4 Claims**

1. A space frame of the type having an upper grid of longitudinal chord members and lateral chord members, a lower grid of longitudinal chord members and lateral chord members, and diagonal struts interconnecting nodes at chord intersections of the two grids, characterized in that at each node;

(a) one chord member of each grid overlies the other chord member of such grid,

(b) an end of each strut extends from the node and is interposed between the said chord members of each grid,



(c) the strut ends are in adjacent, non-superimposed, relationship, and

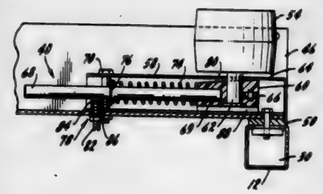
(d) each one of the said strut ends is individually secured by a connector member passing through the said strut end and through the adjacent chord members above and below said strut end.

4,438,617

BELT TRACKING AND TENSIONING ARRANGEMENT

Lawrence W. Ulrich, and Connie W. Walker, both of Bolingbrook, Ill., assignors to Durable Packaging Corporation, Chicago, Ill.

Filed Jan. 18, 1982, Ser. No. 340,011
Int. Cl.³ B65B 61/00
U.S. Cl. 53—137 **10 Claims**



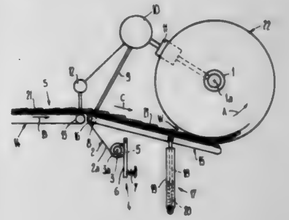
1. In combination with apparatus of the type used for sealing the foldable flaps of cartons, said apparatus including a frame structure, a sealing head means mounted to said frame structure, and a pair of facing longitudinally extending side arm assemblies mounted to said frame structure, said side arm assemblies including moving endless belts positioned to contact the side walls of said carton for movement of same past said sealing head means; an improved endless belt tracking and tensioning arrangement comprising: a first roller member journalled for rotation about a substantially vertical first shaft, said first shaft being rigidly secured to said side arm assembly; a second roller member longitudinally spaced from said first roller for rotation about a substantially vertical second shaft, said second shaft being movably mounted to said side arm assembly for movement towards and away from said first shaft; an endless belt journalled around said first and second roller members; a longitudinally extending channel member rigidly secured to said side arm assembly adjacent to said second roller member; a support block positioned within said channel member and movable longitudinally therein, said second shaft extending into said channel member and rigidly secured to said support block for movement therewith; a control rod member positioned within said channel member, said control rod member having a first end secured to said support block and a second end extending towards said first roller member; a stop means rigidly secured to said channel member intermediate the first and second ends of said control rod member; biasing means extending between said support block and said stop means for biasing said second shaft away from said first shaft; and skewing means associated with a portion of said control rod member spaced from said first end thereof for selectively raising and lowering said portion of said control rod member so as to pivot said support block about a transversely extending horizontal axis and thereby skew said second roller member relative to said first roller member.

4,438,618

APPARATUS FOR STACKING PRINTED PRODUCTS, SUCH AS NEWSPAPERS, PERIODICALS AND THE LIKE, ARRIVING IN AN IMBRICATED PRODUCT STREAM

Werner Honegger, Tann-Rütl, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jul. 6, 1981, Ser. No. 280,998
Claims priority, application Switzerland, Jul. 15, 1980, 5400/80
Int. Cl.³ B65B 63/04
U.S. Cl. 53—430 **30 Claims**



1. An apparatus for stacking printed products, especially newspapers, periodicals and the like, arriving in an imbricated product formation, each of said printed products having a trailing edge and a leading edge, comprising:

a rotatably driven winding mandril rotatable about an axis of rotation for winding-up the imbricated product formation into a wound imbricated package formation;

a separation layer connected with the rotatably driven winding mandril and which, during winding of the imbricated product formation, is wound-up under tension in the form of individual tensioned coils between package layers of the wound imbricated package formation;

said separation layer comprising a winding band which is infed to the rotatably driven winding mandril and is under tension;

means including the rotatably driven winding mandril for infeeding the separation layer under tension to the rotatably driven winding mandril and into the wound imbricated package formation;

drive means for driving the winding mandril such that said individual coils of the separation layer which are wound onto the winding mandril are wound thereon under tension;

means for infeeding the imbricated product formation at a predetermined infeed velocity to the rotatably driven winding mandril with the trailing edges of the products of the imbricated product formation bearing upon the separation layer;

means cooperating with said infeeding means for the imbricated product formation and said drive means for accommodating a winding-up velocity of the winding mandril as a function of the predetermined infeed velocity of the imbricated product formation;

means for regulating driving of the rotatably driven winding mandril as a function of the diameter of the wound imbricated package formation; and

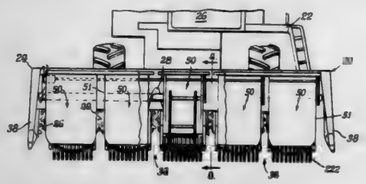
said rotatably driven winding mandril being positioned relative to said separation layer such that the leading edges of the printed products are situated closer to the axis of rotation of said rotatably driven winding mandril than the trailing edges of the printed products which bear upon said separation layer.

4,438,619

CORN HARVESTER COMBINE WITH MEANS FOR PICKING UP LOOSE EARS

Edward J. Heim, R.R. #2, Box 124B, Hoxie, Kans. 67740; Stephen B. Hennessey, 216 SE. Greenroad, Tecumseh, Kans. 66542; Curtis R. Janssen, R.R. #2, Solomon, Kans. 67480; R. Shannon Johnson, 4010 N. Brandywine Dr., Apt. 1023, Peoria, Ill. 61614; Richard B. League, 917 Moro, Manhattan, Kans. 66502; Ronald D. Shinogle, 4010 N. Brandywine Dr., Apt. 1310, Peoria, Ill. 61614, and Richard A. Weber, 513½ Main, Seneca, Kans. 66538

Filed Mar. 17, 1983, Ser. No. 476,279
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—119 **15 Claims**



1. In a mobile corn harvester combine having a corn head comprising a frame with a plurality of forwardly extending horizontally spaced throat portions adapted to be aligned with and moved along a plurality of rows of corn being harvested, a transverse auger conveyor behind the throat portions for conveying corn laterally toward processing mechanism in the machine, each of the throat portions having associated therewith conventional structure including a pair of horizontally spaced stripper plates with snapping rolls and rearwardly moving gathering chains for snapping corn ears from stalks and conveying them to the auger conveyor; means for collecting loose ears of corn from the ground and conveying them to the auger conveyor comprising:

a plurality of conveyor trough means supported by the corn head frame and located forwardly of the frame between adjacent rows of corn, each conveyor trough means extending in a generally rearwardly and upwardly direction and comprising a lower level pickup and receiving section and a higher level discharge section;

said pickup and receiving section having an open grid-like structure comprising finger-like bars parallel to the direction of movement of the harvester, and a ground-engaging skid runner at the forward end of each, each of the skid runners having a forwardly extending lip for picking up ears of corn from the ground, the finger-like bars being pivotally connected to the discharge section and to corresponding ones of the skid runners enabling the finger-like bars to move up and down in response to variations in ground level;

said discharge section comprising a plate having an inlet end portion positioned to receive ears of corn from the pickup and receiving section, and having an outlet end portion positioned to discharge ears of corn onto the gathering chains for transferring ears of corn therefrom to the auger conveyor;

a reel having an auxiliary frame supported by the corn head frame above each conveyor trough means, a pair of horizontally spaced conveyor drive chains trained between forward and rearward sprocket means on the auxiliary frame for orbital movement in a lower conveying run and an upper return run, and having a plurality of movable cross bars supported between the chains for rearward movement with the lower runs of the chains across the pickup and receiving, and discharge sections of the trough means;

power means for driving the conveyor drive chains;

each of the cross bars having a plurality of generally radially extending tines which fit within the spaces between at least some of the finger-like bars and corresponding skid runners to thereby fully engage ears of corn on the forwardly extending lips and move the ears rearwardly along the finger-like bars and transfer them to the discharge section; and

said movable cross bars being effective as conveyor flights to convey ears along the discharge section to the outlet end thereof for transfer to the auger conveyor via the gathering chains.

4,438,620

METHOD AND MEANS OF SERVICING AN OVERHEAD LIMB OF A GROWING PLANT

Paul F. Beardsley, Van Wert, Iowa 50262

Filed Aug. 30, 1982, Ser. No. 412,497
Int. Cl.³ A01D *46/24*
U.S. Cl. 56—332 **14 Claims**



6. A tool for reaching, positioning and holding overhead limbs of growing plants for servicing, comprising,

an elongated member having opposite ends,

a hook means on one end of said elongated member for releasably grasping and holding a limb,

and a foot engaging means on the other end of said elongated member to permit an operator's foot to hold said elongated member and a limb grasped by said hook means in a stabilized position by exerting downward force on said foot engaging means, whereupon both hands of the operator are free to service said limb.

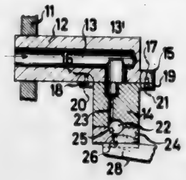
4,438,621

THREAD JOINING DEVICE

Joachim Rohner, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Continuation of Ser. No. 225,636, Jan. 16, 1981, abandoned. This application Jan. 31, 1983, Ser. No. 462,406
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001917
Int. Cl.³ B65H *69/06*; D01H *15/00*; D02J *1/08*
U.S. Cl. 57—22 **6 Claims**

1. Thread joining device, comprising a basic body stationary with respect to threads to be joined, said basic body having a first channel for compressed air formed therein, a plurality of splicing heads for accommodating respective threads of different type, each of said splicing heads having formed therein a splicing chamber for inserting and joining threads and a second compressed air channel for communication between said splicing chamber and said first channel formed in said basic body, and means for interchangeably fastening one of said splicing heads selectively to said basic body in accordance with the type of threads to be joined.

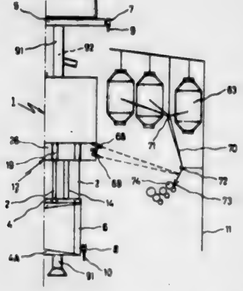


4,438,622

APPARATUS FOR AUTOMATIC CREELING IN RING SPINNING FRAMES

Roberto E. Pons, Ronda General Mitre, 105,4°,1° Barcelona 6, Spain

Filed Mar. 5, 1982, Ser. No. 355,251
Claims priority, application Spain, Mar. 10, 1981, 500,247
Int. Cl.³ D01H *9/18, 15/00*
U.S. Cl. 57—261 **6 Claims**



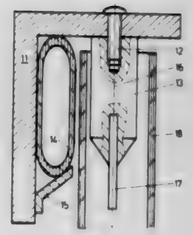
1. Apparatus for automatic creeling in ring spinning frames having a plurality of frame spindles for holding bobbins of roving that passes from the bobbins over roving rods to a drafting system of a spinning machine, comprising a frame, means mounting said frame for movement past a plurality of bobbins of a said ring spinning frame, a body movable vertically on said movable frame, means carried by the movable frame for detecting missing roving for each of the frame spindles, means for stopping the movable frame at the location of the missing roving, means on the body for removing the bobbin on the spindle at the location of the missing roving, means on the body for creeling a full bobbin in the place of the removed bobbin, means for retaining the end of the roving from the freshly creeled bobbin, means on the body for gripping said roving end and for passing it about said roving rods to said drafting system, and means for replacing said bobbins on said movable frame.

4,438,623

GRIPPER APPARATUS ON A RING SPINNING OR RING TWISTING MACHINE

Peter Oswald, Matzingen, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

PCT No. PCT/EP81/00174, § 371 Date Jul. 1, 1982, § 102(e) Date Jul. 1, 1982, PCT Pub. No. WO82/01727, PCT Pub. Date May 27, 1982
PCT Filed Oct. 31, 1981, Ser. No. 396,915
Claims priority, application Switzerland, Nov. 13, 1980, 8428/80
Int. Cl.³ D01H *9/00*; B66C *1/46*
U.S. Cl. 57—275 **12 Claims**



1. A gripper apparatus for gripping bobbin tubes each having an interior space and placed at a ring spinning or ring twisting machine, said gripper apparatus comprising:

a movable support beam extending along the machine and provided with pegs directed towards the bobbin tubes;

each of said pegs having a tapered front end facing a related one of said bobbin tubes and each peg being insertable into the interior space of the related bobbin tube; and

each said peg being provided with a substantially cylindrical extension formed by an elastically bendable material and extending forwardly from said tapered front end of said peg.

4,438,624

OVERHUNG MOUNTED ROTATABLE CENTERING SPINDLE

Walter Mayer, and Stephan Wittmann, both of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 382,964
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121759
Int. Cl.³ D01H *15/00*; B65H *57/00, 69/00*
U.S. Cl. 57—352 **5 Claims**



1. A centering spindle for centering a yarn at an open-end spinning position and the like of the type having a central peripheral groove into which open threaded grooves run together oppositely from both sides, comprising:

a first longitudinal section of said grooves running into said central groove from one side thereof;

a second longitudinal section of said grooves running into said central groove from a second side thereof and extending away therefrom to a free end of said spindle;

said centering spindle being reversibly rotatable so that a yarn engaged thereby travels from said central groove to said free end and is there ejected from said spindle; and

said threaded grooves of said first and second sections having different core diameters.

4,438,625

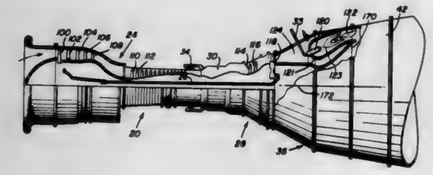
REHEAT GAS TURBINE COMBINED WITH STEAM TURBINE

Ivan G. Rice, P.O. Box 233, Spring, Tex. 77373

Division of Ser. No. 954,838, Oct. 26, 1978, Pat. No. 4,272,953. This application Jan. 13, 1981, Ser. No. 224,496

Int. Cl.³ F02C 6/18

U.S. Cl. 60—39.17 **21 Claims**



1. In an apparatus for the production of useful power including a gas compressor for receiving ambient air and for producing a high pressure air, a generator turbine drivingly connected by a generator shaft to said compressor, a first combustor receiving gas generator fuel and said high pressure air and for forming a combustion gas for driving said generator turbine, said generator turbine driving said compressor and forming a high temperature, high pressure first gas, a reheat combustor for receiving said high temperature, high pressure first gas and reheater fuel and for forming a high temperature, high pressure second gas, a power turbine associated with said reheat combustor for receiving said second gas whereby said power turbine is driven to produce work and an exhaust third gas is produced, the improvement comprising wherein said compressor is capable of producing a pressure ratio of said high pressure air to said ambient air of at least about 18 and a linear axial flow annular diffuser is interposed between said generator turbine and said reheat combustor for reducing the velocity of said first gas, said annular diffuser having a length of at least about 4 feet to prevent separation and resulting turbulence of said first gas during deceleration, said generator turbine, annular diffuser, reheat combustor, and power turbine are sequentially juxtaposed in a linear axial arrangement whereby the flow of gas from said generator turbine sequentially through said annular diffuser, said reheat combuster and said power turbine is substantially parallel to the linear axis of said arrangement.

4,438,626

APPARATUS FOR ATTACHING A CERAMIC MEMBER TO A METAL STRUCTURE

Stephen B. Berestecki, Lynnfield, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Sep. 11, 1981, Ser. No. 301,172

Int. Cl.³ F02C 7/20

U.S. Cl. 60—39.32 **17 Claims**

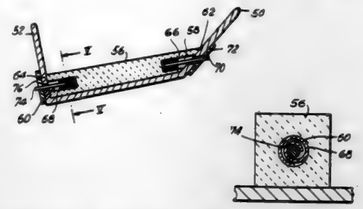
1. Apparatus for mounting a ceramic member to a metallic structure in a thermally cyclic environment, comprising:

at least one bore in said ceramic member;

at least one metallic pin passing through said metallic structure and into said at least one bore;

a scroll-wound metal bushing between each of said metallic pins and each of said bores; and

each of said metal bushings being formed of a metal sheet scroll wound at least one and one quarter turns to provide at least one quarter turn overlap, overlapping portions of said bushing being spaced from each other for resiliently



accommodating differential thermal loading of said ceramic member and said metallic structure.

4,438,627

EXHAUST GAS PURIFICATION APPARATUS IN INTERNAL COMBUSTION ENGINE

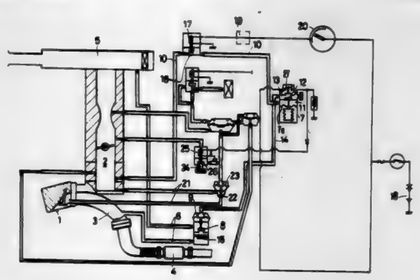
Osamu Gotoh, Higashikurume, and Akira Fujimura, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,689

Claims priority, application Japan, Nov. 18, 1980, 55-161432

Int. Cl.³ F01N 3/22

U.S. Cl. 60—278 **6 Claims**



1. An exhaust gas purification apparatus for a lean mixture internal combustion engine comprising:

an intake passage means;

an exhaust passage means;

a catalyzer for exhaust gas purification coupled to said exhaust passage means;

an external air introducing passage means connected to said exhaust passage means on the upstream side of said catalyzer;

a first detecting means connected to said intake passage and operable in response to negative intake pressure above a predetermined value for detecting deceleration of said engine;

a second detecting means operable in response to vehicle speed above a predetermined value; and

a control valve means positioned in said external air introducing passage means and connected to said first and second detecting means, whereby said control valve means is opened upon concurrent operation of said first and second detecting means to introduce external air into said exhaust passage means only during deceleration from high speed.

4,438,628

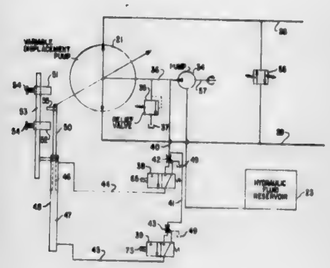
PUMP JACK DRIVE APPARATUS

Reginald D. Creamer, 228 Spring Haven Ct., Airdrie, Alberta, Canada

Filed Dec. 19, 1980, Ser. No. 218,038

Int. Cl.³ F04B 35/00

U.S. Cl. 60—374 **1 Claim**



1. A driving apparatus for a pump jack of the type including a samson post, a walking beam pivotally mounted on the samson post for rotation around a horizontal axis, a horsehead on one end of the walking beam for driving connection to a pump mechanism, said apparatus comprising first cylinder means pivotally mounted on said samson post; first piston rod means associated with said first cylinder means and pivotally connected to said walking beam on one side of said horizontal axis for moving said one end of said walking beam upwardly upon extension of said first piston rod means with respect to said first cylinder means; second cylinder means pivotally mounted on said samson post; second piston rod means associated with said second cylinder means and pivotally connected to said walking beam on the other side of said horizontal axis for moving said one end of said walking beam downwardly upon extension of said second piston rod means with respect to said second cylinder means; adjustable control means for alternately extending said first and second cylinder means, said control means comprising a variable displacement pump, control piston and cylinder means mechanically connected to said variable displacement pump for controlling the operation thereof and including a pair of adjustable limit stops for said control piston and cylinder means for independently controlling the extension speed of said first and second cylinder means, a fixed displacement pump for supplying fluid under pressure to said variable displacement pump and through a pair of solenoid valves to said control piston and cylinder means, adjustable means for controlling the flow rate of fluid through said solenoid valves for independently controlling the acceleration rates of said first and second cylinder means, switch means actuated by said walking beam at the top and bottom limits of the stroke thereof, said switch means being operatively connected to said solenoid valves for controlling the operation of said solenoid valves and thereby said control piston and cylinder means and consequently the feeding direction of said variable displacement pump, whereby said one end of the walking beam and said horsehead are reciprocated upwardly and downwardly, the upward and downward movements being at the same or different speeds according to the extension speeds selected for said first and second cylinder means.

4,438,629

APPARATUS FOR SIMULTANEOUSLY ADJUSTING FLUID PRESSURES IN A DUAL FLUID SYSTEM AND ASSOCIATED METHOD

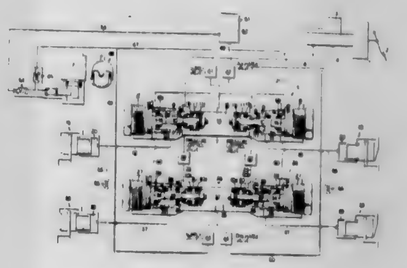
Makoto Sato, Kamifukuoka, and Etsuo Fujii, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 390,039

Claims priority, application Japan, Jun. 25, 1981, 56-98976

Int. Cl.³ F15B 7/08

U.S. Cl. 60—579 **13 Claims**



1. Apparatus for simultaneously adjusting the fluid pressures in a dual hydraulic circuit arrangement in which in a first hydraulic circuit pressurized fluid is supplied from a first pressure source to a first fluid pressure activated device and in a second hydraulic circuit pressurized fluid is supplied from a second pressure source to a second fluid pressure activated device, said apparatus comprising:

a cylinder having opposite closed ends and including spaced bulkheads therein defining a central chamber between the bulkheads and a pair of chambers on respective opposite sides of the bulkheads,

a pair of spaced first pistons slidably mounted in said central chamber and defining a control pressure chamber therebetween and first and second primary fluid pressure chambers between respective pistons and said bulkheads,

said first primary fluid pressure chamber being connected to said first pressure source while said second primary fluid pressure chamber is connected to said second pressure source,

a pair of second pistons secured for common movement with said first pistons, said second pistons being respectively mounted between said bulkheads and the closed ends of said cylinder and defining first and second secondary fluid pressure chambers between the second pistons and respective bulkheads,

said first and second secondary chambers being respectively connected to said first and second fluid pressure activated devices of said first and second hydraulic circuits, and

means for supplying a pressure fluid at a control pressure from a third pressure source to said control pressure chamber between said first pistons for simultaneously adjusting the pressures in said first and second secondary chambers and thereby in said first and second pressure activated devices of said first and second hydraulic circuits.

4,438,630

METHOD AND SYSTEM FOR MAINTAINING OPERATING TEMPERATURES IN A MOLTEN SALT CO-GENERATING UNIT

George H. Rowe, Windsor Locks, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

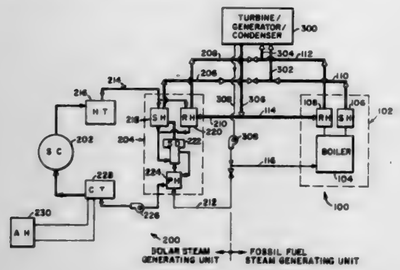
Filed Sep. 7, 1982, Ser. No. 415,511

Int. Cl.³ F01K 13/00

U.S. Cl. 60—676 **2 Claims**

1. In a molten salt co-generating steam supply system, the

system including first and second steam supply units connected to a common load, the first unit adapted for continuous steam generation in alternating full system power and part system power output, the second unit adapted for alternating hot shutdown and partial system power generation, the first unit having a steam flow line to the load and a feed-water flow line from the load, the second unit having a primary fluid loop containing a molten salt and a secondary loop containing water as the working fluid, with a steam generating heat exchanger interposed therebetween, wherein the invention is a method of maintaining the steam generator components of the second unit in a hot standby condition when steam is being generated only by the first unit, comprising the steps of:



connecting the first unit steam flow lines to the second unit secondary loop steam flow lines;

connecting the first unit feed-water flow lines to the second unit secondary feed-water flow lines;

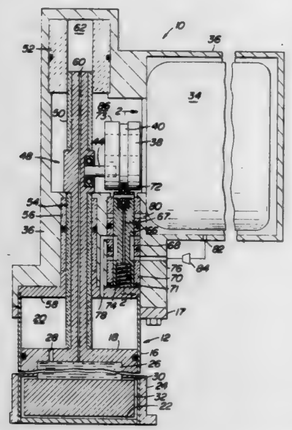
whereby a fraction of the steam generated by the first unit bypasses the load and enters the steam line of the secondary loop, flows in reverse direction through the secondary steam generator and returns to the first unit through the secondary loop feed-water lines, such that the steam generator components are maintained near their normal operating temperatures.

4,438,631

CRYOGENIC REFRIGERATOR

Domenico S. Sarcia, Carlisle, Mass., assignor to CVI Incorporated, Columbus, Ohio

Filed Jul. 15, 1982, Ser. No. 398,482
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **11 Claims**



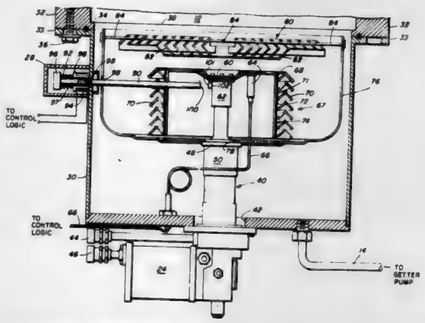
1. In an cryogenic refrigerator in which a moveable displacer means defines within an enclosure first and second chambers of variable volume, and in which a refrigerant fluid is circulated in a fluid path between the first chamber and the second chamber by movement of the displacer means, the improvement comprising chamber means for guiding a slide connected to the displacer means, a moter connected to said slide for reciprocating said slide, a valve having a reciprocal valve member for controlling the flow of high and low pressure fluid, said valve member having a peripheral groove which is of uniform depth at its ends, said moter being connected to a cam arranged to reciprocate said valve member in timed relation with reciprocation of said slide so that the valve member will introduce high pressure fluid via said groove into said first and second chambers when the displacer means is at one of the extremities of its movement.

4,438,632

MEANS FOR PERIODIC DESORPTION OF A CRYOPUMP

Philip A. Lessard, Acton, and Allen J. Bartlett, Milford, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Jul. 6, 1982, Ser. No. 395,120
Int. Cl.³ B01D *5/00*
U.S. Cl. 62—55.5 **7 Claims**



1. A cryopump comprising:

a primary cryopanel within the cryopump associated with a low temperature heat sink having means for adsorbing a first low boiling point gas,

a secondary cryopanel associated with a higher temperature heat sink having means for condensing a higher boiling point gas,

characterized by:

movable means for selectively conducting heat from outside the cryopump to the primary cryopanel within the cryopump to raise the temperature of the cryopanel above that which is necessary to cause said first gas to become desorbed from said cryopanel.

4,438,633

METHOD AND APPARATUS FOR USING LOW GRADE THERMAL ENERGY TO IMPROVE EFFICIENCY OF AIR CONDITIONING AND REFRIGERATION SYSTEMS

Leland L. Hiser, P.O. Box 95, New Braunfels, Tex. 78130

Filed Nov. 12, 1982, Ser. No. 441,163
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—116 **16 Claims**

1. An air conditioning and refrigeration system comprising:

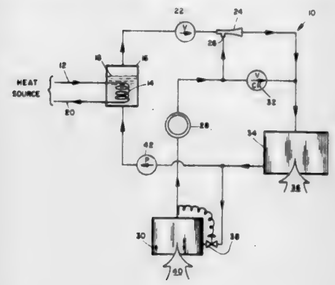
first compressor means;

condenser means for receiving a pressurized refrigerant in a vapor form from said first compressor means, said condenser means converting said vapor form to a liquid form by giving off heat;

expansion means receiving said liquid form of said refrigerant and allowing passage therethrough;

evaporator means receiving said refrigerant from said expansion means and converting said refrigerant to a vapor form by absorbing heat, said vapor being received by said first compressor means for pressurization prior to said receiving by said condenser means;

jet compressor means operated by an expanding vapor, said jet compressor flowing said expanding vapor therethrough to draw a lower pressure at a first orifice thereof,



said first orifice being in operative communication with said first compressor means to reduce pressure across said first compressor means;

boiler means for vaporizing a fluid therein utilizing a heat source to provide said expanding vapor for said jet compressor means, said boiler means being in flow communication with said jet compressor means; and

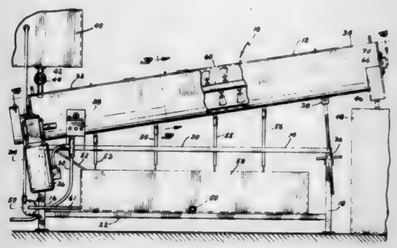
pump means for returning condensed fluid of said expanding vapor from said jet compressor means to said boiler means.

4,438,634

FREEZE CONCENTRATION APPARATUS

Rene Merle, New Hope; Myron Uecker, Buffalo, and Robert Kozlik, Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 5, 1982, Ser. No. 439,448
Int. Cl.³ B01D *9/04*; C02F *1/22*
U.S. Cl. 62—123 **10 Claims**



1. An apparatus useful in the freeze concentration of partially frozen slush having an ice crystal phase and a liquid phase, comprising:

a trough having a first end and an opposed second end;

means for elevating the second end relative to the first end;

means for feeding the slush to the trough proximate the first end;

means for discharging the ice crystal phase proximate the second end;

means for discharging the liquid phase from the underside of the trough;

auger means for advancing the slush along the trough;

a first means for damming the slush, said first dam means adjustably mounted in said trough thereby defining a recrystallizer section of the trough; and

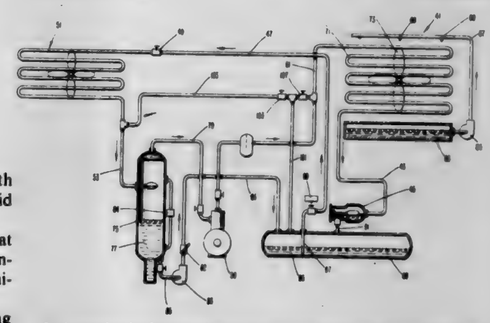
second means for damming the slush adjustably mounted in said trough intermediate the first dam means and the ice crystal discharge means thereby defining a first ice drainage section and a second ice drainage section of the trough.

4,438,635

EVAPORATIVE CONDENSER REFRIGERATION SYSTEM

William J. McCoy, Jr., 1029 Southgate Rd., Knoxville, Tenn. 37919

Filed Mar. 4, 1981, Ser. No. 240,565
Int. Cl.³ F28D *5/00*
U.S. Cl. 62—305 **12 Claims**



1. A method of operating an evaporative condenser refrigeration system, comprising the steps of:

selecting a suitable condensing temperature differential;

selecting a suitable condenser having a sufficient capacity for operation at the average wet bulb temperature of the locality of the system and at the selected temperature differential;

operating the evaporative condenser without capacity controls and at full capacity at all times during operation of the refrigeration system;

permitting the condensing temperature of the working fluid in the condenser to continuously follow the prevailing wet bulb temperature of the locality;

maintaining a seperation between a high pressure portion and a low pressure portion of the refrigeration system; and

controlling the flow rate of condensed working fluid to an evaporator with a flow control valve downstream of the separation between the high and low pressure portions.

4,438,636

HEAT-ACTUATED AIR CONDITIONER/HEAT PUMP

Dean T. Morgan, Sudbury, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Jun. 21, 1982, Ser. No. 390,596
Int. Cl.³ F25B *3/00, 29/00*
U.S. Cl. 62—325 **9 Claims**

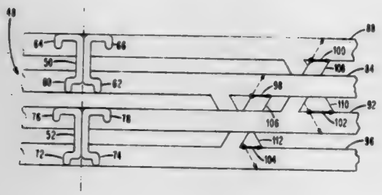
1. A heat-actuated air conditioner/heat pump comprising:

a first heat pipe assembly including at least one sealed tube having a central portion in fluid communication with a condenser leg and an evaporator leg and adapted to carry a working fluid therein, said tube being rotatable about an axis lying substantially in said central portion, said condenser leg located at a radius R_c from said axis of rotation, and said evaporator leg located at a radius R_e from said axis of rotation, R_c being greater than R_e and R_e being comparatively small;

a second heat pipe assembly substantially identical to said first heat pipe assembly, said second assembly being axi-

ally displaced from said first assembly and rotatable about said axis;

means for rotating said heat pipe assemblies about said axis to produce a vapor pressure differential of said fluid in the condenser and evaporator legs of each assembly, the speed of rotation being selected in conjunction with the molecular weight of the working fluid and the values for



R_c and R_e, such that evaporation of the working fluid in the evaporator legs will occur at a lower temperature than that which produces condensation of said fluid in the condenser legs; and

means for providing separate flows of air at different temperatures and for selectively directing said flows onto the condenser legs and the evaporator legs of said heat pipe assemblies.

4,438,637

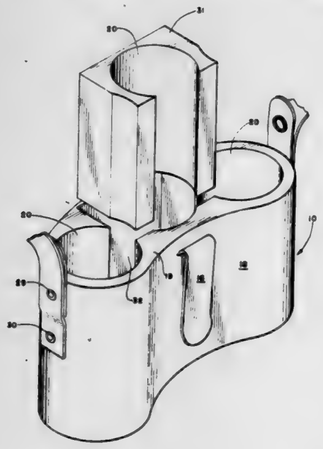
COOLING CONTAINER FOR CANNED BEVERAGES AND SANDWICHES

Lyle H. Atkinson, 3828 Pavant Dr., Salt Lake City, Utah 84120

Filed Aug. 19, 1982, Ser. No. 409,545

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 **8 Claims**



1. A portable cooling container for transporting and cooling canned beverages, comprising in combination:

a curved bottom housing having a plurality of vertically oriented conical compartments for holding canned beverages, said housing having walls of insulating material which surround said compartments;

a removeable center block in said bottom housing for providing a receptacle for sandwiches surrounded by insulating material;

a correspondingly curved top housing having walls of insulating material and having a plurality of recessed cavities therein correspondingly to said vertically oriented compartments in said bottom housing;

a coolant disposed in the upper ends of each respective recessed cavity of said top housing;

flexible means attaching said bottom housing to said top housing; and

means for carrying said top and bottom housings.

4,438,638

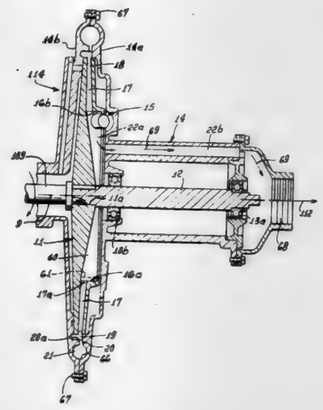
REFRIGERATION PROCESS USING TWO-PHASE TURBINE

Lance G. Hays, Los Angeles; Walter R. Studhalter, Woodland Hills, and Emil W. Ritzi, Manhattan Beach, all of Calif., assignors to Biphase Energy Systems, Santa Monica, Calif.

Division of Ser. No. 145,470, May 1, 1980, Pat. No. 4,336,693. This application Mar. 29, 1982, Ser. No. 363,397

Int. Cl.³ F25B *1/06*

U.S. Cl. 62—500 **17 Claims**



1. In a refrigeration system employing fluid refrigerant, the system including a flow path wherein the refrigerant is compressed and cooled, the system including expansion means to expand the compressed cooled fluid to a lower pressure level and lower temperature level, and refrigeration ducting through which the expanded fluid passes and absorbs heat, the improvement comprising

(a) said expansion means including nozzle means to receive the cooled fluid and to produce a liquid and vapor discharge,

(b) and a separator rotor located in such proximity to said nozzle means as to be rotated in response to said liquid discharged toward the rotor, the rotor carrying reaction nozzle means to discharge pressurized liquid for developing torque acting to rotate the rotor,

(c) at least some of the liquid discharged from said rotor reaction nozzle means flowing to said refrigeration ducting.

4,438,639

PRESSER FOOT FOR A KNITTING MACHINE

Max W. Betts, Coventry, England, assignor to Courtaulds Limited, London, England

Filed Feb. 12, 1982, Ser. No. 348,357

Claims priority, application United Kingdom, Feb. 17, 1981, 8104943

Int. Cl.³ D04B *7/04*

U.S. Cl. 66—64 **7 Claims**

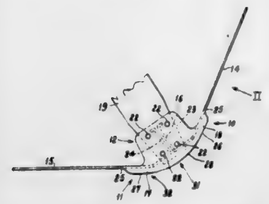
1. A knitting machine with independently operable needles located in opposed needle beds and comprising:

a presser foot device including at least one presser foot for controlling loops during the knitting procedure,

said presser foot having a leading portion and a trailing portion in relation to a direction of movement relative to needles of the machine,

said leading portion comprising a stitch contacting member operative close to both needle beds and stiff so as to resist deformation by knitted loops whereby said member will contact and control knitted loops held on needles of both needle beds, said member including a stitch contacting surface close to both needle beds,

said stitch contacting surface being smoothly curved downwardly and rearwardly in the direction of said relative



movement and having a forward part which is first to contact knitted loops in operation of said presser foot,

said forward part of said stitch contacting surface being inclined to the direction of said relative movement at an angle less than 35°,

said presser foot including a junction region between downward inclination of said stitch contacting surface of said stitch contacting member and rearward extension of said presser foot in said direction of relative movement,

said junction region being located in advance of flush jack position in said knitting machine, and

said trailing portion of the presser foot comprising a resilient elongated element mounted rigid with said leading portion and extending rearwardly therefrom.

4,438,640

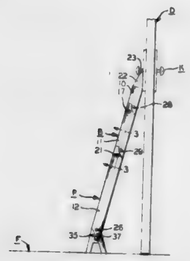
PORTABLE DOOR BRACE

Robert E. Willis, 6606 N. Saginaw, Flint, Mich. 48505

Continuation-in-part of Ser. No. 212,834, Dec. 4, 1980, abandoned. This application Sep. 13, 1983, Ser. No. 532,083

Int. Cl.³ E05B *64/00*; E05C *17/54*

U.S. Cl. 70—94 **4 Claims**



1. A door brace adapted to interengage a door knob or the like on a door and a floor beneath the door comprising:

a plurality of sections interconnected substantially end-to-end and collapsible with respect to each other into a compact form;

means adapted to engage the door knob or the like on the door formed in one end section of said plurality of sections; and

base means formed in the other end section of said plurality of sections, said base means including a main body, means for releasably securing said main body to said other end section, roller means rotatably retained within said main body and movable between a first position wherein said roller means extends below the bottom edge of said main body and a second position wherein said roller means does not extend below the bottom edge of said body, and means for urging said roller means toward said first position such that said roller means normally extends below the bottom edge of said main body.

4,438,641

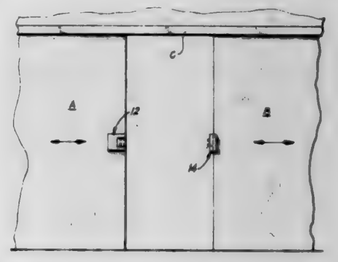
SHIELDED LOCK ASSEMBLY

Ilya I. Levkov, 321 W. 94 St., Apt. 6NW, New York, N.Y. 10025

Filed Oct. 9, 1981, Ser. No. 310,058

Int. Cl.³ E05B *65/52, 67/38, 65/08*

U.S. Cl. 70—95 **14 Claims**



1. A shielded lock assembly suitable for joining first and second members together comprising in combination:

(A) a shackle-bearing element having a body portion and a shackle carried thereby;

(B) a lock body having a keyhole and having a shackle-receiving aperture opening in a given direction and adapted to receive and releasably retain said shackle therein;

(C) a housing adapted to be secured to the first member and having an enclosure adapted to receive said lock body and having access openings communicating with said shackle-receiving aperture and said keyhole, respectively; and

(D) means operatively connected to said housing and engageable with said lock body for retaining said lock body in said enclosure;

said shackle-bearing element being adapted to be secured to the second member such that said shackle is aligned with and enters said shackle-receiving aperture as the first and second members approach each other, said body portion thereof being configured and dimensioned to then cover substantially all portions of said aperture access opening in said housing not occupied by said shackle.

4,438,642

ATTACHMENT DEVICE

Hendrik J. De Jong, Groenlo, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

Filed Dec. 17, 1981, Ser. No. 331,791

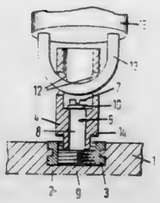
Claims priority, application Netherlands, Dec. 18, 1980, 8006896

Int. Cl.³ F16B *41/00*

U.S. Cl. 70—232 **5 Claims**

1. Attachment device by means of which a safety device can be attached to an article, characterized by a hollow sleeve accommodating a screw member the operation of which enables to attach the attachment device to an article to be protected, said sleeve extending beyond the article-averted end of the screw member and being provided with a transverse bore hole provided in the corresponding end, which transverse bore hole is adapted to receive a lock shackle means which renders the screw member inaccessible to tools and said screw member

has a screw head which rests against an internal shoulder of the sleeve by means of a spring washer, and that the head-averted end of the screw member is provided with a threaded portion



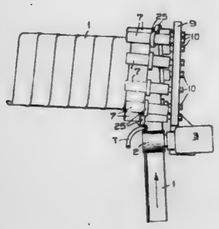
extending beyond the sleeve and having a larger core diameter than the outer diameter of the corresponding end of the sleeve, which threaded portion is adapted to be screwed in a screwed hole of an article to be protected.

4,438,643

MACHINE FOR FORMING TUBES FROM A STRIP

Stanley W. O. Menzel, Adelaide, Australia; David E. Mominee, Alpine, and Gilbert W. Vance, Jamul, both of Calif., assignors to Rib Loc (H.K.) Limited, Hong Kong

Division of Ser. No. 80,044, Sep. 28, 1979, Pat. No. 4,337,564. This application Jun. 21, 1982, Ser. No. 390,517
Claims priority, application Australia, Oct. 6, 1978, PD6282
Int. Cl.³ B21C *37/12*
U.S. Cl. 72—49 **16 Claims**



1. A machine for forming a tube from a strip which has a rib and a complementary groove extending longitudinally on the strip, said machine comprising:

a support;

joining roller means;

means for mounting the joining roller means for rotation on said support so that the joining roller means can engage the strip;

means to urge the strip forwardly over said joining roller means, said joining roller means allowing said strip to be curved around into a helical convolution with a first part of said strip being fed entering said convolution and a second part of the strip leaving said convolution and with the rib of one of said parts being in registry with the groove of the other of said parts;

said joining roller being engageable with one side of said first and second parts of said strip;

pressure roller means for forcing said rib of said one part into said groove of said other part on the joining roller means while applying a differential driving force to the other side of said first part and to the other side of said second part of said strip which tends to move said first and second parts of said strip forward at different rates of motion to progressively form a helical tube from said strip; and

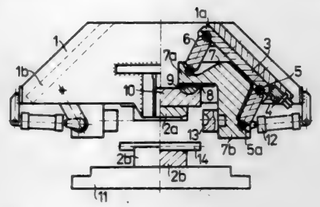
said joining roller means being undriven so that it does not apply a substantial force to said one side of the strip which would oppose said differential driving force.

4,438,644

FORGING DEVICE

Tadeusz Rut, Poznan, Poland, assignor to Instytut Obrobki Plastycznej, Poznan, Poland

Filed May 27, 1980, Ser. No. 153,783
Claims priority, application Poland, Jun. 9, 1979, 216275
Int. Cl.³ B21K *1/08*
U.S. Cl. 72—356 **7 Claims**



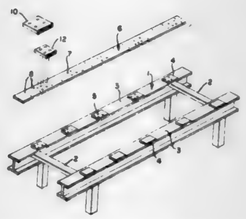
1. A forging device for mounting between the vertically moving head and the base of a forging press comprising a central work-piece, gripping tool positioned between two work-upsetting tools; said gripping tool comprising two jaws, one mounted to the head of the press and moving vertically therewith and the other mounted to the base and both co-acting to grip the work piece upon vertical movement of the head to said base; said upsetting tools moving transverse to the movement of said head and base, horizontally toward each other along the axis of the work piece held by said gripping tool, each upsetting tool comprising an upsetting-die holder and an upsetting-die mounted thereon, each die holder being coupled to the head by articulated connectors shaped as angular elements surrounding said holding tool having horizontal and vertical arms pivotably connected by bearing members to the press head, said horizontal arm pressing against the jaw mounted to the head to press same to said base mounted jaw; said horizontal arm sliding along said bearing surface directing said vertical arms transverse to the direction of the moving press head to converge said upsetting dies upon said work piece.

4,438,645

LEVELLER FOR MOTOR VEHICLES

Horst Lutz, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 938,955, Sep. 1, 1978, abandoned. This application Nov. 12, 1982, Ser. No. 441,059
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739368
Int. Cl.³ B21D *1/14*
U.S. Cl. 72—482 **11 Claims**



1. An aligning stand for motor vehicles with a stand frame comprising longitudinal beams, with

mounting plates being provided on the longitudinal beams of said stand frame,

crossbeams connecting the longitudinal beams and with

said mounting plates being opposite one another and being equipped with fastening holes of a first pattern

intermediate beam means for mounting cross member means, the intermediate beam means being equipped with a first configuration of fastening holes of said first pattern, for mounting to said mounting plates and a second plurality of holes of a second pattern different from said first pattern,

the disposition of the second plurality of holes is developed as a regular pattern extending approximately over the whole length of an intermediate beam means at discrete positions regularly spaced from adjacent positions repetitively, and

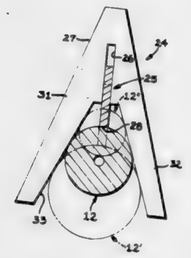
cross member means for mounting to said intermediate beam means employing holes of at least one of said first and second patterns.

4,438,646

CRANKSHAFT JOURNAL SURFACE GAUGE AND KIT THEREOF

C. John Saban, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 225,921, Jan. 19, 1981, abandoned, which is a continuation of Ser. No. 91,678, May 21, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,937
Int. Cl.³ G01B *21/30*
U.S. Cl. 73—105 **8 Claims**



1. A crankshaft journal surface gauge (10,24) for detecting the surface irregularities of an arcuate surface (11) of a crankshaft journal (12) comprising a metallic and magnetized (16) plate (10,25) having a straight and uninterrupted template edge means (15,28) for engaging the arcuate surface (11) of said crankshaft journal (12), in at least substantial parallel relationship relative to a longitudinal axis (X) of said crankshaft journal (12), and for detecting any irregularities in the surface (11) of said crankshaft journal (12).

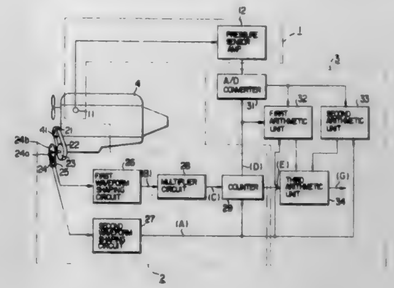
4,438,647

IGNITION RANGE DETECTOR FOR INTERNAL COMBUSTION ENGINES

Tadashi Ozaki, Gamagori; Tadashi Hattori, Okazaki, and Hiroaki Yamaguchi, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 5, 1982, Ser. No. 337,247
Claims priority, application Japan, Jan. 8, 1981, 56-705
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **6 Claims**

1. An ignition range detector for an internal combustion engine comprising a pressure sensor for detecting the pressure in a cylinder of an internal combustion engine, a crank angle sensor for detecting a first angular position of said internal combustion engine in compression stroke before a combustion and a second angular position of said internal combustion engine in expansion stroke, a processor including a computer for processing a pressure signal from said pressure sensor at each combustion and integrating said pressure signal by a signal associated with the crank angle from said crank angle sensor from said first angular position to said second angular position thereby to calculate a value S_1+S_2, said computer further integrating said pressure signal for a hypothetical case of misfire under the same conditions thereby to calculate a value S, said computer further including means of producing



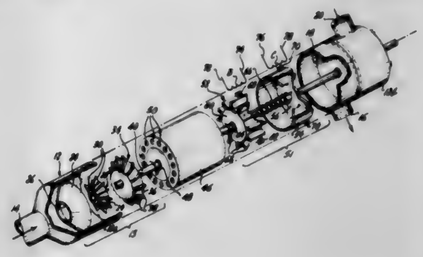
the ratio $(S_1+S_2)/S_1$ and comparing said ratio with a predetermined value α and producing the result of said comparison.

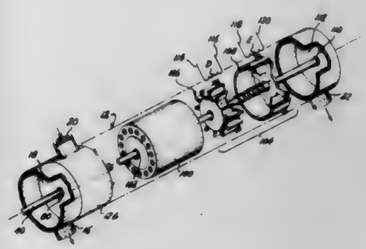
4,438,648

DIFFERENTIAL MASS FLOWMETER

Robert J. Cheney, Jr., Mountlake Terrace, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

Filed Jun. 18, 1982, Ser. No. 390,070
Int. Cl.³ G01F *1/82*
U.S. Cl. 73—195 **10 Claims**





1. An apparatus for measuring the difference between the mass flow rate of a first fluid stream and the mass flow rate of a second fluid stream comprising:

means defining a first flow channel through which said first fluid stream passes;

means defining a second flow channel through which said second fluid stream passes;

a first drum member mounted for rotation in said first flow channel;

a second drum member mounted for rotation within said second flow channel;

driving means associated with said first and second drum members for rotating said first and second drum members at identical speed and with a constant phase relationship;

a first impeller means mounted for rotation in said first flow channel for imparting angular momentum to said first fluid stream, and first impeller means being resiliently coupled to said first drum member to allow said first impeller means to lag behind said first drum member by an amount proportional to the angular momentum imparted to said first fluid stream by said first impeller means;

a second impeller means mounted for rotation in said second flow channel for imparting angular momentum to said second fluid stream, said second impeller means being resiliently coupled to said second drum member to allow said second impeller means to lag behind said second drum member by an amount proportional to the angular momentum imparted to said second fluid stream by said second impeller means;

first impeller pick-off means associated with said first impeller means to produce a first impeller signal representative of the instantaneous angular position of said first impeller means;

second impeller pick-off means associated with said second impeller means for producing a second impeller signal representative of the instantaneous angular position of said second impeller means; and

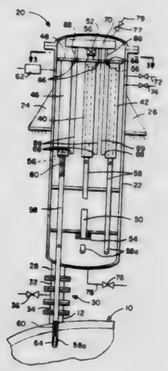
first signal-processing means for receiving said first and second impeller signals and combining them to produce a signal representative of the difference in instantaneous angular position between said first and second impellers which signal is also representative of the difference in mass flow rate between said first and second fluid streams.

4,438,649

APPARATUS FOR REMOTELY POSITIONING SENSING DEVICES IN A REACTOR DURING OPERATION THEREOF

Harris H. Gilman, Portola Valley, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 29, 1981, Ser. No. 288,381
Int. Cl.³ G01F *15/14*; G01K *1/14*; G21C *17/00*
U.S. Cl. 73—432 R **29 Claims**



11. An apparatus for remote positioning of sensing devices in a reactor under pressure, comprising:

a pressure vessel located adjacent to the reactor, said pressure vessel able to contain the reactor pressure;

a fluid-tight passageway between an outlet of said pressure vessel and an inlet of the reactor;

valve means in said passageway for closing-off said passageway to isolate said pressure vessel from the reactor;

a plurality of hydraulic cylinders rotatably mounted within said pressure vessel about an axis thereof such that any of said cylinders may be aligned with said outlet of said pressure vessel;

a piston with a ram attached thereto in each of said cylinders wherein said ram includes a sensing device;

means for rotating said plurality of cylinders about said axis in said pressure vessel to align any one of said cylinders with said outlet of said pressure vessel; and

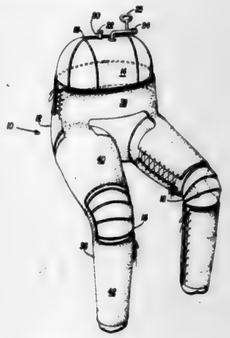
means for moving said piston of said cylinder aligned with said outlet of said pressure vessel so that said ram thereof may be inserted into and removed from the reactor through said passageway.

4,438,650

ANTI-G SUIT TEST RIG

Larry F. Meek, Waterloo, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Mar. 2, 1982, Ser. No. 354,039
Claims priority, application Canada, Mar. 30, 1981, 374186
Int. Cl.³ G01L *7/00*
U.S. Cl. 73—432 SD **8 Claims**



4. Apparatus for testing an anti-G suit comprising a manikin shaped to correspond to the portion of the human body upon which said suit is designed to fit, said manikin being formed from a flexible material and having fluid inlet means and sealing means to seal said fluid inlet means to retain fluid within said manikin, and pressure sensing means associated with said manikin to determine the pressure exerted on fluid in said manikin by a suit placed upon said manikin.

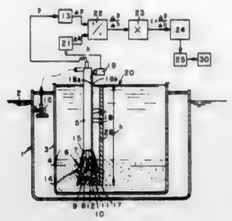
4,438,651

METHOD AND DEVICE FOR MEASURING THE DENSITY OF FLUIDS PARTICULARLY DREDGINGS

Romke van der Veen, No. 87, van Boetzelaerlaan, 2581 AD The Hague, Netherlands

Filed Sep. 30, 1981, Ser. No. 306,958
Claims priority, application Netherlands, Oct. 9, 1980, 8005603
Int. Cl.³ G01N *9/00*
U.S. Cl. 73—433 **3 Claims**

1. A method of measuring the density of a fluid contained in a holder, particularly the density of dredgings, in which the density is derived from volume measuring values and weight measuring values, characterized in that in at least two different states t_n and t_{n+1} during measurements carried out on different fluid layers to be metered, for example, at two different instants during loading of the holder weight measuring values G_n and G_{n+1} and volume measuring values V_n and V_{n+1} are measured, that for the state difference $dt=t_{n+1}-t_n$ the differential dG/dV of the weight measuring value dG to the volume measuring value dV is calculated and that the density r is calculated by multiplication of said differential by the constant value c determined by filling the holder with a calibration fluid, for example, water of known density r_l during a calibration measurement and by subsequently calculating the constant value c from the product of the known density r_l and the



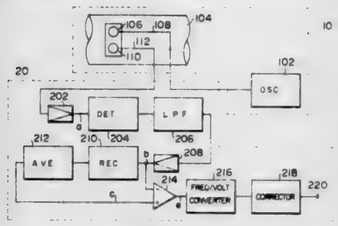
differential dV_l/dG_l of the volume measuring value V_l to the weight measuring value G_l, expressed in a formula: $r=c\times dG/dV$, wherein $c=r_l\times dV_l/dG_l$.

4,438,652

ULTRASONIC DOPPLER FLOWMETER

Kouji Saito, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,620
Claims priority, application Japan, Mar. 6, 1981, 56-31358
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.25 **8 Claims**



1. An ultrasonic Doppler flowmeter comprising:

transmitting means for transmitting an ultrasonic wave of a fixed frequency into a fluid flow to be measured;

receiving means for receiving a reflected ultrasonic wave from said fluid; and

signal processing means including a reference signal generator and a comparator, said reference signal generator generating a reference signal upon reception of a received signal from said receiving means in accordance with the magnitude of the received signal, said comparator being supplied with said received signal and said reference signal to compare said received signal with said reference signal.

4,438,653

SUBLANCE FOR MEASURING AND/OR SAMPLING IN A METALLURGICAL FURNACE

Nicolaas H. Beentjes, Uitgeest, Netherlands, assignor to Estel Hoogovens B.V., Netherlands

Filed Jul. 6, 1982, Ser. No. 395,710
Claims priority, application Netherlands, Jul. 10, 1981, 8103306
Int. Cl.³ G01N *1/10*
U.S. Cl. 73—863.11 **4 Claims**

1. In a sublance for use in monitoring the operation of a metallurgical furnace, comprising an elongate outer tubular member an elongate intermediate tubular member located within said outer member and an elongate inner member located within said intermediate member, each said member extending from an upper end of the sublance, at which there are suspension means for suspending the sublance in use and connections for communication with the interior spaces of the sublance, to a lower end of the sublance at which a probe is mounted on the sublance, the sublance further including a rotational coupling so that the probe is rotatable about a longitudinal axis of the sublance relative to the suspension means the improvement that:



said rotational coupling is located so as to divide only said outer tubular member close to said upper end, so that an upper part of said outer member to which part said connections are attached, is fixed relative to the suspension means and a lower part of said outer member on which part said probe is mounted, is rotatable about the longitudinal axis relative to the suspension means and also relative to said inner and intermediate tubular members which are not rotationally divided.

4,438,654

DEVICE FOR TAKING GROUND WATER SAMPLES IN SOIL AND ROCK

Bengt-Arne Torstensson, 34, Höjdvägen, S-186 00 Vallentuna, Sweden

Filed Mar. 16, 1982, Ser. No. 358,707
Claims priority, application Sweden, Mar. 27, 1981, 8101989
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—864.52 **12 Claims**



1. A device for taking at least one ground water sample in soil and rock, comprising a movable element having an at least partially evacuated sampling container, an end of the container

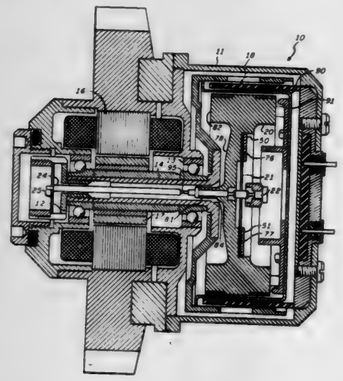
facing downward being sealed air-tight by a first member of a flexible material, the device further including a ground water collector, a second member of flexible material closing an upper end of the ground water collector, and a cannula with two pointed ends arranged between said first and second members, means for selectively moving the cannula in its longitudinal direction relative to the two members for selectively penetrating the first and second members with a respective one of the ends for transferring a ground water sample from the collector to the sampling container.

4,438,655

FLEXURE SUSPENSION FOR FREE ROTOR GYROSCOPES

Thomas R. Quermann, Huntington Station, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 742,158
Int. Cl.³ G01C *19/22*
U.S. Cl. 74—5 F **5 Claims**



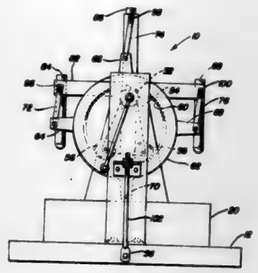
1. In gyroscopic apparatus having gyroscopic rotor means adapted for spinning about a spin axis by means of drive shaft means, improved rotor suspension means comprising:
first support means radially supporting said gyroscopic rotor means for rotation with said drive shaft means for universal tilting about axes substantially perpendicular to said spin axis,
second support means coupled to said drive shaft means for rotation therewith substantially about said spin axis and axially supporting said gyroscopic rotor means for universal tilting about said axes substantially perpendicular to said spin axis,
said second support means comprising cylindrical strut means having a strut axis and a first flexible parallel sided flat section lying in the plane of said strut axis,
said second support means extending through an aperture in said first support means with substantially equal parts of said first flexible parallel sided flat section on either side of said aperture, and
second and third flexible parallel sided flat sections lying in the plane of said strut axis and symmetrically spaced on either side of said first flexible parallel sided flat section,
said second and third flexible parallel sided flat sections being disposed at right angles to said first flexible parallel sided flat section.

4,438,656

POWER TRANSFER DEVICE

David R. Hayer, R.R. 1, Hoffman, Minn. 56339

Filed May 20, 1981, Ser. No. 265,894
Int. Cl.³ F16H *21/12, 21/48, 25/08*; F03G *3/00*
U.S. Cl. 74—63 **4 Claims**



1. An improved power transfer device comprising:
input means for providing operational power of said device, said input means including:
a power input shaft;
drive gear means operably attached to said power input shaft;
ring gear means in operable engagement with said drive gear means, said ring gear means including a plurality of radially extending, diametrically opposed extensions having weight support arm means rotatably attached thereto;
weight means fixedly secured eccentrically to said weight support arm means;
cruciform support means rotatably mounted on said device and providing rotatable support to said weight means; and
output means for providing power to a load from said device, said output means including a power output shaft connected with the cruciform support means, and means mounting the ring gear means and support arms means to perform planetating movement relative to the axis of the drive gear means responsive to a variation of load on the output shaft whereby variation of load on the output shaft will cause shifting of the center of gravity of the weight means in relation to the ring gear means and cruciform support means.

4,438,657

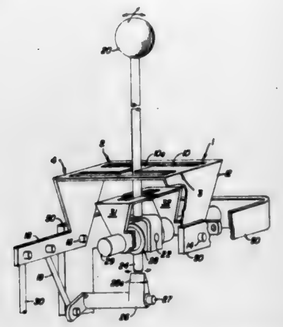
SHIFT DEVICE FOR THE DRIVE OF A UTILITY VEHICLE

Dieter Nobis, Mannheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Sep. 15, 1981, Ser. No. 302,327
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044311
Int. Cl.³ G05G *9/16, 5/10*
U.S. Cl. 74—477 **9 Claims**

1. A shift device for a vehicle drive with a shift lever having a primary shift function for shifting among stages of a multistage transmission, one of the stages being neutral and having a change-over shift function usable in all of the stages, the shift lever being mounted pivotally in two directions and being movable into and out of engagement with shift segments operatively connected to the transmission via shift members, characterized by:
a shift bracket engageable with the shift lever, pivotal in response to movement of the shift lever and having guide slots for receiving and positively guiding the shift lever among the stages, the guide slots including a transverse extending branch and at least one fore-and-aft extending branch, the shift lever being movable to pivot the shift bracket in a direction parallel to the transverse extending

branch when the shift device is in one of its non-neutral stages; and



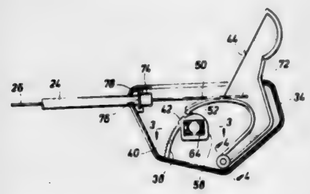
means for preventing the shift lever from pivoting the shift bracket in a direction parallel to the transverse extending branch when the shift device is in the neutral stage.

4,438,658

ENGINE THROTTLE CONTROL

John A. Carlson, Conroe, Tex., assignor to Capro, Inc., Conroe, Tex.

Filed Dec. 14, 1981, Ser. No. 330,595
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **6 Claims**



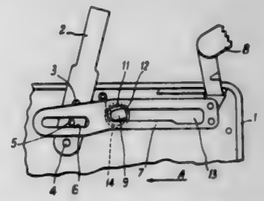
1. An engine throttle control comprising:
a housing having two sections,
one of said sections including a wall having an interior surface and an exterior surface with a peripheral flange being substantially perpendicular to the interior surface of said wall, a boss on the interior surface of the wall having an opening extending through the boss and the wall, said boss extending substantially perpendicular to the interior surface of the wall, an arcuate rack having ridges on one surface thereof extending from said wall, and a pivot projection extending from the wall,
the other of said sections including a wall having an interior surface and an exterior surface with a peripheral flange being substantially perpendicular to the interior surface of the other section wall and adapted to engage the flange of said one section, a pair of spaced apart fingers having shoulders on their ends adapted, when said sections are assembled, to extend through the opening in said boss with said finger shoulders engaging the exterior surface of the wall of said one section to releasably retain said sections together, and a pivot projection extending from the other section wall and aligned with the pivot projection of said one section when said sections are assembled, and
a control lever positioned partially between said assembled sections, extending therefrom and having recesses on opposite sides of one end thereof for receiving said pivot projections, an arm extending from said lever with a detent for engaging said arcuate rack to retain said control lever with a detent for engaging said arcuate rack to retain said control lever in its desired position until positively moved to another position.

4,438,659

RELEASE MECHANISM FOR A TRACTION APPARATUS ACTING ON A CABLE WHICH PASSES THERETHROUGH

Andre Desplats, Boulogne Billancourt, France, assignor to Tractel S.A., France

Filed Jul. 8, 1982, Ser. No. 396,540
Claims priority, application France, Jul. 9, 1981, 81 13553
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—529 **2 Claims**



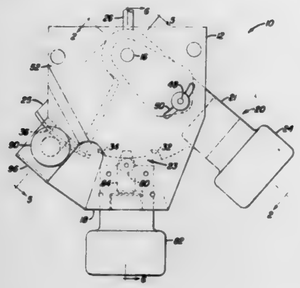
1. In a traction apparatus acting on a cable through two self-clamping jaws by operating either a warping in lever or a warping out lever, the improvement comprising a release mechanism which comprises:
(a) a release lever adapted to longitudinally move in the direction of a longitudinal axis of the apparatus, said release lever presenting:
(b) a front end portion provided with a first longitudinal slit within which engages a pin carried by said warping out lever, and
(c) an intermediate portion provided with another longitudinal slit comprising a portion of reduced width followed by a portion of larger width,
(d) a release control handle rigid with said release lever, and
(e) a locking mechanism which comprises:
(f) a bolt disposed transversely to the apparatus and passing through said portion of larger width of said other longitudinal slit of the release lever, said bolt being adapted to rotate in registering openings of a casing of the apparatus,
(g) a spring co-acting with said bolt to urge same in a locking position in which said bolt engages a shoulder separating the two portions of different width of the other longitudinal slit, thus preventing to move the release lever in a release direction by sliding along said bolt, and
(h) an actuating member extending outside of the casing of the apparatus and rigid with at least one end of the bolt, said actuating member being adapted to be rotated by a user's hand, against the action of said spring, to move said bolt from its locking position to a position in which the bolt is directed along the axis of said another longitudinal slit of the release lever and allows a longitudinal movement of the release lever, so that the release mechanism can be actuated only by pivoting the actuating member of the locking mechanism with one hand of the user while simultaneously the other hand of the user acts on the release control handle to cause the longitudinal movement of the release lever in the release direction thus avoiding any risk of accidental actuation of the release mechanism.

4,438,660

DUAL MODE CONTROL LEVER ASSEMBLY

Carl E. Kittle, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 2, 1981, Ser. No. 307,704
Int. Cl.³ G05G 5/06
U.S. Cl. 74—531 **33 Claims**



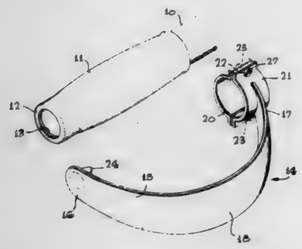
1. A control lever assembly comprising:
a housing;
an operator-movable control lever;
pivot means for pivotally supporting the control lever in the housing;
friction means for frictionally coupling the control lever to the housing and yieldably resisting relative motion therebetween;
resilient means biased to urge the control lever from a displaced position to a neutral position, relative to the housing; and
a selecting member movable between a first position wherein it couples the control lever to the friction means while uncoupling the control lever from the resilient means, and a second position wherein it couples the control lever to the resilient means while uncoupling the control lever from the friction means.

4,438,661

HAND PROTECTOR

Frederick T. Cullen, 16360 Horace Ave., Granada Hills, Calif. 91344

Filed May 29, 1981, Ser. No. 268,492
Int. Cl.³ B62K 21/26
U.S. Cl. 74—551.9 **1 Claim**



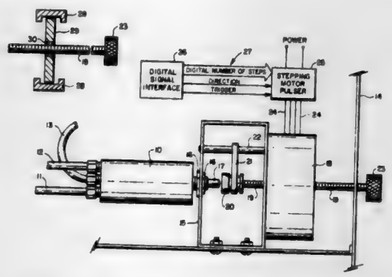
1. A hand protector for use in combination with a handlebar and a handgrip which comprises:
an elongated member having opposite ends separated by an integral mid-section;
said mid-section being of aerodynamic shape having a conical inner surface and substantially arcuate in plan view;
said ends having retainer means for detachably coupling said member to said handlebar about said handgrip;
fastener means releasably coupling said retainer means together;
said retainer means associated with a selected end of said member includes a C-clamping device attached to said handlebar immediately adjacent to the end of said handgrip;
said retainer means associated with said non-selected end of said member includes an inwardly projecting element entering the bore of said handlebar to retain said non-selected end to said handlebar in cooperation with said handgrip;
said inwardly projecting element is a tapering nub terminating at its free end in a rounded end;
said member mid-section incorporates a compound curvature substantially corresponding to the general over-all shape of a driver's knuckles grasping said handgrip; and
said member and said retainer means are composed of a resilient material.

4,438,662

AUTOMATIC CONTROL SYSTEM HAVING MANUAL CONTROL ENGAGEABLE AT WILL

Eric K. Walton, 1516 Doone Rd., Columbus, Ohio 43221, and Gary W. Harris, 5120 Thompson La., Delaware, Ohio 43015

Filed Apr. 2, 1981, Ser. No. 250,356
Int. Cl.³ F16H 25/20; F15B 5/00
U.S. Cl. 74—625 **10 Claims**



1. In a device for exercising control over a further member, which further member may be remotely located from said device, wherein said device includes an external power supply for exercising said control, the combination of a linear stepping motor and a remotely adjustable pulser for directing the exercise of said control, a coupling means between said linear stepping motor and said external power supply which is laterally movable and retained from rotational movement by sliding friction means, and a manually operated means which is capable of overcoming the friction forces of said sliding friction means restraining said coupling means and thus directing the exercise of control.

4,438,663

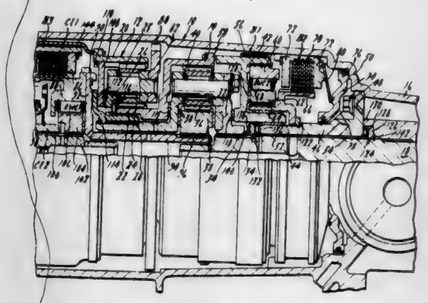
PLANETARY TRANSMISSION GEARING AND OUTPUT SHAFT RETENTION MEANS

Peter Eichenberger, Livonia, and John H. Lodge, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 15, 1981, Ser. No. 283,395
Int. Cl.³ F16H 57/10
U.S. Cl. 74—760 **6 Claims**

1. In a planetary transmission for an automotive vehicle having aligned input and output shafts, a transmission case, said shafts being journalled within said case;
planetary gearing within said case adapted to provide plural torque delivery paths between said input shaft and said output shaft;
said output shaft having a splined connection with a torque output element of said planetary gearing;

a first thrust reaction bearing assembly formed on said output shaft contacting a reaction wall on said casing whereby inbound thrust forces on said output shaft are transmitted directly to said casing;
a second thrust reaction bearing assembly on said output



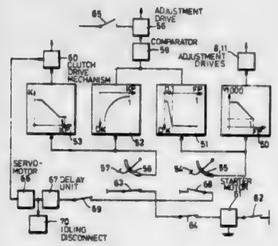
shaft situated contacting another reaction wall on said case whereby outbound thrust forces on said output shaft are transmitted directly to said case; and
spring means for cushioning the transfer of outbound thrust forces from said output shaft to said case through said second thrust reaction bearing assembly.

4,438,664

SYSTEM FOR OPERATING THE DRIVE OF A VEHICLE

Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,662
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036327
Int. Cl.³ B60K 41/14
U.S. Cl. 74—866 **5 Claims**



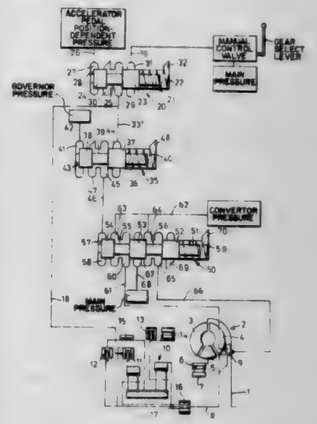
1. In a vehicle drive having an internal combustion engine coupled through a clutch to an infinitely variable transmission, the transmission having input cone pulleys and output cone pulleys and driving a reversible planetary gear train for imparting motive power to an axle, a clutch pedal for acutating the clutch, and an accelerator pedal coupled to the fuel delivery mechanism of the engine; a system for operating the drive comprising:
control signal generating means for controlling the infinitely variable transmission and including first storage means responsive to the position of said accelerator pedal for selecting a first stored value corresponding to a gear ratio of said infinitely variable transmission according to a plot of gear ratio vs. accelerator pedal position;
means for adjusting the gear ratio of said infinitely variable transmission in response to said selected value;
second storage means responsive to the position of said accelerator pedal for selecting a second stored value for said fuel delivery mechanism according to a plot of said second stored value vs. accelerator pedal position;
third storage means responsive to the position of said clutch pedal for selecting a third stored value for said fuel delivery mechanism according to a plot of said third stored value vs. clutch pedal position;
comparison means coupled to said second and third storage means for selecting the smaller of said second and third stored values for said fuel delivery mechanism; and
means for adjusting said fuel delivery mechanism in response to said value selected by said comparison means.

4,438,665

CONTROL SYSTEM FOR AN AUTOMOBILE DRIVE

Dieter Schmidt, Gifhorn, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

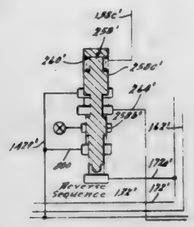
Filed Mar. 10, 1981, Ser. No. 242,282
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010509
Int. Cl.³ B60K 41/10
U.S. Cl. 74—867 **4 Claims**



1. In combination a hydrodynamic-mechanical transmission and a control system therefor, for use in an automobile having an accelerator pedal, a drive select lever having a plurality of positions, including forward drive, a source of first pressurized fluid, and a manual control valve, responsive to the position of said lever, for selectively delivering said first fluid when said select lever is in the forward drive position, wherein said transmission comprises:
(a) a hydrodynamic torque converter having a hydraulically actuatable by-pass clutch;
(b) a mechanical planetary gear train; and
(c) at least one hydraulically actuatable control element for selectively coupling said torque converter and said gear train; and wherein said control system comprises:
(i) a first pressure medium line adapted to be connected to said manual control valve for receiving said first pressurized fluid and communicating with said control element for supplying said first pressurized fluid to said element for actuating said control element,
(ii) a main control valve means arranged in said first pressure medium line for selectively interrupting the delivery of said first fluid to said control element,
(iii) means responsive to at least one automobile operating parameter for actuating said main control valve means, and
(iv) means for delivering a pressurized fluid to said by-pass clutch for selectively actuating said by-pass clutch, wherein the means for delivering pressurized fluid to said by-pass clutch are responsive to the actuation of

said main control valve means for interrupting the delivery of pressurized fluid to said by-pass clutch when said main control valve means is actuated.

4,438,666
SPEED RESPONSIVE REVERSE CONTROL
E. James Lane, Highland, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 16, 1981, Ser. No. 331,396
Int. Cl.³ B60K *41/10, 41/22*
U.S. Cl. 74—868 **5 Claims**



3. In a transmission of the type including input and output shafts; a plurality of power paths disconnectable from both shafts; a plurality of forward speed ratio gears associated with one path and in constant driving relation with one of the shafts; at least one forward and one reverse speed ratio gear associated with another path and in constant driving relation with the one shaft; clutch means associated with each gear and selectively engageable to connect one of the gears with the associated path while the path is otherwise disconnected from the shafts; a powershift clutch associated with each path and alternately engageable to complete driving communications between the shafts via the selected one gears for up, down, and reverse shifting the transmission; and an improved control system comprising:

shift selector means including means moveable between forward, neutral, and reverse positions;

signal means providing a speed signal proportional to the output shaft speed; and

means operative to effect engagement of said one clutch means associated with the reverse gear in response to said speed signal representative of the output shaft speed below a predetermined magnitude and independent of said shift selector means position.

4,438,667
SHARPENING DEVICE FOR A CHAIN SAW
Voris E. Hannah, Rte. 1, Wingo, Ky. 42088
Filed Apr. 15, 1982, Ser. No. 368,638
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—36 **13 Claims**

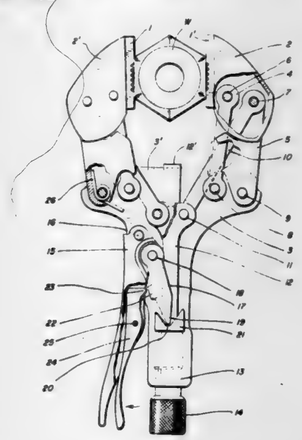


1. A sharpening device for guiding and supporting a file for sharpening the cutting elements of a chain saw, the chain saw having a chain bar about which a chain having the cutting elements travels, the sharpening device comprising:

a top guide portion for supporting the file and including at least one pin projecting therefrom; and

a base portion, said base portion including means for removably securing said base portion to the chain bar and means for supporting said top portion for movement from a first position adjacent the chain for sharpening one of the cutting elements located at the sharpening device to a second position away from the chain to permit indexing of the chain to locate another of the cutting elements at the sharpening device, said means for supporting said top portion including a bore in said base portion for receiving said pin for longitudinal sliding movement therein.

4,438,668
WRENCH
Yeheskel Solomon, Gush Etzion 3, Givatayim, Israel
Filed Jan. 5, 1982, Ser. No. 337,145
Claims priority, application Israel, Jan. 5, 1981, 61855
Int. Cl.³ B25B *7/12*
U.S. Cl. 81—352 **4 Claims**



1. A wrench comprising two mutually movable jaws, each mounted by means of a parallel linkage to a housing constituting the handle, a rod being axially movable in said handle by means of an internally threaded sleeve extending into the bottom end of the handle, said rod being connected at its top by a pivotal link to the top of the outer member of said parallel linkage, a locking lever being pivotally attached to said housing and having pivotally connected thereto a wedge-shaped stop member which is adapted to engage a locking sleeve loosely mounted on said rod, the rotation of said threaded sleeve adjusting the distance between the jaws, the engagement of said stop member with the locking sleeve preventing their movement when said jaws are in working position.

4,438,669
ADJUSTABLE RATCHET PLIERS
Charles E. Hastings, deceased, late of Orlando, Fla., by June Hastings, heir, 3404 Paris Pl., Orlando, Fla. 32808
Continuation-in-part of Ser. No. 101,552, Dec. 10, 1979, Pat. No. 4,269,089, and Ser. No. 963,433, Nov. 24, 1978, abandoned. This application May 14, 1981, Ser. No. 263,749
The portion of the term of this patent subsequent to May 26, 1981, has been disclaimed.
Int. Cl.³ B25B *7/04*
U.S. Cl. 81—410 R **4 Claims**

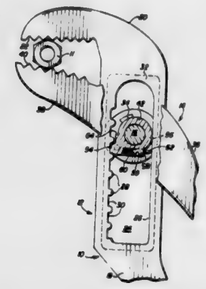
1. An adjustable ratchet pliers comprising in combination:

a first jaw member including a handle and a jaw portion said first jaw member having an elongated slot formed therein with a plurality of notches formed in at least one elongated side of said elongated slot;

a second jaw member including a handle and a jaw portion, said second jaw member being pivotally coupled to said first jaw member;

slide track means formed along the sides of said elongated slot in said first jaw member, said slide track means including a sunken area located outwardly and along at least two elongated sides of said elongated slot in said first jaw member;

slide means for sliding said second jaw member relative to said first jaw member, said slide means having a shaft and a sliding member, said shaft being connected to said second jaw member and extended through said elongated slot in said first jaw means, said slide member being attached to said shaft and slidably positioned on said slide track, and said sliding member being a flat member having a width greater than said elongated slot, substantially equal to the width of said sunken area and sliding in said slide track means sunken area adjacent said elongated slot in said first jaw member thereby laterally positioning said



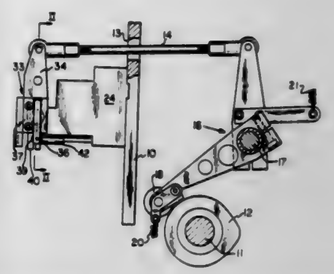
shaft in said slot regardless of the longitudinal position therein;

locking means pivotally mounted on said slide means shaft relative to said sliding member and extending into said elongated slot for engaging said notches therein, said sliding member thereby also laterally positioning the pivotal axis of said locking means, biasing means including means engaging said locking means and pivotally biasing said locking means about said pivotal axis relative to said sliding member into engaging position within at least one of said notches;

releasing means for rapidly releasing said locking means from a notched position, said releasing means including a means on said locking means engagable for rotating said locking means relative to said slide member against the bias of said biasing means out of engagement with said notches for permitting said slide member to slide on the sunken area of said track means thereby permitting said second jaw to be slid relative to said first jaw for moving said jaws to open position, said locking means and notches being shaped to permit said jaws to be slid into closed position when said locking means is in a notched position engaging said notches.

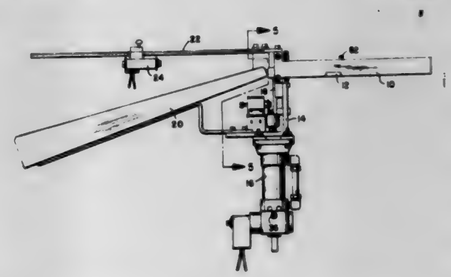
4,438,670
HIGH SPEED WELDER WITH MAGNETIC ALIGNMENT OF WELDING SLUG AFTER CUTTING
Martin D. Johnson, Hadley, Pa., assignor to Electronic Equipment Development Ltd., Toluca Lake, Calif.
Filed May 24, 1982, Ser. No. 381,178
Int. Cl.³ B26D *3/16;* B23D *21/00*
U.S. Cl. 83—154 **1 Claim**

1. In a device for cutting slugs from ferromagnetic feedstock, a die defining an elongate bore into which the feedstock is passed, a knife pivotally mounted to rotate in a plane substantially perpendicular to the feedstock as it is oriented by the die, said knife defining an opening therethrough into which the feedstock is passed when the bore in the die and opening in the knife are aligned, said opening in the knife having an edge adjacent the die defining a cutting edge, means for rocking the knife to shear a slug from the feedstock, transfer means for



receiving and clamping the cut slug as it is advanced through the opening in the knife, the improvement comprising said die being of a ferromagnetic material and there being a small permanent magnet positioned with one magnetic pole abutting the die near the cutting end thereof whereby the slug when cut free moves to align itself end to end with the feedstock emerging from the die without losing its orientation.

4,438,671
CUTTER FOR SLOT WEDGES
Stephen Weirich, and James L. Crothers, both of Lenni, Pa., assignors to Lenni Products, Inc., Lenni, Pa.
Filed Nov. 8, 1982, Ser. No. 439,730
Int. Cl.³ B26D *5/38*
U.S. Cl. 83—212 **13 Claims**



1. Apparatus for cutting slot wedges for electrical rotating machines from wedge stock, the stock consisting of elongated strips of insulating material having generally U-shaped transverse cross-sections, the apparatus comprising:

shearing means;

means, located on one side of the shearing means, for guiding wedge stock in a predetermined direction toward the shearing means; and

means located on the other side of the shearing means, and actuable by an end of the wedge stock extending through the shearing means, for actuating the shearing means;

the shearing means comprising a frame, a first blade mounted on said frame and having an external U-shaped cutting edge lying in a first plane generally perpendicular to the direction of feed of wedge stock, and a second blade mounted on said frame and having an internal U-shaped cutting edge having a rounded end and substantially straight and parallel sides, said internal edge lying in a second plane immediately adjacent and parallel to said

first plane, the U-shaped cutting edges of both blades being substantially symmetrical about a plane of symmetry perpendicular to said first and second planes, the blades being relatively movable, in said first and second planes in the direction of the intersections of said first and second planes by said plane of symmetry, from a rest position in which the rounded end and at least part of the straight sides of the cutting edge of the second blade are external to the curvature of the cutting edge of the first blade to a cut-off position in which the cutting edge of the first blade is external to the curvature of the rounded end of the cutting edge of the second blade, the cutting edge of the first blade being sufficiently wide in the first plane to intersect the cutting edge of the second blade during relative movement of the blades from the rest position to the cut-off position, and the cutting edges of both blades being so configured that, when they intersect each other, the cutting edges of the respective blades intersect each other at acute angles;

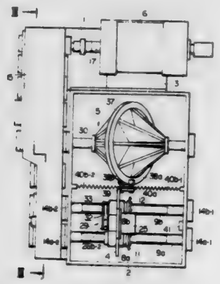
whereby relative movement of the blades from the rest position to the cut-off position causes spreading of the sides of the U-shaped wedge stock outwardly against the sides of the internal U-shaped cutting edge of the second blade, followed by cutting of an insulation wedge from the wedge stock.

4,438,672

PIPE SHEARING DEVICE

Yoshikazu Sasaki, 9-1, Sakuradai 4-chome, Nerima-ku, Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,494
The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.
Int. Cl.³ B26D *1/28, 1/56*
U.S. Cl. 83—319 **4 Claims**



1. A pipe shearing device, comprising:

a. a frame;

b. first and second parallel spline shafts having first and second longitudinal axes respectively rotatably mounted on said frame for rotation about said first and second longitudinal axes;

c. a carriage longitudinally slidably supported on said first and second spline shafts;

d. means for feeding a pipe to be cut along a third longitudinal axis parallel said first and second longitudinal axes;

e. first and second rotary blades mounted to said first and second shafts, respectively, and to said carriage for rotation about said first and second longitudinal axes with said first and second spline shafts and longitudinal movement with said carriage, said first blade being located so as to cut a slit in said pipe when rotated, said second blade being located so as to cut said pipe completely at said slit in one revolution of said second blade;

f. a drum cam having a cam rail, mounted to said frame for rotation about a fourth longitudinal axis parallel said first and second longitudinal axes;

g. means, including a pair of follower rollers rotatably mounted to said carriage engaging opposite sides of said cam rail, for reciprocally moving said carriage longitudinally in response to rotation of said drum about said fourth longitudinal axis;

h. means, including a gear train coupled to said first, second and third shafts, for respectively rotating said first, second and third shafts about said first, second and fourth longitudinal axes, respectively, said first and second shafts rotating in opposite directions such that said first blade first cuts said slit in said pipe and said second pipe then cuts said pipe at said slit; and

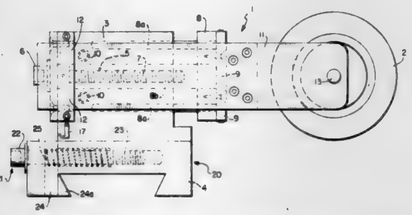
i. a chuck mechanism disposed on said carriage so as to be longitudinally movable therewith, including first and second arms having a clearance formed therein and respective third and fourth blades fixed thereto so as to be closable about and releasable from said pipe, and drive means for closing said first and second arms so that said third and fourth blades grip said pipe when said first and second blades are cutting into said pipe, said first and second blades extending through said clearance during said cutting.

4,438,673

SLITTER MOUNTING BRACKET

Roy O. Noffke, and Thomas G. Engel, both of Appleton, Wis., assignors to Appleton Papers, Inc., Appleton, Wis.

Filed Sep. 14, 1981, Ser. No. 302,131
Int. Cl.³ B26D *1/24*
U.S. Cl. 83—502 **7 Claims**



1. An apparatus for slitting a continuous web of material which comprises in combination a slitter blade and a slitter mounting bracket, said bracket comprising a bracket housing having a threaded depth-post assembly for enabling precise, effect depth control of said slitter blade, a base mount for supporting said bracket housing and a means for maintaining the proper tension between said slitter blade and a cutting surface, said means comprising a spring tension unit including a blade spring having a forward end and a rear end, a spring mounting band, and a tension regulating means, said slitter blade being mounted to said blade spring at said forward end thereof, said spring mounting band being attached to said bracket housing at a rear portion thereof with said rear end of said blade spring being positioned between said housing and said spring mounting band, with said tension regulating means interacting with said blade spring at the site of location of said spring mounting band where said band is affixed to said housing to regulate said blade tension.

4,438,674

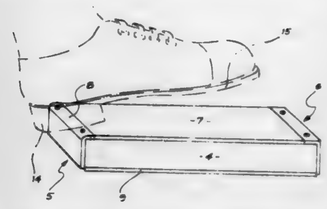
MUSICAL EXPRESSION PEDAL

Richard J. A. Lawson, 8 Mary St., Auburn, New South Wales 2144, Australia

Filed Dec. 11, 1981, Ser. No. 329,877
Claims priority, application Australia, Apr. 11, 1980, PE3086
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **5 Claims**

1. An expression pedal for a musical instrument wherein the pedal or the instrument including the pedal is transportable and thus the pedal is susceptible to detuning by influence from

different surroundings, said pedal comprising a casing having enclosing side walls, forward and rear walls, a bottom and a top all of which comprise capacitive shielding material, an electrically insulating panel over said top of the casing, an electrical proximity responsive device mounted within the



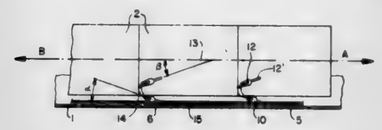
casing and towards said forward wall thereof and exposed to said panel by a hole in said top, and a bevelled edge on an upper corner of said rear end wall, whereby a user's foot when pivoted at the heel upon said bevelled edge with the sole of the foot rising and falling over said proximity device causes varying electrical response in said proximity device.

4,438,675

CABLING FOR SECONDARY AMMUNITION

Klaus H. Fischer, and Heinz Kroschel, both of Troisdorf, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 311,765
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041149
Int. Cl.³ F41F *1/00, 5/02*
U.S. Cl. 89—1.811 **20 Claims**



1. A cabling arrangement for secondary ammunition arranged in the form of at least two ammunition elements in series in a cylindrical casing of a distribution system and being ejectable therefrom, the cabling arrangement serving for supply of at least one of electrical energy and information to the secondary ammunition, the cabling arrangement comprising a continuous electrical conductor system extending substantially in the longitudinal direction of the casing, the conductor system being provided with terminals at spaced positions along the conductor system so that respective ones of the spaced terminals are correlated with respective ones of the individual series arranged ammunition elements, the terminals establishing defined separating zones between the conductor system and the individual ammunition elements.

4,438,676

AMMUNITION CONTAINER

Gert Kausträter, Augsburg, Fed. Rep. of Germany, assignor to Kuka Webrtechnik GmbH, Augsburg, Fed. Rep. of Germany

Filed Jun. 2, 1982, Ser. No. 384,283
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121786
Int. Cl.³ F41D *10/14, 10/42;* F41F *9/06;* F42B *39/12*
U.S. Cl. 89—34 **4 Claims**

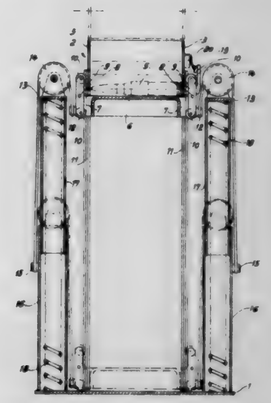
1. Ammunition container comprising:

A. a housing providing a vertical chamber and which is adapted to be positioned beneath or alongside an automatic weapon said chamber having a transverse cross section adapted to the length of the bullets to be received therein and the amplitude of the zigzag placement of the magazine belt therewithin said housing having opposite sidewalls provided with longitudinal slots;

B. a lifting platform mounted within said chamber for movement vertically therewithin over a lifting height, said platform having projections thereon extending through said longitudinal slots in said opposite sidewalls of said housing, said slots extending over the lifting height for said platform within said housing;

C. flexible drive means positioned at least partially externally of said housing and having one end connected to said platform projections; and

D. resilient spring biased pulley means acting on said drive



means to maintain the upper level of the ammunition supply upon the platform at approximately the uppermost position, within said chamber, said resilient spring biased pulley means includes spring means being mounted within a pair of telescopically arranged tube sections of which one tube section is permanently secured at its lower end and the other tube section supports at its upper end a pulley over which is passed the drive means, the other end of said flexible drive means being fixed at a point remote to said lifting platform, whereby said spring means is loaded by loading of ammunition on said platform and raises said platform as the ammunition is discharged from the container.

4,438,677

MUNITION-SUPPLY SYSTEM FOR AN ARMORED VEHICLE WEAPON

Markus Spötzl; Erich Drosen, both of Munich; Leonhard Pongratz, Karlsfeld, and Ferenc Kotai, Munich, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,989
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041866
Int. Cl.³ F41H *7/06, 5/20;* F41F *9/06*
U.S. Cl. 89—36 K **11 Claims**

1. A weapon supply system for a large caliber weapon comprising:

means forming a munitions compartment rearwardly of said weapon and rotatable therewith upon traversing of said weapon, said compartment having a window opening toward said weapon and through which munitions rounds can be fed to load said weapon;

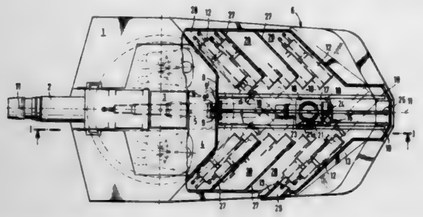
a plurality of holding tubes disposed in said compartment and adapted to receive respective munitions rounds at spaced-apart locations in a plurality of substantially horizontal planes whereby loading tunnel is formed in said compartment in line with said window, said holding tubes being stationary within said compartment, being provided

in arrays on opposite sides of said tunnel, being mutually parallel within each array and having respective round-removal openings turned toward said tunnel; and

a loading mechanism in said tunnel common for all said tubes for removing individual rounds from said holding tubes and feeding said rounds through said window into said weapon said loading mechanism comprising:

round-engaging means engageable with a round in a selected one of said holding tubes,

means for swingably displacing said round-engaging



means about a substantially horizontal axis whereby said round engaging means is positioned selectively in said planes,

means for displacing said round-engaging means angularly about a substantially upright axis for selectively and individually aligning said round-engaging means with each of said holding tubes at the respective round-removal openings, and

means for shifting said axes and said round-engaging means along said tunnel toward and away from said window.

4,438,678

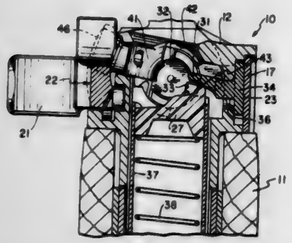
BOLT STOP AND CARTRIDGE EJECTOR FOR AUTO-LOADING RIFLE

William B. Ruger, Southport, Conn., assignor to Sturm, Ruger & Company, Inc., Southport, Conn.

Filed Oct. 23, 1981, Ser. No. 314,437

Int. Cl.³ F41C *15/12*

U.S. Cl. 89—138 **4 Claims**



4. In a firearm having a receiver, a bolt mounted for longitudinal path movement in the receiver, magazine means for delivering a cartridge to the receiver for movement longitudinally in the receiver along a cartridge path and a bolt stop, the improvement comprising

(a) bolt means configured in cross section so that the cross sectional path of the bolt and the cross sectional path of the cartridge are different;

(b) movable finger means mounted adjacent said bolt path and said cartridge path for movement from a first position in which the finger means is positioned in both the bolt path and the cartridge path to a second position in which the finger means is only in the cartridge path; and

(c) magazine follower means to move the finger means to the first position when the magazine follower is in its most upper position and having spring return means to move the finger means to its second position when the follower means is below its most upper position.

4,438,679

AXIAL THRUST COMPENSATING MEANS FOR POWER STEERING CONTROL VALVE

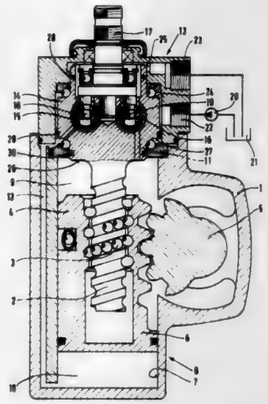
Armin Lang, Schwäbisch Gmünd, and Helmut Knödler, Lorch, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,575

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137366

Int. Cl.³ F15B *9/02*

U.S. Cl. 91—370 **4 Claims**



4. In a fluid power steering assembly including a housing enclosing a servomotor (8) having separated pressure chambers (9, 10), and a control valve (13) having inlet and outlet ports (22 and 23) through which pressure medium is conducted and a valve body (14) formed with passages through which the pressure medium is conducted between said ports and the servomotor, the improvement residing in axial thrust compensating means for the control valve comprising two opposing pairs of surfaces (24, 25, 26, 27) of equal area formed on the valve body, a first of said pairs of the surfaces (24 and 25) being respectively exposed to the pressure medium in the inlet and outlet ports, and the second of said pairs of the surfaces (26 and 27) being respectively exposed to the pressure medium in the pressure chambers (9 and 10).

4,438,680

GREENHOUSE CONSTRUCTION PROVIDED WITH SPECIAL RIDGE FOR VENTILATION

Christopher Esposito, West Bay Shore, N.Y., assignor to Four Seasons Solar Products Corporation, Farmingdale, N.Y.

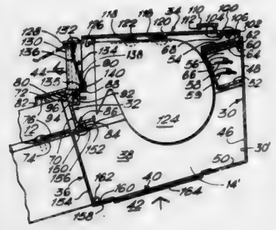
Continuation-in-part of Ser. No. 77,786, Sep. 21, 1979, Pat. No. 4,316,405. This application Jul. 6, 1981, Ser. No. 280,992

Int. Cl.³ A01G *9/24*; F24F *7/00*

U.S. Cl. 98—43 C **18 Claims**

1. A greenhouse construction including first means for abutting a supporting structure and defining a first sloped pocket adapted for receiving the sloped upper extremity of at least one glazing bar and defining a second sloped pocket above said first sloped pocket, second means defining a third sloped pocket adapted for receiving at least one sloped glazing member positioned above the sloped upper extremity of said glazing

bar, and third means coupling said second means to said first means with the second and third pockets in spaced relation



whereby to define an opening for the venting of said greenhouse construction.

4,438,681

INSTALLATION FOR SOLUBILIZING COCOA

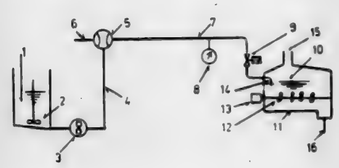
Pierre-Benoit Raboud, Monthey; Frantisek Kubicek, Bossonnens, and Jean-Pierre Bandi, La Tour-de-Peilz, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Division of Ser. No. 106,529, Dec. 26, 1979, Pat. No. 4,349,579. This application Feb. 17, 1982, Ser. No. 349,595

Claims priority, application Switzerland, Jan. 5, 1979, 81/79

Int. Cl.³ A23G *1/00*

U.S. Cl. 99—323.2 **7 Claims**



1. Apparatus for continuously solubilising cocoa comprising:

(a) a reaction tube having an upstream end and a downstream end;

(b) means for continuously advancing cocoa at a predetermined rate into the upstream end of said reaction tube whereby the cocoa so advanced flows through said tube to the downstream end thereof;

(c) discharge control means for maintaining a predetermined superatmospheric pressure within said tube by restricting the flow of cocoa from the downstream end of said tube;

(d) a nozzle having an inlet end and an exit end, said exit end communicating with said tube adjacent the upstream end thereof; and

(e) means for supplying steam to the inlet end of said nozzle under a predetermined pressure more than twice the pressure within said reaction tube; and

(f) means for continuously introducing an alkali carbonate into said reaction tube.

4,438,682

APPARATUS FOR POPPING POPCORN

Michael H. King, Scottsburg, Ind.; Lee W. Poppe, Jr., and Oscar A. Wurtenberg, both of Louisville, Ky., assignors to National ICEE Corporation, Philadelphia, Pa.

Filed Dec. 6, 1982, Ser. No. 447,276

Int. Cl.³ A23L *1/18*

U.S. Cl. 99—323.7 **13 Claims**

1. A corn popping machine adapted for cyclic operation, said machine comprising:

a. a reservoir for unpopped corn;

b. a transparent bell jar;

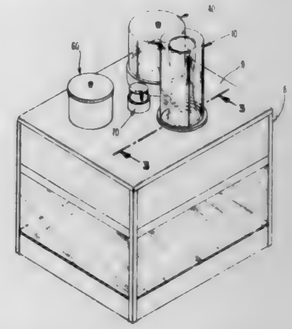
c. a popping tube within said bell jar;

d. an air blower;

e. a heating chamber having a plurality of heating elements;

f. air-flow conveying means coupling said air blower, heating chamber, popping tube and bell jar;

g. a feed conveyor for transporting unpopped corn from said reservoir to the base of said popping tube;



h. a manually operable selector switch adapted to be set at a plurality of set positions;

i. electric means responsive to the position at which said selector switch is set for operating said feed conveyor for a preselected segment of a cyclic time period and for energizing a selected number of heating elements; and

j. means responsive to a change in the setting of said selector switch for changing said time segment and for changing the number of heating elements which are energized.

4,438,683

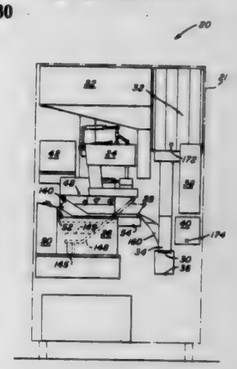
APPARATUS FOR DISPENSING INDIVIDUAL ORDERS OF A HOT FOOD PRODUCT AND COMPONENTS USABLE THEREWITH

William Bartfield, Sherman Oaks, Calif., assignor to Prize Frize, Inc., Sherman Oaks, Calif.

Filed Feb. 26, 1982, Ser. No. 352,879

Int. Cl.³ A47J *37/12*

U.S. Cl. 99—330 **17 Claims**



1. An apparatus for dispensing individual orders of a hot food product comprising:

storage means for storing a supply of food product to be dispensed and having an outlet;

supply means for transferring an amount of food product corresponding to the size of an individual order from the storage means to mixing chamber means;

mixing chamber means having an inlet at an upper end thereof for receiving food product to be mixed and an outlet at a lower end thereof for dispensing mixed food product;

liquid dispensing means for adding a predetermined amount of liquid to said mixing chamber means to thereby provide a mixed food product;

dispensing means for forcing the mixed food product out of the outlet of said mixing chamber means;

cutting means disposed adjacent the outlet of said mixing chamber means for cutting off a portion of the food product forced out of said mixing chamber means;

heating means for receiving and for heating the cut off food product;

conveyor means including a belt conveyor for removing heated food product from the heating means and for conveying the heated food product towards an outlet of said apparatus; and

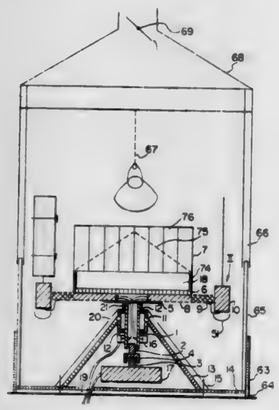
control means for controlling the operation of said apparatus.

4,438,684

KINETIC FIREPLACE AND SPIT ROASTER

Robert Geissmann, 153 Rue de l'Universite, 75007 Paris, France

Filed Mar. 7, 1980, Ser. No. 128,036
Claims priority, application France, Mar. 15, 1979, 79 06545
Int. Cl.³ A47J *3/704*
U.S. Cl. 99—341 **15 Claims**



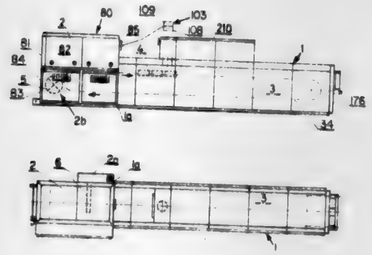
1. A kinetic fireplace comprising a tank-like base, a stationary collar supported on said base, and a primary motor mounted below said collar, a hearth formed by a horizontal grate, having upwardly vertical bars and downwardly extending carrying legs, said legs resting on a horizontal carrying plate having a depending central axle rotatably held in said stationary collar, the lower end of said axle being coupled to said primary motor for rotation about its central axis, a plurality of spaced telescoping columns secured at their lower ends to said base, a hood supported by the upper end of said columns, and panels located between the columns surrounding said hearth, said panels being at least, in part, removable to permit access to said hearth, a plurality of tubular arms secured beneath the horizontal grate and extending radially outward toward said telescoping columns, each of said arms having a slide extension at the end of which a cylinder is mounted provided with a spit, and a secondary motor for rotating each of said spits about an axis radially spaced from said central axle.

4,438,685

WAFER BAKING OVEN

Franz Haas, Sr., Gerstlgasse 25, A-1210 Wien; Franz Haas, Jr., Kreuzgasse, A-2100 Leobendorf, and Johann Haas, Seitweg 4, A-3400 Klosterneuburg, all of Austria

Filed May 11, 1982, Ser. No. 376,954
Claims priority, application Austria, May 11, 1981, 2093/81
Int. Cl.³ A47J *37/00*
U.S. Cl. 99—342 **152 Claims**



1. A wafer baking oven for making, from batter, baked wafers such as flat wafers, low hollow wafers, sugar cones, wafer cups, wafer figures and the like, the baking oven comprising:

a baking chamber having the general shape of an elongated parallelepiped, the baking chamber having a front end and a rear end, the baking chamber having a plurality of heating elements therein;

an enclosure which is at least partially equipped with thermal insulation, at least part of the insulated enclosure enclosing at least part of the baking chamber;

a front port adjoining the baking chamber at the front end of the baking chamber;

a plurality of baking tongs in the baking chamber, the baking tongs being movable through the baking chamber and into and out of the front port in a running direction, the baking tongs being openable when in the front port for the removal of baked wafers therefrom and for charging the baking tongs with batter, the baking tongs also being closeable into a closed state after being charged with batter in the front port and being movable through the baking chamber in the closed state;

the front port including a charging station for charging the baking tongs with batter, and a discharge station for discharging baked wafers along a path;

the baking chamber having two lateral sides, a bottom side and a top side, which sides extend generally between the front and rear ends of the baking chamber, the baking chamber also having a rear side at its rear end;

the insulated enclosure including a pair of lateral walls defining the lateral sides of the baking chamber, a ceiling wall defining the top side of the baking chamber, and a rear wall defining the rear side of the baking chamber;

the baking chamber having a baking chamber exhaust for exhausting gases from the baking chamber;

the insulated enclosure substantially completely enclosing at least the baking chamber on its two lateral sides, on its ceiling walls and at its rear wall, with the exception of the baking chamber exhaust;

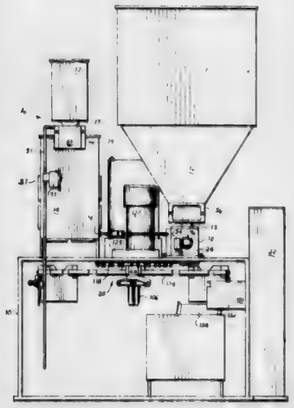
the baking chamber also being substantially completely enclosed at its bottom side.

4,438,686

APPARATUS FOR MIXING A COMMINUTED FOOD MATERIAL AND A LIQUID

Simon A. Perez, Tucson, Ariz., assignor to Innovatec, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 342,881, Jan. 28, 1982, abandoned. This application Jul. 9, 1982, Ser. No. 395,504
Int. Cl.³ A47J *27/00*; B67D *5/52*
U.S. Cl. 99—353 **35 Claims**



1. An apparatus for mixing a comminuted food material and a liquid comprising:

(a) a reservoir for storing therein a supply of said liquid and having a liquid discharge opening for flow of said liquid therethrough,

(b) a hopper for storing therein a supply of said comminuted food material and having a material discharge opening for flow of said food material therethrough,

(c) means associated with said liquid discharge opening of said reservoir for selectively dispensing said liquid in discrete measured quantities,

(d) means associated with said material discharge opening of said hopper for selectively dispensing said food material in discrete measured quantities, and

(e) control means for actuating simultaneously said liquid dispensing means and said food material dispensing means respectively to dispense sequentially respective predetermined pluralities of said discrete measured quantities of said liquid and said food material into receptacle means thereby to thoroughly mix respective predetermined total quantities of said liquid and said food material.

4,438,687

TRIPHAMMER NUTCRACKER

Fred A. McNiel, 611 Bouldin Ave., Austin, Tex. 78074

Filed Aug. 2, 1982, Ser. No. 404,001
Int. Cl.³ A23N *5/00*
U.S. Cl. 99—571 **23 Claims**



1. A triphammer nutcracker comprising:

a base;

a mortar and pestle slideably carried on said base for rectilinear motion with respect to each other, said mortar and said pestle being spaced from each other to define a cracking chamber and each having a recess in a face portion, said recesses cooperating to receive and hold a nut to be cracked in said cracking chamber between said mortar and said pestle;

a triphammer having a hammer head which is spring biased toward said pestle and which forcibly contacts said pestle to effect cracking of the nut positioned in said cracking chamber, said hammer head being slideably carried on said base for movement toward and away from said pestle;

a slideable cracking chamber shield telescopingly surrounding said mortar and being slideable with respect thereto to enclose said cracking chamber during cracking of the nut;

an operating lever having means to retract said hammer head away from said pestle and to release said hammer head to cause said hammer head to forcibly contact said pestle, and means to reciprocate said mortar and said shield to hold the nut and to enclose said cracking chamber during cracking of the nut; and

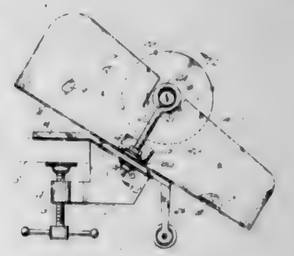
means to adjust said spring bias of said triphammer and means to adjust the distance of travel of said pestle in said base to regulate the cracking force applied to the nut by said pestle.

4,438,688

NUTCRACKER

Paul E. Johnson, 4123 Jasper Rd., Springfield, Oreg. 97477

Filed Mar. 7, 1983, Ser. No. 473,127
Int. Cl.³ A23N *5/00*
U.S. Cl. 99—574 **4 Claims**



1. A nutcracker for temporary attachment to a supporting surface during use and comprising in combination,

a base including a clamping member adapted for engagement with a supporting surface, said base having an angulated portion,

a U-shape chute having an inclined bottom wall in place on said base, a portion of said chute constituting a receptacle to receive uncracked nuts,

bearing posts in place on said base with each post terminating upwardly in an eye, mounting means coacting on said base and said posts and adjustably mounting each of said posts relative said chute bottom wall,

a drum rotatably carried within the eyes of said bearing posts and transversely disposed in said chute so as to locate a portion of the drum periphery adjacent said chute bottom wall whereby the drum and said bottom wall may coact to crack a nut therebetween, and

means for imparting rotation to said drum.

4,438,689

MATERIAL BALING DEVICE

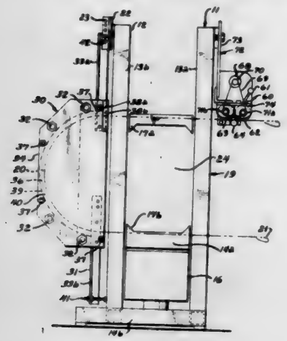
Emil Simich, Chicago, Ill., assignor to A. J. Gerrard & Co., Des Plaines, Ill.

Filed May 10, 1982, Ser. No. 376,266
Int. Cl.³ B65B *13/04*
U.S. Cl. 100—25 **8 Claims**

1. A baling apparatus for use with bale strapping material including in combination:

a first press means and a second press means, each of said

press means including a plurality of channel means extending across said press means;
a return chute assembly having a frame,
a plurality of chute means, each chute means supported on said frame in juxtaposition to said first and second press means, said chute means having a curved face and two sidewalls, said curved face extending radially outward from said first and second press means, said sidewalls extending radially inward from the outer edges of said curved face, said chute means adapted to be aligned in communication with respective channel means of said first and second press means to slideably receive bale strapping



material extending from said channel means of one of said press means and directing said strapping material along said curved face into and through said channel means of said opposite press means where the bale strapping material can be secured onto itself; and
at least one frame member extending parallel to said first and second press means, said frame member including support means for receiving said chute means and including a releasable securing means affixing each of said chute means to said frame member, allowing for movement of said chute means along the length of said frame member to facilitate alignment of said chute means with said channels.

4,438,690

PNEUMATICALLY OPERATED PRESS

Wilhelm von Allworden, Erbach, Fed. Rep. of Germany, assignor to Howard Machinery Limited, Harleston, England

Filed Feb. 10, 1982, Ser. No. 347,555
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105049
Int. Cl.³ B30B *5/02, 9/22*
U.S. Cl. 100—116 **7 Claims**



1. A pneumatically operated press comprising,
a rotatable drum having its axis of rotation disposed horizontally,
a flexible membrane attached to the wall of the drum internally thereof and extending parallel to said axis of rotation so as to sub-divide the interior of the drum into two spaces, a pressing space and an air space,
the pressing space being defined by said membrane and a portion of said wall, and said wall portion having a filling opening through which material to be pressed is introduced into the pressing space,
a closure member for the filling opening which is located adjacent the attachment of the membrane to said wall,
the portion of the drum defining the pressing space, including the closure member, being perforated over its entire curved area between the attachments of the membrane to the drum,
the air space being defined by said membrane and a further portion of the drum and being arranged so that air under pressure introduced into said space causes the membrane to be urged towards the pressing space.

4,438,691

SCREW PRESS ARRANGEMENTS

Per I. Solberg, Rådal, Norway, assignor to Stord Bartz A/S, Bergen, Norway

PCT No. PCT/NO81/00023, § 371 Date Feb. 3, 1982, § 102(e) Date Feb. 3, 1982, PCT Pub. No. WO81/03639, PCT Pub. Date Dec. 24, 1981
PCT Filed Jun. 11, 1981, Ser. No. 345,379
Claims priority, application Norway, Jun. 13, 1980, 801755
Int. Cl.³ B30B *9/12*
U.S. Cl. 100—117 **10 Claims**



1. A screw press comprising a press basket having a first cylindrical portion at a feed end, a second following tapered portion, a third following cylindrical portion and a fourth following tapered portion at a discharge end; and
a pair of screw elements extending through said basket from said feed end to said discharge end in side-by-side relation on parallel longitudinal axes, each said screw element having a core and a screw thread extending from said core, each said core having a minimum diameter within said first basket portion, a greatly increasing diameter in the direction of said discharge end within said second basket portion and a first part of said third basket portion, and a greatly increasing diameter in the direction of said discharge end within said fourth basket portion.

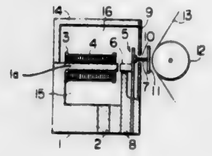
4,438,692

PRINTING APPARATUS WITH COOLING OF HAMMER PRINTING COILS

Michio Yanadori, Hachioji; Yuji Hosoda; Isao Nakajima, both of Ibaraki; Kenichi Igarashi; Makoto Kurosawa, both of Katsuta; Kensei Hosoya, Ibaraki, and Tsuneki Kobayashi, Mito, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 318,120, Nov. 4, 1981, abandoned. This application Jun. 20, 1983, Ser. No. 506,067
Claims priority, application Japan, Nov. 7, 1980, 55-155973
Int. Cl.³ B41J *3/00*; H01F *5/00*
U.S. Cl. 101—93.04 **10 Claims**

1. A printing apparatus comprising:
a printing section including a substantially horizontally disposed core, a plurality of drive coils for driving printing hammers arranged longitudinally in a side-by-side relationship at one side of the core, said drive coils being arranged in a side-by-side relationship adjacent to and in contact with one another so as to form a block having a pair of opposite surfaces to be cooled;
a support means for supporting the printing section;
a first cooling fluid passageway defined between one side of said core and one of said pair of opposite surfaces of said drive coils to allow a cooling fluid for the drive coils to flow therethrough, said first cooling fluid passageway having a substantially constant cross-sectional area in a flow direction of a cooling fluid and extending substantially straight in a direction in which the drive coils are arranged;
a second cooling fluid passageway defined between the other of said pair of opposite surfaces of said drive coils and a cover member to allow the cooling fluid for the



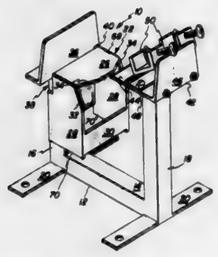
drive coils to flow therethrough, said second cooling fluid passageway being substantially constant in cross-sectional area in a direction of the flow of the cooling fluid and substantially straight in a direction in which the drive coils are arranged; and
at least one fluid machine for forcibly causing the cooling fluid to flow through said first cooling fluid passageway and said second cooling fluid passageway whereby the cooling fluid flows along said opposite surfaces to be cooled of the block of said drive coils.

4,438,693

SILK SCREEN PRINTING ONTO THE FRONT PANEL OF A CAP

Russell A. Serrianne, and Roger L. Jennings, both of Glens Falls, N.Y., assignors to R. Jennings Manufacturing Company, Inc., Fort Ann, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,672
Int. Cl.³ B41M *1/12*; B41F *17/08*
U.S. Cl. 101—129 **10 Claims**



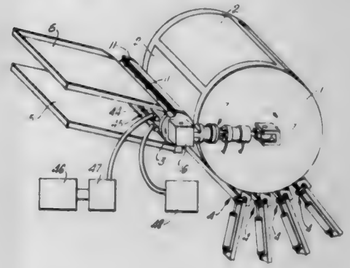
1. A cap printing device for silk screen printing into the front panel of a cap of the type having a sweatband and a bill comprising:
a frame member;
a saddle secured to the frame member for mounting the cap for printing, said saddle having a flat platen which supports the front panel of the cap when the cap is so mounted;
a registration plate against which the bill of the cap presses when the cap is mounted on the saddle, said registration plate being secured to the frame in a spaced-apart perpendicular relationship with the platen, the space between the registration plate and the platen defining a channel for receiving the sweatband of the cap; and
a means for movably securing a silk screen to the frame for movement between an advanced position wherein the silk screen contacts the front panel of a cap mounted on the saddle and a retracted position wherein the silk screen is withdrawn for changing caps.

4,438,694

GRAVURE COLOR PRINTING PRESS

David W. Parkins, Bedford; David K. Thomas, Leighton Buzzard; Peter C. Pugsley, Pinner, and Benjamin J. Price, Haywards Heath, all of England, assignors to Crosfield Electronics Limited, London, England

Filed Sep. 1, 1981, Ser. No. 298,407
Claims priority, application United Kingdom, Sep. 3, 1980, 8028364
Int. Cl.³ B41F *5/18*
U.S. Cl. 101—152 **2 Claims**



1. A gravure color printing press, comprising:
a printing cylinder;
four printing members (2) each for a different color arranged around said printing cylinder;
an impression cylinder (3);
means for holding a sheet of substrate (15) to be printed on said impression cylinder;
four inking assemblies (4), each of said inking assemblies including a doctor blade (35) movable towards and away from said printing cylinder, each of said inking assemblies including an ink channel (31) upstream of its doctor blade and including a pivoted blade (32), said pivoted blade seating against said doctor blade to close said ink channel and cut off a supply of ink to said printing member;
means (7) for moving said impression cylinder towards and away from said printing cylinder, said moving means comprising fluid pressure operated piston and cylinder assemblies (23) and spring means (26) connected together in series and acting between said impression cylinder and said printing cylinder, said spring means defining a final printing pressure between said impression cylinder and said printing cylinder;
an ink dryer and cooler, said ink dryer and cooler comprising an upstream duct (44) and a downstream duct (45) which extend along said impression cylinder, means (46, 47) to supply hot air to said upstream duct, and means (48) to supply cold air to said downstream duct; and
a control system means (49–59) for controlling the operation of each of the inking assemblies so that each of said inking assemblies only supplies ink to its corresponding printing member and each of said doctor blades contacts only its corresponding printing member, said control system means controlling said means for holding a sheet of substrate so that the substrate is held in a fixed position on said impression cylinder until said substrate has been contacted and printed by all of said different color printing members, said control system means controlling a rotation of said impression cylinder and said printing cylinder so that said impression cylinder continues to rotate in step with said printing cylinder when said means for moving said impression cylinder has moved said impression cylinder away from said printing cylinder whereby ink on said

substrate held on said impression cylinder is allowed to dry before said impression cylinder and said printing cylinder are once again brought together to print the next color onto said substrate, said inking assemblies always contacting their corresponding printing member once during each revolution of said printing cylinder.

4,438,695

CYLINDER FOR MACHINES PROCESSING RUNNING LENGTHS OF MATERIAL

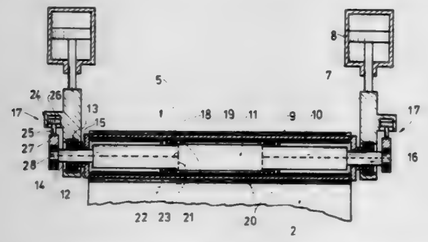
Peter Maier, Worms, and Arnold Niedermaier, Beindersheim, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Continuation of Ser. No. 292,782, Aug. 14, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 519,891

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033230; Apr. 11, 1981, 3114731

Int. Cl.³ B41F *9/06, 13/18, 13/20*

U.S. Cl. 101—153 **9 Claims**



1. An impression cylinder for a printing machine having an impression and an etched cylinder, said impression cylinder including:

(a) a cylindrical outer casing supported at its ends on said machine by first adjustable support means including self-aligning bearings,

(b) a cylindrical core coaxially disposed in said outer casing and supported therein by at least one support bearing disposed symmetrically with respect to the center of said outer casing, the ends of said cylindrical core extending beyond the ends of said outer casing,

(c) second adjustable support means engaging the ends of said cylindrical core which are supported on said first support means for separate independent adjustment, said second adjustable support means permitting radial adjustment of said cylindrical core independent of said outer casing,

(d) an annular oil receiving chamber defined between said cylindrical core and said cylindrical outer casing partially filled with oil, said chamber being open with respect to said support bearing supporting said cylindrical core within said outer casing, and

(e) at least one strip-off device associated with each support bearing, supporting said core within said outer casing, disposed laterally therefrom and secured to said core extending radially toward said outer casing to strip the oil therefrom during operation and direct the oil toward said support bearing, said strip-off device including an angled segment disposed symmetrically with respect to the cylindrical outer casing axis, the apex thereof directed toward the associated support bearing, said angled segment being contoured to said outer casing and said cylindrical core.

4,438,696

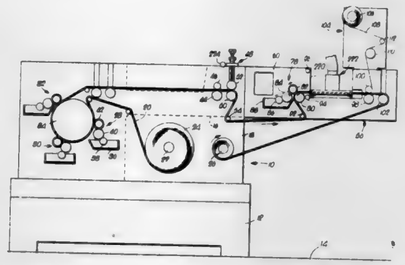
MULTI-PURPOSE FLEXOGRAPHIC PRESS MODULE

John W. George, Meriden, and Eugene D. Rudolph, Topeka, both of Kans., assignors to Express Card & Label Co., Topeka, Kans.

Filed Mar. 15, 1982, Ser. No. 358,116

Int. Cl.³ B41F *5/06, 5/18*

U.S. Cl. 101—180 **9 Claims**



1. For use in combination with a flexographic web printing press having a pair of upstanding frame plates provided with flat end edges, a series of print stations including parallel driven rolls spanning said frame plates and journalled thereby, and means for driving a web through said stations, in timed relation to rotation of said rolls, an add-on, flexographic module comprising:

a chassis including a pair of parallel, laterally spaced apart side plates;

a print station carried by said chassis and including a plurality of parallel rolls spanning said side plates and journalled thereby;

web guide rolls on said chassis between said side plates in parallel relationship with the rolls of said print station of the module in disposition to receive, and return to, a web from said driving means of the press when the module is attached thereto;

means for detachably suspending said module from said frame plates of the press in such a manner that said rolls of the module are maintained in parallel relationship with said rolls of the press; and

mechanism for releasably, drivingly connecting rolls of the module in timed relationship with rolls of the press when the module is attached to the press,

said side plates having flat end edges disposed for abutment against said end edges of said frame plates and being provided with a pair of opposed guide plates projecting outwardly beyond said end edges of the side plates, said guide plates being spaced apart by such a distance less than that between the side plates as to permit the guide plates to slip between the frame plates of the press and into surface-to-surface engagement with the frame plates when the module is attached to the press, said suspending means including structure for releasably holding said end edges of the module side plates in abutting relationship with the end edges of the frame plates.

4,438,697

ROTARY SHEET PRINTING MACHINE

Herbert Doliner, Niederau, German Democratic Rep., assignor to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

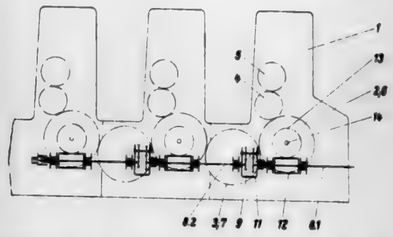
Filed Jun. 1, 1982, Ser. No. 384,166

Claims priority, application German Democratic Rep., Jun. 24, 1981, 231096

Int. Cl.³ B41F *7/06, 13/00*

U.S. Cl. 101—183 **6 Claims**

1. A rotary sheet-printing machine, comprising a plurality of printing mechanisms arranged successively in a longitudinal direction and each having a rotatable cylinder; rotary main drive means providing a predetermined power and having a rotatable main drive shaft extending through said printing mechanisms; and transmission means for transmitting rotation from said rotary drive means to said cylinders of said printing mechanisms, said transmission means including a planetary



transmission for each of said printing mechanisms and having a planetary gear carrier, a hollow worm member driven by said shaft and fixedly connected with said planetary carrier so that said shaft extends through said worm member, and a worm gear connected with said cylinder without intermediate gear means and engaging with said worm member.

4,438,698

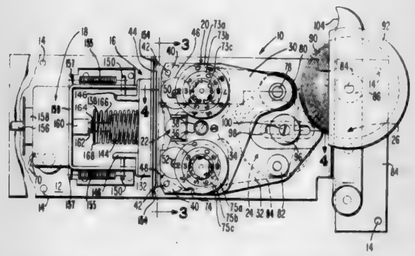
ENDORSING APPARATUS UTILIZING HOLDING FORCE PRESSURE

John L. Sullivan, Jr., Fort Lauderdale; Robert D. Pearson, Pompano Beach, and Donald A. Youngblood, Fort Lauderdale, all of Fla., assignors to Burroughs Corporation, Orlando, Fla.

Continuation of Ser. No. 416,650, Sep. 10, 1982, abandoned, which is a continuation of Ser. No. 182,600, Aug. 29, 1980, abandoned. This application Jul. 5, 1983, Ser. No. 510,741

Int. Cl.³ B41F *1/00*

U.S. Cl. 101—287 **8 Claims**



1. Holding force pressure type endorsing apparatus for use with document processing equipment wherein individual items, such for example as checks or documents, may be printed upon the obverse or reverse side thereof depending upon the application requirement, and wherein the complete endorsing assemblage is demountably removable from its associated apparatus for replacement, repair, adjustment and/or service as required, comprising a supporting base,

print producing means demountable, removable, cantilvered to said base;

signal controlled impact gimbal mounted platen means disposed adjacent to said print producing means and capable of deflecting in directions at right angles to one another and forming together with said print producing means an item receiving passageway into and through which an item/document may be moved for receiving a printed legend or other such information thereon from said print producing means;

drive means for moving an inking member through said item passageway between said impact producing platen means and said print producing means for effecting printing on an item interposed into said passageway;

means for applying fresh ink to said inking member as the ink is depleted therefrom as a result of the printing operation;

incremental, signal controlled holding force pressure drive means for said print producing means for advancing said print producing means in response to an applied signal representing sequential data desired to be printed upon each successive item, and for pressing said platen into said item momentarily stopping said item and means providing an adjustable legend mount operably associated with said print producing means for simultaneously applying additional fixed content printed information to said item as the item is stopped within said passageway;

said legend mount being vertically, slidably, demountably captivated in said base and including means for horizontally displacing said mount relative to said item passageway and for snap out dismounting from said base for changing or renewing the data carried thereon.

4,438,699

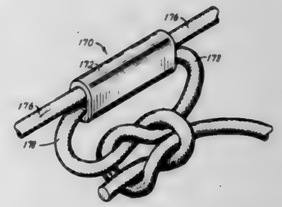
METHOD FOR REMOTE POSITIONING OF EXPLOSIVE CHARGES IN MINING VOIDS

Leonard R. Nitzberg, Knoxville, Tenn., assignor to Patent Development Ltd., Knoxville, Tenn.

Filed Oct. 6, 1980, Ser. No. 193,927

Int. Cl.³ F42B *3/00*

U.S. Cl. 102—313 **10 Claims**



1. A method of remotely positioning explosive charges at preselected locations in substantially horizontal voids created by mining in a vein of ore, each of said voids commencing at an entry proximate the cropping of said vein and continuing inwardly, said method comprising the steps of:

placing an initial charge proximate the entry of said void,

arming said initial charge by attaching a blasting trunk line to said charge,

releasably engaging said initial charge with a loading means,

moving said initial armed charge along the length of said void until said charge is positioned at a first of said preselected locations within said void,

depositing said initial charge with said blasting trunk line attached thereto at said first preselected location within said void,

arming a further charge by slidably attaching a detonator cord of said further charge to said blasting trunk line,

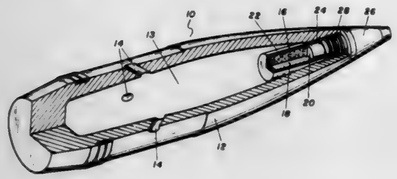
releasably engaging said further charge, and

moving said further armed charge along the length of said void until said further charge is positioned at a further of said preselected locations within said void spaced from said initial charge, said further charge being positioned closer to said void entry than said initial charge.

4,438,700
WHITE SMOKE SPOTTING COMPOSITION FOR TRAINING AMMUNITION

Charles A. Knapp, Wayne, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 19, 1982, Ser. No. 399,601
Int. Cl.³ F42B *13/44*; C06B *33/12*
U.S. Cl. 102—334 **7 Claims**



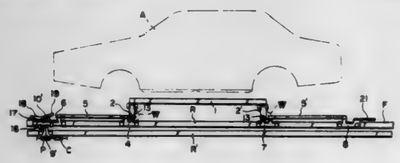
1. A pyrotechnic spotting composition consisting essentially of 30–50% zinc powder, 10–30% aluminum powder, 10–30% potassium nitrate or sodium nitrate, and 10–30% potassium perchlorate.

6. In an artillery training projectile shell having a hollow core, a smoke producing means activated upon pact disposed in said hollow core, and openings in the aft portion of said shell for exiting smoke produced from said smoke producing means, the improvement wherein the smoke producing means includes a composition consisting essentially of 30–50% zinc powder, 10–30% aluminum powder, 10–30% potassium nitrate or sodium nitrate, and 10–30% potassium perchlorate.

4,438,701
TRUCK CONVEYOR

Masasumi Murai; Hirokazu Kondo, both of Tokorozawa, and Shigekatsu Takino, Hanno, all of Japan, assignors to Tsubakimoto Chain Company, Osaka, Japan

Filed Feb. 16, 1982, Ser. No. 348,671
Claims priority, application Japan, Feb. 20, 1981, 56-22078[U]; Feb. 25, 1981, 56-24486[U]; Feb. 27, 1981, 56-26164[U]
Int. Cl.³ B61B *10/04*
U.S. Cl. 104—172 B **7 Claims**

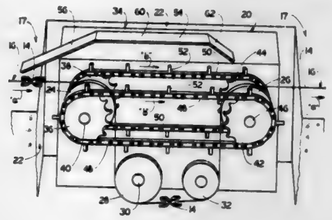


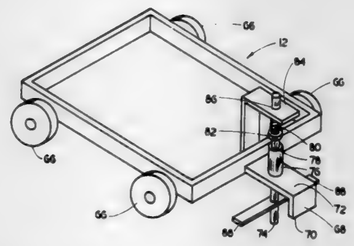
1. A truck conveyor comprising:
a leading trolley;
a front trolley;
means connecting said leading trolley with said front trolley;
a rear trolley;
a rearmost trolley;
means connecting said rear trolley with said rearmost trolley;
a trolley rail for engaging and guiding said leading, front, rear and rearmost trolleys along a conveyance path;
an article carrier for receiving articles for conveyance having first trolley-engagement means at the front of said article carrier for detachably engaging said front trolley and second trolley-engagement means at the rear of said article carrier for detachably engaging said rear trolley;
said first and second trolley engagement means respectively comprising front and rear channeled engaging members having vertically oriented web portions and upper and lower horizontally disposed flanges defining for each engaging member a sideward opening and a]-shaped cross section;
drive means for conveying said article carrier and said leading, front, rear and rearmost trolleys along said trolley rail;
drive-engagement means having an operative position connecting said leading trolley to said drive means to effect conveyance and an inoperative position disconnecting said leading trolley and said drive means to inactivate said conveyance; and
drive disengagement means on said rearmost trolley operable to displace said drive-engagement means to said inoperative position.

4,438,702
ENDLESS CONVEYOR SYSTEM

Arthur B. Rhodes, 7227 Helen Ave., Louisville, Ky. 40258

Filed Jun. 30, 1982, Ser. No. 393,754
Int. Cl.³ B61B *10/00*
U.S. Cl. 104—172 B **15 Claims**



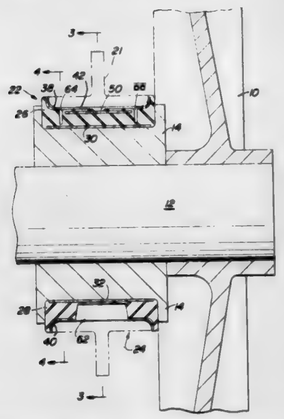


1. A conveyor system for moving load bearing units along a path defined by the conveyor system, comprising:
endless conveyor means having at least one flight thereof defining the path to be traveled by the load bearing units, said at least one path defining flight having a discontinuity along the defined path;
an endless conveyor transfer device disposed across the discontinuity in said at least one path defining flight of said endless conveyor device;
fixed position engagement means attached to each of the load bearing units said engagement means being adapted to engage said endless conveyor transfer device for movement of the load bearing units with said endless conveyor transfer device across the discontinuity;
moveable pin means attached to each of the load bearing units, said pin means being movable between an endless conveyor device engaged position, in which engaged position the load bearing units are connected to said at least one path defining flight of said endless conveyor means for movement therewith along the defined path, and an endless conveyor means disengaged position; and
means for activating said movable pin means to the endless conveyor means disengaged position proximate the upstream end of the discontinuity as said engagement means engages said endless conveyor transfer device and for actuating said moveable pin means to the endless conveyor means engaged position proximate the downstream end of the discontinuity as said engagement means disengages said endless conveyor transfer device.

4,438,703
PRIMARY SUSPENSION SYSTEM FOR A RAILWAY CAR

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Feb. 12, 1982, Ser. No. 348,446
Int. Cl.³ B61F *5/26*
U.S. Cl. 105—224.1 **5 Claims**

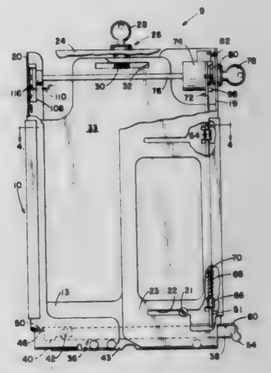


1. In a railway truck having a side frame for receiving a wheel-axle unit disposed to ride in a journal bearing,
a primary suspension system clamped to said side frame between said journal bearing and said side frame comprising:
(a) top and bottom assemblies forming a ring disposed to fit around said journal bearing to minimize forces transmitted from said wheel-axle unit to said side frame;
(b) said top and bottom assemblies each including elastomeric members bonded to pairs of inner and outer plate members;
(c) said outer plate members including primary and secondary plate elements;
(d) said primary plate elements having openings therein;
(e) said elastomeric members having recessed portions on their outer peripheries aligned with the openings of said primary plate elements;
(f) said secondary plate elements being disposed in said recessed portions of said elastomeric members in different planes than primary plate elements;
whereby said suspension system provides a first spring rate up to a predetermined loading of said elastomeric members when said outer secondary plate elements are inoperative and a second higher spring rate when said secondary metal plate elements become operative when some of said elastomeric members are compressed beyond predetermined limits during high load forces.

4,438,704
CASSETTE FOR CURRENCY NOTES OR OTHER VALUABLE ARTICLES

Alfred J. Hutcheon, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 14, 1980, Ser. No. 207,496
Claims priority, application United Kingdom, Jul. 14, 1980, 8022942
Int. Cl.³ G08B *13/06*
U.S. Cl. 109—44 **8 Claims**



1. Apparatus for storing items to be dispensed comprising:
a receptacle for storing said items;
locking mechanism for locking said receptacle in a closed condition to prevent access to said items and also for unlocking said receptacle so as to permit access to said items; and
means for indicating tampering being operatively coupled with said locking mechanism for giving an indication that a cycle including an unlocking of said receptacle followed by a locking of said receptacle has occurred after a said cycle has in fact occurred;
said tampering indicating means including a latch mechanism which is settable to a first state prior to an unlocking operation of said receptacle, said latch mechanism being operatively coupled to said locking mechanism so as to be set to a second state during a said cycle including said unlocking and locking operation of said receptacle, said second state of said latch mechanism being an indication that said cycle has taken place;
said receptacle having a removeable and lockable cover which is separate from said locking mechanism, said cover providing access to said latch mechanism to enable said latch mechanism to be set to said first state and said cover also facilitating the loading of said receptacle with said items to be dispensed.

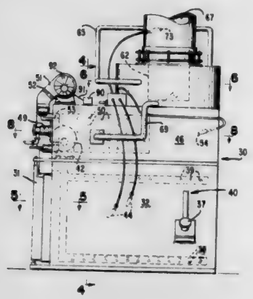
4,438,705
INCINERATOR WITH TWO REBURN STAGES, AND, OPTIONALLY, HEAT RECOVERY

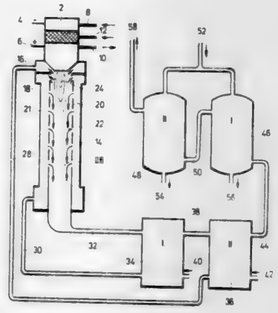
John N. Basic, Sr., 41 W. 202 Whitney Rd., St. Charles, Ill. 60174

Filed Mar. 27, 1981, Ser. No. 248,054
Int. Cl.³ B09B *3/00*
U.S. Cl. 110—235 **249 Claims**

1. An incinerator system for bulk refuse and hydrocarbon-containing liquids comprising:
(A) an enclosed main combustion chamber having:
(1) a first inlet opening for the introduction of solid bulk refuse; and
(2) a first outlet opening for the egress of the gaseous products of combustion from said main combustion chamber;

(B) a first reburn chamber having:
(1) a second inlet opening coupled to and in fluid communication with said first outlet opening;
(2) a second outlet opening for the egress of the gaseous products of combustion from said first chamber;
(3) burner means, located in proximity to said second inlet opening, for burning a fuel in said first chamber, said burner means having a high and a low setting and, when in its high setting, burning more fuel than when in its low setting;
(4) a first plurality of jets extending into said first reburn chamber, said jets extending at least about half of the distance from said second inlet opening to said second outlet opening; and
(5) first oxygenating means, coupled to said first plurality of jets, for introducing an oxygen-containing gas through said first plurality of jets into said first reburn chamber, said first oxygenating means having a high and a low setting and, when in its high setting, introducing a greater volume of gas through said jets than when in its low setting;
(C) a second reburn chamber having:
(1) a third inlet opening coupled to and in fluid communication with said second outlet opening;
(2) a third outlet opening for the egress of the gaseous products of combustion from said second chamber,
(3) a second plurality of jets extending into said second reburn chamber, said jets extending at least about half of the distance from said third inlet opening to said third outlet opening; and
(4) second oxygenating means, coupled to said second plurality of jets, for introducing an oxygen-containing gas through said second plurality of jets into said second chamber, said second oxygenating means having a high and a low setting and, when in its high setting, introducing a greater volume of gas through said second plurality of jets than when in its low setting;
(D) first sensing means, located in proximity to said first reburn chamber, for determining a temperature within said first reburn chamber;
(E) first control means, coupled to said first oxygenating means and to said first sensing means, for, when the temperature determined by said first sensing means is above a first predetermined set point, placing said first oxygenating means in its high setting and, when the temperature determined by said first sensing means is below said first set point, placing said first oxygenating means in its low setting;
(F) second sensing means, located in proximity to said first reburn chamber, for determining a temperature within said first reburn chamber;
(G) second control means, coupled to said burner means and to said second sensing means, for, when the temperature determined by said second sensing means is above a second predetermined set point, placing said burner means in its low setting and, when the temperature determined by said second sensing means is below a third predetermined set point which is not higher than said second set point, placing said burner means in its high setting;
(H) third sensing means, located in proximity to said second reburn chamber, for determining a temperature within said second reburn chamber; and
(I) third control means, coupled to said third sensing means and to said second oxygenating means, for, when the temperature determined by said third sensing means is above a fourth predetermined set point, placing said second oxygenating means in its high setting and, when the temperature determined by said third sensing means is below said fourth set point, placing said second oxygenating means in its low setting.



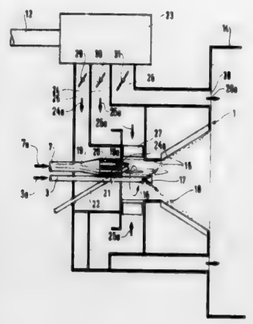


4,438,706
PROCEDURE AND EQUIPMENT FOR DESTROYING WASTE BY PLASMA TECHNIQUE
Otto Boday; Andras Herpay; Ferenc Krajcsovics; Istvan Neveri; Sandor Pete; Ferenc Pocsy; Bela Szikora, and Endre Szirmai, all of Budapest, Hungary, assignors to Villamosipari Kutato Intezet, Budapest, Hungary
Filed Feb. 19, 1982, Ser. No. 350,397
Claims priority, application Hungary, Feb. 27, 1982, 485/81
Int. Cl.³ F23G 7/04
U.S. Cl. 110—238 **6 Claims**

1. Process for destroying fluid waste containing vaporizable organic materials comprising the steps of:
(a) producing air plasma using D.C. energy supply generator;
(b) transferring said plasma into a plasma torch at one end of a plasma reactor;
(c) introducing organic waste vapor and preheated oxygen into said torch for interaction with said plasma; and
(d) discharging end products of said interaction from the end of said plasma reactor, opposite to the location of said torch, into gas washing equipment.

4,438,707
APPARATUS FOR DIRECTLY IGNITING LOW-GRADE SOLID FUEL POWDERS IN COLD COMBUSTION CHAMBERS
Lucien Delaplace, Sevres, and Jacques Robert, Meudon, both of France, assignors to Stein Industrie, Velizy-Villacoublay, France
Filed Feb. 8, 1982, Ser. No. 346,708
Claims priority, application France, Feb. 6, 1981, 81 02383
Int. Cl.³ F23D 1/02
U.S. Cl. 110—264 **10 Claims**

1. Ignition apparatus for directly igniting low-grade solid fuel powders in cold combustion chambers, said apparatus comprising at least one pilot burner with at least one pilot igniter and at least one main igniter, said at least one main igniter being fed with low-grade fuel powders, the improvement comprising:



means for feeding said pilot igniter with low-grade gas from a gasifying unit gasifying said low-grade fuel powders to eliminate adding any auxiliary high-grade fuel.

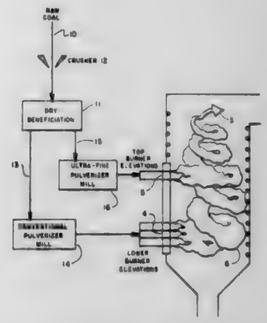
4,438,708
COMPLETE INCINERATION OF WASTE MATERIAL
Russell E. Duff, Solana Beach, Calif., assignor to S-Cubed, LaJolla, Calif.
Filed Aug. 13, 1982, Ser. No. 407,787
Int. Cl.³ F23G 9/00
U.S. Cl. 110—346 **13 Claims**



10. A method of disposing of waste material comprising
providing a container and depositing the waste material in said container,
supplying liquid oxygen to said container in excess of the estimated amount required to completely oxidize the organic and metallic components of the waste material,
submerging said container in the ocean so that said wastes and liquid oxygen are contained in an unvented underwater combustion site, and
igniting said waste material to create a rapid combustion, whereupon substantially all of the waste material is converted to ash and volatile combustion products, said container ruptures, the ash and ruptured container sink to the ocean floor and the volatile combustion products rise through the seawater, condensing within the seawater or reacting with chemicals in the seawater so that only relatively harmless volatile products reach the ocean surface.

4,438,709
SYSTEM AND METHOD FOR FIRING COAL HAVING A SIGNIFICANT MINERAL CONTENT
Richard W. Borio, Somers; Hugh W. Nelson, West Hartford, both of Conn., and Arun K. Mehta, Los Altos, Calif., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Sep. 27, 1982, Ser. No. 423,591
Int. Cl.³ F23K 1/00; F23D 1/00
U.S. Cl. 110—347 **5 Claims**

1. A combustion system for mineralized coal, including,
a source of coal having a significant content of iron pyrite (FeS_2) in its total mineral fraction,
a classifier (beneficiator) connected to the source of coal to receive and divide the coal into a first stream of substantially pure coal and into a second stream of coal with a highly concentrated content of iron pyrite and other minerals,
a furnace having two sets of burners arranged vertically one over the other,
means connected between the classifier and the lower of the two sets of burners to receive and pulverize the first stream of coal supplied the burners,
and means connected between the classifier and the upper of the two sets of burners to receive and pulverize the second stream of coal to an extremely small size (≦400 mesh) and supplied the burners,
whereby the combustion generated by the coal of the first set of burners extends up through the furnace so that the coal of the second set of burners ejects into the hot temperatures and air-richer zone of the combustion and thereby roasts the iron pyrites to iron oxide.

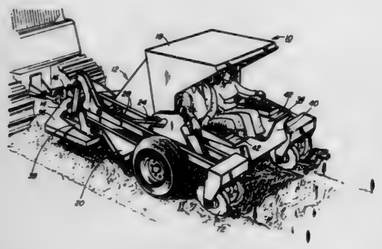


4. A process for burning highly mineralized coal, including,
dividing raw coal with a high mineral content into a first stream of relatively low mineral content and a second stream of relatively high mineral content including pyrites,
pulverizing the first stream of coal to a conventional size for combustion in a furnace,
supplying the first stream of pulverized coal to a combustion zone in the lower portion of a furnace,
pulverizing the second stream of mineralized coal to an extremely fine size,
and supplying the second stream of finely pulverized mineralized coal to the high-temperature upper portion of the combustion zone in the furnace,
whereby the pyrites of the mineral is roasted to Fe_2O_3 and/or Fe_3O_4 and all of the mineral content is prevented from forming slag in the furnace.

4,438,710
SEEDLING PLANTER
Anthony Paladino, Woodstock, Canada, assignor to Timberland Equipment Limited, Woodstock, Canada
Filed Mar. 24, 1982, Ser. No. 361,253
Int. Cl.³ A01C 11/02
U.S. Cl. 111—3 **14 Claims**

1. Apparatus for planting seedlings comprising a main frame; wheel support means for supporting the main frame above the ground; a pair of planting beams each pivotally mounted adjacent to a respective one of the opposing sides of the main frame, each planting beam having a planting dibble adjacent its free outer end; a pair of packing beams each pivotally mounted to the main frame adjacent a respective one of said planting beams and having packing means at their free outer ends for packing earth around seedlings planted by said dibbles, an operators' station disposed on said main frame intermediate the opposing sides of the main frame whereby, in use, operators

located at the operators' station have access to the planting dibbles in their raised positions for placement of seedlings thereinto, means for raising and lowering said planting beams to cause the dibbles carried thereby to move between raised seedling-receiving positions and lowered earth-penetrating positions; and ejecting means carried by the respective planting beams for ejecting individual seedlings out of their planting dibbles into furrows in the soil cut thereby, and wherein said



wheel support means comprises a pair of elongated walking beams each pivotally mounted adjacent to a respective one of the opposing sides of the main frame, a ground engaging wheel attached to a free outer end portion of each said walking beams, a pair of module bases, each connected to the main frame adjacent a respective one of the opposing sides thereof; one each of said walking beams, planting beams and packing means being pivotally connected to a respective one of said module bases.

4,438,711

FUR SEWING MACHINE

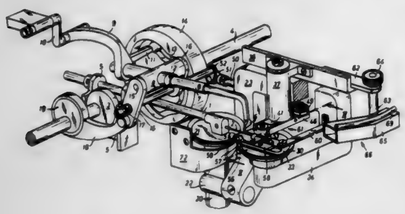
Herbert Dietrich, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,497

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143051

Int. Cl.³ D05B *15/00, 27/10*

U.S. Cl. 112—16 **11 Claims**



1. A fur sewing machine having a housing and a stitch forming area, comprising: a carrier bracket which is displaceable relative to the housing; two feed discs, one of which being mounted on said carrier bracket, said feed discs being rotatably mounted in a plane; a rod non-rotatably and axially displaceably connected in the housing and connected to said carrier bracket for displacing said carrier bracket horizontally relative to the housing; and a trimming mechanism upstream of the stitch forming area and close above said feed discs, said trimming mechanism comprising a trimming blade mounted for oscillation parallel to the plane of rotation of said feed discs, and a relatively stationary counterblade mounted for engagement with said trimming blade and extending parallel to the plane of rotation of said feed discs.

4,438,712

STITCHING HEAD HAVING TWO INDEPENDENT PRESSER FEET

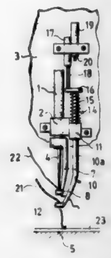
Hugues, J. M. Ducellier, Mesnil Saint Pere, France, assignor to Broderie de Mesnil St Pere S.A.R.L., Troyes, France

Filed Dec. 1, 1981, Ser. No. 326,338

Claims priority, application France, Dec. 10, 1980, 80 26231

Int. Cl.³ D05B *29/06, 53/00*

U.S. Cl. 112—100 **15 Claims**



1. A stitching head for a stitching or embroidering machine having a workplate on which a piece of material may be advanced, said stitching head comprising a support for fixing said stitching head to the machine above the workplate; at least one sewing needle which is slidably mounted in said support; a main presser foot having a pressing heel which is pierced with at least one hole disposed in the path of said sewing needle; means cooperating with said main presser foot for continuously and automatically forming upwardly directed loops with a thread on said piece of material, said loop forming means raising a given length of said thread previously secured to said peice of material during each upward movement of the main presser foot, and nipping said length of said thread during each subsequent downward movement of the main presser foot in order to turn it down and form a loop which is thereafter secured on the piece of material through a stitch made by said sewing needle.

4,438,713

EMBROIDERY STITCH FORMATION DEVICE FOR SEWING MACHINE

Takashi Kato, Kiryu, Japan, assignor to Eltac Co. Ltd., Sizuoka and Tokai Industrial Sewing Machine Co. Ltd., Kasugai, both of, Japan, part interest to each

Filed May 13, 1983, Ser. No. 494,555

Claims priority, application Japan, May 18, 1982, 57-83713; May 18, 1982, 57-83714; May 18, 1982, 57-72212[U]; Jun. 22, 1982, 57-107055

Int. Cl.³ D05C *3/02, 7/08*

U.S. Cl. 112—100 **4 Claims**

1. A device for embroidery stitch formation by a lockstitch sewing machine having a needle bar equipped with a needle provided with a piece of needle thread through a needle hole thereof and a lockstitch bobbin provided with a piece of lockstitch bobbin thread therein comprising:

an outer cylinder which is mounted around the needle bar movably upward and downward in unison with the motion of the needle bar,

a nipple having a passage therethrough fitted to the lower end of the outer cylinder,

a passageway for needle thread and a passage for a cord being provided slantwise through a frame and the outer cylinder,

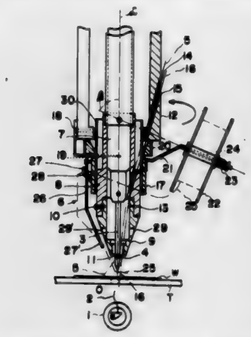
a rotary ring which is rotatably arranged on the outer cylinder and is rotatably supported by a supporter of a supporting rod which is fastened to the frame,

a drive grear arranged on the upper periphery portion of the rotary ring,

a support arm provided with a tilted shaft on which is mounted a bobbin on which bobbin thread is wound being positioned fixedly on the outer periphery of the rotary ring at the position lower than the drive gear, and

a guide bar having guide holes for guiding a piece of bobbin thread supplied from the bobbin being mounted on the rotary ring,

whereby embroidery stitches are formed by thread members comprising: a piece of needle thread supplied through a passageway to be threaded with a needle, a piece of lockstitch bobbin thread supplied from a lockatitch bobbin both of which join in a formation of lockstitch seam and a piece of cord hanging down in parallel with a needle bar through a passageway, which is wound with turns of a piece of bobbin thread supplied from a bobbin mounted on a shaft of a support arm which is rotatably fixed on a rotary ring arranged rotatable around an outer cylinder, said bobbin thread being locked by said needle thread during the process of stitch formation.



4,438,714

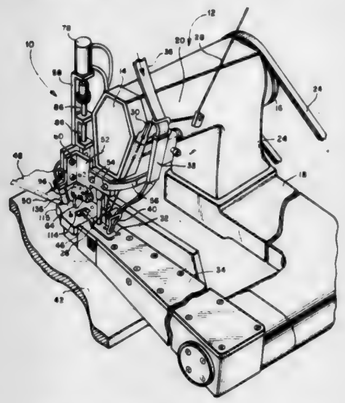
RADIUS BLADE CUTTING APPARATUS FOR A SEWING MACHINE

Samuel W. Smith, Carlisle, and Harold C. McVey, Paris, both of Ky., assignors to Blue Grass Industries, Inc., Carlisle, Ky.

Filed Nov. 27, 1981, Ser. No. 325,347

Int. Cl.³ D05B *65/02*

U.S. Cl. 112—130 **14 Claims**



1. An improved sewing machine of the type in which a continuous strip of material is sewn to a workpiece as the workpiece is moved past a sewing needle, wherein the improvement comprises:

a pair of blade members rotatably mounted upon the sewing machine for rotation about a common blade axis substantially parallel to and spaced from the strip of material and adjacent to the needle, each of the blade members having a cutting surface which is directed substantially radially with respect to the blade axis whereby the cutting surfaces both extend along respective radii from the blade axis in order to effect shearing along their entire radial extent substantially simultaneously;

moving means for effecting coordinated counter-rotation of the blade members from a rest position allowing passage of the strip of material and the workpiece to a cutting position in which the cutting surfaces of the blade members cooperate to snip the strip of material by a shearing action after the sewing of the strip of material to the workpiece is complete and the workpiece is moved away from the path of the blade members.

4,438,715

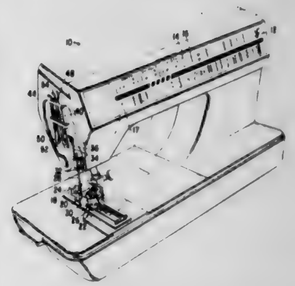
BUTTONHOLE SEWING REPAIR

William H. Dunn, Branchville; William J. Edwards, Cranbury, and Philip F. Minalga, Piscataway, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Nov. 17, 1980, Ser. No. 207,538

Int. Cl.³ D05B *3/06, 3/02*

U.S. Cl. 112—158 B **5 Claims**



1. A method for repairing an incomplete buttonhole in a work material on a sewing machine having a needle bar, a feed system, actuating means for reciprocating said needle bar and actuating said feed system, means for selectively suspending needle bar reciprocation, and means for implementing a buttonhole from an initiating position, said method comprising the steps of:

a. repositioning said work material at the initiating position for said incomplete buttonhole;

b. activating said means for suspending needle bar reciprocation and said means for implementing a buttonhole;

c. actuating said actuating means for actuating said feed system while suspending needle bar reciprocation during that portion of said incomplete buttonhole already stitched;

d. reinitiating needle bar reciprocation substantially at the point where said buttonhole is incomplete.

4,438,716

MULTI-STITCH SEWING MACHINE

Akio Koide, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 230,600, Feb. 2, 1981, abandoned. This application May 12, 1983, Ser. No. 493,044

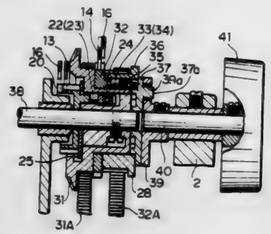
Claims priority, application Japan, Feb. 1, 1980, 55-9941

Int. Cl.³ D05B *1/14*

U.S. Cl. 112—168 **1 Claim**

1. A selecting device for a double-function sewing machine having a first stitch forming mechanism including a drive shaft (38) for producing one type of stitch, a second stitch forming mechanism for producing another type of stitch and a single

machine drive motor (6), said selecting device comprising a first belt wheel (31) mounted on the drive shaft (38) and being rotatable relative to said drive shaft; first transmission means (31A) connecting the first belt wheel to the machine drive motor; first clutch means (20–24) arranged between the first belt wheel and the drive shaft and being displaceable between an operative position in which said first clutch means connects the first belt wheel to the drive shaft and an inoperative position in which said first clutch means disconnects the first belt wheel from said drive shaft, said first clutch means including a first cam (20); a second belt wheel (36) mounted on the first belt wheel and being rotatable relative to the first belt wheel second transmission means (32A) connecting the second belt wheel to the motor; second clutch means (32–34) arranged between said second belt wheel and said first belt wheel and



being displacable between an operative position in which said second clutch means connects said second belt wheel to said first belt wheel and an inoperative position in which said second clutch means disconnects said second belt wheel from said first belt wheel, wherein the first and second clutch means and the first and second belt wheels are mounted on said drive shaft (38), said second clutch means including a second cam (32); and operator-controlled means including a first lever (13) and a second lever (14) and being selectively operated to cause one of said first and second levers to cooperate with one of said first and second cams to thereby displace one of said first and second clutch means into said inoperative position while the other of said first and second levers is held in an inoperative position so that the other of said first and second clutch means may remain in said operative position.

4,438,717

NEEDLE PROTECTOR FOR SEWING MACHINES

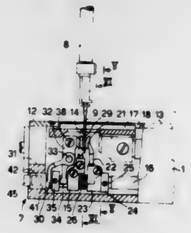
Giancarlo Minella; Bruno Motta, both of Milan, and Egidio Pedone, Corsico, all of Italy, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 29, 1981, Ser. No. 268,024

Claims priority, application Italy, Nov. 12, 1980, 25918 A/80

Int. Cl.³ D05B *55/06, 1/10*

U.S. Cl. 112—227 **2 Claims**



1. A sewing machine of the double chain stitch type having a feed dog and presser foot for advancing a workpiece and a reciprocating needle bar with at least one needle carried thereby and at least one looper operatively connected to a horizontal shaft simultaneously driven within the machine base through reciprocating and oscillating movements to effect movement of the looper in an elliptical pathway about the needle, said sewing machine comprising:

(a) a looper support **15** fixedly mounted on and for movement with the horizontal shaft within the machine's base;

(b) a loop pusher element **21** disposed upstream of the needle **9**;

(c) an oscillatable support element **32** operatively associated with said looper support **15** to support a needle protector **29** on the upper end of said oscillatable support element **32** and move the needle protector toward and away from operative association with the needle during the reciprocating movement of the horizontal shaft, said oscillatable support element **32** having a lower end that defines a pair of spaced depending arms **34** between which the horizontal shaft extends; and

(d) said needle protector **29** being disposed downstream of the needle **9** and mounted on the upper end of oscillatable support element **32** for preventing a variance in the operating phase between the needle and looper during the formation of each stitch and the displacement of the needle in the direction of advancing the workpiece.

4,438,718

PHASE INDICATION DEVICE OF SEWING MACHINE

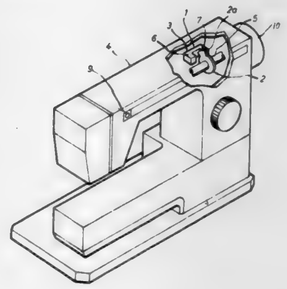
Susumu Hanyu, Hachioji, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Apr. 28, 1982, Ser. No. 372,854

Claims priority, application Japan, Apr. 28, 1981, 56-60572[U]

Int. Cl.³ D05B *69/22*

U.S. Cl. 112—274 **5 Claims**



1. In a sewing machine having a main drive shaft rotated by a drive motor to vertically reciprocate a needle, a phase indication device comprising;

first detection means for electrically detecting a predeterminedf angular position of said main drive shaft, thereby producing a first electric signal;

second detection means for electrically detecting a condition in which said drive shaft is deenergized, thereby producing a second electric signal;

electric circuit means operative to produce an output when both of said first and second electric signals are produced; and

an electric indicator receiving said output of said electric circuit means to be indicative of said predetermined angular position of said main drive shaft;

said second detection means including a switch which is closed and opened in association with operation of a speed controller of said sewing machine to energize and deenergize said drive motor, said switch being opened when said speed controller is not operated and thereby producing said second electric signal.

4,438,719

CONTAINER FOR TRANSPORTING COMPRESSED GAS, SUCH AS NATURAL GAS, AND METHOD OF CONSTRUCTING THE CONTAINER

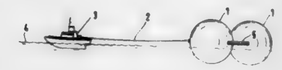
Ulrich Finsterwalder, Munich, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

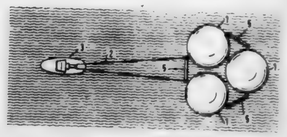
Filed Mar. 18, 1982, Ser. No. 359,590

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111408

Int. Cl.³ B63B *25/08*

U.S. Cl. 114—74 A **13 Claims**





1. Device for transporting gas, such as natural gas, which has been reduced in volume, such as by one of pressurization and liquefaction, comprising a buoyant hollow container in the form of a solid of rotation with a curved generatrix, said hollow container is a hollow sphere formed of reinforced concrete, a wall forms said container having an outside surface and an inside surface with at least a watertight coating deposited on the outside surface, three band-like groups of reinforcing members are positioned in said wall for reinforcing said container, each of said groups comprises a plurality of rings disposed in spaced parallel relation with the rings in each said group intersecting the rings in the other said groups at right angles, said groups comprise a first said group, a second said group and a third said group, said first group located in the middle region of said wall of said container and said second and third groups are arranged at a number of locations inwardly and outwardly of said first group.

4,438,720

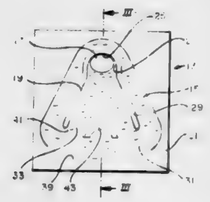
TILT DETECTOR

Worth R. Conn, Dallas, Tex., assignor to Detectors, Inc., Graham, Tex.

Filed Feb. 8, 1982, Ser. No. 346,559

Int. Cl.³ G01C *9/10*

U.S. Cl. 116—215 **11 Claims**



1. A tilt detector for accompanying goods to be transported to determine whether said good have been transported in a recommended position without being inclined beyond a predetermined angle comprising:

a. a first fluid of a first density;

b. a second mass of a second density less than said first density;

c. a horseshoe-shaped baffle with a trapping end in the form of an inner apex for trapping said second mass under the buoyant force of gravity when in a vertical position with its open end in the opposite direction such that at least part of said second mass is freed to move out of said baffle when tilted beyond a pre-determined angle of tilt; the degre of the sides of said baffle being related to said predetermined angle;

d. a thin container having at least a transparent window for viewing at least said trapping end for ascertaining if said second mass has been freed;

such that said tilt detector can be affixed to goods, containers and the like to tell if they have been tilted too much during transportation and the like; said tilt detector being resettable by inverting to replace said less dense second mass within said horseshoe-shaped baffle.

4,438,721

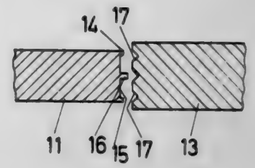
SEALANT APPLYING APPARATUS FOR CAN BODY BLANKS

Kiyoshi Kawamata, Ohmiya, Japan, assignor to Nihon Seikan Kabushiki Kaisha, Japan

Division of Ser. No. 35,904, May 3, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 250,677

Int. Cl.³ B05C *1/08, 1/16*

U.S. Cl. 118—249 **2 Claims**



1. An apparatus for applying a thin coating of sealing substance to the edges to be side-seamed of a can body blank, comprising:

a pair of coating rollers on the opposite sides of the conveying path for carrying a can body blank, each located to face the corresponding longitudinal or lateral side edge of the can body blank for applying a thin coating of sealing substance thereto and each having a central circumferential protrusion, side circumferential protrusions, and circumferential recesses all of which surround the periphery of said coating roller, said central protrusion being slightly higher than said side protrusions; and

a pair of transfer rollers each spaced from the corresponding coating roller, each having circumferential V-shaped recesses surrounding the periphery thereof and located opposite the corresponding central and side protrusions of said coating roller, and further having a sealing substance supply container in which said transfer roller is partly immersed.

4,438,722

DEVELOPMENT UNIT FOR ELECTROPHOTOCOPIERS

Riccardo Forlani, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 15, 1983, Ser. No. 513,815

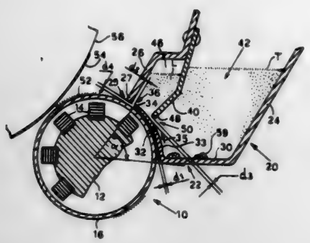
Claims priority, application Italy, Aug. 20, 1983, 68026 A/82

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—657 **8 Claims**

1. A development unit for electrophotocopiers, comprising a magnetic brush (10) in which a rotatable sleeve (16) of non-magnetic material encloses a plurality of magnets (14) fixed on to a rotatable shaft (12), and a toner container (20) situated adjacent to the sleeve in order to feed the magnetic brush through a slit (36) with the toner freed from any lumps or foreign bodies, characterised in that the container (20) comprises an arcuate base wall (32) embracing a portion of the

sleeve (16) and bounded by an edge (34) adjacent to and spaced from a side wall (27) of the container so as to define the toner feed slit (36) wherein the action of the variable magnetic field



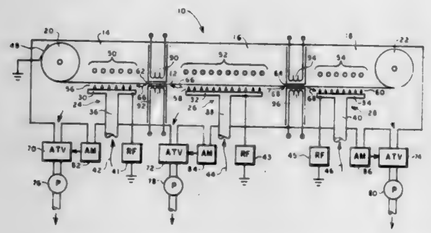
produced by the rotating magnets (14) urges the toner (T) along the arcuate base wall (32) towards the slit and breaks up lumps in the container.

4,438,723

MULTIPLE CHAMBER DEPOSITION AND ISOLATION SYSTEM AND METHOD

Vincent D. Cannella, Detroit; Masatsugu Izu, Birmingham, and Stephen J. Hudgens, Southfield, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 28, 1981, Ser. No. 306,146
Int. Cl.³ C23C 13/10, 13/12
U.S. Cl. 118—718 24 Claims



1. A system for depositing a body of material upon a substrate, said body having at least two layers of different composition, said system comprising:

a first chamber including means for depositing a first layer of material on said substrate;

first source means for providing said first chamber with a first plurality of gases;

a second chamber including means for depositing a second layer of material on said substrate, said second layer of material having a composition differing from the composition of said first layer by the absence of at least one element;

second source means for providing said second chamber with at least one gas; said at least one gas differing from said first plurality of gases introduced into the first chamber by the absence of said at least one element;

slot means interconnecting said first and second chambers;

means for transferring said substrate from said first chamber to said second chamber through said slot means; and

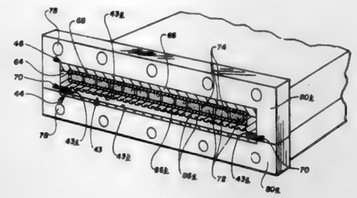
first isolation means for limiting diffusion of said at least one element from said first chamber to said second chamber, said first isolation means including means for establishing a gas flow from said slot means into said first chamber at a rate sufficient to maintain at least a 10^4 ratio of the concentration of said at least one element in said first chamber as compared to the concentration of said at least one element in said second chamber.

4,438,724

GROOVED GAS GATE

Joachim Doehler, Union Lake; David A. Gattuso, Pontiac, and Kevin R. Hoffman, Sterling Heights, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Aug. 13, 1982, Ser. No. 407,983
Int. Cl.³ C23C 13/10
U.S. Cl. 118—719 3 Claims



1. In a gas gate which includes a relatively narrow passageway adapted to (1) operatively interconnect a pair of adjacent deposition chambers and (2) substantially reduce the back diffusion of gases from the first of the pair of chambers to the second of the pair of chambers; a relatively thin, relatively large area substrate adapted to travel from one of the pair of chambers wherein a first layer is deposited onto a surface thereof, and into the other of the pair of chambers wherein a second layer is deposited atop the first layer; means adapted to introduce at least one gas into the first of the pair of chambers; means adapted to introduce at least one additional gas into the second of the pair of chambers; gas removing means for establishing a pressure differential between the adjacent chambers whereby the gas flow therebetween is substantially unidirectional; and means for urging the unlayered surface of the substrate toward a passageway wall; the improvement comprising, in combination:

at least one elongated groove formed in the passageway wall toward which the unlayered surface of the substrate is urged, said groove being substantially coextensive with the length of the passageway so as to operatively interconnect the adjacent chambers, whereby a substantially unidirectional gas flow is established through the slit defined by the space between the gas gate passageway wall and the unlayered surface of the substrate for substantially reducing the backflow of gases from the first to the second of the chambers.

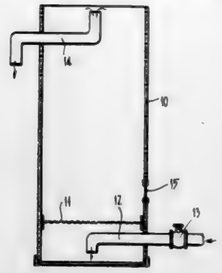
4,438,725

METHOD OF GROWING MOLLUSCS

Brendan W. O'Sullivan, Dublin, Ireland; Leo J. Leggett, Salisbury East, and Maxwell V. Melvin, Brighton, both of Australia, assignors to ICI Australia Limited, Melbourne and State of South Australia, Adelaide, both of, Australia

Filed Feb. 11, 1982, Ser. No. 347,981
Claims priority, application Australia, Feb. 11, 1981, PE7551
Int. Cl.³ A01K 61/00
U.S. Cl. 119—4 16 Claims

1. In the process of cultivating bivalve mollusc on micro-cultch, the improvement comprising a first step of preparing the micro-cultch by screening particulate matter using an oversize screen and a fines screen to produce particles in the size range of 50 microns to 500 microns, a second step of contacting an aqueous culture containing free-swimming bivalve mollusc larvae at the eyed-larvae stage with the said micro-cultch, a third step of screening the aqueous culture with a screen of substantially the same dimensions as the said oversize screen when at least 20% of the free-swimming larvae have become spat, and a fourth step of growing the screened



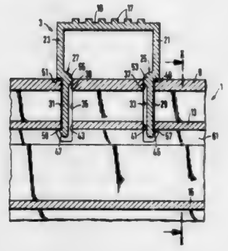
spat to the seed stage in a culture medium wherein the spat are maintained in suspension.

4,438,726

COVER GRATING FOR MANURE REMOVAL CANALS IN STABLES

Herbert Osthoff, Lindenstrasse 9, Mühldorf/Ehring, Fed. Rep. of Germany

Filed Nov. 3, 1982, Ser. No. 438,959
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146564
Int. Cl.³ A01K 1/00
U.S. Cl. 119—28 4 Claims



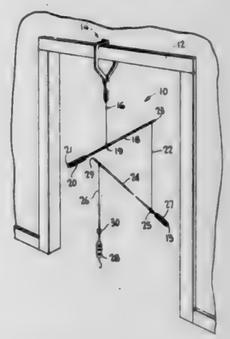
1. A cover grating for manure removal canals in stables comprising elongated lower supports disposed in spaced apart relation, elongated upper supports disposed in spaced apart relation and extending transversely of the elongated direction of said lower supports, said upper supports supported on and detachably engaged to said lower supports, said lower supports having openings therein extending transversely of the elongated direction thereof, said upper supports having downwardly extending flanges extending in the elongated direction of said upper supports and engageable within the transverse openings in said lower supports for securing said upper supports against displacement in the elongated direction of said lower supports, wherein the improvement comprises that said flanges are inserted transversely of their elongated direction into said openings in said lower supports and at least one of said flanges on each of said upper supports can be lockably engaged in said lower support against removal opposite to the insertion direction, said lower supports have a box-like shape in transverse section comprising a number of walls and said upper supports have a U-shape transverse section with the U-shaped section inverted relative to said lower supports when said upper supports are inserted into said lower supports, and at least one of said flanges on each of said upper support being inserted downwardly into said transverse openings in said lower supports, said elongated flanges of said upper supports form the legs of the U-shaped transverse section and are supported on a wall surface of said lower support, and said upper supports each having an upwardly facing substantially horizontal surface forming the plane of said upper supports and said wall surfaces of said lower supports supporting said flanges are disposed in parallel relation to the plane of said upper supports, said wall surfaces of said lower supports supporting said flanges of said upper supports form the upper horizontal wall of said box-shaped section of said lower support, at least one of said elongated flanges on each of said upper supports includes a vertically extending pawl strip forming the lower end of said flange and depending downwardly from the location where said flange is supported on the wall surface of said lower support, said pawl strip is securable in detachable locking engagement with said lower supports against being removed from said lower support in the direction opposite to the insertion direction of said upper supports, and said pawl strip is elastically deflectable in the elongated direction of said lower supports when said upper support is inserted into said lower supports and for removing said upper supports from said lower supports.

4,438,727

MOBILE TOY FOR KITTEN OR SIMILAR ANIMAL

Kenneth H. Thompson, 4613 Saul Rd., Kensington, Md. 20895

Filed Jan. 22, 1982, Ser. No. 341,794
Int. Cl.³ A01K 29/00
U.S. Cl. 119—29 20 Claims



1. A mobile comprising:

a first rod having first and second ends and a longitudinal center;

first support means for freely suspending said first rod at a first support point located intermediate said first and second ends and displaced from said longitudinal center;

first weighted means secured to said first rod for applying a first gravitational torque to said rod about said first support point;

further means secured to said first rod for applying a second gravitational torque, of lesser value than said first gravitational torque, about said first support point;

wherein said further means includes;

a second rod having first and second ends and a longitudinal center;

second support means for freely suspending said second rod at a second support point located intermediate the ends of the second rod and displaced from the longitudinal center of said second rod;

second weighted means secured to said second rod for applying a third gravitational torque to said second rod about said second support point; and

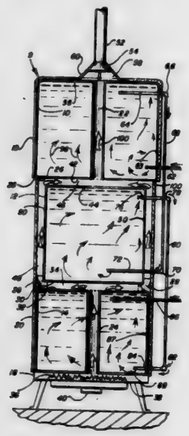
additional means secured to said second rod for applying a fourth gravitational torque, of lesser value than said gravitational torque, to said second rod about said second support point.

4,438,728

MULTI-STAGE HOT WATER HEATING APPARATUS

Eugene E. Fracaro, 533 E. 11th St., Lockport, Ill. 60441

Filed Dec. 29, 1980, Ser. No. 220,742
Int. Cl.³ F22B 5/00
U.S. Cl. 122—14 9 Claims



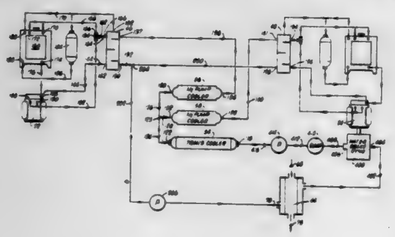
1. A hot water heater comprising three tanks arranged vertically in a casing wherein the upper and lower tanks have a center flue disposed vertically therethrough, the middle tank being imperforate and spaced from the walls of the casing forming an annular flue with the walls of said casing, burner means positioned adjacent the bottom of said lower tank and communicating with the center flue of said lower tank, an exhaust stack positioned on said casing and communicating with the center flue of said upper tank whereby the gases of combustion flow in a serpentine path from the burner to the exhaust stack.

4,438,729

FLAMELESS NITROGEN SKID UNIT

Stanley B. Loesch; James C. St. John, and Danny K. Mints, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 31, 1980, Ser. No. 136,047
Int. Cl.³ F22B 3/06; F17C 7/02
U.S. Cl. 122—26 62 Claims



1. A method of heating a first fluid, said method comprising the steps of:

pumping said first fluid with a main pump means;

driving said main pump means with a first internal combustion engine;

operating a second internal combustion engine;

circulating a coolant fluid through a coolant system means;

transferring heat energy from said first and second internal combustion engines to said coolant fluid;

transferring heat energy from said coolant fluid to said first fluid in a coolant fluid-to-first fluid heat exchanger; and

exerting a varying load on said second internal combustion engine and thereby transferring an increased amount of heat energy from said second internal combustion engine to said coolant fluid and from said coolant fluid to said first fluid as said load exerted on said second internal combustion engine is increased.

4,438,730

PROCESS FOR THE GENERATION OF STEAM

Gerhard Link, Mainz; Siegfried Jung, Florsheim-Wicker; Reinhold Zapp, Waldem; Helmut Bär, Offenbach am Main, and Herbert Mader, Nauheim, all of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 359,152
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110520
Int. Cl.³ F22B 27/00
U.S. Cl. 122—40 19 Claims

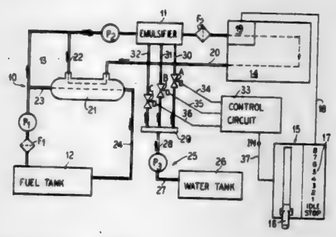
1. A process for producing steam, said process comprising generating steam by evaporating water at a temperature not higher than about 115° C. and a pressure not substantially higher than the vapor pressure of water at the temperature of evaporation, mechanically compressing the steam generated to a pressure which is from 3.0 to 4.5 times that at which the water was evaporated, and further compressing the mechanically compressed steam by means of at least one steam jet ejector to a pressure of from 3.0 to 6.0 bar which is at least 1.4 times the pressure to which the steam was compressed mechanically and a temperature of from 140 ° to 165° C.

4,438,731

FLOW CONTROL SYSTEM

Joseph D. Maggio, Cook County, Ill., assignor to Mercor Corporation, Franklin Park, Ill.

Filed Jan. 26, 1982, Ser. No. 342,900
Int. Cl.³ F02M 25/02
U.S. Cl. 123—25 N 11 Claims



1. An improved fuel delivery system for a locomotive diesel engine having a source of fuel under pressure, a first flow means for delivering fuel at varying rates to said engine, a fuel emulsifier incorporated in said first flow means for mixing a diluent fluid with said fuel upstream of said engine, a source of diluent fluid under pressure, a second flow means for delivering diluent fluid to said emulsifier, and a throttle means having a series of step positions for setting different fuel rates through said first flow means, the improvement comprising:

selectively controllable valve means in said second flow means for regulating the flow rate of diluent fluid therethrough and

control means for activaing said valve means as a function of the step position of said throttle means such that a predetermined desired mixture proportion of diluent fluid and fuel is respectively achieved in said emulsifier for particular fuel flow rates set by said throttle means.

11. A process for regulating delivery of diluent fluid to a fuel emulsifier for a combustion engine having a throttle means having a series of step positions for setting varying flow rates of fuel through said emulsifier to said engine, comprising:

connecting a source of diluent fluid under pressure in a fluid path to said emulsifier,

providing selectively controllable valve means in said fluid path for regulating the flow rate of diluent fluid therethrough, and

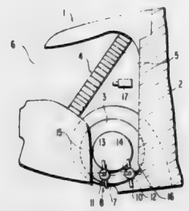
activating said valve means as a function of the step positions of said throttle means such that a predetermined desired mixture proportion of diluent fluid and fuel is respectively achieved in said emulsifier for particular fuel flow rates set by said throttle means.

4,438,732

COOLING ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Peter R. Seifert, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,187
Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121650
Int. Cl.³ F01P 5/06
U.S. Cl. 123—41.05 7 Claims



1. A cooling arrangement for a motor vehicle internal combustion engine accommodated in a sound-absorbing shroud, the cooling arrangement including a cooling air duct means having an air intake and air exhaust, a radiator means disposed in the air duct means, and a fan means cooperable with the radiator means and disposed at a position downstream of the radiator means, as viewed in a normal flow direction of cooling air, characterized in that means are provided for regulating an air throughflow through the radiator means, the means for regulating are disposed downstream of the radiator means, as viewed in the normal flow direction of cooling air, in an area of the air exhaust of the air duct means, the fan means is disposed exteriorly of the air duct means, means are provided for communicating the fan means with the air duct means, and in that means are provided for controlling an operation of the fan means and a position of the means for regulating such that the means for regulating closes the air exhaust when the fan means is operable.

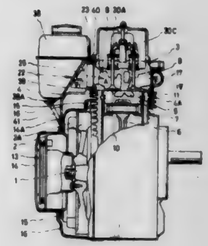
4,438,733

AIR COOLED INTERNAL COMBUSTION ENGINE

Yoshihiro Sasaki, Katano, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Feb. 5, 1981, Ser. No. 231,909
Claims priority, application Japan, Feb. 5, 1980, 55-12616
Int. Cl.³ F01P 1/08
U.S. Cl. 123—41.62 9 Claims

1. An air cooled internal combustion engine comprising: a cooling fan unitarily formed on a flywheel fixed to one end of an engine crank-shaft, a cooling fan case adapted to cover said cooling fan and to guide the flow of cooling air generated by said cooling fan towards the engine body, an air cleaner connected to a suction port of said engine, and a silencer connected to an exhaust port of said engine wherein said suction port is located on the same side of said engine as said flywheel, while said exhaust port is located on the opposite side of said engine from said flywheel, and wherein said air cleaner is formed unitarily with said cooling fan case, the space in said cooling fan case being divided into two passages by a partition



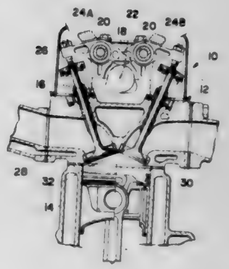
plate, one of said passages being adapted to guide the flow of cooling air generated by said cooling fan to the cylinder head of said engine body in a direction perpendicular to the crank-shaft axis of said engine, while the other being adapted to guide said flow of cooling air to the cylinder block of said engine in a direction substantially parallel to the crank-shaft axis of said engine.

4,438,734

OVERHEAD CAMSHAFT ENGINE

Yoshimasa Hayashi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 2, 1982, Ser. No. 384,259
Claims priority, application Japan, Jun. 5, 1981, 56-86626
Int. Cl.³ F01L 1/04
U.S. Cl. 123—90.27 9 Claims



1. An overhead camshaft engine having a camshaft, comprising:

a cylinder head secured to a cylinder block of the engine;

a plurality of cam bracket members disposed on said cylinder head for rotatably supporting the camshaft on said cylinder head;

at least one beam member secured to said plurality of cam bracket members for securely connecting said cam bracket members to each other; and

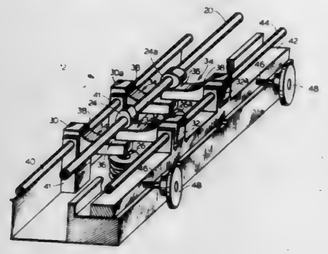
a rocker cover, independent of said beam member and secured to said cylinder block to cover said camshaft, said plurality of cam bracket members, and said beam member.

4,438,735

APPARATUS AND TIMING MECHANISM FOR CONTROLLING THE VALVE OPERATION OF AN INTERNAL COMBUSTION ENGINE

Corliss O. Burandt, Plymouth, Minn., assignor to Investment Rarities, Incorporated, Minneapolis, Minn.

Filed Oct. 13, 1981, Ser. No. 310,637
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.16 **4 Claims**



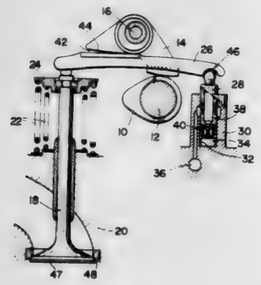
1. In combination with an internal combustion engine including a crankshaft, a first timing member mounted for rotation with said crankshaft, a camshaft, a cam on said camshaft, a second timing member mounted for rotation with said camshaft, an endless member entrained about said first and second timing members, a third rotatable member about which said endless member is also entrained, means shifting said third member toward and away from said second member to angularly displace said second member and said camshaft relative to said first member and said crankshaft, a rocker arm having a straight cam follower surface and a curved cam follower surface, and means interconnected with said shifting means for simultaneously moving said rocker arm to shift said cam follower surfaces in accordance with the shifting of said third member toward and away from said second member.

4,438,736

VARIABLE VALVE TIMING ARRANGEMENT WITH AUTOMATIC VALVE CLEARANCE ADJUSTMENT

Seinosuke Hara; Hiromichi Ofuji, and Takaharu Gotou, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Mar. 9, 1982, Ser. No. 356,269
Claims priority, application Japan, Mar. 10, 1981, 56-32190[U]
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.16 **11 Claims**



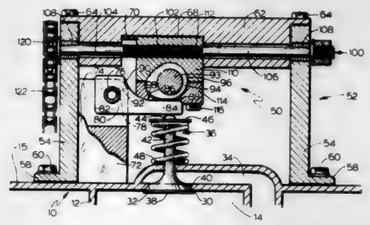
1. In an internal combustion engine,
a valve for controlling a port;
a lever which abuts said valve at a first end thereof;
a piston which is biased in one direction and on which a second end of said lever is pivotally mounted;
a cam which is rotatable in synchronism with a crankshaft of said engine;
a second lever which abuts said cam at a first end thereof and which abuts said lever at a second end thereof; and
support means which pivotally supports said second lever at a location between the first and second ends thereof, said support means being operative to move an axis about which said second lever pivots in first and second directions to increase and decrease the lift of said valve, respectively.

4,438,737

APPARATUS AND METHOD FOR CONTROLLING THE VALVE OPERATION OF AN INTERNAL COMBUSTION ENGINE

Corliss O. Burandt, Plymouth, Minn., assignor to Investment Rarities, Incorporated, Minneapolis, Minn.

Filed Oct. 13, 1981, Ser. No. 310,510
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.17 **17 Claims**



2. Apparatus for operating a valve of an internal combustion engine having a reciprocable valve member for opening and closing a valve port in communication with a combustion chamber of the engine, the apparatus comprising a rocker arm, means mounting one end of said rocker arm for pivotal movement about a fixed axis so that the other end of said rocker arm acts against said valve member, a camshaft, a cam on said camshaft engageable with said rocker arm, and means for shifting said camshaft relative to said fixed axis so that said cam is engageable with various longitudinal portions of said rocker arm between its said other end and its said one end, said shifting means including bearing means for rotatably supporting said camshaft and means threadedly engaging said bearing means for moving said bearing means to effect said shifting of said camshaft relative to said axis.

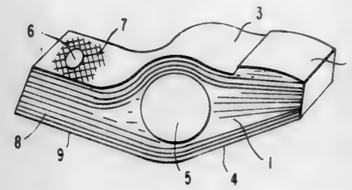
4,438,738

ROCKER ARM AND PROCESS FOR PRODUCING THE SAME

Hiroyuki Kosuda; Yasuo Kogo, both of Shizuoka; Yasuhiro Mishima, Aichi, and Masahiro Nakagawa, Shizuoka, all of Japan, assignors to Toho Beslon Co., Ltd., Tokyo and Toyota Jidosha Kabushiki Kaisha, Aichi, both of, Japan

Filed Nov. 26, 1982, Ser. No. 444,659
Claims priority, application Japan, Nov. 26, 1981, 56-189762; Nov. 26, 1981, 56-189763
Int. Cl.³ F01L *1/18*
U.S. Cl. 123—90.39 **22 Claims**

1. A rocker arm made from a carbon-fiber reinforced resin wherein the central axis of a rocker shaft hole through which the rocker shaft is inserted is referenced as Z-axis, a line parallel to a surface of a valve side of the rocker arm opposite a surface having a cam contact face and which crosses the Z-axis at point 0 at a right angle, is referenced as a Y-axis, the line that is parallel to the surface of the cam side of the rocker arm opposite the surface having the cam contact face and which crosses the Z-axis at point 0 at a right angle is referenced as a Y'-axis, and the bisector of the angle YOY' is referenced as a X-axis, and wherein $\cos^2\beta$, the average of $\cos^2\beta$ of the carbon fibers present on the Y-axis side with respect to a X-Z plane and carbon fibers present on the Y'-axis side with respect to X-Z plane, is not more than 0.9924, β being the angle of orientation with respect to the Y-axis of a first group of fibers as the fibers are projected onto the X-Y plane and the angle of orientation with respect to the Y'-axis of the second group of fibers as they are projected onto the X-Y' plane, and $\cos^2\alpha$, the average of $\cos^2\alpha$ of the first group of fibers and second group of fibers is not less than $\frac{1}{4}$, α being the angle of orientation with respect to the Y-axis of the first group of fibers as they are projected onto Z-Y plane and the angle of orientation with respect to the Y'-axis of the second group of fibers as they are projected onto Z-Y' plane.

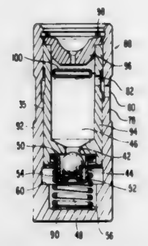


4,438,739

HYDRAULIC LASH ADJUSTER

Fuminao Arai, Kariya; Hisashi Kodama, Nagoya, and Yoshio Okabe, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 4, 1981, Ser. No. 240,337
Claims priority, application Japan, Mar. 6, 1980, 55-28481
Int. Cl.³ F01L *1/24*
U.S. Cl. 123—90.55 **5 Claims**



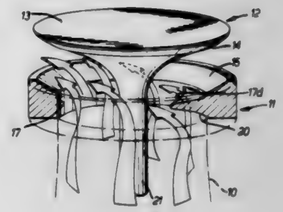
1. An hydraulic lash adjuster comprising a hollow cylindrical body member having a bottom wall at one end thereof, a hollow plunger member having a bottom wall at one end thereof and an upper wall at the upper end thereof slidably disposed within said body member, said plunger and said body member defining a pressure chamber between the bottom walls thereof, said plunger member having a reservoir chamber therein and an aperture in said bottom wall thereof, check valve means operatively associated with said aperture to permit fluid contained in said reservoir chamber to pass through said aperture to said pressure chamber while preventing fluid flow in the opposite direction, clearance means between said body member and said plunger member and passage means through said plunger means communicating said clearance means with said reservoir chamber, spring means located in said pressure chamber for biasing said plunger member away from the bottom wall of said body member and a structurally independent, free floating member disposed on and substantially covering the upper surface of said hydraulic fluid in spaced relation to said upper wall of said reservoir to prevent air above the fluid from being absorbed by the fluid in operation.

4,438,740

VALVE SEAT INSERTS FOR INTERNAL COMBUSTION ENGINES

Roger H. Slee, Warwick, England, assignor to Brico Engineering Limited, Coventry, England

Filed Sep. 23, 1981, Ser. No. 304,835
Claims priority, application United Kingdom, Sep. 23, 1980, 8030688
Int. Cl.³ F01L *3/06*; F02F *1/42*
U.S. Cl. 123—188 S **8 Claims**



1. A reciprocating internal combustion engine comprising:
at least one cylinder,
a valve-controlled inlet for feeding a charge to the cylinder,
a piston slidable within the cylinder for compressing the charge within the cylinder,
a valve seat insert arranged in said inlet,
an edge formed on said valve seat insert,
means defining an aperture in the insert whose periphery is formed by said edge,
an annular valve-engaging surface extending around said means defining an aperture,
a first area of said means defining an aperture lying to one side of a plane including the axis of said annular valve-engaging surface, said aperture being bounded by a longer portion of said edge having the shape of a part of the circumference of a circle whose centre lies on the axis of the annular valve-engaging surface,
a second area of said means defining an aperture lying on the other side of said plane, said first area being larger than said second area,
means bounding said second area including two curved sections each extending from an end of said longer edge portion and meeting at a cusp whose distance from the centre of said circle defining said edge portion is less than the radius of said circle whereby an incoming charge passing to said insert in a path generally parallel to the axis of said valve-engaging surface is deflected from said path on passage through said means defining an aperture, the charge, when deflected, travelling in directions having a velocity profile thereacross which are controlled by the shape of said two curved sections.

4,438,741

DEVICE FOR CONTROLLING A FLOW IN A HELICAL TYPE INTAKE PORT

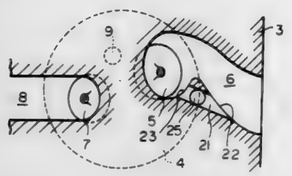
Takeshi Okumura; Kiyoshi Nakanishi, both of Susono, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 22, 1982, Ser. No. 341,911
Claims priority, application Japan, Apr. 7, 1981, 56-51149
Int. Cl.³ F02F *1/42*
U.S. Cl. 123—188 M **13 Claims**

1. A device for controlling the flow in a helical type intake port in an internal combustion engine having a cylinder block

containing a cylinder and a cylinder head containng an intake valve and an exhaust valve for the cylinder, said helical port being formed in said cylinder head with a helical portion around said intake valve and a substantially straight inlet portion tangentially contiguous to the helical portion, said device comprising:

a bypass passage branched off from said inlet portion and connected to an end portion of said helical portion, said bypass passage being formed completely within said cylinder head;



normally closed valve means arranged in said bypass passage for controlling the flow area of said bypass passage;

means for detecting the amount of air fed into a cylinder of the engine to produce a control signal indicating that the amount of air is increased beyond a predetermined value; and

actuating measn for actuating said valve means in response to said control signal to open said valve means when the amount of air is increased beyond said predetermined value.

4,438,742

INTERNAL COMBUSTION ENGINE

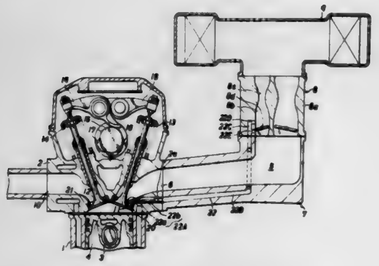
Yuzuru Namba, and Kenichi Aoyagi, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 27, 1981, Ser. No. 296,854

Claims priority, application Japan, Sep. 29, 1980, 55-135602; Sep. 29, 1980, 55-135604

Int. Cl.³ F02B *31/00*; F02M *35/10*

U.S. Cl. 123—308 **7 Claims**



1. An internal combustion engine comprising:

a combustion chamber defined by a cylinder, a cylinder head, and a piston fitted in said cylinder;

a main suction path connecting a carburetor with said combustion chamber via a suction port which is formed in said cylinder head, said combustion chamber having a side and said suction port having an end portion located at said side of said combustion chamber, said suction port being adapted to be opened and closed by a suction valve which is disposed in said end portion of said suction port at said side of said combustion chamber; and

a sub-suction path provided separately of said main suction path and having its outlet end opened into said suction port immediatley upstream of said suction valve for injecting a gas into said combustion chamber during the suction stroke thereby to generate a swirl of the suction gas to turn centering around the axis of said cylinder;

the internal combustion engine characterized in that the outlet end portion of said sub-suction path is constructed of a pipe member, said pipe member having a first outlet end which is open and directed toward said suction port and a second end portion opposite said first outlet end, said cylinder head further having an outside end face with a side therein, said pipe member being rotatably press-fitted in an insertion hole in said cylinder head and being opened in both said suction port and said outside end face of said cylinder head and which is so shaped that said open direction of said first outlet end of said pipe member can be changed when it is rotated for adjustment, and in that a rotationally operating portion for said pipe member is formed in said second end portion of said pipe member at said side of said outside end face of said cylinder head.

4,438,743

INTERNAL COMBUSTION ENGINE

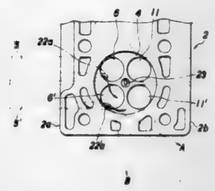
Yuzuru Namba, and Kenichi Aoyagi, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 14, 1981, Ser. No. 301,524

Claims priority, application Japan, Nov. 13, 1980, 55-159716

Int. Cl.³ F02B *31/00*; F02M *35/10*

U.S. Cl. 123—308 **5 Claims**



1. An internal combustion engine comprising:

A. a combustion chamber defined by a cylinder head, a cylinder attached to said cylinder head and a piston operably mounted within said cylinder and adapted to make both compression strokes and suction strokes; and

B. a carburetor adapted to mix fuel with air to produce an air-fuel mixture and adapted to provide said air-fuel mixture to the combustion chamber; and

C. a main suction path, through which the air-fuel mixture is provided to the combustion chamber, terminating in two suction valves, said suction valves opening into said combustion chamber; and

D. two sub-suction paths provided in the main suction path, a first sub-suction path terminating in a first nozzle and a second sub-suction path terminating in a second nozzle, said first and second nozzles opening into the combustion chamber in a direction tangential to the axis of the cylinder;

wherein the first nozzle and the second nozzle are oriented, with respect to one another, such that gases passing through the first nozzle and gases passing through the second nozzle produce swirls of gases in the combustion chamber in an identical direction, said swirls centering around the axis of the cylinder.

4,438,744

IDLING RPM FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

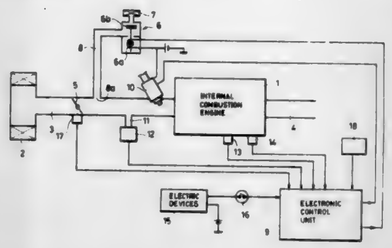
Shumpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,866

Claims priority, application Japan, Jan. 18, 1982, 57-5838

Int. Cl.³ F02M *23/06*

U.S. Cl. 123—327 **2 Claims**



1. A method for controlling the quantity of supplementary air being supplied to an internal combustion engine in a feedback manner responsive to the difference between actual engine rpm and desired idling rpm, said engine having an intake passage, a throttle valve arranged in said intake passage, and an air passage having one end communicating with said intake passage at a location downstream of said throttle valve and another end with the atmosphere, respectively, said supplementary air being supplied to said engine through said air passage and said intake passage, said method comprising the steps of: (a) comparing an actual value of engine rpm with a first predetermined value which is larger than an upper limit of a desired idling rpm range including said desired idling rpm; (b) comparing said actual value with a second predetermined value which is equal to said upper limit of said desired idling rpm range when it is determined at the step (a) that said actual value is smaller than said first predetermined value; (c) effecting control of the quantity of supplementary air in feedback mode when it is determined at the step (b) that said actual value is smaller than said second predetermined value, (d) determining whether or not the control of the supplementary air was effected in feedback mode immediately before the determination at the step (b) when it is determined at the step (b) that said actual value is larger than said second predetermined value, (e) continuing the feedback control of the quantity of supplementary air when the result of the determination at the step (d) is affirmative, and (f) effecting control of the quantity of supplementary air in decelerating mode in a predetermined manner when the result of the determination at the step (d) is negative.

4,438,745

ENGINE IDLE SPEED CONTROL DEVICE

Shunso F. Watanabe, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

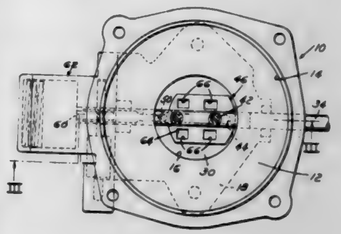
Continuation-in-part of Ser. No. 404,183, Aug. 2, 1982, abandoned. This application Sep. 7, 1982, Ser. No. 415,050

Int. Cl.³ F02D *9/08*

U.S. Cl. 123—339 **5 Claims**

1. An engine idle speed control device for an automotive type internal combustion engine having an air throttling body with an air induction passage therethrough and a disc type throttle plate mounted for a rotatable movement across the passage between an essentially closed idle speed position and a wide open position to control flow of air through the passage, the device including

an opening through the throttle plate for the passage of air therethrough, a shuttle type slide valve slidably mounted for a movement across the opening to variably control the flow of air therethrough, and power operated means responsive to engine operating conditions to move the slide valve to control the air flow through the opening to control the engine speed independently of the angular



position of the throttle plate and the air flow around the throttle plate.

4,438,746

RPM GOVERNOR FOR A FUEL INJECTION PUMP

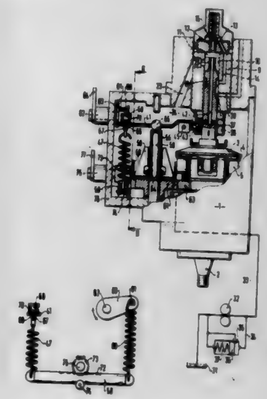
Max Greiner, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,549

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137520

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—373 **9 Claims**



1. An rpm governor of a fuel injection pump for internal combustion engines having a governor lever which is pivotable about a shaft and arranged at one end to actuate a supply quantity adjusting member of the fuel injection pump, a governor spring, said governor lever being actuated at another end counter to an rpm-dependent force by said governor spring connected thereto by an upper end thereof, a correction lever, said governor spring further includes a lower end which engages one end portion of said correction lever, a correction spring, said correction spring including one end that is connected to another end of said correction lever, said correction spring having another end connected to an arbitrarily adjusting setting lever, a bearing means provided between opposite ends of said correction lever, said correction lever being supported by and pivotable about a fulcrum point formed by said bearing means, said correction lever being displaceable along its length with respect to said bearing means thereby changing a length of said correction lever between said fulcrum point and said governor spring whereby an rpm force on said governor lever is changed for adjustment of said supply quantity adjusting member.

4,438,747

FUEL INJECTION PUMPING APPARATUS

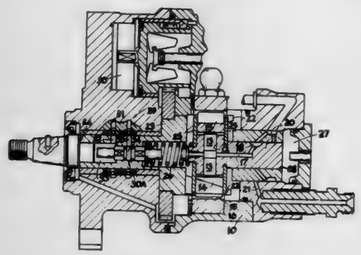
Robert T. J. Skinner, High Wycombe, and Brian W. Tumber, Greenford, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed May 17, 1982, Ser. No. 379,147

Claims priority, application United Kingdom, May 28, 1981, 8116307

Int. Cl.³ F02D *17/00*

U.S. Cl. 123—450 **11 Claims**



1. A fuel injection pumping apparatus for supplying fuel to internal combustion engines comprising a rotary distributor member mounted in a body, plungers carried in a bore in the distributor member, a cam ring having cam lobes operating as the distributor member rotates to effect inward movement of the plungers thereby to cause delivery of fuel by the apparatus, a low pressure pump for supplying fuel to said bore, said distributor member being axially movable to determine the amount of fuel supplied at each delivery stroke of the plungers, fluid pressure operable means for varying the axial setting of the distributor member, said fluid pressure operable means comprising a resiliently loaded servo valve responsive to a control pressure, a variable volume chamber defined at least in part by a surface movable with the distributor member, said servo valve acting to control the admission of fluid to and the escape of fluid from said chamber and resilient means for opposing the force exerted on said surface by the fluid pressure in said chamber.

4,438,748

METHOD OF SUPPLYING FUEL TO AN INTERNAL COMBUSTION ENGINE DURING START-UP

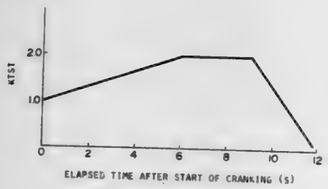
Kenji Ikeura; Hiroshi Yamaguchi; Kunifumi Sawamoto, and Tatsuo Morita, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 2, 1982, Ser. No. 353,825

Claims priority, application Japan, Mar. 4, 1981, 56-29797

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—491 **8 Claims**



1. A method of supplying fuel to a fuel-injected internal combustion engine during start-up, comprising the steps of:
(a) sensing whether a starter motor for the engine is on or off;
(b) sensing engine temperature;
(c) sensing at least one other engine condition;
(d) determining on the basis of the sensed engine conditions whether fuel combustion is taking place within the engine;
(e) determining a first fuel supply value T_2 on the basis of engine temperature;
(f) changing said first value T_2 at a predetermined rate until fuel combustion within the engine is determined to be taking place;
(g) opening a fuel injection valve of the engine for a length of time corresponding to said first value T_2; and
(h) after the starter motor is first sensed to be on, repeating steps (c) through (g) until the crankshaft rotates at a speed indicative of steady-state operation.

4,438,749

FUEL SUPPLY SYSTEM FOR COMBUSTION ENGINES

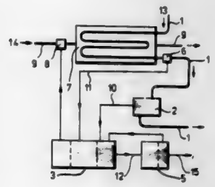
Guusstaaf A. Schwippert, Pijnacker, Netherlands, assignor to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Jul. 15, 1981, Ser. No. 283,607

Claims priority, application Netherlands, Jul. 15, 1980, 8004071

Int. Cl.³ F02D *1/00*; F02B *3/00*

U.S. Cl. 123—494 **7 Claims**



1. A device for controlling the air-fuel ratio in a fuel supply system for combustion engines, comprising:
an opto-electronic sensor for measuring the index of light refraction of the fuel, said opto-electronic sensor including a light source, a light conductor positioned at least partially in contact with the fuel, and a light receiver, whereby the measurement of the index of light refraction is based on a critical-angle measurement, and the quantity of light taken up by the light receiver at least comprises a variable portion resulting from non-direct irradiation and dependent on the index of refraction of the fuel;
an electronic circuit responsive to said opto-electronic sensor for generating a control signal in accordance with the state of aggregation or composition of said fuel; and
a temperature detecting element positioned in the fuel supply conduit and connected to said electronic circuit for correcting the measured index of refraction and thereby the control signal in accordance with temperature changes in the supplied fuel.

4,438,750

DEVICE FOR FUEL DELIVERY TO INTERNAL COMBUSTION ENGINE WITH VAPORIZATION OF INJECTED FUEL

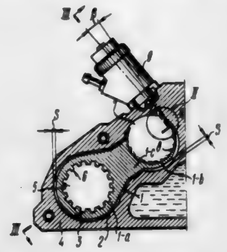
Jury B. Sviridov; Alexandr M. Andreev; Vadim V. Kozlovsky; Alexandr M. Lukin, and Evgeny V. Novikov, all of Leningrad, U.S.S.R., assignors to Nauchno Proizvodstvennoe Obiedinenie Po Toplivnoi Apparature Dvigatelei, Leningrad, U.S.S.R.

Filed Dec. 28, 1981, Ser. No. 335,211

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **7 Claims**

1. A device for fuel delivery to an internal combustion engine with vaporization of injected fuel, comprising an intake manifold through which the air is sucked into the engine cylinder, an exhaust manifold through which exhaust gases are discharged, a vaporizing element comprising an elongated member including two end sections, one end section being disposed in the exhaust manifold, the second end section being disposed in and being designed to conform to the walls of the ducts of the intake manifold receiving said second end section, said end section including an operating surface extending along the surface of the intake manifold from the portion of the second end section closest to the first end section to, at least, a diametrically opposite portion of said intake manifold, and an injection nozzle whose orifice is directed onto the diametrically opposite portion of said operating surface of the vaporizing element as close to the direction of a tangent to the operating surface as possible, whereby an injected fuel charge moves circumferentially over the operating surface in the direction of its temperature gradient toward the portion of the second end section closest to the first end section.



4,438,751

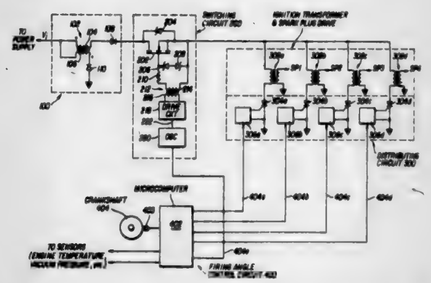
HIGH VOLTAGE GENERATING CIRCUIT FOR AN AUTOMOTIVE IGNITION SYSTEM

Shinichiro Iwasaki, Troy, Mich., assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 383,607, Jun. 1, 1982, and Ser. No. 268,889, Jun. 1, 1981, Pat. No. 4,382,430. This application Apr. 27, 1983, Ser. No. 489,189

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—606 **14 Claims**



1. A high voltage generating circuit for an automotive ignition system including at least one spark plug, comprising:
a power source;
a current control circuit coupled to said power source for generating a linearly increasing current signal;
controlled high frequency switching means coupled to said current control circuit for initiating generation of said linearly increasing current signal, said controlled high frequency switching means having an output in the form of a high frequency voltage and a high frequency linearly increasing current;
ignition transformer means adapted to be coupled to said spark plug and connected to the output of said switching means for stepping up said high frequency voltage supplied from said switching means for application to said spark plug such that a breakdown voltage of said spark plug is exceeded and a linearly increasing current is developed across the electrodes of said spark plug; and
firing angle control means coupled to said controlled high frequency switching means and said transformer means for controlling the timing of generation of said high frequency linearly increasing current between the electrodes of said spark plug.

4,438,752

VEHICLE IGNITION SYSTEM

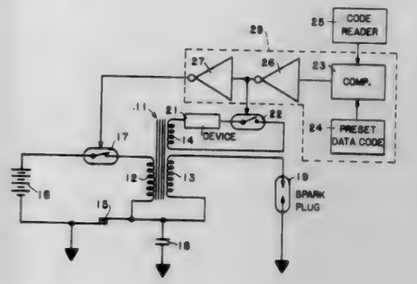
William S. H. Cheung, 95B Robinson Rd., Ground Floor, Hong Kong, Hong Kong

Filed Sep. 4, 1981, Ser. No. 299,490

Claims priority, application United Kingdom, Jul. 24, 1981, 8122957

Int. Cl.³ B60R *25/00*

U.S. Cl. 123—630 **8 Claims**



1. A vehicle ignition system comprising:
a transformer having a primary winding, secondary winding and auxiliary winding;
means for alternately connecting said primary winding to a voltage source whereby a magnetic flux is generated, said magnetic flux inducing an ignition current in said secondary winding;
a security switch means serially connecting a power dissipating load to said auxiliary winding, said load reducing said secondary winding current prohibiting an ignition current of sufficient magnitude for providing ignition to said vehicle;
a comparator for opening said security switch meansin response to a unique input code; and
means for supplying a unique code to said comparator whereby said vehicle ignition current is restored upon detection of said unique code.

4,438,753

COMPOUND BOW

Gary Simonds, Gainesville, Fla., assignor to Kidde Recreation Products, Inc., North Brook, Ill.

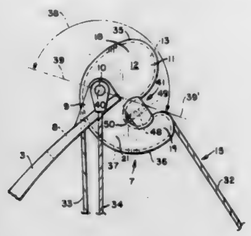
Filed Sep. 28, 1982, Ser. No. 425,683

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—24 R **10 Claims**

1. A compound bow including, a handle section, upper and lower limbs extending from said handle section and each having a tip, pivot means for supporting a displaceable member mounted adjacent each said limb tip, a cam attached to each said pivot means and having an irregularly configured external periphery, a cable track in said cam external periphery and disposed in a single vertical plane, said cam when viewed in side elevation including an enlarged main body section joined to an elongated terminal section by a reduced width intermediate section, a continuous stretch of cable sheaved within at least a portion of said track, a bowstring attached to one end of said cable stretch and a tension cable extending from the other end of said cable stretch, said cable stretch adjacent said bow-

string engaging said periphery track on said intermediate section, said cable stretch adjacent said tension cable engaging said periphery track on said main body section, portions of said cam periphery track profiled to yield a specific draw force when said bowstring is drawn, said cam arcuately displaced substantially 180° as said bowstring is drawn from brace height



to full draw and releasable cable anchor means removably attachable within a configuration formed by the external periphery of said intermediate section so that said anchor means may be forced against said cable stretch in said cam external periphery track in the intermediate section to adjustably secure said cable stretch against linear displacement relative said cam.

4,438,754

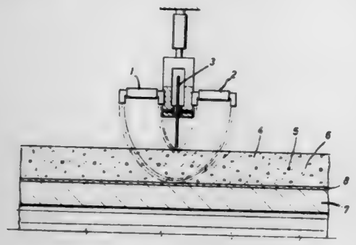
METHOD FOR SENSING AND REMOTELY CONTROLLING A TOOL TO WORKPIECE SPATIAL RELATIONSHIP

Walter C. Nanny; Thomas L. Stewart, and Dean P. Hemphill, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 66,366, Aug. 14, 1979, abandoned, which is a continuation of Ser. No. 850,311, Nov. 10, 1977, abandoned. This application Sep. 11, 1981, Ser. No. 301,259

Int. Cl.³ G01B *7/14*; G01N *27/72*; G01R *33/12*

U.S. Cl. 125—14 **3 Claims**



1. A method for cutting and removing concrete containing embedded reinforcement from about a pipe, said cutting being effected with a saw blade without cutting the pipe, comprising:

disposing two magnetic field generating probes on opposite sides of the saw blade, each probe having a north and south pole face and the saw blade being magnetically insulated;

generating a magnetic field extending between the north pole of each probe and the south pole of the other probe;

sensing the massive disturbing effect of the pipe and the minimal disturbing effect of the reinforcement;

distinguishing between the massive disturbing effect and the minimal disturbing effect to determine the distance between the saw blade and the pipe; and

cutting and removing the concrete containing embedded reinforcement without cutting the pipe by maintaining not less than the determined distance between the pipe and the saw blade.

4,438,755

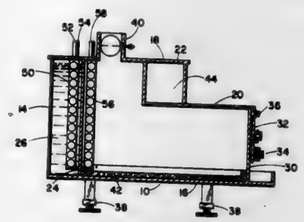
WOOD BURNING STOVE HAVING WATER HEATER

Daniel J. Moffett, Route 2, Box 99B, Osceola, Wis. 54020

Filed Jan. 31, 1983, Ser. No. 446,043

Int. Cl.³ F24C *13/00*

U.S. Cl. 126—34 **5 Claims**



1. A solid fuel burning stove comprising

(a) a combustion chamber having openings for introduction of fuel, intake of air and exhaust of smoke;

(b) a tank adjacent said combustion chamber having the top thereof open to the atmosphere;

(c) a heat exchange device positioned in said tank adapted to cause preheating of water circulated therethrough;

(d) a second heat exchange device located in the combustion chamber adapted to heat said preheated water to an elevated temperature, and

(e) suitable conduit means for carrying a flow of water into said first heat exchange device, from said first heat exchange device to said second heat exchange device and therefrom to a hot water distribution system.

4,438,756

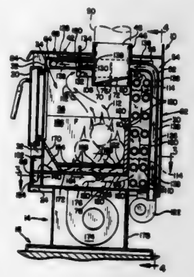
APPARATUS AND METHOD FOR ACCOMPLISHING EFFICIENT BURNING OF BIOMASS FUEL MATERIALS

Joseph G. Chamberlain, 12350 SW. 124th, Tigard, Oreg. 97223, and Paul E. Tiegs, Beaverton, Oreg., assignors to Joseph G. Chamberlain, Tigard, Oreg.

Filed Dec. 13, 1982, Ser. No. 449,461

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—131 **5 Claims**



1. A heating apparatus comprising:

a combustion chamber having a fresh air inlet and a grate to support biomas fuel material thereon;

a passageway having a first end portion originating generally near the top and a second end portion terminating generally near the bottom of the combustion chamber;

the first end portion comprising two conduits with the inlet ends thereof in communication with two openings in the combustion chambr and the outlet ends thereof in communication with inputs to a het exchanger, each conduit including a catalytic converter positioned to receive hot combustion product gases produced in the combustion chamber for transformation to substantially pollutant-free residual exhaust gases that are delivered to the heat exchanger to convert for use the heat carried thereby, and the second end portion comprising an opening in communication with a flue and a flow control means in communication with the outlet of the heat exchanger to vary the quantity of substantially pollutant-free residual exhaust gases introduced into the combustion chamber and to discharge the remaining quantity thereof through the flue.

4,438,757

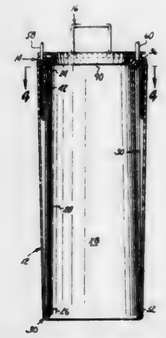
DEVICE FOR REOPENING AN ICE-BOUND WATER SOURCE

Lyle C. Anderson, Rte. #6, Fergus Falls, Minn. 56537

Filed Aug. 13, 1981, Ser. No. 292,625

Int. Cl.³ F24H *1/20*

U.S. Cl. 126—360 R **7 Claims**



1. A device for reopening an ice-bound water source, comprising:

(a) a double-walled hollow tubular member having open top and bottom ends defining a space between the walls;

(b) at least one tube extending between said double walls from said top and toward said bottom end for carrying fluid between said walls;

(c) a first fluid impervious barrier between said walls at the top thereof, said barrier including upper and lower surfaces first and second concentric depressions on its top surface, said first depression including at least one inlet aperture sized to receive the upper end of said at least one tube, said second depression including at least one outlet passage providing fluid communication through the upper and lower surfaces of said barrier; and

(d) cover means located atop said barrier and in fluid tight connection therewith for covering said depressions to create fluid tight concentric passageways, said cover means including an inlet in fluid communication with said first depression and an outlet in fluid communication with said second depression, whereby warmed fluid can be circulated from the inlet to the outlet and thereby transfer heat to the tubular member.

4,438,758

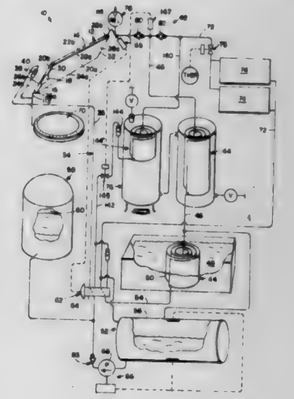
SOLAR HEATING UNIT AND HEAT TRANSFER APPARATUS

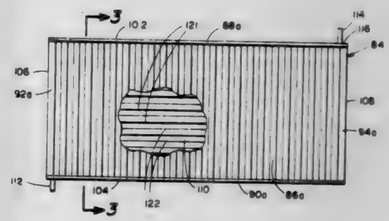
Carroll E. Brekke, 6130 Monterey Rd., #83, San Jose, Calif. 95138

Filed Jun. 14, 1982, Ser. No. 388,403

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—419 **14 Claims**





1. A heating unit (10), comprising:

an energy absorber panel (12) having an upper periphery (14) and a lower periphery (16) and defining an interior cavity (18);

fluid delivery means (34) for delivering working fluid to the cavity (18);

a heat exchange unit (44);

means (38) for preventing the delivering of working fluid to the cavity (18) in response to the working fluid within the cavity (18) reaching a selected level;

conducting means (42) for conducting a vapor formed in the cavity (18) due to vaporizing of the working fluid from a location in the cavity (18) above the selected level to the heat exchange unit (44);

a fluid (48) in contact with an exterior (50) of the heat exchange unit (44), the fluid (48) being in a quantity sufficient and the heat exchange unit (44) being of a construction sufficient to normally condense the vapor into the liquid working fluid;

fluid conducting means (52) for conducting the condensed working fluid from the heat exchange unit (44) to the fluid delivery means (34), the unit (10) being sealed and having sub-atmospheric pressure therein, the working fluid being selected to boil at said sub-atmospheric pressure at a temperature in a range from about 27° C. to about 99.5° C.;

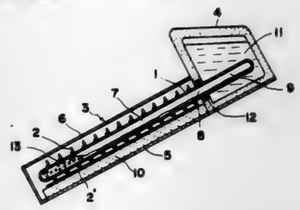
a space heating unit (74);

vapor directing means (75) for directing vapor formed from said working fluid to said space heating unit (74) in re-

sponse to ambient temperature adjacent said space heating unit (74) being below a selected value;
means (72) for conducting fluid condensed from said vapor in said space heating unit (74) to said fluid delivery conduit (34);
an auxiliary heat exchange unit (44″) having an auxiliary interior cavity;
an auxiliary fluid delivery conduit (142) for delivering working fluid to said auxiliary cavity;
an auxiliary valve (144) in the auxiliary fluid delivery conduit (142), said auxiliary valve (144) being of a construction sufficient for preventing the delivery of working fluid to the auxiliary cavity in response to the working fluid within the auxiliary cavity reaching an auxiliary selected level;
auxiliary conducting means (140) for conducting vapor formed in the auxiliary cavity due to vaporization of the working fluid from a location in the auxiliary cavity above the auxiliary selected level to the vapor directing means (valve in 72);
means (76) for heating the auxiliary heat exchange unit (44″) sufficiently for vaporizing the working fluid within the auxiliary cavity;
connecting means (62) for connecting the fluid conducting means (52) with the energy absorber panel (12); and
sensor means (65) for sensing a condition within the cavity (18) and for controlling the connecting means (62) to connect the fluid conducting means (52) with the energy absorber panel (12) in response to said condition indicating vaporization of working fluid is occurring in said cavity (18) and for controlling the connecting means (62) to connect the fluid conducting means (52) with the auxiliary heat exchange unit (44″) in response to said condition indicating non-vaporization of working fluid is occurring in said cavity (18).

11. A heat transfer apparatus (84) which comprises a flexible first wall member (86*a*) having first member upper (88*a*), lower (90*a*), first end (92*a*), and second end (94*a*) portions (88*a*, 90*a*, 92*a*, 94*a*) a second wall member (86*b*) having second member upper (88*b*), lower (90*b*), first end (92*b*) and second end (94*b*) portions (99*b*, 90*b*, 92*b*, 94*b*), said second wall member (86*b*) being generally parallel to and adjacent to said first wall member (86*a*), said respective first (86*a*) and second (86*b*) member upper (88*a*, 88*b*), lower (90*a*, 90*b*), first end (92*a*, 92*b*) and second end (94*a*, 94*b*) portions (88*a*, 88*b*, 90*a*, 90*b*, 92*a*, 92*b*, 94*a*, 94*b*) being sealed together to form upper (102), lower (104), first end (106), and second end (108) peripheries (102, 104, 106, 108) and to define an interior cavity (110) and said first (86*a*) and second (86*b*) wall members (86*a*, 86*b*) forming the major heat exchange portions of said heat transfer apparatus (84), said heat transfer apparatus (84) further including a liquid inlet (112) communicating with said interior cavity (110) and a vaporized fluid outlet (114) communicating with said interior cavity (110) adjacent said upper periphery (102), a structure (118) extending from a respective one (86*a* or 86*b*) of said first (86*a*) and second (86*b*) wall members (86*a*, 86*b*) and contacting a respective other (86*a* or 86*b*) thereof, said structure (118) being of a construction sufficient to provide such contacting over no more than about 15% of the surface area of said respective other (86*a* or 86*b*) of said first (86*a*) and second (86*b*) wall members (86*a*, 86*b*) and to allow a fluid in said interior cavity (110) to flow with substantially no impedence both from said lower periphery (104) towards said upper periphery (102) and from said first end periphery (106) towards said second end periphery (108), said first (86*a*) and second (86*b*) wall members (86*a*, 86*b*) being of sufficient rigidity to not collapse together when said interior cavity (110) has a pressure of as little as about one-fifth atmosphere.

4,438,759
HEAT-PIPE TYPE SOLAR WATER HEATER
Soichi Kitajima, Nara; Kazuyuki Iwamura, Ikoma, and Yasuhiko Takeda, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 10, 1981, Ser. No. 329,516
Claims priority, application Japan, Dec. 24, 1980, 55-186783[U]; Jan. 30, 1981, 56-12940[U]
Int. Cl.³ F24J 3/02
U.S. Cl. 126—433 5 Claims





1. A heat-pipe type solar water heater comprising:
a main housing;
a plurality of heat pipes arranged longitudinally of said housing and having vaporizing portions and condensing portions, said vaporizing portions being positioned inside said housing and said condensing portions projecting out from one end of said housing;
a heat exchange tank mounted to said one end of said housing for enclosing said condensing portions and
a plurality of heat collector plates arranged inside said housing in intersecting relation with said heat pipes, each heat collector plate having an upper portion formed with holes each provided with an annular flange integral with the collector plate and a lower portion bent substantially perpendicular to said upper portion to cover a space between itself and an adjacent collector plate, the vaporizing portion of each heat pipe penetrating said collector plates through corresponding holes and flanges in intimate fixed and heat conductive contact therewith.

4,438,760
CONCENTRATING REFLECTOR FOR SOLAR RADIATION OF LOW AERODYNAMIC FRICTION FORCE AND HIGH AERODYNAMIC BUOYANCY FORCE
Reinhart Radebold, Qusstenhornweg 14a, 1000 Berlin 22, Fed. Rep. of Germany
Filed Oct. 26, 1981, Ser. No. 315,062
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1980, 730068
Int. Cl.³ F24J 3/02; B64C 3/06
U.S. Cl. 126—438 8 Claims

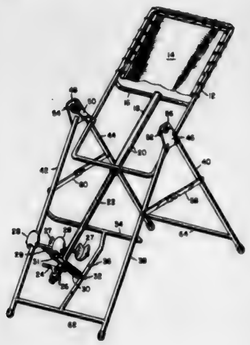
1. A reflector for concentrating solar radiation, comprising:
a foil having a surface of specular reflection and having a contour and configuration of a paraboloidal sector, having accordingly a leading edge and a trailing edge and a plane of symmetry;

means disposed above and underneath the foil and providing a wing-like structure of which the upper surface is transparent, there being a lower surface accordingly completing, with the upper surface, an aerodynamic, liftproducing profile;



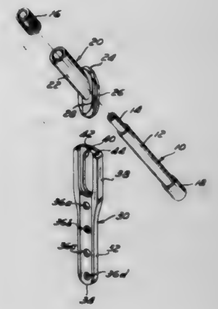
means including a rudder and rudder support structure and extending upward from said profile, in said plane of symmetry, and contoured so that the rudder support structure includes a focal area for said paraboloid, the rudder support structure provided for receiving means for receiving radiation concentrated by the reflecting foil in said focal area.

4,438,761
THERAPEUTIC DEVICE FOR A HUMAN BODY
Wayne H. McGowen, 4930 Mill Creek, Dallas, Tex. 75234
Continuation-in-part of Ser. No. 324,133, Nov. 23, 1981, abandoned. This application Feb. 17, 1982, Ser. No. 349,451
Int. Cl.³ A61H 1/02
U.S. Cl. 128—75 13 Claims



8. A therapeutic apparatus for the human body comprising:
an elongated planar platform adapted to support the upper body in a reclining position, said platform being pivotally mounted on a fulcrum wherein said platform is pivotally displaceable about an axis transversed to the longitudinal axis of said platform;
a lower body support mounted to said platform by an elongated frame member, said elongated frame member including means for adjusting the mounting of said lower body support whereby said lower body support may be adjusted along the longitudinal axis of said platform, said lower body support including:
first support means mounted on said lower body support and positioned to extend under each foot;
ankle engagement means mounted on said lower body support and adapted to surroundingly engage and restrain the ankle portion of each foot while disposed in a first position and adapted to release each foot while disposed in a second position; and
means for automatically moving said ankle engagement means from said second position to said first position in response to a pivotal displacement of said platform.

4,438,762
ORTHOPEDIC HIP FIXATION DEVICE
Richard F. Kyle, 825 S. 8th St., Ste. 302, Minneapolis, Minn. 55404, assignor to Richard F. Kyle, Minneapolis, Minn.
Filed Dec. 30, 1981, Ser. No. 335,808
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 BB 1 Claim



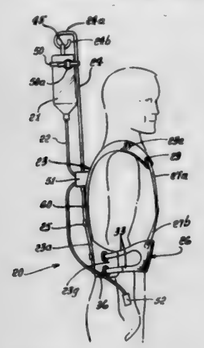
1. A femur fracture reduction device, comprising:
an elongate shaft having a distal end and a proximal end;
a keeper connected to the proximal end of the shaft;
a guide sleeve including a cylindrical portion having a passage therethrough for slidably receiving the elongate shaft therein;
a flanged head mounted to an end of the guide sleeve;
a threaded end portion mounted on the distal end of the elongate shaft, the threaded end portion and the keeper cooperating to retain the elongate shaft inside the passage in the guide sleeve, the threaded end portion being formed for threadedly engaging the head of a patient's femur; and
a trochanteric plate including means for permitting attachment of the plate to the femur and a slot for slidably receiving the guide sleeve head at a predetermined angle with respect to the trochanteric plate, such that during use, the assembled guide sleeve and the elongate shaft with the threaded end portion mounted thereon are fitted into an aperture in the patient's femur with the threaded end portion being threadedly affixed to the head of the femur to retain the head of the femur in alignment with the neck of the femur to reduce a fracture thereof and the elongate shaft being telescopically slidable within the guide sleeve to accommodate changes which may occur during healing of the fracture.

4,438,763
AMBULATORY APPARATUS FOR USE IN COMBINATION WITH AN INTRAVENOUS DELIVERY SYSTEM
Marshall A. Zablen, 3714 Whitespeak Dr., Sherman Oaks, Calif. 91403
Continuation-in-part of Ser. No. 354,503, Mar. 3, 1982. This application Aug. 2, 1982, Ser. No. 404,505
Int. Cl.³ A61M 5/14; A45F 5/00
U.S. Cl. 128—133 11 Claims

1. In combination with an intravenous delivery system, the combination comprising
(a) a relatively rigid support sheet sized to fit flatly adjacent the lower central back and middle central back of a human patient, and having means thereon mounting an upwardly extending pole member which in turn suspends an intravenous liquid container, said member extending upwardly proximate the medial extent of said sheet, the sheet having

a lower relatively wide portion located adjacent the patient's lower back and the patient'sides, a narrowed and upwardly diverging mid-portion extending between upwardly diverging lateral edges and located adjacent the patient's mid and upper back, and terminal left and right hook shaped portions sized to fit over the patient's shoulders,

(b) a belt section adapted to extend adjacent the abdomen of the wearer, the belt section having adjustable connection to lower side extends of the support, the belt section

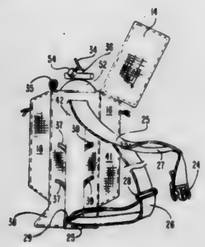


having a mid-portion of a vertical width generally to cover the patient's abdomen and extending at a level to provide abdominal support to the patient, after surgery, and

(c) first flexible strap means connected between the support sheet and the belt so that the strap means then extends upwardly between the belt at the front of the wearer patient, and upper extent of the support, proximate the shoulders of the wearer patient,

(d) whereby the patient may then move about with his or her arms free of constraint by the support.

4,438,764
OXYGEN CADDY
Salvatore Eppolito, 77 Wert Ave., Trenton, N.J. 08610
Continuation-in-part of Ser. No. 255,565, Apr. 20, 1981, Pat. No. 4,383,528. This application Aug. 31, 1982, Ser. No. 413,415
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.22 **16 Claims**

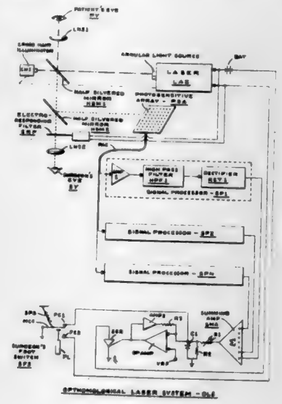


1. An oxygen caddy which comprises:

(a) a rigid supporting frame adapted to hold and completely surround an oxygen tank together with its regulator and valve, said frame including a hinged top portion constructed to define a protective cage for a regulator attached to an oxygen tank within said frame;

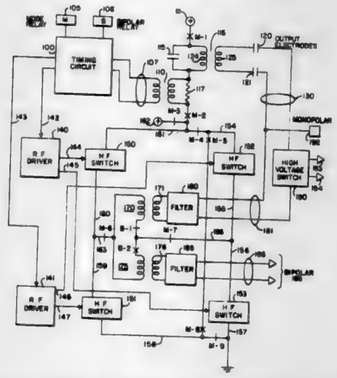
(b) a fabric case into which said rigid supporting frame is placed, said case including at least one pocket in which oxygen delivery means may be stored, and an opening through said case into said at least one pocket, whereby a hose connecting an oxygen delivery means to an oxygen tank may extend through said opening in said case and into said pocket.

4,438,765
MOTION SENSITIVE FIRABLE DEVICE
Jack Wilinsky, 145 Oakdene Ave., Teaneck, N.J. 07666
Filed Jun. 4, 1981, Ser. No. 270,617
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **10 Claims**



1. A target motion sensitive firable device comprising a surgical laser for firing at a target, user operable switching means for activating said surgical laser when operated by a user, motion detector means interconnecting said switching means and said surgical laser for preventing said switching means from activating said surgical laser in response to the operation by a user when a motion is detected in the target.

4,438,766
ELECTROSURGICAL GENERATOR
William J. Bowers, Aurora, Colo., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Sep. 3, 1981, Ser. No. 299,204
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.14 **15 Claims**



1. In an electrosurgical generator for performing a plurality of electrosurgical operations having a D.C. power source, output circuitry for connection to a patient and means control-

lable by an operating surgeon for selecting one of said electrosurgical operations, the improvement comprising:

a plurality of switches;

means responsive to said selecting means for connecting said switches in a bridge configuration;

means responsive to said selecting means for connecting said bridge across said power source;

means responsive to said selecting means for connecting said output circuitry across said bridge; and

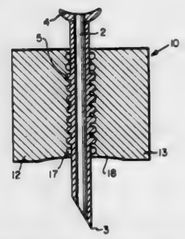
means responsive to said selecting means for generating timing signals to control said switches to selectively connect said output circuitry to said power source.

4,438,767
EXFOLIATOR DISC
Priscilla E. Nelson, 11 Brentwood Dr., Peabody, Mass. 01960
Filed Oct. 30, 1978, Ser. No. 956,260
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—304 **2 Claims**



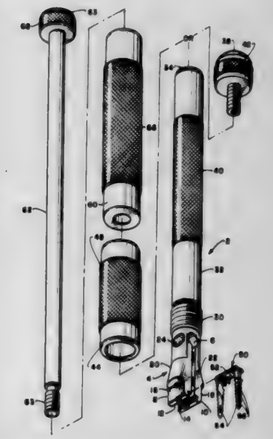
1. An exfoliator disc for scraping and removing dead skin tissues comprising a thin, flat, circular metal blade, opposite side finger tip engageable grip portions generally centered relative to the blade, the peripheral edge of the blade including a continuous, laterally deflected scraping edge projecting laterally to only one side of said blade, said blade having a constant thickness and parallel flat surfaces extending to the deflected edge, said deflected scraping edge being formed when the blade is sheared from stock metal and having a lateral dimension in the same direction as the lateral deflection of the scraping edge that is substantially less than the thickness of the blade and a minute radial dimension measured along the radius of the disc, said deflected edge also tapering laterally to a feather edge with the peripheral side of the deflected edge forming with the peripheral edge of the blade a cylindrical surface.

4,438,768
EMERGENCY CRICOTHYROIDOTOMY INSTRUMENT
Robert W. Barrickman, R.D. #2, Box 139C, Clarion, Pa. 16214
Filed Sep. 23, 1981, Ser. No. 304,807
Int. Cl.³ A61F *17/32*; A61M *15/08*
U.S. Cl. 128—305.3 **11 Claims**



1. A cricothyroidotomy instrument comprising an elongated unitary needle and a needle holder, said needle having a sharp point on one end and a longitudinal passage extending from the end of said needle with said sharp point to the opposite end of said needle, means on a portion of the exterior surface of said needle adapted to engage said needle holder, said needle holder having separable sections, each of said sections having a face adapted to abut a face of the other section, means on the abutting faces of said separable sections adapted to contact said means on the exterior surface of said needle to hold said needle in said needle holder, means to retain said separable sections in a closed relationship with said abutting faces in contact to clamp said needle in said needle holder, and means on said needle holder adapted to attach said needle holder to a patient's neck.

4,438,769
MEDICAL STAPLE DEVICE
Clyde R. Pratt, 5898 La Cumbre, Somis, Calif. 93066, and Roger G. Carignan, 219 Mara Ave., Ventura, Calif. 93004
Filed Apr. 15, 1982, Ser. No. 368,621
Int. Cl.³ A61B *17/18*
U.S. Cl. 128—334 R **16 Claims**



1. A medical staple device for holding, driving and withdrawing same comprising the combination: an integrally constructed staple retaining member having integral, spaced and opposed portions normally and inherently urged away from each other and being adapted to receive and retain a medical staple therebetween, said integral, spaced and opposed portions having force application surfaces to which force may be applied to overcome the normal and inherent urging away force to releasably retain a medical staple therebetween; and a force applying and force reduction member cooperatively associated with said integrally constructed staple retaining member for selective application or removal of discrete forces upon said force application surfaces.

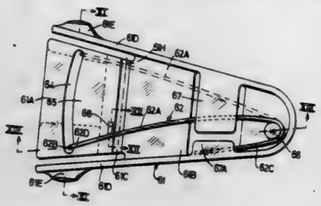
4,438,770
SKIN INCISING DEVICE
Hans P. O. Unger, Virtavägen 35, 115 29 Stockholm, and Johan E. H. Westberg, Rödstuguvägen 14, 181 31 Lidingö, both of Sweden, assignors to Hans Peter Olof Unger and Johan Eric Hayden Westberg, both of, Sweden
Continuation of Ser. No. 132,409, Mar. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 945,099, Sep. 22, 1978,. This application Aug. 6, 1982, Ser. No. 406,050
Claims priority, application Sweden, Mar. 23, 1979, 7902628
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—637 **10 Claims**

4. A device for making a skin incision of controlled length and uniform depth comprising:

(a) a cutter guide having a base surface adapted to be pressed

against the patient's skin, said base surface having a flat skin-engaging depression of a length for responding to the controlled length, there being a slot in said base surface extending across said depression; and

(b) a resiliently biased cutter supported on and guided by said cutter guide and having a cutting tip projecting through said slot at said flat depression by a distance



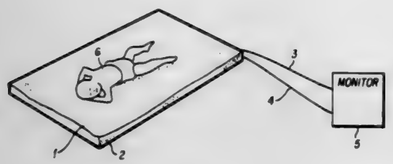
corresponding to said uniform depth, said cutting tip being in a non-projecting position at both ends of said slot, said cutter being guided to move parallel to the skin in said depression from a releasably latched retracted position at one end of said slot under the force of its bias to an advanced position at the opposite end of said slot, the force of said base surface against the skin effecting such release.

4,438,771

PASSIVE CONTACTLESS MONITOR FOR DETECTING CESSATION OF CARDIOPULMONARY

W. Otto Friesen, and Gene D. Block, both of Charlottesville, Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Apr. 26, 1982, Ser. No. 371,933
Int. Cl.³ A61B 5/08, 5/10
U.S. Cl. 128—671 **10 Claims**



1. An apparatus for detecting cessation of cardiopulmonary functioning of a human body, comprising:

a passive conductive means, spaced apart from said body in which a potential is directly induced by the movement of said body due to the movement of the charge of said body when said cardiopulmonary functioning occured;

monitor means responsive to said directly induced potential to produce a indication of cessation of cardiopulmonary functions of said body.

4,438,772

DIFFERENTIAL STETHOSCOPE

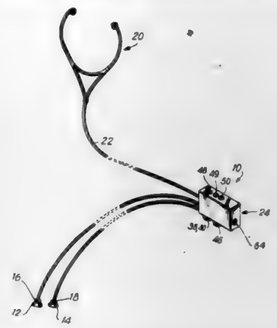
Martin J. Slavin, Dix Hills, N.Y., assignor to Intech Systems Corp., Hauppauge, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,516
Int. Cl.³ A61B 5/02
U.S. Cl. 128—715 **16 Claims**

1. A portable stethoscope for listening to internal sounds of a body comprising:

first and second sensor means for selective application at two selectively and variably spaced portions of the external surface of said body and for detecting said internal sounds and outputting electrical signals in response to said sounds, said sound signals including a first signal desired for detection and a second undesired signal, said first signal being masked by said second signal;

comparison means for receiving said electrical signals from said first and second sensor means and outputting a comparison signal, said comparison signal being the difference



between concurrently received electrical signals from said first and second sensor means;

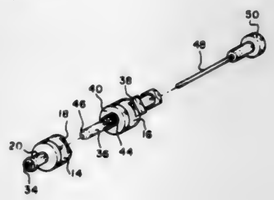
output means receiving said comparison signal and outputting a sensible signal, said sensible signal corresponding to said difference comparison signal of said detected sound signals.

4,438,773

SUBARACHNOID BOLT

Fred Letterio, Philadelphia, Pa., assignor to Paul L. Sweeney, Jr., Laurel Springs, N.J.

Filed Mar. 15, 1982, Ser. No. 358,444
Int. Cl.³ A61B 5/00
U.S. Cl. 128—748 **6 Claims**



1. A subarachnoid bolt for use in measuring intracranial pressure including:

a lower bolt half having a top, an enlarged flange and a coaxially arranged tubular member extending downwardly from said flange, said tubular member being adapted to be inserted into a substantially complementary shaped hole in a patient's skull with said flange overlying the outer surface of the skull around said hole, said tubular member having a lowermost end which is radially expandable so that the same is adapted to be secured to the patient's skull;

means on said lower bolt half for allowing the same to be held to prevent rotation thereof;

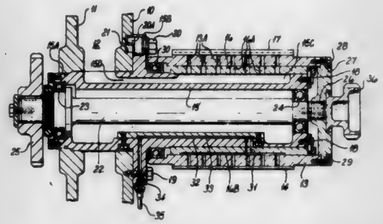
an upper bolt half screwed to the top of said lower bolt half, said upper bolt half having a downwardly extending tubular element fitted within said tubular member of said lower bolt half when said upper and lower bolt halves are screwed together.

4,438,774

CIGARETTE CONVEYING DRUMS

Derek H. Dyett, and Rex Harvey, both of High Wycombe, England, assignors to Molins Limited, London, England

Filed Dec. 8, 1981, Ser. No. 328,619
Claims priority, application United Kingdom, Dec. 18, 1980, 8040525
Int. Cl.³ A24C 5/32, 5/35
U.S. Cl. 131—282 **8 Claims**



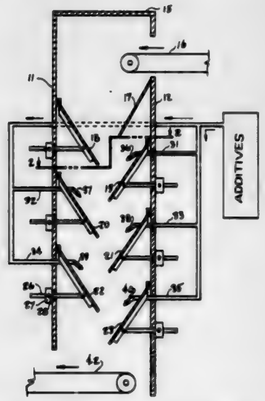
1. Apparatus for conveying cigarettes by means of one or more fluted drums comprising a frame including spaced front and back walls defining between them a suction manifold; a fluted drum disposed in front of the frame and having ports in communication with the flutes thereof; a tubular drum-carrying member which extends through an opening in the front wall of the frame, engages and seals in or around an aperture in the rear wall of the frame, and has a flange by which it is secured to the front wall of the frame, the fluted drum being positioned for rotation around the tubular member; and a drive shaft which extends axially through the tubular member, is secured to the front end of the drum, is supported by bearings carried by the tubular member, and carries at its rear end behind the rear wall of the frame a gear or other means by which it is driven; said tubular member being provided with a passage within the thickness of the wall of the tubular member in the region where it extends through the front wall of the frame, so that suction may be transmitted to the ports of the flutes of the drum from the manifold via said passage.

4,438,775

APPARATUS AND PROCESS FOR TREATING TOBACCO

Charles D. Mays, Lewisville; Max A. Wagoner, and Daniel G. Williard, both of Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 2, 1981, Ser. No. 269,289
Int. Cl.³ A24B 3/18
U.S. Cl. 131—300 **14 Claims**



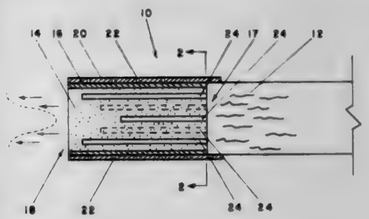
1. A process for treating cut or shredded tobacco which comprises introducing a continuous stream of cut or shredded tobacco into inlet means in the upper portion of a substantially vertically disposed power, allowing the tobacco so introduced to fall by gravity from the upper portion of the tower to outlet means in the lower portion of the tower, momentarily deflecting the falling tobacco by means of a plurality of cooperating, vertically spaced baffles extending inwardly from opposing sides of said tower in altenating fashion intermediate the inlet and outlet means and directing a treating fluid onto the falling tobacco from a plurality of spraying devices located within the tower at points intermediate the inlet and outlet means.

4,438,776

CIGARETTE FILTER

Charles G. Lamb, Anchorage, and Robert A. Sanford, Prospect, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jun. 24, 1982, Ser. No. 391,883
Int. Cl.³ A24D 3/00, 3/04
U.S. Cl. 131—336 **6 Claims**



1. A filter for a cigarette comprising:

a permeable filter rod of generally cylindrical configuration having an upstream end and a mouth end;

means defining a plurality of blind-end channels in said filter rod, each of said channels being open at one end to the upstream end of said filter rod and extending therefrom in generally the longitudinally direction of said filter rod a predetermined distance less than the length of said filter rod, said channels being dispersed throughout the cross-sectional body of said filter rod the closer a channel being to the perimeter of said filter rod the greater its predetermined extending distance; and

filter wrapping material extending longitudinally of and circumscribing said filter rod, said wrapping material being air permeable to allow ambient ventilating air into the body of said filter rod and into said blind-end channels.

4,438,777

FREEZE PROTECTION VALVE WITH IMPROVED RESETTING CAPABILITY

Fred L. Pirkle, Controls Consulting Company, R.D. 2, Box 353, Phoenixville, Pa. 19460

Filed Apr. 29, 1983, Ser. No. 490,153
Int. Cl.³ E03B 7/12
U.S. Cl. 137—62 **7 Claims**

1. A valve for use in draining a liquid system to prevent the system from freezing under low ambient temperature conditions comprising:

means providing a valve chamber connectable to the liquid system, said valve chamber having a drain outlet;

a valve element cooperating with said drain outlet and movable from a closed position in which it closes the drain outlet to an open position in which the drain outlet is opened;

means connected to the valve element for urging the valve element toward its open position;

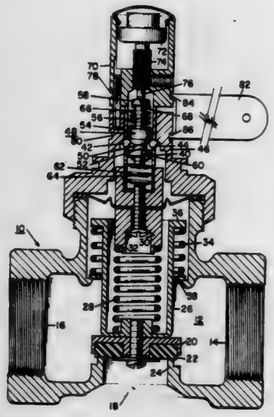
first latch means for holding the valve element in its closed

position, said first latch means being releasable to permit the valve element to move to its open position under the influence of the urging means;

a temperature sensor including a temperature sensing element and means responsive to the temperature sensing element for releasing the first latch means when the temperature of the sensing element falls below a predetermined level;

means for conducting heat from the liquid system to the temperature sensing element;

manually operable means, connected to the valve element, for effecting resetting movement of the valve element from its open position to its closed position against the influence of the urging means;



second latch means for holding the valve element in its closed position following resetting movement thereof when the temperature of the sensing element is below said predetermined level, said means responsive to the temperature sensing element also being operative to effect reengagement of said first latch means as the temperature of the sensing element increases while the valve element is held in its closed position by said second latch means; and

means responsive to the temperature of the temperature sensing element for automatically releasing said second latch means after the temperature of the temperature sensing element reaches the level at which the first latch means becomes operative to hold the valve means in its closed position.

4,438,778

MAXIMUM PRESSURE SELECTOR DEVICE

William R. Spencer, Springdale, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 2, 1981, Ser. No. 317,107
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—112 **15 Claims**

1. A maximum pressure selector device comprising:

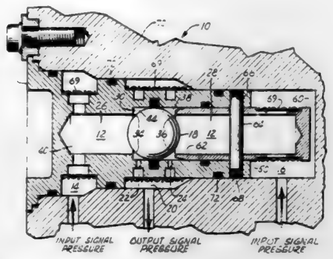
(a) a chamber;

(b) a spaced pair of inlet ports communicating with said chamber;

(c) a spaced pair of circular valve seats disposed between said inlet ports;

(d) an outlet port disposed between said valve seats and comprising a pair of spaced orifices communicating with said chamber, at least one of said orifices being of a predetermined cross-sectional area for allowing a predetermined maximum fluid flow rate therethrough for reducing surge flow between said inlet ports;

(e) a ball-shaped valving element disposed between said valve seats and being pressure actuatable toward alternate ones of said valve seats and having a stroke less than the distance between said orifices; and



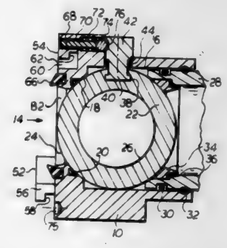
(f) sealing means comprising a resilient sleeve positioned about said ball positioned in said chamber about said valving element and being in sealing engagement therewith throughout the stroke thereof.

4,438,779

BALL VALVE COUPLING

Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Nov. 16, 1981, Ser. No. 321,433
Int. Cl.³ F16L *37/06*
U.S. Cl. 137—614.06 **5 Claims**



1. A coupling comprising, in combination, a first annular body having a passage defined therein having a longitudinal axis, said body having a conduit connection end for communicating with conduit means and a coupling end, said passage communicating with said conduit connection and coupling ends, a ball valve rotatably mounted within said passage, said ball valve including a spherical exterior surface and a diametrical bore extending through said valve, a valve actuator attached to said ball valve extending through said body having a manually operated handle exteriorly accessible of said body for selectively rotating said ball valve between an open position wherein said bore is in alignment with said passage axis and a closed position wherein said bore is tranversely disposed to said passage axis, an annular valve seat within said passage concentric to said passage axis sealingly engaging said ball valve exterior surface, first coupling attachment means defined upon said first body coupling end, a second annular body having a passage defined therein having a longitudinal axis, said second body having a conduit connection end for communicating with conduit means and a coupling end, said second body passage communicating with said second body conduit connection and coupling ends, second coupling attachment means defined upon said second body coupling end complementary in configuration to said first coupling attachment means and connectable thereto to a fully coupled condition to align said passages of said first and second bodies, first locking means defined upon said first body operatively connected to said valve actuator for selective movement between first and

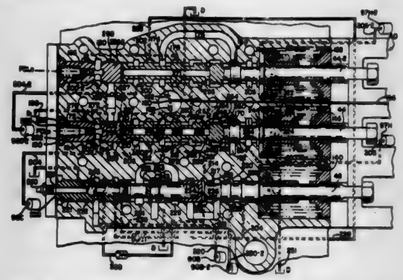
second positions upon rotation of said ball valve between said open and closed positions, respectively, and second locking means defined on said second body alignable with and receiving said first locking means upon said first and second coupling attachment means being in the fully coupled condition permitting said first locking means to be shifted from said second position to said first position to permit said ball valve to be rotated from said closed position to said open position only upon said first and second bodies being fully coupled, said first body coupling end including a flat sealing surface perpendicularly disposed to the axis of said first body passage, said spherical valve exterior surface being substantially tangential to said sealing surface when said ball valve is in said closed position to minimize the volume of voids within said first body passage adjacent said sealing surface.

4,438,780

CLUTCH-CLUTCH-BRAKE STEERING MECHANISM FOR TRACTORS

Probir K. Chatterjea, Mt. Prospect, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 176,815, Aug. 11, 1980, Pat. No. 4,372,408, which is a continuation of Ser. No. 951,690, Oct. 16, 1978, abandoned. This application Oct. 22, 1982, Ser. No. 436,159
Int. Cl.³ F15B *13/06*
U.S. Cl. 137—625.6 **2 Claims**



1. Consolidated valving assembly means provided with high pressure, low pressure, and signal output conduits and controllably connecting the high and low pressure conduits to supply incrementally modulated pressure signals in ranges therebetween and unmodulated signals to the signal output conduits, said assembly means having:

a common bore (190) hydraulically disposed for communicating with said conduits;

independently slidable, multi positionable hydropotentiometer (44) and satisfied-metering spools (226) in the common bore for establishing therein signal and modulated pressures, respectively;

said hydropotentiometer spool having a 1st position constituting its home position and providing unmodulated pressure as an unmodulated 1st signal, a 2d position constituting a moved position and providing unmodulated pressure as a 2d signal which is unmodulatable unless the spool is further moved, and a 3d position constituting a further moved, braking range threshold, position and providing modulated pressure as a signal which is further modulatable to a 3d signal with additional spool movement to introduce the braking range when the 3d signal is inaugurated, all for collectively affording a series of 1st, 2d and 3d signals respectively supplied by the assembly means to the signal output conduits thereof;

first biasing means (324) associated with said bore along the line of travel of said hydropotentiometer spool, and being pre-loaded and having an end engaged by the just-said spool in said 1st position for unaugmented resistance to the spool to prevent it from discontinuing the 1st signal;

second biasing means (322) associated with said bore along the line of travel of said hydropotentiometer spool, and being pre-loaded and having an end engageable by the spool in a 2d position in a clutching range, for substantially augmented resistance to the spool to prevent it from modulating the 2d signal; and

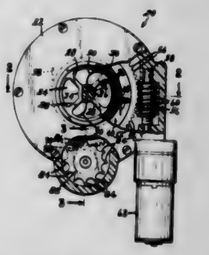
third biasing means (328) associated with said bore along the line of travel of said hydropotentiometer spool, and being pre-loaded and having an end engageable by the spool in a 3d position at threshhold to a braking range, for fully augmented resistance to the spool to prevent it from inaugurating the 3d signal.

4,438,781

SPIRALLY WOUND FLOW CONTROL VALVE

David L. Brenholt, Dundas, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Feb. 5, 1981, Ser. No. 231,688
Int. Cl.³ F16K *3/00, 37/00*
U.S. Cl. 137—625.28 **12 Claims**



1. A fluid flow control valve, comprising:

(a) a conduit member having an orifice formed therethrough, through which orifice a fluid can be conducted;

(b) a first axis extending through said orifice and being oriented substantially aligned with an intended direction of fluid conduction;

(c) an elongated control element having a portion thereof fixed at said first axis, an axial edge, and a remote end, said element being coiled about said first axis with said remote end disposed for revolution about said first axis selectively in opposite directions wherein, as said remote end is revolved in a first direction, said element is wound tightly radially inwardly toward said first axis so that said axial edge can form a substantially continuous surface occluding said orifice when a sufficient measure of compression is achieved; and

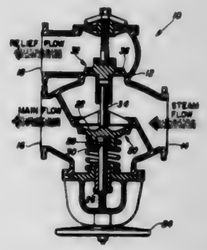
(d) means for imparting said selective revolving motion to said remote end.

4,438,782

ISOLATION STEAM VALVE WITH ATMOSPHERIC VENT AND RELIEF CAPABILITY

Joseph E. Kelly, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 153,123, May 27, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 350,919
Int. Cl.³ F17D *1/06*
U.S. Cl. 137—628 **12 Claims**



1. An isolation steam valve arrangement for use between a

steam turbine exhaust and another piece of steam-using equipment, comprising:

a casing having an inlet and plural outlets;

said inlet adapted to be connected to the discharge side of the steam turbine;

one of the outlets adapted to be connected to another piece of steam-using equipment, and another of the outlet adapted to communicate to the atmosphere;

a main valve between the inlet and one outlet;

means for selectively controlling the main valve from fully open to fully closed for selectively passing turbine exhaust steam therethrough;

a normally spring-force closed relief valve between the inlet and said another outlet adapted to open in response to steam pressure at the inlet above a predetermined amount;

a normally spring-force closed vent valve between the inlet and another outlet; and

means operatively interconnecting the vent valve and main valve;

whereby, when the main valve is closed, the vent valve is positively open, thereby establishing open communication between the inlet and another outlet for allowing continuous steam venting to the atmosphere.

4,438,783

PROTECTIVE DEVICE FOR PIPES

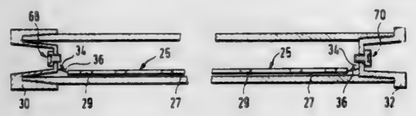
Wilfried Dreyfuss, Dorfstrasse 52, D-3111 Elmke, Fed. Rep. of Germany; Thomas E. Remp, Jr., 5555 Del Monte Dr. T-Z, Houston, Tex. 77056, and Kurt Müller, Eicklingen, Fed. Rep. of Germany, assignors to Wilfried Dreyfuss, Fed. Rep. of Germany and Thomas E. Remp, Houston, Tex.

Filed Apr. 9, 1982, Ser. No. 366,981

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114368; Apr. 9, 1981, 3114264

Int. Cl.³ F16L *55/24*

U.S. Cl. 138—89 **14 Claims**



1. A protective device for a longitudinal pipe having an interior comprising thread guards at the ends of the pipe, a rust guard and a moisture indicator, said rust guard being a dessicant substantially evenly distributed throughout said interior of said longitudinal pipe such that corrosion of said interior is prevented.

4,438,784

STOPPER FOR A SOURCE FOR AN X-RAY INSPECTION HOLE IN A PIPE OR OTHER APPARATUS

Jacques Bobichon, Verrieres le Buisson, and Pierre-Loup Leroy, Flines Lez Mortagne, both of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Jun. 2, 1982, Ser. No. 384,374

Claims priority, application France, Jun. 10, 1981, 81 11367

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—92 **2 Claims**

1. A stopper assembly for permitting inspection internally of a pipe or other apparatus by an X-ray inspection probe having access thereto, said stopper assembly comprising, in combination:

a hole within the wall of said pipe being threaded over at least a portion of its length from the outside of the pipe,

a cylindrical outer component having an external screw thread and being sized to and threadably engaging said threaded hole within said wall of said pipe,

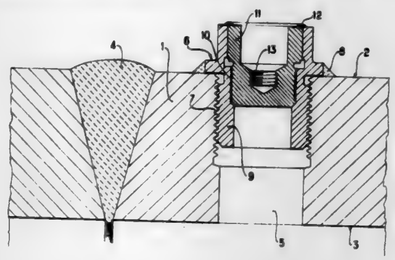
said cylindrical outer component including an inside screw thread,

and said outer cylindrical component being threaded to said threaded hole within said wall of said pipe to an extent where a portion of said cylindrical outer component projects outside of said hole,

said outer cylindrical component being welded to the outer surface of the wall of said pipe at an intermediate level where it projects outwardly from said hole,

a cylindrical inner component having a blind hole, and having an outside screw thread sized to said outer cylindrical component inside screw thread, said inner component being screwed into the inside screw thread of the outer component to the extent such that its outside end is radially flush with the outside end of said outer cylindrical component, and

a circumferential weld across the flush outside ends of the outer component and the inner component for fixedly joining the components,



and wherein said blind hole is equipped with means for allowing the inner component to be unscrewed from the outer component after the weld joining the outside ends of said components is rapidly ground off;

whereby, a high strength, effectively sealed stopper assembly is provided, and wherein the inner component may be repeatedly screwed back into the outer cylindrical component, fixed with its end radially flush with the end of the outer component and fixed by another weld across the flush outside ends of said components and which weld also can be readily ground off to permit repetitive access internally of the pipe by said X-ray inspection probe.

4,438,785

PIPE ENCLOSURE

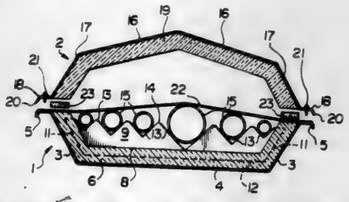
John D. Morrison, 12233 Lake Erie Rd. SE., Calgary, Alberta, Canada T2J 2Z3, and Robert McCheyne, 8307 - 161 St., Edmonton, Alberta, Canada

Filed Jul. 8, 1981, Ser. No. 281,560

Claims priority, application Canada, Jul. 10, 1980, 355875

Int. Cl.³ F16L *3/00*

U.S. Cl. 138—103 **8 Claims**



1. A pipe enclosure for use above ground comprising:

(a) an elongated casing, including

(i) a generally C-shaped, upwardly opening base defined by a bottom wall, upwardly and outwardly extending side walls, and outwardly extending flanges having downwardly turned edges on upper free ends of said side walls, and

(ii) a generally C-shaped, downwardly opening cover defined by a top wall, outwardly and downwardly extending side walls, and outwardly extending flanges having downwardly turned edges on lower free ends of said side walls for engaging the correspondingly shaped flanges on said base to define a closed casing;

(b) means for releasably interconnecting said base and cover;

(c) insulation on the interior of said base and said cover, and

(d) first support means having a U-shaped cross section and supported by the insulation in said base and spaced from said base for supporting at least one pipe in said casing and spaced from said casing by said insulation.

4,438,786

KNIFE CONSTRUCTION FOR A DOUBLE-LIFT OPEN-SHED JACQUARD LOOM

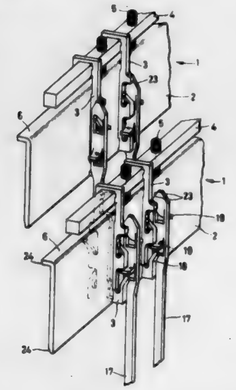
Heinz Königs, Krefeld; Hubert Kremer, Grefrath, and Hans-Theo Pieters, Krefeld-Hüls, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 343,679

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106305

Int. Cl.³ D03C *3/00, 3/08*

U.S. Cl. 139—59 **19 Claims**



1. In a knife construction for a double-lift open shed Jacquard loom having two knives movable in opposite directions passing each other, the knives include a carrier member and at least one hook member fastened thereto, the hook member having spaced control hooks thereon, and a movable lifter member movable in said opposite directions having two main noses engageable with the control hooks of the hook member, the control hook and the main noses being inclined from the direction of movement of the lifter member to permit passage of the lifter member intermediate the control hooks of the hook member, the improvement wherein

the hook member is a stamping supported on and clamped to said carrier member and defines a longitudinal slot to receive the carrier member.

4,438,787

DEVICE FOR SELECTING THE HOOKS OF A WEAVING MECHANISM BY SUCCESSIVELY FEELING THE TWO HALVES OF A CARD OF THE JACQUARD TYPE

Ulrich Mutschler, 41A rue Pasteur, 69300 Caluire, France

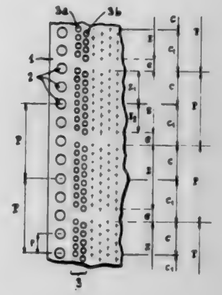
Filed Mar. 22, 1982, Ser. No. 360,733

Claims priority, application France, Apr. 14, 1981, 81 07650

Int. Cl.³ D03C *3/34, 15/04*

U.S. Cl. 139—329 **4 Claims**

1. An improved mechanism for intermittently advancing an endless Jacquard paper on a drum to pass beneath feeler needles controlling a loom and biased to read perforation patterns in the paper by passing through the perforations, the paper being divided longitudinally into transverse extending successive zones each constituting a standard perforated pattern card zone separated from adjacent card zones by non-perforated transverse zones, the improved mechanism being cooperative with a modified loom wherein the number of feeler needles is reduced to one half the number of needles for which the standard perforation pattern is designed and wherein the pattern of each card is advanced in two successive strokes and read in two successive half-zones by the reduced number of feeler needles, the advancing mechanism for driving the drum comprising:



(a) first means connected to be driven continuously in synchronism with the loom; and

(b) second means coupled to drive the drum and to be driven by said first means to rotate intermittently and alternately through two different angular motions respectively displacing the paper through two different successive strokes to bring the feeler needles into registry with the two half zones of each card.

4,438,788

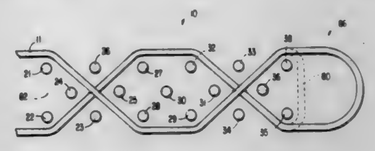
PAPERMAKERS BELT FORMED FROM WARP YARNS OF NON-CIRCULAR CROSS SECTION

William J. Harwood, Waycross, Ga., assignor to Scapa Inc., Waycross, Ga.

Continuation-in-part of Ser. No. 192,216, Sep. 30, 1980. This application Apr. 28, 1981, Ser. No. 258,047

Int. Cl.³ D03D *15/00*; D21F *7/10, 1/12*

U.S. Cl. 139—383 A **13 Claims**



1. A papermakers fabric comprising:

a first layer defined by a first plurality of weft yarns;

a second layer defined by a second plurality of weft yarns;

a plurality of stuffer picks; and

a plurality of warp yarns of non-circular cross section interwoven with said weft yarns to define a first surface on said first layer, a second surface on said second layer, and a plurality of stuffer pick receiving sheds interposed between said first and second layers, each shed for receiving at least one of said stuffer picks, a select number of said shed defining warp yarns extending out of a warp end of said fabric and being symmetrically rewoven into said fabric to produce a mirror image of itself when viewed with respect to the plane defined by said stuffer picks and to define a number of seam loops, one seam loop being formed by at least one of a preselected number of adjacent shed defining warp yarns.

4,438,789

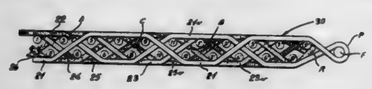
WOVEN PIN SEAM IN FABRIC AND METHOD

Donald G. MacBean, Ottawa, Canada, assignor to JWI Ltd., Kanata, Canada

Continuation of Ser. No. 270,341, Jun. 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 214,738, Dec. 9, 1980, abandoned. This application Jun. 8, 1983, Ser. No. 502,132

Int. Cl.³ D03D *3/04*

U.S. Cl. 139—383 A **17 Claims**



1. A woven all-synthetic monofilament dryer fabric for use in a paper-making machine, said fabric being constituted by a belt woven with warp and weft strands with said warp strands extending in the machine direction, there being at least two weft layers and said warp strands being crimped relative to said weft strands in a non-symmetrical pattern, said belt being interconnected at opposed ends by a woven single pintle pin seam formed by reversely turned warp strands to constitute an endless belt, said warp strands in at least re-woven end portions of said belt being flattened strands with the original crimp configuration being changed in reversely turned portions of said reversely turned warp strands.

4,438,790

APPARATUS FOR GUIDING A FLUID MEDIUM DRIVEN WEFT THREAD IN THE SHED OF A LOOM AND USE OF THE APPARATUS AT A MULTIPLE LONGITUDINAL TRAVERSING SHED LOOM

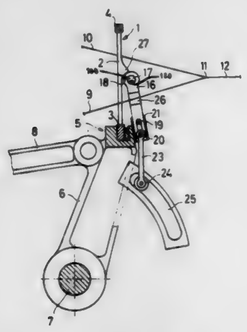
Alois Steiner, Rieden/SG, Switzerland, assignor to Rüti Machinery Works Ltd., Rüti, Switzerland

Filed Mar. 9, 1981, Ser. No. 241,934

Claims priority, application Switzerland, Mar. 27, 1980, 2440/80

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **10 Claims**



1. An apparatus for guiding a weft thread within the shed of a loom and which is driven by a flowing fluid medium, comprising:

two lamellae combs which are capable of dipping into and out of warp threads;

each of said lamellae combs comprising elastically structured lamellae elements;

each lamella element having a throughpass opening for guiding an inserted weft thread and a thread outlet opening;

said lamellae elements when assuming an operative position where they are immersed into the shed being interleaved with one anothr and forming by means of their through-pass openings a guide channel for the weft threads inserted in a predetermined weft insertion direction;

said guide channel being essentially continuous in the weft insertion direction;

said thread outlet openings of said lamellae elements, when in their operative position, being sealed and said guide channel also being continuously closed in radial direction; and

stop means operatively associated with said elastically structured lamellae elements in order to close said thread outlet openings during interleaving of both of said lamellae combs.

4,438,791

WEFT THREAD-SELECTION APPARATUS FOR A WEAVING MACHINE

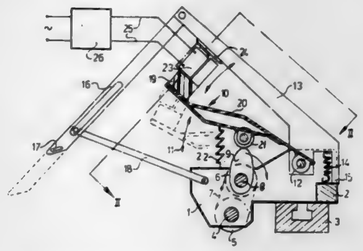
Gerhard Oesterle, Koblach, Austria; Rudolf Jaeger, Frasnacht, Switzerland; Wilhelm Hutter, Roggwil, Switzerland, and Elmar Zanol, Arbon, Switzerland, assignors to Aktiengesellschaft Adolph Saurer AG, Arbon, Switzerland

Filed May 24, 1982, Ser. No. 381,569

Claims priority, application Switzerland, Jun. 9, 1981, 3750/81

Int. Cl.³ D03D *47/38*

U.S. Cl. 139—453 **10 Claims**



1. A weft thread-selection apparatus for a weaving machine comprising:

a weft thread-infeed device operatively related to each weft thread to be inserted for bringing each such weft thread, prior to its insertion into a shed of the weaving machine, out of a preparatory position into a thread transfer position serving for the thread transfer to a weft thread-insertion device;

said weft thread-infeed device comprising weft thread-infeed rods;

a to-and-fro driven entrainment device with which there can be operatively connected the weft thread-infeed device by means of an electromagnetic control;

said entrainment device comprising an oscillatable support element which can be oscillated in cycle with a predetermined weft thread insertion frequency of the weaving machine;

said support element having a free end;

said free end of the support element carrying at least a first part of electromagnetic devices corresponding in number to the number of weft thread-infeed rods;

said support element having a further end;

a shaft at which there is rotatably mounted said further end of said support element;

oscillatable arm members;

said shaft simultaneously forming a pivot point for said oscillatable arm members;

spring means for retaining each of said oscillatable arm members in a preparatory position;

said oscillatable arm members each being hingedly connected at its free end with a related one of the weft thread-infeed rod; and

each of said oscillatable arm members carrying a further part of the electromagnetic devices intended to be cooperatively coupled with a predetermined one of the first part of the electromagnetic devices.

4,438,792

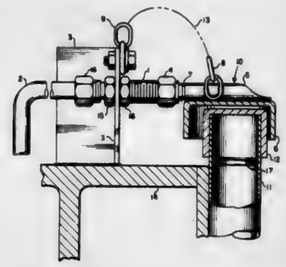
PRESSURE RELIEF ALERT

George A. Timberlake, Jr., Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 28, 1981, Ser. No. 334,754

Int. Cl.³ B65B *3/04*; B67C *5/32*

U.S. Cl. 141—95 **13 Claims**



7. A pressure relief alert apparatus comprising:

(a) a tank containing a stored fluid at a pressure higher than atmospheric; (b) a pressure relief pipe having an inlet in communication with said stored fluid in said tank and an outlet; (c) means for discharging said stored fluid at a predetermined pressure through said pressure relief pipe; (d) a pressurized tube containing a control fluid in combination with a pressurized break-away tube assembly and a means for detachably connecting said pressurized tube to the break-away tube assembly wherein said pressurized tube is held rigidly immovable at a position in close proximity to said connecting means and said pressurized break-away tube assembly, and wherein said break-away tube assembly further includes a break-away tube open only at an end communicating with said connecting means, with a scored circumference located at a position exterior to said connecting means, but in close proximity thereto, when said pressurized break-away tube assembly is connected to said pressurized line tube; (e) a force plate attached to said break-away tube assembly and located over said relief pipe outlet, said force plate adapted to move in response to a release of fluid through said pipe; whereby a movement of said force plate in response to fluid release through said relief pipe breaks said break-away tube and releases said control fluid; and (f) means for detecting said release of said control fluid.

4,438,793

AERIAL REFUELING BOOM NOZZLE

Albert W. Brown, Newport Beach, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed May 4, 1981, Ser. No. 259,838

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—382 **10 Claims**

1. A nozzle for an aerial refueling boom comprising:

a housing having a fluid flow passage therethrough, said housing containing a solenoid including a coil and an armature movable parallel to the longitudinal axis of said housing between first and second positions;

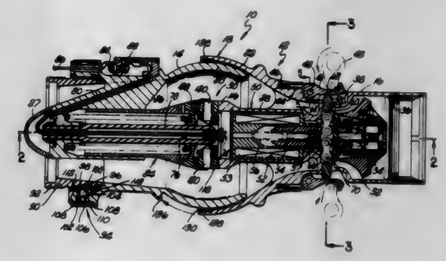
a pair of latches mounted in recesses on opposite sides of said housing outside of said flow passage each pivotable about an axis transverse to said longitudinal axis;

spring means normally biasing said latches inwardly into said recesses into a release position;

radially movable cam elements in said housing engaging the undersides of said latches;

means operatively connecting said cam elements and said armature;

in said first position of said armature said cam elements being



located in a retracted position allowing said latches to assume their release position; and

in said second position of said armature said cam elements being forced outwardly via said connecting means to an extended position pushing said latches outwardly from said recesses into a locking position.

4,438,794

BARK TOOL AND CONNECTION

Aaron R. Carpenter, Rte. One, Box 238, Chatom, Ala. 36518, and Robert R. Bagby, Rte. Two, Box 504-M, Pell City, Ala. 35125

Continuation-in-part of Ser. No. 56,319, Jul. 23, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 207,477

Int. Cl.³ B27L *1/00*

U.S. Cl. 144—208 E **1 Claim**



1. Apparatus for removal of bark from logs, comprising: a debarker rotor; at least one shaft attached to said rotor and mounted for rotation about the longitudinal axis of said shaft; a bark tool attached to said shaft, said bark tool having a connecting end portion and a tip portion at opposite ends thereof, said connecting end portion being located adjacent said shaft and being not substantially narrower than the greatest depth of the bark tool; said tip portion having means for debarking a log and being located at the outer end of said bark tool for the purpose of making contact with bark to be removed from a log; said bark tool being in the form of a crescent shaped plate of rigid metal, approximately one-quarter circle in relative configuration; said debarker rotor having moment inducing means for applying force through said shaft to the tip portion of said bark tool; said bark tool having a structural shape with moment resisting capacity increasing substantially linearly from the tip end to the connecting end of said bark tool, wherein structural capacity in resisting moment induced stresses is defined by the formula

$$\sigma = (M/S)$$

where σ is stress, M is the moment and S is the section modulus, which for rectangular section is determined by the formula

$S=(bd^2/6)$

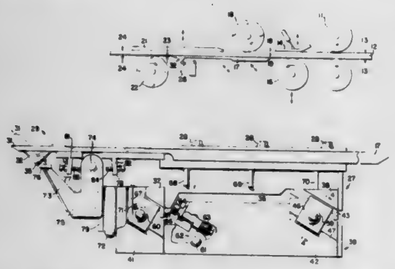
where b is the thickness of the member transverse to the plane of bending and d is the depth of the member in the plane of bending; said shaft having a shaft foot production connected thereto, said shaft foot portion being located adjacent the connecting end of said bark tool, said connecting end being connected to said shaft foot by at least one stud connector whose shear reaction in the plane of the bark tool provides a moment resisting capacity equal to or greater than that of the connecting end of said bark tool, said shaft foot being substantially thicker than the bark tool thickness and elongated in the direction of the bark tool, said stud connector being arranged along the elongated portion of the shaft foot and fixed therein, said shaft foot being connected to said shaft by connecting means having sufficient, moment resisting capacity to transmit the moment from the debarker rotor to the bark tool.

4,438,795

FLEXIBLE PLATEN PLANER

Irving L. Plough, Snohomish, Wash., assignor to Kimwood Corporation, Eugene, Oreg.

Filed Apr. 22, 1982, Ser. No. 370,689
Int. Cl.³ B27C 1/08
U.S. Cl. 144—373 **18 Claims**



1. An apparatus for holding a workpiece against a fixed platen during surface treatment of one side thereof by a surface treatment element spaced a first predetermined distance from said fixed platen comprising:

an elongated body having a workpiece contact surface extending parallel to said fixed platen and adjacent said surface treatment element;

means connected to one end portion of said elongated body remote from said surface treatment element for locating the workpiece contact surface a second predetermined distance from said fixed platen;

said elongated body having the other end thereof adjacent said surface treatment element free flexing for movement relative to said one end;

biasing means connected to said free flexing end for applying pressure thereto to bias said free flexing end against the workpiece to maintain contact between the workpiece and said fixed platen to accommodate variations in the thickness of the workpiece; and

means for driving the workpiece from said one end portion toward said free flexing end of said elongated body to effect surface treatment thereof.

18. A method for holding one side of a downstream-moving workpiece in constant contact with a stationary platen during surface treatment of the other side of the workpiece, comprising the steps of:

supporting one end of a semi-rigid elongated surface member in a fixed position a predetermined distance from said stationary platen;

providing a free flexing cantilevered end portion of said surface member, disposed downstream of said one end;

exerting a resilient bias against said cantilevered end portion to maintain contact between the one side of the workpiece and said stationary platen to accommodate variation in the thickness of the workpiece; and

after the resilient bias has been exerted, effecting surface treatment of the workpiece.

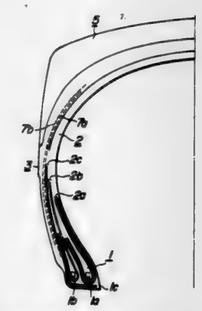
4,438,796

PNEUMATIC TIRE FOR OFF-ROAD VEHICLES

Masaru Abe, Sayama; Isao Miyoshi, Kodaira; Toshiro Tezuka, Higashi-Murayama, and Toshio Yoshimoto, Akigawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 781,029, Mar. 24, 1977, abandoned. This application Aug. 1, 1979, Ser. No. 62,868
Claims priority, application Japan, Mar. 26, 1976, 51-33266
Int. Cl.³ B60C 9/04, 9/20
U.S. Cl. 152—353 R **14 Claims**





1. A pneumatic tire for off-road vehicles comprising a reinforcing element composed of helically formed filaments and having an excellent side-cut resistant property, comprising a toroidal-shaped carcass body composed of a plurality of rubberized ply layers superimposed one upon the other and each containing organic fiber cords embedded therein, a side portion formed of a rubber coating made integral with both said carcass body and a tread portion, and a side portion reinforcing layer arranged in said side portion and for preventing cuts subjected to the surface of said side portion, said side portion reinforcing layer being composed of at least one rubberized layer containing a reinforcing element embedded therein and formed of 3 to 30 helically formed filaments, each filament having a diameter ϕ of 0.13 to 0.5 mm and made of material having a tensile breaking strength of at least 140 kg/mm², said reinforcing element having an elongation at tensile breaking strength which is 0.15 to 1.7 times that of organic cord of the ply of the carcass body, and said rubberized layer as a whole being extensible, wherein said reinforcing element has a ratio δ defined by

$$\delta = \frac{\{S-(D+d-\phi)\}}{S} = 0.11 \text{ to } 0.7$$

where S is a pitch in mm between midlines of the two adjacent reinforcing elements; d is an effective diameter in mm of the reinforcing element defined by

$$1.25 \times \sqrt{N} \times \phi$$

where N is the number of filaments for constituting the reinforcing element, ϕ is the diameter of a helically formed filament and D is the average diameter of an outer contour projected on a plane perpendicular to the axial direction of one pitch of a filament wherein, $D=D_{max}+D_{min}/2$ is in the range of 2ϕ–20ϕ.

2. A pneumatic tire for off-road vehicles comprising a reinforcing element composed of helically formed filaments and having an excellent side-cut resistant property, comprising a toroidal-shaped carcass body composed of a plurality of rubberized ply layers superimposed one upon the other and each containing organic fiber cords embedded therein, a side portion formed of a rubber coating made integral with both said carcass body and a tread portion, and a side portion reinforcing layer arranged in said side portion and for preventing cuts subjected to the surface of said side portion, said side portion reinforcing layer being composed of at least one rubberized layer containing a reinforcing element embedded therein and formed of a helically formed filament bundle of 3 to 30 helically formed filaments assembled together without twisting at random, each filament having a diameter ϕ of 0.13 to 0.5 mm and each made of material having a tensile breaking strength of at least 140 kg/mm², said reinforcing element having an elongation at tensile breaking strength which is 0.15 to 1.7 times that of organic cord of the ply of the carcass body, said reinforcing element has a ratio δ defined by

$$\delta = \frac{\{S-(D+d-\phi)\}}{S} = 0.11 \text{ to } 0.7$$

where S is a pitch in mm between midlines of the two adjacent reinforcing elements; d is an effective diameter in mm of the reinforcing element defined by

$$1.25 \times \sqrt{N} \times \phi$$

where N is the number of filaments for constituting the reinforcing element, ϕ is the diameter of a helically formed filament and D is the average diameter of an outer contour projected on a plane perpendicular to the axial direction of one pitch of a filament wherein, $D=D_{max}+D_{min}/2$ is in the range of 2ϕ–20ϕ and said rubberized layer as a whole being extensible, said reinforcing layer extending from the crown portion of the tire to a region above the bead region of the tire at a position above the point at which the upper edge of a rim on which the tire is mounted meets the tire.

4,438,797

SEAL FOR A MULTIPIECE WHEEL ASSEMBLY

David S. Suckow, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

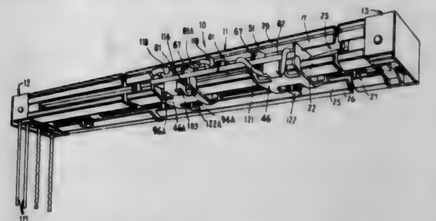
PCT No. PCT/US82/00335, § 371 Date Mar. 19, 1982, § 102(e) Date Mar. 19, 1982, PCT Pub. No. WO83/03228, PCT Pub. Date Sep. 29, 1983
PCT Filed Mar. 19, 1982, Ser. No. 375,113
Int. Cl.³ B60B 25/18
U.S. Cl. 152—410 **6 Claims**

1. A multiple-piece tire rim assembly (16) for mounting and sealing a tubeless tire (10), said tire rim assembly (16) comprising:

an annular rim base (18) having an axial center line (19) and an outer periphery (30) defining first and second grooves (32,34), said first groove (32) located in an axially outer portion of the outer periphery (30) of the rim base (18) and having a depth greater than said second groove (34), said second groove (34) defining a bottom surface and being located axially inward of said first groove (32), said bottom surface having a uniform diameter and opening into an inner side of said first groove (32);

an annular bead seat member (24) disposed radially outside said rim base (18) and having an inner periphery (38) radially adjacent said outer periphery (30) of said rim base (18), said inner periphery (38) defining an inner surface (40), a load transferring surface (42), and an inclined ramp surface (44) located between said inner surface (40) and said load transferring surface (42), said load transferring surface (42) extending radially outwardly and upwardly from said inclined ramp surface (44), said load transferring surface (42) and said inclined ramp surface (44) being respectively radially adjacent said first and second grooves (32,34);

an annular split lock ring (28) having a first portion (46) disposed in axially restraining engagement with said first groove (32) and a second portion (50) in load transferring



engagement with said load transfer surface (42) of the bead seat member (24); and

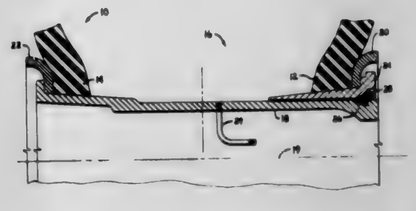
an annular elastomeric seal (26) having a cross section less than the width and depth of the first groove and being disposed in said second groove (34) in axial abutment with the lock ring (28), said annular elastomeric seal (26) being in sealing compression with said second groove (34) by said inclined ramp surface (44) only when the first portion (46) of the lock ring (28) is fully seated in the first groove (32) and said load transferring surface (42) of the bead seat member (24) is in contact with the lock ring (28) said annular elastomeric seal (26) freely moves from the second groove (34) to the first groove (32) during attempted inflation of the tubeless tire (10) in the event the lock ring (28) is omitted during assembly thus ensuring that the tire cavity does not retain any air pressure during the attempted inflation.

4,438,798

MASTER CARRIER FOR A TRAVERSE ROD

James A. Ford, and Steven R. Haarer, both of Sherman Township, St. Joseph County, Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 2, 1981, Ser. No. 298,553
Int. Cl.³ A47H 1/00
U.S. Cl. 160—126 **14 Claims**



1. In combination, a horizontally elongated drapery rod having wall means defining first and second side-by-side paral-

lel channels extending lengthwise of said rod, said wall means also defining first and second elongated slots extending lengthwise of said rod and respectively communicating with said first and second channels, said first channel being disposed adjacent the front side of said rod and said first slot opening downwardly from said first channel, a master carrier slidably supported on said rod for movement lengthwise therealong, and elongated flexible propelling means housed within said second channel and extending therealong for connection to said master carrier to effect slidable movement thereof along said rod, the improvement wherein said master carrier comprises:

first and second carrier members which are separate from one another and are slidably supported in said first and second channels, respectively;

said first carrier member having a first part which is slidably supported within said first channel and a second part which is releasably but fixedly connected to said second carrier member, said first carrier member also having a third part which is fixed to said first part and projects downwardly through said first slot and rearwardly of said rod for fixed connection to said second part;

first fastening means for releasably but fixedly coupling the second part of said first carrier member to said second carrier member, said first fastening means including means permitting said first carrier member to be fixedly but releasably attached to said second carrier member at either a first location disposed adjacent one end of said second carrier member or a second location disposed adjacent the other end of said second carrier member so that said master carrier can be used for either right-hand or left-hand operation;

means defining a passageway extending transversely through said first carrier member for permitting said elongated flexible propelling means to extend therethrough; and

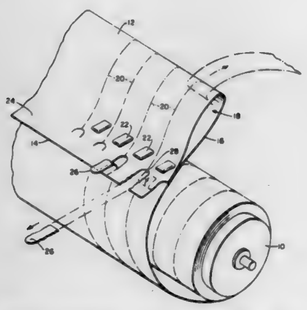
second fastening means on one of said first and second carrier members for permitting attachment of said propelling means thereto.

4,438,799

TEAR STARTING MECHANISM FOR TEAR SHADES

Paul E. Comeau, Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Filed Apr. 21, 1982, Ser. No. 370,595
Int. Cl.³ A47G 5/02
U.S. Cl. 160—263 **6 Claims**



1. A tear shade comprising a sheet of flexible shade material having top, bottom and side margins, a plurality of spaced score lines in said material extending from the bottom to the top margins and parallel to one side margin for weakening said material to permit hand tearing of said material along any selected one of said score lines whereby to reduce the width of said shade to a selected degree, the bottom margin folded upwardly to form a pocket along the bottom of the shade, means sealing the shade material of the pocket to itself between the spaced score lines on a line parallel to the bottom margin and substantially inwardly of the bottom margin to form a free flap of said material, spaced perforations in said flap along a line parallel to the bottom margin forming pull-tabs bridging each score line between the bottom margin and the line of said sealing means, the configuration of said perforations providing said tabs with a wide base nearest to said bottom margin narrowing to an apex at the respective score lines whereby pulling said tabs toward said bottom margin to tear said material leaves an opening along said bottom margin which terminates at an apex located at a score line thereby permitting the remaining part of said flap on the side of said opening toward said one side margin of the shade to be pulled so as to start tearing the shade material along a selected score line.

4,438,800

SURFACE DEFINING SLATS AND ARTICLES UTILIZING SAME

Clayton J. Hemmerle, 116 NE. 16th Ct., Ft. Lauderdale, Fla. 33305, and Richard A. Basinger, 6318 SW. 26th St., Miramar, Fla. 33023

Filed Feb. 25, 1982, Ser. No. 352,102
Int. Cl.³ E06B 3/30
U.S. Cl. 160—371 **30 Claims**



1. A slat adapted to being securely positioned between opposing support members capable of defining at least one surface when a plurality of slats are positioned therebetween, said slat comprising surface defining means including top and bottom surfaces for defining a portion of said at least one surface, said surface defining means having two generally opposing ends, each of said ends including attachment means defining a substantially closed cavity for receiving a portion of one of said support members, and biasing means for providing a bias force thereby biasing said attachment means to a normal substantially closed position and for allowing access to said cavity upon application of a force in a direction generally opposing said bias force.

4,438,801

PROCESS AND APPARATUS FOR THE TRANSPORT OF A TRAIN OF FLASKLESS CASTING MOLDS

Eugen Bühler, Schleifweg 3, 8877 Burtenbach, Fed. Rep. of Germany

PCT No. PCT/DE81/00041, § 371 Date Oct. 23, 1981, § 102(e) Date Oct. 23, 1981, PCT Pub. No. WO81/02698, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 9, 1981, Ser. No. 315,532
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011265; May 29, 1980, 3020349
Int. Cl.³ B22D 47/02
U.S. Cl. 164—130 **18 Claims**

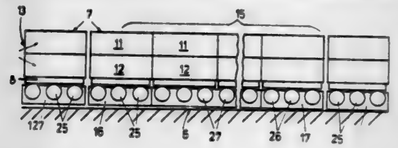
1. A process for the transport of a mold train of flaskless molds on movable transporting structures along storing, teeming and cooling stations in a foundry and having at least one straight conveyor run on which said transporting structures are supported, new teeming molds joining, one after the other, a back end of the mold train and filled molds being taken therefrom at the same rate from a front end of the train, comprising the steps of:

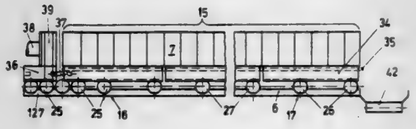
(a) lining up said molds in said mold train with their end faces resting against each other, said molds having upright end and side faces normal to the conveyor plane;

(b) transporting said mold train by speeding up and braking forces adjusted as necessary and as needed, said speeding up force taking effect at the back end of said mold train and said braking force taking effect at the front end thereof; and

(c) transmitting said forces together with any forces acting against thermal expansion within said mold train along the full length of the mold train only by said molds, from one mold to the mold next thereto.

8. Apparatus for casting including flaskless molds and a conveyor for transporting a mold train of said flaskless molds along storing, teeming and cooling stations and having at least





one straight conveyor run, new teeming molds joining, one after the other, a back end of the mold train and filled molds being taken therefrom at the same rate from a front end of the train, wherein said conveyor stretches from a mold-producing station to a shake-out station and includes turning supports turning about fixed axes, and said conveyor including transport structures for supporting one or more molds having a length in the transport direction smaller than the length of the mold or molds placed thereon, said mold or molds stretching out to the back and front of each such transport structure, and said transport structures placed at one of the front or back ends of one run of the mold train are geared with a driving unit and at the other end with a braking unit by means of at least one adjustable torque limiting slip clutch.

4,438,802

CONTINUOUS CASTING WITHDRAWAL APPARATUS

Evgeny A. Korshunov, pereulok Otdelny, 5a, kv. 29, Sverdlovsk; Maxim B. Ovodenko, ulitsa Gorkogo, 19, kv. 5, Krasnoyarsk; Alexandr N. Kuznetsov, prospekt Mira, 118, kv. 49, Krasnoyarsk; Gennady G. Kuzmin, ulitsa Lebedevoi, 147a, kv. 9, Krasnoyarsk; Valery P. Kostrov, ulitsa Bozhova, 57, kv. 10, Sverdlovsk; Alexandr N. Timofeev, ulitsa Kachinskaya, 60a, kv. 3, Krasnoyarsk; Tatyana V. Meschaninova, ulitsa Malysheva, 127a, kv. 21, Sverdlovsk, and Valery L. Bastrikov, ulitsa Malysheva, 127a, kv. 21, Sverdlovsk, all of U.S.S.R.

Filed Nov. 18, 1981, Ser. No. 322,700
Int. Cl.³ B22D 11/124, 11/128
U.S. Cl. 164—443 **2 Claims**

1. An apparatus for withdrawing a casting from a mould of a continuous metal casting plant, comprising:

(a) a movable housing;

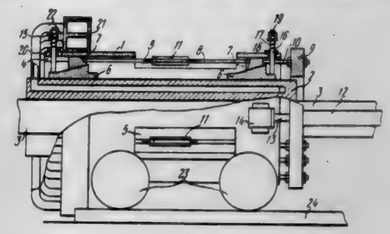
(b) cooled shoes disposed along the perimeter of said casting and located within said housing;

(c) two pairs of wedges disposed between each said shoe and said housing; one wedge of each of said pair of wedges being rigidly secured on said shoe; the other wedge of said pair being disposed in a recess in said housing for movement relative to said housing and said one wedge;

(d) a member adjustable in length connecting the other wedges of each of said two pairs of wedges with each other;

(e) means for withdrawing said casting from said mould, said withdrawing means including hydraulic cylinders with rods for withdrawing said casting from said mould;

(f) means for pressing said shoes against said casting, said



pressing means including hydraulic cylinders with rods for pressing said shoes against said casting;

(g) a crossbar connected with said rods of said means for withdrawing said casting from said mould and said means for pressing said shoes against said casting; and

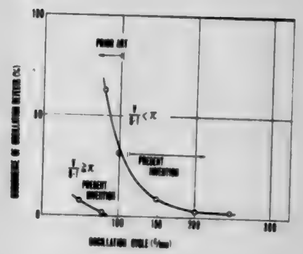
(h) a member of a constant length connecting said other wedges with said crossbar.

4,438,803

CONTINUOUS CASTING OF STEEL SLABS AND BLOOMS FREE FROM SURFACE DEFECTS

Hidemaro Takeuchi; Shogo Matsumura; Ryoichi Hidaka; Yasunobu Ikehara, all of Yamaguchi, and Tsuyoshi Saeki, Fukuoka, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 249,982
Claims priority, application Japan, Apr. 4, 1980, 55-43628; Feb. 3, 1981, 56-14647
Int. Cl.³ B22D 11/04, 11/07
U.S. Cl. 164—472 **5 Claims**



1. A process for continuous casting of a steel slab free from surface defects by oscillating a mold vertically with a sine-curved stroke, in which the maximum downward movement speed of the mold is larger than the strand withdrawal speed, and the mold is oscillated with an oscillation cycle not less than 110 C/min, and an oscillation stroke with a range of from 3 mm to 10 mm.

4,438,804

WATER SOLUBLE CORES AND METHOD FOR MANUFACTURING CAST ROTOR PROVIDED WITH VENTILATION DUCTS UTILIZING THE CORE

Toshiro Aiga, and Toshiaki Maeda, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1981, Ser. No. 321,088
Claims priority, application Japan, Nov. 20, 1980, 55-162591
Int. Cl.³ B22C *1/18*
U.S. Cl. 164—522 **7 Claims**



1. A water soluble core comprising a mold product prepared from a mixture consisting essentially of a sand in an amount of 100 parts by weight, a first binding agent of potassium carbonate in an amount of 10–50 parts by weight, and a second binding agent selected from the group consisting of at least one of barium carbonate in an amount of 1–50 parts by weight and 1–15 parts by weight of alkali silicate, and wherein said water soluble core is prepared by kneading a mixture of said sand, said first and second binding agents, and 5–20 parts by weight of water based on 100 parts by weight of said sand and said water soluble core is dried after molding.

6. A method of manufacturing a cast rotor of an induction motor comprising the steps of preparing a plurality of water soluble cores each comprising a mixture consisting essentially of sand in an amount of 100 parts by weight, a first binding agent of potassium carbonate in an amount of 10–50 parts by weight, and a second binding agent selected from the group consisting of barium carbonate in an amount of 1–50 parts by weight and alkali silicate in an amount of 1–15 parts by weight, each of said water soluble cores being provided with a shaft hole and a plurality of conductor slots, interposing said water soluble cores between adjacent laminated core blocks each having a shaft hole and a plurality of slots corresponding to those of said water soluble cores so as to align said water soluble cores and said laminated core blocks to form a laminated assembly, positioning said laminated assembly in a casting mold, pouring electrically conductive molten metal into said casting mold to form conductors, circuit rings, and cooling fins of said cast rotor, and treating with, by water, a cast product taken out from said cast mold thereby to disintegrate said water soluble cores to form ventilation ducts.

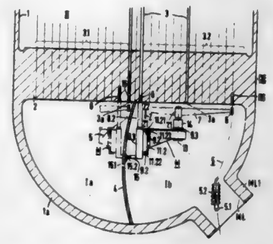
4,438,805

MANIPULATOR FOR REMOTE-CONTROLLED INSPECTION AND, IF NECESSARY OR DESIRABLE, REPAIR OF HEAT EXCHANGER TUBES

Georg Gugel, Kalchreuth, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,153
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 3029811
Int. Cl.³ F28G *15/02*
U.S. Cl. 165—76 **5 Claims**

1. Manipulator for positioning a tube probe at tube mouths of heat-exchanger tubes by remote-control of the tube probe which is connected to a flexible supply line and provided for inspecting and/or repairing the heat-exchanger tubes, the tube mouths being disposed in a tube sheet and extending over an approximately semicircular tube field defined by a chord, the manipulator including a rigid carrying body disposed parallel to the tube sheet, the carrying body having a linear track, a support disposed parallel to the tube sheet and mounted on the carrying body so as to extend away therefrom in the direction of the tube sheet, said support being displaceably mounted on the track along the carrying body, a boom mounted on a bearing surface of the support facing towards the tube sheet, the boom being pivotable in a plane parallel to the tube sheet, and a mouthpiece disposed at a free end of the boom and being movable therewith for introducing a tube probe into a respective heat exchanger tube, said carrying body comprising at least three clamping devices distributed over the length of the



carrying body and being lockable independently of one another in respective tube mouths of the tube sheet, said clamping devices being formed as insertable and retractable expanding mandrels extending from the carrying body towards and spacing the body from the tube sheet, the boom having a swivel head by which it is fastened to a rotary shaft of a swing drive seated on the bearing surface of the support facing towards the tube sheet, the mouthpiece being spaced from said rotary shaft a distance greater than a perpendicular distance of said rotary shaft from the chord defining the approximately semicircular tube field, the mouthpiece being thereby pivotable with the boom into the space between the carrying body and the tube sheet for introducing the tube probe into the respective tube mouths located thereat.

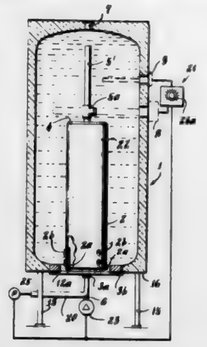
4,438,806

HEAT EXCHANGER FOR TRANSFERRING HEAT TO A LIQUID

Dieter Kaehler, Berlin, Fed. Rep. of Germany, assignor to Alfa-Laval Agrar GmbH, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 105,769, Dec. 20, 1979, Pat. No. 4,305,454. This application Aug. 14, 1981, Ser. No. 292,816
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854999
Int. Cl.³ F24H *1/20*; F28D *1/04*
U.S. Cl. 165—108 **13 Claims**

1. A heat exchanger for transferring heat from a warmer medium to a liquid to be heated, comprising a substantially upright insulated jacket defining an internal space containing the liquid to be heated; a hollow heat conducting body disposed in the interior of said jacket and arranged to guide the liquid to be heated; a heating body traversed by the warmer medium and at least paritally surrounded by said heat conducting body, said heat conducting body separating the liquid which is heated in the interior thereof as a result of heat exchange with the warmer medium in said heating body from the liquid in the internal space of said jacket and said heat conducting body having a lower end provided with an inlet opening for admission of liquid to be heated from said internal space and an upper end provided with a flow restrictor defining an outlet opening for the liquid which is heated in the interior of and rises in said heat conducting body, said heat conducting body and said flow restrictor having thermally insulating walls; a thermometer for sensing the temperature of liquid in said jacket; means for adjusting said flow restrictor; an electric heater for heating the liquid in the jacket; a thermostat for controlling the heater; a first pump for admitting liquid into said heat conducting body; a second pump for admitting warm



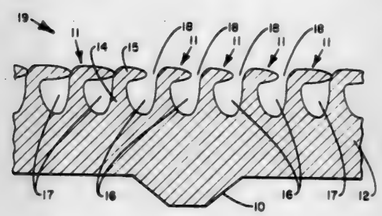
medium into said heating body; and control means operatively connected to said thermometer, said adjusting means, said heater, said thermostat and said pumps for maintaining the temperature of liquid in said jacket at a desired level.

4,438,807

HIGH PERFORMANCE HEAT TRANSFER TUBE

Achint P. Mathur, Clay; Matti J. Tornisinen, and James P. Shawcross, both of Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,901
Int. Cl.³ F28F *19/00*
U.S. Cl. 165—133 **2 Claims**



1. A heat transfer tube for transferring heat between a boiling liquid in contact with the exterior surface of the tube and a fluid flowing through the tube, comprising:

at least one helically extending rib on the interior surface of the tube; and

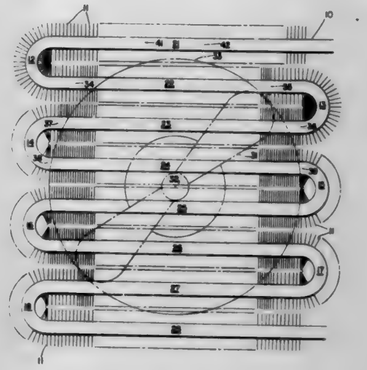
at least one helically extending fin convolution extending around the exterior of the tube, said fin convolution having a base portion extending generally radially outward from the exterior surface of said tube and having a tip portion inclined toward the side of the adjacent convolution to form a channel of substantially uniform cross-section extending around the tube with the sections of the fin convolution not located approximately above an internal rib having their tip portions touching the adjacent convolution to form closed subsurface passages which fluidically communicate with the surroundings of the tube substantially only through cavities having openings located at the sections of the fin convolution located approximately above an internal rib where depressed tip portions of the fin convolution do not touch the adjacent convolution whereby a pattern of closed and open section are formed on the exterior surface of the tube.

4,438,808

HEAT EXCHANGER TUBE

Herbert J. Venables, III, and Herbert J. Venables, IV, both of Shaker Blvd., Hunting Valley Village, Chagrin Valley Post Office, Ohio 44022

Continuation of Ser. No. 16,799, Mar. 2, 1979, abandoned. This application Apr. 7, 1981, Ser. No. 251,882
Int. Cl.³ F28F *1/36*
U.S. Cl. 165—150 **6 Claims**



1. A heat exchanger system comprising a heat exchanger operable to transfer heat between two fluids and means to cause a flow of one of said fluids over said heat exchanger as a stream of said one fluid having a substantially predetermined pattern, the flow rate over the first portions of said heat exchanger in alignment with said pattern being substantially greater than the flow rate over the second portions of said heat exchanger outside of said pattern, said heat exchanger including a substantially smooth tube and a continuous separate strip of spine fins having separate and distinct spines extending radially from at least one edge of a continuous uninterrupted base portion, said base portion being helically wound around said tube under tension causing stretching of only the base portion of said strip of spine fins, a plurality of bends in said second portions, said tube providing a plurality of separate passes through said stream of said one fluid, said spine fins being wrapped along said plurality of said passes with a predetermined small helix angle and providing a uniform high spine density along said first portions of said heat exchanger and with a greater helix angle providing uniform lower spine density along at least part of said second portions of said heat exchanger containing said bends, said spine fins being wrapped around said tube with a substantially uniform amount of material provided in each wrap of said spine fin along the entire length of said tube, said spine fins along said at least part of said second portions being stretched a greater amount than along said first portions of said heat exchanger.

4,438,809

TAPERED PLATE ANNULAR HEAT EXCHANGER

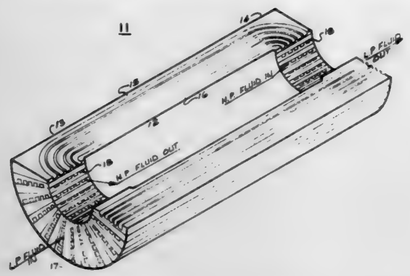
Thaddeus Papis, 10115 Victoria Ave., Riverside, Calif. 92503

Filed Aug. 1, 1980, Ser. No. 174,362
Int. Cl.³ F28F *3/08*
U.S. Cl. 165—166 **6 Claims**

1. A heavy duty annular heat exchanger with multiplicity of parallel, essentially axial fluid passageways of small cross-section for heat transfer between a plurality of fluids in a high pressure environment, comprising:

a multiplicity of solid plates, in plurality of distinct sets, each said plate having a tapered cross-section taken in a plane perpendicular to the longitudinal axis of the heat exchanger, said plates being selectively provided with a multiplicity of essentially parallel, longitudinally disposed

grooves of relatively small cross-section for defining fluid passages, wherein grooves adjacent plate edges define therewith land areas serving as primary plate joining surfaces and interior grooves define therebetween heat transfer fins which also serve as load carrying members;



said plates being juxtaposed and joined together to form a self-enclosed structure of annular, radially symmetric cross-section, defining a heat transfer core and fluid transition zones with a multiplicity of distinct fluid flow passageways; and

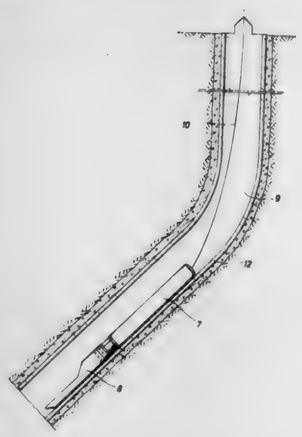
means for introduction and discharge of a plurality of distinct fluids to and from their respective passageways.

4,438,810

APPARATUS FOR DECENTRALIZING AND ORIENTING A WELL LOGGING OR PERFORATING INSTRUMENT

Gregory J. Wilkinson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 26, 1981, Ser. No. 314,821
Int. Cl.³ E21B *43/119*
U.S. Cl. 166—65 M **6 Claims**



1. An apparatus for orienting a logging or perforating instrument supported by a cable and disposed within a cased borehole to the lower side of said borehole, comprising;

an elongated body member having a first end portion of generally circular lateral cross-section adapted to attach to said instrument;

said body member having an elongated portion wherein the mass of said body member exhibits a generally truncated circular lateral cross-section, said truncated circular lateral cross-section being predominantly disposed to one side of the longitudinal axis of said body member;

said body member having one or more longitudinal recesses within said elongated portion said longitudinal recesses generally centered upon the curvilinear portion of said truncated circular lateral cross-section of said body member; and

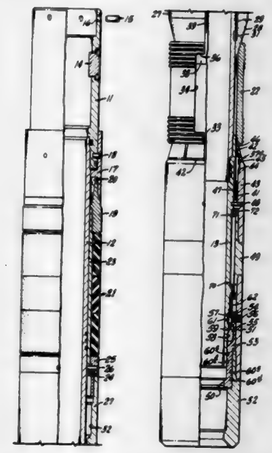
one or more permanent magnets cooperatively arranged within said recesses.

4,438,811

LATCH FOR USE IN A WELL

Dhirajlal C. Patel, Carrollton, Tex., assignor to Otid Engineering Corporation, Dallas, Tex.

Filed Aug. 16, 1982, Ser. No. 408,455
Int. Cl.³ E21B *23/06*
U.S. Cl. 166—123 **12 Claims**



1. A latch for a well tool comprising, a mandrel including a latch sleeve having an external groove therein, a split latch ring in said groove, an outer sleeve telescoped over the lower end of the latch sleeve and having a stop shoulder preventing upward movement of the latch ring relative to the outer sleeve, a ring retainer slidable over the latch sleeve and within the outer sleeve and having an internal retainer land for engagement with said latch ring to retain it in said groove, means releasably positioning said ring retainer with the retainer land in engagement with said latch ring, and seal means between said ring retainer and each of said outer sleeve and latch sleeve to provide fluid integrity between said latch sleeve and said outer sleeve.

4,438,812

BRUSH TOOL FOR WELLS

Donald P. Hammon, 75 E. Mountain View St., Long Beach, Calif. 90805

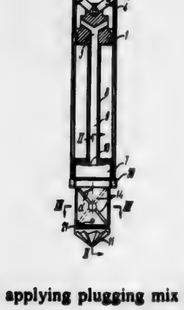
Filed Aug. 23, 1982, Ser. No. 410,815
Int. Cl.³ F21B *41/00*
U.S. Cl. 166—173 **5 Claims**

1. A brush tool for wells including, in combination:

(a) a mandrel for insertion in a well pipestring, said mandrel having a central bore for maintaining well fluid circulation during a brushing operation;

(b) first and second semi-cylindrical sections, each having a plurality of holes along its length;

(c) brush means radially extending through said holes, said first and second sections being dimensioned to surround said mandrel in coaxial relationship when brought together from opposite sides of said mandrel so that the inner ends of the brush means are held secure between the outer wall of the mandrel and the inner walls of the first and second semi-cylindrical sections, said brush means including a brush bundle for each hole comprising a rivet shaped collar and a plurality of wires passing through the collar to make up the brush bundle, said rivet-shaped collar having a cylindrical portion dimensioned to be snugly received in said hole and of an axial length sufficient to hold the wires in a bundle and a radially extending exterior flange at one end overlapping the entrance periphery of the hole, said plurality of wires having their inner ends bent laterally to overlie said flange, said flange and bent wires being trapped between the outer wall of



said mandrel and the inner cylindrical wall of the semi-cylindrical section through which said hole passes so that all the brush bundles are securely held on said mandrel, said rivet shaped collar further preventing direct contact of said wires with said holes to thereby minimize wear on said holes; and

(d) ring means receivable over the ends of said mandrel to engage about the opposite ends of the semi-cylindrical sections and thereby hold them together about said mandrel whereby rapid assembly and disassembly of the brush means over the length of said mandrel can be realized.

4,438,813

DEVICE FOR APPLYING PLUGGING MIX TO WELL WALLS

Nikolai I. Nikolaev; Lev A. Tereschenko; Arian M. Yakovlev; Vitaly I. Kovalenko, all of Leningrad; Nikolai K. Lipatov, Murmanskaya; Ruben A. Tatevosian, and Mikhail Y. Titov, both of Moscow, all of U.S.S.R., assignors to Proizvodstvennoe Geologicheskoe Obiedinenie "Tsentrogeologia", Moscow, U.S.S.R.

Filed Jan. 27, 1982, Ser. No. 343,284
Claims priority, application U.S.S.R., Mar. 25, 1981, 3257101
Int. Cl.³ E21B *33/138*
U.S. Cl. 166—177 **3 Claims**

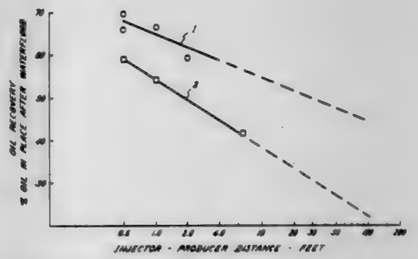
1. A device for applying plugging mix to well walls to be installed in a drilling string comprising: a piston of a diameter which is slightly smaller than the nominal inside diameter of said drilling string; passages for the flow of a fluid in said piston; spring-biased locking members for fixing the position of said device with respect to said drilling string, installed on said piston; a head installed coaxially with said piston and rigidly coupled thereto; passages for the flow of the fluid in said head communicating with said passages of said piston; vanes for applying a plugging mix to walls of said well, said vanes being made in the form of plates installed on opposite sides in said head at an angle with respect to its axis of rotation, the vanes being radially movable with respect to the axis of rotation; a bit for drilling-off the plugging mix, said bit being installed at the distal end of said head; said head and bit being of a diameter which is slightly smaller than the nominal inside diameter of said drilling string.

4,438,814

OIL RECOVERY METHOD EMPLOYING ALTERNATE SLUGS OF SURFACTANT AND FRESH WATER

Issam S. Bousaid, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

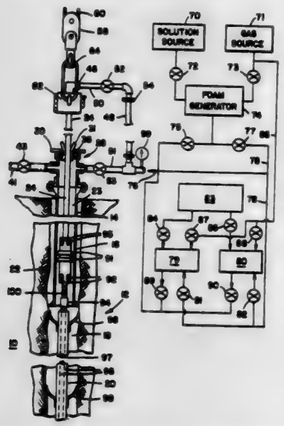
Continuation-in-part of Ser. No. 193,323, Oct. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 71,211, Aug. 30, 1979, abandoned. This application Aug. 25, 1982, Ser. No. 411,172
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 **15 Claims**



1. A method of recovering petroleum from a subterranean, petroleum-containing, permeable formation penetrated by at least one injection well and by at least one production well, said formation containing water having a salinity in excess of about 20,000 parts per million total dissolved solids, comprising injecting into the formation a predetermined volume of an aqueous surfactant fluid, said surfactant being slightly soluble in a fluid having a salinity of from 50 to 100 percent of the salinity of the water present in the formation, and reducing interfacial tension between the petroleum and water to a value less than 100 millidynes/centimeter, said surfactant fluid being injected by the injection well and displacing petroleum in the formation toward the production from which it is recovered to the surface of the earth, wherein the improvement comprises:

injecting the surfactant fluid into the formation in from 2 to 15 separate slugs, and separating successive slugs of surfactant fluid from one another by injecting sequentially therewith, separate isolation slugs consisting essentially of fresh water having salinity less than 10,000 parts per million total dissolved solids, the volume of each isolation slug being less than 0.5 pore volume.

4,438,815
FOAM GRAVEL PACKING
Thomas D. Elson, Chino, and Ralph S. Millhone, Brea, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Nov. 23, 1981, Ser. No. 323,787
Int. Cl.³ E21B 43/04
U.S. Cl. 166—278 6 Claims

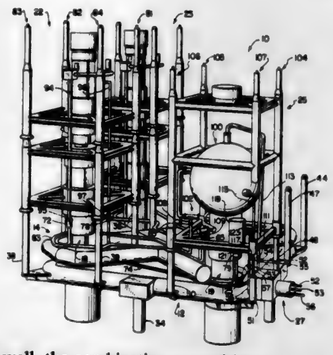


1. A method for packing particulate material in a well bore subsurface location comprising the steps of:
(a) generating a stable foam material at the surface above said well;
(b) injecting said foam through said particulate material from below to produce a foam-particulate mixture and to fluidize said mixture of foam and particulate material;
(c) forcing said fluidized foam-particulate mixture into said well bore and to said subsurface location;
(d) causing said particulate material of said foam-particulate mixture to be retained at said subsurface location; and
(e) moving said foam of said foam-particulate mixture upward through said well bore.

4,438,816
PROCESS FOR RECOVERY OF HYDROCARBONS FROM OIL SHALE
Peter Urban, Northbrook; Russell W. Johnson, Villa Park, and Lee Hilfman, Mt. Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.
Filed May 13, 1982, Ser. No. 378,024
Int. Cl.³ C10G 1/04; E21B 43/24
U.S. Cl. 166—303 16 Claims

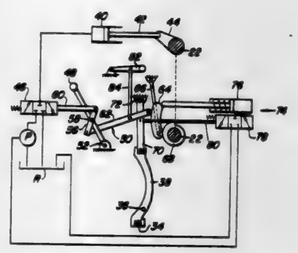
1. A process for the recovery of hydrocarbons from oil shale containing said hydrocarbons which comprises:
(a) first heating said oil shale in the presence of a non-combustion supporting, non-oil miscible gas selected from the group consisting of nitrogen, hydrogen sulfide, ammonia, mercaptan, hydrocarbon, sulfur dioxide, carbon monoxide, carbon dioxide, water and mixtures thereof at subcritical conditions of said selected gas and at a temperature of from about 650° F. to about 825° F. to produce a solvent extractable material and to liberate at least a first portion of said hydrocarbon contained therein;
(b) recovering said solvent extractable material and said first hydrocarbon portion; and
(c) then contacting said recovered solvent extractable material with a normally-liquid solvent at subcritical, reflux conditions of said solvent to liberate at least a a second portion of said hydrocarbon contained in said solvent extractable material.

4,438,817
SUBSEA WELL WITH RETRIEVABLE PIPING DECK
Roger L. Pokladnik, Houston, and William A. Valka, Spring, both of Tex., assignors to Armco Inc., Middletown, Ohio
Filed Sep. 29, 1982, Ser. No. 426,695
Int. Cl.³ E21B 43/01
U.S. Cl. 166—341 12 Claims



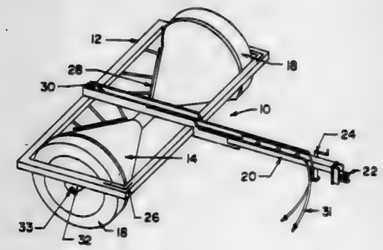
1. A subsea well, the combination comprising:
a template installed on the seabed and having a plurality of guide sleeves oriented over a plurality of wells formed in the seabed;
a plurality of wellheads, each installed in one of said guide sleeves;
a retrievable piping deck having a plurality of flow lines coupled thereto and located on the top of said template;
a plurality of Christmas trees, each installed on one of said wellheads;
means, including vertically oriented connectors, for coupling each of said Christmas trees to one of said flow lines;
a fluid manifold installed on said template;
means, including vertically oriented connectors, for coupling each of said flow lines to said manifold; and
a main flow line coupled to said manifold and extending from said template to the surface of the sea.

4,438,818
DRAFT CONTROL SYSTEM FOR AGRICULTURAL TRACTOR
Richard Treichel, and Seaton Moon, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.
Continuation-in-part of Ser. No. 209,239, Nov. 21, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,012
Int. Cl.³ A01B 63/112
U.S. Cl. 172—9 7 Claims



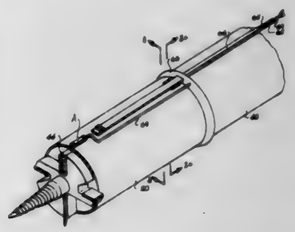
1. In a tractor having fluid-power adjusting means for effecting adjustment of an associated implement to increase or decrease draft load, a draft load control system including a source of fluid pressure, main valve means operative between the power adjusting means and the source, a mechanical spring on the tractor for balancing the normal draft load of the implement, a draft responder movable on the tractor in response to changes in the spring according to changes in draft load and providing a mechanical output proportioned to draft load, a hydraulic force-amplifier on the tractor including cylinder and piston members and a second valve interposed between the cylinder member and the tractor fluid pressure source, mechanical means interposed between the draft responder and the second valve for effecting changes in position thereof in response to movement of the draft responder to cause movement of one of the force-amplifier members relative to the other, and means operative between the main valve means and the movable one of the members for operating the main valve to control the power adjusting means.

4,438,819
RICE LEVEE SHAPER AND PACKER
Lloyd E. Ryals, P.O. Box 98, Dundee, Miss. 38620
Filed May 21, 1982, Ser. No. 380,686
Int. Cl.³ A01B 29/00, 49/06
U.S. Cl. 172—536 2 Claims



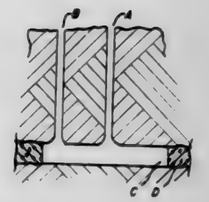
1. A land shaper and packer assembly for agricultural use in the construction of rice levees for shaping a ridge of loosely packed soil into a compacted ridge of uniform width and substantially flat top, having a furrow of uniform width and depth adjacent each side thereof, and with said ridge having a substantially fixed height relative to the bottoms of said furrows, said assembly comprising:
a frame including a tow bar secured thereto, an integral roller-wheel assembly rotatably secured to said frame and having an adjustable weight greater than 3,000 pounds, said roller having first and second symmetrical end parts connected by a horizontally positioned cylindrical part having a uniform fixed diameter, said first and second end parts each being identically frusto-conically shaped and having a relatively large outwardly facing end base member and an inwardly sloping surface extending from said base to one end of said cylindrical part; an axle extending through said roller and having opposite ends journaled in said frame wheel means integrally coaxially connected to each said base to rotate therewith for supporting a pneumatic tire; first and second pneumatic tires mounted on said wheel means, said tires having a diameter larger than the diameter of said bases whereby said tires maintain the roller in a position off the ground when towed along a roadway and form said furrows adjacent said ridge of soil; said tires having a diameter approximately three times greater than the diameter of said cylindrical part whereby rotation of said tires in the formation of a rice levee causes the roller to be rolled and dragged along said ridge of soil so that the soil is rolled, graded and pushed forward by said roller surfaces to completely fill in and compact all spots in said levee.

4,438,820
GRADE MONITORING AND STEERING APPARATUS
Paul N. Gibson, Rte. 1, Box 153, Saluda, S.C. 29138
Filed Nov. 16, 1981, Ser. No. 322,026
Int. Cl.³ E21B 7/04
U.S. Cl. 175—45 19 Claims



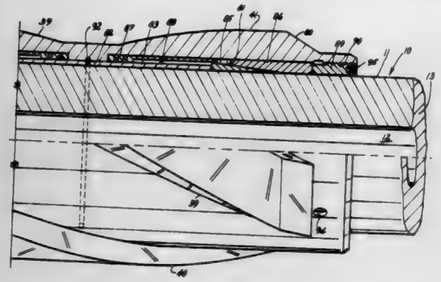
1. Apparatus for monitoring the grade of pipe casing being laid in a bore underground simultaneous with said bore being cut of the type which includes a cutting head carried by a casing head attached to the front of said casing, means for steering said casing head up or down to correct the grade of the bore, and means for pushing said casing through said bore as it is formed, said apparatus comprising:
a grade sensor including a reservoir for containing a fluid medium at a predetermined level and adapted for being carried by said casing head;
a light source carried in said reservoir arranged to transmit light through said medium;
a light detector carried in said reservoir opposite said light source for detecting the intensity of said light received through said medium having an output representing said light intensity;
whereby changes in the intensity of light detected due to changes in the inclination of-said sensor and of said level of medium may be utilized to produce indications of deviations in grade of said casing head and said steering means may be adjusted to return said casing head to grade.

4,438,821
MINING MACHINERY
Henry Jolly, 918 Palmer Ave., Patton, Pa. 16668
Filed May 11, 1981, Ser. No. 262,751
Int. Cl.³ E21B 7/08; E21C 41/00
U.S. Cl. 175—74 9 Claims



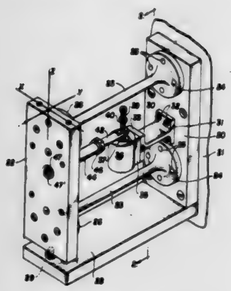
1. Mechanism for mining an underground mineral through a bore hole comprising a casing made of rotatably connected cylindrical sections having mitered ends, including means for locking each casing section with its adjoining sections, an articulated drill shaft journalled therein, and an elongated auger drill bit connected to the forward end of the articulated drill shaft, the auger drill bit being formed to cut on its face and on its circumference along its length.

4,438,822
CLAMP-ON DRILL COLLAR STABILIZERS
Larry R. Russell, 6025 Edgemoor, Suite, Houston, Tex. 77081
Filed Sep. 28, 1981, Ser. No. 306,302
Int. Cl.³ E21B *17/00*
U.S. Cl. 175—325 12 Claims



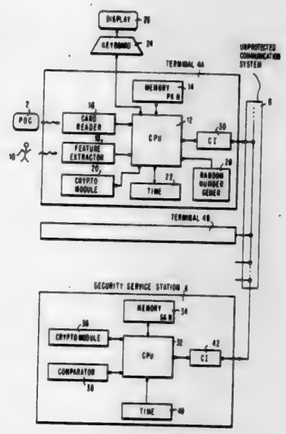
1. Stabilizer apparatus adapted for releasable connection around a drill collar, to centralize and guide the drill collar in a well, comprising tubular sleeve means having passage means therethrough end to end, a drill collar received through said passage means, connection means having movable clamping means disposed substantially entirely within said sleeve for forming, when actuated, a releasable clamped engagement between said sleeve and said drill collar, actuating means for forceably driving said clamping means in one direction to form said clamped engagement and including means for forceably driving said clamping means in the opposite direction to positively release said clamped engagement.

4,438,823
LOAD CELL
Bernard H. Hussels, South Burlington, and Charles T. Goetz, Shelburne, both of Vt., assignors to DBI Industries, Inc., South Burlington, Vt.
Filed Aug. 9, 1982, Ser. No. 406,708
Int. Cl.³ G01G *3/00, 21/23*
U.S. Cl. 177—210 EM 14 Claims



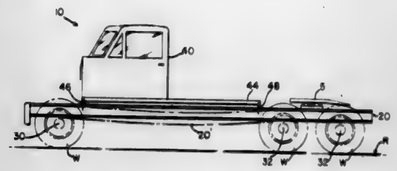
1. A load cell comprising a stationary support member, a movable load bearing member spaced from the stationary support member, a pair of circular cross section cantilever spring arms secured to the stationary support member and projecting therefrom in spaced parallel relationship in a common vertical plane and connected with and carrying said load bearing member, and a movement sensing and measuring means for the load cell including an element connected with the movable load bearing member.

4,438,824
APPARATUS AND METHOD FOR CRYPTOGRAPHIC IDENTITY VERIFICATION
Christian Mueller-Schloer, Voorhees, N.J., assignor to Siemens Corporation, Iselin, N.J.
Filed Apr. 22, 1981, Ser. No. 256,523
Int. Cl.³ H04L *9/00*
U.S. Cl. 178—22.08 8 Claims



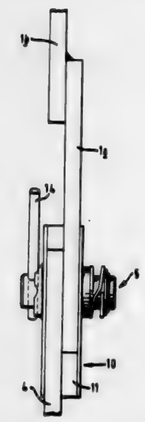
1. An apparatus for identity verification using a data card with protection against misuse of said card by unauthorized users, comprising in combination:
(a) a terminal containing
(a1) a first central processing unit having a first memory for storage of a program, of a public network key, and of variables;
(a2) a card reader for reading data from said personal data card and for introducing said data into said first memory, said data including sensitive data;
(a3) input means for introducing personal identification information into said first memory;
(a4) a first crypto module connected to said first centeral processing unit, said first module being adapted to encrypt and decrypt data received from said first memory under the control of said first central processing unit;
(b) a security service station containing
(b1) a second central processing unit having a second memory for storage of a program, of a secret network key, and of variables;
(b2) a second crypto module connected to said second central processing unit, said second crypto module being adapted to encrypt and decrypt data received from said second memory under the control of said second central processing unit;
(b3) a comparator connected to said second central processing unit for comparing transmitted personal identification information with transmitted reference personal identification information, and
(c) a communication system connecting said terminal to said security service station, said communication system transmitting digital data from said terminal to said security service station, and vice versa, including said personal identification information and said reference personal identification information.

4,438,825
CAB PITCH RESTRAINT
Donald L. Stephens, King County, Wash., assignor to PACCAR Inc., Bellevue, Wash.
Filed Jul. 6, 1982, Ser. No. 395,613
Int. Cl.³ B62D *33/06*
U.S. Cl. 180—89.12 6 Claims



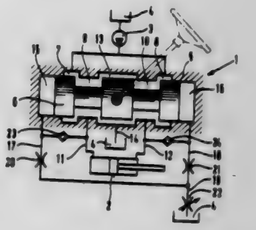
1. A vehicle which comprises:
a vehicle frame including left and right frame rails which undergo vertical deflection when under load;
a front axle attached to the vehicle frame near the front of the vehicle frame, the front axle including a plurality of front wheels mounted thereon;
a rear axle attached to the vehicle frame near the rear of the vehicle frame, the rear axle including a plurality of rear wheels mounted thereon;
a pair of cab rails coupled to the frame rails at two longitudinally spaced points of substantially equal vertical deflection along the frame rails; and
a vehicle cab mounted on the cab rails.

4,438,826
TILT CAB SUPPORT STAY
Ronald Bewers, Maldon, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed Jul. 15, 1981, Ser. No. 283,578
Claims priority, application United Kingdom, Jul. 30, 1980, 8024966
Int. Cl.³ B62D *23/00*
U.S. Cl. 180—89.14 6 Claims



1. A tilt cab vehicle having a cab pivotally connected to a frame of the vehicle so that the cab can be pivoted and thus raised from a lowered position which it occupies when the vehicle is to be driven and having a stay comprising a pair of arms pivotally connected to each other and to the cab and frame of the vehicle, the stay being provided for supporting the cab selectively in each of a first raised position in which the cab has been pivoted through a first angle from its lowered position, and a second raised position in which the cab has been pivoted through a second and larger angle from its lowered position and in which, when the cab is in its first raised position and the vehicle stands on a horizontal surface, the arms of the stay supporting the cab directly compressively engage each other at their adjacent ends due to the force of gravity acting on the cab.

4,438,827
SERVO STEERING, ESPECIALLY FOR MOTOR VEHICLES
Armin Lang, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany
Filed May 25, 1982, Ser. No. 381,709
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122370
Int. Cl.³ B62D *5/08*
U.S. Cl. 180—143 8 Claims



1. In a servo power steering system for motor vehicles, including a servo motor having opposed operating chambers, a servo pump, a reservoir, a control valve through which fluid is conducted between the pump, the servo motor and the reservoir, and a control mechanism having a restricted cross-sectional flow area that is adjustable as a function of vehicle speed, said control valve having at least one movable valve piston and at least one pair of reaction chambers, the improvement comprising means mounting the valve piston (6, 26, 27) for movement in opposite steering directions, fixed flow restricting means (20, 21) for conducting fluid under pressure from the pump in series through the reaction chambers (15, 16, 32, 33, 34, 35) and the control mechanism (22) to the reservoir (4), and one-way valve means (23, 24, 38, 39) operatively mounted between the pair of reaction chambers (15, 16, 32, 34) and the servo motor (2) for unidirectionally conducting the fluid under pressure between said one pair of reaction chambers and the operating chambers of the servo motor corresponding thereto.

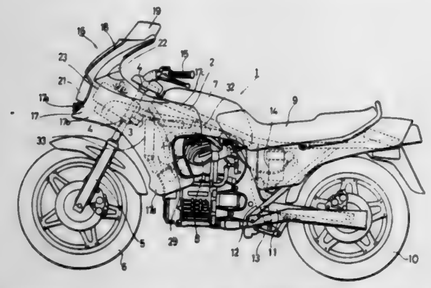
4,438,828
AIR CLEANER DEVICE IN MOTORCYCLES
Mitsuo Nakagawa, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 18, 1982, Ser. No. 379,326
Claims priority, application Japan, May 18, 1981, 56-74634
Int. Cl.³ B01D *50/00*
U.S. Cl. 180—219 2 Claims

1. An air cleaner device in a motorcycle, wherein said motorcycle includes a body frame; a front fork pivotably connected to said body frame; an engine mounted on said body frame; at least one meter disposed forwardly of a top portion of said front fork; and a fairing mounted on said body frame and substantially covering the front of said body frame, said front fork and said meter; wherein said fairing includes a front wall supporting a headlight mounted thereon, right and left side walls extending substantially rearwardly from right and left sides, respectively, of said front wall and a bottom wall disposed adjacent the lower side of said front wall; and wherein said air cleaner device comprises:
a casing including a transverse portion extending in a trans-

verse direction of said body frame and a longitudinal portion extending from one end of said transverse portion in a longitudinal direction of said body frame;

said transverse portion of said casing being disposed rearwardly of said headlight, forwardly of said front fork, between said right and left side walls of said fairing, substantially below said meter and above said bottom wall of said fairing;

said longitudinal portion of said casing being disposed between one of said right and left side walls of said fairing and said front fork;



said transverse portion and said longitudinal portion of said casing being connected with each other such that said casing is substantially L-shaped in plan;

said casing having a wall which defines substantially a rear part of said transverse portion and a side part of said longitudinal portion facing said front fork;

said wall of said casing being curved substantially concentrically with the pivoting locus of said front fork;

a filter element disposed within said casing; and

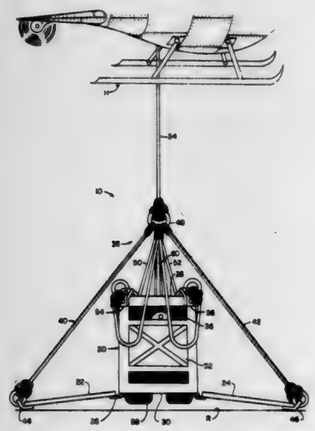
a connecting pipe connected at one end thereof to said casing and at the other end thereof to said engine so as to conduct air from said casing to said engine.

4,438,829

EMERGENCY RESCUE BOX

Donald I. Waters, 3907 Forrest Park Ave., Baltimore, Md. 21207

Filed Oct. 1, 1981, Ser. No. 307,364
Int. Cl.³ A62B 1/02
U.S. Cl. 182—150 **1 Claim**



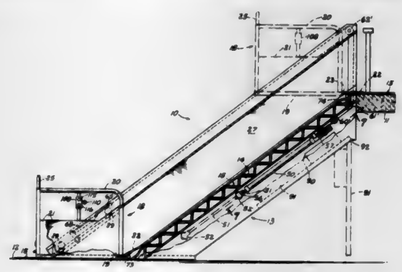
1. A system for rescuing people from a burning high-rise building having flat roofs and sides with openings for windows and the like, comprising: a rescue box of rectangular shape and with top, bottom, sides and ends, means for lifting the rescue box by a helicopter, first and second doors forming respective opposed upright sides of the rescue box, means hinging a lower edge of each of saids first and second doors to the rescue box permitting said first and second doors to swing outward and downward from the position in which they form said upright sides, means for securing said upright sides, forming said upright sides when the rescue box is lifted comprising the means for lifting including a line attaching to an upper edge portion of each of said first and second doors, the means for lifting further including at least one line attaching to the rescue box adjacent each end of the rescue box, means for securing all said lines together at a central location over said rescue box, all said lines being proportioned in length for becoming taut when said rescue box is lifted; each of said first and second doors having a smaller door therein, means for opening said smaller doors inwardly into the rescue box, said means for opening said smaller doors inwardly including hinge means, attaching to a lower portion of a respective one of said first and second doors, means for aerodynamically stabilizing the rescue box comprising a fixed tail fin extending from one of said ends thereof, and means for cushioning said rescue box when set down after lifting.

4,438,830

STAIRWAY WITH FAIL SAFE POWER LIFT FOR LADING, THE INFIRM, WHEELCHAIR PATIENTS, AND THE LIKE

Raymond W. Born, 4211 First St., Space 121, Santa Ana, Calif. 92703

Continuation-in-part of Ser. No. 51,801, Jun. 25, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,424
Int. Cl.³ B66B 9/06
U.S. Cl. 187—12 **34 Claims**



1. Combined stairway and power lift apparatus comprising:

a main frame supporting and fixed to stairs extending from end-to-end thereof;

load supporting platform means having means movably supporting the same on said main frame and including pressurized hydraulic fluid power means mounted on and along the underside of said main frame operable to propel said platform means along said stairs between the upper and lower levels served thereby and generally even with said upper and lower levels of said stairs, said platform means including a first edge relatively close to the tread edges of said stairway and a second edge remote therefrom, means supporting upright gate means on said platform means for swinging movement of said gate means between a closed position generally along said second edge and an open position leaving said second edge unobstructed and designed and constructed to prevent people from walking across said second edge of said platform when said gate means is closed; and

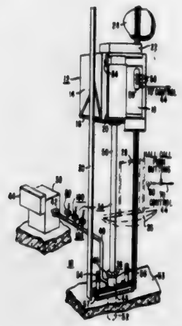
said power means including means for automatically and smoothly accelerating said platform means while departing from said upper and lower levels of said stairs by gradually varying the flow of pressurized fluid to and from said hydraulic power means between no flow and full flow.

4,438,831

ELEVATOR SYSTEM

James E. Rohanna, Gettysburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 7, 1980, Ser. No. 110,280
Int. Cl.³ B66B 1/00
U.S. Cl. 187—30 **4 Claims**



1. An elevator system, comprising:

a structure having floors and a hoistway,

an elevator car in the hoistway of said structure for serving the floors therein,

said elevator car having a passenger compartment for accommodating a load,

motive means for said elevator car including a hydraulic system which includes fluid means under pressure, with the pressure of said fluid means being responsive to the weight of said elevator car and the load in its passenger compartment when the elevator car is stationary,

load monitoring means responsive to the pressure of the fluid means in said hydraulic system when the elevator car is stationary, with said load monitoring means providing a predetermined signal when the magnitude of the pressure in the hydraulic system indicates the load in the passenger compartment exceeds a predetermined magnitude,

a door on said elevator car operable between open and closed positions,

and means responsive to the position of said door for inhibiting the load monitoring means from providing the predetermined signal unless the door is in the open position.

4,438,832

SLIDE PIN DEVICE IN A FLOATING CALIPER TYPE DISC BRAKE

Yoshihisa Nomura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

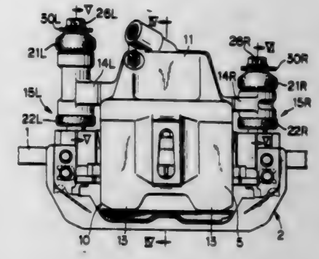
Continuation of Ser. No. 147,940, May 8, 1980, abandoned. This application Jun. 2, 1982, Ser. No. 384,344
Claims priority, application Japan, Jun. 9, 1979, 54-72857
Int. Cl.³ F16D 65/00
U.S. Cl. 188—73.45 **6 Claims**

1. A slide pin device for guiding a caliper assembly which functions to urge a pair of braking pad assemblies, disposed on either side of a disc rotor, onto said disc rotor, in a movement thereof parallel to the axis of said disc rotor, said slide pin device comprising:

a substantially cylindrical sleeve for guiding said caliper assembly along its external surface;

a bolt extending through said sleeve and threaded into a stationary torque receiving member at one end thereof for securing said sleeve to said torque receiving member; and

a generally planar member separate from said sleeve and having in the center thereof a bolt hole extending therethrough, said planar member being interposed between one end of said sleeve and the head of said bolt for preventing rotation of said sleeve about axis of said bolt upon rotation thereof, said planar member having means engageable with a tool for manually holding said planar member against rotation upon rotation of said bolt.

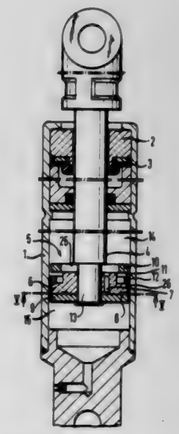


4,438,833

PISTON FOR A PNEUMATIC, HYDRAULIC, OR HYDROPNEUMATIC INSTALLATION

Willi Schäfer, Koblenz, Fed. Rep. of Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,383
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039801
Int. Cl.³ F16F 9/19
U.S. Cl. 188—320 **7 Claims**



1. In a piston adapted to be used in a pneumatic, hydraulic or hydropneumatic installation of the type including a cylinder filled with gas and/or liquid, comprising a piston slidably housed within said cylinder and separating the cylinder cavity into two working chambers, a piston rod connected to said piston and extending through guiding and sealing means provided at one end of said cylinder, and damping means in said piston comprising a constantly open throttled passage between said working chambers, the improvement wherein said constantly open throttled passage includes at least one spirally-shaped throttled channel, which extends in a plane perpendicular to the piston axis over an angle of more than 360°, and which is provided in one front face of the piston body and covered by one of a piston plate and a piston disc.

4,438,834
HYDRO-PNEUMATIC DAMPING UNIT

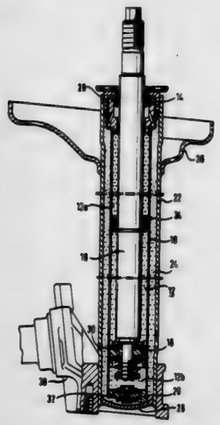
Günther Handke, Esserbach, and Johachim Kopic, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 145,837, May 1, 1980, abandoned. This application Jun. 2, 1982, Ser. No. 384,384

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922437

Int. Cl.³ F16F 9/36

U.S. Cl. 188—322.16 33 Claims



1. In a hydro-pneumatic damping unit which includes an elongated cylinder member forming a central cavity between first and second ends of said cylinder member, a piston rod guiding and sealing unit including a guiding member arranged at the first end of said cylinder member, said guiding and sealing unit having a guiding bore coaxially aligned with said cylinder member, an elongated piston rod extending through the central cavity and within the guiding bore of said guiding and sealing unit for movement in the axial direction of said cylinder member, a piston unit fixed to said piston rod within said central cvity to divide the central cavity into a first cylinder chamber adjacent the first end of said cylinder member and a second cylinder chamber adjacent the second end of said cylinder member, first fluid passage means associated with said piston unit for providing throttled fluid communication between the first and the second cylinder chambers when said piston rod is axially moved relative to said cylinder member, the first and the second cylinder chambers containing a body of liquid, a cylindrical container coaxially surrounding said cylinder member to form an annular cavity, said container having a first end adjacent the first end of said cylinder member and a closed, second end adjacent the second end of said cylinder member, second fluid passage means adjacent the second end of said cylinder member for providing throttled fluid communication between the annular cavity and the second cylinder chamber when said piston rod is axially moved relative to said cylinder member, the annular cavity being partly filled with a liquid and partly filled with a gas, at least a part of said guiding member being housed inside an axial section of said cylindrical container adjacent the first end of said cylindrical container, and annular cavity bridging means adjacent the first end of said container for closing the annular cavity in the axial direction of said container and for radially centering said guiding member relative to said container, the improvement comprising,

at least the part of said guiding member housed inside said axial section of said cylindrical container has an outer diameter smaller than the inner diameter of said axial section of said container; said guiding member forming a contact surface which is directed substantially in the axial direction of said cylindrical container; and said bridging means includes a first annular supporting member axially fixed with respect to said guiding member and having a sealing face directed toward the second end of said cylinder member, a second annular supporting member axially fixed with respect to said guiding member and having a sealing face directed opposite from the second end of said cylinder member, and an annular cavity sealing member which is fitted between the outer circumferential surface of said guiding member and the inner circumferential surface of said container in the radial direction of said container and between the sealing faces of said first and second annular supporting members in the axial direction of said container, at least one of said first and said second annular supporting members comprising sheet material which forms a substantially radially projecting first flange for engaging said substantially axially directed contact surface of said guiding member, a substantially radially projecting second flange for supporting said annular sealing member, and an intermediate section extending generally in the axial direction of said cylinder member for connecting said first flange and said second flange to one another, the radial thickness of said intermediate section being smaller than one-half the difference between said outer diameter of said part of said guiding member housed inside said axial section of said cylindrical container and said inner diameter of said axial section of said container, and said second flange extending radially between said part of said guiding member and said axial section of said container.

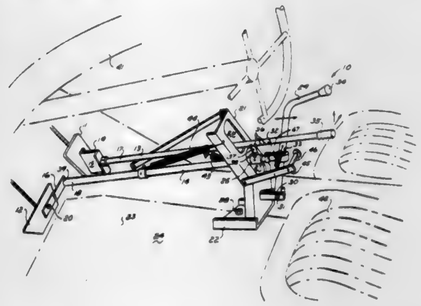
4,438,835
HAND OPERATED CONTROLS FOR MOTOR VEHICLE

William Dowden, deceased, late of Los Angeles, and by Naomi Muckelroy, executrix, 324 E. 81st St., Los Angeles, Calif. 90003

Filed Jun. 8, 1981, Ser. No. 271,804

Int. Cl.³ B60K 41/20; G05G 9/08

U.S. Cl. 192—3 M 4 Claims



1. In a motor vehicle having a conventional automatic gear transmission, a brake pedal, and a fuel flow control foot pedal disposed in a driver compartment, the hand operated vehicle controls comprising:

a first push-pull control rod disposed and separately clamped to a fuel flow control foot pedal at a first control rod first terminus,

a clamp rotatably secured to said first control rod first terminus and to said fuel flow foot pedal,

a second push-pull control rod disposed and separately clamped to a brake pedal at a second control rod first terminus,

a second clamp rotatably secured to said second control rod first terminus and to said brake pedal,

a bearing plate extending upright from the floor of said driver compartment and adaptively angularly positioned and secured at a base plate to said floor,

two guiding and sliding apertures disposed in said upright bearing plate, each one of said apertures holding and guiding a separate said first and second push-pull control rod slidable in said apertures,

a brake first lever pivotally secured at a first brake lever terminus to said bearing plate and pivotally secured at a mid-lever location to said second push-pull rod second terminus, the second terminus of said lever formed into a manual hand handle,

multiple spaced rod position notches on said first push-pull control rod disposed normal to the rod length on the rod underside adjacent to the driver compartment floor,

a lock slot stop disposed in said sliding aperture of said bearing plate, engagable with one of said multiple position notches of said first push-pull control rod,

a brake second lever pivotally secured at a first lever terminus to said bearing plate and having a second lever terminus handle curved to rotate forward and upwardly, lift said first push-pull control rod from said lock slot stop, when said brake first lever is cooperatively moved forward, and

at least two spring means, each anchored at a first spring means terminus of each means to said bearing plate and at a second terminus of each spring means anchored to said first push-pull rod and said second push-pull rod, providing tension means retracting said first and second push-pull rods to a non-operative position.

4,438,836
FREEWHEEL HUB ASSEMBLY

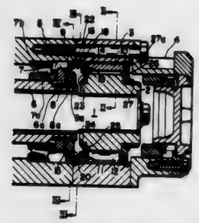
Tooru Kagata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 22, 1981, Ser. No. 256,575

Claims priority, application Japan, Apr. 24, 1980, 55-56625; Apr. 25, 1980, 55-54241

Int. Cl.³ F16D 41/07, 41/08

U.S. Cl. 192—36 7 Claims



1. A freewheel hub assembly comprising a wheel hub rotatably supported by bearing means on non-rotatable support means, retaining means mounted on said non-rotatable support means, non-rotatable surface means non-rotatably mounted on the radial periphery of said retaining means, freewheel means connecting said wheel hub with rotatable axle means for transmitting rotating torque from said axle means to said wheel hub but leaving the wheel hub freely rotatable when the axle means is not rotating, said freewheel means including inner disc means adapted to be connected with said axle means to rotate therewith, said inner disc means having a profiled outer periphery, outer housing means rotatable with said wheel hub and having a circular inner periphery opposed to said profiled outer periphery of the inner disc means, roller cage means disposed between the outer periphery of the inner disc means and the inner periphery of the outer housing means, a plurality of rollers carried by said roller cage means, retarder means carried by said cage means and having friction surface means adapted to be brought into friction engagement with said non-rotatable surface means, said retarder means being carried at one axial end of said cage means for axial movement through an engagement between at least one cut-out formed in said axial end of the cage means and at least one projection formed in said retarder means and complementary to said cut-out in the cage means.

4,438,837
CONVEYOR DRIVE GEAR BOX

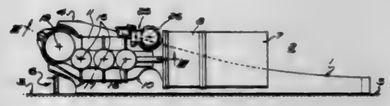
Brian R. Stoppani, Doncaster; Nigel J. Box, Skellow, and David D. Phillips, Worksop, all of England, assignors to Mining Supplies Limited, Balby, England

Filed May 7, 1980, Ser. No. 148,164

Claims priority, application United Kingdom, May 10, 1979, 7916281

Int. Cl.³ B65G 19/18

U.S. Cl. 198—735 5 Claims



1. A conveyor drive gear box, comprising:

(a) a gear box casing, said gear box casing extending in a longitudinal direction in generally symmetrical relationship to a predetermined plane and having an offset nose above or below the predetermined plane projecting from a terminal end thereof;

(b) an output shaft located in said casing nose; and

(c) a gear train located within said casing for transmitting power to said output shaft, said gear train including a plurality of shafts with gear wheels mounted thereon, each of the shafts in said casing being rotatable about substantially parallel axes with all of the shafts in the gear train being located within the predetermined plane offset from the axis of the output shaft whereby the output shaft is located above or below said predetermined plane.

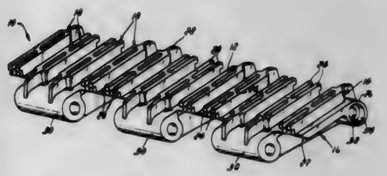
4,438,838
CONVEYOR CHAIN FOR USE WITH FINGERED TRANSFER PLATE

Wasyly G. Hodlewsky, Greendale, and Roger H. Schrooder, Hartland, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed May 1, 1981, Ser. No. 259,616

Int. Cl.³ B65G 17/08

U.S. Cl. 198—853 7 Claims



1. A chain link comprising:

a base portion, including at least two first hollow barrels, said first barrels being axially aligned and having a space between them, and at least one second hollow barrel, the axis of said second barrel being radially spaced from and parallel to the axis of said first barrels, such that said second barrel is positioned opposite the space between said first barrels; and

a raised portion integral with and supported by said base portion, said raised portion compriaing:

a plurality of coplanar fork-shaped members, each of said fork-shaped members comprising two prongs and a stem, wherein the prongs of each fork-shaped member are paral-

lel to each other and perpendicular to the axes of said barrels, said prongs substantially spanning the distance between said first and second barrels, and the width of said stem is less than the distance between said prongs, said stem being located over one of said barrels, and said fork-shaped members being arranged in a regularly-spaced row such that the fingers of a fingered transfer plate may be received between said fork-shaped members, wherein the upper surface of said stems is curved so as to prevent kick-up, and

wherein each of said fork-shaped members further comprises a cross-member extending between and attached to both of the prongs approximately at their midpoints.

4,438,839

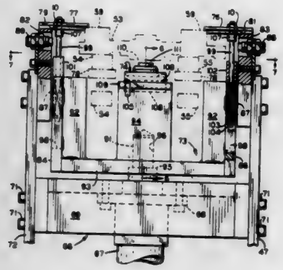
APPARATUS AND METHODS FOR ASSEMBLING END SHIELD ASSEMBLIES FOR DYNAMOELECTRIC MACHINES

James M. Tomson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 128,085, Mar. 7, 1980, Pat. No. 4,348,791. This application Jul. 16, 1982, Ser. No. 399,087

Int. Cl.³ B65G 47/00

U.S. Cl. 198—345 **5 Claims**



3. A method of lifting the end frame of a dynamoelectric machine from a conveyor at a work station; wherein the end frame includes a centrally disposed bearing supporting portion and laterally extending portions, at least some of which are susceptible of being supported on conveyor means; the method comprising: moving an end frame on the conveyor means into proximity with a lift mechanism and guiding the end frame in the vicinity of the lift mechanism with guide means; engaging the end frame in the vicinity of the bearing supporting portion thereof while holding the end frame in engagement with the conveyor means by biased guide means; elevating the end frame above the conveyor means with the lift mechanism while continuing to engage the end frame with the guide means and biasing the end frame against the lift mechanism with the guide means; performing a work operation on the end frame at the work station between the time that the lift mechanism elevates the end frame from the conveyor means and a subsequent time at which the lift mechanism has redeposited the end frame on the conveyor means.

4,438,840

APPARATUS FOR SELECTING CLOSURES

Franciscus A. Damen, Langeweg, Netherlands, assignor to Flesluittechniek B. V. Handelend Onder De Naam Calumatic, Dongen, Netherlands

Filed Feb. 19, 1982, Ser. No. 350,200

Claims priority, application Netherlands, Feb. 27, 1981, 8100966

Int. Cl.³ B65G 47/24

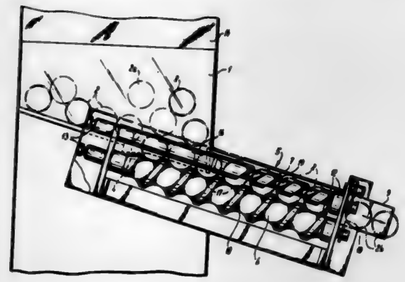
U.S. Cl. 198—398 **1 Claim**

1. The apparatus for selecting closures out of a supply of closures in which they are present in one plane with the back to one or the other side, which closures have a cylindrical raised edge comprising:

a hopper that in cross section is rectangular and is provided with side walls that are mutually spaced in such a manner that the closures fit therebetween, said hopper also having side edges and a lower wall, which lower wall slopes and is provided with an opening,

a first worm disposed below said opening and extending parallel to the lower wall of said hopper and having a profile with a curvature in which the raised edges of the closure fit, and a side wall of the hopper adjoining the opening of the lower wall having an opening,

a cylindrical shaft extending into said side wall opening and having an outer face tangential to the plane of this side wall, and extending parallel to said first worm and driven



by said first worm synchronously, which shaft extends with said first worm until outside the side wall of the hopper,

a second worm merging with said shaft and having the same pitch and with a width of thread that is substantially smaller than the inner diameter of the raised edge of the closures, the back of said second worm being opposite to the cavity of the profile of the first worm,

the first worm and the shaft are driven in the same rotational direction in such a manner that the first worm downwardly discharges the closures that are not correctly oriented and that do not find support on the second worm, the closures being discharged between the first and second worms, and whereby the correctly oriented closures are longitudinally advanced by said first worm and second worm to a use position.

4,438,841

OBSTRUCTION CLEARING APPARATUS FOR MINING CONVEYORS

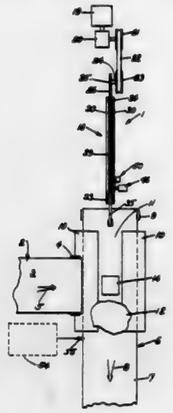
Gregory Johnson, P.O. Box 166, Virgie, Ky. 41572

Filed Jul. 6, 1981, Ser. No. 280,268

Int. Cl.³ B65G 43/00

U.S. Cl. 198—524 **24 Claims**

1. A conveyor system comprising a receiving conveyor, feed means positioned above said conveyor for feeding material onto said conveyor, means for restricting the fed material to the central portion of said conveyor, sensing means to sense a build up of material cause by an obstruction on said restriction



means, and means responsive to said sensing means for removing the obstruction from said restriction means.

4,438,842

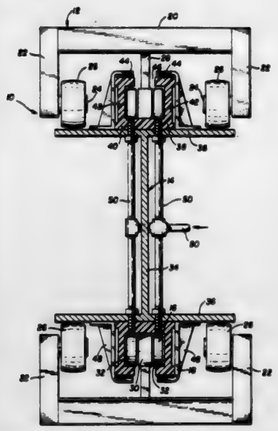
SLIDE CONVEYOR WITH SIDE STABILIZERS

Robert L. Alldredge, 130 Pearl St., Apt. 1108, Denver, Colo. 80203, and Robert J. Deltour, 16227 E. Arkansas Dr., Aurora, Colo. 80012

Continuation of Ser. No. 74,345, Sep. 11, 1979, abandoned. This application Jul. 26, 1982, Ser. No. 401,916

Int. Cl.³ B65G 15/60

U.S. Cl. 198—838 **12 Claims**



1. An improved conveyor of the type having a convoluted longitudinally extending belt adapted to follow a laterally and vertically curved path and a conveyor chain capable of both lateral and vertical bending with the path of the belt, wherein the improvement comprises:

(a) a longitudinally extending conveyor track assembly carrying a longitudinally oriented chain slide surface defining substantially the full length of the operational conveyor path and having a bottom and opposite side walls thereon, and carrying on each lateral side of the slide surface a stabilizer operating surface;

(b) a belt carriage connected to the conveyor belt and extending transversely thereto, having a central connecting means for joining the carriage to a single conveyor chain substantially at the transverse center of the belt and having a pair of laterally speced stabilizer means flanking said central connecting means and overlying the stabilizer operating surfaces when the chain overlies said slide surface bottom wall, the stabilizer means being oriented with respect to the central connecting means and chain such that at substantially any point along the length of the chain slide surface when the carriage is laterally evenly weighted the chain is in force bearing contact with said slide surface and the stabilizer means are without force bearing contact with said stabilizer operating surfaces; and

(c) wherein the chain is of the type formed from pin links and intermediate block links, the central connecting means being joined only to the block links, the block links being of the type having a transverse hole at each end thereof for receiving the pin of a pin link and the hole being sufficiently larger in diameter than the pin that the block link is capable of a predetermined degree of lateral tilting before the block link applies twisting torque to the pin, and wherein the stabilizer means are oriented with respect to the central connecting means such that a stabilizer means will contact an operating surface in force bearing relationship when the carriage is laterally unevenly wieghted prior to the time that a block link applies substantial twisting torque to a pin.

4,438,843

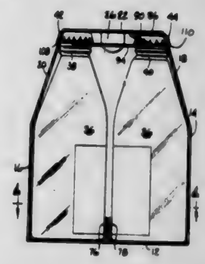
WRAP-AROUND STYLE BEVERAGE BOTTLE CARRIER WITH FULLY INTEGRATED PRODUCT SEPARATION MEANS

Earl J. Graser, Monroe, La., assignor to Manville Service Corp., Denver, Colo.

Filed Feb. 18, 1982, Ser. No. 349,893

Int. Cl.³ B65D 75/00

U.S. Cl. 206—148 **4 Claims**



1. A wrap-around bottle carrier for a plurality of bottles, comprising:

(a) a bottom panel;

(b) a pair of vertical first side panels hingedly attached to the bottom panel;

(c) a pair of sloped second side panels hingedly attached to the first side panels, each sloped second side panel having formed thereon a plurality of openings along the upper edge thereof for receiving a protruding portion of the caps of the bottles to be retained in the carrier;

(d) an outer top panel hingedly attached to one of the second side panels and having a handle means;

(e) a partial inner top panel hingedly attached to the other of the second side panels and fixedly attached to a portion of the underside of the outer top panel;

(f) an upper product separation means hingedly attached to the partial inner top panel, the upper product separation means comprising first and second separator panels hingedly attached to each other along a fold line, the first separator panel extending downwardly from and beneath the inner top panel and the second separator panel extending parallel to and spaced below the outer and inner top

panels, a series of generally oval shaped openings aligned with the fold line and located partially on the first separator panel and partially on the second separator panel, and a series of generally semi-circular cutouts along a free edge of the second separator panel, for positioning between the caps and the necks of the bottles to be contained in the carrier to separate the bottles both longitudinally and transversely in the carrier; and

(g) a lower product separation means comprising a plurality of tabs hingedly attached to the bottom panel and designed to be positioned vertically between the bottles to be contained in the carrier in order to provide both longitudinal and transverse bottle separation in the carrier.

4,438,844

TRAVELING GARMENT BAG

Jacob Kesselman, 53B Troy Dr., Springfield, N.J. 07081, and Howard Kesselman, 628 S. Highland, Merian Station, Pa. 19066

Filed Aug. 11, 1982, Ser. No. 407,087
Int. Cl.³ A45C *3/00, 13/26*
U.S. Cl. 206—287.1 **11 Claims**



1. A novel garment bag for hanging items therein, comprising:

a storage area formed by a front panel, a back panel and a side gusset;

a means for opening and closing said storage area positioned on said front panel;

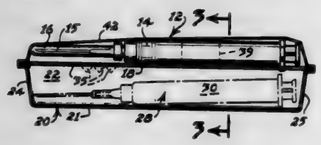
a handle assembly positionable at a terminus of said means for opening and closing said storage area on said side gusset of said storage area, said handle assembly comprised of a handle member, a hanging member, a closure member and a means for attaching said handle assembly to said gusset of said storage area.

4,438,845

CONTROL PACKAGE FOR ELONGATED ARTICLE

Charles M. Mochow, Rte. #1, Iron Hill, Burns, Tenn. 37209

Filed Jul. 18, 1983, Ser. No. 514,553
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—366 **9 Claims**



1. A package for an elongated product having a predetermined length and transverse dimension, comprising:

(a) an elongated container having closed side and bottom walls and an upper portion, defining a discard chamber having a length, width and depth greater than the corresponding dimensions of a discarded elongated product received within said discard chamber,

(b) an elongated platform member covering the upper portion of said discard chamber, said platform member being of a sufficient length and width for receiving an elongated product on top of said platform member and above said discard chamber, in a packaged position,

(c) an elongated opening formed through, and extending longitudinally of, said platform member,

(d) said elongated opening having opposed edge portions defining elastic closure members normally occupying a closed position in which the spacing between at least some of the opposed edge portions is less than the transverse dimension of the elongated product in said package position, and said closure members being adapted to support said elongated product in said packaged position,

(e) said closure members being yieldable to the downward pressure of an elongated discarded product having a length less than the length of said opening when said product is forced downward from said platform member into said discard chamber, and

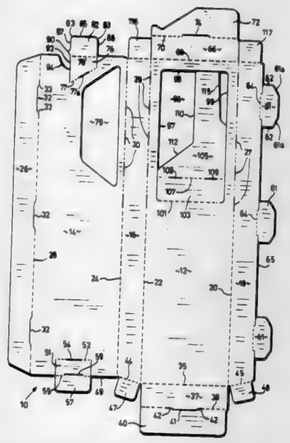
(f) means retaining an elongated product in said packaged position on said platform member.

4,438,846

CASSETTE BOX CONSTRUCTION

Andreas S. Stylianou, 5595 Finch East, Scarborough Ontario, Canada M1B 2T9

Filed Aug. 9, 1982, Ser. No. 406,364
Int. Cl.³ B65D *5/50, 25/10, 25/54, 55/02*
U.S. Cl. 206—387 **11 Claims**



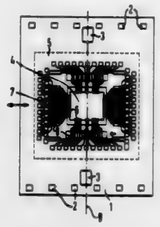
1. In a box construction which includes an entry tab adapted to enter a slot, the entry tab having side edges and a leading edge, the improvement which comprises, on one side edge of the entry tab, a protrusion which merges smoothly with said one side edge in both directions, said protrusion being of a size such as to make the width of the entry tab at the region of the protrusion greater than the width of the slot, thereby to require a distorting force to insert the entry tab into the slot, whereby removal of the entry tab from the slot is discouraged.

4,438,847

FILM CARRIER FOR AN ELECTRICAL CONDUCTIVE PATTERN

Otmar Fritz, Neukeferloh, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 2, 1983, Ser. No. 471,311
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207450
Int. Cl.³ B65D *85/30, 73/02;* H05K *5/00*
U.S. Cl. 206—330 **8 Claims**



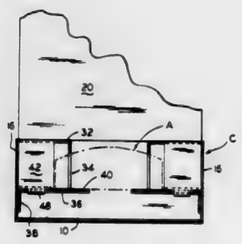
1. A carrier film for use in the manufacture of electronic micro-packs having contact arrays comprising a film having marginal edge perforations along each edge longitudinal side thereof, the marginal perforations being substantially of the dimension and spacing of transport perforations for narrow gauge film, at least two adjustment openings through the carrier film, the adjustment openings being positioned on opposite sides of the film normal to the transport direction of the film, the adjustment openings being positioned and dimensioned substantially according to position and size standards for cinema film transport perforations, at least one pair of said adjustment openings being provided for each contact array area of the carrier film.

4,438,848

CUSHIONING CARTON

James Montealegre, St. Paul, and James L. Rader, Burnsville, both of Minn., assignors to Container Corporation of America, Chicago, Ill.

Filed Aug. 20, 1982, Ser. No. 410,042
Int. Cl.³ B65D *81/02, 85/30*
U.S. Cl. 206—588 **5 Claims**



1. A carton, formed of a unitary blank of foldable paperboard, for holding and cushioning a packaged article, comprising:

(a) a bottom wall panel having pairs of opposed front and rear side wall panels and end wall panels foldably joined to side and end edges thereof and to each other and upstanding therefrom to form a box-like structure;

(b) a cover for said structure which includes a top wall panel;

(c) an integral, internal support structure for holding a fragile article in a predetermined position spaced from said front and rear side, end, bottom, and top wall panels; and

(d) said support structure comprising a pair of cooperating opposed tubular members spaced from each other at opposite ends of said carton and each including:

(i) an upper panel foldably joined at its outer edge to an upper edge of a related end wall panel and extending inwardly therefrom;

(ii) an inner side panel foldably joined at its upper edge to an inner edge of said upper panel and extending downwardly therefrom;

(iii) a lower panel foldably joined at its inner edge to a lower edge of said inner side panel and extending outwardly therefrom toward said related end wall panel in spaced relation to said bottom wall panel, said lower panel having an integral shelf panel formed by material of the related said inner side panel, said shelf panel projecting inwardly toward and adapted to cooperate with a related shelf panel of the other tubular member to support the packaged article above said bottom wall panel;

(iv) an anchor panel foldably joined to an outer edge of said lower panel and secured to an inside surface of said related end wall panel; and

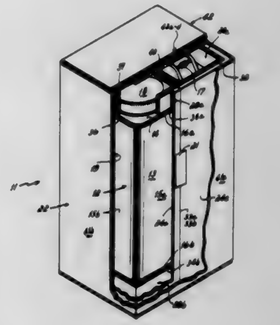
(v) a vertical strut formed from material within said upper panel thereof and extending downwardly therefrom at right angles to said lower panel and engaging said lower panel.

4,438,849

PACKAGE FOR PROTECTING A GENERALLY RECTANGULAR PARALLELPIPED ARTICLE

Orison W. Stone, Middlebury, Vt., assignor to Pack Image, Inc., Middlebury, Vt.

Filed Nov. 23, 1981, Ser. No. 324,035
Int. Cl.³ B65D *81/02*
U.S. Cl. 206—592 **10 Claims**



1. In combination with a generally rectangular metallic container having peripheral chimes on its upper and lower surfaces, a protective package comprising

an inner liner surrounding said container and having upper and lower edge portions extending beyond the chimes at the upper and lower ends of said container;

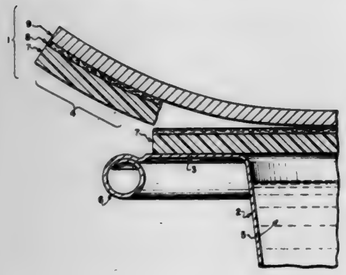
inner flanges secured to said upper and lower edge portions and engageable with the edges of said chimes at respective ends of said container;

a separate filler member forming a generally rectangular rib disposed within each chime of said container adapted to support the end walls of said container against internal pressure and to maintain said flanges engaged with the edges of said chimes;

and a rectangular outer carton surrounding said liner and said ribs at the end of said container wherein the inner

dimensions of said outer carton correspond to the exterior dimensions of said inner liner.

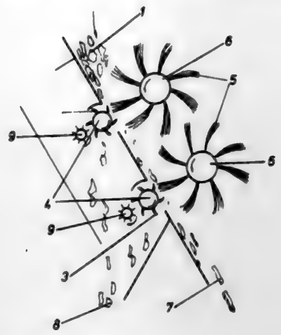
4,438,850
MEMBRANE CLOSURE STRUCTURE
Merle S. Kahn, Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Jul. 15, 1982, Ser. No. 398,672
Int. Cl.³ B65D 43/02, 51/20
U.S. Cl. 206—634 **10 Claims**



1. A membrane closure for a container, said membrane closure being heat sealable to said container and said membrane closure being capable of withstanding retort sterilization, said membrane closure comprising a plastics resin film layer, said plastics resin film layer providing protection and splatter resistance for contents of said container after removal of a barrier layer therefrom, an intermediate adhesive layer bonded on one side thereof to said plastics resin film layer and a barrier layer bonded on one side thereof to the other side of said adhesive layer, said plastics resin film layer having a heat seal strength to said container greater than the adhesive strength of said adhesive layer to said plastics resin film layer and said plastics resin film layer having a tear strength less than the adhesive strength of said adhesive layer to said plastics resin film layer, whereby upon peeling of said membrane closure from said container under hand pressure, failure occurs within said plastics resin film layer at an outer edge of a heat seal between said membrane closure and said container, thereby removing said barrier layer and providing a protective covering for the contents of said container.

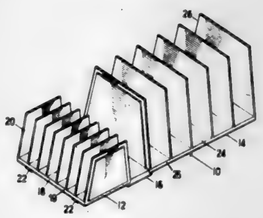
4,438,851
METHOD AND APPARATUS FOR THE SORTING OUT OF PLASTIC FOILS FROM A MIXTURE OF REFUSE
Peter Voelskow, Holzinshaus 15, 7869 Schönau/Schw., Fed. Rep. of Germany
Filed Oct. 19, 1981, Ser. No. 312,538
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039547
Int. Cl.³ B07C 5/34
U.S. Cl. 209—616 **5 Claims**

1. Method for sorting out plastic foil from a mixture of refuse which previously has been divested of at least its components of heavy materials, such as stone, glass and iron, in which the mixture of refuse is conducted past spines of a spiked roller with a direction of movement corresponding so that foil or textile wastes are seized and more rigid components, such as paper, are not seized, characterized in that the mixture of refuse is conveyed in a thin layer using moderate feeding power in opposite direction of movement past said pointed spines by means of a broom or brush so that only components with higher tensile strength remain hanging on the spines while components with lower tensile strength, such as paper, or components which are not seized, such as leather, cardboard,



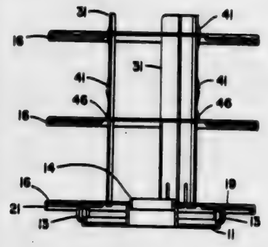
wood boards and thick-walled plastic refuse, are further conveyed by the broom or brush.

4,438,852
MODULAR DESK ORGANIZER AND ADAPTER THEREFOR
Donald L. Evans, Windsor, Wis., assignor to Don Evans, Inc., DeForest, Wis.
Filed Jun. 15, 1981, Ser. No. 273,915
Int. Cl.³ A47F 7/00
U.S. Cl. 211—11 **2 Claims**



1. A modular desk organizer comprising two organizing units (12, 14, 112, 114), each of which is one of a vertical sorting tray (12, 14, 114) and a horizontal sorting tray (112);
- a downwardly extending peripheral skirt (19, 25) formed around the periphery of each organizing unit;
- a pair of spaced, depending legs (22, 28, 122) provided along two opposite sides of each of the organizing units, the legs being positioned spaced inwardly of the peripheral skirt on the organizing unit and all of the legs on the organizing unit being equal in length;
- an adapter (12) joining the two organizing units together and including a planar, rectangular, horizontal surface (30) extending between the two organizing units;
- a pair of horizontal, planar support shelves (32) extending outwardly from the sides of the adapter (12) at a lever lower that the horizontal surface (3) and under the adjacent organizing units with the height of the support shelves (32) selected to correspond to the length of the legs on the organizing units so that the organizing units remain horizontal and rest firmly and evenly on all four of their legs (22, 28), each of the support shelves (32) having a pair of spaced apertures (34) formed therein to receive therethrough one pair of the legs of one of the organizing units, the apertures (34) being located in the support shelves so that the peripheral skirt on each of the organizing units is pressed against the horizontal surface of the adapter and rests on top of the support shelf (32) so that the adapter is securely attached to the organizing units.

4,438,853
ROTATING STORAGE RACK FOR BABY FOOD CONTAINERS
Jody L. Numbers, Scottsdale, Ariz., assignor to Monterey Laboratories, Inc., Las Vegas, Nev.
Filed Nov. 25, 1981, Ser. No. 325,005
Int. Cl.³ A47B 73/00
U.S. Cl. 211—77 **10 Claims**



1. A rotating rack for supporting a plurality of containers, comprising; a base member, a plurality of shelf units, a plurality of vertical support members, means for supporting one of said shelf units on said base member in freely rotating fashion, means for securing said vertical support members to said one shelf unit for rotation in common therewith, and means for securing the remainder of said plurality of shelf units to said vertical support members in vertically spaced relationship, each of said shelf units comprising a generally disc-like panel, and a plurality of container-engaging depressions formed in said panel and spaced thereabout to engage the lower portions of said containers, said depressions being joined by a plurality of interconnecting channel depressions interposed therebetween, said means for supporting one of said shelf units on said base in freely rotating fashion including a plurality of rollers extending from said base member and adapted to impinge on the lower surface of said one shelf unit, said container-engaging depressions and said interconnecting channel depressions forming on said lower surface a continuous closed curved flat of substantially planar, ring-like configuration, said rollers engaging said closed curved flat to support said one shelf unit in freely rotating fashion.

4,438,854
RAILWAY COUPLER
Donald L. Baughman, and William O. Elliott, both of Pittsburgh, Pa., assignors to McConway & Torley Corporation, Pittsburgh, Pa.
Filed Nov. 20, 1981, Ser. No. 323,273
Int. Cl.³ B61G 3/06
U.S. Cl. 213—127 **11 Claims**

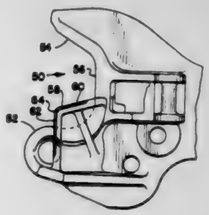
1. A railway coupler knuckle thrower including a knuckle-actuating leg for engaging a thrower pad on a knuckle while pivotally supported by a coupler head, said thrower further including a lock-actuating surface to engage with a lock for pivoting said thrower, said thrower further including a downwardly-extending trunnion for pivotal support of the thrower by a thrower hole in a bottom wall of said coupler head, the improvement comprising a thrower retainer engaged with an end portion of said trunnion and arranged outside said coupler head for preventing withdrawal of the trunnion from the thrower hole.

6. In a railway coupler housing including a bottom wall section extending forwardly beyond a horn line to a downwardly-inclined back lock chamber wall of a lock chamber, said back lock chamber wall including a floor section with a thrower hole extending therethrough, said coupler housing further including a guard arm on a guard arm side and a knuckle on an oppositely spaced knuckle side, a side wall extending forwardly from the horn line at the guard-arm side, and a side wall diverging outwardly from the horn line at the knuckle side and continuing vertically from a bottom wall section at a rearwardly-spaced relation from the thrower hole along a sufficient height to permit a generally vertical drop-



ping of a thrower within the interior of the coupler head for engaging a trunnion of the thrower in the thrower hole, the combination therewith of a thrower having an elongated trunnion for pivotal support by said thrower hole, and a thrower retainer arranged outside said lock chamber to engage with the end portion of the trunnion for preventing withdrawal of the trunnion from the thrower hole.

4,438,855
RAILWAY COUPLER SHELF CHAMFER
Russell G. Altherr, Munster, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Jan. 21, 1982, Ser. No. 341,307
Int. Cl.³ B61G 3/04, 7/00
U.S. Cl. 213—153 **1 Claim**



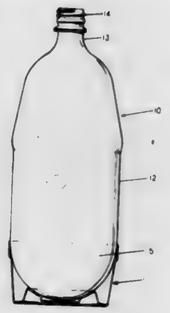
1. A railway car coupler comprising a head including a throat portion, a knuckle pivotally connected to the head at one side of the longitudinal vertical centerplane of the head,
- a generally planar, lower shelf extending from the head below the knuckle, said lower shelf extending from an intersection with the throat to a point substantially adjacent the pivot of the knuckle, said lower shelf having a front edge surface and a side edge surface, and a chamfer on the side edge surface and part of the front edge surface of the lower shelf, said chamfer extending downwardly and away from the guard arm side of the coupler head on the edge surface and downwardly and toward the coupler throat on the front edge surface.

4,438,856

COMBINATION BASE CUP AND BOTTLE

Long F. Chang, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 30, 1981, Ser. No. 336,000
Int. Cl.³ B65D *23/08*
U.S. Cl. 215—12 R **14 Claims**



1. A pressurized fluid package comprising:
an oriented plastic bottle having a main body that includes a generally cylindrical side wall,
a neck terminating in a neck finish on the upper end of the neck for receiving a closure, a hemispherical bottom wall in which the radius of the hemisphere forming the bottom wall is substantially equal to the radius of the main body,
a base of plastic material comprising a standing ring for engaging a support surface, said base adapted for injection molding with a reduced molding cycle time, said base being of substantially uniform wall thickness,
said standing ring being so constructed and arranged that it has a generally planar contacting surface for substantially full contact with the supporting surface for greater stability,
said base including a support ring spaced above said standing ring, the support ring being so constructed and arranged that it has substantially full contact with the bottom of the bottle,
said base having an annular supporting member extending from the inner periphery of the standing ring and inclined upwardly and inwardly to the outer periphery of the support ring, the base initially engaging a support surface along the outer edge of the standing ring, the standing ring flexing into substantially full contact with the support surface when the bottle is filled and pressurized,
said annular supporting member being so constructed and arranged that it is substantially straight in frusto-conical shape and the member remaining straight when the bottle is filled and pressurized to provide the package with improved stability and improved strength against top load stress.

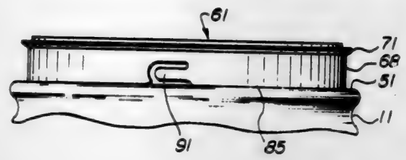
4,438,857

CAP AND NECK STRUCTURE FOR A WIDE-MOUTH JAR

Joseph J. Bullock, III, Atherton, Calif., assignor to Three Sisters Ranch Enterprises, San Carlos, Calif.

Filed Jul. 12, 1982, Ser. No. 397,550
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—256 **7 Claims**

1. A cap of the type having a central top disc, a thin-walled substantially cylindrical outer skirt of substantially uniform thickness depending from said disc, an upper internal circumferential bead on said outer skirt, a lower internal circumferential bead on said outer skirt below said upper bead, a circumferential score line in said outer skirt above said lower bead, the improvement which comprises a portion of said outer skirt below said score line being cut away to form a pull tab extending in a direction parallel to said score line, whereby upon pulling said tab circumferentially, said outer skirt severs along said score line, said lower bead being removed as said tab is pulled, said portion of said outer skirt cut away comprising a



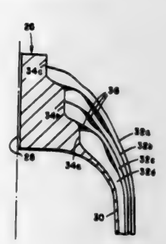
straight section parallel to and immediately below said score line, an arcuate section of about 180° extending down to the lower edge of the outer skirt, and the lower edge of said tab being cut away at a level above the lower edge of said outer skirt, the upper edge of said tab being spaced substantially below the lower edge of said skirt immediately thereabove.

4,438,858

FILAMENT WOUND VESSEL WITH IMPROVED POLAR FITTING

Richard L. Grover, Lincoln, Nebr., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 3, 1982, Ser. No. 345,327
Int. Cl.³ B65D *8/00*
U.S. Cl. 220—3 **10 Claims**



1. In a filament wound pressure vessel which has a generally spherical portion including a polar opening defined by a fitting, a composite comprising a plurality of layers of filaments forming part of the thickness of the vessel and wound about the fitting, said fitting comprising a polar boss having shoulder means defining a stepped configuration of decreasing diameters in a direction outwardly of the vessel whereby sequential layers of filaments lay against sequentially smaller diameters of said fitting, the wind angle of each layer being such as to lay adjacent to the largest unwound step diameter until the composite thickness reaches the extremity of the step where the wind angle of the wind pattern is changed such that the layers lay adjacent the next smaller unwound step diameter.

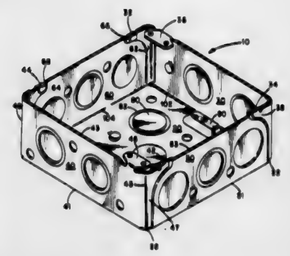
10. A method of fabricating at least a generally spherical portion of a filament wound pressure vessel wherein a plurality of layers of filaments form part of the thickness of the vessel, comprising:
providing a fitting with a polar opening and with shoulder means defining a stepped configuration of decreasing diameters in a direction outwardly of the vessel, and
winding said layers of filaments about said polar boss whereby sequenial layers of filaments lay against sequentially smaller diameters of said fitting, the wind angle of each layer being such as to lay adjacent to the largest unwound step diameter until the thickness reaches the extremity of the step, and changing the wind angle of the wind pattern such that the layers lay adjacent the next smaller unwound step diameter.

4,438,859

ELECTRICAL JUNCTION AND OUTLET BOX

Leszek Solek, St.-Lambert, Canada, assignor to Commander Electrical Materials, Inc., St. Jean, Canada

Continuation of Ser. No. 360,121, Mar. 19, 1982, abandoned. This application Jul. 29, 1983, Ser. No. 517,935
Int. Cl.³ H02G *3/08*
U.S. Cl. 220—3.2 **1 Claim**



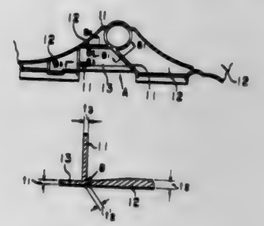
1. A unitary folded metal electrical wiring box comprising:
a generally flat base portion having a polygonally shaped periphery defined by a plurality of angularly disposed straight edges;
an equal plurality of sidewall portions;
said plurality of sidewall portions comprising first and second adjacent sidewall portions, each having a first and second edge;
each of said sidewall portions disposed generally perpendicularly to said base portion and integrally joined thereto along a portion of said first edge, said first edge being a fold line coincident with a straight edge of said base portion;
said first and second sidewall portions disposed at an angle with one another to form a corner region;
said first sidewall portion providing an indented portion adjacent to said corner region, said corner region being rounded;
said indented portion being indented inwardly and extending from said first edge to said second edge of said first sidewall portion;
said second sidewall portion providing an extended portion extending from said first edge to said second edge of said second sidewall portion and being folded around the corner at said corner region to lie generally parallel to said first sidewall portion and mate with said indented portion of said first sidewall portion creating a flat surface;
said extended portion of said second sidewall portion having means engaging said first sidewall portion;
said means for engaging comprising a tab disposed on said extended portion of said second sidewall portion, said tab being folded inwardly over said second edge of said first sidewall portion gripping said first sidewall portion;
further including tab engaging means in said second edge of said first sidewall portion for receiving said tab to prevent lateral movement of said tab along said second edge;
said tab engaging means comprising a notch in said second edge of said first sidewall portion at said indented portion.

4,438,860

MAGNETIC TAPE CASSETTE

Masatoshi Okamura, and Haruo Shiba, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,024
Claims priority, application Japan, Feb. 9, 1981, 56-16865[U]
Int. Cl.³ G11B *23/06*; B65H *7/48*; B65D *6/34*, *1/46*
U.S. Cl. 220—4 B **3 Claims**



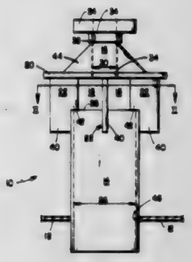
1. A resin molded magnetic tape cassette comprising:
(a) a bottom plate of an upper half casing;
(b) a projecting plate which extends outwardly from and is a continuation of said bottom plate; and
(c) an outer peripheral rib projecting vertically from the juncture between said bottom plate and said projecting plate, said outer peripheral rib being formed near the head receiving portion of said upper half casing,
wherein:
(d) said projecting plate has an at least substantially uniform thickness t_1;
(e) the central portion of said bottom plate has an at least substantially uniform thickness t_2 which is grester than the thickness t_1; and
(f) the portion of said bottom plate immediately inwardly of said outer peripheral rib tapers from the thickness t_2 to the thickness t_1 at the point where said outer peripheral rib projects from the juncture between said bottom plate and said projecting plate, whereby a white cloudy pattern in the resin at the juncture between said bottom plate and said projecting plate is substantially avoided.

4,438,861

VENTED INLET FOR TANKS LOADED FROM PRESSURIZED TANKERS

James W. McGuffey, Lansing, Mich., assignor to Process Equipment Corporation, Belding, Mich.

Filed Oct. 6, 1981, Ser. No. 308,988
Int. Cl.³ B65B *3/04*
U.S. Cl. 220—86 R **12 Claims**



7. A vented inlet for a tank loaded from a pressurized tanker, said inlet reducing the possibility of damage to the tank from a surge of compressed air by venting the compressed air to the surrounding air before the compressed air enters the tank, said inlet comprising:

a lower pipe having an upper end;

a plurality of generally planar gusset members extending longitudinally from said upper end of said lower pipe, each of said gusset members being oriented generally radially with respect to said lower pipe, each of said gusset members having a first portion mounted on said lower pipe and a second portion remote from said lower pipe; and

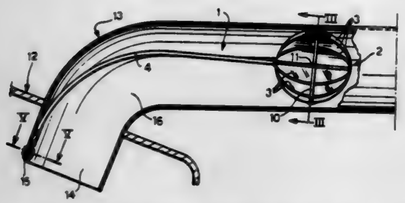
an upper pipe having a lower end operatively supported on said second portions of said gusset members and an upper end to receive a filler hose connection, said upper pipe being generally axially aligned with said first pipe, whereby liquid flowing out of said lower end of said upper pipe falls through said vent space and into said lower pipe and any compressed air flowing out of said lower end of said upper pipe will pass through said vent space and between said support members to the surrounding air.

4,438,862

DEVICE FOR PREVENTING THE UNAUTHORIZED REMOVAL OF FUEL FROM THE TANK OF A MOTOR VEHICLE

Eligio Bona, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Oct. 15, 1981, Ser. No. 311,804
Claims priority, application Italy, Oct. 20, 1980, 68604 A/80; May 15, 1981, 67652 A/81
Int. Cl.³ B65B *3/06*
U.S. Cl. 220—86 AT **11 Claims**



1. Anti-theft device for fitting within the filler pipe of a fuel tank of a motor vehicle to prevent the introduction into the filler pipe of a flexible hose for withdrawing fuel to the exterior of the tank, wherein the device comprises:

a body provided with a cylindrical core and a plurality of substantially planar closely spaced radial vanes extending outwardly from said core, said vanes lying in different planes which intersect each other along a common axis, and

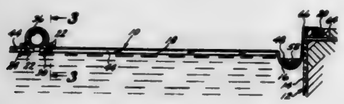
a rod having a first end connected to the said body and means at the opposite end of said rod for anchorage within the filler pipe.

4,438,863

GAS VENTING FLOATING COVER

John V. Wilson, Islington, Canada, and William B. Kays, La Habra, Calif., assignors to Globe Linings, Inc., Long Beach, Calif.

Filed Aug. 17, 1981, Ser. No. 293,701
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—227 **7 Claims**



1. A gas venting floating cover for a liquid container wherein said cover includes a sheet of flexible material for lying upon the contained liquid and for attachment to the container sides in fluid tight relationship, the sheet having excess material at its perimeter to form into a depending fold; flotation means attached to said cover and defining gas collection spaces for receiving gases evolving from said liquid; and gas collection means for receiving and carrying away gases collecting in said collection spaces, said cover being characterized in that:

said flotation means comprises generally parallel first and second strings of floats spaced apart to define a longitudinal passage, certain of said floats in each of said first and second strings defining transverse passages in communication with said longitudinal passage;

connecting means extending between and connecting together said first and second strings and preventing said first and second strings from moving apart; and,

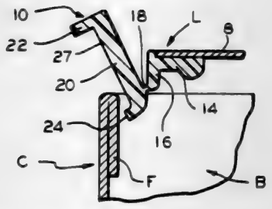
said gas collection means comprises a conduit resting upon and mounted between said first and second strings in coextensive, overlying relation to said longitudinal passage, said conduit being buoyed in substantially stable relation by said first and second strings, said gas collection means further comprising flexible connector means and piping coupled to said conduit for bridging the perimetrical fold in said sheet of said cover.

4,438,864

TAMPERPROOF CLOSURE

Charles R. Helms, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Jun. 9, 1982, Ser. No. 386,632
Int. Cl.³ B65D *41/32*
U.S. Cl. 220—265 **5 Claims**



1. In a tamperproof closure arrangement for a generally cylindrical container with a body wall having, adjacent the open end thereof, an internal flange presenting an axially inwardly facing abutment, an insertable lid comprising:

(a) a central portion, including a generally circular center panel;

(b) an annular outer rim;

(c) said rim being formed of molded plastic and including:

(i) a base portion joined to said center panel;

(ii) a skirt portion disposed radially outward of and pivotal with respect to said base portion, said skirt portion being molded at an oblique angle to said base portion;

(iii) a relatively thin, annular, integral hinge interconnecting said skirt portion and said base portion for accommodating pivotal movement of said skirt portion relative to said base portion to permit insertion of the lid into the container;

(d) said skirt portion including:

(i) a generally frusto-conical wall prior to insertion into the container;

(ii) an integral annular retaining flange extending radially outward from a lower portion of said frusto-conical wall for engagement with said container body wall, said lower portion being spaced axially downwardly from said hinge;

(iii) a second flange extending radially outward from an upper portion of said frusto-conical wall and defining with said retaining flange an annular channel for receiving said container body wall flange, said upper portion being spaced radially outwardly from said base portion and being spaced axially upwardly from said hinge;

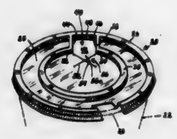
whereby when the lid is inserted into the open end of the container, the contact of the container with the lid causes said skirt portion to pivot with said retaining flange moving radially outwardly and with said second flange moving radially inwardly so that said retaining flange lockingly engages with the underside of said container body wall flange to prevent removal of the lid from the container without causing visible damage thereto.

4,438,865

ANTI-SPILL LID FOR A DRINKING CUP

Joseph J. Scattaregia, 112 Malvern Dr., Normal, Ill. 61761, assignor to Joseph J. Scattaregia, Normal, Ill.

Filed Apr. 11, 1983, Ser. No. 483,583
Int. Cl.³ B65D *41/26, 47/10*
U.S. Cl. 220—270 **4 Claims**



1. A lid for mounting on the rim of a drinking cup comprising:

a circular disk-like body having a circumferentially continuous, down-turned peripheral channel section engageable with the rim of the drinking cup;

the body having a stiffening arcuate rib spaced inwardly of the peripheral channel section, extending less than a full circle therewithin, and having circumferentially spaced opposite ends;

the body having a pair of circumferentially spaced stiffening transverse ribs extending transversely from the ends of the arcuate rib to the peripheral channel section;

the body having a tear-out drink tab between the transverse ribs, the sides of the tab being defined by weakened lines extending along the insides of the transverse ribs, the outer end of the tab being defined by a weakened line extending along the inside of the peripheral channel section between the transverse ribs, and the inner end of the tab comprising a manually liftable portion defined by intersecting weakened lines of a perforatable straw aperture;

whereby the intersecting weakened lines are common to the drink tab and the perforatable straw aperture; and

whereby further the lid is optionally usable in one mode in which a straw is inserted through the straw aperture while the straw engages the inner end portion of the tab, and in another mode in which the tab is removed to provide a larger, reinforced drink opening including part of the straw aperture.

4,438,866

PRESTRESSED DOME CLOSURE FLANGE

Albert A. Gegaregian, Sunnyvale; Dennis K. Kuruma, Milpitas, and Kenneth W. Lengel, Sunnyvale, all of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

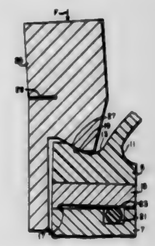
Filed Aug. 3, 1982, Ser. No. 404,672
Int. Cl.³ B65D *45/02, 45/30*
U.S. Cl. 220—319 **10 Claims**

1. A flange for prestressing the fibers adjacent inner and outer surfaces of a dome closure and adjacent said flange, comprising:

a ring made integral with said dome closure and extending radially outwardly thereof;

an annular rise disposed adjacent the outer periphery of said ring; and

said ring having a surface outboard of said dome closure for receiving a clamping force, which rotates said ring about



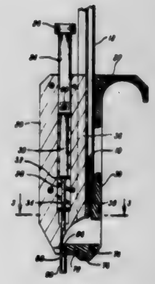
said annular rise producing compressive forces in said fibers adjacent the outer surface of said dome closure and adjacent said ring and tensile forces in said fibers adjacent the inner surface of said dome closure and adjacent said ring thereby reducing the forces in said fibers adjacent said ring when the dome closure is internally pressurized.

4,438,867

ELECTRICAL COMPONENT DISPENSING TOOL

David L. Mayne, Waterloo, and David Jahsman, Sherrill, both of N.Y., assignors to Industrial Design & Development Corp., Waterloo, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,269
Int. Cl.³ B65D *85/42*
U.S. Cl. 221—197 **24 Claims**



1. A manually operated tool for sequentially ejecting, in predetermined orientation, individual electrical components of predetermined dimensions which are gravity fed from a magazine holding a stacked plurality of such components, said tool comprising, in combination:

(a) a body portion having a first opening for receiving an open end of the magazine, and a second opening for ejection of components from the tool;

(b) means for positioning said magazine open end in a predetermined location with said body portion;

(c) an actuating member having a portion manually engagable by an operator for movement of said actuating member between first and second positions with respect to said body portion;

(d) movable means arranged adjacent said predetermined location for movement between a first position, effectively blocking exit of components from said magazine open end, and a second position, allowing exit of components from said magazine open end, in response to movement of said

actuating member between its first and second positions, respectively;

(e) a component transport member having an end portion movable between a first position adjacent said second opening and a second position immediately below said movable means to receive on said end portion a component fed by gravity from said magazine open end when said movable means is in its second position, in response to movement of said actuating member between its first and second positions, respectively; and

(f) an ejector portion effective to engage a component at said second opening and eject it from said tool upon movement of said actuating member to its second position.

4,438,868

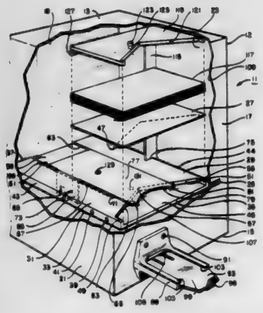
ENVELOPE VENDING MACHINE

Raymond M. Edwards, 1037 Keith Dr., Hurst, Tex. 76053

Filed Feb. 16, 1982, Ser. No. 348,851

Int. Cl.³ B65H *3/26*

U.S. Cl. 221—240 **7 Claims**



1. An envelope vending machine for dispensing single envelopes, comprising:

a housing having a closed top, a closed bottom, and sidewalls therebetween, and an envelope dispensing slot in one of said sidewalls;

a stationary slotted partition having upper and lower surfaces and front and rear edges supported in said housing generally parallel with said closed bottom, said partition having a recess formed in the front edge thereof in the shape of an envelope flap, said recess being adapted to receive the flap of an envelope to be dispensed, said slotted partition having a channel formed in the upper surface thereof which intersects said recess formed in said front edge;

a moveable envelope support member slidably received within said channel, said support member having a leading edge adapted to engage said envelope flap received in said partition recess and said support member having a depending flange received within said slot in said partition, said support member being reciprocable in said channel between an extended position for dispensing an envelope and a retracted position for receiving an envelope flap in said partition recess; and

a coin chute having a coin slide therein, said coin slide having a longitudinal extent received within said housing and engaging said support member depending flange whereby reciprocal movement of said coin slide in said coin chute reciprocates said envelope support member on said slotted partition to thereby dispense an envelope through said envelope dispensing slot.

4,438,869

DOSING DEVICE WITH BALL VALVE AND OPERATING METHOD

Peter Vierkötter, Leverkusen, and Paul-Otto Weltgen, Hilden, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

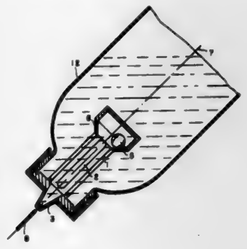
PCT No. PCT/EP81/00092, § 371 Date Feb. 8, 1982, § 102(e) Date Feb. 8, 1982, PCT Pub. No. WO82/00348, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 3, 1981, Ser. No. 348,065

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026067

Int. Cl.³ G01F *11/26*

U.S. Cl. 222—1 **5 Claims**



1. A dosing device with ball valve for attachment to a liquid container with a valve ball closing the discharge opening of the dosing device in a tilted position of the container comprising a ball valve, a valve ball guide tube having at least one lateral opening leading towards the container interior over its length, wherein the inside diameter of the valve ball guide tube is clearly greater than the ball diameter and the ball diameter is clearly greater than the width of the at least one lateral opening in the valve ball guide tube, said valve ball guide tube having a discharge opening, a sealing valve ball seat at its discharge end and a lower part opposite its discharge end expanding in funnel shape from the tube wall for a length corresponding to at least half the ball diameter to a cylinder having a solid circular bottom, the funnel shaped so that half the aperture angle formed between the tube centerline and the surface of the funnel-shaped area of the lower part is between about 45° and 60°, whereby the ball remains in the funnel-shaped area of the lower part without dropping into the tube in a tilted position of the container not exceeding half the aperture angle.

4,438,870

CAPTIVE DISPENSING CAP CONSTRUCTION

Morton Stull, Split Rock Rd., Boonton Township, Morris County, N.J. 07005

Filed May 20, 1981, Ser. No. 265,384

Int. Cl.³ B65D *47/20*

U.S. Cl. 222—48 **16 Claims**

16. A captive dispensing cap construction comprising, in combination:

(a) a tubular body part adapted to be carried by a container and having a discharge passage, said body part having a stopper extending upwardly from said passage,

(b) a screw cap part carried by said body part and surrounding said discharge passage,

(c) said screw cap part having a discharge opening into which the stopper extends when the screw cap part is screwed to its full-on position on the body part,

(d) said screw cap and body parts having two pairs of mutually engageable portions,

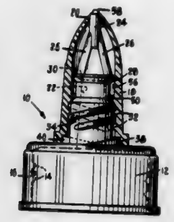
(e) one pair of mutually engageable portions comprising cooperable screw thread means respectively on said parts,

for moving the screw cap part axially on the body part as the screw cap part is turned,

(f) a lug disposed on the screw cap part,

(g) a stop shoulder on the body part, engageable with the lug of the screw cap part to halt turning of the latter as it is screwed to its full-on position,

(h) the screw thread means of the screw cap and body parts having sufficient backlash to enable the screw cap part to have an initial unscrewing turning movement from its fully screwed-on position without outward axial displacement, through an angle essentially in excess of 20° before tending to cause such displacement,



(i) said other pair of mutually engageable portions comprising a cam track on the body part and a follower portion on the screw cap part,

(j) said cam track having a first portion which lies in a plane substantially perpendicular to the axis of the screw cap part, and a second portion of spiral configuration, said cam track and follower portion becoming effective to move the screw cap part axially outwardly in response to the latter being turned through an angle essentially in excess of 20°, as the follower portion leaves the first portion of the cam track and engages the second portion thereof.

4,438,871

DISPENSER

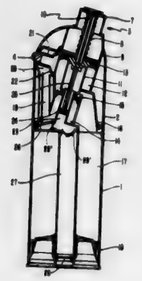
Josef Eckert, Mellrichstadt, Fed. Rep. of Germany, assignor to Wischerath and Schreiner KG, Mellrichstadt, Fed. Rep. of Germany

Filed May 26, 1982, Ser. No. 382,094

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121075

Int. Cl.³ B67D *5/52*

U.S. Cl. 222—137 **10 Claims**



1. A dispenser for pasty substances and/or liquids having a supply tank with an axially displaceable follower piston and an ejection device with an operating plunger, comprising a reciprocable metering piston in a pump chamber, the pump chamber being connected on one side to the supply tank and on the other to an outlet for the dispenser, a plug in said outlet biassed in the direction of closure, and further characterized in that a second pump chamber 23 of smaller diameter than the first pump chamber 14, and having a second metering piston 24 is mounted coaxially of the first pump chamber, the second metering piston being connected to the plunger 3 and the second pump chamber 23 being connected to a second supply tank 27 within the first supply tank 17, and ejection channel means for material from said second pump chamber.

4,438,872

DISPENSING APPARATUS

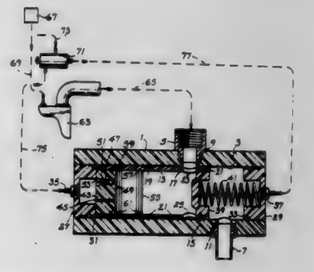
Dan W. Dooley, 6182 W. Dawn St., and Robert T. Bromps, 6239 SW. Edgewood, both of Lake Oswego, Oreg. 97034

Filed Jul. 20, 1981, Ser. No. 285,388

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.³ G01F *11/06*; B65D *88/54*

U.S. Cl. 222—217 **3 Claims**



1. A dispensing apparatus for pressurized viscous material and comprising,

an elongate body including end caps and defining a bore, said end caps each defining an air inlet port,

a sleeve slidably disposed within the bore and defining a chamber closed at its ends by a first plug and a second plug,

biasing means interposed between said second sleeve plug and an end cap of the elongate body to bias the sleeve to a loading position,

a piston within said sleeve,

a material inlet port on the body,

said sleeve defining an inlet port registerable with said inlet port on the body for the admission of pressurized material into said sleeve,

a material outlet port on said body,

said sleeve defining a discharge port registerable with said material outlet port on said body,

valve means in communication with a source of pressurized air and the air inlet port in said end caps and manually operable to alternately direct pressure via said end caps to the ends of said body defined bore, and

said first plug of the sleeve including a metering orifice for the admission of air in a metered manner to act on the piston within said sleeve to urge the sleeve to a discharge position and the piston along said sleeve to discharge sleeve contents.

4,438,873

GROUND DRIVEN TOP DRESSER UTILIZING SPECIAL CLUTCH MECHANISM

William C. Kaercher, Jr., Minneapolis, Minn., assignor to Turfco Manufacturing, Inc., Minneapolis, Minn.

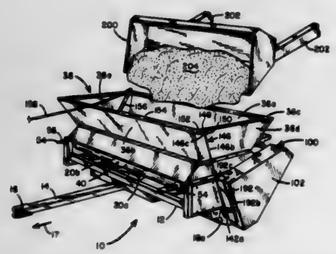
Filed Oct. 28, 1981, Ser. No. 315,756

Int. Cl.³ A01C *15/16*

U.S. Cl. 222—616 **18 Claims**

1. A top dresser adapted to be pulled across the ground comprising frame means, wheel means supporting said frame means, a hopper extending transversely of said frame means

having a lower opening through which material contained in said hopper is discharged, a conveyor belt mounted for movement beneath said hopper for receiving material discharged through said opening and moving such material rearwardly relative to the direction the dresser is pulled, a cylindrical brush mounted for rotation about an axis generally parallel to said hopper so as to engage and propel material from said belt into the ground, said wheel means including at least a first wheel subjacent the left side of said frame means and at least a second wheel subjacent the right side of said frame means, and



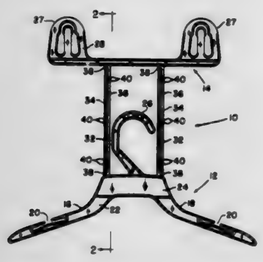
means connecting said conveyor belt and cylindrical brush to said wheel means so that said belt and brush are both ground driven by said wheel means, said means connecting said conveyor belt and said cylindrical brush to said wheel means including a remotely operated clutch comprising a multi-faced cam and a one-way clutch mechanism, said one-way clutch mechanism indexing said cam by one face each time it is actuated, and including a flexible actuator for actuating said one-way clutch mechanism, said overrunning clutches preventing said conveyor belt and said cylindrical brush from operating when the top dresser is pushed backwards.

4,438,874

UNITARY GARMENT HANGER SYSTEM

Jack M. Zuckerman, and Andrew M. Zuckerman, both of 110-11 Queens Blvd., Forest Hills, N.Y. 11375

Filed Aug. 21, 1981, Ser. No. 295,111
Int. Cl.³ A47J 51/084, 51/097
U.S. Cl. 223—88 17 Claims



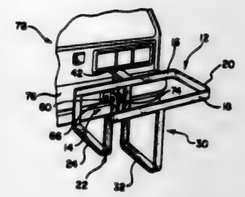
16. A unitary hanger system comprising
first and second hanger elements,
and means formed unitary with and joining together said first and second hanger elements in a substantially flat condition,
and said joining means permitting movements of said hanger elements relative to each other out of said substantially flat condition to a selected substantially side-by-side position and to positions on opposite sides of each other and including means permitting their movement to equal and different heights relative to the other.

4,438,875

WHEELCHAIR CARRIER

William E. Fritsch, 756 Buffalo Ctr., Carol Stream, Ill. 60187

Filed Apr. 22, 1983, Ser. No. 487,840
Int. Cl.³ B60R 9/06
U.S. Cl. 224—42.03 R 5 Claims



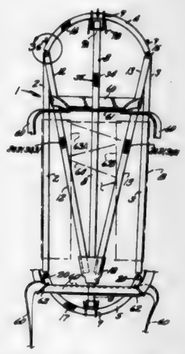
1. A wheelchair carrier comprising: a rigid basket framework, including a pair of sideframe members spaced apart to receive the width of a collapsed wheelchair therebetween, a crossbrace joining respective back ends of said sideframe members and defining a first outstop, a first pendant, U-shaped member joining respective front ends of said sideframe members to define both a second, opposed outstop and a roll-up step for use in raising a wheelchair into said framework, and a second pendant, U-shaped member attached intermediate the ends of said sideframe members and having substantially greater depth than said first U-frame member to define a wheelchair downstop; and coupling means for releasibly mounting said framework to an automotive bumper.

4,438,876

COMBINATION BACK PACK AND TENT FRAME

Russell G. Ward, 2050 SW. 71st Ave., Portland, Oreg. 97225

Filed Jun. 18, 1981, Ser. No. 275,062
Int. Cl.³ A45F 3/08
U.S. Cl. 224—154 13 Claims



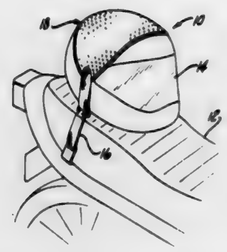
1. A back pack frame having separable members which may be reassembled into a tent frame, said pack frame comprising,
tubular back pack frame members,
means coupling the tubular members to another in a detachable manner,
tent frame components stowed in juxtaposition within certain of said tubular members, said tent frame components arranged in pairs with each pair axially extractible from one of said frame members and thereafter positionable to constitute a part of the tent framework, hinge means joining the tent frame components into said pairs.

4,438,877

HELMET RESTRAINING DEVICE

William S. Jackson, P.O. Box 7370, Ann Arbor, Mich. 48107

Filed Jun. 13, 1983, Ser. No. 503,525
Int. Cl.³ B62J 11/00
U.S. Cl. 224—275 9 Claims



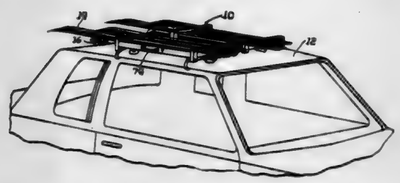
1. A restraining device for securing motorcycle helmets or the like to cycles comprising:
a seat strap;
a pair of anchoring means releasably secured at each end respectively of the seat strap for engaging the vehicle and securing the seat strap across a top surface of the vehicle;
means for adjusting the length of the seat strap to insure a tight fit;
a pair of connector rings slidably mounted upon the seat strap;
a restraining cup adapted to cover a substantial section of the top surface of the helmet; and
a pair of fastener means fixedly secured at opposite ends of the restraining cup, each fastener including means for releasably securing each end respectively of the restraining cup to each of the connector rings thereby securing the restraining cup to the seat strap and the helmet therebetween.

4,438,878

SKI RACK AND CARRIER

Terence M. Heslop, 331 Sussex La., Lake Forest, Ill. 60045

Filed Nov. 12, 1982, Ser. No. 441,157
Int. Cl.³ B60R 9/04
U.S. Cl. 224—319 21 Claims



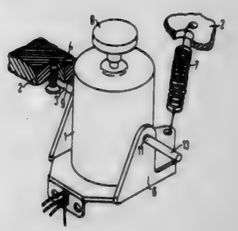
1. A carrier for skis and ski poles for mounting on a roof of an automobile or similar structure comprising:
rack means,
mounting means on the rack means to securely mount the rack means to the roof,
a pair of substantially identical carrier frames adapted for removable mounting adjacent to each other to the rack means,
each carrier frame having a rectangular central frame member and top and bottom pairs of pivotal arms, each pivotal arm connected at one end to the central frame member, the pivotal arms spaced apart from each other with the top pair and bottom pair of arms flanking the central frame member, each pair of pivotal arms adapted to receive and secure multiple sets of skis or ski poles at two points between the arms and the central frame member,
a locking end member for securing the top pivotal arms to the bottom pivotal arms in a locked relationship with each other and the central frame member thereby securing the skis and ski poles between the pivotal arms and the central frame member, and
locking means to secure the carrier frame to the rack means, whereby the carrier frame can be removed from the rack means and be easily transported while securely retaining the skis and ski poles.

4,438,879

SUSPENSION FOR THE PIVOTABLY SEATED TAPE DRIVE MOTOR IN A CASSETTE MAGNETIC TAPE DEVICE

Guttorm Rudi, Fjellhamar, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Mar. 30, 1982, Ser. No. 363,436
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112802
Int. Cl.³ B65H 17/20; F16H 13/10; G11B 15/28
U.S. Cl. 226—188 3 Claims



1. A suspension for pivotably seating a capstan motor in a cassette magnetic tape device, comprising: a bearing fork having two free ends and a bearing retaining aperture in each free end, the bearing fork being shaped so as to receive the capstan motor in a seating position against a base portion thereof between the free ends; a spring element connected between the bearing fork and a portion of a principal frame of the tape device so that a capstan wheel of the motor is pressed against a drive wheel of the cassette with a defined force; a bearing neck freely positioned in and through each of the bearing retaining apertures, each of the bearing necks having a bearing end facing and in contact with the motor; opposite ends of each of the bearing necks being received against respective inside corner edges of portions of the principal frame of the tape device; respective sink screws having heads at each of said opposite ends of the bearing necks and positioned at the respective corner edges such that an under surface of the head of each of the sink screws clamps the respective bearing neck at the inside corner edge; and the sink screws being arranged such that by turning one of the other sink screws the respective bearing neck abuts against an end stop at the corner edge while the other bearing neck is moved along the corner edge by the action of the sink screw when turning so as to tightly clamp the capstan motor between the two bearing ends of the bearing necks.

4,438,880

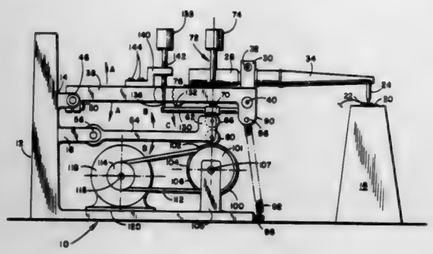
ULTRASONIC WIRE BOND TOUCHDOWN SENSOR

Michael C. Smith, and Hal W. Smith, Jr., both of Costa Mesa, Calif., assignors to Orthodyne Electronics Corporation, Costa Mesa, Calif.

Filed Aug. 17, 1981, Ser. No. 293,303
Int. Cl.³ B23K 1/06
U.S. Cl. 228—1 A 24 Claims

1. An ultrasonic bonding device comprising an ultrasonic bonder having a transducer that is connected to a tool for ultrasonic bonding or welding that is in turn driven by a gener-

ator at a specific voltage to provide ultrasonic vibrations for welding with a support for said tool that moves upwardly and downwardly driven by a motor wherein the improvement comprises:



means for detecting increased impedance when the tool makes contact with a work surface by virtue of the fact that the transducer is dampened; and,

means for stopping the motor when such impedance is increased which is tantamount to touchdown.

4,438,881

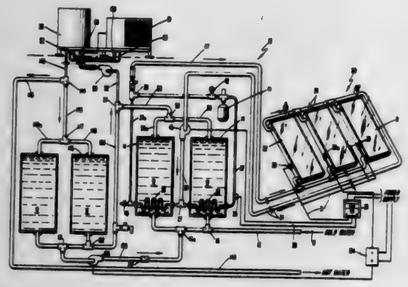
SOLAR ASSISTED HEAT PUMP HEATING SYSTEM

Joseph C. Pendergrass, 1283 Wessel Rd., Gainesville, Ga. 30501

Filed Jan. 27, 1981, Ser. No. 228,919

Int. Cl.³ G05D *23/00*; F25B *27/02*

U.S. Cl. 237—2 B **31 Claims**



30. In a heat pump including a compressor, an evaporator and heat exchanger means interconnected in a refrigerant flow relationship, and a fan driven by motor means for circulating ambient air over said evaporator to extract heat from the air; the improvement comprising refrigerant operating parameter sensing means for detecting a refrigerant operating parameter after said refrigerant fluid passes through said evaporator, and modulating means responsive to said refrigerant sensing means for controlling the flow of ambient air through said evaporator to maintain a predetermined parameter range of said refrigerant fluid, said modulating means being operative to restrict air flow during periods of high ambient temperature thereby enabling said heat pump to operate at higher than normal outdoor temperatures.

4,438,882

NOZZLE, PARTICULARLY FOR BURNERS

Herbert Frehner, Boppelsen, Switzerland, assignor to Satronic AG, Regensdorf, Switzerland

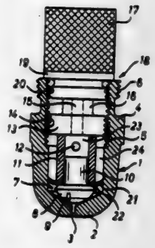
PCT No. PCT/CH81/00075, § 371 Date Mar. 8, 1982, § 102(e) Date Mar. 8, 1982, PCT Pub. No. WO82/00333, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 7, 1981, Ser. No. 359,651

Claims priority, application Switzerland, Jul. 10, 1980, 5305/80

Int. Cl.³ B05B *1/14*

U.S. Cl. 239—462 **1 Claim**



1. A nozzle for atomizing a fluid especially for use in burners, comprising: a hollow nozzle casing having an inflow side and an exit bore, a filter located at said inflow side and having orifices with a free passage, a whirl member in said casing and having a whirl member head at said exit bore, an annular channel between the inner wall of said casing and said whirl member, and an annular protective member formed by a sheet of sieve material in said annular channel at said whirl member head and having orifices with a free passage larger than the free passage of said filter orifices, said sheet being positioned between said whirl member head and an assembly sleeve, said annular channel being defined by the inner wall of said nozzle casing and the outer wall of the assembly sleeve, whereby impurities contained in the fluid are retained in the filter, and impurities originating from the nozzle are retained by said protective member.

4,438,883

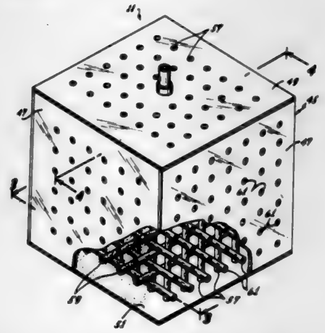
DYNAMIC PRESSURE ATTENUATOR AND METHOD

Stanley W. Zison, Irvine, and Robert N. Turer, Long Beach, both of Calif., assignors to Getty Synthetic Fuels, Inc., Signal Hill, Calif.

Filed Aug. 23, 1982, Ser. No. 410,333

Int. Cl.³ B05B *1/14*

U.S. Cl. 239—553.3 **24 Claims**



1. A dynamic pressure attenuator comprising:

a housing;

wall means defining a plurality of wind passages extending through the interior of said housing, said wind passages being open to allow the wind to pass therethrough;

said wall means having a plurality of ports extending through the wall means and providing communication between the interior of the housing and at least some of said wind passages whereby when the wind passes through said wind passages, the dynamic pressure in said housing outside of said wind passages is substantially less than the dynamic pressure within said wind passages through which the wind is passing; and

said housing having means for permitting a gas to be discharged into the interior of said housing whereby such gas can flow through at least some of said ports and associated wind passages to the atmosphere.

4,438,884

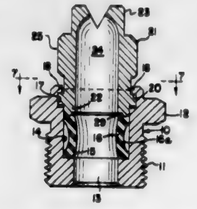
QUICK DISCONNECT NOZZLE

Edward J. O'Brien, Barrington; Gary A. Paulsen, Geneva, and Daniel J. Filicicchia, Aurora, all of Ill., assignors to Spraying Systems Company, Wheaton, Ill.

Filed Nov. 2, 1981, Ser. No. 317,199

Int. Cl.³ B05B *15/00*

U.S. Cl. 239—600 **7 Claims**



1. A quick disconnect coupling comprising first and second coupling members each having an internal fluid passageway, said coupling members being selectively engageable with each other and at least one of said members being adapted for connection to a source of fluid so as to permit fluid transfer through said passageways, one of said coupling members defining an internal chamber having an annular seat at one end thereof, an annular sealing member positioned in said chamber with one end thereof disposed against said annular seat, said sealing member having an inwardly bowed portion intermediate its ends defining an annular space between the outer periphery of said sealing member and said chamber, the other of said coupling members having an annular end that is engageable with the other end of said sealing member and positionable into said chamber for axially compressing the sealing member between said annular end and annular seat while forcing said bowed section radially inwardly to accommodate such compression, and means for retaining said coupling members in said sealing member compressing relation whereby said sealing member forms a fluid seal between said annular end and annular seat and upon an increase in fluid pressure within said coupling member passageways said bowed sealing member portion is forced radially outwardly causing an increase in axial sealing pressure between said sealing member and said annular seat and annular end.

4,438,885

MANURE LOADER

Mervin G. Martin, Myerstown, Pa., assignor to Hedlund Manufacturing Co., Inc., Boyceville, Wis.

Continuation of Ser. No. 119,523, Feb. 7, 1980, abandoned. This application May 3, 1982, Ser. No. 374,549

Int. Cl.³ B02C *19/00*

U.S. Cl. 241—101 B **16 Claims**

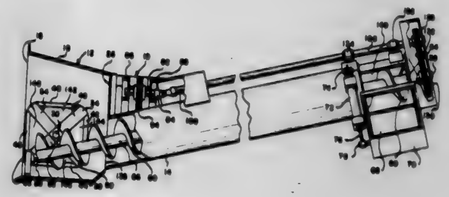
1. In a loading apparatus suitable for loading liquid and semi-liquid materials, the combination of:

scoop means to pick up a load of material;

the scoop means including enclosing sidewalls defining an open front to admit the material therethrough and a right side and a left side;

auger means rotatable within the scoop means to direct the material from one side toward the other,

the auger means comprising a shaft and blades rotatable with the shaft,



at least some of the blades being provided with openings suitable to chop the material as the blades are rotated;

loading means in material communication with the scoop means to pick up the directed material and to unload the material at a location remote from the scoop means, and

drive means to rotate the auger means and drive the loading means.

4,438,886

DOUBLE WIRE-WINDING MACHINE WITH AUTOMATIC TRANSFER

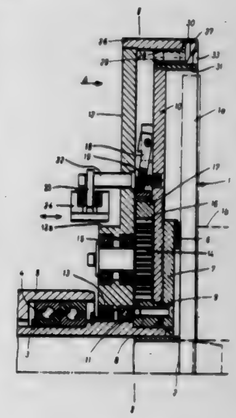
Marc Meisser, Meyrin; Kurt Weber, Echandens, and Louis Veyrassat, Rolle, all of Switzerland, assignors to Maillefer S.A., Ecublens, Switzerland

Filed Apr. 3, 1981, Ser. No. 250,917

Claims priority, application Switzerland, Apr. 11, 1980, 2813/80; Dec. 10, 1980, 9110/80

Int. Cl.³ B65H *54/02*

U.S. Cl. 242—25 A **19 Claims**



1. A double winding machine with automatic transfer for continuously winding metal wire on reels which each have a barrel, comprising:

two reel supports with parallel drive shafts, each equipped with a snagging mechanism for snagging a leading end of wire to be wound;

each snagging mechanism comprising a hook-bearing disk with a hook, an uncoiling member, and bearing means for

supporting said hook-bearing disk and said uncoiling member coaxially with respect to the reel and for permitting a relative displacement from an initial position to a displaced position between said disk and said uncoiling member;

disengageable coupling means for rotationally coupling said disk, said uncoiling member and said reel;

means for translationally disengaging said coupling means;

means for braking said hook-bearing disk to produce a lag of said disk with respect to said reel in order to lengthen said leading end; and

means for performing said relative displacement at the time of said lag, said lengthened leading end being thus retained through said hook and said uncoiling member.

4,438,887

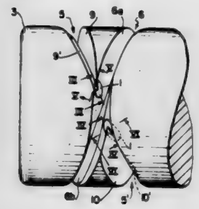
GROOVED TRAVERSE DRUM FOR USE IN DRUM WINDER

Masao Mino, and Takeshi Ohno, both of Yao, Japan, assignors to Kabushiki Kaisha Mino Seisakusho, Osaka, Japan

Filed Apr. 26, 1982, Ser. No. 372,004

Int. Cl.³ B65H *54/48*

U.S. Cl. 242—43.2 **11 Claims**



1. A grooved traverse drum having a spiral yarn guide groove in the peripheral surface thereof, the yarn guide groove including at least one crossover point where a shallow groove portion is interrupted by a deep groove portion, said deep groove portion having sidewalls, wherein a cylindrical abrasion-resistant means is inserted into said drum in the interrupted shallow groove portion, said cylindrical abrasion-resistant means having a notch forms substantially the whole of the shallow groove portion at the crossover point such that yarn guided by said shallow groove portion only contacts the notch in said abrasion-resistant means, wherein said notch in the abrasion-resistant means has a V-shaped cross-section defining two legs of a V, taking the place of the interrupted shallow groove portion at the crossover point, and one of the legs of the V of the notch that serves as a guide for the yarn entering the shallow groove portion, is raised on the drum constituting material, while the other leg of the V that serves as a guide for the yarn passing out of the shallow groove portion, is indented beneath the drum constituting material.

4,438,888

SELF-ALIGNING WEB REEL

Hugh D. Seelinger, Tucson, Ariz., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 10, 1982, Ser. No. 356,879

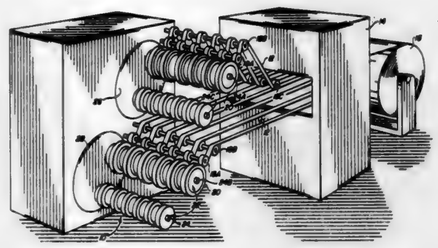
Int. Cl.³ B65H *19/04*

U.S. Cl. 242—56.9 **22 Claims**

1. Self-aligning apparatus driven by a rotatable shaft for winding a web of material comprising in combination:

spline means affixed to the rotatable shaft including at least one set of serrations spaced around the periphery of said spline means with a shaped cutout in at least one side of each of said serrations with each set spaced at the same axial distance along the shaft;

a reel including an outer circular hub for accommodating the web of material and an inner circular hub interconnected to said outer hub, said inner hub including elongated protrusions spaced around its inner diameter of a width to slide between two of the spaced serrations of said spline means, said protrusions shaped to seat into the associated shaped cutout of said serrations for aligning



said reel with the shaft, the web of material and for rotatable driving said reel with said spline means and shaft; and

tension means for adjusting the tension of the web of material as the web is wound on said reel.

4,438,889

SYSTEM FOR DECELERATING THE DRIVE OF A WEB-WINDING APPARATUS

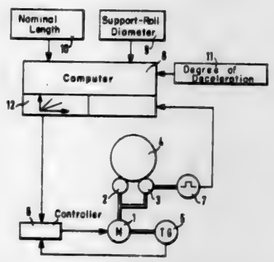
Herbert Schonmeier, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,214

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101360

Int. Cl.³ B65H *17/12, 25/32*

U.S. Cl. 242—67.1 R **3 Claims**



1. In a process for winding a web to obtain a desired nominal length, wherein the drive of the web winding apparatus is decelerated to a standstill, the improvement wherein the step of decelerating comprises: selecting a desired nominal length of the web, determining the instantaneous web speed; and decelerating the drive, at a time determined as a function of the selected nominal length and the instantaneous web speed, with a preset degree of deceleration obtained from two differenct curves of deceleration, one of which would result in the nominal length of the web being undershot, while the other would result in its being overshot if either curve alone were effective upon initiation of deceleration, continuously determining the instantaneous degree of deceleration and switching between said two curves whenever the instantaneous degree of deceleration indicates the nominal length would be undershot or overshot.

4,438,890

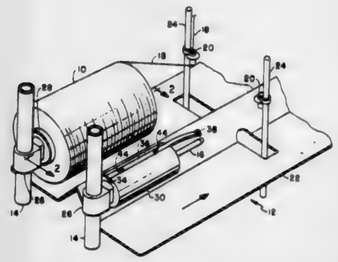
BOBBIN LOCK

William J. Schroder, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jul. 19, 1982, Ser. No. 399,462

Int. Cl.³ B65H *49/02*; D03J *5/08*

U.S. Cl. 242—130 **3 Claims**



3. A creel for a yarn consuming machine comprising a plurality of yarn package support members, each yarn support member having a creel pin projecting outwardly therefrom, an elongated, substantially rigid adaptor member mounted on each of said creel pins, means to secure said adaptor members to said creel pins, a yarn package telescoped over said adaptors having a core extending therebeyond, a groove in the outer surface of each of said adaptors, a second means mounted in each of said grooves between said core and said adaptor member engaging the end of said core to prevent said core from sliding off said adaptor, said second means including an elongated spring steel member mounted to the adaptor member, said spring steel member having an upstanding flange on one end engaging the end of said core and a cap member connected onto the end of said core with a portion thereof engaging and maintaining said upstanding flange into engagement with said core.

4,438,891

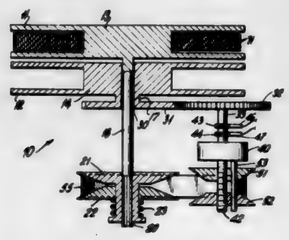
TAPE TRANSPORT SYSTEM

Selmer L. Wlig, Plainfield, N.J., assignor to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed May 26, 1981, Ser. No. 266,658

Int. Cl.³ B65H *59/04*; G11B *15/32, 15/28*

U.S. Cl. 242—190 **5 Claims**



1. A tension control system for a tape transport arrangement of the type wherein a first reel having tape wound thereon supplies tape which is drawn therefrom by a tape drive mechanism, the drawn tape being collected on a second reel, the first and second reels being mechanically coupled to first and second shafts, respectively, said second shaft having first and second independently rotatable portions, the first portion of said second shaft being coupled to said second reel, the tension control system comprising:

tension sensing means for detecting a tensile force in the tape as it is collected onto the second reel and providing a tape tension signal which corresponds to said tensile force;

first and second variable ratio coupling members for rotatively coupling the first and second shafts to one another, whereby rotation of the first shaft is coupled to the second shaft to rotate the second shaft at a rate of rotation corresponding to the selected ratio with respect to a rate of rotation of the first shaft, said selected ratio of said rate of rotation of the first and second shafts being selectable within a predetermined range of ratios; said variable ratio coupling members comprising flexible drive transmission means for mechanically interconnecting said first and second coupling members, said first and second variable coupling members each comprising first and second pulley halves, each said pulley half having a central axis of rotation and a respective friction surface for engaging said flexible drive transmission means, said first and second pulley halves being coaxially movably arranged with respect to one another along said central axis of rotation; and

servo motor means responsive to said tape tension signal from said tension sensing means, said servo motor means being coupled between said first and second portions of said second shaft to provide relative rotation between said first and second portions of said second shaft, said second portion of said second shaft being coupled to said second variable coupling member for producing said relative coaxial displacement between said first and second pulley halves, thereby to select said selected ratio of said rate of rotation of the first and second shafts.

4,438,892

TAPE CASSETTE, ESPECIALLY A MAGNETIC TAPE CASSETTE

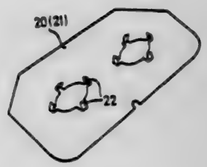
Horst Fitterer, Mannheim; Hubert Koob, Willstaett, and Bert Nestler, Seelbach, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 22, 1982, Ser. No. 341,885

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 8101456[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—199 **9 Claims**



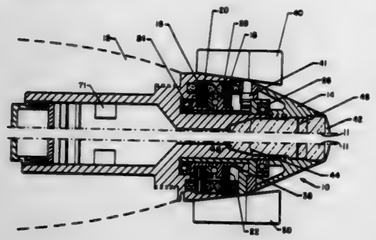
2. A tape cassette, especially a magnetic tape cassette, comprising a housing, at least one hub rotatably mounted on a collar on the housing, a roll of tape wound on the said one hub having at least one central recess, at least one aperture in the housing which allows a drive spindle to enter the cassette to drivably engage the said one hub and which is surrounded by the said collar, and at least one liner located between the said one hub and the housing and provided with a hole therein to allow the drive spindle to pass through the said one liner to engage the said one hub, wherein adjacent to the hole in the said one liner, the said one liner is provided with at least one raised bearing portion which projects into the said central recess in the said one hub and thereby resiliently supports the said one hub radially and axially, preventing it from making contact with the said collar.

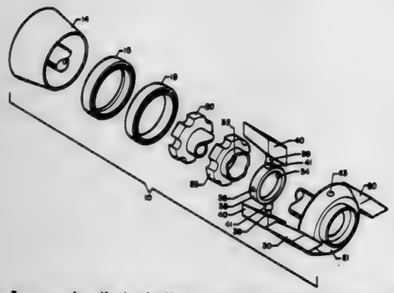
4,438,893

PRIME POWER SOURCE AND CONTROL FOR A GUIDED PROJECTILE

Timothy B. Sands, Acton, Mass., and Ronald R. Sinclair, Moultonboro, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 10, 1973, Ser. No. 392,715
Int. Cl.³ F42B *15/02*
U.S. Cl. 244—3.21 **11 Claims**





4. In a projectile including a main housing capable of being spun at high speeds and a canard frame capable of being despun and having deflectable canards thereon, wherein the improvement comprises:

a set of windings coupled to said main housing;

a rotor coupled to said deflectable canards; and

means for applying electrical signals to said windings to occasion deflection of said canards.

4,438,894

HOLDER

Koichi Yaotani, Akikawa; Minoru Yoshida, Hachiohji, and Seiichi Sato, Yokohama, all of Japan, assignors to Nissan Motor Corp. and Kato Hatsujyo Kaisha Ltd., both of Kanagawa, Japan

Filed Aug. 10, 1981, Ser. No. 291,290
Claims priority, application Japan, May 15, 1980, 55-115779
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—73 **4 Claims**



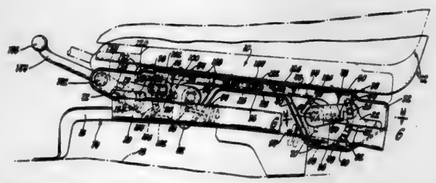
1. A fitting to be used in combination with a holder comprising a base plate having a hooking projection on the inner side of one end thereof, a bent piece bent inwardly of said base plate and integrally connected to the other end of said base plate, and a pressing piece folded into between said bent piece and said base plate and integrally connected to the end of said bent piece, a holding space being formed between said base plate and said pressing piece, said fitting comprising a mounting portion having an upwardly warped end portion bent into an inverted U-shape, a flat plate portion extending downwardly from the mounting portion and an abutting portion outwardly bent from the lower end of the flat plate portion.

4,438,895

VERTICAL SEAT ADJUSTER FOR VEHICLE SEATS

Richard W. A. Rees, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1982, Ser. No. 383,471
Int. Cl.³ F16M *11/24*
U.S. Cl. 248—396 **5 Claims**



1. A seat support mechanism for mounting a vehicle seat on a vehicle for vertical adjustment thereof relative to the vehicle comprising, in combination,

an elongate seat support for supporting the seat and including a generally vertically directed slot in a first portion thereof,

spaced first and second pivot means mounted on the vehicle, the first pivot means extending through the slot of the seat support,

a lever having one end thereof rotatably secured to the first portion of the seat support and the other end thereof rotatably secured to the first pivot means,

means pivotally mounting a second portion of the seat support to the second pivot means,

rotation of the lever about the first pivot means causing the first portion of the seat support and lever to rotate relative to each other to vertically adjust the first portion of the seat support as the slot of the seat support moves vertically relative to the first pivot means and the second portion of the seat support rotates relative to the second pivot means,

a lock plate including a series of detent means, each detent means representing a vertical position of the seat support relative to the first pivot means and being selectively engageable with the first pivot means to lock the seat support in such position,

cooperating means on the lock plate and the seat support mounting the lock plate on the seat support for movement therewith and sliding movement relative thereto between

(1) a locked position wherein one detent means of the lock plate engages the first pivot means to lock the seat support in the vertical position represented by the one detent means by blocking relative rotational movement between the seat support and lever, and

(2) a released position wherein the one detent means of the lock plate is disengaged from the first pivot means to permit relative rotational movement between the seat support and lever as the seat support moves to a different vertical position relative to the first pivot means, return of the lock plate to locked position engaging another detent means of the lock plate with the first pivot means to lock the seat support in the vertical position represented by such detent means,

means biasing the lock plate to locked position, and,

release means for moving the lock plate to released position.

4,438,896

SEGMENTED COLLAR TRIPOD FOR HOLDING SURVEYOR'S STAKE

George W. Hall, 3200 Viking Dr., Sioux City, Iowa 51104

Filed Sep. 28, 1981, Ser. No. 305,916
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—523 **1 Claim**



1. A tripod for holding a surveyor's stake comprising:

collar means comprising at least three collar segments, each of said collar segments comprising an arcuate portion having opposite ends, each of said opposite ends having a hinge flange extending radially outwardly with respect to the arc of curvature of said arcuate portion, said flanges each having a bolt receiving hole therein;

at least three legs, each having an upper end and a lower end;

said collar segments being positioned in end to end relation to form a continuous circle with said hinge flanges or the adjacent ends of said segments being paired in facing spaced apart relation with said bolt receiving holes of said paired spaced apart flanges being in registered alignment;

said upper ends of said legs having a surface for mating engagement with said hinge flanges and each leg being interposed between one of said spaced apart pairs of flanges,

said upper ends of said legs each having a bolt receiving hole in registered alignment with said bolt receiving holes of said one spaced apart pair of flanges;

a bolt extending through each of said registered pairs of bolt receiving holes in said pairs of flanges and also extending through said bolt receiving hole in said upper end of the one of said legs therebetween;

said bolt having a head at one end thereof and nut means threadably engaging the opposite end thereof to permit threadable adjustment of the tightness with which said head and nut press said pair of flanges and said upper end of said leg together whereby said legs can be selectively pivoted into a desired position and locked into that position;

said collar segments and said legs when fully assembled forming a stake receiving opening located centrally with respect to the circle formed by said segments,

holding means connected to said collar means for grasping and holding a vertically disposed surveyor's stake extending through said stake receiving opening to a point adjacent the ground surface,

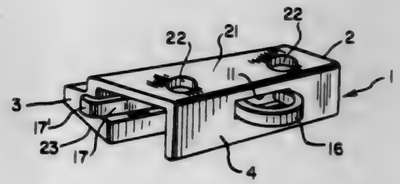
at least three thumb screws each threadably extending through one of said collar segments in a radial direction with respect to said stake receiving opening; each of said thumb screws having an inner radial end adapted to move towards and retentively engage a surveyor's stake within said stake receiving opening in response to rotation of said thumb screw so as to hold said stake in a vertical position, each of said legs being pivotable independent of one another in a substantially unlimited arc about the axis of said bolt extending through said bolt receiving hole in said leg.

4,438,897

HEADRAIL INSTALLATION BRACKET

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International N.V., Rool Catootje, Netherlands Antilles

Filed Aug. 2, 1982, Ser. No. 404,294
Int. Cl.³ F16M *13/00*; A47H *1/14*
U.S. Cl. 248—544 **6 Claims**



1. A venetian blind headrail installation bracket for mounting of a U-shaped venetian blind headrail to a frame member, characterized in having a body including first and second body portions extending parallel to the longitudinal axis of the U-shaped headrail adapted to be mounted thereby, mounting means on said body adapted to mount said bracket to a frame member, an outwardly facing supporting member on said first body portion adapted to support a first edge of a U-shaped headrail, abutment means on said body, a slot-like opening in said second body portion, and a resilient spring member having an extended portion being supported on one side by said abutment means and on an opposite side by said extended portion extending through said opening outwardly of said body with said extended portion being adapted to support a second edge of said U-shaped headrail and said extended portion being movable towards said abutment means against the force of said spring means to allow disengagement of the first edge of a U-shaped headrail from said outwardly facing supporting member.

4,438,898

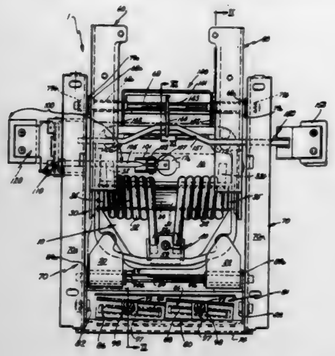
CHAIN CONTROL LOCKING ASSEMBLY

Jack R. Knoblauch, Byron Center; Duane M. Boukema, Grand Rapids, and Kenneth W. Hoseski, Grandville, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 1, 1980, Ser. No. 145,622
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—561 **30 Claims**

1. In a chair control having a stationary member for mounting to a base, a tiltable member pivotally mounted with respect to said stationary member, bias means operably connected between said stationary and tiltable members for controlling the rate of tilt of said tiltable member with respect to said stationary member and for biasing said tiltable member to a normal position, and means for locking said tiltable member with respect to said stationary member, the improvement in said chair control comprising: said locking means including a rigid member movably mounted on said chair control; a pivotally mounted rod having a deviation therein defining a lever, said lever engaging said rigid member and pivoting said rigid member when said rod is twisted, said rigid member being of such a configuration and having such an orientation in its mounting to said chair control that when in said locking position, it extends from a position of operable engagement with said tilting member to a position of operable engagement with

said stationary member, thereby preventing relative movement of the two, and such that when in said unlocking position, it is



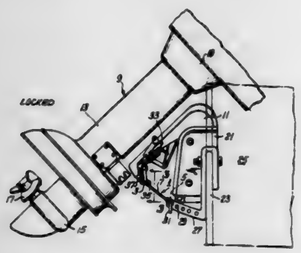
out of operable engagement with one of said tiltable and stationary members whereby said tiltable member can tilt with respect to said stationary member.

4,438,899

TRANSPORT BRACKET FOR OUTBOARD MOTORS

Dale J. Perkins, 704 W. Grand, and Leon L. Lincicum, 222 S. 2nd, both of Union, Oreg. 97883

Filed Jan. 6, 1982, Ser. No. 337,399
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—642 **3 Claims**



1. In an outboard motor pivotally connected to a clamp for securing the outboard motor to a transom of a boat, wherein the clamp includes a locking pin engageable through aligned apertures provided in a pair of spaced lock arms and the motor includes at least one thrust surface for engaging the locking pin, the improvement comprising means for maintaining the motor in a desired position of outward tilt with respect to the locking pin including:

(a) an elongate thrust member for engaging the thrust surface;

(b) a hollow cylindrical pivot member disposable between the spaced lock arms and of sufficient internal diameter for receiving the locking pin therethrough and permitting free pivotal movement of the pivot member about the locking pin;

(c) a bridging member including opposed ends secured to substantially the midpoints of the thrust and pivot members for defining a generally H-shaped configuration;

(d) the bridging member being of a substantially flat web-shaped configuration and of sufficient length for disposing the motor at an angle with respect to the vertical when the thrust member is engaged with the thrust surface; and

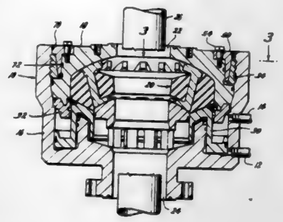
(e) the pivot and thrust members being of substantially the same length.

4,438,900

LOCKING MECHANISM FOR ANNULAR BLOWOUT PREVENTER

Gary R. Schaeper, and Richard A. Olson, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 5, 1980, Ser. No. 156,722
Int. Cl.³ E21B *33/06*; F16L *21/08*
U.S. Cl. 251—1 B **12 Claims**



1. In an annular blowout preventer adapted for use on an oil or gas well rig, and having a lower housing, an upper housing, a resilient sealing means therein, and a piston for actuating said sealing means, the improvement in locking means for securing the upper housing to the lower housing, comprising:

a split circular latch ring having a plurality of teeth on its outer surface, said teeth angled outwardly and downwardly, said ring having a tapered surface on its inner surface tapered downwardly and inwardly,

said lower housing having a plurality of locking grooves contoured to mate with said teeth,

said upper housing having a seating surface for engaging said lower housing, and having a shoulder for engaging the lower edge of said latch ring,

a locking ring having a tapered surface on its outer surface contoured to mate with the tapered inner surface on said latch ring, and telescopically engaging said upper housing, and

securing means for securing said locking ring to said upper housing whereby tightening said securing means produces downward movement of said locking ring relative to said upper housing, said downward movement forcing said latch ring outward and forcing said teeth outward and down the mating contours of said locking grooves, said teeth and said locking grooves including surfaces which are spaced from each other insuring the downwardly movement of said latch ring and said upper housing to seatingly engage said seating surface of said upper housing with said lower housing and to lock together said housings.

4,438,901

APPARATUS FOR TENSIONING A STUD AND METHOD OF DOING SAME

Bobby J. Reneau, and Bruce E. Morris, both of Houston, Tex., assignors to Gripper, Inc., Houston, Tex.

Filed Jan. 25, 1982, Ser. No. 342,235
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—29 A **9 Claims**

1. An apparatus for tensioning a stud extending from a surface, comprising:

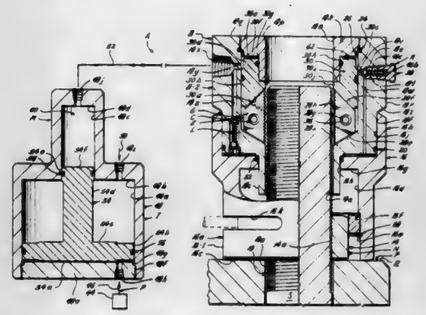
a body adapted to be removably mounted about the stud extending from the surface, said body including a first body member and a second body member;

said first body member having a surface engaging end and a chamber end, said surface engaging end for engaging the surface and said chamber end for receiving said second body member;

said second body member having a stud bore therethrough adapted to receive the stud therein;

gripper means surrounding said stud bore of said second body member for gripping the stud;

pressure force means acting within said body for moving said gripper means and said second body member, said pressure force means moving said gripper means into engagement with the stud, and said pressure force means moving said second body member from a contracted position, wherein said gripper means engages the stud, to



an expanded position, wherein said gripper means tensions the stud, thereby tensioning the stud;

regulation means operably connected to pressure force means for automatically regulating radial movement of said gripper means into engagement with the stud prior to said second body member moving from said contracted position to said expanded position; and,

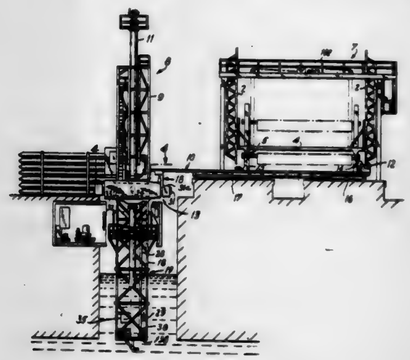
amplifier means operably connected to said pressure force means for applying an amplified vacuum releasing force.

4,438,902

PIPE STRING LIFT SYSTEM

John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Division of Ser. No. 108,122, Dec. 28, 1979, Pat. No. 4,365,787. This application Nov. 2, 1981, Ser. No. 382,365
Int. Cl.³ B66F *1/00*
U.S. Cl. 254—106 **12 Claims**



1. A system for lifting and supporting a string of downwardly extending pipe from a floating surface vessel, the system comprising a floating surface vessel having a hull; a platform pivotally connected to the hull of the surface vessel about two horizontal, transverse axes of rotation, the platform having a central opening therethrough;

main vertical support means, secured to the platform and arranged about the central opening and designed to vertically support a downwardly extending pipe;

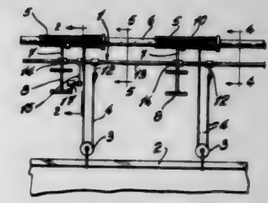
lateral holding means supported from the platform and arranged about the center line of the central opening but located substantially not higher than the bottom of the hull of the surface vessel, and so designed to contact a pipe supported by the main support means so that lateral movement is limited in the portion of the pipe extending between the lateral holding means are the main support means without providing any substantial vertical support for the pipe.

4,438,903

OBSTACLE DETECTOR FOR A DESCENDING OR ASCENDING LOAD

Pierre Gagnon, 5637 Wilderton Ave., Montreal, Canada H3T 1S1, and Pierre Laforest, 1945 Bruxelles St., Montreal, Canada (H1L 5Z5)

Filed May 7, 1982, Ser. No. 375,884
Int. Cl.³ B66D *1/48*; E05F *15/02*
U.S. Cl. 254—269 **7 Claims**



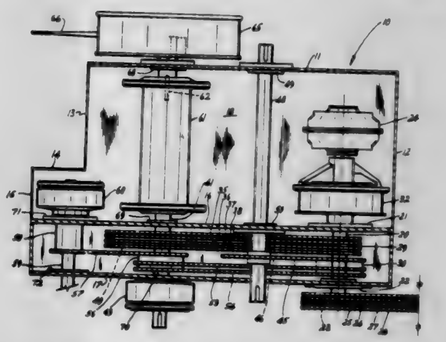
1. A device for detecting the presence of an obstacle in the path of a descending or ascending load suspended from a pair of cables trained around a pair of spaced pulleys attached to the load and each having a dead end, said device comprising the combination of said cables with a rotatably-supported rod and a pair of radially-projecting and oppositely positioned torque members secured to said rod, each cable having its dead end secured to a respective torque member and exerting oppositely-directed and counterbalancing torque on said rod, whereby a decrease or increase of tension in one cable, due to contact of an obstacle with the descending or ascending load, respectively, will cause rotation of said rod, and further including rod rotation-sensitive means operable to cause stopping of said cables.

4,438,904

DRAWWORKS

Bobby E. White, P.O. Box 1137, New Iberia, La. 70560

Filed Jan. 7, 1982, Ser. No. 337,748
Int. Cl.³ B66D *1/14, 1/20, 1/26, 5/00*
U.S. Cl. 254—311 **4 Claims**



1. Drawworks apparatus, comprising a drilling platform

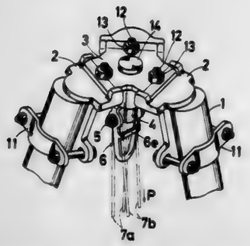
supporting said drawworks apparatus, a cable drum, a drum shaft rotatably supporting said cable drum between two upright support wall members, an input shaft and means for driving said input shaft in rotation, clutch controlled chain sprocket and chain transmission means for causing rotations of said drum shaft and cable drum at any of multiple speeds in response to rotations of said input shaft, control apparatus disposed at the outer side of the one of said support wall members which is disposed toward the drilling platform to be readily accessible to the driller for controlling operation of said drawworks apparatus, said drum shaft having an extension beyond said one support wall member, a single outboard brake fixed to said drum shaft extension at the same side of said apparatus as said control apparatus, said brake controlling rotations of said drum shaft and cable drum, said brake being readily accessible from the drilling platform for inspection, service and repair.

4,438,905

DEVICE FOR MOUNTING AND DISMOUNTING CHAIN BLOCKS

Koji Nishimura, Rittocho, Japan, assignor to Vital Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1981, Ser. No. 327,034
Int. Cl.³ B66D 3/00
U.S. Cl. 254—389 **9 Claims**



1. A device for mounting and dismounting chain blocks comprising:

a support member located at a high place;

a vertical linear suspension member movably connected to and descending downward from said support member;

a horizontal linear pin inserted through the lower portion of said suspension member so that the ends of said pin protrude outward on opposite sides of said suspension member;

a generally upright U-shaped suspension ring with its two arm portions pivotally mounted on the opposite protruding end portions of said horizontal pin so that each said arm portion is displaced from said linear suspension member a sufficient distance to permit a chain block lifting rope to pass freely therebetween; and

a ring guide for changing the angle of the U-shaped suspension ring comprising a bridge bar horizontally connected between the two arm portions of said ring.

4,438,906

FORMERS FOR LINING METALLURGICAL VESSELS

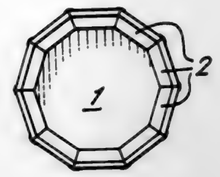
Gary F. English, Conneaut, Ohio, assignor to Foseco International Limited, Birmingham, England

Filed Jun. 20, 1983, Ser. No. 505,818
Int. Cl.³ C21B 7/04
U.S. Cl. 266—44 **16 Claims**

1. A method of lining a metallurgical vessel for containing molten metal, comprising the steps of:

(a) positioning within the vessel a hollow, disposable former comprising a plurality of connected adjoining wall portions of dry wall sheet material so as to leave a space between the former and the vessel corresponding to the lining of the vessel to be formed;

(b) filling the space with hardenable refractory lining material;



(c) while practicing step (b) filling the interior of the former with particulate material;

(d) hardening the lining material; and

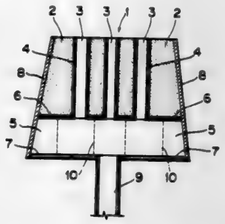
(e) drying and firing the lining to produce a metallurgical vessel lined with refractory lining material.

4,438,907

GAS BLOWING NOZZLE, AND PRODUCTION AND USAGE THEREOF

Narito Kimura, Yokohama; Kiyomi Taguchi, Fukuyama; Masayuki Hammyo, Fukuyama; Osamu Terada, Fukuyama; Teruyuki Hasegawa, Fukuyama; Youichi Nimura, Fukuyama, and Noriyuki Hiraga, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,346
Claims priority, application Japan, Jun. 3, 1981, 56-84321; Aug. 27, 1981, 56-125950[U]; Aug. 27, 1981, 56-133287
Int. Cl.³ C21B 7/16
U.S. Cl. 266—217 **4 Claims**



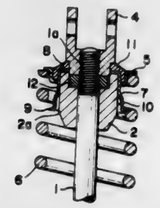
1. A nozzle for refining molten metal, comprising a non-porous refractory structure positionable at a bottom or a wall of a converter; a plurality of passageways for transmitting gas formed in said refractory structure, said passageways being of metal pipes; an upper metal plate and a lower metal plate defining therebetween a gas storage area communicating with said passageways at the bottom of said refractory structure, said upper plate having a plurality of holes corresponding to said passageways; a metal cover encircling said refractory structure and said storage area; and lead pipe connectable to said lower metal plate, said metal pipes being connected to said holes in said upper metal plate; wherein said passageways have a a diameter of from 0.1 to 5 mm, and have a space therebetween of from 3 mm to 150 mm; wherein said plurality of passageways have walls of metal with thicknesses of from 0.1 to 10 mm; wherein said metal cover has a thickness of from 0.1 to 5 mm; wherein said gas storage area has a space between said upper metal plate and said lower metal plate of from 2 mm to 50 mm distance; and wherein said said plurality of passageways comprises a plurality of outside passageways and a plurality of inside passageways, said outside passageways being disposed on the outside of said inside passageways, said outside passageways having a diameter smaller than the diameter of said inside passageways.

4,438,908

SPRING RECEIVING STRUCTURE FOR HYDRAULIC SHOCK ABSORBER

Makato Terada, Fukuroi, Japan, assignor to Showa Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 222,718, Jan. 5, 1981, abandoned. This application Jul. 27, 1982, Ser. No. 402,246
Claims priority, application Japan, Jun. 26, 1980, 55-88835[U]
Int. Cl.³ B60G 13/00
U.S. Cl. 267—8 R **6 Claims**



1. In a hydraulic shock absorber of the type in which a piston is fitted in a main cylinder filled with working fluid to thereby provide a shock absorbing force generating mechanism, a piston rod carried by said piston and extending out of and beyond said main cylinder, a spring receiving and protective structure comprising:

a shock absorbing protective rubber seat fitted onto an end portion of said piston rod remote from said main cylinder for protectively engaging said main cylinder to limit the stroke of said piston within said main cylinder; a protecting cylinder fitted on the base portion of said rubber seat, the leading end of said protecting cylinder having a larger diameter than the diameter of said cylinder at its central portion to accommodate any expanded portion of said rubber seat upon deformation of said rubber seat; a spring receiving collar fitted onto the outer side of said protecting cylinder; said piston rod end portion being terminally threaded; and a mounting fixture screwed onto said end of said piston rod; and a coil spring interposed axially under compression between said spring receiving collar and said main cylinder and forcing said spring receiving collar into contact with said mounting fixture.

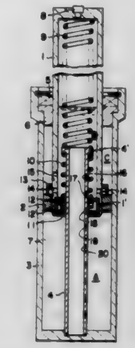
4,438,909

VEHICLE FRONT FORK

Fumio Matsumoto, Shizuoka, Japan, assignor to Showa Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1981, Ser. No. 296,646
Claims priority, application Japan, Sep. 16, 1980, 55-127315
Int. Cl.³ F16F 9/06
U.S. Cl. 267—64.26 **4 Claims**

1. A front fork for a vehicle comprising a bottom casing filled with working oil and slidably receiving a fork tube having upper and lower ends and carrying a piston at its lower end, a seat tube having upper and lower ends and having the lower end fixed to the bottom portion of the bottom casing and extending into the fork tube, spring means mounted under compression extending between the upper ends of said fork tube and said seat tube and a balance spring mounted under compression between the upper end of the seat tube and the lower end of the fork tube so that the fork tube is stabilised at a position where the difference in the compression between the two springs is balanced with a load, a first check valve carried by the lower end of the fork tube and operating so as to be closed upon contraction of the fork and opened upon extension of the fork, a second check valve overlying the piston and operating so as to be opened upon contraction of the fork and closed upon extension of the fork, the fork tube having an orifice for providing communication between the inside and outside thereof and an axially extending row of orifices formed in the seat tube.

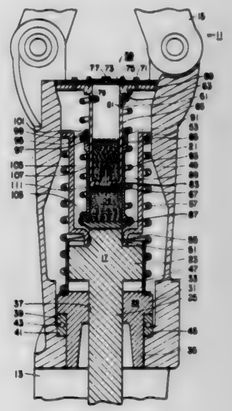


4,438,910

SHOCK ABSORBING SNUBBER FOR DERRICK HOOKS

Edward J. McFadden, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 184,607, Sep. 5, 1980, abandoned. This application Aug. 5, 1982, Ser. No. 405,230
Int. Cl.³ F16F 9/19
U.S. Cl. 267—126 **2 Claims**



1. A shock absorbing snubber for a derrick hook of the type having a housing, a shank axially movable in the housing, and a load bearing hook connected to the lower end of the shank, comprising:

a plunger carried by the housing, having a hollow interior and a lower end;

a sliding barrel having a closed bottom adapted to be contacted by the upper end of the shank, and an open top telescopingly receiving the lower end of the plunger;

the barrel and plunger containing hydraulic fluid with a volume less than the volume of the interiors of the barrel and the plunger when the shank has pushed the barrel to an uppermost position;

check valve means mounted in the interior of the plunger for restricting fluid flow rate from the barrel to the plunger upon movement of the barrel upward relative to the

plunger, and for allowing an increased rate of fluid flow from the plunger to the barrel upon movement of the barrel downward relative to the plunger; and

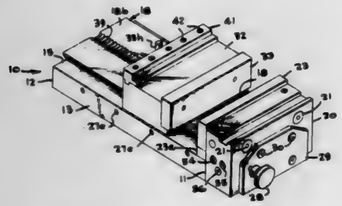
air passage means in the top of the plunger communicating with the atmosphere for allowing air to pass in and out of the plunger above the hydraulic fluid in response to hydraulic fluid volume changes to maintain the pressure in the plunger substantially at ambient.

4,438,911

QUICK SET HYDRAULIC VISE STRUCTURE

Thomas F. McDougal, 1415 Beech La., Fairmont, W. Va. 26554

Filed Jul. 12, 1982, Ser. No. 397,520
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—32 **14 Claims**



1. A quick set hydraulic work holding vise comprising an elongated stationary base plate member having a fore-and-aft longitudinal axis, a front stationary jaw fixed to said base plate member at a front end thereof and a rear jaw movable toward and away from said stationary jaw along said longitudinal axis, an elongated slide plate member of narrower width than said base plate member overlying and extending centrally along substantially the length of the latter, means supporting the slide plate member for a limited predetermined range of longitudinal movement between a forward gripping position and a rearward release position for the movable jaw, means interfitting said movable jaw on the slide plate member for sliding movement of the movable jaw to a coarse adjustment position along the length of the slide plate member disposing the jaws at a work release position whereby a workpiece portion to be received between the jaws may be withdrawn therefrom, quick acting worm thread means for fine adjustment of the rear jaw to approach workpiece gripping position including an upwardly facing screw threaded trough-like channel substantially longitudinally spanning said slide plate member and rotatably adjustable worm tooth means carried by the movable jaw to interfit in the threads of said channel, means for rotating said worm tooth means between a release position and an interfitting position relative to said channel, hydraulic power means connected to said slide plate member for rapidly moving the slide plate member and the movable jaw thereon to said gripping position responsive to application of fluid pressure to the power means, and means for returning said slide plate member and movable jaw thereon to said release position upon removal of forwardly moving fluid pressure force from said hydraulic power means.

4,438,912

SWIVELLING DEVICE FOR SUPPORTING A LARGE-SIZE PART IN THE FORM OF A SPHERICAL DOME

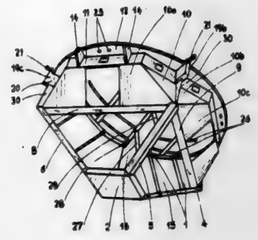
Georges Gillot, Le Creusot, France, assignor to Framatome, Courbevoie, France

Filed Nov. 20, 1981, Ser. No. 323,637
Claims priority, application France, Dec. 8, 1980, 80 25976
Int. Cl.³ B23Q *1/06*
U.S. Cl. 269—55 **5 Claims**

1. A swivelling device for supporting a large-size object (18) in the form of a spherical dome upon which operations are carried out, comprising:

(a) a supporting structure (1) in the form of a truncated pyramid having polygonal large and small bases and consisting of metal sections (4, 5, 6, 7, 8, 9) welded along the direction of the edges of said pyramid, said structure having a plurality of bearing surfaces one of which constitutes the small base of said pyramid and the others its side faces;

(b) a crown (12) for support and attachment of said dome (18) including means (19, 25) for centering and attachment of said dome (18) onto said crown (12); and



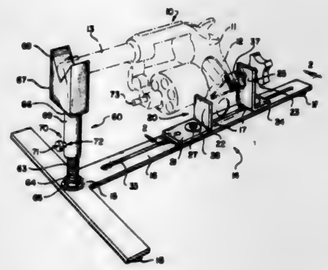
(c) a connecting structure (10, 11) for assuring a rigid union between the large base of said pyramid (1) and said crown (12) so that the central axis of said pyramid (1) coincides with the central axis of said crown (12), said large base located adjacent said crown (12), said dome (18) being placed on said crown (12) with its axis directed towards said supporting structure (1), whereby it may be swivelled in different directions by letting said supporting device rest upon a horizontal surface by way of its various bearing surfaces.

4,438,913

PISTOL MAINTENANCE DEVICE

Gary F. Hylla, 1709 Spruce St., Peru, Ill. 61354

Filed Sep. 24, 1982, Ser. No. 423,296
Int. Cl.³ B23Q *3/18*
U.S. Cl. 269—60 **12 Claims**



1. A handgun holding device for maintaining a handgun having a handgrip and barrel in position by the handgrip and barrel during maintenance, comprising:

a baseplate having a longitudinal slot, said handgrip positionable thereon at a cleaning position adjacent to said longitudinal slot with said barrel extending in substantial alignment with said longitudinal slot;

a pair of angle brackets mounted upon said baseplate at the cleaning position including first and second angle brackets rigidly mounted to said baseplate through said longitudinal slot, said first angle bracket abutting one side of the handgrip;

an adjustable holding means engaging said second angle bracket and adjustably extendible therefrom to rigidly engage the other side of the handgrip opposite to said one side, thereby rigidly maintaining the handgrip in position between said adjustable holding means and said first angle bracket;

a barrel support member having one end mounted on said baseplate in substantial alignment with said longitudinal slot and the other end supportably engaging said barrel while allowing ready access to all desired cleaning or repair regions of the handgun;

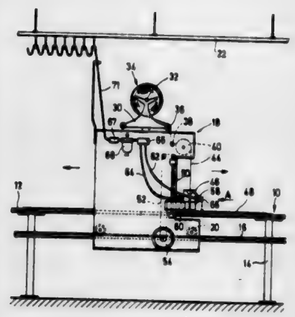
wherein said barrel support member comprises a support member with one end engaging said baseplate and a top end extending upwardly from the baseplate, said top end including a pillow block having surfaces contoured to supportably nest said barrel therewithin.

4,438,914

CLOTH LAYING MACHINE

Rolf Stengle, and Rolf Grupp, both of Stuttgart, Fed. Rep. of Germany, assignors to Krauss u. Reichert GmbH & Co. and KG Spezialmaschinenfabrik, both of Fellbach, Fed. Rep. of Germany

Continuation of Ser. No. 70,712, Aug. 29, 1979, abandoned. This application Jul. 30, 1981, Ser. No. 288,357
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838410
Int. Cl.³ B65H *29/46*
U.S. Cl. 270—31 **17 Claims**



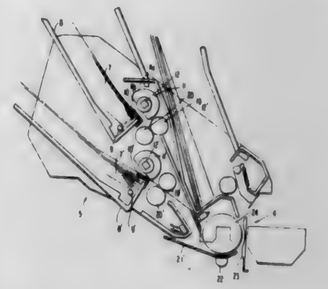
1. A cloth laying machine for laying out on a supporting surface superimposed layers of cloth drawn off from a web of cloth supply having two longitudinal edges and a longitudinally extending center area therebetween, said cloth laying machine comprising a cloth laying carriage for drawing off a web of cloth from said supply and for guiding said web, means for reciprocating said carriage above the supporting surface in two directions of travel for deposition of at least one respective layer of cloth by said cloth laying carriage at least when said cloth laying carriage moves in one of the two directions of travel, said supporting surface being substantially horizontal, a blower means located above the topmost layer of cloth, said blower means being supplied with a positive air pressure for generating an air current flowing from above and directed downwardly towards a substantially horizontal layer of cloth that has been laid out, said blower means being disposed so that the air current has flow components directed outwardly from said center area to either edge of said layer of cloth.

4,438,915

SHEET FEEDING DEVICE

Yoshiyuki Akamatsu, and Jun Shimogawara, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 155,821, Jun. 2, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,289
Claims priority, application Japan, Jun. 1, 1979, 54-69087
Int. Cl.³ B65H *3/06*
U.S. Cl. 271—9 **7 Claims**



1. A sheet feeding device, comprising:

a sheet stack housing for housing stacked sheets, said sheet stack housing having a pair of separator pawls and means for pressing said stacked sheets against said separator pawls;

kick-out roller means provided above said sheet stack housing for kicking out and feeding an uppermost sheet from said stacked sheets, said kick-out roller means having a circular segment cross section and a chordal flat;

means for rotating said kick-out roller in a transporting direction from said sheet stack housing;

clutch means for selectively transmitting a one-way rotational force to said kick-out roller means;

bi-directionally rotatable feed rollers located proximate to said kick-out roller means for further feeding said sheet kicked out and fed from said sheet stack housing and for return feeding said sheet to said sheet stack housing; and

drive means for driving said feed rollers in one direction to deliver a sheet from said sheet stack housing, and in the reverse direction to deliver said sheet back to said sheet stack housing.

4,438,916

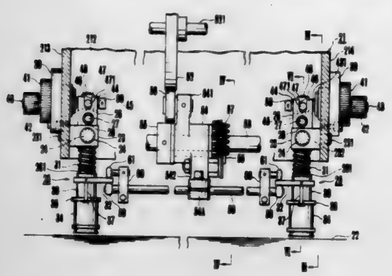
PAPER FEEDER

Shoichi Kawaguchi, Toride, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 354,102
Claims priority, application Japan, Mar. 4, 1981, 56/30781; Mar. 4, 1981, 56/30783
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—93 **6 Claims**

1. A paper feeder comprising a frame, a separation suction device mounted on said frame and subetantially vertically movable for picking up stacked sheets one at a time, said separation device having a guide nozzle, a transport suction device mounted on said frame and substantially horizontally movable for transferring the picked-up sheet from said separation suction device, and an adjustment device for adjusting said separation suction device tiltably back and forth and laterally, said adjustment device including a nozzle support pivotably mounted on said frame for angular movement about a first axis, a pin having a second axis transverse to said first axis and by which said guide nozzle is pivotably supported on said nozzle support, a nut pivotably mounted on said guide nozzle at an upper end thereof, an adjustment shaft having a threaded portion held in threaded engagement with said nut, and an

adjustment knob having an axial bore off center with respect to said adjustment knob and rotatably mounted on said frame,



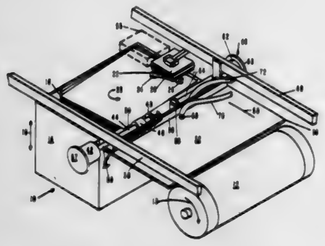
said adjustment shaft extending through said axial bore for angular movement about its own axis.

4,438,917

DUAL MOTOR ALIGNER

Donovan M. Janssen; John P. Mantey; Donald C. Roller, all of Boulder, and Lance A. Walker, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1981, Ser. No. 311,837
Int. Cl.³ B65H 9/20
U.S. Cl. 271—227 **7 Claims**



1. A sheet handling device for adjusting sheet position prior to entering said sheet into the sheet processing station of a utilization apparatus, said device capable of adjusting said sheet position (1) for skew misalignment, (2) for lateral (side) edge misalignment, and (3) for adjusting sheet speed to that desired for entry into the processing station and for timing the entry of the leading edge of the sheet into the processing station at a desired time, comprising:

a sheet entry station;

a sheet transport path coupling said sheet processing station with said entry station;

independently controlled drive means disposed within said transport path, a first one of such drive means located adjacent a first edge of said transport path and a second one of such drive means located adjacent the opposite edge of said transport path, said drive means for moving said sheet along said transport path to said sheet processing station from said entry station;

signal generating means disposed within said transport path for sensing sheet position; and

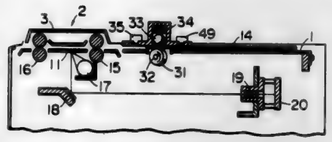
control means responsive to said signal generating means for adjusting the speed of said independently controlled drive means to correct sensed positional misalignment of said sheet for skew misalignment, lateral edge misalignment and for timing the entry of the leading edge of said sheet into said sheet processing station at a desired speed.

4,438,918

ORIGINAL ALIGNING DEVICE

Yoshio Ito, Kanagawa; Takeshi Ikeda, Yokohama; Hiroaki Matsumoto, Kawasaki, and Minoru Ogata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 220,045, Dec. 5, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 468,809
Claims priority, application Japan, Apr. 20, 1979, 51-48655; Jun. 12, 1979, 51-73694; Oct. 8, 1979, 51-129781; Oct. 23, 1979, 51-136727; Oct. 24, 1979, 51-137231
Int. Cl.³ B65H 9/16
U.S. Cl. 271—251 **10 Claims**



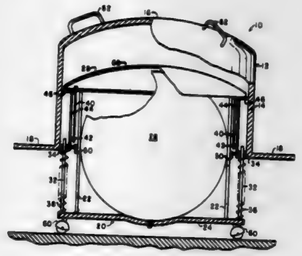
5. An original aligning device for automatically aligning sheet-like originals of various thickness in a predetermined direction so that, when an original is conveyed to a reading portion for reading image information of the original, the original is fed in the predetermined direction with respect to said reading portion, characterized by a single ball (8, 23, 33, 44, 51, 71, 75) having no particular rotation axis and which, when it receives an external drive force, rotates in accordance with said drive force, a roller member (22, 29, 50, 70, 76) for holding a sheet original (14, 25, 81) between it and said ball, an original guide surface (5) provided in a direction at right angles with respect to said reading portion (11), means (7, 10, 13, 24, 32, 60) for driving one of said ball and said roller member in a direction such that the original conveyed by the cooperation of said ball and said roller member bears against said guide surface, magnetic means (34, 38, 41, 46) for forming a gap between said ball and said roller member when the original is inserted between said ball and said roller member by a magnetic force, and conveyor means (15) positioned downstream of said ball and roller member for conveying the sheet original to said reading portion, said conveyor means being stopped during the initial feeding of the sheet original to prevent conveyance thereof to said reading portion, thereby facilitating the alignment of the sheet original in the predetermined direction by the driving force applied thereto.

4,438,919

MECHANICAL BOUNCING, ROLLING AND SKATING APPARATUS

Israel Gamzo, 2570 - 35th Ave., Oakland, Calif. 94601

Filed Mar. 19, 1982, Ser. No. 359,786
Int. Cl.³ A63B 25/00
U.S. Cl. 272—1 B **7 Claims**



1. A recreational apparatus comprising

means defining an upper housing having generally cylindrical side walls and a top cover,

a support platform attached to said upper housing disposed about the outer periphery of said generally cylindrical side wall proximate the bottom edge thereof,

a bottom support member comprising

a base support,

a plurality of first guide members attached to said base support and extending upwardly therefrom, said guide members adapted to telescopically receive said upper housing,

means defining a base support cover attached to said plurality of first guide members proximate the top ends thereof, and adapted to be enclosed within said cylindrical side walls of said upper housing, said base support cover comprising

means for controlling the flow of air into and out of the space between said top cover of said upper housing and said base support cover, and

means for resiliently biasing said upper housing away from said bottom support member.

4,438,920

EXERCISE DEVICE

Pierre Veillette, 6 Pl. Radisson, Apt. 610, Hull, Quebec J8Z 1T7, Canada

Filed Aug. 11, 1982, Ser. No. 407,063
Int. Cl.³ A01B 23/00
U.S. Cl. 272—67 **5 Claims**



1. An exercise device comprising an elongated, substantially cylindrical body; first and second sleeve means rotatably mounted on the ends of said body for manual gripping by a user, said first and second sleeve means being resilient, whereby the sleve means can be squeezed against said body to prevent rotation; cord means fixedly connected at one end to said body between said first and second sleeve means; and connector means for connecting the other end of said cord means to a weight whereby, by squeezing one sleeve, releasing the other sleeve and rotating the squeezed sleeve and body, the cord is wound around the body and the weight is raised.

4,438,921

CALIBRATION OF LOAD INDICATOR FOR ERGOMETRIC EXERCISER

Eugene J. Szymski, Skokie, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.

Filed Jun. 8, 1981, Ser. No. 271,675
Int. Cl.³ A63B 21/00; G01L 5/28
U.S. Cl. 272—73 **2 Claims**

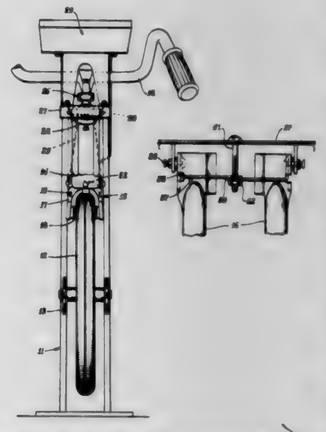
1. The method of calibration for effecting precise adjustment of a load indicator in an ergometric exerciser having support means for said load indicator, a pedal-actuated wheel freely rotatably mounted on said support means, brake means mounted on a frame resiliently biased on said support means for variable frictional engagement with said wheel for movement on said frame by forward rotation of the wheel to actuate said load indicator, including adjustable resistance control means for frictionally engaging said brake means with said wheel, and adjustable calibration means interposed between said frame and said support means; comprising the following steps:

(1) suspending a weight by a cord from the forwardly disposed periphery of said wheel;

(2) raising said weight until the same hangs freely by manually rotating said wheel backwards;

(3) adjusting said resistance control means to just prevent said weight from turning said wheel;

(4) manually rotating said wheel slightly forward, allowing slight slippage past said brake means;



(5) rapping the side of said wheel briskly several times just behind said brake means, as with the handle of a screwdriver, and noting the reading of said load indicator;

(6) slightly rotating said wheel backwards, without slippage of said brake means, and repeating step 5; and

(7) adjusting said calibration means against the resilient biasing of the frame to compensate for the average readings obtained in steps 5 and 6 to effect a precise initial setting of said indicator.

4,438,922

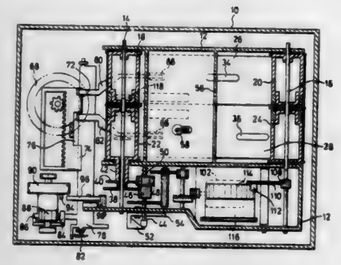
TOY FOR STEERING A SIMULATED CAR

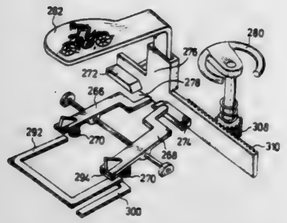
Kataro Suda, Tokyo, Japan, assignor to Suda Kinzoku Seisakusho Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,445
Claims priority, application Japan, Feb. 20, 1981, 56/22884[U]
Int. Cl.³ A63F 9/14
U.S. Cl. 273—1 GA **2 Claims**

1. A toy for steering a simulated car, which comprises two shafts arranged parallel in a housing; two drums mounted separately on each of said shafts, one of said drums being rotatable in relation to the other drum on the same shaft; two light transmissive endless belts disposed side by side, one said belt being trained over one drum on each shaft and each said belt having a number of cars pictured thereon, said endless belts being provided with the same number of cutouts as the number of said pictured cars; gears having different numbers of teeth for drivingly rotating one of the drums engaged with one of said belts and one of the drums engaged with the other belt; drive means for driving said gears and for selectively interrupting the drive to one of said gears; a light source arranged between the drums; an elastic body for pressing one end of each of a pair of driven elements against cutouts of the two belts, each of said driven elements being provided adjacent to its other end with a support portion capable of moving together with a simulated car operated by a handle, said support portion allowing one or the other of said one ends of said

driven elements to be supported thereon depending on its position; and a switch under the other end of each said driven





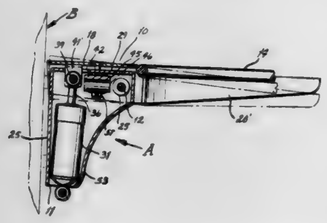
element and switched on by pressure of said driven element for causing an electric current flow to said light source.

4,438,923

SHOCK-ABSORBING BASKETBALL GOAL UNIT

Charles J. Engle, St. Louis County, and Robert A. Boitano, St. Louis, both of Mo., assignors to Gared Corporation, St. Louis, Mo.

Filed Apr. 26, 1982, Ser. No. 371,960
Int. Cl.³ A63B 63/08
U.S. Cl. 273—1.5 R **8 Claims**



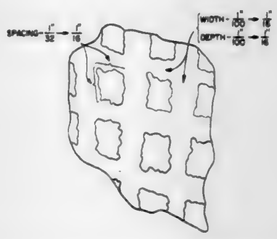
1. A basketball goal unit for use with a basketball backboard having a front surface and comprising a rigid backboard mounting frame adapted to be securely mounted on the front surface of said backboard, including a first portion configured for lying against said backboard and for being secured thereto, and a second portion extending outwardly from said first portion, and, thereby, outwardly from the front surface of said backboard, a goal mounting frame configured for cooperative interengagement with said backboard mounting frame, said goal mounting frame being configured for overlying the second portion of said backboard mounting frame, a goal carried by said goal mounting frame, a pivot shaft for pivotally interconnecting said goal mounting frame with said backboard mounting frame to permit pivotal rocking movement of said goal and goal mounting frame about a transverse pivot axis, said pivot shaft connecting said goal mounting frame to said second portion of said backboard mounting frame, said goal mounting frame having a pivot shaft-remote portion extending from said pivot shaft toward said backboard, first coupling means for providing resilient coupling between said goal mounting and backboard mounting frames to permit resilient pivotal rocking movement of said goal about said pivot axis, and second coupling means for providing shock absorbing coupling between said goal mounting and backboard mounting frames during said pivotal rocking movement of said goal about said pivot axis, said first coupling means interconnecting said second portion of said backboard mounting frame and said pivot shaft-remote portion of said goal mounting frame, said second coupling means interconnecting said first portion of said backboard mounting frame and said pivot shaft-remote portion of said goal mounting frame, said pivot shaft-remote portion of said goal mounting frame and said second portion of said backboard mounting frame each being of channel section and of inverted-U configuration and each thereby having side flanges, said pivot shaft extending through said side flanges, said goal mounting frame thereby being pivotally secured to permit rocking movement of said goal about said pivot axis relative to said backboard upon said goal being displaced downwardly by external application of force, said first coupling means comprising a spring interengaging said second portion of said backboard mounting frame and said pivot shaft-remote portion of said goal mounting frame.

4,438,924

GAME BALL

Ian Carr, 740 S. Federal, Apt. 1104, Chicago, Ill. 60605

Filed Apr. 13, 1981, Ser. No. 253,110
Int. Cl.³ A63B 39/00
U.S. Cl. 273—58 B **32 Claims**



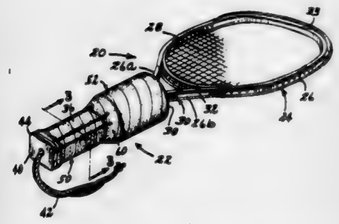
1. A spheroidal projectile for launching into ballistic flight, said projectile having a continuous outer surface for preventing fluid from entering within said projectile, a dense concentration of aerodynamic roughening elements per unit of surface area which protrude through the laminar sublayer of the fluid boundary layer flowing past the projectile in flight, said aerodynamic roughening being adapted to cause said projectile, when spinning at rotational speeds attainable by hand launch, to experience asymmetric lateral drag forces which drive said projectile through a flight trajectory having a first curved flight direction followed by a second curved flight direction having a curve component opposite to said first curved flight direction, where the curved flight directions are related to the density of the aerodynamic roughening elements, said projectile further including a mass of magnitude such that said curved flight directions caused by said aerodynamic roughening are accentuated at translational velocities below about 100 feet per second, such as attainable by hand launch.

4,438,925

HANDLE FOR RACQUETBALL RACQUET

James A. Lindstrom, 1595 Trollhagen Dr., Fridley, Minn. 55421

Filed Feb. 9, 1982, Ser. No. 347,102
Int. Cl.³ A63B 49/08
U.S. Cl. 273—75 **10 Claims**



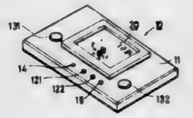
1. A handle for a racquetball racquet, comprising:
an elongatad member having a longitudinal axis and including front, intermediate, and rear portions, said front portion having a larger cross sectional configuration in at least two orthogonal directions than said rear portion, said intermediate portion extending from said front portion to said rear portion, said rear portion having a length which is less than said intermediate and front portions combined; said handle providing for a modified grip wherein said front portion or a portion thereof makes contact with the front two fingers of a player's hand and said rear portion or a portion thereof makes contact with the back two fingers of a player's hand, such that said front two fingers cannot extend as far about the periphery of said handle as said back fingers, and are necessarily positioned farther away from said longitudinal axis than said back fingers thereby allowing said back fingers to grip the handle more tightly than said front fingers.

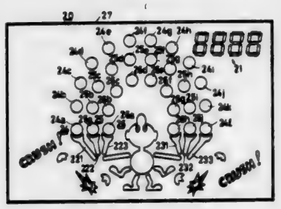
4,438,926

TIMEPIECE APPARATUS HAVING A GAME FUNCTION

Gunpei Yokoi, Kyoto, and Satoru Okada, Osaka, both of Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Filed Jun. 20, 1980, Ser. No. 161,344
Claims priority, application Japan, Feb. 28, 1980, 55-24836; Apr. 4, 1980, 55-44999
Int. Cl.³ A63F 9/00
U.S. Cl. 273—85 G **48 Claims**





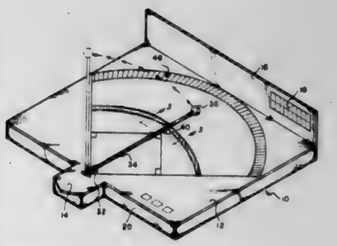
1. A timepiece apparatus having a game function, comprising: game associated information generating means for generating game associated information including at least a symbol indicating information for use in a game and including game operation means operable by a player for performing said game, current time information generating means for generating a current time information, said time information generating means including horological means for performing a horological function for said generating of a current time information, display means including game information displaying means for displaying said game associated information from said game associated information generating means, apparatus controlled symbol means adapted for being displayed by said display means for displaying at least a symbol having a movable or changeable configuration, and numerical value information displaying means for displaying said current time information from said current time information generating means in the form of at least a numerical value, mode selecting means for selecting for said display means a game displaying mode for displaying said game associated information or a current time displaying mode for displaying said current time information, and display control means responsive to the selection of said game displaying mode by said mode selecting means for displaying said game associated information, said display control means being further responsive to the selection of said current time displaying mode by said mode selecting means for displaying said current time information from said current time information generating means by said numerical value information displaying means, current time correcting means operatively connected to said horological means and responsive to said game operating means for correcting said current time information by using said game operation means when said current time displaying mode is selected by said mode selecting means, said apparatus further comprising player controlled symbol means adapted to be displayed on said display means for interacting with said apparatus controlled symbol means in response to an operation of said game operation means, means for imparting to said apparatus controlled symbol means different relative movements in a plurality of paths, and means for causing at least one of said apparatus controlled symbol means to assume a substantially unknown different relative movement to another of said apparatus controlled symbol means in said paths in response to a predetermined positional relationship between said one of said apparatus controlled symbol means and said player controlled symbol means.

4,438,927

BASEBALL GAME

Rudolph R. Hefler, 17 E. Main St., Moorestown, N.J. 08057

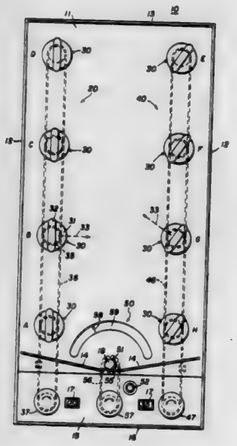
Filed Sep. 30, 1982, Ser. No. 431,583
Int. Cl.³ A63B 69/00
U.S. Cl. 273—90 **5 Claims**



1. A baseball game comprising:
a substantially horizontally disposed platform having a simulated baseball field on the upper surface thereof with home plate adjacent one side edge of the platform;
an elongated rod having a ball at the upper end thereof, the lower end of said rod being spring mounted to said platform adjacent home plate so that it can be moved between its normally upright position and a plurality of horizontal positions;

means for temporarily holding said rod in one of said horizontal positions;
means remotely located from said holding means for deactivating said holding means to thereby allow said rod to swing to its upright position under the force of said spring;
a baseball bat for batting said ball thereby moving said ball and said rod to one of said plurality of horizontal positions;
a plurality of sensing means, a different one of said sensing means being located at each of said plurality of positions, and
indicating means for visually indicating the position to which said ball and rod have been batted.

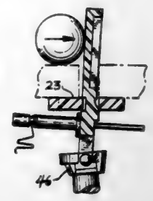
4,438,928
PINBALL GAME WITH GANGED KICKER MECHANISMS
Max Wiczer, Skokie, Ill., assignor to Wico Corporation, Niles, Ill.
Filed Aug. 19, 1982, Ser. No. 409,412
Int. Cl.³ A63D *13/00*
U.S. Cl. 273—121 R **23 Claims**



1. In a pinball game in which a ball rolls along an inclined playfield board, the improvement comprising a plurality of kicker mechanisms carried by the playfield board, each of said kicker mechanisms including a movable support and a kicker member carried by said support, each kicker member being movable with respect to its corresponding support for engagement with the ball to propel the ball therefrom in a predetermined direction, and direction control means coupled to all of said supports for simultaneous movement thereof, said direction control means being selectively operable during the normal course of play of the game to vary said predetermined directions of said supports, and kicker control means for controlling movement of said kicker members with respect to their respective said supports, said direction control means and said kicker control means being operable independently of each other.

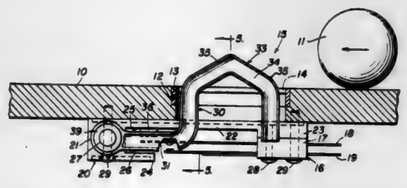
4,438,929
DROP TARGET WITH CAM MEANS
Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.
Filed Aug. 3, 1981, Ser. No. 289,371
Int. Cl.³ A63D *13/00*
U.S. Cl. 273—127 R **5 Claims**

4. A drop target for a pinball game comprising an elongated target body having front and rear surfaces, a rectangular notch formed in said front surface closely adjacent to one end thereof and extending laterally thereacross, said notch having an inner surface disposed substantially parallel to the direction of elongation of said target body, and a cam surface extending outwardly from said rear surface adjacent to said one end of said



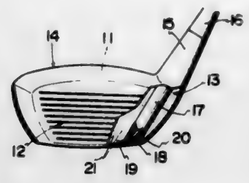
body and inclined with respect to said inner surface of said notch, said cam surface being intersected by a plane disposed normal to the direction of elongation of said target body and intersecting said notch.

4,438,930
ROLLOVER SWITCH APPARATUS
Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.
Filed Aug. 28, 1981, Ser. No. 297,117
Int. Cl.³ A63D *13/00*
U.S. Cl. 273—127 R **8 Claims**



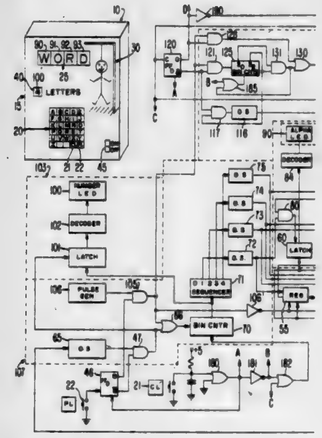
1. Rollover switch apparatus for use in a pinball game including a playfield board upon which a pinball rolls and which has at least one opening therein, said rollover switch apparatus comprising a switch having two leaf-spring members, one said leaf-spring member being movable toward and away from the other said leaf-spring member, said an elongated one-piece plastic base for attachment to the underside of the playfield board, said base having a body portion and a leg portion carried by said body portion and a foot portion carried by said leg portion, said switch being fixedly attached to said foot portion, a stop member carried by said body portion and projecting therefrom parallel to said leg portion and spaced therefrom, an elongated rigid one-piece plastic actuator channel-shaped in transverse cross section along the entire length thereof and pivotally attached to said body portion for movement between a rest position and an actuating position, said actuator having a ball-engaging portion, a leaf-spring engaging member carried by said actuator, said leaf-spring engaging member being elongated in a direction normal to the direction of elongation of said actuator and extending between said leg portion and said stop member for cooperation therewith to limit the pivotal movement of said actuator, said ball-engaging portion being adapted to protrude through the opening in the playfield board and said leaf spring members being spaced apart when said actuator is in the rest position thereof, said leaf-spring engaging member engaging said one leaf-spring member and holding it in engagement with said other leaf-spring member when said actuator is in the actuating position thereof, said actuator being adapted to respond to engagement of said ball-engaging portion by a pinball for moving from the rest position to the actuating position.

4,438,931
GOLF CLUB HEAD
Tetsuo Motomiya, Tsubame, Japan, assignor to Kabushiki Kaisha Endo Seisakusho, Tsubame, Japan
Filed Sep. 16, 1982, Ser. No. 418,636
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—167 H **10 Claims**



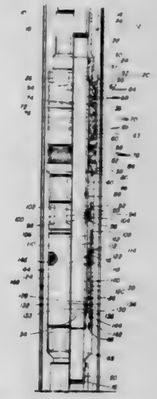
1. A golf club head comprising
two or more sheet-like shell sections secured together edgewise to form a one-piece sealed hollow shell structure having a shaft mounting section and a bottom section, and
a shaft, the lower end of which is fastened both to said shaft mounting section and to said bottom section.

4,438,932
APPARATUS FOR ELECTRONIC WORD GAME
Herbert Finkel, 714 Jackpine Ct., Sunnyvale, Calif. 94086
Filed Oct. 16, 1978, Ser. No. 951,477
Int. Cl.³ A63F *3/06*
U.S. Cl. 273—237 **15 Claims**



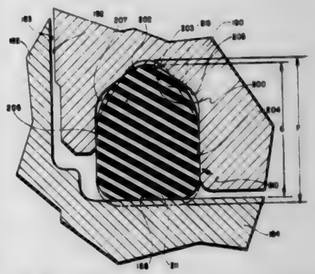
1. An electronic word game comprising:
(a) a comparator circuit;
(b) a first circuit for applying sequentially to said comparator circuit a first set of signals representing letters of a selected word;
(c) a second circuit for applying successively to said comparator circuit a second set of signals representing letters selected to match the letters represented by said first set of signals;
(d) said comparator circuit producing a first output voltage for each signal of said second set matching a signal of said first set and producing a second output voltage for each signal of said second set failing to match a signal of said first set;
(e) a word display circuit responsive to said first output voltage to display a letter for each matched letter; and
(f) an object illuminating circuit responsive to said second output voltage to display segmentally an object for each failure to match a signal of said second set with a signal of said first set.

4,438,933
HYDRAULIC SET HIGH TEMPERATURE ISOLATION PACKER
John C. Zimmerman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed May 6, 1982, Ser. No. 375,418
Int. Cl.³ E21B *43/04*
U.S. Cl. 277—9.5 **18 Claims**



1. A packer, comprising: mandrel means;
a compressible packer element on said mandrel means;
fluid pressure actuated piston means adapted to compress said packer element; and
mechanical packer element compression maintenance means, including:
ratchet means associated with said piston means; and
spring means adapted to exert an axial force on said packer element and said ratchet means.

4,438,934
SEAL FOR ROTARY CONE ROCK BIT
Claude R. Garner, Odessa, Tex., and William J. Neilson, Murrieta, Calif., assignors to Smith International, Inc., Newport Beach, Calif.
Continuation-in-part of Ser. No. 378,454, May 14, 1982. This application Nov. 3, 1982, Ser. No. 438,671
Int. Cl.³ F16C *33/78*; F16J *9/00*; E21B *10/08*
U.S. Cl. 277—92 **19 Claims**



1. A shaft seal for rotary motion between a shaft and a housing containing said shaft to isolate a lubricated bearing from an external environment comprising a resilient annular

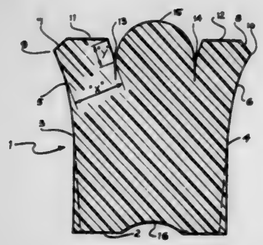
seal having a greater radial length than longitudinal length in cross section, said radial length is from about 1.1 to about 1.4 times said longitudinal length, said radially disposed annular seal being confined within an annular chamber, said chamber being formed between a bearing journal and a rotating part mounted thereon, by the cooperation of radially extending surfaces and two concentric longitudinally extending surfaces formed between said journal and said rotating part and characterized by at least one of said longitudinally extending surfaces being shaped so that the radial dimension of the annular chamber changes gradually from a minimum adjacent the radially extending surfaces to a maximum at a central region between the radially disposed surfaces, so that differential pressure across said radially disposed annular seal moves said seal axially away from said central region thereby increasing the squeeze on said seal and resisting egress of lubricant from a bearing or ingress of a material from said external environment into said bearing.

4,438,935

FLUID SEALS

Geoffrey C. Lees, Toongabbie, Australia, assignor to J. C. Ludowici & Son Ltd., New South Wales, Australia

Filed Jul. 20, 1982, Ser. No. 400,112
Claims priority, application Australia, Jul. 29, 1981, PE9968
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—205 **9 Claims**



1. A homogeneous self-energising seal comprising an annular member having side walls, a top and a bottom forming the trunk of the seal, the side walls having top chamfered portions, the upper edges of which merge into flat portions on the top of the seal, the bottom edges of said chamfered portions forming the sealing lips of the seal, the flat portions merging into spaced annular slots or troughs in the top of the seal which are separated by a raised centre portion upstanding from the top of the seal.

4,438,936

SECONDARY SEALING ELEMENT WITH U-SHAPED SEALING RING FOR MECHANICAL SEALS

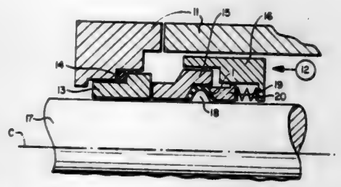
Rainer Schlegel, Albanstrasse 18, 6234 Hattersheim am Main, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 235,941
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007665
Int. Cl.³ F16J *15/38*
U.S. Cl. 277—212 C **20 Claims**

1. A secondary sealing device for an axial seal ring assembly having a chamber therein with a cylindrical surface wall surrounding the axial shaft, the secondary sealing device comprising:

(a) a biased axial sliding and adjustment ring positioned in the chamber; and

(b) a sealing ring positioned around the shaft in the chamber between the cylindrical surface wall and sliding and adjustment ring, formed of a material with good sliding, low-elasticity, and non-brittle characteristics, having a generally U-shaped cross-section with two arms extending from a plane perpendicular to the axis of rotation of the shaft, and pressed into sealing engagement against the cylindrical surface wall and the shaft by the axial bias of



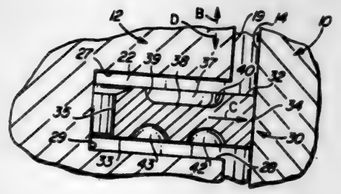
the sliding and adjustment ring against the side of one of the two arms of the sealing ring and the resulting changes in the diametric dimensions of the sealing ring.

4,438,937

PISTON RING

Maurice J. Moriarty, 3225 W. Sahuaro, Phoenix, Ariz. 85029

Filed Dec. 6, 1982, Ser. No. 447,237
Int. Cl.³ F16J *9/12*
U.S. Cl. 277—215 **11 Claims**



1. In a piston ring for residing within a ring groove of a piston, which piston is disposed for reciprocal movem at within a cylinder, which ring is generally annular and includes a top surface, an undersurface, an outersurface, and an innersurface, said surfaces defining a cross-section of fixed exterior dimension, and which ring groove includes an upper surface for receiving the top surface of said ring thereagainst, and a lower surface for receiving the undersurface of said ring thereagainst, and which cylinder includes a surface for sealingly receiving the outer surface of said ring, improvements therein for increasing the responsiveness of said ring, said improvements comprising:

at least one gas loading cavity in said top surface; and

means for decreasing the inertia of said ring while preserving the fixed exterior dimensions of said cross-section.

4,438,938

SEAL FOR INCORPORATION IN HIGH PRESSURE LEAK TESTING TOOL

Richard A. Armell, Montrose, Scotland, assignor to Boc-Nowsco Limited and Drexel Equipment Limited, both of London, England

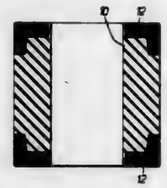
Filed Feb. 11, 1983, Ser. No. 465,803
Claims priority, application United Kingdom, Feb. 12, 1982, 8204252
Int. Cl.³ F16J *15/20*
U.S. Cl. 277—230 **9 Claims**

1. A high-pressure seal comprising

a hollow cylindrical member of a rubber having a poor memory, and

multiple, pre-rubberized, woven fabric layers arranged as a nested stack and embedded in the rubber of the cylindrical member,

each said layer being shaped to conform both with a peripheral part of one end face of the hollow cylindrical member and with an axially extending part of the outer cylindrical periphery contiguous with said end face so that each layer is continuous at the junction between the portion thereof contiguous with the end face and the portion contiguous



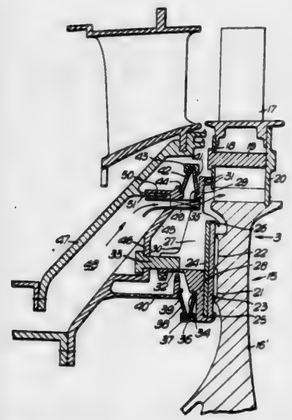
with the cylindrical periphery, the rubber and the rubberized fabric layers being of materials such that they can withstand multiple high compression loading cycles without permanent deformation, substantially without extrusion and with a rapid return to the relaxed condition after each loading cycle.

4,438,939

ANNULAR SEAL FOR A GAS TURBINE ENGINE

George Pask, Stanton-by-Bridge, and Howard J. Golton, Allestree, both of England, assignors to Rolls-Royce Limited, London, England

Filed Apr. 22, 1981, Ser. No. 256,672
Claims priority, application United Kingdom, May 10, 1980, 8015557
Int. Cl.³ F16J *15/08*
U.S. Cl. 277—236 **5 Claims**



1. A gas turbine engine comprising:

a first generally annular component having an axially facing annular surface;

a second generally annular component having an axially facing annular surface coaxial with and opposing said annular surface of said first component;

means permitting relatively large axial movement of said first annular component with respect to said second annular component without permitting relative rotational movement between said first annular component and said second annular component; and

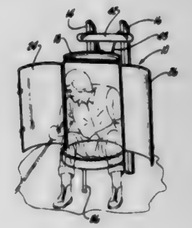
an annular seal for sealing between the annular surface of said first component and the annular surface of said second component while permitting the relatively large axial movement of said first annular component with respect to said second annular component, said annular seal separating a higher pressure area of the engine from a lower pressure area of the engine and comprising a stacked plurality of frusto-conical Belleville washers, adjacent washers being of opposite hand and having opposed abutting preipheries, and an annular ring U-shaped in cross-section for receiving and circumferentially enclosing the opposed abutting peripheries of said washers, said ring permitting said washers to be capable of complete angular displacement of each when there is a change of axial length of the stack of washers without extreme stresses and high functional forces being developed therein at the enclosed abutting peripheries of said washers, said annular ring enclosing the abutting peripheries of the washers extending toward said lower pressure area.

4,438,940

PORTABLE ICE FISHING ENCLOSURE

Frederick J. Hunt, 3224 Garden, Royal Oak, Mich. 48072

Filed Apr. 14, 1982, Ser. No. 368,167
Int. Cl.³ B62B *15/00*
U.S. Cl. 280—12 S **15 Claims**



1. A transport apparatus for carrying goods in one orientation and providing shelter in another orientation, comprising:

a container body having base and wall portions and being of such size and interior volume as to accommodate at least the trunk portion of a human therein;

ground engaging means for facilitating movement of said body over a ground surface, said ground engaging means being connected to said body for transport operation with said wall portion in a horizontal orientation;

support means connected to the base portion of the body for stabily supporting said body in a shelter position wherein the wall portion is vertically oriented and the base portion is spaced above the ground surface to provide comfortable seating for a human,

said ground engaging means being configured to slide said apparatus over snow and ice and functioning with said support means to support the apparatus on end with the wall portion of said apparatus in an upright and vertical position.

4,438,941

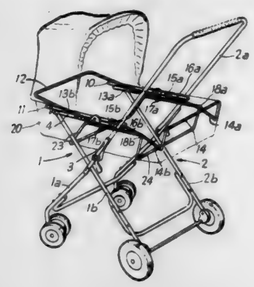
SUPPORT FOR CHILD

Raymond Guillaume, Mougins, France, assignor to Baby Relax, Anglet, France

Filed Jun. 17, 1981, Ser. No. 274,628
Claims priority, application France, Jun. 18, 1980, 80 13481
Int. Cl.³ B62B *7/00*
U.S. Cl. 280—47.4 **9 Claims**

1. A support means transformable into a seat or perambulator, comprising an articulated framework, a bottom supported by the framework and a body element forming at least a partial connection between the bottom and the framework, wherein the framework has a head end and a foot end and includes two first parallel longitudinal elements, two end hoop elements articulated on said first longitudinal elements, and two second parallel longitudinal elements parallel to said first longitudinal

elements and articulated on said hoop elements so that, seen in profile, the hoop element-longitudinal element assembly constitutes a parallelogram deformable from a first position in which the longitudinal elements and hoop elements substantially form a frame contained in a plane to a second position in which said hoop elements form with the longitudinal elements three consecutive planes defining the general appearance of a seat, wherein the end hoop element located at the foot end of the framework includes means for defining a footrest, said footrest means being substantially perpendicular to the plane of



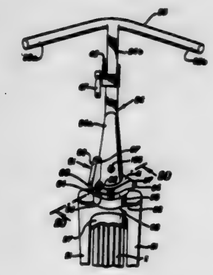
said frame in the first position and being substantially parallel to said longitudinal elements in the second position, wherein the body element forms a substantially parallelepipedic pouch coupled at least to the transverse parts of said hoop elements and to the footrest means, and wherein the bottom includes two parts articulated transversely to each other, the bottom part nearer said footrest means being free with respect to the body element and supported by a first stirrup-shaped crosspiece coupled to said framework and the other bottom part being fastened to said pouch.

4,438,942

FOLDABLE AND PORTABLE VEHICLE

David T. Hon, Los Angeles, Calif., assignor to Hon Corporation, Los Angeles, Calif.

Division of Ser. No. 233,624, Feb. 12, 1981. This application Sep. 29, 1982, Ser. No. 427,435
Int. Cl.[3] B62K *15/00*
U.S. Cl. 280—278 17 Claims



1. In a foldable and portable bicycle having a frame and a front wheel mount at the front end of said frame, a handlebar and steering assembly comprising:

a front wheel support having an upper end and a lower end portion extending downwardly from said upper end, and carrying a front wheel with an axle mounted on said lower end;

a handlebar having a central portion that normally is disposed above said upper end, and laterally projecting opposite end portions;

an elongated steering post having an upper end that is joined to said central portion and a lower end spaced above said wheel support;

steering post hinge means at the lower end of said post and including a hinge and a hinge base above said upper end of said wheel support, said hinge means defining a pivotal axis offset to one side of said post for swinging of the post from a normal upright position over said front wheel support to a depending folded position in which the post is offset laterally and longitudinally from the front wheel support and extends downwardly alongside and lies closely against the front wheel;

said steering post hinge means including means for turning said handlebar from a normal position in which said opposite end portions project laterally on opposite sides of the wheel to a generally front-to-rear position to lie alongside the wheel during said swinging movement of the post to the depending folded condition;

means for connecting said hinge base to said front wheel support through the front wheel mount;

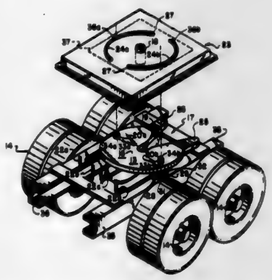
and selectively operable post locking means for holding the steering post securely in its normal upright operating position relative to said hinge base and releasable to permit the post to swing to its folded position.

4,438,943

FIFTH WHEEL SAFETY DEVICE FOR TRACTOR TRAILERS

Alfred M. Hebert, Skidmore Rd., Pleasant Valley, N.Y. 12569

Filed Mar. 1, 1982, Ser. No. 353,200
Int. Cl.[3] B62D *53/08*
U.S. Cl. 280—432 3 Claims



3. A safety device for tractor trailers actuable with the truck brakes comprising:

a bed plate on the trailer having a downwardly extending king pin and a pair of diametrically opposed slots extending upwardly into the bed plate on both sides of the king pin,

a fifth wheel mounted on the tractor having a notched portion to engage the king pin and a pair of oppositely situated pistons each piston having a plunger element which extends upwardly into one of said slots in the said bed plate, and,

means for actuating the plunger elements simultaneously with the brakes to forcefully engage on upper surfaces of the slots under pressure to prevent jackknifing of the trailer, each of said plunger elements including a roller bearing at the end thereof to contact said upper surface.

4,438,944

TOWING AND CARRYING SYSTEMS

Leonard B. Della-Moretta, 1796 Russell Pl., Pomona, Calif. 91767

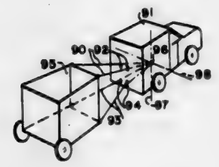
Filed Mar. 3, 1981, Ser. No. 240,199
Int. Cl.[3] B62D *53/00*
U.S. Cl. 280—460 R 16 Claims

1. A towing connection for connecting a trailer having a pair of wheels toward its rear end only, to a towing vehicle, including in combination:

three linear links, including one upper link and two lower links, the lower links being generally horizontal;

a first corresponding series of spaced-apart ball joints connecting the links to a forward portion of the trailer; and

a second corresponding series of spaced-apart ball joints connecting the links to a rearward portion of the towing vehicle, said second series of joints being closer together than the first series so that the links converge such that extended lines upon which the links lie approximately



intersect a remote forward generally vertical instantaneous turning axis, and approximately intersect a remote forward generally horizontal carrying axis; and

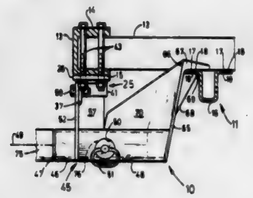
wherein the ball joint connecting the upper link to the towing vehicle is positioned somewhat aft of a transverse vertical plane passing substantially through the ball joints connecting the lower links to the towing vehicle, such that the trailer front is at the same level when the trailer is in a preselected turning angle in either direction with respect to the towing vehicle as it is when in the normal straight ahead towing position, whereby rise and fall of the trailer front during turning is substantially minimized.

4,438,945

ASSEMBLY FOR MOUNTING A WORK OBJECT ON A VEHICLE OR THE LIKE

Stanley F. Curtis, Exeter, Calif., assignor to Pollution Controls Industries, Inc., Tulare, Calif.

Filed Jan. 27, 1982, Ser. No. 343,224
Int. Cl.[3] B60D *1/00*
U.S. Cl. 280—501 4 Claims



1. An assembly for mounting a work object on a vehicle having a frame with a pair of transversely extending structural members disposed in spaced, substantially parallel relation to each other and in substantially right-angular relation to a longitudinal axis of the vehicle, the assembly comprising a first component adapted to be mounted in an assembled position on one of said structural members and having a mounting plate and projection extending therefrom substantially in a common direction relative to the first component; and a second component having a mount for said work object, a mounting plate and projection extending therefrom substantially in a common direction relative to the second component and a support engageable with the other of said structural members in depending relation in an assembled position with said first component wherein the plates and projections of the first and second components can be interlocked with each other to secure the mount for said work object on the vehicle in substantial alignment with said longitudinal axis of the vehicle, and wherein said projections of the first and second components have tubular configurations dimensioned for fitted engagement with each other along an axis substantially normal to the longitudinal axis of the vehicle when the first and second components are in the assembled positions to resist lateral movement of the second component relative to the first component.

4,438,946

SLALOM SKI WITH VIBRATION DAMPER

Yves Piegay, Voiron, France, assignor to Skis Rossignol S.A., Voiron, France

Filed Apr. 7, 1982, Ser. No. 366,357
Claims priority, application France, Apr. 9, 1981, 81 07519
Int. Cl.[3] A63C *5/00*
U.S. Cl. 280—602 4 Claims



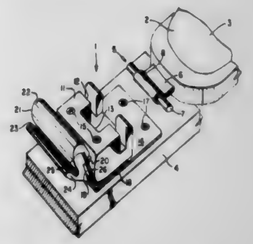
1. A slalom ski having a body with a tip zone, a heel and a boot-supporting tread zone, said body having a structure incorporating in its interior a band of stressed viscoelastic material of a length ranging substantially between 15% and 30% of the length of said body, said band extending from substantially the middle of said tread zone toward said tip zone and terminating short of the latter.

4,438,947

TOE BINDING FOR SKIS

Roderick A. Cooper, 4310 Graham Dr., Pierrefond, Quebec, Canada

Filed Aug. 16, 1982, Ser. No. 408,591
Claims priority, application Canada, Aug. 17, 1981, 383992
Int. Cl.[3] A63C *9/10*
U.S. Cl. 280—615 5 Claims



1. A toe binding for use with a ski and a boot of the type including a substantially T-shaped toe piece extending forwardly from the toe end of the boot, said binding comprising a body for mounting on a ski; a substantially T-shaped groove in said body for receiving said toe piece; pin means slidable in

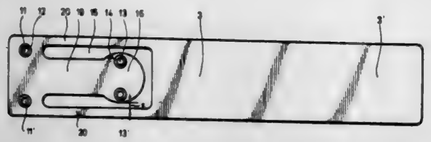
said body for movement between a toe piece retaining position and a toe piece release position; spring means connected to said body biasing said pin means toward said toe piece retaining position; and handle means connected to said spring means for moving said pin means from the toe piece retaining position to the release position, whereby the toe piece can be inserted into or removed from the ski binding.

4,438,948

SOLE-SUPPORT PLATE

Ulrich Gertsch, Interlaken, Switzerland, assignor to TMC Corporation, Baar, Switzerland

Filed May 17, 1982, Ser. No. 379,222
Claims priority, application Switzerland, May 25, 1981, 3390/81
Int. Cl.³ A63C 9/081
U.S. Cl. 280—618 **13 Claims**



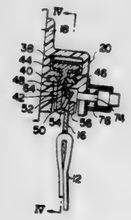
1. In a sole-support plate for a release ski binding, including means for supporting said sole-support plate on the upper side of a ski so that at least one end thereof is movable laterally of the ski, and including restoring means for resiliently urging said plate back into its original position after such lateral movement, the improvement comprising wherein said restoring means includes at least one first opening provided in said sole-support plate, and wherein said sole-support plate, at least in the region of said first opening, is made of a resilient material, said first opening weakening said sole-support plate in the region of said resilient material so that said lateral movement is effected by elastic deformation of the region of said sole-support plate having said first opening therein and, after the lateral movement, said sole-support plate is returned automatically to its original position by said resilience of said region of said sole-support plate having said first opening therein.

4,438,949

AUTOMATICALLY FASTENING SEATBELT SYSTEM

Hiroshi Tsuge, Chiryu; Mitsuaki Katsuno, Toyota; Yuji Nishimura, Nagoya; Tatsushi Kubota, Okazaki; Tadao Yamada, Chiryu, and Yoshihiro Hayashi, Kasugai, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Oct. 7, 1981, Ser. No. 309,509
Claims priority, application Japan, Oct. 15, 1980, 55-143974
Int. Cl.³ B60R 21/10
U.S. Cl. 280—804 **13 Claims**



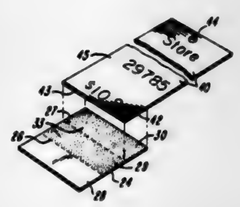
1. An automatically fastening seatbelt system comprising:
a guide rail laid on a vehicle body;
a driving force transmitting member movable along said guide rail;
an anchor plate connected to an occupant-restraining-webbing and movable along said guide rail;
a support device movable along said guide rail and supporting said anchor plate on said guide rail for applying a driving force of the driving force transmitting member to said anchor plate to move said anchor plate along said guide rail, whereby said webbing is caused to approach or recede from the occupant; and
a release device provided at a predetermined position in the longitudinal direction of said guide rail for releasing said anchor plate from said guide rail when said support device reaches said predetermined position,
wherein said driving force transmitting member is a flexible tape movable in a slide groove formed in the guide rail, a portion of said anchor plate is extended through an opening formed in said flexible tape to receive a driving force of said tape, and said support device is movable by being guided by an anchor groove formed in the guide rail and engaged with the anchor for preventing said anchor plate from being detached out of the opening of said tape.

4,438,950

COMPOSITE LABEL WEB, PRICE TAG AND RE-PRICE LABEL COMBINATION, AND METHOD OF PRICE AND RE-PRICE MARKING

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 236,414, Feb. 20, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,087
Int. Cl.³ B32B 3/10
U.S. Cl. 283—70 **10 Claims**



1. Method of re-pricing, comprising the steps of: providing a price tag having an outer side and an underside with price data printed on its outer side, providing a re-price label having an outer side and an underside with first and second spaced lines of weakening dividing the re-price label into first, second and third label parts, the outer side of the re-price label being free of adhesive, the underside of the re-price label having pressure sensitive adhesive, printing re-price data on the outer side of the first label part which differs from the price data on the price tag, applying the third label part by means of the adhesive to the underside of the price tag with the first and second label parts projecting beyond the price tag, and folding the first label part about the first line of weakening and adhering the first and second label parts together with the adhesive so that the re-price data printed on the first label part are on the same side as the printed price data on the price tag.

4,438,951

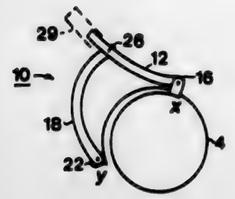
Patent Not Issued For This Number

4,438,952

PIPE COUPLING

Harry Z. Tabor, Jerusalem, Israel, assignor to The Scientific Research Foundation, Jerusalem, Israel

Filed Jul. 7, 1981, Ser. No. 281,094
Claims priority, application Israel, Jul. 11, 1980, 60562
Int. Cl.³ F16L 35/00
U.S. Cl. 285—39 **10 Claims**



1. A quickly-attachable coupling for pipes, characterized in that it comprises: a flexible tube having an internal diameter approximately equal to the outer diameter of the pipe to be coupled; and a cylindrical spring overlying said flexible tube; said cylindrical spring including a closely-wound coil of flat spring material having more than one complete turn, in both an open and closed position and having an inner diameter in its relaxed condition less than the outer diameter of the flexible tube said coil spring being partially uncoilable under stress to open same by increasing its inner diameter at least to the outer diameter of the flexible tube and of the pipe to be coupled the opposite ends of the flat spring material forming the cylindrical spring including a toggle mechanism actuatable to one position for uncoiling the cylindrical spring under stress to open same, or to a second position permitting the relaxing of the cylindrical spring to close same and to cause it to compress the flexible tube into tight engagement with the pipe for the complete length of the coil spring.

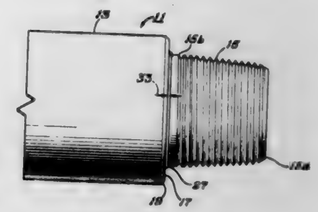
4,438,953

TOOL JOINT BENCH MARK

Albert C. Timme, Jr., Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Feb. 27, 1981, Ser. No. 238,720
Int. Cl.³ F16L 35/00
U.S. Cl. 285—93 **5 Claims**

1. An improved bench mark for a drill pipe member having tool joints on each end of the type having threads spaced from the make-up shoulder, comprising:
an edge formed in each of the tool joints in the space between the threads and make-up shoulder, the edge extending continuously around the space between the threads and make-up shoulder; the edges being located the same distance from their respective make-up shoulders.

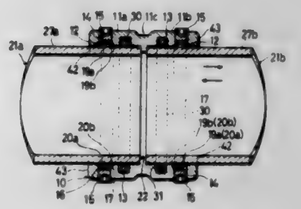


4,438,954

PIPE COUPLING

Tadashi Hattori, Kishiwada, Japan, assignor to Isuzu Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 27, 1981, Ser. No. 325,124
Claims priority, application Japan, Mar. 26, 1981, 56-44619
Int. Cl.³ F16L 17/02
U.S. Cl. 285—104 **9 Claims**



1. A pipe coupling comprising:
a coupling body having at least two sections, at least one of which is of substantially cylindrical form with an opening mouth and includes a first and a second internal annular grooves;
said first internal annular groove being defined by an innermost annular wall which extends substantially transversely of a longitudinal axis of said one section in which said first internal annular groove is formed and is disposed axially innermost of said one section, and an outermost annular wall which is tapered down toward said opening mouth and disposed outermost of said one section, and an intermediate annular wall which is of substantially arcuate

profile in cross section and interposed between said innermost wall and said outermost wall;

a split clamping ring made of elastic metal and disposed in said first internal annular groove so as to be slightly displaceable axially of said one section and relatively to said first internal annular groove;

said clamping ring being of substantially arcuate configuration in cross section and having a pair of spaced circular sharp edges directed radially inwardly thereof;

a deformable sealing ring disposed in said second internal annular groove; and

adjustable depressing means provided for adjustably compressing said clamping ring diametrically;

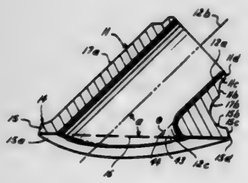
axial displacement of said coupling body relative to said clamping ring engages said arcuate configuration of said clamping ring with said tapered outermost annular wall for forcing said split clamping ring radially inwardly.

4,438,955

ACUTE ANGLED VESSEL CONNECTOR

Bobby W. Ryan, Houston, Tex., assignor to WFI International, Inc., Houston, Tex.

Filed Jan. 21, 1982, Ser. No. 341,559
Int. Cl.³ F16L *13/02*
U.S. Cl. 285—189
5 Claims



1. An acute angled vessel connector adapted to be mounted in a vessel or pipeline and to provide a high pressure angled connection from such vessel or pipeline to a branch pipe, comprising:

a generally cylindrical main body having an interior body bore formed of an interior cylindrical wall and having an exterior wall which is at least in part cylindrical, said interior body bore having a central axis;

a contoured mounting rim formed integrally with one end of said main body, said mounting rim being generally elliptical in configuration and being at a predesignated acute angle with respect to the central axis of said interior cylindrical body bore, said mounting rim being adapted for welding in a flush position in an opening in a vessel or pipeline such that said generally cylindrical main body and said interior cylindrical body bore extend at said predesignated angle acute with respect to the surface of such vessel or pipeline;

said main body having at its other end means for connecting said vessel connector to a branch pipe;

said contoured mounting rim including a generally annular mounting ledge having an undersurface with an outer edge which is generally elliptical and an inner edge approximately concentric thereto, said inner edge being formed by the intersection of the undersurface of said generally annular ledge and said interior body bore; and

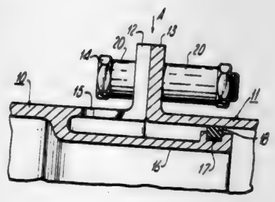
said inner edge of said generally annular mounting ledge includes a fluid impact zone wherein the radius of curvature of said inner edge is substantially larger than the radius of curvature of the remaining portions of said edge, said radius of curvature of said inner edge being measured in a direction perpendicular to the plane of said curved undersurface.

4,438,956

JOINING OF COMPONENTS

Thomas J. Jones, and David S. Curtis, both of Bristol, England, assignors to Rolls Royce Limited, London, England

Filed Dec. 2, 1982, Ser. No. 446,256
Claims priority, application United Kingdom, Dec. 22, 1981, 8138543
Int. Cl.³ F16L *23/02*
U.S. Cl. 285—223
5 Claims



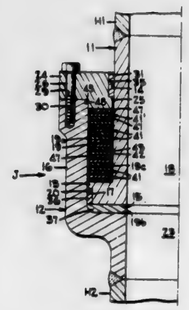
1. An assembly comprising two components to be secured together and between which relative movement is tolerated wherein each component is provided with means for securing the components together at a joint face, at least one of the components is provided with slots adjacent the joint face to impart flexibility to that component, and one of the components is provided with a bridging piece which extends from the region of its attachment to said one component in a direction that covers the slots and is provided at an end thereof with a seal means that engages with the other component thereby to provide a seal which is operable against the leakage of fluid through the slots.

4,438,957

CONSTANT MOTION SWIVEL JOINT

Michael R. Williams, Houston, and Albert R. Tucker, Spring, both of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 12, 1981, Ser. No. 243,169
Claims priority, application United Kingdom, Apr. 1, 1980, 8010878
Int. Cl.³ F16L *27/00*
U.S. Cl. 285—223
12 Claims



1. A constant motion swivel joint for connecting two lengths of pipe, said connector comprising:

a generally cylindrical inner member having a bore extending axially therethrough, and having a flange extending radially outward from the outer surface of said inner member;

means for connecting a first length of pipe to communicate with said axial bore of said inner member;

a generally cylindrical outer member having a bore extending axially from a first end thereof through a portion of said outer member, said outer member having an axially extending passage to receive said inner member, said passage extending from a second end of said outer member through a portion of said outer member;

means for connecting a second length of pipe to communicate with said axial bore of said outer member;

a plurality of annular metal rings mounted between an outer wall of said inner member and an inner wall of said outer member, each of said rings having a low friction coating on one side thereof and a layer of elastomeric material bonded to the other side, said metal rings reducing extrusion of said bonded elastomeric material under pressure and said elastomeric material flexing to accommodate a predetermined amount of rotary motion between said inner and said outer members without slippage between adjacent annular rings; and

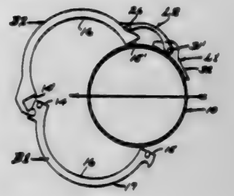
means for compressing said rings between said radial flange of said inner member and a portion of said outer member to provide a fluid-tight seal between said inner and said outer members.

4,438,958

CLAM-SHELL COUPLING FOR JOINING BEADED TUBES

Herbert A. De Cenzo, 3917 Cannon Ave., Las Vegas, Nev. 89121

Division of Ser. No. 112,956, Jan. 17, 1980. This application Feb. 4, 1982, Ser. No. 345,551
Int. Cl.³ F16L *21/06*
U.S. Cl. 285—234
21 Claims



1. A split coupling of clam-shell configuration for sealed lateral application over the radially beaded open end of a tube section, and including;

a pair of segmental body members separable at a diametrically disposed plane coincidental with a central longitudinal axis and at which plane opposite side faces of the body members have abutted interface engagement,

a longitudinal bore concentric with said axis and extending through the pair of body members to open at one end thereof for the reception of an end portion of the tube section,

a counterbore in the body members and of greater diameter than the longitudinal bore to receive the radial tube section bead and extending to an inwardly disposed shoulder engageable with the radial tube section bead thereby to prevent separation of the tube section therefrom,

one side of the body members being joined by hinge means,

the other side of the body members being releasably joined by latch means comprised of longitudinally disposed concaved seats formed in radial enlargements outward of the abutted interface engagement at said other side of the body members respectively, a link rotatively carried by one body member and contiguously engageable over the radial enlargements of said body members, and a toggle clamp rotatively carried by the link and releasably engaged with a seat in said other body member,

a circumferential seal carried at said one end of the body members and comprised of depressible segments projecting radially inward from the bore of each body member to engage with the outer diameter wall of a tube section extending therethrough, said seal segments having male and female formation and at least one of which extends circumferentially from the abutted side interface engage-

ment of said body members for reception one within the other,

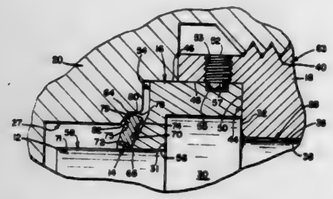
and a longitudinal seal carried at each abutted interface engagement of the opposite side faces of said body members and comprised of a depressible section projecting from the side face of one body member to engage with the side face of the other body member at said abutted interface engagement thereof and extending from the circumferential seal segments at the one end of the body members.

4,438,959

TORSIONALLY DEFLECTABLE SEAL RING ASSEMBLY FOR FLUID-RECEIVING SYSTEMS

Gordon A. Valentine, Denver, Colo., assignor to Stanley Aviation Corporation, Denver, Colo.

Filed Dec. 2, 1981, Ser. No. 326,521
Int. Cl.³ F16L *19/08, 25/00, 35/00*
U.S. Cl. 285—340 **14 Claims**



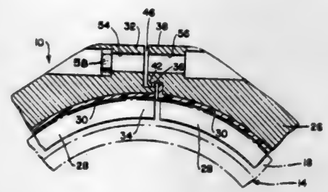
1. In a fluid-receiving assembly first and second relatively axially displaceable structures, said first structure having a tubular configuration for receiving fluid under pressure, said second structure having at least a portion received in said first structure, a torsionally deflectable seal ring received in said first structure and circumferentially surrounding said portion of said second structure, said seal ring being formed with at least a pair of diagonally opposite inner and outer corner edges and being torsionally deflectable to establish a seal between said first and second structures, an adapter formed separately of said first and second structures and having a tubular cross section, said adaptor being received in said first structure for axial displacement with one of said structures relative to the other of said structures, and first and second formations delimiting a cavity receiving said seal ring and positioned to engage said inner and outer corner edges, respectively, upon relative axial displacement of said structures for torsionally deflecting said seal ring to its seal-establishing condition, one of said formations being formed in part by said adapter and in part by a preselected one of said structures, and the other of said formations being formed on the other of said structures, said one of said formations being defined by a peripherally extending surface and by a further surface adjoining said peripherally extending surface, said peripherally extending surface being formed on said preselected one of said structures, and said further surface being formed on an end of said adapter and being contained in a conical envelope intersecting said peripherally extending surface at an obtuse angle such that said peripherally extending surface and said further surface cooperate to define a peripherally extending corner which receives one of said diagonally opposite corner edges of said seal ring.

4,438,960

CLAMPING & SEALING SYSTEM FOR FLANGED DUCTS

Glenn G. Carroll, and Joseph C. Frank, both of Port Hope, Mich., assignors to Alcolite Products Corp., Mt. Clemens, Mich.

Filed Jul. 16, 1982, Ser. No. 399,023
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—367 **4 Claims**



1. In a system for removably clamping and sealing together the ends of a pair of connecting ducts of circular cross-section wherein each duct end is provided with a peripheral flange which is engageable by a clamping ring adapted to surround the flanges of the ducts to be joined, the ring being shaped and dimensioned to engage the flanges and force them together upon tightening of the clamping ring, the ring being formed with a short circumferential opening to enable it to be resiliently spread apart for assembly over the duct flanges and provided with adjustable securing means to draw together the two ends of the ring at the ring opening to tighten the ring upon the duct flanges to thereby clamp and seal the joint between the pair of ducts, the improved clamping ring which comprises:

a first end of the ring having an undercut recess to receive an integral non-adjustable projection on the second end of the ring, said recess and projection being shaped and positioned so that said projection can be inserted into said recess only by the temporary resilient relative displacement of the first and second ends of the ring in a radial direction, release of the displacement force permitting said first and second ends to return to a position wherein said recess and projection cooperate to form a temporary latch which holds the ends of the ring in a predetermined relative position and prevents the ends from separating in a circumferential direction;

said predetermined position being selected to provide sufficient clamping force to retain the connected ducts in an unclamped but loosely connected condition while permitting the ducts to be rotated about their common axis for final position adjustment prior to application of full clamping force by the adjustable securing means;

adjustable securing means on said clamping ring adapted to draw the two ends of the ring together after said projection and recess have established said temporary latch, to thereby tighten and clamp the ring onto the duct flanges and tightly draw the connecting ducts together.

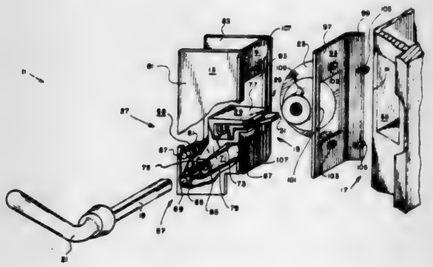
4,438,961

DOOR LATCH MEANS

C. Lynwood Grisham, Memphis, and Freddie A. Grisham, Bartlett, both of Tenn., assignors to Grisham Corporation, Arlington, Tenn.

Filed Apr. 23, 1982, Ser. No. 371,413
Int. Cl.³ E05C *5/00*
U.S. Cl. 292—67 **2 Claims**

1. Door latch means for latching a swingably mounted door, said door latch means comprising a boxlike housing, striker means disposed within said boxlike housing for latchable engagement with suitably established jammounted keeper means and for enabling said door latch means to properly latch the door while in the closed position thereof, a rock shaft extending through said housing and being coupled with said striker means and carrying knoblike means at either end thereof for providing arcuate movement of said striker means thus facilitating unlatching the closed door, first striker actuator means for causing latching action of said latch means by establishing a rectilinear movement of at least a portion of said striker means which is caused to operatively engage the keeper means thus latching the door as it swings toward the closed position thereof, and second striker actuator means for unlatching said latch means by establishing arcuate movement of said striker means through rotation of said rock shaft, thus said second striker means enables said door latch means to be unlatched by a mere turning action of either of said knoblike means; said striker means including mainbody means responsive to said second striker actuator means and being coupled with said rock shaft for arcuate movement therewith, and tonguelike means responsive to said first striker actuator means for latchlike engagement with the keeper means, said mainbody means being provided with a passageway especially constructed for matably receiving said rock shaft in such a manner that when said rock shaft is manually turned about its longitudinal axis said mainbody means is caused to be swingably carried therewith, said mainbody means being further provided with a slot for slidably receiving said tonguelike means; said first striker actuator means including first bias means disposed within said slot for operable engagement with said tonguelike means and



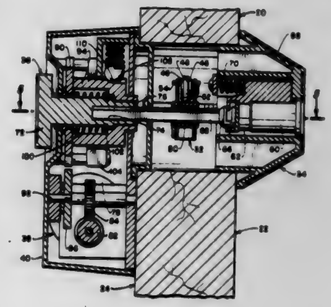
for yieldably urging said tonguelike means toward the keeper means; said second striker actuator means including second bias means disposed within said boxlike housing for operable engagement with said mainbody means and for yieldably urging said striker means swingably toward the keeper means; said second striker actuator means including support means for pivotally supporting said mainbody means within said boxlike housing; said second bias means including torsion spring means having a coiled member and a pair of torsion applying leg members constituted by integrally joined extensions of said coiled member; said second striker actuator means additionally including coil pin means fixedly attached to said boxlike housing for circumflexably receiving and thus supporting said coiled member, and leg pin support means fixedly attached to said boxlike housing for engagement with and thus supporting one of said leg members while the leg member other than said one of said leg members is bearing against said mainbody means so as to yieldably urge said striker means swingably toward the keeper means; said support means including an elongated sleevelike member provided with an elongated interruption coextending the length thereof; said mainbody means including a cylindricallike member which is substantially concentrically disposed about said passageway with the diameter of said cylindricallike member being compatibly sized with respect to the internal diameter of said sleevelike member for contiguous reception therein.

4,438,962

ALTERNATE MANUALLY AND ELECTRICALLY ACTUATED BOLT

Paul G. Soloviff, Tustin, Calif., and William C. Lichtenfels, West Hartford, Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 2, 1981, Ser. No. 308,150
Int. Cl.³ E05B *47/00*; E05C *1/06*
U.S. Cl. 292—144 **36 Claims**



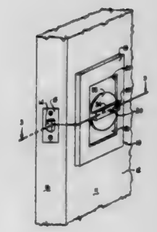
1. In an alternate manually and electrically actuated bolt of the type having a bolt movable between extended and retracted positions, manual operator means operably connected to said bolt for moving said bolt between said extended and retracted positions upon manual actuation thereof, an electric motor, and gear means operably connected to each of said electric motor and said bolt for moving said bolt between said extended and retracted positions upon electrical actuation of said motor; the improvements including: said gear means comprising an oppositely rotatable driven gear operably connected to said bolt for moving said bolt between said extended and retracted positions upon opposite rotatable movement of said driven gear, a driving gear segment operably connected oppositely movable by said electric motor, said driving gear segment being constructed and arranged relative to said driven gear engaging said driven gear moving said bolt between said extended and retracted positions and totally disengaging said driven gear upon said bolt moving into either of said extended and retracted positions; whereby, said bolt may be moved from either of its extended and retracted positions to the other of its extended and retracted positions by said manual operator means without movement of said driving gear segment and said electric motor.

4,438,963

DOOR LATCH MECHANISM WITH GENERALLY LINEARLY MOVABLE OPERATING MEMBER

Peter Friedrich, 44 Riverside Ave., Lyndhurst, N.J. 07071

Filed Jun. 26, 1981, Ser. No. 277,876
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—168 **16 Claims**



1. A door latch mechanism including:

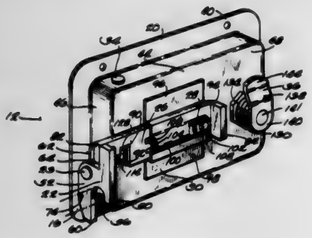
(a) manual operating means adapted for mounting on the face of a door and including a manually accessible operating member generally linearly translatable substantially parallel to the face of the door;
(b) a door latch assembly for location within the door between its faces, the door latch assembly including a movable door latch element for latching the door closed and operable between an extended, latched position and a retracted, released position, and door latch actuator means operatively connected to the door latch element for effecting the movement thereof;
(c) means connected between the operating member and the door latch actuator means for operating the door latch actuator means and moving the door latch element when the operating member is moved linearly;
(d) said lineraly translatable operating member being mounted for rotational movement in addition to said translation; and
(e) the mechanism further comprising locking means responsive to rotational movement of the operating member for preventing retraction of the door latch element.

4,438,964

PADDLE OPERATED VEHICLE LATCH

William S. Peters, Appleton, Wis., assignor to Pierce Manufacturing, Inc., Appleton, Wis.

Filed Jun. 18, 1981, Ser. No. 275,006
Int. Cl.³ E05C 3/26; E05B 13/10
U.S. Cl. 292—216 10 Claims



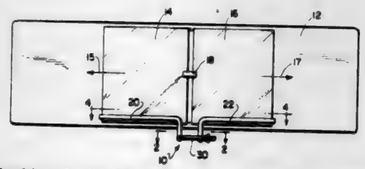
1. A rotary latch mechanism for engaging a latch post, comprising:
A. a cam pivotally mounted for rotation between engaged and disengaged positions about an axis parallel to the direction of extension of said latch post, said cam having peripheral edges and first and second parallel faces;
B. first biasing means to bias said cam toward said disengaged position at all times;
C. a first recess, defined by first opposed outwardly extending leading and following edges formed in said cam, to receive said post when said door is closed, wherein said leading edge clears said post to allow said post to enter said recess when said cam is in its disengaged position, said leading edge engages said post in said recess to latch said door when said cam is rotated to its engaged position, and said following edge engages said post in said recess as said door is closed to rotate said cam from its disengaged position to its engaged position;
D. a second recess, defined by second opposed outwardly extending leading and following edges formed in said cam;
E. a latch bar having first and second ends, disposed parallel to said axis, and mounted for sliding lengthwise between a retracted position clear of said cam, an intermediate position wherein said first end bears against the nearest face of said cam when said cam is in its disengaged position, and an extended position wherein said first end passes into said second recess and engages said second following edge to latch said cam in its engaged position;
F. second biasing means biasing said latch bar toward said extended position when said latch bar is free to slide;
G. unlatching means to retract said latch bar to said retracted position from said extended position, whereby to withdraw said first end from said second recess to free said cam for rotation to said disengaged position responsive to said first biasing means, and thus to release said latch post when said unlatching means is operated; and
H. safety latch means to latch said cam in a safety position between its engaged and disengaged positions to permit rotation of said cam toward said engaged position and to prevent rotation of said cam toward said disengaged position, said safety latch means comprising a step formed in said nearest cam face adjacent said second following edge to receive said first end of said latching bar when said cam is in said safety position, and to clear said first end to allow extension of said latching bar when said cam is rotated to said engaged position.

4,438,965

LOCKING DEVICE FOR VEHICLES EQUIPPED WITH SLIDING WINDOWS

Chris Stearns, Farmington, N. Mex., assignor to C. K. Locks Limited, Farmington, N. Mex.

Filed Oct. 8, 1981, Ser. No. 309,582
Int. Cl.³ E05C 19/18
U.S. Cl. 292—256.75 8 Claims



1. A locking device for securing oppositely movable sliding panels, comprising:
a first arm attachable to a first one of said panels;
a second arm attachable to a second one of said panels;
a bolt detachably connectable between said first and second arms, said bolt having a pivot joint connected to said first arm and a slot for receiving said second arm; and
a nut threadably engaging said bolt and extending across said slot for holding said second arm in said slot, wherein said second arm includes a notched portion engaging said bolt within said slot.

4,438,966

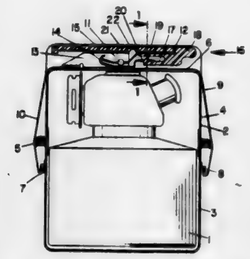
LOCK FOR CARRYING CASES OF RESPIRATORS

William Eckstein, Sereetz, and Gerd Pantaleon-Stemberg, Mölln, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,493
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3032915
Int. Cl.³ E05C 19/18; B65D 45/16
U.S. Cl. 292—259 R 12 Claims

1. A lock and seal combination for a carrying case of a respirator having a container part and a cover member, with at least one strap having strap ends held together by a toggle clamp to hold the container part to the cover member, the toggle clamp having a lever, comprising: a sealing piece (5) engaged to the cover member and having a recess for receiving the lever (12), one strap end having a hook portion (14) with an opening (20) in said hook portion; and the sealing piece having a portion with a protrusion (19) extending therefrom engaged into the hook portion opening; the toggle clamp including a

holding member (13) connected to the other strap end for pivotally carrying the lever; one end of the lever engaged with



the hook portion connected to the one strap end and another end of the lever engaged into the recess of the sealing piece.

4,438,967

BAG HANDLE

Donald L. Fox, 76 Maple Ave., Greenwich, Conn. 06830

Filed Aug. 3, 1981, Ser. No. 289,408
Int. Cl.³ B65D 33/06
U.S. Cl. 294—164 9 Claims

1. Apparatus for keeping a bag opening closed and providing a handle for carrying the bag comprising:
(a) frame means having a first portion thereof for gripping the bag and a second portion thereof for carrying the bag;
(b) means for engaging the bag opening with the frame means in the vicinity of the first portion of the frame means whereby after the bag is engaged, any force tending to pull the bag off of the frame means places more force on the engagement means; and
(c) said first portion of said frame means including a stop, said engaging means including a non-spring-biased rotatable member extending transversely of said frame means for support of the bag, said member being mounted on said first portion of said frame means at a site spaced apart from said stop to provide an entry space for entry of said bag between said member and said stop and frame means, said rotatable member having an edge with gripping means movable towards said stop into said entry space for gripping the bag upon rotation of said member.

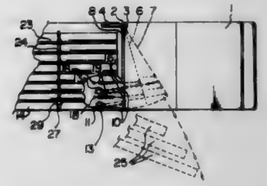
4,438,968

DEFLECTING DEVICE FOR TRUCK LOAD

Ralph Worthing, P.O. Box 715, Kamloops, B. C., Canada (V2C 5L7)

Filed Mar. 3, 1982, Ser. No. 354,330
Claims priority, application Canada, Apr. 2, 1981, 374486
Int. Cl.³ B62D 25/00
U.S. Cl. 296—1 R 5 Claims

1. A deflecting device for deflecting the load of a trailer, consisting of a plate vertically positioned across the front of the trailer for pivotal movement about a vertical pivot at one



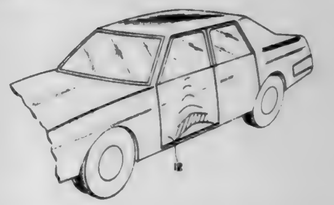
side of the trailer and restraining means between the trailer and the plate for limiting the amount of pivoting of the plate.

4,438,969

COLLISION RESISTANT CONSTRUCTION FOR A DOOR OF A VEHICLE

Ken Kamijo, Zushi, and Kouzo Maeda, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Nov. 6, 1981, Ser. No. 319,102
Claims priority, application Japan, Nov. 7, 1980, 55-160193[U]
Int. Cl.³ B60J 5/04
U.S. Cl. 296—146 12 Claims

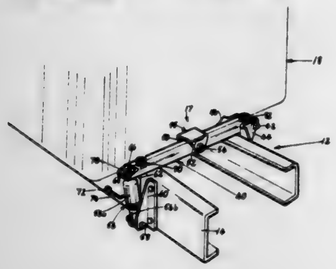


1. A collision resistant construction for a door of a vehicle having a door opening defined above a side sill, a hinged side door operable to open and close said door opening and a seat assembly located in the vehicle cabin beside said door opening, comprising:
a sliding mechanism securely mounted on a floor of said vehicle, said sliding mechanism having mounted thereon a seat proper frame of said seat assembly for permitting a sliding movement of said seat assembly in a fore-and-aft direction relative to said floor;
first means securely connected to said sliding mechanism and said seat proper frame, said first means having a rigidly constructed extreme end portion which extends outwardly toward said door opening in the vicinity of said side sill; and
second means provided on said hinged side door to be movable therewith, said second means being positioned at a portion of the door which faces said extreme end portion upon normal closing of said side door,
whereby, when said side door tends to be driven into the vehicle cabin by an external force applied thereto, said second means is brought into secure engagement with said extreme end portion of said first means thereby preventing said door from continuing the driving-in motion.

4,438,970
VEHICLE CAB SUSPENSION

Graeme B. Boucher, Ferntree Gully, Australia, assignor to Pacar Inc., Bellevue, Wash.

Filed Jul. 31, 1981, Ser. No. 288,983
Claims priority, application Australia, Oct. 9, 1980, PB5973
Int. Cl.³ B62D 27/06
U.S. Cl. 296—190 23 Claims

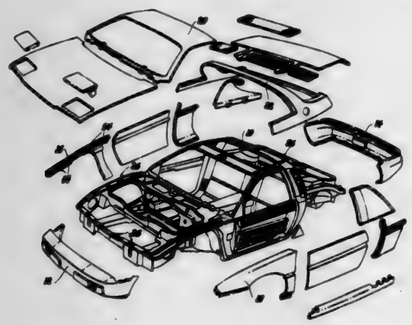


9. A cab suspension for a wheeled vehicle comprising a chassis, a cab on said chassis, pivot means at a first location for pivotally supporting one end of said cab on said chassis for movement relative to said chassis, and support means for supporting the other end of said cab at a second location spaced from said first location permitting vertical movement of said cab relative to said chassis, said support means including an elongated member coupled to one of said cab or chassis for relative rotational movement thereto at a first position along said member, coupled to an opposite one of said cab or chassis for relative rotational movement thereto at a second position along said member spaced from said first position, and coupled to said cab or chassis at a third position along said member by damping means for dampening vertical movement of said member relative to said cab or chassis, said cab thereby being allowed to oscillate substantially vertically in damped movement about said pivotally supported end.

4,438,971
METHOD AND APPARATUS FOR PLASTIC BODY PANEL ATTACHMENT

Wieslaw S. Zaydel, Rochester; Hulki Aldikacti, Orchard Lake, and James G. Bouck, Clarkston, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 15, 1982, Ser. No. 418,200
Int. Cl.³ B62D 27/02
U.S. Cl. 296—191 2 Claims

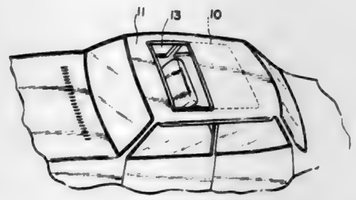


1. A vehicle body comprising:
a vehicle body structural panel suitably connected to other vehicle body structural panels to provide a self-support body structure;
a vehicle body outer panel having a generally planar apertured mounting surface adapted for attachment on the body structure in spaced relation from the body structural panels;
an attachment block having a stamped metal housing with a base adapted for attachment on the body structural panel and a cylindrical projecting wall defining a plastic filled cavity, said cylindrical wall and said plastic being machinable to establish a precisely located body outer panel support face and said plastic being drillable to provide a fastener hole; and
a fastener installed through the aperture of the body outer panel mounting surface and into the drilled hole in the plastic of the attachment block whereby the mounting surface of the body outer panel is securely attached to the support face of the attachment block to attach the body outer panel on the body frame.

4,438,972
OPERATING MECHANISM FOR OPERATING A SLIDING AND TILTING ROOF-PANEL

Yoshinori Katayama, Tokyo; Ryoji Fujiwara, Mizuho, and Tsunetoshi Nishimaki, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa and Johnan Seisakusho Company, Limited, Nagano, both of, Japan

Filed Apr. 28, 1981, Ser. No. 258,465
Int. Cl.³ B60J 7/02; H02P 5/06
U.S. Cl. 296—223 6 Claims

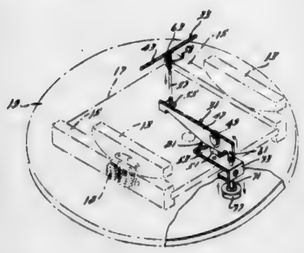


1. An operating mechanism for operating a sliding and tilting roof panel of an automobile and the like, the tilting movement of the roof panel being started after the sliding movement of the roof panel to return the roof panel to its fully closed position is completed, the sliding movement of the roof panel being started after the tilting movement of the roof panel to return the roof panel to its fully closed position is completed, comprising:
(a) an electric motor;
(b) a cable connected to the motor, whereby the cable is moved when the motor is electrically actuated, the cable being also connected to the roof panel, whereby the motor drives the roof panel via the cable when electrically actuated;
(c) a rack engaging the cable, whereby the rack is moved according to the movement of the cable;
(d) a pinion meshing with the rack to be rotated according to the movement of the rack;
(e) a switch-operating member engaging the pinion so as to be moved according to the rotation of the pinion, whereby the position of the switch-operating member represents the position of the roof panel; and
(f) first and second limit switches operated by the switch-operating member, the first switch being operated to cut off the electrical actuation of the motor when the roof panel is slid to its fully closed position, the second switch being operated to cut off the electrical actuation of the motor when the roof panel is tilted to its fully closed position;
whereby the roof panel is automatically stopped at its fully closed position when the roof panel is slid or tilted to its fully closed position.

4,438,973
SWIVEL CHAIR WITH BRAKE

Larry P. LaPointe, LaSalle, Mich., assignor to La-Z-Boy Chair Company, Monroe, Mich.

Filed Aug. 4, 1981, Ser. No. 290,068
Int. Cl.³ A47C 3/02, 3/00
U.S. Cl. 297—349 17 Claims

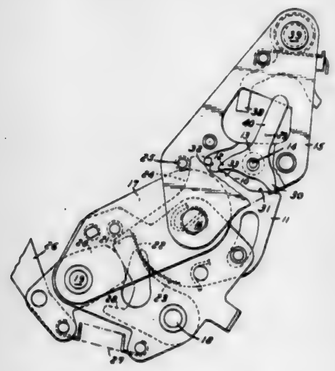


1. A chair comprising a seat frame, a base for the chair, chair support means swively mounting the frame on the base, and brake means acting between the support means and the base to resist swiveling of the chair when it is unoccupied a seat spring system on said seat frame providing a yieldable top crown seating surface, said brake means being connected to and energized by force of the spring system released as it moves to provide said top crown seating surface when a chair occupant lifts his weight from the seat.

4,438,974
GUIDE PROFILE FOR INERTIA LATCH

Fred C. Kresky, Richland, Mich. and Gainesville, Fla., assignors to Keiper U.S.A., Inc., Battle Creek, Mich.

Filed Sep. 24, 1981, Ser. No. 305,187
Int. Cl.³ A47C 1/025; B60N 1/04
U.S. Cl. 297—379 7 Claims

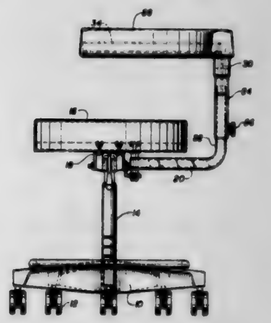


1. Passenger car seat back hinge comprising pivotally connected brackets for respective connections to seat and seat back, inertia latch means for arresting forward seat back tilting under predetermined emergency vehicle deceleration, said latch means including a gravity/inertia actuated latch element pivotally mounted on said seat back bracket for movement between latching and unlatching positions, a cooperating latch stop mounted on said seat bracket engageable by said latch element, said latch element having a center of gravity horizontally displaced from its pivotal center when the car is on a level surface to produce a gravity actuated unlatching moment and vertically displaced to produce a vehicle deceleration inertia actuated latching moment, positive stop means limiting backward pivotal movement of said seat back bracket to a user position, cam means responsive to return of said seat back to user position for overcoming gravity bias of said latch element and producing pivotal movement to a latch engaging attitude, said latch element having substantial additional pivotal travel available in a latch engaging direction to produce full latch engagement in response to initial seat back forward tilting under emergency deceleration conditions, and means to minimize any pivotal lost motion angular clearance for said latch element with said seat back bracket in user position, said horizontal displacement and unlatching moment being reduced upon parking on a downward slope in proportion to the steepness of slope and being subject to further reduction by any pivotal lost motion displacement of said latch element, as might result from applying the brakes in parking on a downward slope, thereby resulting in an ineffective release moment when the combination of downward steepness of slope and lost motion exceed predetermined limits, said means to minimize any pivotal lost motion angular clearance combined with said horizontal displacement accommodating at least a 15° downward parking angle without loss of effective release moment.

4,438,975
ARMREST FOR A SEAT

Ralph J. Williams, New Oxford, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Jun. 21, 1982, Ser. No. 390,015
Int. Cl.³ A47C 7/54
U.S. Cl. 297—412 6 Claims



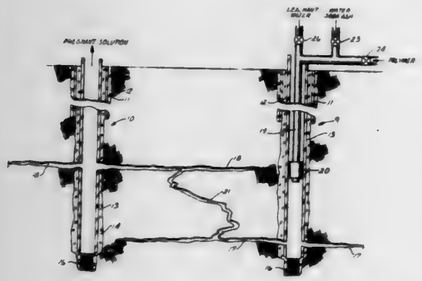
1. An arm rest arrangement for a seat such as a stool and the like comprising a seat member, a post extending perpendicularly relative to an edge of said seat and having sections of two different diameters in axial alignment, a one-way clutch movably supported upon the upper end of said post, an arm connected to said clutch and extending laterally relative to said post, said clutch being circular and being connected to said arm and movable axially upon said post between said sections of different diameters thereof and when engaging said section of larger diameter permitting rotation of said arm in one direction upon said post but preventing reverse direction and when said clutch is disposed upon the post section of smaller diameter said clutch is deactivated to permit rotation of the arm about the axis of the post in said reverse direction.

4,438,976

METHOD OF REPAIR OF SHORT CIRCUITS FOR IN SITU LEACHING

David R. Baughman, Mesa, Ariz., and Jerry R. Bergeson, Golden, Colo., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 6, 1982, Ser. No. 406,022
Int. Cl.³ E21B *43/26, 43/28, 33/138*
U.S. Cl. 299—4 35 Claims



1. A method for reducing leakage of leachant through a short circuit passage in a subterranean formation between a first fracture in communication with a first well and a second fracture in communication with a second well in an in situ leaching system comprising the steps of:

introducing leachant having a first pH into the subterranean formation surrounding the short circuit passage;

introducing into the short circuit passage an aqueous solution having a second pH and containing a sealing material that gels at the first pH; and

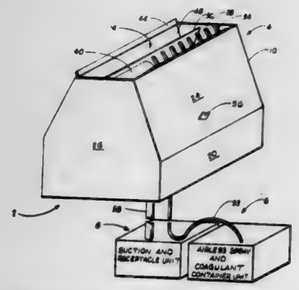
discontinuing liquid flow between the first and second wells for a time sufficient for residual leachant in the subterranean surrounding the short circuit passage to initiate gelation of the sealing material.

4,438,977

APPARATUS FOR REMOVING MATERIAL

Nimrod T. Chapel, 3804 Green Oaks Way, Edmond, Okla. 73034

Continuation-in-part of Ser. No. 113,192, Jan. 18, 1980, Pat. No. 4,274,676. This application May 18, 1981, Ser. No. 264,635
Int. Cl.³ A47L *7/02;* E01H *1/08*
U.S. Cl. 299—64 3 Claims



1. An apparatus for removing material from a surface, comprising:

scraping means for scraping the surface to loosen the material therefrom, said scraping means having a cavity and an opening defined therein and including:

a bottom wall;

a first side wall connected along an edge thereof to a first edge of said bottom wall;

a second side wall connected along an edge thereof to a second edge of said bottom wall, said second edge disposed opposite said first edge of said bottom wall;

a third side wall angularly extending from another edge of said first side wall, which other edge of said first side wall is disposed opposite the edge of said first side wall connected to said first edge of said bottom wall, said third side wall extending inwardly toward said opening;

a fourth side wall angularly extending from another edge of said second side wall, which other edge of said second side wall is disposed opposite the edge of said second side wall connected to said second edge of said bottom wall, said fourth side wall extending inwardly toward said opening and said fourth side wall having an outlet port defined therein;

a first end wall connected to first ends of said first, second, third and fourth side walls; and

a second end wall connected to second ends of said first, second, third and fourth side walls, said bottom wall, said first, second, third, and fourth side walls and said first and second end walls being connected so that said cavity is defined thereby;

coagulant applying means for applying a coating of a coagulant to the material to be removed, said coagulant applying means including conduit means for providing a passageway by which said coagulant can be carried to said port defined in said fourth side wall for being discharged therefrom when said fourth side wall is moved adjacent the surface from which the material is to be removed; and

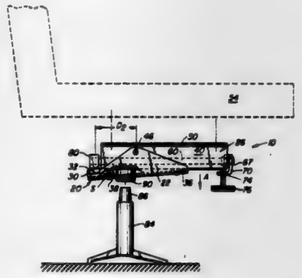
withdrawing means, associated with said scraping means, for withdrawing the coagulant coated material which has been loosened from the surface which is scraped when said opening of said scraping means is moved adjacent the surface.

4,438,978

TILT BACK MECHANISM FOR A CHAIR

Tor Arild, P.O. Box 4063, Woodside, Calif. 94062

Filed Nov. 18, 1981, Ser. No. 322,559
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—304 8 Claims



1. A tilt back mechanism for a chair comprising:

a planar yoke having front and rear ends, said yoke including a pair of upstanding braces formed along the opposed side edges thereof, and with the yoke further including an upstanding stop means formed adjacent the rear end along one side edge thereof;

a rocker plate having front and rear ends and a width less than the spacing between the upstanding braces of the yoke enabling the rocker plate to be received therebetween, and with the rocker plate including a second pair of upstanding braces formed along the side edges thereof, with adjacent braces of each pair being pivotally connected enabling the rocker plate to tilt relative to the yoke; and

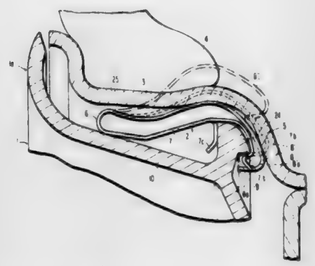
means for restraining the tilting of the rocker plate in the rearward direction, the restraining means including a torsion bar extending longitudinally along the rocker plate from the front to the rear end thereof, with front end of the torsion bar being fixably mounted adjacent the front end of the rocker plate and with the torsion bar being supported for rotational movement adjacent the opposed rear end thereof, with the restraining means further including a lever arm fixably connected to the rear end of the torsion bar and extending to said one side edge of the yoke in a manner to be aligned and abutting with the upstanding stop means whereby tilting of the rocker plate in the rearward direction causes a rotational torque to be placed on the torsion bar through the rotational movement of the lever arm such that the tilt back motion is torsionally restricted thereby.

4,438,979

WHEEL COVER

Dieter Renz, Rechberghausen, and Bernd Löper, Korb, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,459
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931163
Int. Cl.³ B60B *7/06*
U.S. Cl. 301—37 PB 20 Claims



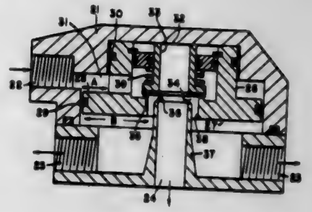
1. A wheel cover which includes a mounting means for enabling mounting of the wheel cover onto a rim of a wheel, the mounting means including a plurality of U-shaped retaining springs each including a bent-over section and two legs adjoining the bent-over section, each of said retaining springs being adapted to resiliently engage into a channel-like identation provided in the rim of the wheel, characterized in that each of the retaining springs has an unstressed condition and a prestressed condition and is constructed so as to enable a predetermined prestressing thereof by movement of at least one leg of each retaining spring over a predetermined prestressing distance, the movable leg of each retaining spring also being movable from the prestressed condition into an installed condition, one point of the movable leg of the retaining spring being operable to abut at a point of the wheel cover during displacement of the movable leg into the installed condition in such a manner that the effective free bending length thereof is shortened and therewith the spring rate of the retaining spring is increased.

4,438,980

PROPORTIONING VALVE WITH PRESSURE PORT COMMUNICATING WITH STEPPED AREA OF DIFFERENTIAL PISTON

Sidney A. Lippiatt, Bath, England, assignor to Bendix Limited, Bristol, England

Filed Mar. 23, 1982, Ser. No. 361,162
Claims priority, application United Kingdom, Mar. 27, 1981, 8109772
Int. Cl.³ B60T *15/18*
U.S. Cl. 303—6 C 4 Claims



1. A pressure proportioning valve having a housing having a pair of opposite ends, said housing having an inlet port, an outlet port, and an exhaust port, a piston slidable in said housing, said piston being stepped to define larger and smaller portions with a shoulder therebetween, first sealing means sealing the smaller portion of the piston with the wall of said housing to define a first chamber between one end of said housing, said smaller portion of the piston and said first sealing means, said first chamber being communicated with said exhaust port, second sealing means sealing the larger portion of the piston with the wall of said housing to define a second chamber between the other end of said housing, said larger portion of the piston, and said second sealing means, said second chamber being communicated to one of said inlet and outlet ports, said shoulder cooperating with the wall of said bore and said first and second sealing means to define a third chamber separated from said first chamber by said first sealing means and from said second chamber by said second sealing means, the other of said inlet and outlet ports communicating with said third chamber, and a double valve assembly including a valve member carried by said piston and responsive to movement thereof to control communication between said chambers, the effective area of said piston responsive to the pressure level in said third chamber being less than the effective area of said piston exposed to the pressure level in said second chamber, said double valve assembly having a stable lap position to maintain a predetermined pressure ratio between said second and third chambers.

4,438,981

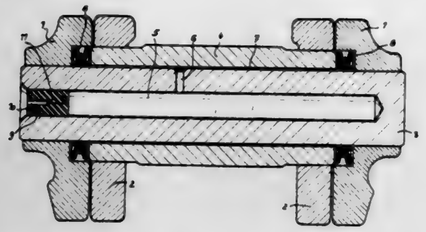
HINGE JOINT FOR A TRACK CHAIN

Hans-Wilhelm Harms, Ratingen, Fed. Rep. of Germany, assignor to Intertractor Viehmann GmbH & Co., Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,520
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127104
Int. Cl.³ B62D *55/20*
U.S. Cl. 305—14 9 Claims

1. A hinge joint for a track chain comprising a pin having a bore therein, a bushing around the pin and slightly spaced therefrom, a radial or transverse channel through the wall of the pin communicating with the space between the pin wall and the adjacent bushing surface, outer chain links encircling the opposite ends of the pin and having packing receiving recesses in the inwardly facing link walls, packings in said recesses beyond the bushing ends, inner chain links encircling the ends of the bushings and disposed adjacent to but out of contact with the other chain links, and one end of said bore terminating in a blind closed terminus and the other outer or

mouth end of the bore having a plug of compressible material inserted therein and which plug has a channel communicating with a reduced slit leading to the mouth of the bore the plug being compressed along its entire length by the walls of said bore such that said plug forms a seal with said bore along the



entire length of said plug and the plug surfaces forming said slit rest tightly against each other under residual stress, whereupon lubricant introduced through said channel of said plug passes through said slit and into said bore to said packings and wherein said slit is sealed by the residual stress to prohibit lubricant from leaking from said bore through said plug.

4,438,982

GROUND-ENGAGING CONTACT ELEMENT FOR ENDLESS-TRACK VEHICLES

Helge Pettersson, Gislaved, Sweden, assignor to Gislaved Aktiebolag, Gislaved, Sweden

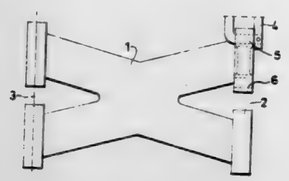
PCT No. PCT/SE80/00353, § 371 Date Sep. 9, 1981, § 102(e) Date Sep. 9, 1981, PCT Pub. No. WO81/01988, PCT Pub. Date Jul. 23, 1981

PCT Filed Dec. 29, 1980, Ser. No. 302,417

Claims priority, application Sweden, Jan. 11, 1980, 8000257

Int. Cl.³ B62D *55/08*

U.S. Cl. 305—35 EB **6 Claims**



1. A ground-engaging contact element for endless-track vehicles, said endless tracks each comprising two separate drawing-elements that interconnect a plurality of contact elements and which run substantially in parallel over at least two wheels of a vehicle on each respective side of the vehicle in a driving direction, said plurality of contact elements of each track being arranged between said pair of drawing-elements to connect said pair of drawing elements with each other, each one of said drawing-elements comprising a chain having articulately connected links, at least some of said links having end points and at least some of said links comprising releasable connecting links.

said contact elements each comprising a generally polygonal plate of elastic polymer material, said plate being flexible in the driving direction of the vehicle wheels as well as in the transverse direction of the vehicle wheels; said contact elements each having a length in said driving direction which at least corresponds to the distance between endpoints of two links of said chains; and enlarged corners projecting substantially perpendicular to the main plane of said polygonal plate, said corners having through holes therein for receiving at least portions of releasable connecting links which are connectable to separate adjacent links in said chains.

4,438,983

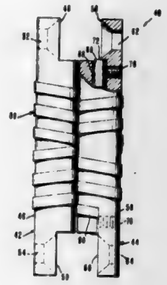
LOW FRICTION PIVOT

Roland O. Davis, Santa Ynez, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Aug. 21, 1981, Ser. No. 295,053

Int. Cl.³ F16C *11/12*

U.S. Cl. 308—2 A **5 Claims**



1. A pivot structure comprising:

a cylindrical base member;

a cylindrical pivot pin member;

band means comprising a band having a first portion and a second portion, with said first portion affixed to one of said cylindrical members and said second portion affixed to one of said cylindrical members, said band means having first and second portions respectively extending around one of said cylindrical members in a first direction and around the other of said cylindrical members in a second direction, said band means being a metallic band and the curved surface of said pivot pin and said base, and the thickness of said metallic band being such that said metallic band is not stretched beyond its fatigue limit, said first portion and said second portion of said band means being configured so that the bending forces said first and second band portions onto said pivot pin is substantially balanced.

4,438,984

DRILL STEEL GUIDING AND CENTRALIZING MECHANISM

Matti Leppälä, Teräksentie, 33960 Pirkkala 6, Finland

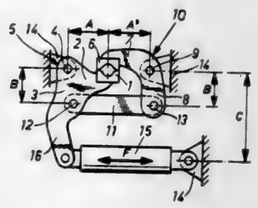
PCT No. PCT/FI81/00045, § 371 Date Feb. 12, 1982, § 102(e) Date Feb. 12, 1982, PCT Pub. No. WO82/00171, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 12, 1981, Ser. No. 349,086

Claims priority, application Finland, Jul. 2, 1980, 802116

Int. Cl.³ B23Q *3/06*; B25B *1/08, 21/00*; E21B *19/20*

U.S. Cl. 308—3.9 **3 Claims**



1. A drill steel guiding and centralizing mechanism comprising a body (14), a first jaw (1), a first lever arm (2) directly

connected by said first jaw, a second lever arm (3) directly connected to the first lever arm away from the connection of the first jaw with the first lever, and an extension (16) for the second lever arm, a first swivel joint (4) connected between the first and the second lever arms and the body (14), around which joint the first angled lever (5) formed by the first and the second lever arms turns, and another jaw (6), cooperating with the first jaw in order to open and close the jaws, a third lever arm (7) directly connected to the second jaw, and a fourth lever arm (8) directly connected to the third lever arm away from the connection of the second jaw with the third lever arm, the body (14) between the third and the fourth lever arms, on which second joint (9) the angled lever (10) formed by the third and the fourth lever arms is swiveling, whereby the second lever arm (3) and the fourth lever arm (8) are on the same side in relation to the first and the second joints, and a power mechanism (15) to move the arms, the center of the jaws (1, 6) being positioned on a line connecting the joints (4, 9) when in a closed position of the jaws and that the jaws are movable away from and towards the line when the jaws are opened and closed, the improvement being that the second and fourth lever arms are connected through a firm connecting rod (11) that is connected to the second lever arm (3) by a third joint (12) and to the fourth lever arm (3) by a fourth joint (13) and that the power mechanism (15) to drive the arms being coupled to affect only one of the lever arms (2, 3, 7 or 8) or its extension, or the connecting rod (11) between the second (3) and fourth (8) lever arms, and the first (4), the second (9), the third (12) and the fourth (13) joints being corner points of a parallelogram.

4,438,985

BALL BUSHING OF SIMPLIFIED CONSTRUCTION

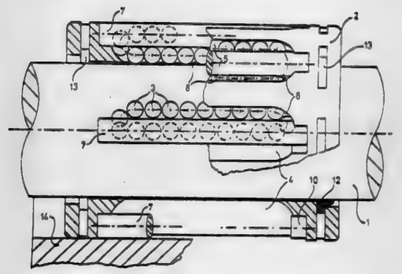
Denis Borel, Wallisellen, Switzerland, assignor to SRO Kugellagerwerke J. Schmid-Roost AG, Switzerland

Filed Oct. 26, 1982, Ser. No. 436,657

Claims priority, application Switzerland, Nov. 3, 1981, 7006/81

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **14 Claims**



1. A ball bushing, comprising:

a hollow cylindrical sleeve with an exterior surface and an interior surface; at least one recess in the sleeve extending from the exterior surface to the interior surface for defining a ball channel; the ball channel defined in the recess being comprised of two longitudinal sections extending generally along the axis of the sleeve and of two curved sections joining the ends of the longitudinal sections, thereby forming a complete ball raceway in the longitudinal and curved sections of the ball channel; the longitudinal and curved sections all being shaped for guiding movement of balls therealong; a plurality of balls disposed in the ball channel for movement therealong;

a circular cross-section needle positioned in the recess and extending the length of the ball channel, and located radially outside one of the longitudinal sections of the ball channel, the needle having a center and being defined by a circular periphery; the needle being longer than the ball channel; the balls in the longitudinal sections of the ball channel being guided along the periphery of the needle, and in the curved sections of the ball channel, which partially wrap about the circular periphery of the needle, the balls being guided around the periphery of the needle, the curved sections being concavely curved around the needle;

the needle and the longitudinal sections of the ball channel being so shaped and so positioned that the centers of the balls in the longitudinal and in the curved sections of the ball channel are approximately the same distance from the center of the needle, the axes of the longitudinal sections of the ball channel continuously are approximately the same distance from the axis of the needle, and the balls and the needle being sized so that all balls in all sections of the ball channel are always in contact with the needle for being guided thereby and for being held in the ball channel.

4,438,986

BALL SCREW ASSEMBLY CONTAINING A BALL SPLINE UNIT FOR EXACT SLOW FEED AND POWER TRANSMISSION MECHANISM COMPRISING SAID BALL SCREW ASSEMBLY

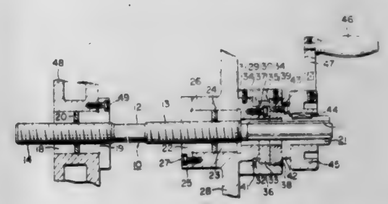
Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-chome, Setagaya-ku, Tokyo, Japan (158)

Filed Feb. 8, 1982, Ser. No. 346,692

Claims priority, application Japan, Mar. 13, 1981, 56-35418; Oct. 5, 1981, 56-157454

Int. Cl.³ F16C *31/04, 29/10*; F16H *92/20, 1/20*

U.S. Cl. 308—6 R **3 Claims**



1. A power transmission mechanism for exact and slow feed with a ball screw assembly containing a ball spline unit (21), said ball screw assembly comprising: a shaft (10) consisting of two parts, one of the two parts being formed as a spline (11) and the other one containing at least two screws (13, 14), spaced apart from one another at a predetermined distance, wherein the respective screws having a different pitch are in screw engagement with a corresponding ball screw nut (22, 18), and the ball spline unit (21) is fitted into the spline (11), said mechanism being characterized in that the ball screw nuts consist of a stationary ball screw nut (22) and a movable ball screw nut (18), said stationary ball screw nut (22) being held in a housing, said housing having a front and rear end part, said spline (11) being in said rear end part, and said movable ball screw nut (18) being secured to a movable member, the ball spline unit (21) being rotatably arranged at the rear end part of the housing with a ring member (33) disposed on the spline, and, a rotational driving member (46) is operatively connected to the ball spline unit, said ball spline (21) being fitted onto said shaft (10) with balls (50) interposed therebetween.

4,438,987

MAGNETIC BEARING SYSTEM

Hendrikus J. Kapaan, Ijsselstein, Netherlands, assignor to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

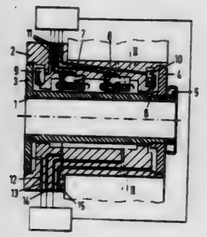
Filed Mar. 5, 1979, Ser. No. 17,111

Claims priority, application Netherlands, Mar. 8, 1978, 7802553

Int. Cl.³ F16C *39/00*

U.S. Cl. 308—10

11 Claims



1. A magnetic bearing system comprising a first bearing member, a second bearing member movable relative to said first member, and adjusting means for maintaining a distance between said first and second members substantially constant, said adjusting means including means for transmitting light from one of said members to a surface of the other of said members, means for receiving a portion of said light reflected by said surface, and electromagnetic means electrically connected to said receiving means for exerting an electromagnetic force between said members variable as a function of the magnitude of the light received by said receiving means, at least one of said transmitting means and receiving means including a light conducting optical fiber.

4,438,988

VERTICAL BEARING ASSEMBLY

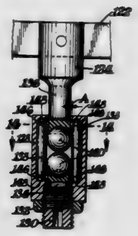
Frank Santora, 2301 N. Grant Ave., Wilmington, Del. 19806

Continuation-in-part of Ser. No. 188,616, Sep. 19, 1980, Pat. No. 4,357,015. This application Sep. 14, 1981, Ser. No. 301,987

Int. Cl.³ F16C *19/49*

U.S. Cl. 308—174

3 Claims



1. A low friction, vertical bearing assembly comprising:

(a) an upper, substantially vertical load-bearing shaft extending into

(b) a bearing housing containing two ball bearings, one ball bearing being oriented above and in contact with the other in said housing, said upper shaft having a lower, concave end resting upon the top of said upper ball bearing, the concave end being substantially of the contour of said ball bearing, said lower ball bearing resting upon

(c) a lower, substantially vertical load-bearing shaft which has a concave upper end, the concave end being substantially of the contour of said lower ball bearing, and

(d) a plurality of needle bearings contained within said housing and oriented substantially vertically around the periphery of said ball bearings and in contact therewith, whereby a bearing assembly is provided having extremely low rotational friction.

4,438,989

BALL BEARING

Richard Negele, Esslingen, and Wilhelm Birkenmaier, Weinstadt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

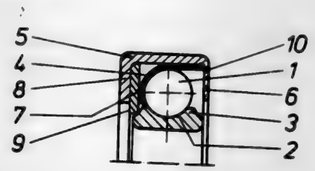
Filed Jun. 5, 1979, Ser. No. 45,648

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 7816941[U]

Int. Cl.³ F16C *19/16, 27/04, 33/78*

U.S. Cl. 308—184 R

10 Claims



1. In a ball bearing having first and second radially spaced means defining inner and outer raceways respectively, and a row of balls positioned to roll between said raceways; the improvement wherein said first means comprises an outer shell having a pair of axially spaced apart radially inwardly directed flanges, an outer ring radially engaging said shell and axially confined between said flanges and defining said outer raceway, and space between one of said flanges and said ring, and an annular bearing function-defining element in said space and extending from said one flange to said ring, said bearing function-defining element comprising a ring corrugated in the peripheral direction positioned in said space and engaging said outer ring and the flange adjacent thereto, said corrugated ring forming a spring.

2. In a ball bearing having first and second radially spaced means defining inner and outer raceways respectively, and a row of balls positioned to roll between said raceways; the improvement wherein said first means comprises an outer shell having a pair of axially spaced apart radially inwardly directed flanges, an outer ring radially engaging said shell and axially confined between said flanges and defining said outer raceway, and space between one of said flanges and said ring, and an annular bearing function-defining element in said space and extending from said one flange to said ring, the other of said flanges having a reduced thickness.

5. A ball bearing having inner and outer raceways, a row of balls positioned to roll between said raceways, one of said raceways comprising a ring having an arcuate cross-section, with a first axially extending side and a second side extending radially toward the other raceway, an annular shell having a central portion radially engaging said ring and having first and second side flanges axially confining said ring, and annular means extending axially between said first flange and said radially extending side of said ring.

4,438,990

SEALING ASSEMBLY FOR A ROLLING BEARING

Bartje Schalk, Zeist; Claudio Operti, Nieuwegein, and Johan C. Bras, Buurmalsen, all of Netherlands, assignors to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

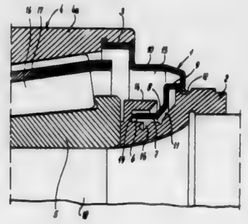
Filed Dec. 2, 1982, Ser. No. 446,397

Claims priority, application Netherlands, Dec. 17, 1981, 8105701

Int. Cl.³ F16C *33/76*; F16J *15/447*

U.S. Cl. 308—187.1

4 Claims



1. Seal assembly for a rolling bearing assembly having an inner race ring (5) adapted to be mounted on a shaft member (18) and an outer race ring (4) radially spaced from the inner race ring (5) defining an annular space for rolling elements (16) comprising a contoured sealing ring (1) connected to the outer race ring (4) cooperatively associated with a closure member (2) mounted on the shaft member adjacent one axial end of said inner race ring (5) to seal the annular space at least at one axial end of the rolling bearing assembly, said sealing ring (1) having an outer portion (3) connected to the outer race ring (4) inner and outer axially directed annular wall portions (7, 10) connected by an intermediate wall portion (8) and spaced apart radially to define an enlarged chamber overlying and spaced radially outwardly of said closure member (2) annular lubricant chamber (13), said closure member comprising an annular body portion (2a) and an axially outwardly directed flange portion (14) spaced radially from the body portion (2a) and defining a pocket (6) within which the terminal portion of the inner annular wall portion (7) extends, the inner annular wall portion (7) being contoured to complement the contoured face of the body portion which has angularly disposed wall segments (11 and 12) generally parallel to and spaced from wall portions (8) and (9) of the sealing ring and closely spaced therefrom to define a serpentine labyrinthian passage having an inlet and communicating with the chamber (13) disposed radially inwardly of an outlet and communicating with the ambient atmosphere, the flange (14) defining the innermost axially extending wall of said lubricant chamber (13) whereby upon relative rotation of said inner and outer race rings and said sealing ring (1) and closure member (2) a centrifugal force is exerted on lubricant in said chamber (13) urging the lubricant radially outwardly away from said labyrinthian passage thereby minimizing escape of lubricant therethrough and means defining an annular groove (15) in the innermost wall of said body portion defining said pocket (6) serving as an auxiliary lubricant reservoir.

4,438,991

BEARING HOUSING

Bengt Lundgren, Lerum, Sweden, assignor to SKF Nova AB, Sweden

Filed Nov. 3, 1982, Ser. No. 438,913

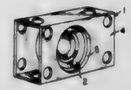
Claims priority, application Sweden, Jan. 14, 1982, 8200173

Int. Cl.³ F16C *35/077*

U.S. Cl. 308—189 R

7 Claims

1. Bearing housing (1) for supporting a bearing (2) in a bearing seat arranged in the housing, characterized by that the housing has the shape of a tube with a mainly rectangular cross section, whereby, when a bearing is arranged in the housing, the bearing axis (3) extends mainly perpendicular to two housing walls (4) facing each other and the bearing is enclosed by the housing.





4,438,992

TWO-PIECE ROLLING BEARING CAGE

Armin Olschewski; Klaus Kispert, both of Schweinfurt, and Hans Meining, Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

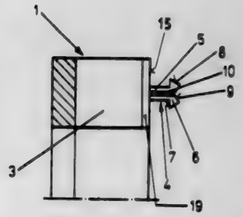
Filed Jun. 1, 1981, Ser. No. 268,884

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 8016523[U]

Int. Cl.³ F10C *33/38, 33/46*

U.S. Cl. 308—201

4 Claims



1. A two-piece rolling bearing cage comprising first and second cage sections, at least one of said cage sections having a plurality of cage bridges terminating in a snap pin, said snap pin comprising an elongated split shaft and an enlarged split protruding tapered conical head, the other of said cage sections having a plurality of recesses each for accommodating a separate said snap pin, said recesses each having a diameter to permit passage of said head when compressed through said split, said conical head having a conical end recess, and a conical projection in each other cage section recess and engaging an end recess of a respective pin to hold the elongated shaft of said pin against the respective elongated passage while holding said enlarged head against a contact surface of said enlarged end of the respective other cage section recess, for holding said cage sections together axially and radially.

4,438,993

DISPLAY CASE INCLUDING IMPROVED HINGE CONNECTION ARRANGEMENT

Kenneth J. Rabas, Waukesha, Wis., assignor to DCI Marketing, Milwaukee, Wis.

Filed Jan. 4, 1982, Ser. No. 336,775

Int. Cl.³ F16B *12/02*; A47F *3/00*

U.S. Cl. 312—140

7 Claims

1. A display case comprising

a plurality of shelves for displaying merchandise,

a pair of vertical end walls supporting said shelves, said end walls each including a rearward edge, a rear wall having vertical edges, and

means for pivotally and releasably joining at least one vertical edge of said rear wall to said rearward edge of one of said end walls, said means for joining including

a first hinge member including a supporting surface and a restraining member spaced from said supporting surface in opposed relation thereto, said restraining member projecting toward said supporting surface and including a rodlike bearing surface facing said supporting surface, said rodlike bearing surface and said supporting surface defining a socket therebetween,

an insertable hinge member having one elongated vertical edge secured to said edge of said rear wall, said insertable hinge member being adapted to be positionable in a first angular position wherein said rear wall is positioned at an acute angle with respect to said end wall and wherein at least a portion of said insertable hinge member is slideably insertable into said socket and slideably removable from said socket and adapted to be positionable in a second



angular position wherein said rear wall is substantially perpendicular to said end wall and wherein said portion of said insertable hinge member is restrained against removal from said socket, said insertable hinge member including an edge portion insertable into said socket when said insertable hinge member is in said first angular position and restrained against removal from said first hinge member when said insertable hinge member is in said second angular position, said edge being curved about an axis parallel to said edge, said curved edge including opposite sides, one of said sides defining a concave curved bearing surface adapted to house said restraining member and to pivot on said restraining member as said insertable hinge member moves from said first angular position to said second angular position, and the other side defining a convex curved surface at least a portion of which is adapted to face said supporting surface, and

a channel integrally joined to said socket portion, said channel defining an elongated slot slideably receiving said rearward edge of said end wall and supporting said end wall in substantially perpendicular relation to said rear wall.

4,438,994

DRAWERS AND DRAWER RUNNERS

Harry H. Davis, Mooresville, N.C., assignor to L. B. (Plastics) Limited, Belper, England

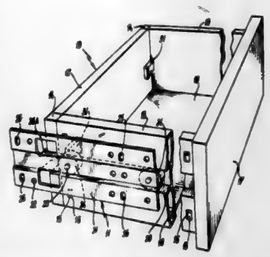
Filed Feb. 18, 1981, Ser. No. 235,392

Claims priority, application United Kingdom, Feb. 23, 1980, 8006181; Oct. 3, 1980, 8031926

Int. Cl.³ A47B *88/00*; F16C *21/00*

U.S. Cl. 312—330 R **14 Claims**

1. A drawer runner comprising a mounting member adapted to be mounted in a cabinet in which a drawer is to be supported in use, a pair of spaced bearing members in the form of rollers rotatably mounted on studs carried by said mounting member for engagement in a runner recess in the drawer side, and a fixed load-supporting flange mounted on and extending at right angles to said mounting member in a position rearwardly of said bearing member, said flange being adapted to assist by contacting the runner recess of said drawer in supporting the



weight of the drawer when the drawer is laden and in its closed position.

4,438,995

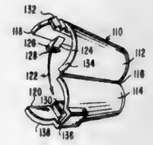
HOUSING WITH FRANGIBLE LOCKING ELEMENTS

Richard W. Fisher, Rahway, N.J., and Frank A. Cristell, 205 E. Inman Ave., Rahway, N.J. 07065, assignors to Frank A. Cristell, Colonia, N.J.

Filed Jul. 27, 1981, Ser. No. 287,426

Int. Cl.³ H01R *13/52*

U.S. Cl. 339—39 **10 Claims**



1. A frangible housing, said housing defining side walls, said side walls being intermediate one end and another end of said housing, said one and said other end of said housing each carrying openings, said openings residing in a pair of planes extending parallel to one another, at least one tongue-like element, said at least one tongue-like element having one end thereof secured to said housing, the other end of said at least one tongue-like element carrying at least one clamping-like surface thereon, means to non-releasably lockingly clampingly engage said at least one clamping surface to a seating surface carried on another structure, whereby said housing is attachably securable to said other structure when said at least one clamping surface is in touching seating engagement with said seating surface, said at least one tongue having a longitudinal axis, said longitudinal axis extending normal to one of said planes, wherein adjacent portions of said side walls are joined together by a hinge, and wherein other portions of said side walls are separable from one another along a parting line disposed intermediate said one end and said other end of said housing, whereby at least one of said portions of said housing carries one of the said at least one tongue, said longitudinal axis extending parallel to the axis of said parting line, a side acting tongue, said side acting tongue being secured to one of said at least one of said portions of said side walls and extending substantially tangentially to said longitudinal axis, at least one side acting seating surface being configured in another of said at least one of said portions of said side walls, means to clampingly non-releasably lockingly engage a clamping surface of said at least one side acting tongue to said at least one side acting seating surface of said another portion of said side walls, whereby said housing defines a cavity disposed intermediate its side walls and said one end and said another end of said housing.

4,438,996

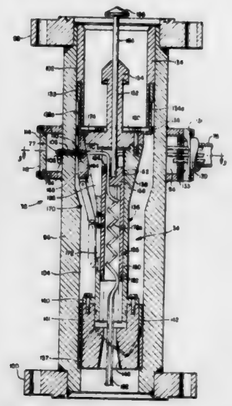
APPARATUS FOR USE IN ENERGIZING SUBMERGIBLE PUMPING EQUIPMENT IN UNDERWATER WELLS

James N. Zehren, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 222,540, Jan. 5, 1981, abandoned. This application Oct. 30, 1981, Ser. No. 316,743

Int. Cl.³ H01R *13/453*

U.S. Cl. 339—40 **9 Claims**



1. Apparatus for energizing submergible pumping equipment in a well comprising a suspension head from which the equipment is adapted to be suspended and a casing adapted to be associated with wellhead apparatus for receiving the suspension head, the suspension head and casing having cooperable means for seating the head in the casing, the casing carrying at least one element for establishing electrical connection between an external power source and a supply cable for the equipment carried by the suspension head, the suspension head being inserted into the casing by motion along a line parallel to the casing longitudinal axis to a position past the said one element, the casing further including a sliding door for covering said element and the suspension head having a ramp and including means for sliding the door to a position exposing said element when the head is seated in the casing, with the sliding motion of said door being along a line substantially parallel to said casing longitudinal axis, said means for sliding including at least one radially expandable slip carried by the suspension head for axial movement along said ramp, said slip being positioned to engage said door and to move the door to expose said element during radially expanding movement of the slip along said ramp.

4,438,997

PIVOTING ELECTRICAL CONTACT

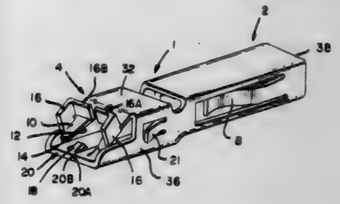
William R. Evans, Clemons, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 136,852, Apr. 3, 1980. This application Jul. 30, 1981, Ser. No. 288,618

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—97 R **6 Claims**

1. A stamped and formed electrical contact for connection to an electrical conductor comprises a plate portion, a notch communicating with a free end of the plate portion, opposite sides of the notch define insulation penetrating and conductor engaging jaws constructed for straddling and penetrating a conductor to establish an electrical connection, characterized in that; a conductor receiving receptacle is connected adjacent to the plate portion, the receptacle has sidewalls and an open end so as to provide an internal cavity for receipt of the conductor within the receptacle, the plate portion is pivotal toward the cavity of the receptacle, and into electrical connection with the conductor, and tabs on the receptacle lock the plate portion transversely of the cavity of the receptacle with the jaws penetrating the conductor, said plate portion further



having flaps projecting therefrom for pressing against the conductor when the plate portion projects transversely of the cavity and the jaws penetrate the conductor.

4,438,998

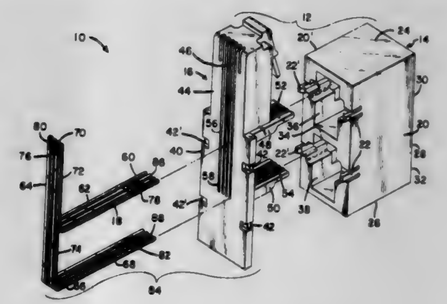
MODULAR PLUG-DIAL MODULAR JACK ADAPTOR

Ronald W. Myers, Landisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 354,974, Mar. 5, 1982. This application May 14, 1982, Ser. No. 378,301

Int. Cl.³ H01R *13/518*

U.S. Cl. 339—154 A **10 Claims**



1. A modular plug-dual modular jack adaptor of the type comprising a first modular plug and first and second modular jacks, the modular jacks having plug-receiving faces which lie in a common plane and having backwalls which lie in a common plane which is substantially parallel to, and spaced from, the common plane of the plug-receiving faces, the modular plug extending in the common plane of the backwalls of the modular jacks, a plurality of conductors, each conductor having a first jack contact portion in the first modular jack, a first connecting portion extending from the first modular jack to the modular plug and having an intermediate portion in the modular plug, the intermediate portion being reversely bent upon itself and forming a plug contact in the modular plug, a second connecting portion extending from the intermediate portion to the second modular jack, and a second jack contact portion in the second modular jack, the adaptor being characterized in that:

the first and second modular jacks are side-by-side with the corresponding first and second jack contacts in the first and second modular jacks lying in the same plane,

each of the conductors is a continuous one-piece uninsulated conductive member, the intermediate portion comprising first and second parallel sections in the modular plug which extend from the reverse bend to the rearward end of the modular plug,

the first connecting portion extending normally from the

first parallel section through the back wall of the first modular jack and into the first modular jack,

the second connecting portion extending normally from the second parallel section through the back wall of the second modular jack and into the second modular jack whereby,

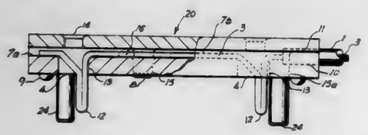
upon mating the modular plug of the adaptor with an additional modular jack and plugging additional modular plugs into the first and second modular jacks, the conductors in the additional modular jack are connected to the corresponding conductors in the additional modular plugs.

4,438,999

WIRE PIN CONNECTOR FOR RIBBON CABLE

Donald D. Lang, Garden Grove, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 2, 1979, Ser. No. 63,282
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—176 MF **11 Claims**



1. A wire pin connector kit for ribbon cable for clampingly retaining an end of said ribbon cable in preparation for forming terminals from ends of bared conductors of the ribbon cable by passing a tool through aligned apertures and deforming the bare conductors, comprising:

a first member having a plurality of first rectangular apertures therethrough;

a second member having a plurality of second rectangular apertures therethrough, and adapted to be retained against the first surface of said first member in substantial alignment with said first member and adapted to clamp an end of said ribbon cable therebetween;

said first apertures being longer than said second apertures and substantially equal in width to said second apertures;

and adapted to be in substantial alignment with said second apertures when said first member is in substantial alignment with said second member;

said first member including a plurality of grooves on said first surface adapted to retain the bared ribbon cable conductors in alignment with said first apertures and said second apertures;

a first surface of said second member including a plurality of studs protruding therefrom adapted to be pressed through and to protrude from said first member; and

said first member including a plurality of third apertures adapted to receive said studs therethrough.

4,439,000

SURFACE MOUNT/DAUGHTER BOARD CONNECTOR

John W. Kaufman, Hershey; William J. Stape, Lewisberry, and Patrick F. Yeager, Middletown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,166
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—176 MP **1 Claim**

1. A surface mount connector for electrically interconnecting circuits on a daughter card and mother board, comprising:

a. an inverted T-shaped housing having a card receiving cavity along the top surface thereof and laterally extending surfaces along each side adjacent the bottom surface, terminal receiving passages opening into the cavity along either side thereof, and further terminal receiving channels extending along the bottom of the laterally extending surfaces normal to the cavity and in registration with the passages; and



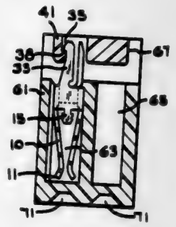
b. a plurality of L-shaped terminals having a daughter card engaging portion positioned in the passages and a mother board engaging portion positioned in the channels.

4,439,001

IDC SOCKET CONNECTOR

James H. Curley, Van Nuys, and Roger J. Lang, Garden Grove, both of Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 7, 1982, Ser. No. 375,921
Int. Cl.³ H01R *13/50*
U.S. Cl. 339—176 MP **13 Claims**



1. A multi-socket connection device for forming an electrical connection with a plurality of first wires of an insulated planar cable and a plurality of second wires for electrical connection to each first wire, comprising:

a first body,

a second body,

said first body defining a plurality of sockets,

each said socket having a first opening onto a first side of said first body and a second opening onto a second side of said first body,

a connector mounted in each said socket and having a first end at said first opening for receiving one said second wire and forming an electrical contact at a second end at said second opening for engagement with a respective one of said insulated wires, said second end of said connector having a latching means to engage a holding means on said second body,

said second end having a positioning means for locating said insulated wire on said connector and an insulation displacing means for forming an electrical contact with said insulated wire,

said second body having means for engaging said insulated wire and displacing said insulated wire from said positioning means to said insulation displacing means responsive to said second body being driven towards said first body, and

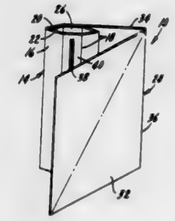
where the improvement comprises said connector having a stabilizing means perpendicularly separating said connector latching and insulation displacing means to prevent displacement of said insulation displacement means responsive to the engagement of said latching means by said second body, said latching means being disposed perpendicular to said insulation displacing means.

4,439,002

ONE-PIECE FOLDABLE KALEIDOSCOPE KIT

Lyman J. Brown, Oak Brook, Ill., assignor to Bates Printing Specialties, Inc., Cicero, Ill.

Filed Aug. 16, 1982, Ser. No. 408,513
Int. Cl.³ G02B *23/00*
U.S. Cl. 350—4.1 **5 Claims**



1. A one-piece kaleidoscope kit in the form of a multi-layered prefolded packet having a first section and second section joined by a fold line, a portion of the second section being divided into a plurality of strips beginning at the end of the second section distal from the fold line,

the most distant strip being folded and adhered to the strip closest to the fold line to form a flattened multi-panel tube,

the tube being folded flat between the first and second sections to form the packet,

a perforated tear line formed in the second section to separate the plurality of strips from the remainder of the second section,

a reflective surface formed on corresponding sides of the plurality of strips which form the interior of the folded flattened tube, and

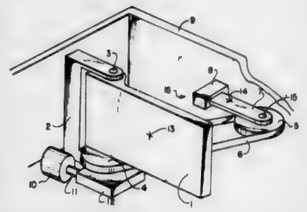
means connecting the first panel to one of the strips of the tube to form the prefolded packet.

4,439,003

REMOTE COUNTER-BALANCING MECHANISM

Ronald B. Roth, Boxboro, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 10, 1981, Ser. No. 291,538
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.6 **13 Claims**



1. A system comprising:

A. a mechanical assembly having a single pivot point;

B. a counterweight assembly;

C. means for rotating said mechanical assembly about said single pivot point; and

D. means for mechanically linking said counterweight assembly and said mechanical assembly, said means for linking comprising

(i) means for enabling the pivoting of said counterweight assembly about another pivot point,

(ii) wherein a line through the center of gravity of said mechanical assembly and through said single pivot point is a first line of action and wherein a line through the center of gravity of said counterweight assembly and said another pivot point is a second line of action,

(iii) means for enabling said first and second lines of action to be substantially parallel as said mechanical assembly is rotated, and

(iv) means for enabling a torque created at said center of gravity of said mechanical assembly to be substantially equal to a torque at said center of gravity of said counterweight assembly.

4,439,004

OPTICAL WAVEGUIDE AND MODULATOR AND PROCESS FOR FABRICATING SAME

Robert G. Hunsperger, and Gordon A. Shiffrin, both of Malibu, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 778,288, Mar. 16, 1977, abandoned, which is a division of Ser. No. 345,625, Mar. 28, 1973, abandoned. This application Oct. 27, 1982, Ser. No. 437,079
Int. Cl.³ G02B *5/172*; G02F *1/015*
U.S. Cl. 350—96.12 **10 Claims**

1. An optical waveguide comprising:

(a) a substrate of semiconductive material having a bandgap energy sufficiently high so that it will sustain the propagation of chosen light wavelengths at relatively high guiding efficiencies; and

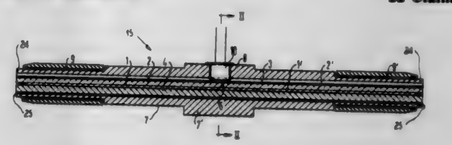
(b) a proton implanted region within said substrate and annealed to reduce and minimize optical absorption losses therein, said proton implanted region having a resistivity substantially higher than that of said substrate, and said proton implanted region and said underlying substrate material meeting at a common interface boundary adjacent a relatively sharp change in carrier concentration as a result of the high energy proton implantation dosage profile in said substrate, whereby said profile and the relatively large difference in refractive indices between said proton implanted region and said underlying substrate greatly enhance the reflectivity of light by said interface boundary and greatly enhance the light guiding efficiency in said proton implanted region.

4,439,005

BRANCHING ELEMENT FOR OPTICAL WAVEGUIDES

Gerhard Winzer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,695
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1978, 2840602
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.15 **22 Claims**



1. A branching device for branching a light component out of an optical waveguide extending on a common waveguide axis, said device comprising a pair of optical waveguides; each of the waveguides being received in a carrier member, each carrier member being a body having a substantially cylindrical shape; means for positioning the carrier members with the

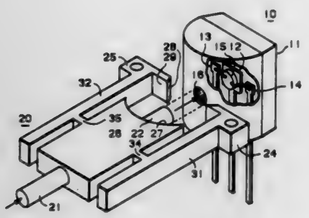
optical axis of each of the pair of waveguides being on the common waveguide axis and a gap between the end surfaces thereof; a beam divider means being disposed in the gap between the end surfaces of the waveguides and including a layer extending obliquely to the common waveguide axis for reflecting out a portion of the light transmitted by one of said waveguides as a light component on a path; and a photo detector, said means for positioning including a tubular member having an aperture for receiving and positioning the photo detector and a support carrier having a cylindrical shape and having a longitudinally extending groove receiving the pair of carrier members with the layer arranged to reflect the light component out of the groove, said support carrier being received in the tubular member with the groove and light waveguides being on the common axis and the path of the light component being directed at the photo detector, and said support carrier with the carrier members and the tubular member having approximately the same lengths so that the ends of the device are plane surfaces.

4,439,006

LOW COST ELECTRO-OPTICAL CONNECTOR

David W. Stevenson, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 18, 1981, Ser. No. 264,764
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **9 Claims**



1. A connector for coupling an optical fiber transmission line to the package of an electro-optical semiconductor device comprising:

a central body portion having a surface thereof complementary to the shape of said package;

a pair of arms positioned on either side of said central body portion and extending away from said surface to form a pincer-like enclosure for said package;

flexible coupling means interconnecting said central body portion and said arms so that said arms can move relative to said central body portion;

each arm having an end portion extending orthogonal to the arm and defining a shoulder portion for temporarily securing said connector to said package; and

wherein said central body comprises optical fiber extending at least to said surface for optical connection to said semiconductor device.

4,439,007

LOW DISPERSION SINGLE MODE FIBER

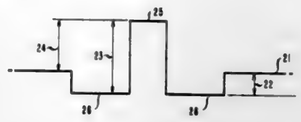
Paul D. Lazay, New Providence; Paul J. Lemaire, Basking Ridge, and Arthur D. Pearson, Bernardsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 9, 1981, Ser. No. 271,957
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.30 **8 Claims**

1. A single mode fiber comprising

(a) an up-doped core of diameter less than 9 μm,

(b) a down-doped cladding with no abrupt change in index of refraction, and which contributes at least 20 percent of the fiber Δ,



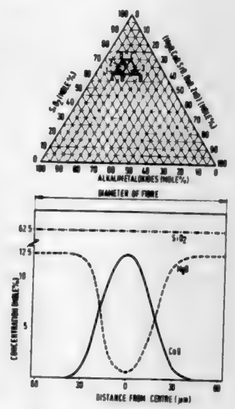
the Δ of the fiber being greater than 0.3 percent and less than 0.75 percent, the dispersion of the fiber being less than 5 psec/nm-km within the wavelength range of 1.25–1.385 μm, and the cutoff wavelength being less than 1.31 μm.

4,439,008

OPTICAL FIBER OF THE GRADED INDEX TYPE AND METHOD OF PRODUCING SAME

Hendrik J. M. Joormann, and Gijsbertus A. C. M. Spierings, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 387,993
Claims priority, application Netherlands, Jun. 26, 1981, 8103089
Int. Cl.³ C03C 3/04, 3/10, 13/00; G02B 5/14
U.S. Cl. 350—96.31 **7 Claims**



1. A graded index glass optical fiber having an axis and a circumference, said fiber consisting essentially of:

60 to 70 mole % silicon dioxide;

15 to 30 mole % of two or more alkali metal oxides, the quantity of lithium oxide not exceeding 15 mole %; and

10 to 25 mole % magnesium oxide in combination with at least one metal oxide having a cation which can be exchanged with the magnesium cation, said metal oxide being selected from the group consisting of CaO, SrO, BaO, and ZnO, the quantity of CaO not exceeding 15 mole %;

wherein the fiber is substantially free of boron contains less than 0.01 parts per million of impurities which absorb radiation having a wavelength up to 1500 nanometers; and

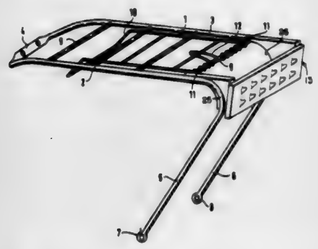
wherein the graded refractive index is caused by a decreasing exchangeable cation concentration and an increasing magnesium concentration in the fiber from the fiber axis to the fiber circumference.

4,439,009

BICYCLE LUGGAGE CARRIER AND REFLECTOR STRUCTURE COMBINATION

Heinz Niemann, Herford, Fed. Rep. of Germany, assignor to ESGE-Marby GmbH & Co., KG, Bielefeld, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,683
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 8108128[U]
Int. Cl.³ G02B 5/12
U.S. Cl. 350—99 **14 Claims**



1. For combination with a cycle luggage carrier, having a rectangular frame (1) including two longitudinal bars or rods (2, 3), cross connecting elements (9) cross connecting said longitudinal bars or rods, and support struts (5, 6) bent off from said bars or rods and forming a transition zone (25, 26) therewith, said support struts extending to the region of the wheel axle of the cycle for attachment to the frame of the cycle,

a reflector structure having

a reflector plate (13) and means for attachment of the reflector plate to the frame,

comprising, in accordance with the invention,

a pair of essentially plate-like engagement and holding elements (14) shaped to fit against the facing sides of the longitudinal bars or rods (2, 3) of the frame (1) and support struts (5, 6) in the region of the transition zone (25, 26) between the longitudinal bars or rods and the support struts;

a clamping element (15) formed on each of the engagement and holding elements (14) shaped to fit at least in part around the facing surfaces of the frame in the transition zone (25, 26);

a resiliently deformable connecting plate (16, 17*a*, 17*b*, 17', 18, 18', 19, 19') cross connecting said engagement and holding elements to permit resilient deformation thereof upon assembly to the frame of the carrier;

and wherein the reflector plate (13) is a stiff plate-like element fitting against at least a major portion of the connecting plate and includes attachment means (21, 22) for securing the reflector plate (13) against at least a major portion of the connecting plate and stiffening the connecting plate, upon attachment thereto, for preventing resilient deformation thereof after assembly of the engagement and holding element (14) with the clamping elements (15) thereon to the frame (1) of the carrier.

4,439,010

APPARATUS FOR COMBINING OPTICAL IMAGES

James L. Doty, Laguna Niguel, Calif., assignor to Spectron Development Laboratories, Inc., Costa Mesa, Calif.

Filed Apr. 1, 1982, Ser. No. 364,317
Int. Cl.³ G02B 27/10
U.S. Cl. 350—174 **8 Claims**

1. An apparatus for viewing selected portions of an object, comprising:

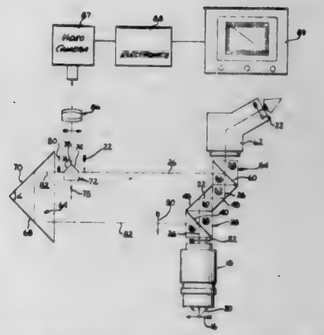
light gathering means for gathering and focusing light rays from said object;

a first light reflecting surface;

a second light reflecting surface oriented substantially 90 degrees with respect to said first light reflecting surface;

beamsplitting means for splitting said light rays into first and second object images, said first and second object images having different spatial orientations such that said second object image is inverted with respect to said first object image;

light directing means for selectively directing at least some portion of said first object image onto said first reflecting surface, and for directing at least some portion of said second object image onto said second reflecting surface,



such that said first and second object images reflected from said surfaces form a single resultant image;

positioning means for selectively positioning said first and second surfaces along an axis defined by the bisector of said 90 degree angle between said surfaces, such that only a desired portion of said first and second object images is directed onto said reflecting surfaces;

viewing means positioned above said first and second light reflecting surfaces for viewing said resultant image;

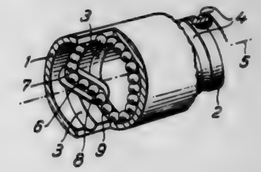
whereby selected portions of said object image are combined to form a single resultant image.

4,439,011

APPARATUS FOR FOCUSING AN OPTICAL SYSTEM

Herbert Machmerth, Solms, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,535
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049138
Int. Cl.³ G02B 7/04; F16H 53/08
U.S. Cl. 350—255 **7 Claims**



1. In a lens mount for focusing a photographic objective having an optical axis, a stationary tubular mount adapted to be attached to a camera body, a focusing adjustment ring rotatably supported on said mount, a lens barrel including at least parts of said photographic objective and arranged coaxially inside said mount and means for mechanically interconnecting said focusing adjustment ring and said lens barrel for displacing said barrel in the direction of said optical axis upon rotation of said focusing adjustment ring, the improvement comprising:

said focusing adjustment ring (1) and said lens barrel (2) each

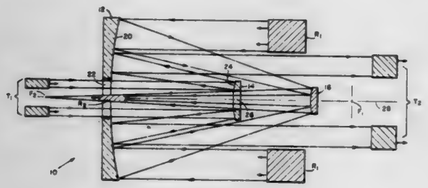
having a guide groove (3, 4) helically winding around said optical axis (5), one of said focusing adjustment ring (1) and said lens barrel (2) having a return channel (6) connecting at least two consecutive turns of said guide groove (3) and said guide groove (4) bounded to a segment by the junctions (7, 8) of said return channel (6) and said return channel (6) being filled with a plurality of balls (9) having a given thickness for connecting said focusing adjustment ring (1) and said lens barrel (2) to be displaced with respect to each other only by means of said balls (9).

4,439,012

DUAL-SECONDARY MIRROR CASSEGRAIN OPTICAL SYSTEM

Orrin D. Christy, Tonawanda, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 11, 1982, Ser. No. 338,695
Int. Cl.³ G02B *23/02*
U.S. Cl. 350—294 **9 Claims**



1. An optical system for transmitting and receiving optical radiation comprising: first optics means for providing a first optical beam path; and second optics means for providing a second optical beam path spatially separated from and coaxial with said first optical beam path; said first optics means comprising a primary mirror and a secondary mirror, both of said mirrors having a central aperture and being aligned coaxially for providing a common optical system axis, said secondary mirror being movably positioned along said system axis for variably expanding and reflecting optical radiation toward said primary mirror, and said primary mirror being disposed for intercepting and redirecting optical radiation received from said secondary mirror.

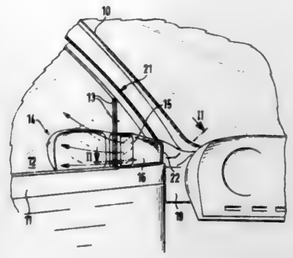
4,439,013

MOTOR VEHICLE PROVIDED WITH AN ADDITIONAL MIRROR EMBRACING THE DEAD ANGLE

Bruno Hagn, Munich; Werner Neuhauser, Coburg, and Robert Wimmer, Oberlaufing, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP80/00120, § 371 Date Jun. 30, 1981, § 102(e) Date Jun. 30, 1981, PCT Pub. No. WO81/01269, PCT Pub. Date May 14, 1981
PCT Filed Oct. 29, 1980, Ser. No. 279,991
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943941
Int. Cl.³ B60R *1/08*
U.S. Cl. 350—307 **1 Claim**

1. A motor vehicle comprising a heating and venting system having an air-outlet opening in the dashboard and a mirror arrangement having an additional mirror that includes the blind angle, said additional mirror being disposed in the front area of a side door adjacent to the inside of a side window pane for cooperation with an outside rear-view mirror disposed on the outside of the side door, said additional mirror being held in a separate housing disposed on a covering in the front area of the door, the housing is subdivided inside by a separating wall into a first chamber, receiving the additional mirror and a second chamber serving as an air-guiding duct, an elastic element connecting one end of the air-guiding duct to the air-outlet opening of the heating and venting system, the other end of the air-guiding duct is connected with an air-outflow gap formed between the additional mirror and the side window



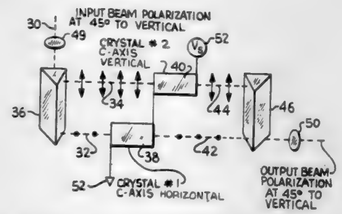
pane whereby said air-outflow gap acts as a defroster nozzle for directing air from said heating and venting system to clear said side window pane.

4,439,014

LOW VOLTAGE ELECTRO-OPTIC MODULATOR

Robert A. Stacy, St. Louis County, and Robert R. Rice, Florissant, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 13, 1981, Ser. No. 321,065
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—388 **9 Claims**



1. An electro-optic modulator comprising:
means for delivering a coherent light beam to the input of the modulator;
means for splitting the input beam into two intermediate beams of substantially equal intensity, wherein a first intermediate beam has a linear polarization defined by a first vector, and a second intermediate beam has a linear polarization defined by a second vector which is substantially perpendicular to the first vector;
a first Pockels cell having A, B, and C crystal axes wherein the C axis of the cell is oriented parallel to the first polarization vector of the first intermediate beam which is transmitted through the cell as an E-wave;
a second Pockels cell having A, B, and C crystal axis wherein the C axis of the cell is oriented parallel to the second polarization vector of the second intermediate beam which is transmitted through the second cell as an E-wave;
a modulation means comprising a voltage source controlled in relation to a modulating signal such that the voltage source is operably connected across the crystal faces of each cell perpendicular to the C axis of each cell;
means for recombining the two intermediate beams into an output beam.

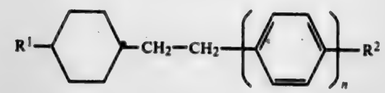
4,439,015

DISUBSTITUTED ETHANES

Roland Rich, Hesingue, France; Alois Villiger, Basel, and Erich Widmer, Münchenstein, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 22, 1982, Ser. No. 341,926
Claims priority, application Switzerland, Jan. 30, 1981, 619/81; Oct. 13, 1981, 6545/81
Int. Cl.³ G02F *1/13*; C09K *3/34*
U.S. Cl. 350—350 R **20 Claims**

1. A compound of the formula



I

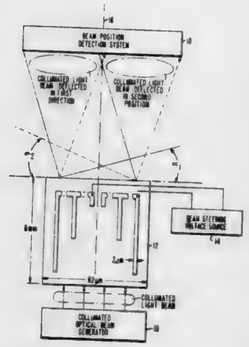
wherein R^2 is $-R^3$, $-OR^3$, $-CO-R^3$, $-CO-OR^3$ or $-O-CO-R^3$, R^1 and R^3 each are straight-chain alkyl of 1 to 12 carbon atoms and n is 1 or 2.

4,439,016

OPTICAL BEAM DEFLECTION SYSTEM

Jon W. Ogland, Millersville; Joe C. Bradley, Towson, and Dickron Mergerian, Baltimore, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 6, 1981, Ser. No. 319,154
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—356 **4 Claims**



1. An optical beam deflector comprising:
(a) a first electrically conductive electrode;
(b) a layer of electro-optical material affixed to said first electrically conductive electrode;
(c) a second electrode comprising a pattern of stripes of electrically conductive material affixed to a second surface of said layer of electro-optical material, said strips being longer near opposed edges of said electro-optical layer and shorter near the center of said pattern of stripes.

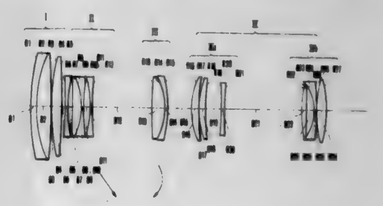
4,439,017

ZOOM LENS

Shin Yamaguchi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1981, Ser. No. 289,175
Claims priority, application Japan, Aug. 14, 1980, 55-112210
Int. Cl.³ G02B *9/64, 15/18*
U.S. Cl. 350—427 **2 Claims**

1. A compact zoom lens comprising, from front to rear:
a first lens group of positive refractive power having one negative lens and two positive lenses and being movable for focusing;
a second lens group having a negative refractive power;
a third lens group of positive refractive power having one positive lens and one negative lens;
variation of image magnification being effected by the second and third lens groups; and
a fourth lens group of positive refractive power constituting an image forming section;
the first lens group having, from front to rear, a positive lens consisting of a negative lens and a positive lens cemented together, and a positive lens, the second lens group having, from front to rear, a negative lens, a negative lens consisting of a positive lens and a negative lens cemented together, and a negative lens, and the third lens group having a positive lens consisting of a positive lens and a negative lens cemented together,
letting ν_{23} denote the average value of the Abbe numbers of the two positive lenses in the first lens group, ν_1 the Abbe number of the negative lens in the first lens group, the partial dispersion ratio $\theta=(ng-nd)/(nF-nC)$ where ng, nF, nd and nC are the refractive indices for the Fraunhofer g-line, F-line, d-line and C-line respectively, letting θ_{23} denote the average value of the partial dispersion ratios of



the two positive lenses in the first lens group, θ the partial dispersion ratio of the negative lens in the first lens group, and letting $\nu 8$, $\nu 9$, $\theta 8$ and $\theta 9$ be the Abbe numbers and partial dispersion ratios of the positive and negative lenses in the third lens group respectively,
and letting f2 represent the focal length of the second lens group, fw the shortest focal length of the zoom lens system, n4, n6 and n7 the refractive incides for the spectral d line of the first to the third of the three negative lenses in the second lens group counting from the front respectively, so that when the second lens group is moved axially and at the same time the third lens group is moved so as to describe a path concave toward the front to effect zooming,
then the relations
$72<\nu_{23}\leqq 95.1$
$1\times10^{-3}<(\theta_1-\theta_{23})/(\nu_{23}-\nu_1)<2\times10^{-3}$
$0.9\times10^{-3}<(\theta_9-\theta_8)/(\nu_8-\nu_9)<2.3\times10^{-3}$
$-0.45fw<f_2<-0.36fw$
$1.68<n_4<1.883$
$1.68<n_6<1.883$
$1.68<n_7<1.883$
are satisfied.

4,439,018

ZOOM LENS STRUCTURE

Hidekazu Okajima, Tokyo, and Sadahiko Tsuji, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

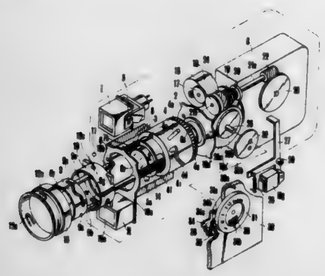
Filed Aug. 7, 1981, Ser. No. 291,036
Claims priority, application Japan, Aug. 22, 1980, 55-115417
Int. Cl.³ G02B *7/10, 15/18*
U.S. Cl. 350—430 **5 Claims**

1. A zoom lens structure comprising:
zoom optics forming an optical axis and including a focusing optical element, a variation optical element and an image forming optical element;
cam means for moving the focusing optical element along the optical axis for focusing the optics;
zooming operation means for displacing the variation optical

element along the direction of the optical axis for focal length adjustment of the optics;

means for operatively engaging the zoom operation means with the focusing optical element; and

compensation means for displacing the focusing optical element so as to compensate for focusing the optics when the focusing optical means in operative engagement with the zooming operation means is rotated relative to the cam means;



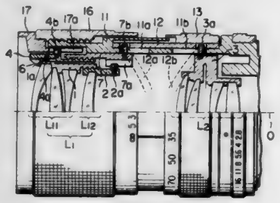
the cam means for moving the focusing optical element forming a first cam range for focusing in a normal photography range and a second cam range for focusing in a macrophotograph range, the zooming operating means having a predetermined variation operation range and a predetermined macrophotography position, the variation optical element and the focusing optical element being connected to each other only at the macrophotography position so as to be displaced along the optical axis in the second cam range of the cam means for macrophotography.

4,439,019

ZOOM LENS BARREL WITH SINGLE-RING CONTINUOUS FOCUSING

Takeshi Muryoi, Chigasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 2, 1981, Ser. No. 308,182
Claims priority, application Japan, Oct. 11, 1980, 55-1442265
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—430 **4 Claims**



1. A zoom lens barrel comprising:

(a) an optical system including forward lens means and rearward lens means, said forward lens means comprising first lens means and second lens means;

(b) first means for driving said forward lens means in the direction of the optical axis for focusing, said first means including an operating member, a first holding member holding said first lens means and movable in the direction of the optical axis in response to said operating member, a second holding member holding said second lens means and movable in the direction of the optical axis, and means responsive to movement of said first holding member to move said second holding member while varying the spacing between said first lens means and said second lens means; and

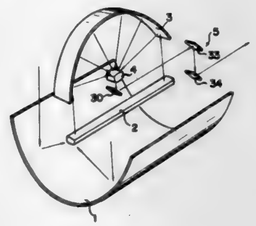
(c) second means for driving said forward lens means and said rearward lens means in the direction of the optical axis for zooming, said second means including another operating member, a third holding member holding said rearward lens means, means responsive to said another operating member to move said first holding member and said second holding member together with each other, and means responsive to said another operating member to move said third holding member.

4,439,020

SUNRAYS FOCUSING APPARATUS

Saburo Maruko, Yamato, Japan, assignor to Nihon Chemical Plant Consultant Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,338
Claims priority, application Japan, Feb. 13, 1981, 56-18927
Int. Cl.³ G02B *17/18*
U.S. Cl. 350—443 **5 Claims**



1. A sunrays focusing apparatus, comprising in combination:

a first vertical shaft;

a support frame rotatably mounted on said first vertical shaft;

first drive means for rotating said support frame around said first vertical shaft; horizontal shaft means rotatably supported on said support frame;

second drive means for rotating said horizontal shaft means;

a first trough-shaped parabolic reflector means fixedly secured to said horizontal shaft means for reflecting incoming sunrays;

first elongated refractor means mounted to said first reflector means at or adjacent to a focal axis of said first reflector means, said first elongated refractor means being adapted to refract sunrays reflected by said first parabolic reflector means into parallel sunrays;

second trough-shaped parabolic reflector means mounted to said first parabolic reflector means in such a way that focal axes of both said first and second parabolic reflector means are disposed at right angles to each other;

second refractor means mounted to said first parabolic reflector means at or adjacent to the focal axis of said second parabolic reflector means for refracting sunrays reflected by said second parabolic reflector means into highly condensed parallel sunrays; and sun tracking means responsive to sunrays for directing said first parabolic reflector means to the sun by controlling said first and second drive means.

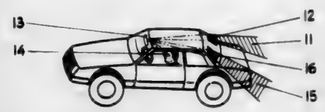
4,439,021

MOTOR VEHICLE REAR VIEWING SYSTEM

Leo Gross, 3611 217 St., Bayside, N.Y. 11361

Filed Jun. 8, 1981, Ser. No. 271,610
Int. Cl.³ G02B *3/08*
U.S. Cl. 350—452 **5 Claims**

1. In an improved optical system for directing an image from blind spots at the rear of a vehicle to the operator's view, the improvement comprising in combination with a rear window of said vehicle a laminated integral Fresnel window assembly having a plurality of Fresnel prism elements mounted integrally with the refracting edge of each said prism elements oriented vertically between laminate layers of said window of said vehicle so as to compensate for the slope of a markedly sloping rear window; wherein the power and orientation of



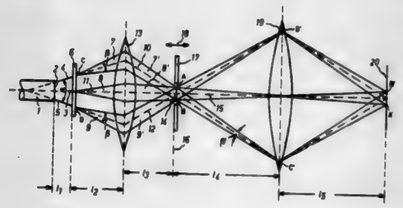
said prism elements are selected to fit the window location and the direction of each said prism element is tilted and oriented to optimize the view of the blind spots to a vehicle operator when used in conjunction with a centrally mounted rear viewing mirror; and whereby side view mirrors may be eliminated from said vehicle.

4,439,022

ARRANGEMENT FOR THE POINT- AND LINE-WISE RECORDING OF IMAGE INFORMATION

Axel Gebhardt, Mönkeberg; Heinrich Jürgensen, Raisdorf, and Christian Roes, Kiel, all of Fed. Rep. of Germany, assignors to Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

PCT No. PCT/DE80/00193, § 371 Date Aug. 21, 1981, § 102(e) Date Aug. 21, 1981, PCT Pub. No. WO81/01887, PCT Pub. Date Jul. 9, 1981
PCT Filed Dec. 20, 1980, Ser. No. 296,269
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952209
Int. Cl.³ G02B *5/02, 27/00*
U.S. Cl. 350—572 **9 Claims**



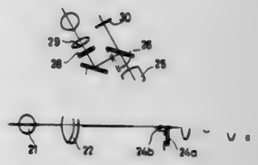
1. In an arrangement for point and line-wise recording of image information on a light sensitive recording medium by means of a group of rays emerging from a light waveguide and being imaged through a diaphragm and a first lens onto the recording medium, the improvements comprising a scatter medium for dividing each ray of the group of rays into a ray bundle diverging with an angle of dispersion (β) being disposed between an exit surface of the light waveguide and the diaphragm, a focusing lens being disposed between the scatter medium and the diaphragm, the spacing (l_1) on the optical axis between the exit surface of the light waveguide and the scatter medium and the spacing (l_2) between the scatter medium and the focusing lens being dimensioned in such manner that the focusing lens superimposes all ray bundles to form superimposed fields (AB) in a plane at a distance (l_3) from the focusing lens, said diaphragm being disposed in the superimposition area of the ray bundles and around the plane, and wherein the spacings (l_4) between the diaphragm and the first lens and the spacing (l_5) between the first lens and the recording medium being dimensioned in such a manner that the diaphragm aperture at the superimposed fields is imaged in a desired scale on the recording medium through the first lens with a focal length f_2.

4,439,023

OPTICAL SYSTEM FOR OPHTHALMOLOGICAL INSTRUMENTS

Youich Iba; Ken-ichi Nakahashi, and Masaki Matsubara, all of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 4, 1981, Ser. No. 260,395
Claims priority, application Japan, May 8, 1980, 55-59994
Int. Cl.³ A61B *3/14*; G03B *29/00*
U.S. Cl. 351—206 **4 Claims**



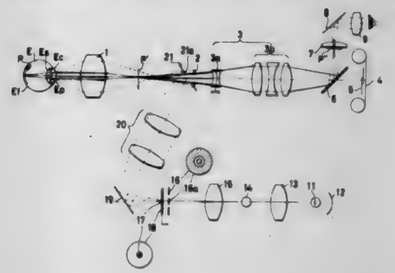
1. An optical system for ophthalmological instruments comprising an illumination system comprising a light source, collector lenses, a ring slit having a central light shielding portion arranged in close proximity an image of said light source formed with said collector lenses and an objective lens so arranged as to form an image of said ring slit in close proximity to the cornea of an eyeball to be examined, and a photographing/observation system comprising said objective lens, a small reflector mirror arranged in close proximity to said ring slit and positioned on and inclined with regard to the optical axis of said objective lens and a relay lens for focusing the rays reflected from the fundus of the eyeball to the examined after said rays have passed through said objective lens and been reflected by said small reflecting mirror.

4,439,024

EYE EXAMINING INSTRUMENT WITH VARIABLE INTENSITY OF ILLUMINATION LIGHT

Yuji Ito, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,683
Claims priority, application Japan, Apr. 25, 1978, 53-49025
The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.
Int. Cl.³ A61B *3/14*; G03B *29/00*
U.S. Cl. 351—207 **26 Claims**



1. An eye examining instrument comprising:

an eye inspecting system for inspecting an eye to be examined;

an illuminating system arranged to direct light into the eye inspection system and toward the eye to be examined and forming an optical path, said illuminating system having a first light shading member at a position conjugate with the anterior part of the eye to be inspected in the optical path

and a second light shading member, for eliminating undesirable light due to the lens of the eye to be inspected in the optical path so as to alter the amount of the illuminating light at the eye to be examined in cooperation with the first light shading member;

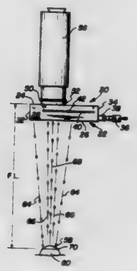
at least one of said shading members being variable relative to the other.

4,439,025

VARIABLE CIRCULAR DUAL IMAGE CORNEAL RADIUS MEASUREMENT INSTRUMENT

Heinz J. Smirmaul, 1307 Brookstone La., Duncanville, Tex. 75137

Filed Aug. 13, 1981, Ser. No. 292,513
Int. Cl.³ A61B *3/10, 3/00*
U.S. Cl. 351—212 **20 Claims**



1. An instrument for measuring the radius of curvature of a cornea of an eye comprising:

a housing;

means mounted within said housing for projecting a reference image on the cornea along an axis perpendicular to said cornea, said reference image comprising substantially a circle having a diameter;

a rod of refractile transparent material disposed within said housing and mounted along said axis for optically forming two images substantially identical to said reference image;

means for varying the diameter of said reference image and said two images substantially identical to said reference image, such that said images form a predetermined image pattern; and

means for measuring the diameter of said reference image when said predetermined image pattern is formed to provide an indication of the radius of curvature of the cornea.

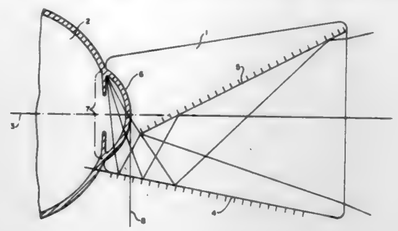
4,439,026

OPTICAL DEVICE WITH TWO REFLECTING SURFACES

Karl-Heinz Wilms, Emmering, Fed. Rep. of Germany, assignor to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,067
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040214
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—219 **6 Claims**

1. A double-reflecting contact glass for the observation of the chamber angle of a common eye in proximity of its iris, comprising an eye abutment surface, a reflecting surface arranged laterally of the eye to be examined and a central reflecting surface provided within the area of the common optical axis of the eye as well as of the contact glass, the path of observation rays being guided from the eye of an observer to the central reflecting surface and from the latter by way of the lateral reflecting surface into the interior of the eye, characterized in that the lateral reflecting surface is so arranged with respect to the common optical axis that the plane of said reflecting surface intersects the eye to be examined outside of the corneal area thereof and extends in the direction toward the eye to be examined up to a location beyond a line tangent to the



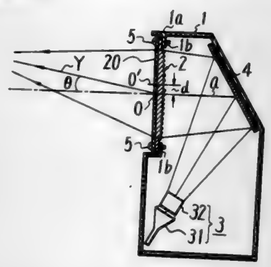
eye abutment surface and perpendicular to the optical axis of the eye.

4,439,027

REAR PROJECTION APPARATUS

Takizo Shioda; Norio Ito, both of Tokyo, and Hiroshi Horiuchi, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 24, 1982, Ser. No. 444,231
Claims priority, application Japan, Nov. 26, 1981, 56-175582[U]
Int. Cl.³ G03B *21/28;* H04N *5/74*
U.S. Cl. 353—77 **11 Claims**



1. A rear projection apparatus comprising:

a cabinet having a screen attaching portion;

a rear projection screen attached to said screen attaching portion and having a rear side with respect to a viewing position;

image projecting means for projecting an image onto said rear projecting screen from the rear side;

convex lens means disposed at said rear side of said rear projection screen, said convex lens means having an optical axis which is offset from a mechanical center of said convex lens means; and

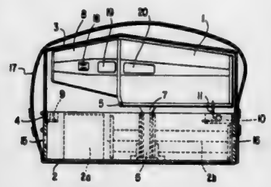
means removably attaching said convex lens means to said screen attaching portion in various orientations relative to the latter with said optical axis of said lens means offset from a mechanical center of said rear projection screen, whereby a light axis of said image from said rear projection screen is deflected in a predetermined direction by changing the orientation of said convex lens means with respect to said screen attaching portion of said cabinet.

4,439,028

PROJECTOR ASSEMBLY

Hellmut Schrader, Am Hüttenkrug 12, D-3057 Neustadt 1, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,971
Int. Cl.³ G03B *21/30*
U.S. Cl. 353—119 **12 Claims**



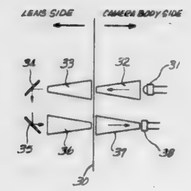
1. A projector assembly comprising: a projector having disposed therein a light source, light paths, lens, film drive and ventilation; a base supporting said projector and having disposed therein an energy supply and control means for film movement and adjustment of focus; electrical connecting means connecting said projector and said base; at least one adjustable telescoping leg with one end mounted in said base and the other end connected to said projector for adjusting the height of said projector relative to said base; and a hood adapted to be placed over said projector and connected with said base to form a closed case for said projector when said at least inetelescoping leg is in its contracted position.

4,439,029

CAMERA WITH INFORMATION TRANSMITTING ELEMENTS

Zenichi Okura, Ichikawa, and Shinsuke Kohmoto, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,692
Claims priority, application Japan, Dec. 17, 1981, 56-204216
Int. Cl.³ G03B *7/00*
U.S. Cl. 354—479 **10 Claims**



1. A photographic camera having a camera body with a lens receiving mount, an interchangeable lens having a mount removably engagable with the camera body mount, and a plurality of information transmitting elements comprising:

a light source in the camera body;

light receivers in the camera body corresponding to the respective elements;

optical fiber means in the camera body corresponding to the respective elements for coupling light from the source to the lens receiving mount and from the lens receiving mount to the receivers; and

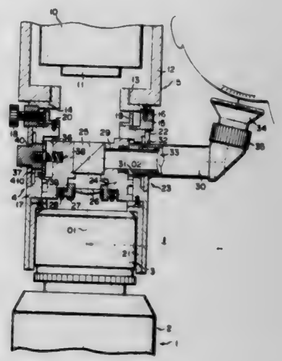
light transmitting means in the lens for returning light associated with the optical fiber means of selected elements to the light receivers of the selected elements, the selected elements representing information transferred from the lens to the camera body.

4,439,030

CONNECTING DEVICE FOR AN ENDOSCOPIC TELEVISION CAMERA

Yasuhiro Ueda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 420,235
Claims priority, application Japan, Oct. 12, 1981, 56-162202
Int. Cl.³ A61B *1/04;* G03B *29/00*
U.S. Cl. 354—62 **8 Claims**



1. A connecting device for optically and mechanically connecting an eyepiece section of an endoscope and a light receiving section of a television camera so that the optical axes of these sections are in alignment, comprising:

a cylindrical housing having one end connectable to the eyepiece section and the other end connectable to the light receiving section;

a finder extending section located between the eyepiece section and the light receiving section, and having a first optical axis in alignment with the optical axis extending from the eyepiece section to the light receiving section, and a second optical axis at a given angle to the first optical axis;

supporting means in the housing for supporting the finder extending section so as to be able to rock relative to the housing around the first optical axis;

an eyepiece section for the connecting device connected to the supporting means so as to be rockable therewith and extending outward from the peripheral surface of the housing along the second optical axis for observation of an endoscopic picture through the eyepiece section of the endoscope; and

fixing means capable of fixing the supporting means in a predetermined position.

4,439,031

DIAPHRAGM DRIVING DEVICE FOR A LENS BARREL

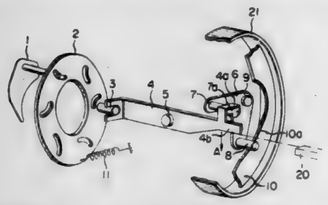
Takeshi Muryoi, Chigasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 238,423, Feb. 26, 1981, abandoned. This application Sep. 1, 1982, Ser. No. 413,777
Claims priority, application Japan, Mar. 6, 1980, 55-28207
Int. Cl.³ G03B *9/02*
U.S. Cl. 354—274 **4 Claims**

1. In a diaphragm driving device for a lens barrel which is provided between a diaphragm driving ring having its aperture opening by a diaphragm blade variable by rotation thereof about the optical axis of an optical system and a cam member having, near a mount portion for a camera body, an aperture value adjusting cam surface displaceable in response to operation of an aperture value setting operating member and which regulates the rotation of said diaphragm driving ring in correspondence with a positional variation amount provided by said cam surface during the stop-down operation by a diaphragm

interlocking device provided on said camera body, the improvement comprising:

(a) a pivotable member having a first arm coupled to said diaphragm driving ring and a second arm provided with a first portion engageable with the diaphragm interlocking device of said camera body and a second portion integrated with said first portion, said pivotable member being pivotable with respect to a fixed axis on said lens barrel, said axis being substantially orthogonal to said optical axis lying between said first and said second arm, said pivotable member being prevented from pivotally moving in one direction by the engagement with said diaphragm



interlocking device and pivoting to said one direction in response to the stop-down operation by said diaphragm interlocking device;

(b) means for biasing said pivotable member in said one direction; and

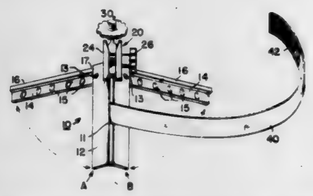
(c) a limiting member having a first portion engageable with said second portion of said second arm during said pivotal movement in said one direction and a second portion engageable with said cam surface and enabling said pivotal movement of said pivotable member in said one direction until both engagements of said first and second portions of said limiting member are accomplished.

4,439,032

PORTABLE CAMERA SUPPORT

Jon M. Congdon, Kings County, Wash., assignor to PEDCO, Seattle, Wash.

Filed Sep. 27, 1982, Ser. No. 424,619
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—293 **8 Claims**



1. A portable support for a camera or the like which comprises:

a stationary leg including a pair of elongated surfaces skewed acutely with respect to one another;

a pair of extendible legs pivotally mounted to the stationary leg for movement into extended and retracted positions such that the extendible legs abut the elongated surfaces of the stationary leg when the extendible legs are in a retracted position and the extendible legs combine with the stationary leg to form a tripod when the extendible legs are in an extended position;

a securing strap having one end attached to the stationary leg, the securing strap including means for variably securing the portable support to a companion object when the extendible legs are in a retracted position; and

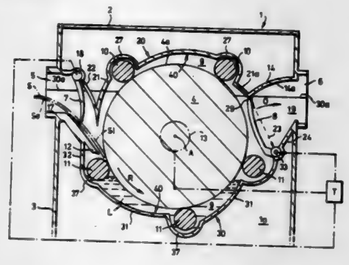
a camera mounting assembly affixed to the stationary leg for releasibly mounting a camera on the portable support.

4,439,033

DRUM-CONTAINING APPARATUS FOR READY PROCESSING AND HANDLING OF PHOTOGRAPHIC MATERIAL

Barrie A. Freeman, Wickford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 27, 1982, Ser. No. 436,906
Claims priority, application United Kingdom, Nov. 4, 1981, 8133189
Int. Cl.³ G03D *3/02, 3/08*
U.S. Cl. 354—316 **12 Claims**



1. Apparatus for treating with a liquid sheets of flexible photographic material having a front side and a reverse side, the front side being covered with a light sensitive emulsion layer, comprising:

a container,

a vessel therein which is adapted for receiving the liquid therein up to a determined level, and is of generally cylindrical configuration, having a vessel sidewall;

a drivable drum having a cylindrical surface and being rotatable about a substantially horizontal axis, the said liquid level present in said vessel being sufficiently high to immerse, during rotation of said drum, a lower region thereof in the liquid,

guiding means adapted for guiding a sheet of said photographic material into contact with said drum, with the reverse side of the sheet contacting said drum surface;

rotatable roller means spacedly disposed about said drum surface so that wall sections of the vessel are present between every two consecutive roller means, which roller means keep said sheet, during its passage about said drum and through the liquid in the vessel, in contact with said drum surface;

an entry port in said vessel sidewall, for introducing said sheet into said vessel,

entry closing means adapted for light-tightly closing said entry port and mounted movably so as to permit, when in open position, the introduction of a sheet of said material into contact with said drum surface,

an exit opening in said vessel sidewall located above the level of the liquid in said vessel and on the side of said vessel opposite said entry port, and

exit-controlling means comprising a part of the vessel sidewall which is movable between a closed position closing said exit opening, and an open position, said movable sidewall part being so shaped as to permit, when in the said closed position, the leading edge of a sheet to slide unobstructedly along the part and on to the vessel sidewall or roller means above said exit opening, and said movable sidewall part being so shaped as to permit, when the movable sidewall part is in open position, a sheet emerging from the liquid to peel away from the drum surface sufficiently to enter the exit opening, said exit-controlling means further comprising

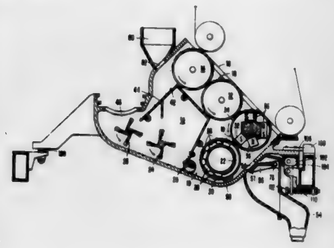
deflecting wall means extending outward from the upper end of said exit opening, and adapted for guiding a peeled-away sheet entering with its leading edge said exit opening, out of the container.

4,439,034

METHOD AND APPARATUS FOR PURGING A COPIER DEVELOPER

Raymond A. Daniels, Thornwood, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,958
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD **8 Claims**



1. In a magnetic brush developer having a magnetic brush roller, means for generating a brush magnetic field from within said brush roller, a magnetic transport roller and means for generating a transport magnetic field from within said transfer roller, said brush roller and said transport roller positioned so that the pick-up zone of the brush magnetic field is in the throw-off zone of said transport magnetic field, improved apparatus for purging the developer mix from the developer, said improvement comprising:

a purge opening located adjacent the juncture of the throw-off zone of said transport roller and the pick-up zone of said brush roller, said opening covered by a purge door;

said brush field generating means being moveable between a develop position and a purge position; in the develop position, said pick-up zone is in said throw-off zone, and in the purge position, said pick-up zone is outside of said throw-off zone;

means for moving said brush field generating means from the develop position to the purge position;

a catching means attached to said developer at said purge opening for catching the developer mix;

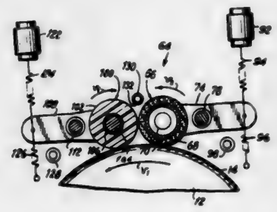
means for opening said purge door so that when said door is open and said brush magnetic field means is in the purge position, the developer mix flows from said throw-off zone out the purge opening and into said catching means.

4,439,035

COPIER CLEANING SYSTEM INCORPORATING RESILIENT NONCELLULAR SEALING ROLLER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Filed Nov. 9, 1978, Ser. No. 958,977
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **7 Claims**



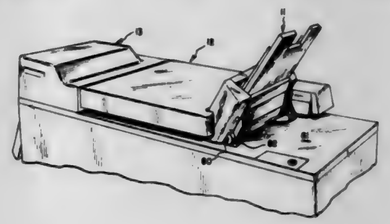
1. In an electrophotographic copier in which an imaging surface is moved to an imaging station at which said surface is provided with an electrostatic latent image of an original, to a developing station at which a developer is applied to said surface to form a developed image, to a transfer station at which said developed image is transferred to a copy sheet, and then to a cleaning station, apparatus at said cleaning station including a cleaning roller having a body of resilient material formed with cells over the surface of said roller which are open to the external environment and isolated from the interior of said body, means for wetting the surface of said body with cleaning liquid, means for effecting relative scrubbing engagement between said imaging surface and the surface of said body, a polyurethane squeegee roller having a surface smoothness of between 2 and 10 microinches positioned in engagement with said imaging surface and said cleaning roller at a point following said cleaning roller, and means for rotating said squeegee roller so that the relative motion between its surface and said imaging surface is substantially zero, whereby said squeegee roller forms a dynamic seal with said imaging surface.

4,439,036

LARGE DOCUMENT ACCESS FOR A SCANNING SYSTEM OF A COPYING MACHINE

James W. Davis, Richardson; Bradley W. Larson, Garland; Barry C. Kockler, Lewisville; Daniel T. Noonan, Irving; N. Flynt Moreland, Mesquite, and Lonnie K. Spears, Murphy, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 355,410
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **6 Claims**



1. In a copying machine comprising a frame, an exposure platen mounted in said frame for exposing bulky documents, an exposure station mounted in said frame separate from said exposure platen for exposing sheet type documents, a platen cover for covering said exposure platen, sheet transport means having a drive input positioned within said platen cover for transporting said sheet documents to said exposure station, sheet feeder means having a drive input for receiving original sheet documents and feeding said sheet documents to said transport means, the improvement comprising:

a. means for pivotably mounting said platen cover containing said transport means to said frame in swing-up relationship from a lowered single sheet operating position to a raised position for providing access to said exposure platen;

b. means for pivotably mounting said feeder means in a swing-away relationship from single sheet operating position of cooperation with said transport means when said cover is in lowered position, to a removed position to provide side access to said platen; and

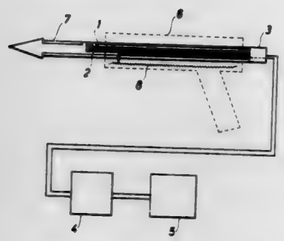
c. means cooperating with said drive input to said transport means and with said drive input to said feeder means for actuating said transport and said feeder means when said transport means and said feeder means are in a sheet copying position.

4,439,037

PROCESS FOR OPTICALLY DETERMINING THE MEAT-TO-LARD-RATIO IN FOR INSTANCE SLAUGHTERED ANIMALS

Allan Northeved, Farum, and Ole Nilsson, Olstykke, both of Denmark, assignors to Medicoteknisk Institut, Svejsecentralen, Glostrup, Denmark

PCT No. PCT/DK79/00056, § 371 Date Jul. 9, 1980, § 102(e) Date Jul. 9, 1980, PCT Pub. No. WO80/01205, PCT Pub. Date Jun. 12, 1980
PCT Filed Dec. 6, 1979, Ser. No. 273,873
Claims priority, application Denmark, Dec. 8, 1978, 5546/78
Int. Cl.³ G01J *3/46*; G01N *21/84*
U.S. Cl. 356—402 2 Claims



1. A process for optically evaluating the meat-to-lard-ratio in slaughtered animals or portions thereof, comprising:
inserting a probe comprising at least one light means including at least one transmitter transmitting light of a predetermined color and at least one receiver, said transmitter and receiver being located opposite or behind a cutting edge of said probe, substantially perpendicularly to a surface of a slaughtered animal or portion thereof,
transmitting red light in a very narrow frequency band about a predetermined wave length,
measuring reflected signals relative to a reference value automatically determined as the mean value of the lowest value in a series of received signals, and
recording reflection versus penetration depth.

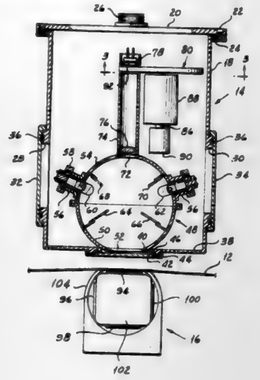
4,439,038

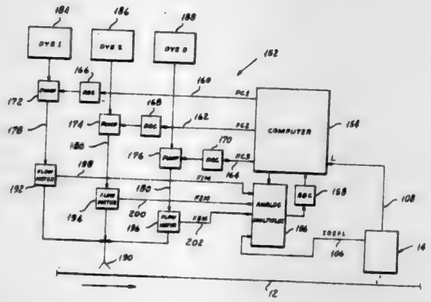
METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE COLOR OF A MOVING WEB

John W. Mactaggart, Bolton, Canada, assignor to Sentrol Systems Ltd., Downsview, Canada

Filed Mar. 3, 1981, Ser. No. 240,171
Int. Cl.³ G01N *21/27*
U.S. Cl. 356—408 8 Claims

1. A method of controlling the application of a plurality of colorants having known absorption spectra to a continuously formed material moving along a path including the steps of applying said colorants to said material at a first location along said path, continually measuring the actual reflectance spectrum of said material at a second location along said path spaced downstream from said first location, providing values corresponding to a desired reflectance spectrum of said material, each of said spectra comprising a relatively large number of substantially monochromatic components extending substantially over the rang visible wavelengths, said reflectance spectra having substantially uniform weighting as a function of wavelength, computing from each measured reflectance spectrum and from said absorption spectra the changes in concentration of said colorants which would minimize the sum of the squares of the differences between corresponding components of a subsequently measured reflectance spectrum and said desired reflectance spectrum, and changing the concentrations





of said colorants applied to said material at said first location in accordance with said computed concentration changes.

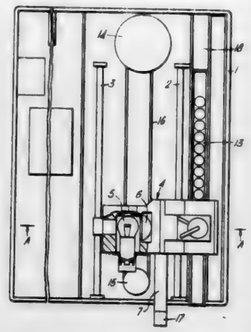
4,439,039

PHOTOMETER

Osmo A. Suovaniemi, Helsinki, Finland, assignor to Eflab Oy, Helsinki, Finland

PCT No. PCT/FI81/00055, § 371 Date Mar. 9, 1982, § 102(e) Date Mar. 9, 1982, PCT Pub. No. WO82/00361, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 10, 1981, Ser. No. 359,674
Claims priority, application Finland, Jul. 11, 1980, 802221
Int. Cl.³ G01N *21/27*
U.S. Cl. 356—416 3 Claims

1. A photometer comprising:
a case having guide means disposed therein;
means disposed in said case for holding a plurality of linearly arranged stationary samples to be measured;
a one-piece optics frame displaceably mounted along said guide means to be displaced proximate to each of the samples to be measured, said optics frame including a horizontally disposed light source, light filtering means and a semi-transparent mirror disposed at a 45° angle to provide a vertical measurement beam and a horizontal reference beam, an opening in said optics frame dimensioned so that said means for holding said samples and said samples may pass therethrough, a reference detector for measuring the light of said reference beam disposed horizontally from said light source and a measurement detector disposed vertically above said semi-transparent mirror and said opening in said optics frame.

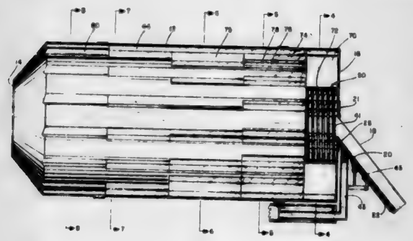


4,439,040

RECYCLING APPARATUS FOR PARTICULATE ASPHALTIC CONCRETE

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Division of Ser. No. 180,297, Aug. 22, 1980, Pat. No. 4,382,682, which is a continuation-in-part of Ser. No. 1,051, Jan. 28, 1979, Pat. No. 4,219,278, Ser. No. 155,502, Jun. 2, 1980, Pat. No. 4,265,546, and Ser. No. 139,640, Apr. 14, 1980, which is a continuation-in-part of Ser. No. 871,351, Jan. 23, 1978, Pat. No. 4,208,131, and Ser. No. 906,734, May 17, 1978, Pat. No. 4,240,754. This application Jan. 27, 1983, Ser. No. 437,495
Int. Cl.³ B01F *15/02, 15/06*; B28C *5/46*
U.S. Cl. 366—2 5 Claims



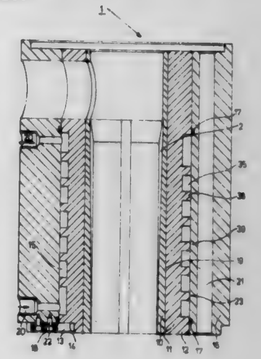
1. In a process for gradually heating and mixing particulate asphaltic concrete composition in a rotating drum between a first drum end at which said composition is introduced and a second drum end at which heated composition is recovered, the improvement comprising
inserting a chute into said second drum end to contact said composition, sensing the composition temperature contacted by said chute in said drum, and further inserting or retracting said chute to recover composition of a selected temperature.

4,439,041

FEED BUSHING FOR SINGLE-SCREW EXTRUDERS

Gerard Schaeffer, Lampertheim, and Dieter Hoffarth, Worms, both of Fed. Rep. of Germany, assignors to Paul Kiefel GmbH, Worms, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 365,101
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 8110512[U]
Int. Cl.³ B01F *15/06*
U.S. Cl. 366—144 11 Claims



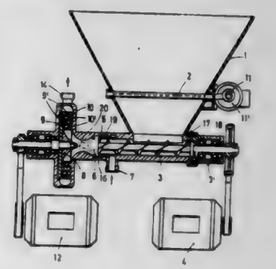
1. A feed bushing for single-screw extruders for the plasticizing extrusion of plastics under a high inertia resistance comprising an outer casing, a grooved bushing enclosed in the outer casing and receiving the screw of the extruder and a cooling system, wherein the grooved bushing is assembled from a tubular grooved inset and a tubular reinforcement surrounding the grooved inset, the inset being shrink-fitted into the reinforcement with a shrinkage allowance for withstanding the maximum forces of inertia of the screw.

4,439,042

APPARATUS TO CONTINUOUSLY MIX AND HOMOGENIZE POWDERED SUBSTANCES WITH LIQUID SUBSTANCES

Guido Bertoglio, Viganello, Switzerland, assignor to Water-Line S.A., Mezzovico, Switzerland

Filed Oct. 25, 1982, Ser. No. 436,451
Claims priority, application Switzerland, Oct. 23, 1981, 6829/81
Int. Cl.³ B01F *7/10*
U.S. Cl. 366—154 6 Claims



1. Apparatus for the continuous mixing and homogenization of powdered substances with liquid substances, comprising a hopper (1) adapted to contain the powdered substance; a screw (3) situated at the base of the hopper, a housing surrounding said screw said housing having a terminal construction followed by a converging-diverging chamber functioning as a

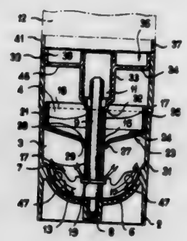
venturi, a motor (4), for actuating the screw such that the powdered substance is transported to a said terminal constriction (5) to hold back the powder flowing into said converging-diverging chamber (6); an injector conduit, an annular nozzle (16) from which liquid, introduced under pressure from said injection conduit (7) is discharged at great velocity in an annular stream into said venturi; a homogenization turbine, comprising a rotor with a plurality of rings (9') having channelling (8') to which rotor the powdered mixture plus liquid is fed from said venturi, and a stationary diffuser (10) having rings (10') interfingering with those of the rotor and having channelling (15); said rotor terminating in a discharge conduit (14) for the homogenized mixture.

4,439,043

APPLIANCE FOR PREPARING MAYONNAISE OR SIMILAR EMULSIONS

Joanny Dalox, Is sur Tille, France, assignor to SEB S.A., Selongey, France

Filed Jul. 1, 1982, Ser. No. 394,472
Claims priority, application France, Jul. 31, 1981, 81 14917
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—164 11 Claims



1. A domestic appliance for preparing mayonnaise or similar emulsions, comprising a mixing chamber in which is mounted a rotary mechanical beater, an oil reservoir, a calibrated communication passage between the oil reservoir and the mixing chamber, and means for causing the oil to flow from the reservoir to the mixing chamber via said calibrated communication passage during the mixing operation, the reservoir and the mixing chamber being arranged within an appliance body on each side of a sliding separator, the end of said calibrated communication passage which is nearest the mixing chamber opening into a suction zone of the beater.

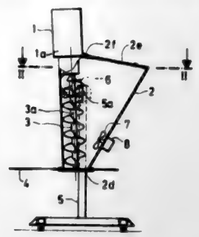
4,439,044

SCREW MIXER

Urs Büttiker, Lostorf, Switzerland, assignor to Rolf Baumgartner AG, Oftringen, Switzerland

Filed May 23, 1983, Ser. No. 497,143
Claims priority, application Switzerland, Jun. 2, 1982, 3373/82
Int. Cl.³ B01F *7/00, 13/10*
U.S. Cl. 366—292 5 Claims

1. A screw mixer comprising:
a downwardly tapering container having container walls;
a conveying and mixing screw defining a screw axis and protruding into said container from above;
said container forming substantially triangular cross-sections with rounded corners in planes extending normally relative to said screw axis of said screw;
said screw being arranged in one of said corners;
said container defining a height and a wall including said rounded corners;
said container wall, at the region of said corner in which said screw is arranged, forming a curved section extending essentially over the entire height of said container at an essentially constant distance from said screw; and



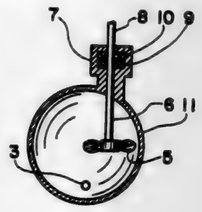
means for mounting said container for pivotal movement about a substantially horizontal axis such that said screw is pivoted in a substantially vertical plane when said container is pivoted.

4,439,045

ROTATIONAL MIXING VESSEL

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 758,141, Jan. 10, 1977, Pat. No. 4,326,811. This application Feb. 3, 1982, Ser. No. 345,211
Int. Cl.³ B01F *7/22*
U.S. Cl. 366—297 6 Claims



1. A rotational mixing vessel for mixing and agitating the fluid medium and slurry contained in said rotational mixing vessel, said mixing vessel comprising in combination:
(a) a cylindrical vessel having an inlet and an outlet; and
(b) a propeller rotatably disposed adjacent to the cylindrical wall of said cylindrical vessel wherein the plane of rotation of said propeller substantially includes the central axis of said cylindrical vessel and the axis of the rotation of said propeller is substantially parallel to a tangential plane of said cylindrical wall of said cylindrical vessel and substantially perpendicular to and offset from the central axis of said cylindrical vessel; whereby, the rotation of said propeller generates a thrust force tangential to the cylindrical wall of said cylindrical vessel and substantially perpendicular to the central axis of said cylindrical vessel for inducing and maintaining the rotational motion of said medium rotating about the central axis of said cylindrical vesel.

4,439,046

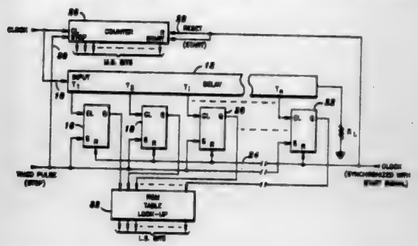
TIME INTERPOLATOR

David R. Hoppe, McHenry, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Sep. 7, 1982, Ser. No. 414,769
Int. Cl.³ G04F *8/00*
U.S. Cl. 368—120 3 Claims

1. An improved resolution circuit for a digital elapsed time measuring circuit which utilizes a system clock signal as a time standard, wherein the improvement comprises:
tapped delay means for delaying the clock signal, said delay means being driven by the clock signal, said delay means having a plurality of n taps;

a plurality of n latch means for capturing the time of arrival of the clock signal, each of said plurality of latch means having a clock signal input terminal, each of said clock signal input terminals being connected to a different one of said plurality of n taps, each of said plurality of latch means having a stop pulse input terminal and an output



terminal, a signal on said output terminal being responsive to a time coincidence of said time of arrival of the clock signal and of said stop pulse; and
means for converting said time coincidence to a digitally coded output signal corresponding to said time coincidence.

4,439,047

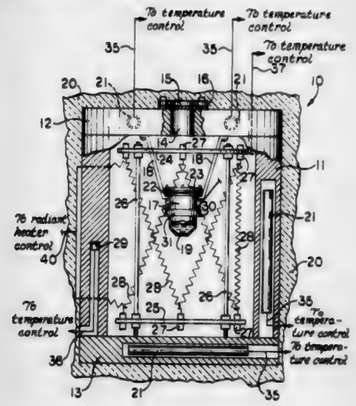
Patent Not Issued For This Number

4,439,048

ACCELERATING RATE CALORIMETER AND METHOD OF OPERATION

Donald I. Townsend; Richard H. Solem, both of Midland; Edward E. Timm, Coleman, and Victor J. Caldecourt, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 906,182, May 15, 1978, Pat. No. 4,208,907, which is a continuation-in-part of Ser. No. 723,686, Sep. 16, 1976, abandoned. This application Dec. 10, 1979, Ser. No. 101,937
Int. Cl.³ G01K *17/00*
U.S. Cl. 374—34 1 Claim



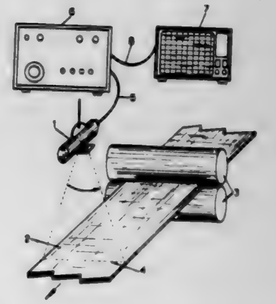
1. A method for measuring the adiabatic self-heat rate, and the time to maximum rate of an exothermic chemical reaction, as a function of temperature, to determine the adiabatic thermal runaway characteristics of reactive chemicals, the method comprising the steps of:
placing a sample of a reactive chemical (19) in a sample vessel (17) and closing said vessel;
positioning the closed sample vessel (17) inside of a reaction chamber (10), such that said vessel is surrounded by the environment of the chamber;
heating the sample vessel (17) in fixed temperature increments to a temperature at which the adiabatic self-heat rate of the exothermic reaction is detectable by a time and temperature recorder unit (42, 43, 44);
allowing the reaction to go to completion adiabatically and recording the adiabatic self-heat rate of the reactive chemical, by using a time and temperature recorder unit (42, 43, 44) during the course of the reaction;
holding the temperature of the reaction chamber (10) and the environment in said chamber, at the same temperature as the sample vessel (17), to maintain an adiabatic condition for the sample vessel (17); and
continuously sensing the temperature of the sample vessel (17) during the reaction; and
continuously recording the temperature of the sample vessel (17) as a function of time, in the time and temperature recorder unit (42, 43, 44), to thereby derive the time to maximum rate for said reaction.

4,439,049

TEMPERATURE SCANNER

Bastiaan Hoogendoorn, Heemskerk; Nicolaas L. van Schagen, Alkmaar; Johannes C. A. van den Bemt, Schagen, and Jan W. Zeijlmans, Santpoort-Noord, all of Netherlands, assignors to Estel Hoogovens B.V., Netherlands

Filed Feb. 2, 1982, Ser. No. 345,086
Claims priority, application European Pat. Off., Feb. 2, 1981, 81200070.1
Int. Cl.³ G01J *5/00;* G01K *13/06*
U.S. Cl. 374—124 7 Claims



1. A temperature scanner for scanning the temperature of the surface of a hot steel strip moving relative to the scanner, the scanner comprising
(a) a photocell,
(b) scanning means enabling said photocell to optically scan a plurality of different strips across said surface as the surface moves,
(c) electronic analysis means connected to said photocell, and
(d) display means connected to said electronic analysis means to display the output of said electronic analysis means,
(e) said electronic analysis means is adapted to operate in all of three modes, which modes are
(i) a first mode in which said electronic analysis means compares the temperatures detected by said photocell with a reference temperature level and through said display means displays a map of the surface in which areas of the surface whose temperatures are above said reference temperature level are distinguished from areas whose temperatures are below said level,
(ii) a second mode in which at least one temperature

profile across the surface obtained from one or more scans of said surface strips is displayed, and

(iii) third mode in which a plurality of said profiles are displayed simultaneously, spaced apart on the display means,

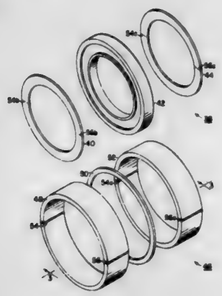
(f) said electronic analysis means further comprising switching means enabling operation of said electronic analysis means in any one of the said three modes of operation.

4,439,050

ROTARY BIT BEARING SYSTEM

Lloyd L. Garner, Fort Worth, Tex., assignor to Globe Oil Tools, Inc., Fort Worth, Tex.

Filed Jun. 11, 1981, Ser. No. 272,659
Int. Cl.³ F16C *17/04*
U.S. Cl. 384—100 **10 Claims**



1. An improved bearing system for a cutter cone of a rotary bit comprising at least one sliding bearing means wherein said sliding bearing means rotatably supports said cutter cone to withstand lateral forces including an external cylindrical bearing face defined about said journal, an internal cylindrical bearing face defined within said cutting cone, and a freely rotatably cylindrical composite sleeve bearing means mounted between said internal cylindrical bearing face and said external cylindrical bearing surface, said composite sleeve comprising:

(a) a first cylindrical sleeve member;

(b) a second cylindrical sleeve member;

(c) a spacer disc thrust member mounted in freely rotatable relation between said first and said second sleeve members; and

(d) said composite sleeve being mounted to permit the sliding mating bearing surfaces within said lateral sleeve bearing means to have relative movement as a function of the friction co-efficient between said surfaces.

4,439,051

SINGLE PRINTING STATION, MULTIPLE RECORD MEMBER FEEDING MECHANISM

Raymond L. Lawter, Zanesville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 24, 1982, Ser. No. 423,368
Int. Cl.³ B41J *11/50*
U.S. Cl. 400—605 **10 Claims**

1. A mechanism for moving a plurality of first and second record members past a single printing station comprising:

a supporting surface;

a printing mechanism positioned adjacent said supporting surface for printing data on a record member positioned at a printing station on said supporting surface;

a first support member rotatably mounted adjacent said supporting surface for movement between a first printing positions and second nonprinting actuated position;

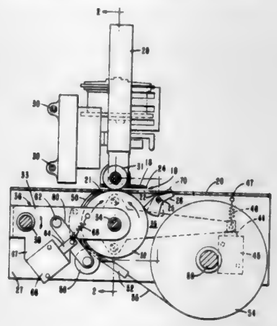
a platen member rotatably mounted between said first support member and a second support member and disposed adjacent said printing mechanism;

drive means engaging said platen member and mounted on said first support member, said drive means operable for rotating the platen member in a first and second feeding direction;

said second support member rotatably mounted adjacent said platen member;

a first driven roller member rotatably mounted on said second support member;

means engaging said second support member constructed for normally rotating said second support member in a direction to move the first driven roller member into engagement with said platen member, enabling said platen member to move a first record member positioned be-



tween the platen member and the driven roller member to said printing station adjacent said printing mechanism when rotated in said first feeding direction by said drive means and for removing the first record member from said printing station when rotated in said second feeding direction;

and first actuating means engaging said first support member and operable to rotate said first support member to said actuated position whereby said platen member is removed from said printing position enabling a second record member to be positioned on said supporting surface adjacent said printing mechanism.

4,439,052

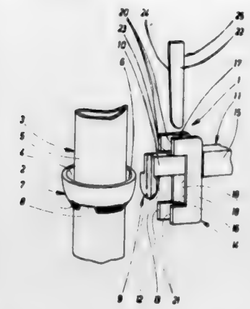
DEVICE FOR COUPLING TOGETHER LATERALLY DIRECTED SCAFFOLD ELEMENTS TO UPRIGHTS IN A SCAFFOLD OR THE LIKE

Harry Wallther, Limmerhult, Hindås, Sweden, assignor to Stillningsgruppen i Göteborg Aktiebolag, Göteborg, Sweden

PCT No. PCT/SE80/00250, § 371 Date Jun. 11, 1981, § 102(e) Date Jun. 11, 1981, PCT Pub. No. WO81/01164, PCT Pub. Date Apr. 30, 1981
PCT Filed Oct. 15, 1980, Ser. No. 276,344
Int. Cl.³ F16B *1/00*
U.S. Cl. 403—49 **8 Claims**

1. A device for coupling together laterally directed scaffold elements and uprights in a scaffold or the like, each coupling device including an engagement member which is connected to the upright and is open upwards at least in the position of use, said engagement member having a wall which extends with spacing from the upright and which defines a space situated between the upright and the wall, a hook-shaped member which is situated at least at one end of said scaffold element and which is adapted to hook into said engagement member, a first clamping member which is movable in relation to the scaffold element and which comprises at least one clamping surface, said first clamping member being arranged with at least said one clamping surface to bear against the upright, and a second clamping member which is adjustable between a release position and a locking position and which is adapted, in the locking position, to be forcibly gripped between said first clamping

member and said scaffold element so that said first clamping member is pressed towards the upright and the scaffold ele-



ment is pressed in the direction out from the upright and as a result is clamped by means of said hook-shaped member in the engagement member.

4,439,053

SWIVEL JOINT, ESPECIALLY FOR SEATS WITH ADJUSTABLE BACKREST

Herbert Pelz, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remschied-Hasten, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,176
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032374
Int. Cl.³ F16C *11/00*
U.S. Cl. 403—101 **4 Claims**



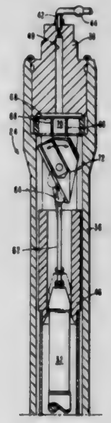
1. A swivel joint, especially for seats with adjustable backrests, comprising a first link member adapted to be fixed to a seat; a second link member adapted to be fixed to a back rest; a pivot pin having a pair of coaxial cylindrical portions and an eccentric portion arranged between and integral with said coaxial portions; means for angularly adjusting said first and said second link member with respect to each other and for holding the same in any adjusted position and comprising an internal gear integral with one of said link members, a spur gear integral with the other of said link members and having teeth meshing with teeth of said internal gear, the gear integral with the other of the said first and second link members being mounted on said eccentric portion of said pivot pin; means connected to the one of said first and second link members for turnably mounting said coaxial cylindrical portions of said pivot pin; and elastic buffer elements mounted at the bottom lands of at least one of said gears, wherein at least one of said gears is provided with an annular groove concentrically arranged and axially spaced at a small distance from the dedendum circle thereof and a plurality of radially extending cutouts respectively leading from said groove to the bottom lands between the flanks of all teeth, said elastic buffer elements being integrally connected to each other by a ring located in and filling said annular groove and webs located in and filling said cutouts.

4,439,054

LATCHING MECHANISM

Luciano Veronesi, O'Hara Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1980, Ser. No. 217,056
Int. Cl.³ F16D *3/48*
U.S. Cl. 403—322 **7 Claims**



1. A latching mechanism comprising:

a mounting member;

a pivotable member pivotably attached to said mounting member having a first bore and a second bore therein and having a first slot, a first bore, and a second slot therein with each extending from the top to the bottom ends of said pivotable member with said first slot being defined along one edge of said pivotable member and extending into said first bore, with said first bore being defined adjacent to and substantially parallel with but not in colinear alignment with said first slot and having a ledge therein, and with said second slot being defined along the length of said first bore and extending into said first bore;

biasing means attached to said pivotable member for pivoting said pivotable member relative to said mounting member;

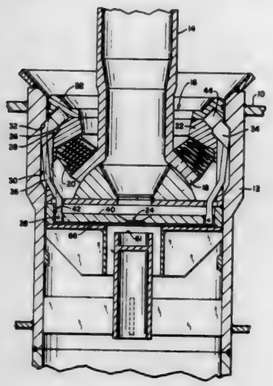
a contact member having a head on one end thereof with said head being capable of passing into said first bore and not being capable of passing through said first slot and said second slot, with said contact member being capable of being inserted through said first slot, said first bore, and said second slot and with said head being capable of being captured by said ledge in said first bore; and

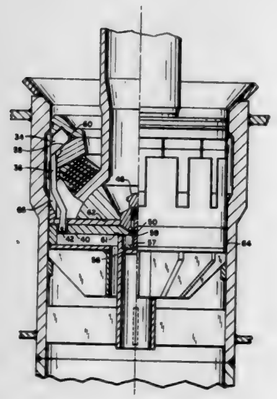
drive means connected to said contact member for moving said head into contact with said pivotable member thereby pivoting said pivotable member relative to said mounting member thereby allowing said head to be inserted in said first bore while said contact member passes through said first slot thus latching said contact member to said pivotable member.

4,439,055
ANCHOR CONNECTOR

Daniel F. Quigg; Darrell L. Jones, both of Ventura; Richard G. McFerron, Camarillo, and James L. Bell, Jr., Oak View, all of Calif., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Jan. 25, 1982, Ser. No. 342,452
Int. Cl.³ B25G 3/18; F16B 21/00; F16D 1/00
U.S. Cl. 403—330 12 Claims



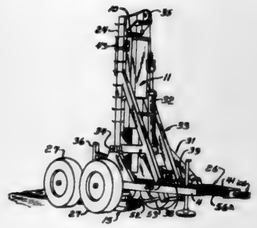


1. An anchor connector for connecting a tension leg of a tensioned leg platform to a subsea template comprising: A flexible joint having a universally pivotable member for connection to the tension leg, and a fixed member; said fixed member having a first circumferential recess on its outer diameter at an elevation above the pivot center of said flexible joint with an upwardly facing shoulder at its lower end, and a second circumferential recess on its outer diameter, above, contiguous with, and deeper than said first recess; a cylindrical template receptacle having an annular circumferential template recess on its inner diameter with a downwardly facing shoulder at its upper end; a latch carrier free to move between an upper position and an lower position with respect to said flexible joint; a plurality of latch dogs pivotally connected to said latch carrier, and having a dog head at the upper end of each; said dogs, template recess, and first recess being sized such that in the lower latch carrier position said dog head must engage both the upwardly facing shoulder of said first recess and the downwardly facing shoulder of said template recess on upward movement of said flexible joint; and said dogs and said second recess being sized such that in the upper latch carrier position said dog head fits within said second recess sufficiently for said dogs to clear said downwardly facing shoulder of said template recess on upward movement of said flexible joint.

4,439,056
MACHINE SUITABLE FOR BREAKING CONCRETE PAVEMENT IN PLACE

Clair H. Reilly, and Robert M. Reilly, both of Ossian, Iowa, assignors to Pettibone Corporation, Chicago, Ill.

Filed Jul. 13, 1981, Ser. No. 282,886
Int. Cl.³ E01C 19/34; B25D 17/28
U.S. Cl. 404—90 8 Claims



1. A machine suitable for breaking concrete pavement in place including a mobile chassis having guide uprights generally vertical during operation, and a generally vertically disposed power driver having at its lower end a shoe for engagement with the pavement and subject to repetitive downward powered driving action by the power driver with sufficient force to progressively break chunks from the pavement as it is drawn along the pavement, said power driver at its upper portion being free to undergo a bobbing action but being guided at an upper portion thereof for vertical movement by guide angles having flanges and a vertical guide upright, one flange of each angle being associated with the power driver and the other flange of each angle being with the guide uprights, characterized by the improvement in which:

said flange guide angles, and guide uprights are adapted to permit and withstand a pendulum like swinging of the power driver; and the machine also includes cushioned tow means for advancing the lower end of the power driver, including said shoe, with a relatively intermittent movement compared to the relatively constant movement of the chassis; said cushioned tow means further including elongate tow means, vertically flexible between its ends, extending forwardly from said lower end, and biasing means applied to the elongate tow means at the forward end thereof to urge the elongate tow means forwardly with long-stroke yieldability, to permit the shoe to lag when forced through the pavement surface by the driver, but advancing it rapidly between instances of lagging.

4,439,057
SOIL COMPACTOR DRIVE ASSEMBLY

Gale Sprague, R.R. 2, St. Joseph, Mo. 64505

Filed Apr. 7, 1982, Ser. No. 366,305
Int. Cl.³ E01C 19/34; F16H 23/04
U.S. Cl. 404—133 3 Claims

1. A compacting device comprising:

a box housing;

a motor mounted on said box housing and having its output shaft disposed along a generally vertical axis;

a rotatable member coupled with said shaft for rotation about said axis,

said member having a generally planar surface disposed in a plane oblique to said axis;

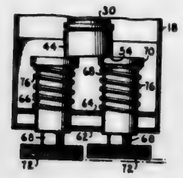
a generally cylindrical drive member integral with said rotatable member and extending perpendicular to said planar surface;

a bell housing partially enclosing said cylindrical drive member and adapted to be acted upon by said drive member, said bell housing presenting a generally planar drive surface;

bearing means disposed between said bell housing and said drive member to accomodate rotation of the latter within said bell housing;

means for holding said bell housing against rotation;

first and second driven shafts mounted in said box housing,



each of said driven shafts having a planar contact surface in engagement with said drive surface;

first and second tamping feet coupled with said first and second driver shafts, respectively;

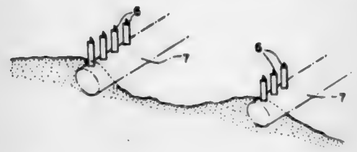
first and second spring means coupled with said box housing and disposed to act on said first and second driven shafts,

whereby said drive member alternately moves said driven shafts in a downwardly direction and said spring means move said driven shafts in the opposite direction.

4,439,058
ASYMMETRIC SEAWEEDS

Bernard J. Le Mehaute, Miami, Fla., assignor to University of Miami, Coral Gables, Fla.

Filed Feb. 8, 1982, Ser. No. 346,894
Int. Cl.³ E02B 3/04
U.S. Cl. 405—24 15 Claims



1. A device which, once implanted in the water adjacent to a surf zone of a beach, channelizes wave energy to inhibit coastal erosion and enhance accretion comprising:

(a) an anchoring means;

(b) a base;

(c) a plurality of dynamically asymmetric strips, one end of which is attached to said base and the other end of said strip extends away from said base into the boundary layer of the water near the bottom or near the surface;

(d) a means for attaching said asymmetric strips to said base; and,

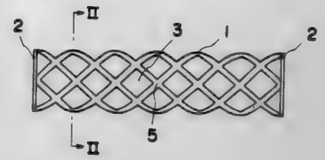
(e) said asymmetric strips having means permitting a decrease in the width of said asymmetric strips when wave motion is directed toward one side of said asymmetric strips, and having means permitting an increase in the width of said asymmetric strips when wave motion is directed toward the other side of said asymmetric strips;

whereby such decrease and increase in said width of said asymmetric strips being controlled by wave motion to inhibit coastal erosion and enhance accretion.

4,439,059
ARTIFICIAL REEF UNIT

Kenji Kikuzawa, and Shozo Akasaka, both of Moriyama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 166,912, Jul. 8, 1980, abandoned. This application Nov. 6, 1981, Ser. No. 318,859
Int. Cl.³ A01K 61/00; E02B 3/00
U.S. Cl. 405—25 11 Claims



1. An artificial reef unit comprising a hollow structure formed by spirally winding elongated fiber-reinforced plastics and having at one end thereof a first opening and at the other end thereof a second opening and having a peripheral framework extending from the circumference of said first opening to the circumference of said second opening,

said peripheral framework comprising a plurality of first fiber-reinforced plastic bands wound spirally about an axis of the hollow structure from said first opening to said second opening at an oblique angle with the axis to have a plurality of phases of the number corresponding to the number of the first fiber-reinforced plastic bands and a plurality of second fiber-reinforced plastic bands wound spirally about the axis in a direction opposite to said first fiber-reinforced plastic bands to have a plurality of phases of the number corresponding to the number of the second fiber-reinforced plastic bands, thereby forming lattice pattern windows respectively defined by said first fiber-reinforced plastic bands and said second fiber-reinforced plastic bands intersecting therewith,

each first fiber-reinforced plastic band and each second fiber-reinforced plastic band being composed of at least two layers of elongated fiber-reinforced plastics each comprising glass-based fibers and a thermohardened resin, thus rendering each of the intersections of said first fiber-reinforced plastic bands and said second fiber-reinforced plastic bands to be a unitary joint formed of at least four layers of fiber-reinforced plastics in which each of the layers constituting said first fiber-reinforced plastic band is laid alternately with each of the layers constituting said second fiber-reinforced plastic band,

said fiber-reinforced plastics having a bending strength of 18 to 100 kg/mm^2 and a modulus of elasticity of 800 to 7,000 kg/mm^2,

said hollow structure having a cross-sectional area on a plane perpendicular to said axis of 0.3 to 7 m^2,

said first fiber-reinforced plastic band and second fiber-reinforced plastic band each having a cross-sectional area of 2 to 15 cm^2,

said peripheral framework having a total band surface area of 15 to 50% based on the imaginary entire surface area of framework,

said windows each having an open area of 0.1 to 0.8 m^2.

4,439,060
MARINE CIRCULATOR

Mary A. Liscio, 133 Brewery Rd., New City, N.Y. 10956

Filed Nov. 9, 1981, Ser. No. 319,364
Int. Cl.³ E02B 15/02
U.S. Cl. 405—61 5 Claims

1. A marine circulator comprising:

housing means including substantially continuous cylindrical-shaped wall means of predetermined axial extent and

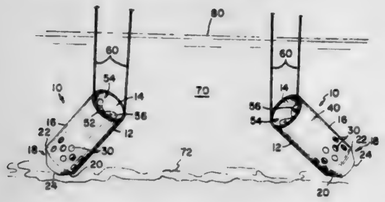
predetermined circumferential size, said housing means being open at a top end thereof and closed at a bottom end thereof by closure means integral with said housing means to prevent entry of water and debris through the bottom end of said closure means;

said closure means including a substantially flat bottom portion of predetermined circumferential size, smaller than the predetermined circumferential size of said cylindrical wall means, and concentrically arranged with respect thereto, and a tapered portion integral with and extending upwardly and outwardly from the periphery of said bottom portion and integrally joined to the lower end of said cylindrical wall means;

mounting means disposed within said housing means intermediate said top and said bottom ends;

fluid moving means;

said wall means being solid and continuous except for a plurality of openings extending through said wall means in the region above said closure means and between said mounting means and said fluid moving means, said openings being arranged about the periphery of said cylindrical wall means in the aforementioned region;



said flat bottom portion adapted to support said circulator upon the bottom surface of a body of water, whereby said openings are displaced from said bottom portion to prevent mud and/or debris from entering said housing means;

flexible cable means coupled to the upper end of said housing means for suspending the marine circulator submerged in a body of water;

said fluid moving means comprising a drive motor carried by said mounting means and a propeller driven by said drive motor and arranged so that when said housing means is disposed in a body of fluid and said drive motor is energized, fluid is drawn into said housing means through said plurality of openings, and the fluid drawn into said housing means is propelled out of said housing means through the top end thereof whereby, when said circulator is submerged in a body of water so that its top end is closer to the surface of the water than said bottom means, water from the lower depths of the body of water is delivered toward the surface of the body of water to alter the temperature of the water in the region of said surface.

4,439,061

ALUMINUM STOPLOGS

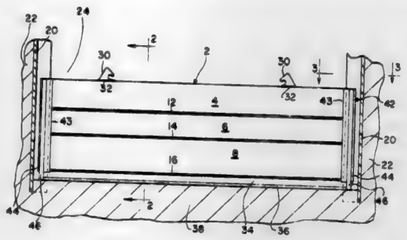
George E. Whipps, Athol, Mass., assignor to Whipps, Inc., Athol, Mass.

Filed Feb. 16, 1982, Ser. No. 348,802
Int. Cl.³ E02B 7/36, 7/54
U.S. Cl. 405—104 8 Claims

1. A stoplog for use in forming a stoplog gate, said stoplog comprising

two or more parallel elongate metal members which are shaped and attached to one another so as to form a single rigid hollow structure characterized by two parallel spaced flat faces, a bottom wall, two side walls, and a top wall, with at least one of said faces being substantially impervious to water, and

sealing means disposed about said at least one water-impervious face along said side walls and said bottom wall, said sealing means comprising (a) at least one bottom groove in said bottom wall, said at least one bottom groove extending along substantially the entire length of said bottom wall and being open at its bottom side, (b) at least one side groove in each of said two side walls, each of said side grooves extending along at least a part of the length of said side walls and being open in a direction perpendicular



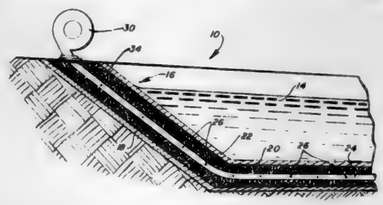
to said flat faces, and (c) a plurality of resilient strips secured in said bottom and side grooves, with portions of said strips protruding from said grooves and said protruding portions each having a generally flat surface for engaging and forming a watertight seal with adjacent surfaces when said stoplog is disposed in a log-retaining structure.

4,439,062

SEALING SYSTEM AND METHOD FOR SEALING EARTHEN CONTAINERS

Robert P. Kingsbury, Laconia, N.H., assignor to American Colloid Co., Skokie, Ill.

Filed Dec. 21, 1981, Ser. No. 332,351
Int. Cl.³ E02B 3/04
U.S. Cl. 405—24 15 Claims



1. A method for sealing an earthen container to prevent fluid seepage into surrounding soil, comprising:

disposing a layer comprising water expandable colloidal clay onto soil to form an outer seal,

disposing a layer of granular fill material on said lower seal,

disposing a layer comprising water expandable colloidal clay onto an upper surface of said granular fill material to form an inner seal, and

introducing a fluid into said layer of granular fill material, between said upper and lower seals to provide a positive pressure between said upper and lower seals greater than the pressure on an upper surface of said upper seal.

4,439,063

HYDRAULIC CONTROL MEANS

Herbert Heftkamp, Werne, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

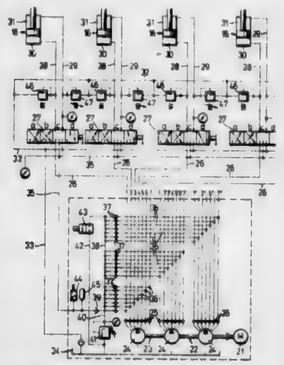
Filed May 13, 1981, Ser. No. 263,381
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019374
Int. Cl.³ E21D 9/06; F16D 31/02
U.S. Cl. 405—145 23 Claims

1. In a tunnel knife shield having a support frame, a plurality

of knives positioned side-by-side on the support frame, a plurality of double-acting hydraulic rams for advancing the knives and for causing the support frame to follow up the advance of the knives, the rams being positioned between the knives and the support frame, and each ram having first and second working chambers pressurization of which is effective to extend and retract that ram, an improved hydraulic control means for controlling the extension and retraction of the rams, the hydraulic control means comprising:

(a) a multi-flow pump and a plurality of control valves, each of which is associated with a respective hydraulic ram,

(b) each control valve including a first input and a second input,



(c) each of the first inputs is connected to a separate first hydraulic line, and each of the second inputs is connected to a common second hydraulic line,

(d) the common second hydraulic line being connected to a plurality of the first hydraulic lines, whereby when a given control valve is in a first operating position, the first working chamber of the associated ram is connected to the common second hydraulic line, and, when that valve is in a second operating position, the second working chamber of that ram is connected to the first hydraulic line associated with that control valve,

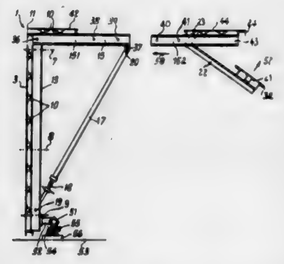
(e) the multi-flow pump supplies pressurized hydraulic fluid to all of the first hydraulic lines, the first hydraulic lines being supplied with equal amounts of pressurized hydraulic fluid via separate pump outlets.

4,439,064

TUNNEL FRAMINGS

Cornelis van der Gaarden, Ysselstein, Netherlands, assignor to Outinord St. Amand S.A., Saint Amand les Eaux, France

Filed May 4, 1982, Ser. No. 374,898
Claims priority, application France, Apr. 28, 1981, 81 08825
Int. Cl.³ E21D 11/10
U.S. Cl. 405—150 8 Claims



1. A half casing for tunnel framings for poured concrete, said half casing having a vertical panel supported by vertical beams, said vertical beams having upper and lower ends, a horizontal panel constituted of plural panel elements supported by horizontal beams, said horizontal beams having distal ends connected pivotally to the upper ends of the vertical beams, said vertical and horizontal panels forming a right-angled dihedron having an outer edge, and adjustable struts connecting the proximal ends of the horizontal beams to the lower ends of the vertical beams, characterized in that each half casing comprises

(a) horizontal beams composed of inner and outer telescopic beam sections, said inner beam sections being connected pivotally to the upper ends of the vertical beams and said outer beam sections including the proximal ends of the horizontal beams,

(b) a horizontal panel element supported on the inner telescopic beam sections, said horizontal panel element including the edge of the dihedron and having a width shorter than the length of said inner beam sections,

(c) a second horizontal panel element supported on the outer telescopic beam sections adjacent their proximal ends, said second panel element having a width shorter than the length of said outer beam sections, whereby a horizontal gap is provided between said two horizontal panel elements,

(d) connection means for connecting the inner and outer telescopic beam sections together at selected telescopic positions relative to each other, thereby to vary selectively the width of the gap between the two horizontal panel elements,

(e) a plurality of horizontal panel elements of modular widths for selected insertion into the gap to completely close the gap and

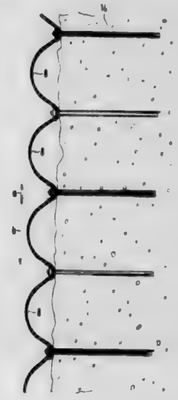
(f) a horizontal reinforcing beam affixed to the lower ends of the vertical beams for stiffening and supporting the vertical panel.

4,439,065

CONTINUOUS GALLERY CONSTRUCTION, IN PARTICULAR FOR UNDERGROUND MINE TUNNELS

Artur Constapel, Wilhelmstrasse 140, 4100 Duisburg 17, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,602
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032821
Int. Cl.³ E21D 11/22
U.S. Cl. 405—151 11 Claims



1. In a multi-section gallery construction for use in a mine tunnel, said gallery construction being of the type comprising a plurality of sheet steel elements disposed in partially overlapping relation to one another to provide a continuous longitudi-

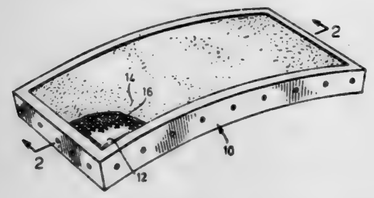
nally extending gallery in the mine tunnel, the improvement wherein each of said steel elements has a thickness in the range of 0.5 to 3 mm, each said element being of elongated arcuate shape and defining a plurality of spaced corrugations which are oriented in the longitudinal direction of said gallery, each said element having a cross-sectional shape in the longitudinal direction of said gallery consisting of a smoothly curved convex section the opposing edges of which merge into smoothly curved concave sections, the radii of curvature of said concave sections being substantially less than the radius of curvature of said convex section, adjacent ones of said steel elements overlapping one another in the longitudinal direction of said gallery only at said concave sections whereby said gallery exhibits a longitudinal cross section of smoothly curved wavy configuration consisting of plural convex sections and intervening smaller-radii concave sections, the amplitude (A) and longitudinal width (b) of each said concave section being substantially greater than the amplitude (B) and longitudinal width (a) of each said convex section, and supporting means in separable engagement with at least some of said overlapping concave sections for securing said gallery to a wall of the mine tunnel.

4,439,066

PERVIOUS TUNNEL LINER MEMBER

Michael P. McNally, R.R. #1, Freelton, Ontario, Canada L0R 1H0

Filed Mar. 19, 1982, Ser. No. 359,771
Int. Cl.³ E21D *11/00*
U.S. Cl. 405—153 8 Claims



1. A tunnel lining comprising a series of similarly shaped tunnel liner members each being of a similar geometric shape such that when assembled with one another they form a continuous tunnel lining, said members being curved to conform to the shape of the tunnel, said members having exposed exterior and interior surfaces, each member having an edge surface of substantial width extending inwardly substantially orthogonally from said exterior surface, and extending around the periphery thereof to facilitate the coupling of adjacent lining members, in the construction of said lining, at least a portion of said members having a recess formed in the exterior surface of said member, a suitable filter means located in said recess to allow the passage of selected filtrate therethrough, said filter means permitting the passage of water and air therethrough, but preventing the passage of soil particles therethrough, conduit means passing through said member serving to communicate the recess in the exterior surface of said member with the interior surface of said member.

4,439,067

METHOD OF LAYING AND JOINING PIPES AND A LIFTING DEVICE FOR PERFORMING THE METHOD

Thorleif Bakk, and Henry Bakk, both of Oslo, Norway, assignors to deha Baubedarf GmbH & Co. KG, Grossgerau, Fed. Rep. of Germany

Filed Nov. 5, 1981, Ser. No. 318,567
Claims priority, application Norway, Nov. 10, 1980, 803374
Int. Cl.³ F16L *1/00*
U.S. Cl. 405—154 4 Claims

1. A lifting and joining device for use in laying and joining pipes end to end, especially large concrete pipes, to form a pipeline of a plurality of pipes comprising, an asymmetrical lifting strap having at least two legs, a first leg being longer than the second leg, a lifting and connecting member interconnecting said legs at one end, and pipe attaching means on the other ends adapted to be attached to the pipes to be joined, so that



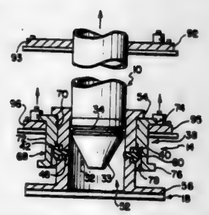
when said longer leg is attached to a pipe already laid and the shorter leg is attached to a pipe to be joined at a position closer to the end to be joined than the position where the longer end is connected to said laid pipe and a lifting force is applied to said lifting and connecting member, the pipe to be joined is drawn toward said laid pipe.

4,439,068

RELEASABLE GUIDE POST MOUNT AND METHOD FOR RECOVERING GUIDE POSTS BY REMOTE OPERATIONS

Roger L. Pokladnik, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Sep. 23, 1982, Ser. No. 422,091
Int. Cl.³ E02B *7/12*; F16L *35/00*
U.S. Cl. 405—169 10 Claims



1. In a guide system for an underwater well installation of the type comprising a base secured to an upstanding well member and at least one guideline to be secured to the base and to extend from the base to the surface of the body of water, the combination comprising:

a receptacle rigidly secured to the base and having an upwardly opening cavity;

a guide post having a lower end portion of shape and dimensions to be accommodated by said cavity, said lower end portion having an outwardly opening locking recess;

at least one locking element carried by said receptacle and movable between a first, inactive position, in which the locking element is disengaged from said locking recess when said lower end portion of the guide post is disposed in said cavity, and a second, active position, in which the locking element engages said locking recess to lock the guide post to the receptacle; and

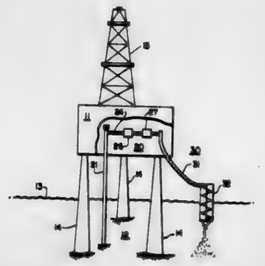
a movable operating member carried by said receptacle and movable between a first position, in which the operating member holds said locking element in its active position, and a second position, in which the movable operating member at least frees said locking element for movement to its inactive position, said operating member having externally exposed means for direct engagement by a remotely lowered and remotely operated tool.

4,439,069

METHOD AND APPARATUS FOR DISPOSING OF DRILL CUTTINGS AT AN OFFSHORE LOCATION

John Kelly, Jr., Arlington, Tex., and Gregory J. Edelbrock, Forus, Norway, assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,856
Int. Cl.³ E02B *17/00*; E21B *21/00*
U.S. Cl. 405—195 1 Claim



1. A system for disposing of oil contaminanted drill cuttings from a drill platform of an offshore well drilling operation in which a drilling fluid is circulated to remove drill cuttings from the well being drilled, comprising:

(a) means for compacting said drill cuttings to minimize water pollution when said drill cuttings are discharged into the water surrounding the drill platform, and

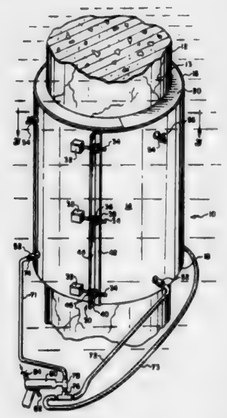
(b) a discharge member for conveying said drill cuttings from the drill platform into the water along a pathway which is straight running and inclined 45° to 60° from the vertical along at least a portion of its length whereby said discharged drill cuttings enter the water at a distance from the drill platform sufficient to eliminate impact of the discharged drill cuttings with the underwater support structure for the platform which could cause contamination in the water surrounding the drill platform.

4,439,070

METHOD FOR RESTORING AN UNDERWATER PILING AND AN UNDERWATER JACKET USED THEREWITH

Floyd E. Dimmick, 109 Brinker Rd., Barrington Hills, Ill. 60010

Filed Jul. 23, 1981, Ser. No. 285,964
Int. Cl.³ E02D *5/60*
U.S. Cl. 405—216 46 Claims



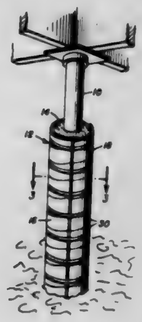
1. A method for restoring an underwater concrete, wood or steel piling or other underwater structure including the steps of: placing a sheet of plastic material around a portion of a piling to be restored with longitudinal edges of the sheet overlapping each other and with at least one strip of compressible material situated between the lower edge of the sheet and the piling; applying an epoxy composition either to the inner surface of the strip of compressible material and/or the adjacent piling; drawing the longitudinal edges of the sheet in further overlapping relationship; fixing the drawn together edges in place to form a jacket around the piling and to create an annular space between the piling and the jacket; injecting an epoxy composition into said annular space while at the same time venting said annular space in at least one location at the upper end of said annular space until said epoxy composition begins to escape from said at least one location at the upper end of said annular space.

4,439,071

PILING ENCASEMENT SYSTEM

Linwood W. Roper, Jr., Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Jan. 15, 1982, Ser. No. 340,002
Int. Cl.³ E02D *5/60*
U.S. Cl. 405—216 7 Claims



1. For use in the formation of a reinforcing sleeve of concrete or the like about a pile, a mold for encircling a pile in outwardly spaced relation thereto, said mold comprising a first integral one-piece section of partial tubular configuration and an independent second integral one-piece section of partial tubular configuration, said first section extending about an arc of greater than 180° and having opposed longitudinal edges defining an opening of an arc of less than 180°, said second section extending about an arc greater than that of the opening for positioning over said opening, said first section including an outer surface, said second section terminating in opposed edges positioned in overlying relation to the outer surface of said first section circumferentially spaced from the opening beyond the opposed edges of the opening, the opposed edges of said second section being directly supported by said first section.

4,439,072

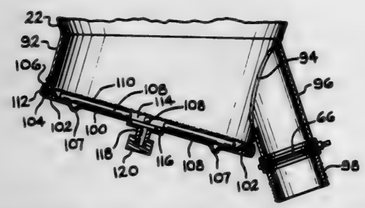
FLUIDIZED BED DISCHARGE BIN WITH AERATING BLOWER

James H. Goodkea, Beatrice, Nebr., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed May 22, 1981, Ser. No. 266,032
Int. Cl.³ B65G *53/38*
U.S. Cl. 406—91 4 Claims

4. In a fluidized bed discharge bin including an aerating blower the improvement comprising a removable closure covering an opening in the bottom of the bin, said closure including an imperforate wall portion having a generally flat planar interior surface on which the weight of overlying con-

tents of the bin is supported, and an air-permeable sheet within the bin overlying said generally flat interior surface of said imperforate wall portion and having a perimeter retentively held between said closure and said bin opening, spacing means within the bin disposed on said interior surface of said imperforate wall portion and engaging that side of said air-permeable sheet facing said interior surface to preclude the entirety of



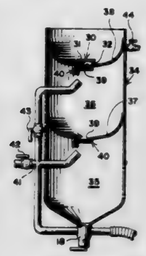
said air-permeable sheet from being pressed flat against said interior surface, and means for introducing aerating fluid from the blower into the bin via an inlet in said closure which is located immediately adjacent said imperforate wall portion, said inlet being located at a central region of said closure and said spacing means comprising a series of spacing elements circumferentially spaced and directed generally radially with respect to the central region of said closure.

4,439,073

FILLING HOLE SWING VALVE FOR SANDBLASTERS

Harold J. White, 820 NW. 144th St., Miami, Fla. 33168

Filed Apr. 30, 1982, Ser. No. 373,364
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—125 9 Claims



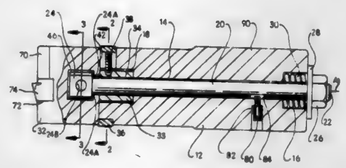
1. In a filling hole swing valve for sandblasters of the type having a sand holding and delivery chamber, a sand filling chamber above the sand holding and delivery chamber, an inverted head wall separating the sand holding and delivery chamber from the filling chamber, a circular sand filling hole centrally located in the head wall for the passage of sandblasting sand from the filling chamber into the sand holding and delivery chamber, and a pressurized air conduit extending into said sand holding and delivery chamber, the improvement comprising, in combination, a swing valve, means pivotally journalling said swing valve with respect to the underside of the head wall for movement between a downwardly-extending position away from the sand filling hole and an upward position in seating engagement against the underside of said filling hole and surrounding a peripheral head wall zone thereof, said swing valve comprising a flat metal plate, a flat elastic gasket secured against the upper side of said plate, said pivotally journalling means permitting limited translational movement of said plate in the vertical direction, the pressurized air conduit terminating within the sand holding and delivery chamber in abutment with the underside of said plate when said swing valve is in its downwardly-extending position.

4,439,074

BORING TOOL WITH COARSE AND FINE ADJUSTMENT

Shivdas A. Kalokhe, Clinton, Canada, assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jun. 30, 1982, Ser. No. 393,915
Int. Cl.³ B23B *39/00*
U.S. Cl. 408—178 12 Claims



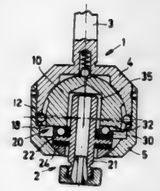
1. A boring tool comprising a tool body having a first longitudinal bore, a shaft means disposed in said first bore with clearance such that the shaft means is movable eccentrically in said bore, tool means carried by said shaft means, key means between the tool body and tool means permitting transverse movement of said tool means relative to said tool body, and bushing means rotatable in said first bore and having a second longitudinal bore offset therefrom with the shaft means received in said second bore and movable with said bushing means such that rotation of the bushing means causes the shaft means to move in an eccentric path in said first bore and impart a transverse movement to the tool means relative to the tool body for purposes of tool adjustment.

4,439,075

TOOLHOLDER FOR ROTARY TOOL

Hans Wiederkehr, Ifangstrasse 107, Rümlang, Switzerland

Filed Dec. 9, 1980, Ser. No. 216,314
Claims priority, application Switzerland, Dec. 10, 1979, 10930/79
Int. Cl.³ B23B *31/36*
U.S. Cl. 408—239 R 6 Claims



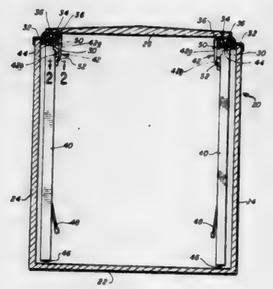
1. A toolholder for rotary tool, comprising
a driving part having a casing coupled thereto;
a driven part having a bearing flange and mounting means for coupling a tool to said driven part along a tool axis; and
joint means, mounted in said casing, for coupling said driving part and said driven part for relative pivotal movement and lateral movement perpendicular to said tool axis, said joint means including:
means in said casing defining a substantially spherically shaped recess,
a substantially spherically shaped body mounted in said recess for pivotal movement to all sides,
means for coupling said recess to said body to transmit torque from said driving part and casing to said body;
a planar bearing surface on said body generally parallel with said bearing flange;
a bearing ring carrying a plurality of bearing balls and coupling balls; and
means in said bearing surface and in said bearing flange for engaging said coupling balls for transmitting torque from said body to said driven part,
said bearing balls concurrently permitting relative lateral movement between said bearing surface and bearing flange.

4,439,076

MOVABLE FREIGHT RESTRAINING DEVICE FOR FREIGHT CARS AND THE LIKE

Russell M. Loomis, Palos Heights; Michael D. Galkowski, Homewood, and Denis R. Brzezinski, Richton Park, all of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.

Filed Apr. 1, 1981, Ser. No. 249,898
Int. Cl.³ B60P *7/14*; B61D *45/00*
U.S. Cl. 410—153 38 Claims



1. A device for restraining freight in a cargo area in a freight transporting vehicle, which vehicle has track means spaced inwardly of a side wall of the vehicle and extending along one side of at least a portion of the length of the cargo area in the top portion thereof, which comprises:
horizontal axle means positioned above said track means at right angles thereto, said axle means and any supporting structure therefor extending laterally beyond said track means on at least one side thereof;
an upright, elongated stanchion having a vertically extending cargo restraining surface on one side thereof substantially normal to said track means, said cargo restraining surface extending transversely for substantially less than one-half of the width of said cargo area;
roller means rotatably mounted on said axle means for rolling on said track means, said roller means being disposed along said axle means on both sides of the vertical plane that passes through the center of gravity of said stanchion and is parallel to said track means;
yoke means connected with said axle means and any supporting structure therefor at its upper end and connected with said stanchion at its lower end, to provide a support framework for said stanchion that is rigid throughout its entire extent, in a first vertical plane that passes through the center of gravity of the stanchion and is normal to said track means, from said roller means, along said axle means and any supporting structure, along said yoke means, and across said stanchion to a second vertical plane that passes through said center of gravity and is parallel to said track means,
the connection between said stanchion and said lower end of said yoke means, when said roller means includes more than one roller disposed in a given direction, being articulated in said given direction,
said stanchion being supported solely by said track means extending along said one side of said freight transporting vehicle; and
locking means for locking said stanchion in selected positions with respect to said cargo area.

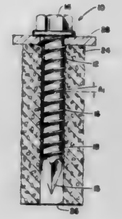
31. In a device for restraining freight in a cargo area in a freight transporting vehicle, which device includes an upright stanchion suspended by means of a yoke member from a carriage for rolling along track means spaced inwardly of a side wall of the vehicle and extending along at least a portion of the length of the cargo area in the top portion thereof, said stanchion having a horizontal flat plate member secured thereto, said yoke member being a generally L-shaped member having a vertical arm and a horizontal arm extending towards the outer wall of said vehicle beneath said track means, the subcombination of means for connecting said stanchion and said yoke member, which comprises:
a horizontal shelf member supported on the free end of said horizontal arm of the yoke member, said shelf member having an upper, planar bearing surface, the vertical line on which the center of gravity of said stanchion lies, when the stanchion is supported by said yoke member, passing through said planar bearing surface, said shelf member being positioned to support said flat plate member secured to said stanchion, with said flat plate member being free to rock upon said shelf member in response to lateral or longitudinal displacement forces applied to the lower portions of said stanchion.

4,439,077

CONCRETE SCREW ANCHOR

Kent B. Godsted, 917 S. Allmen, Hinsdale, Ill. 60521

Filed Feb. 11, 1982, Ser. No. 347,809
Int. Cl.³ F16B *35/04*
U.S. Cl. 411—411 5 Claims



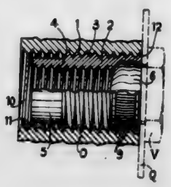
1. A screw type anchor for retention in a bore of predetermined diameter formed in a masonry type support surface in combination with said surface, the anchor including an axially extending shank with an enlarged head portion at one extremity and a support surface entering portion at the opposite extremity, the head portion including rotation inducing surfaces, a spaced, helical, continuous thread having a predetermined threads per inch and predetermined crest diameter formed on the shank and extending from the entering portion towards the enlarged head portion for a substantial portion of the length of the shank, the helical thread having a V-shaped cross-sectional configuration with the flanks of the thread intersecting at an included angle in the range of approximately 30°–65°, the helical thread extending about the shank at a lead angle in the range of approximately 6° to 8½°, the predetermined bore diameter is approximately equal to 0.9 the predetermined crest diameter of the anchor, so that the average penetration of the crest of the thread into the wall of the bore is approximately 0.05 the predetermined crest diameter, whereby the anchor can be threadingly inserted in said bore by cutting mating threads in the wall of the bore at an acceptable insertion torque level while optimizing the pull-out strength of the anchor in the support surface.

4,439,078

ASSEMBLY SLEEVE FOR FIXING A SCREW IN AN OBJECT, PARTICULARLY OF A SOFT MATERIAL

Alexis A. J. F. Dessouroux, Spa, Belgium, assignor to Shur-Lok International SA, Petit Rechain, Belgium

Continuation of Ser. No. 127,084, Mar. 4, 1980, abandoned. This application Feb. 24, 1982, Ser. No. 351,892
Claims priority, application France, Mar. 15, 1979, 79 06611
Int. Cl.³ F16B 37/12
U.S. Cl. 411—178 6 Claims



1. In an insert sleeve for interposition between a screw and a tapped hole of an object, in particular of a soft material, said sleeve comprising an outer screwthread adapted to the screwthread of the tapped hole, an inner screwthread adapted to the screwthread of said screw, and a cylindrical extension portion adjacent an end of the sleeve, which extension portion is devoid of screwthreads and has an outside diameter which is no larger than the minor diameter of the outer screwthread of the sleeve, said extension portion comprising a ribbed outer cylindrical surface and provided for axial compression and buckling to produce a radially outward deformation against the screwthead of said tapped hole to prevent rotation of the sleeve; the improvement comprising means for facilitating and accelerating a disengagement of said ribbed outer surface from the screwthread of the tapped hole, subsequent to said outer deformation thereof, when it is desired to remove the sleeve from the tapped hole, said facilitating and accelerating means comprising an outer circular annular and smooth flange on an outer end of the extension portion, the annular flange having an outside diameter exceeding the minor diameter of the outer screwthread of the sleeve so as to be capable of axially bearing against said object and acting as an abutment which, when rotated relative to said object, is non-destructive of the material of said object and prevents further penetration of said outer end portion into the tapped hole when screwing the rest of the sleeve still further into the tapped hole in the conventional manner by means of a bolt or the like which is jammed in said inner screwthread of the sleeve for rotating the sleeve for disengaging said buckled ribbed outer surface from the screwthread of the tapped hole, the extension portion having an inside diameter larger than the major diameter of said inner screwthread, said outer flange constituting reinforcing means for said outer end which facilitate the production of said outer deformation by an axial compression and buckling on said extension portion merely by application of axial force on said flange.

4,439,079

WALL ANCHOR ASSEMBLY

Al Losada, 30 Stag St., Stratford, Conn. 06497

Filed Jul. 24, 1981, Ser. No. 286,581
Int. Cl.³ F16B 21/00, 13/06
U.S. Cl. 411—345 9 Claims

1. An anchoring device for use in a wall to support a fixture thereon comprising:

an elongated anchor means sized to fit through an opening formed in a wall,

said anchor means having an opening formed therein adapted to receive a fastener,

a pair of elongated leg members hingedly connected to said anchor means, said leg members being disposed to either side of said opening,

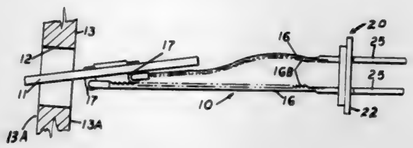
ratchet teeth longitudinally spaced along the length of at least one of said leg members,

a releasable slip collar arranged to be slidably mounted along said leg members,

said collar having a central opening adapted to be disposed in alignment with the opening in said anchoring means,

said collar having opposed slideways for receiving said leg members, and

said slideways each having opposed closed ends confined within the periphery of said collar, the distance between said closed ends defining the width of said slideways, and



said slideways having a width which is greater that the width of said leg members,

said collar being arranged to slide along said leg members,

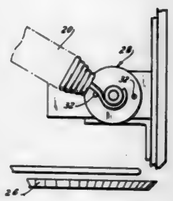
a complimentary tooth formed in at least one of said slideways adapted to ratchet over the ratchet teeth of the corresponding leg member whereby said collar is free to ratcher over said ratchet teeth in one direction only, and whereby the width of said slideway relative to its corresponding leg member permits said collar and leg members to be shifted relative to one another so as to affect disengagement of the complimentary tooth of the slideway from the associated ratchet teeth of the corresponding leg member so that said collar is rendered freely slidable along said leg members independently of any ratcheting.

4,439,080

BINDER CLAMP SPRING SAFETY DEVICE

Robert E. LeFevere, Memphis, Tenn., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 28, 1982, Ser. No. 372,505
Int. Cl.³ B42B 9/00
U.S. Cl. 412—9 1 Claim



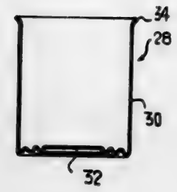
1. A binder clamp spring safety device for restraining a segment of a failed binding machine clamp spring in combination with a binding machine comprising a cutting and roughing saw, a clamp plate and a curved plate spaced from said saw, a clamp carrier cam spaced from said clamp plate, a shaft bushing block secured to said curved plate, a shaft protruding from said block, a clamp locking mechanism spring having one end thereof secured to said protruding shaft, a collar connected to said shaft and interposed between said bushing block and said spring, and a pair of pins protruding from said collar each on an opposite side of said spring to retain said spring therebetween in order to prevent said spring from engaging said saw or said clamp carrier cam.

4,439,081

CONTAINER PRODUCED BY TRIPLE DRAWN METHOD USING TIN COATED STEEL

Albert J. Holk, Frankfort, and Sam C. Puleiani, Norridge, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Jun. 26, 1979, Ser. No. 52,176
Int. Cl.³ B21D 51/26
U.S. Cl. 413—1 8 Claims



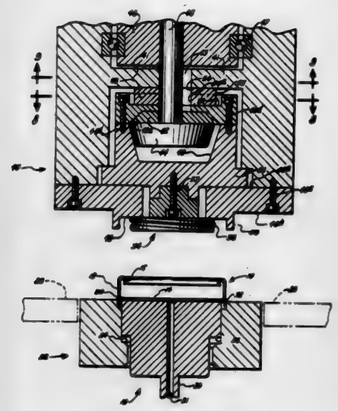
1. In the method of forming a can including a body and an integral end wherein a steel sheet blank is first drawn to form a large diameter shallow cup, then redrawn to form a deeper smaller diameter cup, and thereafter redrawn to the final can body diameter; the improvement of starting with a tin coated steel sheet wherein the steel sheet prior to coating has a surface finish on the order of 30 microinch maximum.

4,439,082

APPARATUS FOR THREADING CLOSURES

Roderick V. King, Girard, Pa., assignor to Ethyl Products Company, Richmond, Va.

Division of Ser. No. 200,909, Oct. 27, 1980, Pat. No. 4,397,597. This application Jul. 23, 1982, Ser. No. 401,203
Int. Cl.³ B21D 51/00
U.S. Cl. 413—56 11 Claims



1. An apparatus for forming spiral threads in a closure having a cylindrical wall comprising:

(a) an apparatus support means;

(b) nest means attached to said support means for receiving said closure;

(c) closure support means slidable received in said nest means for moving said closure into and out of said nest means;

(d) cylindrical threading tool means having at least one outwardly extending spiral thread forming member around the outside thereof;

(e) means for vertically inserting and withdrawing said threading means in said closure;

(f) threading tool housing means axially aligned with said nest means and having threading tool carrier means mounted therein that is connected to said threading tool means, said carrier means including a carrier having a conical recess that has the shape of an inverted truncated cone located in its interior, and a truncated conical actuator adapted to slide into and out of said recess to move said threading tool carrier transversely to bring said threading tool means into contact with said cylindrical wall of said closure; and

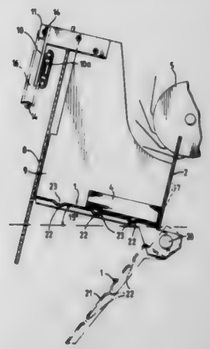
(g) orbiting means for moving said threading tool means in an orbital path whereby the axis of said threading tool moves in a circle about the axis of said closure while preventing rotational and axial movement of said threading tool about its own axis.

4,439,083

AUTOMATIC SHEET DISPENSING APPARATUS

Stuart M. Jenkins, Bognor Regis, and Steven M. Hosking, Southsea, both of England, assignors to De La Rue Systems Limited, London, England

PCT No. PCT/GB81/00219, § 371 Date May 28, 1982, § 102(e) Date May 28, 1982, PCT Pub. No. WO82/01435, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 8, 1981, Ser. No. 385,401
Claims priority, application United Kingdom, Oct. 10, 1980, 8032881
Int. Cl.³ B65H 33/00, 31/30
U.S. Cl. 414—46 9 Claims



1. An automatic sheet dispensing apparatus, comprising: means for feeding sheets singly to form a stack, and a dispensing module for conveying the stack to a selected one of two presentation platforms, the dispensing module comprising an elongated base plate (1) defining the presentation platforms and inclined to the horizontal, an upwardly extending support plate (2) along a lower lateral edge of the base plate in a plane at right angles to the base plate, a movable pusher plate (9) disposed adjacent to and at right angles to the base plate and to the support plate and mounted (at 10) to traverse in the direction of the length of the base plate, and means (14 to 18) to drive the pusher plate between two positions intermediate the ends of the base plate, the feeding means being arranged (at 5) to deliver a stack of sheets (4) onto a receiving platform (21) of the base plate lying between the two presentation platforms with the sheets lying in superimposition parallel to the base plate, the dispensing apparatus characterized in that the base plate (1) has fixed end sections terminating in the presentation platforms and a downwardly pivotable middle section which constitutes the receiving platform (21) of the base plate to allow a faulty stack of sheets thereon to be dumped, and in that there is at least one straight continuous longitudinal channel

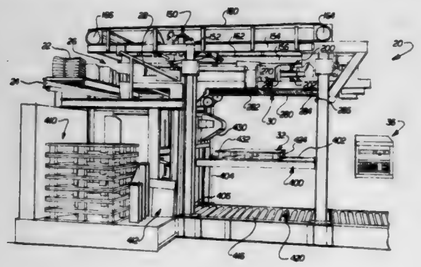
(22) extending along all three platforms of the base plate and at least one projection (23) on a lower edge of the pusher plate which mates with and runs in said channel to reduce the risk of dispensed sheets sliding under the pusher plate as it traverses the base plate.

4,439,084

PALLETIZER FOR NEWSPAPER BUNDLES

James S. Werkheiser, Nazareth, Pa., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Dec. 30, 1981, Ser. No. 335,839
Int. Cl.³ B65G 57/06
U.S. Cl. 414—62 18 Claims



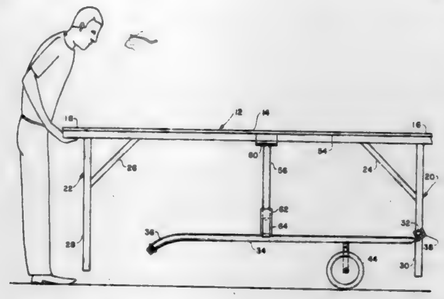
1. An apparatus for loading layers of articles to form a stack on a pallet, said apparatus comprising means defining a row staging area in which a stream of articles is formed into rows, each row having a pair of opposed side surfaces and a pair of opposed end surfaces, means defining a layer staging area for receiving the rows of articles from said row staging area and for forming said rows into layers, each layer including a plurality of rows disposed in a side by side arrangement, floor means for supporting said layer over a pallet, means for withdrawing said floor means from over said pallet to drop said layer onto said pallet, guide means for compacting the arrangement of articles in said layer and for maintaining the compact arrangement of said layer as it drops to form said stack on said pallet, said guide means including a layer register stop having surface means defining a first plane disposed vertically for engagement with a side surface of a first row in said layer to limit movement of said layer in a direction transverse to said first plane as said layer drops onto said stack on said pallet, and blade means including surface means defining a second plane generally parallel with said first plane for engaging a side surface of a last row of said layer to limit movement of said layer in a direction transverse to said second plane as said layer drops to form said stack on said pallet, and control means for forming complete rows having a predetermined number of articles in each of said complete rows and for forming complete layers having a predetermined number of complete rows in each of said complete layers, for forming a partial layer having fewer articles than the number of articles in said complete layers, and said guide means including means for guiding said partial layer to drop onto said stack on said pallet, said means for guiding said partial layer to drop onto said stack on said pallet including offsetting means for guiding said partial layer to drop onto said stack on said pallet at a location offset inwardly from an edge of said stack on said pallet, said layer register stop being movable and said offsetting means including means for moving said layer register stop between a location in which said first plane defined by said surface means of said layer register stop is vertically aligned with an edge of said pallet and a location offset inwardly from said edge of said pallet toward the center of said pallet.

4,439,085

HANDCART FOR BANQUET TABLES

Thomas A. Rodriguez, 203 Chapel Dr., and Angelo J. Zavaglia, 809 St. Clair, both of Collinsville, Ill. 62234

Filed Oct. 26, 1981, Ser. No. 314,653
Int. Cl.³ B62B 1/12, 1/14
U.S. Cl. 414—447 7 Claims



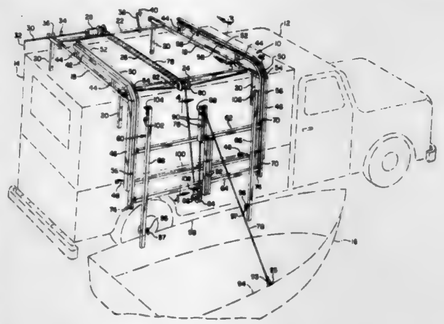
1. A handcart for banquet tables or the like having a flat table surface and at least one set of an end pair of table legs supporting said table surface in which said pair of table legs are braced by a horizontal leg brace spaced above the bottom of said legs and extending therebetween, said handcart being comprised of an elongated shaft having a handle portion at one end and a leg brace engaging portion at an opposite end, a pair of floor engaging wheels rotatably supported by said shaft intermediate said ends and table engaging support means connected to said shaft, said table engaging support means being comprised of a rigid member having one end connected to said shaft and an opposite end engageable with a under surface of the table in supporting relation thereto, said rigid member being relatively moveable with respect to said shaft into and out of engagement with said under surface of the table and said leg brace engaging portion being comprised of a rigid transverse cradle member which receives a major portion of the horizontal leg brace in cradled relation.

4,439,086

BOAT LOADER

Ralph W. Thede, 735 Edgewater St. NW., Salem, Oreg. 97304

Filed Jul. 1, 1982, Ser. No. 394,270
Int. Cl.³ B60R 9/04
U.S. Cl. 414—462 10 Claims



1. A boat loader for moving a boat between an upright position adjacent a vehicle on which said boat loader is mounted and an inverted position atop said vehicle, and for thereafter supporting the boat during travel of the vehicle, the boat loader comprising:

(a) a frame adapted for being mounted on a vehicle;

(b) a pair of tracks having respective downwardly depending and horizontal portions joined by respective arcuate portions, said pair of tracks being mounted parallel with each other on said frame;

(c) a carriage mounted on said pair of tracks, said carriage including a pair of generally parallel apart-spaced longitudinal rail members, each extending between said tracks, each longitudinal rail member having a pair of opposite ends and means associated with each of said opposite ends for movably engaging a respective one of said tracks and guiding said carriage therealong between a lowered position on said downwardly depending portions of said tracks and a raised position on said horizontal portions of said tracks, said carriage further including a pair of parallel transverse central carriage members spaced apart from each other and fixedly attached transversely across said longitudinal rails at a central location therealong;

(d) guide means associated with said frame and said carriage for guiding an elongate flexible tension-supporting member, said guide means including an upper sheave and a lower sheave each rotatably mounted between and supported by said transverse central carriage members;

(e) an elongate flexible tension-supporting member extending through said guide means and having an attached end and a free end;

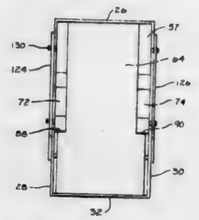
(f) means associated with said attached end of said elongate flexible tension-supporting member for retracting and extending it for raising and lowering said carriage along said tracks between said lowered position and said raised position, said elongate flexible tension-supporting member extending from said means for retracting and extending, further extending downwardly and around said lower sheave, thence upward, thence around said upper sheave and to an object to be lifted, when said carriage is in said lowered position.

4,439,087

STOCK RACK AND LOADING CHUTE FOR TRUCKS

Dave K. Schink, Rte. 3, Box 676, Union, Mo. 63084

Filed Feb. 20, 1981, Ser. No. 236,334
Int. Cl.³ B60P 1/00, 1/64
U.S. Cl. 414—537 11 Claims



1. A stock rack for pick-up trucks and the like, said rack comprising a front rack wall member, a pair of side rack walls and a rear rack wall, said rear rack wall having a left hand and right hand section spaced from one another to define a central opening receiving a gate means, said means being comprised of a pair of laterally positioned gate members, pivot means supporting each of said gate members for swinging movement inwardly and outwardly of said truck and means for raising and lowering said gate members in the closed position, each of said gate members being hinged to a frame member slidably receivable in a vertical track member connected to each of said left hand and right hand rear wall sections, said frame member completely framing the hinged gate members and being vertically moveable with the gate members as a unit.

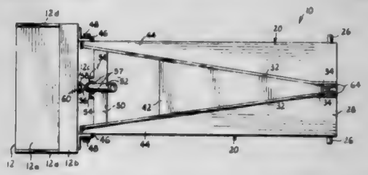
7. A stock rack for pick-up trucks and the like, said rack comprising a front rack wall member, a pair of side rack walls and a rear rack wall, said rear rack wall having a left hand and right hand section spaced from one another to define a central opening receiving a gate means, a raised planiform stock supporting bed supported by support frame means upon and substantially extending over a flat bed of said truck, said support frame means being connected to the front and rear walls of said stock rack in order that the rack, support means and raised bed may be installed or removed as an integral unit, said support frame means including a pair of longitudinally extending guide members defining with said truck flat bed and said separate raised bed a storage compartment for a ramp of a stock loading chute, said ramp being slidably receivable within said compartment and having pivot means when retracted from said compartment for pivoting a forward end to said support frame means, said chute ramp having a rear end adapted to be lowered when the chute ramp is retracted by pivoting said ramp about said pivot means, and side stock restraining members removably receivable by said chute ramp in the retracted position to provide a livestock chute.

4,439,088

BUCKET ATTACHMENT FOR TRACTORS

Gareth Summa, Platte County, Mo., assignor to Summa-Rise, Denver, Mo.

Filed Jul. 27, 1982, Ser. No. 394,646
Int. Cl.³ B66C 23/36
U.S. Cl. 414—703 10 Claims



1. A frame structure for attaching an implement such as a bucket to a three-point tractor hitch having a pair of draft links and a third hitch point, said frame structure comprising:

a pair of rigid beams each having a back end portion providing an arm pivotally coupled with the implement in a manner permitting horizontal pivot axis, said beams having front end portions adapted to be pivotally coupled with the draft links of the tractor hitch;

power means for effecting pivotal movement of the implement about said pivot axis;

a side plate on each beam forming the outside surface thereof;

a top plate of each beam inclining upwardly and inwardly from the corresponding side plate, each top plate being tapered from front to back;

a rib extending generally upwardly from each top plate, said ribs being tapered from front to back and having spaced apart front end portions adapted to be pivotally coupled with the third hitch point of the tractor hitch;

a connecting plate rigidly interconnecting said beams at a location above said side plates, said connecting plate beig tapered from back to front; and

a cross brace extending between said side plates of the beams.

4,439,089

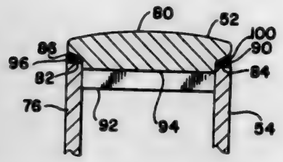
BOOM ARM WITH ROCK DEFLECTION FEATURE

Rodney H. Anderson, Libertyville, and Thomas M. Cameron, Waukegan, both of Ill., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 950,937, Oct. 12, 1978, abandoned. This application Jun. 3, 1981, Ser. No. 270,171
Int. Cl.³ B66C 23/00; E02F 3/76; E04C 3/30
U.S. Cl. 414—722 1 Claim

1. A boom arm assembly for use on a loader vehicle having a pair of boom arms; each boom arm having a first sidewall having a curvilinear upper edge and a lower edge, a second sidewall having an upper curvilinear edge and a lower edge disposed in a spaced apart parallel manner with said first sidewall, said first and second sidewalls being flat plates having

upper and lower edges straight cut such that each edge presents surfaces perpendicular to a surface of said flat plates; a pair of bottom plates identified as forward and rear bottom plates, each welded to said lower edge of said first and second sidewalls to join them together; a first and a second boom arm end, one boom arm end welded to each respective end of said boom arm, each boom arm end being a casting formed with a sidewall contacting portion forming a weld bed and each boom arm end having a through bore; a boom pocket casting formed with a sidewall contacting portion forming a weld bed welded to said lower edge of said first and second sidewalls between said forward and said rear bottom plates, said boom pocket casting having a through bore defining a centerpoint; a torque



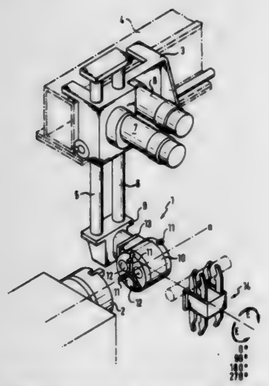
tube casting connecting one of said pair of boom arms to the other of said pair of boom arms said torque tube casting including a pair of bellcrank pivot members each having a bore defining a centerpoint whereby said centerpoint of said boom pocket casting is generally an equal distance from said centerpoint of said first boom arm end and said centerpoint of said bore of said bellcrank pivot member; wherein the improvement comprises a top plate welded in position between said curvilinear upper edges of said first and second sidewalls to join them together, said top plate having a transverse cross sectional shape that has a flat inboard surface and an arcuate outboard surface and edges that are stepped down from the outboard to the inboard surface of said top plate.

4,439,090

WORKPIECE HANDLING APPARATUS

Wolfgang Schaefer, Isernhagen, Fed. Rep. of Germany, assignor to Gildemeister AG, Bielefeld, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,661
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043687
Int. Cl.³ B23Q *7/04*
U.S. Cl. 414—736 **13 Claims**



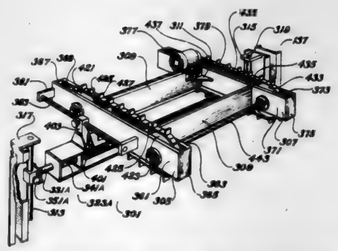
1. A workpiece handling apparatus comprising:
a support arm with a workpiece gripper mounting surface;
a detachable workpiece gripper with a mounting surface for mating engagement with said gripper mounting surface;
a movable workpiece gripping element carried by said workpiece gripper;
urging means connected with said workpiece gripping element for holding the gripping element in one position;
a piston and cylinder actuator carried by said support arm having a piston rod operable to bridge the mating mounting surfaces and to operably engage the said workpiece gripping element, the piston being operable to move the piston rod in one direction to move the workpiece gripping element from said one position to a second position against the urging of the urging means, said piston rod being retractable beyond said mating mounting surfaces so that the workpiece gripper may readily be rotated relative to said support arm and may readily be detached from the support arm and another workpiece gripper substituted therefor.

4,439,091

PIPE FEEDING SYSTEM

Robert Frias, Odessa, Tex., assignor to Ingram Corporation, New Orleans, La.

Filed Feb. 27, 1980, Ser. No. 125,160
Int. Cl.³ E21B *19/04*
U.S. Cl. 414—745 **13 Claims**



1. A device for moving lengths of pipe off of or onto rows of stacked pipe comprising:
a pair of stanchions secured in place in spaced relation, said stanchions defining a plane generally parallel to the lengths of stacked pipe,
a horizontal beam member extending between said stanchions and connected at either ends to said stanchions by connecting means,
said horizontal beam member having a longitudinal axis,
said connecting means allowing said horizontal beam member to have vertical movement and to turn about an axis extending between said stanchions,
said horizontal beam member having a length shorter than the distance between said stanchions,
a rod means having said turning axis extending axially from the ends of said horizontal beam member to said connecting means,
a frame structure mounted to said horizontal beam member by mounting means,
said mounting means allows said frame structure to be moved in a direction generally perpendicular to said longitudinal axis of said horizontal beam member,
a pair of endless belt means attached to said frame structure, positioned generally perpendicular to said plane and adapted to rest across at least a portion of a row of pipe,
said mounting means being independent of said endless belt means,
a feet means attached to each said endless belt means and adapted to engage the pipe on which said endless belt means is positioned and to move the pipe toward or away from said pair of stanchions, and
a drive means for driving said pair of endless belt means in unison in first or second directions for moving the pipe on

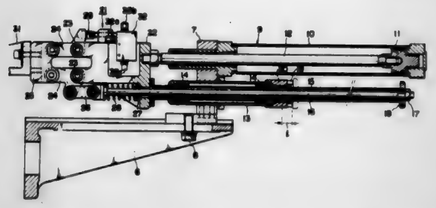
which said pair of endless belt means rests toward or away from said pair of stanchions.

4,439,092

APPARATUS FOR UNLOADING WORKPIECE FROM PRESS

Yasuo Ajisaka, Kawasaki, Japan, assignor to Kabushiki Kaisha Orii Jidoki Seisakusho, Japan

Filed Mar. 2, 1982, Ser. No. 354,022
Claims priority, application Japan, Nov. 17, 1981, 56-171206[U]
Int. Cl.³ B65G *65/00*
U.S. Cl. 414—752 **3 Claims**



1. Apparatus for unloading a workpiece from a press includig a die and a bolster, which apparatus comprises:
(a) a power cylinder mounted on the bolster and having a piston rod horizontally movable along its axis toward and away from the die on which the workpiece is placed;
(b) an operating rod mounted on the bolster in parallel relation to said piston rod and movable along its axis, the stroke of said operating rod being shorter than the stroke of said piston rod;
(c) a linkage means attached to the forward ends of said piston rod and operating rod so that said operating rod is moved horizontally together with said piston rod during its stroke, said linkage means having a forward end which is vertically moved toward and away from the die upon the horizontal movement of said piston rod relative to said operating rod at a final portion of the extending stroke thereof and at an initial portion of the retracting stroke thereof; and
(d) a suction means mounted on the forward end of said linkage means, said suction being operable to hold the workpiece on the die when said forward end is moved vertically toward the die.

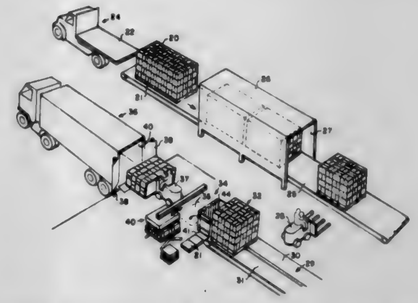
4,439,093

CARTON HANDLING SYSTEM

Robert W. Victorino, Salinas, Calif., assignor to Growers Vacuum Cool Company, Salinas, Calif.

Continuation of Ser. No. 139,865, Apr. 14, 1980, abandoned. This application Jul. 19, 1980, Ser. No. 399,437
Int. Cl.³ B65G *59/08, 67/04*
U.S. Cl. 414—786 **9 Claims**

5. A method for handling pallets with cartons thereon and loading the cartons into a vehicle having side walls and wherein each carton includes planar semi-rigid side and end walls and a top and bottom, said method comprising the steps of:
placing the pallets and cartons on a carton rotator and rotating the pallets and cartons from a first position approximately ninety degrees to shift the carton load off the pallet and rotate the cartons to a second position onto a second base;
squeezing the carton stack on the pallet while the pallet is rotated to hold the carton load together and to align the cartons and reduce the size of the stack by moving pressure plates into contact with two opposite sides of said carton stack and applying sufficient pressure to reduce the size of said carton stack sufficiently to fit within a vehicle;
removing the pressure plates from contact with the carton stack, and



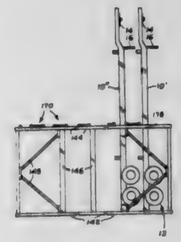
removing the carton stack from the carton rotator and moving it into the transport vehicle to allow the cartons to relax and expand to engage the vehicle side walls.

4,439,094

METHOD FOR STORING WHEELED FRAMES OF DETACHABLE CARGO CONTAINER TYPE TRAILERS

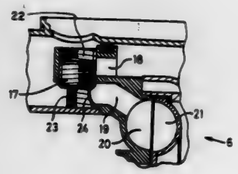
Joseph L. Riley, Milwaukie, Oreg., assignor to Scott S. Corbett, Jr. and Lynn F. Perrott, both of Portland, Oreg.

Division of Ser. No. 69,563, Aug. 24, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,747
Int. Cl.³ A45F *3/10*
U.S. Cl. 414—786 **5 Claims**



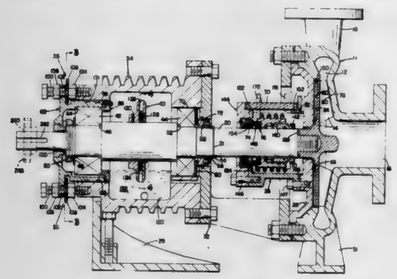
1. The method of storing the empty elongated wheeled frame of a trailer of the detachable cargo container type wherein the trailer frame has a top trailer-supporting surface and an opposite bottom surface and laterally spaced longitudinal sides and the wheels are mounted on the frame adjacent the rear end thereof, the method comprising:
(a) uncoupling said trailer frame from a powered tractor,
(b) gripping the trailer frame between the said top and bottom surfaces at least in areas adjacent both laterally spaced sides of the frame and forwardly of the wheels as the frame is supported on the ground in substantially horizontal position,
(c) lifting the frame above the ground,
(d) rotating the lifted frame to substantially vertically extending position with the rear end facing downward,
(e) moving the vertically extending frame to a storage site, and
(f) supporting the frame removably in stationary storage in said substantially vertically extending position.

4,439,095
COMBUSTION AIR FAN
Rüdiger Galtz, Munich, and Rudolf Reinhardt, Krailling, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Gauting, Fed. Rep. of Germany
Filed Dec. 6, 1982, Ser. No. 447,186
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209904
Int. Cl.³ F01D 17/00
U.S. Cl. 415—52 9 Claims



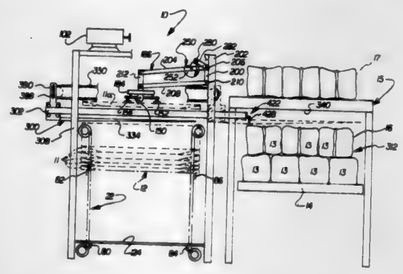
1. A fan of the type for conveying combustion air to the burner of a motor vehicle heating system, comprising a housing, an impeller in said housing, an intake duct for delivery of air to said impeller and a discharge exit for the conveyance of air from said impeller, wherein an outlet by-pass duct is connected in by-passing relationship with respect to the discharge exit of the fan and is provided with an adjustable throttling member, whereby the output of the fan may be adjusted, wherein the throttling member is an adjusting screw which controls the flow cross section of the by-pass duct, projects into the intake duct, and is operable for controlling of the flow cross section of the intake duct in a manner opposite to its controlling of the cross section of the by-pass duct.

4,439,096
IMPELLER ADJUSTER FOR CENTRIFUGAL PUMP
Robert E. Rockwood, Windham, and Richard P. Antkowiak, Hampstead, both of N.H., assignors to A. W. Chesterton Company, Stoneham, Mass.
Division of Ser. No. 408,043, Aug. 13, 1982. This application Sep. 20, 1982, Ser. No. 419,994
Int. Cl.³ F01D 7/00
U.S. Cl. 415—131 4 Claims



1. A centrifugal pump comprising a bladed impeller in a stationary pump housing, the leading edges of said blades being adjacent a first radially extending wall of said housing, a rotatable shaft on which said impeller is mounted, a shaft support for rotatably holding the end of said shaft which is opposite said impeller, and adjustable fastening means for connecting said shaft support to a stationary member, said impeller, shaft and shaft support together being adapted for axial adjustment upon axial adjustment of said fastening means, said fastening means comprising at least two threaded bolts projecting from said stationary member in a direction parallel to the axis of said shaft, and reference nuts for fixing the position of said shaft support on said bolts, said reference nuts having marks at regular angular intervals, and at least one reference mark on said shaft support adjacent each reference nut cooperating with said marks on said reference nuts for indicating the axial position of said impeller with respect to said pump housing.

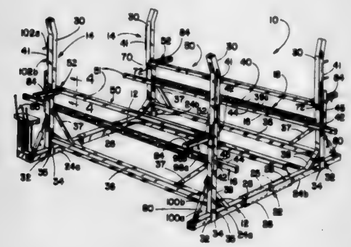
4,439,097
SEPARATOR SHEET FEEDER
Henry R. Mebus, Nazareth, Pa., assignor to Harris Graphics Corporation, Melbourne, Fla.
Filed Dec. 7, 1981, Ser. No. 327,901
Int. Cl.³ B65H 5/08, 33/02
U.S. Cl. 414—42 6 Claims



3. An apparatus for feeding a separator sheet onto a layer of newspaper bundles on a pallet, said apparatus comprising a frame, elevator means for supporting a stack of nested separator sheets in said frame, suction means for lifting the top separator sheet from said stack of nested separator sheets, carriage means laterally reciprocatable from a first position for receiving said one lifted separator sheet from said suction means to a second position above said layer of newspaper bundles on said pallet, and means for holding a separator sheet moved by said carriage means to said second position against lateral movement when said carriage means returns from said second position to said first position, said suction means including at least one suction cup, linkage means connected with said frame and said suction cup for moving said suction cup in a generally vertical path between a lower position in which said suction cup engages said top separator sheet of said stack of nested separator sheets and an upper position above said stack of nested separator sheets, said linkage means including a four-bar linkage, and said apparatus further including a cam, a cam follower disposed in engagement with said cam and connected with said linkage means, drive means for effecting relative movement between said cam and said cam follower to effect movement of said linkage, and a lost motion connection between said cam follower and said four-bar linkage.

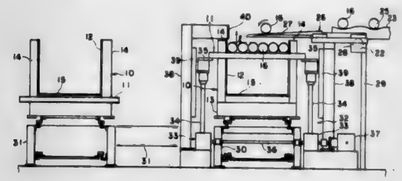
4,439,098
FRAME-HANDLING-AND-STACKING APPARATUS
Bert J. Rienks, Redlands, Calif., assignor to Robert L. Bauer, Westminster and Richard Upthegrove, Huntington Beach, both of, Calif.
Filed Sep. 28, 1979, Ser. No. 79,947
Int. Cl.³ B65G 57/00
U.S. Cl. 414—43 13 Claims

1. A handling-and-stacking apparatus for wooden frames and like structures, comprising:
a base-support structure;
a pair of tiltable truss units pivotally attached to said base-support structure, said truss units being positioned opposite and parallel to each along said base structure;
wherein each of said truss units comprises:
a front, vertical girder member;
a rear, vertical girder member; and
a longitudinal bar member interconnecting said front and rear girder members, whereby said front and rear girders move together from a vertical position to an angular tilted position;
means for pivotally mounting said truss units to said base structure so as to be tilted outwardly thereof;
conveyance means mounted between said truss units and adapted to receive a frame structure thereon for locating said frame structure between said truss members;
carriage means operably mounted to said truss units and adapted to be moved vertically upward and downward from said truss units while carrying said frame structure thereon;
wherein said carriage means comprises:



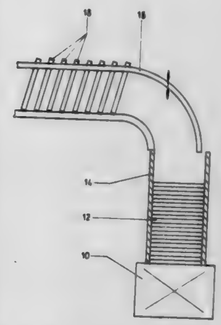
an elongated sill member positioned longitudinally from said front girder member to said rear girder member, and positioned below said conveyance means;
a pair of arm members secured to said sill member, each arm member being slidably supported in respective front and rear girder members;
a rack assembly mounted to said truss units and positioned above said carriage means, in order to receive a frame structure from said carriage means and support said frame structure thereon; and
a power-operating system operably connected to said truss units, said carriage means and said rack assembly.

4,439,099
APPARATUS FOR STACKING ELONGATED MATERIALS
Akira Asari, Osaka; Tatsuhiko Noyori, Kobe; Takahisa Tabuchi, Kobe; Munenori Soejima, Kobe, and Tetsuya Miyauchi, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Jun. 2, 1981, Ser. No. 269,758
Claims priority, application Japan, Jun. 4, 1980, 55-76196
Int. Cl.³ B65G 57/10
U.S. Cl. 414—45 5 Claims



1. An apparatus for horizontally stacking elongated material of uniform shape and circular cross-section, said apparatus comprising:
(a) a load-carrying bed having a substantially horizontal, sectionally U-shaped receptacle channel for stacking elongated material therein, said load-carrying bed comprising a plurality of pairs of upright beams positioned opposite one another along the length axis of the receptacle channel, each of said upright beams having a flange extending perpendicularly away from the length axis of the receptacle channel;
(b) a feeder for sequentially feeding the elongated material to said load-carrying bed such that the longitudinal axis of the elongated material is substantially parallel to the length axis of the receptacle channel in said load-carrying bed;
(c) a transfer mechanism for sequentially feeding individual units of the elongated material to said feeder at predetermined intervals;
(d) first means for moving the distal end of said feeder by a distance which corresponds substantially to the cross-sectional width of one unit of the elongated material after each unit of the elongated material has dropped off said feeder into said load-carrying bed until a horizontal row of the elongated material has built up in said load-carrying bed;
(e) a plurality of support beams which extend horizontally across the receptacle channel in said load-carrying bed to support the elongated material being fed to the receptacle channel at longitudinally spaced positions on opposite sides of the center of gravity of the elongated material, each of said plurality of support beams having a pair of locking members which are sized, shaped, and positioned to slide vertically along said flanges on an associated one of said plurality of pairs of upright beams, said locking members functioning to completely block movement of said support beams in the horizontal direction; and
(f) second means for moving said support beams downwardly by a distance which corresponds substantially to the cross-sectional height of the unit of elongated material after each horizontal row of the elongated material has dropped off said feeder into said load-carrying bed.

4,439,100
DEVICE FOR SEPARATING AND TAKING OFF OF SHEETS FROM A STACK
Karl-Heinz Fichtner, Von Elff Str. 11, 6450 Hanau am Main 7; Willi Kramer, Schlesienring 20, 6368 Bad Vilbel 2, and Willi Muskulus, An der Pfaffenmauer 17, 6000 Frankfurt am Main 60, all of Fed. Rep. of Germany
Filed Dec. 8, 1980, Ser. No. 214,101
Int. Cl.³ B65G 59/06
U.S. Cl. 414—115 15 Claims



1. A device for the separating and taking off of one or more notched stamped sheets from a stack of sheets comprising:
a magazine for receiving the stack of notched stamped sheets; and
a tool operatively disposed adjacent said magazine comprising first and second tool parts which are movable relative to one another;
said first tool part including a first surface for engaging the notched sheets to cause the sheets to slide on one another in the plane of separation of the stack, the sliding move-

ment of the sheets being of a limited distance such that the sheets do not come into engagement in the region of the notches;

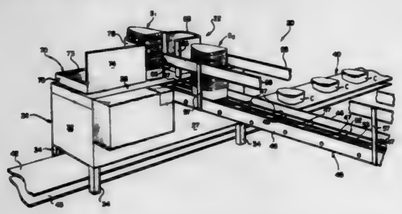
at least one of said first and second tool parts including a second surface for engaging and applying pressure against at least one location of the sheets which is exposed during the relative sliding movement between sliding sheets so that the sliding sheets are separated from one another in a direction normal to the plane of separation, and such that thereafter a relative transverse movement between the sliding sheets can take place without danger of catching.

4,439,101

APPARATUS FOR SEPARATING NESTED CUP-SHAPED CONTAINERS

Gerald J. Orlowski, Scottsdale, Ariz., and Robert S. Adamson, Englewood, Colo., assignors to Armour Food Company, Phoenix, Ariz.

Filed Jul. 26, 1982, Ser. No. 401,802
Int. Cl.³ B65G 59/06
U.S. Cl. 414—126 5 Claims



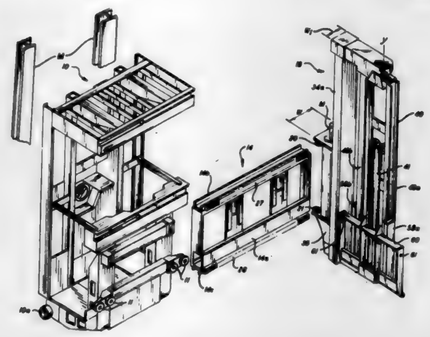
1. Apparatus for continuously separating cup-shaped containers from a plurality of stacks thereof in which the containers in each stack are arranged in upwardly opening nested relation, said apparatus comprising, in combination, a separating mechanism for separating the containers of a stack supplied thereto and a feed mechanism for supplying additional stacks of containers to said separating mechanism prior to or upon depletion of a stack being separated, said separating mechanism including vertically extending guide means for supporting a stack of containers to be separated in vertically extending relation, said guide means having an upper end through which a stack of containers to be separated descends, finger means movable into and out of engagement with the containers of the stack in said guide means and operable to separate said containers, one at a time, from the bottom of said stack, and at least one holding shoe disposed below said finger means and operable to engage a side wall of the lowermost container in the stack and thus support the stack of containers in said guide means while said finger means is disengaged from said stack, said feed mechanism including means defining a path for receiving and retaining a plurality of stacks of said containers, one end of said path terminating at a staging station adjacent to the upper end of said guide means, conveyor means for advancing stacks of containers on said path toward and onto said staging station, shiftable means for effecting movement of a stack of containers on said staging station over the upper end of said guide means prior to or upon depletion of a stack being separated, first control means carried by said guide means for controlling said shiftable means, and second control means carried by said staging station and operable to actuate said conveyor means whenever a stack of containers and said shiftable means are absent from said staging station.

4,439,102

MATERIAL HANDLING APPARATUS

Ralph E. Allen, Greene, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Continuation of Ser. No. 30,122, Apr. 16, 1979, abandoned. This application Apr. 6, 1983, Ser. No. 482,454
Int. Cl.³ B60P 1/34; B66F 9/14
U.S. Cl. 414—633 6 Claims



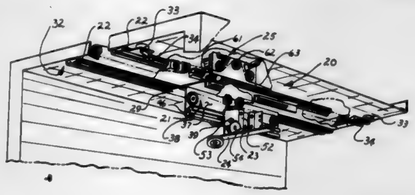
1. A mast assembly for a lift truck, comprising, in combination: a first mast; a compartment adapted to carry an operator, said compartment being suspended from said first mast, with said first mast on a first side of said compartment, means for raising and lowering of said compartment along said first mast; a generally C-shaped frame having a vertical member and upper and lower arm members extending from the vertical extremities of said vertical member; traverse means for suspending said vertical member of said frame on said operator compartment on a second side of said operator compartment opposite from said first side with said arm members extending away from said second side of said compartment, and for moving said frame horizontally back and forth across said second side of said operator compartment; a second mast confined vertically in between said upper and lower arm members of said frame and pivotally connected to said arm members for rotation about a substantially vertical axis; means for tilting said second mast; a load carriage guided for vertical movement along said second mast; and lifting means carried on said second mast for raising and lowering said load carriage along said second mast relative to said compartment and said first mast.

4,439,103

AUTOMATIC EJECTOR SYSTEM

Daniel Almagor, Setauket, N.Y., assignor to The Peelle Company, Bay Shore, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,309
Int. Cl.³ B65G 65/00
U.S. Cl. 414—661 13 Claims



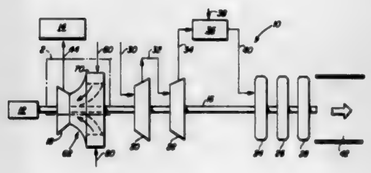
1. In a material lift elevator system having an elevator car operating in a vertical shaft between vertically spaced landings, said car having a floor for supporting a material unit and at least one opening for loading and off-loading the material unit to and from the car, means for automatically moving a material unit in a horizontal path between a lift position on the floor of the car and a wait position on the landing, said moving means including an arm adapted to engage a generally vertical end face of the material unit and displace said material unit through said path by forces applied to said end face, said moving means being suspended on the car in a zone above the path of said material unit, means supporting said arm for extension and retraction movement from said zone downwardly into said path and upwardly to said zone, said supporting means including means for causing extension and retraction movement of said arm in a substantially vertical plane.

4,439,104

COMPRESSOR INLET GUIDE VANE AND VORTEX-DISTURBING MEMBER ASSEMBLY

David H. Edmonds, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 15, 1981, Ser. No. 273,715
Int. Cl.³ F01D 17/16
U.S. Cl. 415—161 10 Claims



1. Inlet guide vane and flow disturbing member apparatus adapted to be mounted in an inlet opening of a gas intake device, said apparatus comprising:

(a) an articulated guide vane having a leading edge member, and a trailing body member pivotable about an axis between first and second positions;

(b) a flow disturbing member;

(c) means for connecting said flow disturbing member and said trailing body member for relative pivotal motion about said axis, and for positioning said flow disturbing member to intercept a portion of a gas stream flowing past said trailing body member in a direction generally perpendicular to said axis; and

(d) cooperating means on said flow disturbing member and said leading edge member for preventing appreciable pivotal motion of said flow disturbing member about said axis.

4,439,105

OFFSET-AXIS WINDMILL HAVING INCLINED POWER SHAFT

Kurt H. Hohensee, Brentwood, Mo., assignor to Jerome A. Gross, Clayton, Mo.

Continuation-in-part of Ser. No. 49,348, Jun. 18, 1979, Pat. No. 4,298,313. This application Oct. 2, 1981, Ser. No. 307,862
Int. Cl.³ F03D 7/04
U.S. Cl. 416—13 11 Claims

1. A wind energy conversion machine comprising

mast structure including means to provide a yaw axis, and

wind-responsive components supported thereon for substantially free yawing including

(a) a rotor having a hub mounting a plurality of rotor blades on a shaft,

(b) shaft bushing means projecting the rotor to the windward side of the mast structure, the shaft axis:

(1) being at a fixed moment arm from said yaw axis, whereby rotor thrust applies a furling moment about said yaw axis, and

(2) having a downward-and-aft inclination which provides a vertical torque component accompanying extraction of power from the rotor, and

(3) whose sense of rotation applies such vertical torque component as an anti-furling moment substantially balancing that part of the furling moment of the rotor thrust which accompanies extraction of power,

(c) power extraction means having the same inclination,

(d) means to couple the rotor to the power extraction means,

(e) wind vane means including a boom having forward at its



end a furling hinge, whereby to permit furling of the rotor relative to said wind vane means, and

(f) yieldable means operating on said wind vane means to apply about said furling hinge an anti-furling moment in an amount which substantially balances the moment of thrust of the rotor when uncoupled from the power extraction means,

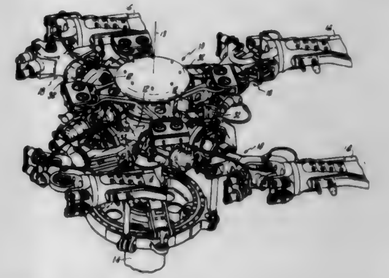
whereby to substantially overcome the tendency of the rotor to overspeed on discontinuance of coupling of the rotor to the power extraction means.

4,439,106

ROTOR BLADE SHAFT INTEGRITY MONITORING SYSTEM

Donald L. Ferris, Newtown; Elliot F. Olster, and Michael J. Marchitto, both of Orange, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 14, 1982, Ser. No. 388,299
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.
Int. Cl.³ B64C 27/48
U.S. Cl. 416—61 5 Claims



1. A helicopter rotor including a hub member mounted for rotation about an axis of rotation and having at least one hub arm and related helicopter blade projecting substantially radially therefrom for rotation therewith, and an improved spindle assembly comprising:

a hollow spindle shaft extending radially from within the hub arm and outwardly therebeyond and having a radial inner end, a radial outer end, and a central bore extending the full length of said shaft, said radial outer end shaped to define an enlarged chamber contiguous with the spindle

bore and being adapted to be operatively connected to a helicopter blade,

bearing means operatively connecting the spindle shaft inner end to the hub arm and operative so as to support said spindle shaft and hence the blade from the hub so that blade centrifugal loading during rotor operation will be passed through said spindle shaft and said bearing means to said hub,

a bolt extending through the spindle shaft bore for the full length and having an inner end comprising a bolt head abutting said spindle inner end and having an outer end extending beyond the radially outer end of the shaft bore and into said spindle outer end enlarged chamber,

means to operatively connect the bolt outer end to the spindle shaft outer end to serve as a redundant centrifugal load path in the event of spindle shaft failure,

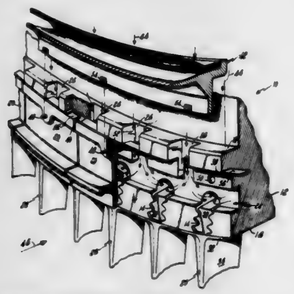
a closed reservoir located in said spindle enlarged chamber containing a fluid dye in a normally unpressurized condition, wherein the reservoir includes a conduit for dye passage to a location externally of the spindle, and a pressure relief member at the end of the conduit, and means to cause pressurization of said reservoir upon loading of the bolt beyond the pressure level required to actuate said relief member.

4,439,107

ROTOR BLADE COOLING AIR CHAMBER

Stephen M. Antonellis, Hebron, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 16, 1982, Ser. No. 418,860
Int. Cl.³ F01D 5/08
U.S. Cl. 416—95 6 Claims



1. A turbine rotor assembly, comprising

a rotor disk having a plurality of circumferentially spaced slots extending across the rim of the disk at the periphery thereof;

a plurality of rotor blades one each extending from a corresponding slot on the disk;

a plurality of sideplate segments disposed in overlapping end to end relationship circumferentially about the rotor disk and spaced axially from a portion of the rotor disk to form a chamber for rotor blade cooling air therebetween; and

a flexible strip having overlapping ends disposed inwardly of the sideplate segments and adapted to seat against the inwardly facing ends of said sideplate segments to seal radially extending gaps between each pair of adjacent sideplate segments.

4,439,108

WINDMILL HAVING CENTRIFICALLY FEATHERED ROTORS TO CONTROL ROTOR SPEED

Richard Will, R.D. #2 Dutch Rd., Waterford, Pa. 16441

Filed Jun. 8, 1982, Ser. No. 386,431
Int. Cl.³ F03D 7/04
U.S. Cl. 416—131 12 Claims



1. A windmill comprising:

a hub;

at least two rotors mounted on said hub, each said rotor including a rotor root rotatably coupled to said hub and a rotor blade mounted on said root, said hub and each rotor adapted such that wind forces produce rotation of each said blade, each said root and said hub around an axis of rotation passing through said hub, said hub defining a plane of rotation perpendicular to said axis of rotation;

each said root mounted in an initial position at a predetermined compound angle with respect to said axis of rotation and said plane of rotation, each said blade fixedly mounted on said root at a predetermined angle with respect to said plane of rotation with each said root mounted in said initial position;

biasing means for applying a force biasing each said root in said initial position;

linkage means disposed in said hub for synchronizing rotation of the roots of the said rotors with respect to each other, comprising at least a pair of root linkage members each having opposed ends, one end of each of the root linkage members coupling a respective rotor root, and a pivot linkage member having opposed ends coupling respective of the other ends of said root linkage members, said biasing means coupling the other ends of said root linkage members and said pivot linkage to said hub;

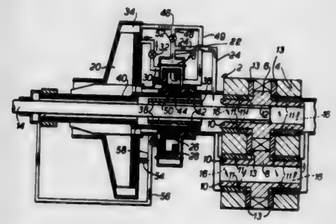
wherein rotation of said hub and each said rotor produces a centrifugal force opposing the biasing force applied by said biasing means, such that when each said rotor and said hub attain a rotation speed exceeding a predetermined value, the centrifugal force thereby generated overcomes said biasing force to produce rotation of each said blade root relative to the axis of rotation and the plane of rotation thereby to vary said compound angle such that the angle of each said blade with respect to said plane of rotation is increased, decreasing the pitch of each said blade with respect to the wind direction, and correspondingly controlling the speed of rotation of said hub and each said rotor.

4,439,109

PUMP FOR PUMPING A LIQUID CONTAINING SOLID CONTAMINANTS

Robert S. Wood, Gosport, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Dec. 7, 1981, Ser. No. 328,246
Claims priority, application United Kingdom, Dec. 5, 1980, 8039113
Int. Cl.³ F01C 21/04
U.S. Cl. 418—88 7 Claims



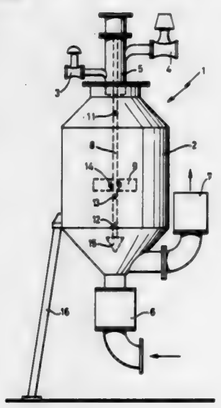
1. A pump for pumping a liquid containing solid contaminants, which pump comprises rotatable pumping means for pumping the liquid from a pump inlet to a pump outlet, a filter for filtering the liquid, auxiliary pumping means for pumping the liquid to the filter, first passage means for passing filtered liquid to at least one bearing in the pump for lubrication, a rotor device which is operative during use of the pump to cause the liquid inside the filter to swirl and clean the inside of the filter, and second passage means for allowing the passage of unfiltered liquid from the inside of the filter whereby the unfiltered liquid can remove separated solid contaminants on the inside of the filter.

4,439,110

CONTROLLING AND REGULATING DEVICE FOR PUMPS WITH CONSTANT VOLUME

Jean G. Massaux, 50 rue de Dinant - B -, 6302 Gougnies, Belgium

Continuation of Ser. No. 95,261, Nov. 19, 1979, abandoned. This application Mar. 8, 1982, Ser. No. 355,487
Claims priority, application Belgium, Nov. 21, 1978, 191850
Int. Cl.³ F04F 1/06
U.S. Cl. 417—129 8 Claims



1. A device for controlling and regulating the performance of pumps having a constant volume pump body,

admission and evacuation valves for admitting and evacuating a pressurized gas into and out of the pump body, and non-return valves for filling and delivering a pumped liquid into and out of the pump body, comprising:

an independent time-switch device having time impulses which are independently adjustable, the time-switch device maintaining a total duration of a complete cycle of the pump constant from one cycle to the next by varying a stop period while filling the pump body with said liquid and delivering said liquid from said pump body to compensate for varying suction and delivery duration periods thus producing a pulsating and jerky discharge;

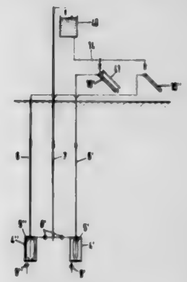
at least three liquid level detectors in the pump body, the three level detectors being adapted to control the opening and the closing of the admission and evacuation valves for the pressurized gas.

4,439,111

SOLAR PUMPING INSTALLATION FOR PUMPING LIQUID AND SOLAR COLLECTOR CONSTRUCTION

Albert Seidel, and Dietmar Wolf, both of Siegertsbrunn, Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,904
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744952
Int. Cl.³ F04B 47/08
U.S. Cl. 417—379 11 Claims



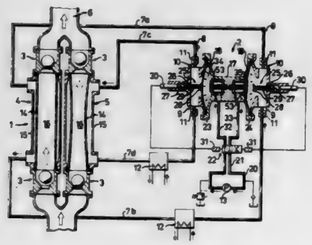
1. A solar pumping system, comprising, a pump housing defining a pump chamber therein, adapted to be positioned in the ground below ground water level, suction valve means connected into said pump chamber for the admission of ground water into said pump chamber, discharge valve means connected out of said chamber for the discharge of ground water therefrom, displacer means in said housing displaceable therein by increase of pressure to expel water through said discharge valve means, a solar collector having at least one hydride conduit therein exposed to the sun for solar heating thereof having hydride therein connected to said pump chamber for generating hydrogen to pressurize said chamber upon heating of said hydride to increase the pressure in said hydride conduit and said pump chamber to force said displacer means to expel water from said pump chamber, and means for cooling said hydride conduit to lower the pressure in said hydride conduit and to permit the inflow of ground water into said chamber through said suction valve means, wherein said means for cooling said hydride conduit comprises a shield for shielding said solar collector.

4,439,112

METHOD AND APPARATUS FOR PUMPING VISCOUS AND/OR ABRASIVE FLUIDS

Henrik M. Kitsuk, Segmon, Sweden, assignor to HK-Engineering AB, Sweden

Continuation-in-part of Ser. No. 940,646, Sep. 8, 1978, abandoned. This application Jan. 14, 1981, Ser. No. 225,136
Claims priority, application Sweden, Sep. 9, 1977, 7710137
Int. Cl.³ F04B 17/00
U.S. Cl. 417—383 6 Claims



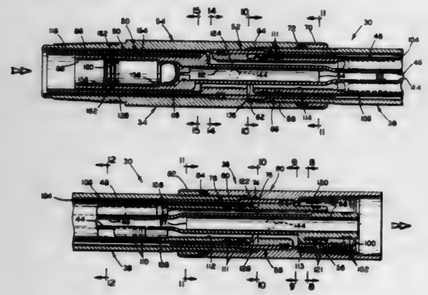
1. A process for pumping a viscous or abrasive aqueous fluid, comprising the steps of:
(a) passing said fluid in one direction through an expanding and contracting pumping zone;
(b) actuating said pumping zone by a second aqueous fluid caused to flow continuously and smoothly through a conduit system having valve means responsive to small pressure differentials adjacent to said pumping zone so as to cause said pumping zone to respond hydraulically to the movement of said second fluid; and
(c) actuating said second fluid by hydraulic pressure from a third non-aqueous fluid.

4,439,113

LIQUID PUMP WITH FLEXIBLE BLADDER MEMBER

Douglas B. Owen, Rochester, Mich., assignor to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Division of Ser. No. 175,281, Aug. 4, 1980, Pat. No. 4,360,320.
This application Jun. 25, 1982, Ser. No. 392,159
Int. Cl.³ F04B 43/10
U.S. Cl. 417—394 17 Claims



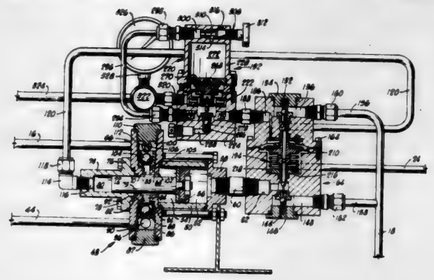
1. A liquid pump module for use in a well, said pump module including a housing, a lower coupling affixed to a lower end of said housing, an upper coupling affixed to an upper end of said housing, a first tube within said housing extending between said lower coupling and said upper coupling and forming a first passage therebetween, a second tube within said housing extending between said lower coupling and said upper coupling and forming a second passage therebetween, a flexible tubular member positioned around both of said tubes and extending between said lower coupling and said upper coupling, at least one of said couplings having means for connecting said first passage with one side of said flexible member, means for supplying fluid under pressure to said first passage means to cause said member to flex, and valve means for controlling the supply of fluid from said supply means to said first passage means.

4,439,114

PUMPING SYSTEM

Garman O. Kimmell, 3125 N. Virginia, Oklahoma City, Okla. 73118

Filed Mar. 19, 1981, Ser. No. 245,494
Int. Cl.³ F04B 17/00
U.S. Cl. 417—403 25 Claims



1. In a gas treating system in which liquid impurity absorbent contacts a pressurized, impurity-containing gas in a contactor, followed by treatment of the impurity-containing absorbent in a treater at a reduced pressure preparatory to returning the absorbent to the contactor, the improvement which comprises:
a pressure-volume energy exchange pump connected to the contactor and driven by a mixture of impurity-containing absorbent and gas from the contactor;
means connected to the pump for transferring absorbent from the treater to the contactor via the pump while elevating the pressure of the absorbent by use of the pump;
a four-way transfer valve connected to the pump for concurrently charging impurity-containing pressurized absorbent and gas to the pump from the contactor, and for discharging impurity-containing absorbent and gas from the pump to the treater via the four-way transfer valve; and
a needle valve controlled, diaphragm-type astable pneumatic amplifier pilot valve drivingly connected to said four-way transfer valve.

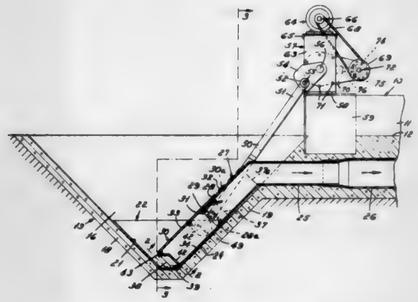
4,439,115

MANURE TRANSFER SYSTEM HAVING A PULL PUMP

Clinton A. Nesseth, and Clifford B. Nesseth, both of Barron, Wis., assignors to Butler Manufacturing Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 928,591, Jul. 27, 1978, abandoned, which is a continuation of Ser. No. 759,278, Jan. 14, 1977, abandoned. This application Aug. 3, 1979, Ser. No. 63,592
Int. Cl.³ F04B 29/00, 19/22, 21/04
U.S. Cl. 417—460 16 Claims

1. A manure transfer and storage system for transferring manure or the like from a first location to a second remote storage location, which comprises:
(a) a manure collection hopper positioned at the first location, wherein the collection hopper includes an open upper end through which manure may be loaded into the collection hopper and a closed bottom for retaining the manure in the collection hopper;
(b) a manure transfer pipe having an inlet spaced from said hopper bottom, for transferring manure from the collection hopper to the remote storage location; and
(c) a pull pump for pumping manure from the collection hopper into the manure transfer pipe, wherein the pull pump comprises:
(i) an elongated hollow cylinder fixedly diposed at least partially inside the collection hopper, wherein the cylinder includes an open inlet and located inside the collection hopper above the bottom thereof and an outlet end which is operatively connected to the inlet of the manure transfer pipe, wherein the inlet end of the cylinder includes a valve which is opened by manure being forced into the cylinder and which is closed by the weight of the manure in the cylinder;
(ii) an elongated pump piston having a piston body which cooperatively slidably engages the outer surface of the cylinder for pumping manure from the collection hopper into the cylinder, said body having an exterior surface, wherein the piston body is operatively movable generally between the bottom of the collection hopper and the inlet end of the cylinder, the piston body being



movably mounted in the collection hopper for movement in an upward direction towards and in overlying engagement with the cylinder and in a downward direction away from the cylinder, and wherein the piston body has means for loading a charge of manure into the piston body during its downward movement and for dispensing the loaded manure charge into the cylinder during its upward movement such that the manure is lifted upwardly from the bottom of the collection hopper into the cylinder; and
(iii) power means connected to said exterior of the piston body for reciprocating the piston body in its upward and downward movement directions to pump a plurality of manure charges through the cylinder and into the manure transfer pipe, wherein after passing said valve, the manure charges pass unobstructed by said connected power means through said cylinder to said manure transfer pipe.

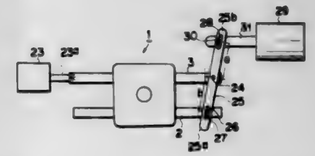
4,439,116

FUEL INJECTION PUMP

Tomonori Ohie, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,463
Claims priority, application Japan, Mar. 4, 1981, 56-29047[U]
Int. Cl.³ F02M 59/24
U.S. Cl. 417—499 8 Claims

1. A fuel injection pump, comprising:
a first plunger having a first helix lead which serves to set the timing of the end of fuel injection;
a second plunger having a second helix lead which serves to set the timing of the beginning of fuel injection;
a barrel in which ports corresponding to said first and second helix leads are defined and said first and second plungers are received;
a first pinion member having an engaging portion which is engaged with said first plunger so as to allow said first plunger to reciprocate in its axial direction and to move together with said first pinion member in its circumferential direction;
a second pinion member having an engaging portion which is engaged with said second plunger so as to allow said second plunger to reciprocate in its axial direction and to move together with said second pinion member in its circumferential direction;
a first rack for adjusting the rotational position of said first plunger to set the timing of the end of fuel injection, said first rack being engaged with said first pinion member;
a second rack for adjusting the rotational position of said second plunger to set the timing of the beginning of fuel



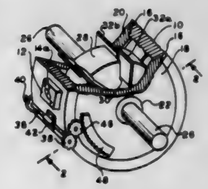
injection, said second rack being engaged with said second pinion member;
a governor having an operating member; and
means for operatively connecting said first and second racks and said operating member in such a way that only said first rack is displaced in accordance with the movement of said operating member and only said first rack is displaced at a predetermined ratio of displacement in response to the displacement of said second rack, whereby the change in the amount of fuel injection due to the change in the position of said second rack is offset by the displacement of said first rack by said second rack through said connecting means.

4,439,117

VARIABLE DISPLACEMENT VANE PUMP

Dennen J. Bunger, Clinton, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Aug. 17, 1982, Ser. No. 409,006
Int. Cl.³ F04C 2/00, 15/04
U.S. Cl. 418—22 15 Claims



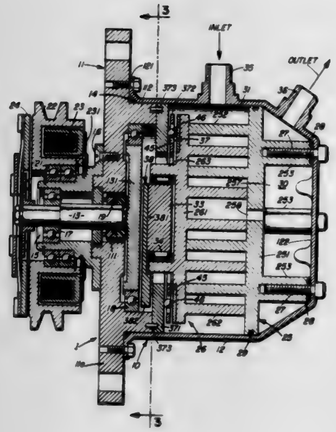
1. A variable displacement vane pump comprising:
a ported casing having a pair of relatively rotatable complementary cams, each having a surface shaped to provide a curvilinear annular track;
a rotor rotatably mounted in said casing; and
a first and second plurality of vanes mounted to be axially slidable upon said rotor, each of said vanes being sized and positioned to engage a corresponding one of said pair of cams, the vanes of the first plurality engaging one of the cams, the vanes of the second plurality engaging the other one of the cams.

4,439,118

ORBITING FLUID DISPLACEMENT APPARATUS WITH COUNTERWEIGHT ATTACHMENT

Takayuki Iimori, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed Nov. 4, 1981, Ser. No. 318,313
Claims priority, application Japan, Nov. 10, 1980, 55-161094[U]
Int. Cl.³ F01C 1/02, 21/00
U.S. Cl. 418—55 4 Claims



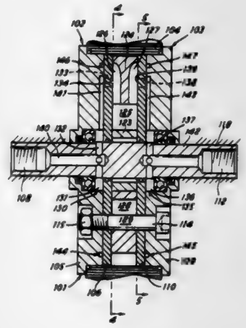
1. In a coupling device for coupling a rotatable drive shaft to an orbiting member of an orbiting piston type fluid displacement apparatus through a drive pin disposed eccentrically of and driven by the drive shaft and rotatably received within a hole in a bushing, the bushing being rotatably carried in a boss extending from the orbiting member, a counterweight assembly comprising an attachment portion for attachment to the bushing and a balance weight portion having a mass to generate a centrifugal force of a magnitude to cancel the centrifugal force generated by the orbital motion of the orbiting parts of the apparatus, fastening means for attaching said attachment portion of said counterweight assembly in a position such that the centrifugal force generated by the motion of said balance weight portion is in a direction opposite to the centrifugal force generated by the orbiting parts of the apparatus, the center of the drive pin being located on an opposite side to a center of the drive shaft with regard to a straight line, which passes through the center of the bushing and is perpendicular to a connecting line passing through the center of the drive shaft and the center of the bushing, the center of the drive pin also being beyond the connecting line in the direction of the rotation of the drive shaft, and means for limiting the angle which the bushing and counterweight assembly can swing about the axis of the drive pin, said limiting means including a portion of said fastening means extending from an end surface of said attachment portion of said counterweight assembly and an indentation formed in an end surface of the drive shaft for receiving said portion of said fastening means with an amount of clearance sufficient to permit a predetermined amount of swing of the bushing and counterweight assembly about the axis of the drive pin.

4,439,119

GEROTOR MACHINE WITH COMMUTATING VALVING THROUGH THE RING GEAR

Hans C. Petersen, and Soren N. Sorensen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 177,373, Aug. 12, 1980, abandoned.
This application Sep. 15, 1982, Ser. No. 418,431
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1979, 2932728
Int. Cl.³ F01C 1/10, 21/00
U.S. Cl. 418—61 B 6 Claims



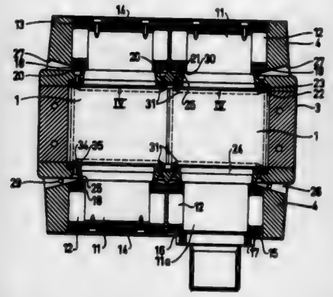
1. A rotary piston machine, comprising, a fixed shaft member, a casing surrounding said shaft member and mounted in sealing and rotatable relation to said shaft member, said shaft member having fluid inlet and outlet passages, radially inner and outer gerotor type wheel and ring gears having rotatable and orbital movement relative to each other and being operable to form expansible chambers therebetween, the orbital movement of said wheel gear relative to said ring gear causing the line of eccentricity therebetween to rotate relative to the axis of said ring gear, said wheel gear being fixedly attached to said shaft member, said ring gear having rotatable movement relative to said shaft member and being connected to said casing so as to only have orbital movement relative thereto, said ring gear having generally radially extending first and second sets of commutating valving slots formed on opposite sides thereof, said casing forming first and second axially spaced sidewalls engaging opposite sides of said gears in sealing engagement therewith, said first and second casing sidewalls having first and second sets of commutating valving control apertures fluidly connected respectively to said inlet and outlet passages and being respectively cooperable with said first and second sets of ring gear valving slots so that when there is relative movement between said wheel and ring gears said expansible chambers on opposite sides of said line of eccentricity have constant fluid communication respectively with said inlet and outlet passages (.), said first and second sidewalls including first and second commutating valving auxiliary apertures respectively cooperable with said first and second sets of gear valving slots to provide hydraulic balancing for opposite sides of said wheel and ring gears, said first set of auxiliary apertures in said first sidewall being exactly opposite said sidewall second set of control apertures in said second sidewall and said second set of auxiliary apertures in said second sidewall being exactly opposite said first set of control apertures in said first sidewall.

4,439,120

MESHING COG-WHEEL INJECTION UNIT WITH LATERAL SEALING AND SCROPERS

Per-Olov Berggren, Ersmark, Sweden, assignor to Skega AB, Ersmark, Sweden

Filed Oct. 23, 1981, Ser. No. 314,415
Claims priority, application Sweden, Oct. 27, 1980, 8007519
Int. Cl.³ F04C 2/18, 13/00, 15/00
U.S. Cl. 418—77 9 Claims



1. Apparatus for injecting viscous material comprising a housing having a cavity therein; two oppositely rotatable driven cog-wheels in the cavity, said cog-wheels having axially projecting journals, said cog-wheels being meshed with each other in an engagement zone and defining with the walls of the cavity a high pressure injection chamber in communication with and at a location just in advance of the engagement zone with respect to the direction of rotation of the cog-wheels; inlet passage means leading to the periphery of the cog-wheels; injection passage means extending from the injection chamber, the arrangement being such that material fed into the inlet passage means travels around part of the peripheries of the cog-wheels to the injection chamber without passing through the engagement zone; sealing means within the casing for cooperation with cylindrical lateral portions of each cog-wheel, at least said cylindrical portions or the surfaces of the sealing means facing said cylindrical portions having annular grooves located radially inwardly of the periphery of the cog-wheels for recieving injection material which might leak between said cog-wheels and said sealing means; guide means in each groove at a location behind the injection chamber with respect to the direction of cog-wheel rotation for directly guiding such material in between the cogs of the cog-wheels at a location in advance of the inlet passage means whereby such material is directly engaged by and carried by the cog-wheels and subsequently returned to the injection chamber.

4,439,121

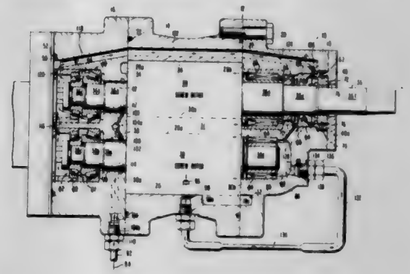
SELF-CLEANING SINGLE LOOP MIST TYPE LUBRICATION SYSTEM FOR SCREW COMPRESSORS

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Mar. 2, 1982, Ser. No. 354,008
Int. Cl.³ F04C 18/16, 29/02
U.S. Cl. 418—98 5 Claims

1. In a helical screw rotary compressor comprising a sealed compressor housing including a central housing defining intersecting parallel cylindrical bores and inlet and outlet end bearing housings, intermeshed helical screw rotors mounted within respective bores for rotation about their axes, shafts borne by said rotors, sealed bearing cavities within said compressor housing inlet and outlet end bearings housings and about said shafts at opposite ends of said rotors, anti-friction bearings mounted within said cavities and supporting said shafts for rotation therein, said intermeshed helical screw rotors and said cylindrical bores defining a compressor working chamber defined by closed threads of the intermeshed helical screw rotors, a low pressure suction port opening to one side of the intermeshed helical screw rotors, and a high pressure discharge port open to said intermeshed helical scew rotors to the opposite sides thereof, an injection passage borne by said housing forming an injection port opening directly into the first closed thread from said suction port for permitting fluid injection to the intermeshed helical screw rotors for sealing and lubricating purposes, the improvement comprising:

oil passage means within said compressor forming a single lubrication loop leading from said compressor working chamber initially to the sealed bearing cavities within the outlet end bearing housing, from said sealed bearing cavities within said outlet end bearing housing to the sealed bearing cavities within the inlet end bearing housing and from said sealed bearing cavities within the inlet end bearing housing to said injection port open to said compressor working chamber,



and wherein said single lubrication loop includes upstream capillary means within said oil passage means upstream of said sealed bearing cavities within said inlet end bearing housing to effect a partial pressure reduction within said oil passage means upstream of said inlet end sealed bearing cavities to change lubricating oil to oil mist form for effective lubrication of the anti-friction bearings formed by said sealed bearing cavities, and

downstream capillary means within said single lubrication loop between said sealed bearing cavities of said inlet end bearing housing and said injection port to insure a further pressure reduction across said anti-friction bearings towards the compressor suction port, even under conditions where the oil injection port is directly open to the suction port during compressor unloading, thereby minimizing the oil entrained in the working fluid insuring an all oil mist lubrication of the bearings, regardless of load conditions and in which the oil mist type lubrication system is self-cleaning at the upstream capillary means.

4,439,122

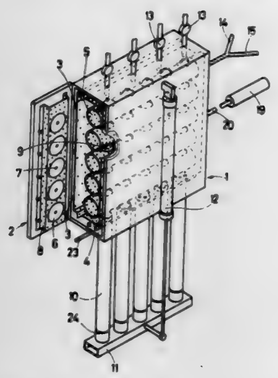
DEVICE FOR FABRICATING PANELS OF EXPANDED SYNTHETIC MATERIALS

Maurice Besse, Leysin, and Jacques Grisoni, La Croix-sur-Lutry, both of Switzerland, assignors to Frosse S.A., Switzerland

Filed Nov. 17, 1982, Ser. No. 442,520
Claims priority, application European Pat. Off., Nov. 18, 1981, 81201273.0
Int. Cl.³ B29D 27/00
U.S. Cl. 425—4 R 5 Claims

1. An installation for the manufacture of panels of steam-expandable particulate synthetic material, possessing two groups of intercommunicating, intersecting, parallel, rectilinear tubular passages, which comprises a rectangular, parallelepipedal leaktight steam chamber provided with a gate on one of the short sides, inside which a tubular fixed mold of perforated steel plate is attached at a distance from the walls of the chamber, the shape of the mold corresponding to the external shape of the panel to be obtained, a first set of fixed, parallel, perforated metal tubes inside the mold, corresponding to one

of the groups of tubular passages to be obtained in the panel, these tubes possessing lateral holes for the passage of a second set of perforated or non-perforated metal tubes firmly fixed to a movable external support, passing through one of the short walls of the steam chamber and capable of moving perpendicular to the tubes of the first set, passing through the latter, and this second set of tubes corresponding to the second group of tubular passages, and at least: an inlet valve for the partially expanded particulate synthetic material, an inlet for the steam



and for a cooling fluid, and an extractor working in parallel with the tubes of the first group to push the molded panel out of the mold by causing it to slide over the tubes of the first group, one of the ends of the tubes located inside the steam chamber being closed, in the molding position, and provided with a nozzle for the injection of a cooling liquid, while the other end communicates with the steam chamber and while those ends of the movable tubes which are located on the outside are open.

4,439,123

INJECTION MOLDING MACHINE

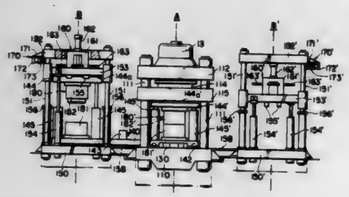
Tsutomu Sano; Naoki Takeuchi, and Masanobu Kurumaji, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 4, 1982, Ser. No. 374,734

Claims priority, application Japan, Jun. 9, 1981, 56-89244; Jul. 13, 1981, 56-104440[U]; Jul. 24, 1981, 56-110799[U]; Aug. 18, 1981, 56-122835[U]

Int. Cl.³ B29D *9/06*

U.S. Cl. 425—112 **19 Claims**



1. An injection molding machine comprising;

(a) a first station for injecting a plasticized material into a die cavity, said first station including a molding machine and a first die half which serves exclusively in said first station;

(b) a second station for joining facing sheets to the articles produced by said first station, said second station including a stamp press and a second die half which serves exclusively in said second station;

(c) at least two third die halves, each of which is sized and shaped to cooperate with both said first and said second die halves;

(d) a third station for trimming excess facing sheet material from the articles produced by said second station, said third station including a trimming cutter which conforms to said third die halves;

(e) at least two die carriages movable among said first, second, and third stations, each of said die carriages fixably supporting thereon one of said third die halves;

(f) means for guiding movement of said carriages between and through said first, second, and third stations;

(g) carriage clamp means at each of said first, second, and third stations for selectively fixing said die carriage therein;

(h) first closing means at said first station for releasably clamping said first die half and one of said third die halves together;

(i) second closing means at said second station for releasably clamping said second die half and one of said third die halves together; and

(j) third closing means at said third station for moving said trimmer cutter into position to trim excess facing sheet material from the article produced by said second station.

4,439,124

MACHINE FOR AUTOMATICALLY MAKING ROLLED FOOD PRODUCTS SUCH AS EGG ROLLS AND THE LIKE

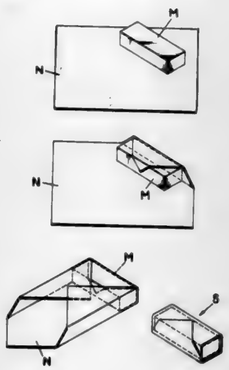
Hidefumi Watanabe, Amagasaki, Japan, assignor to Daieigiken, Inc., Amagasaki, Japan

Filed Jul. 2, 1981, Ser. No. 280,065

Claims priority, application Japan, Jul. 12, 1980, 55-95519; Jul. 12, 1980, 55-95524; Jul. 12, 1980, 55-95520; Jul. 12, 1980, 55-95521; Jul. 12, 1980, 55-95522; Jul. 12, 1980, 55-95523

Int. Cl.³ B29C *17/00*; B29D *3/00*; A21C *9/06*

U.S. Cl. 425—112 **10 Claims**



1. A machine for automatically making a rolled food product by rolling a food stuffing in a generally rectangular edible skin having first and second diagonally opposite corner portions and third and fourth diagonally opposite corner portions, which machine comprises, in combination:

means for depositing food stuffing on an edible skin at a location on a first corner portion of a diagonal between opposite corners of the skin, with a longer side of said food stuffing parallel to said diagonal while the skin is lying flat on a table;

means for shaping the food stuffing into an elongated configuration to adapt the stuffing to be handled by said means for depositing,

folding means for folding the first corner portion of the skin, which has thereon the food stuffing, so as to overlay the the food stuffing, for turning said overlay backwards and for folding the third and fourth corner portions on respective sides of the food stuffing so as to overlay the food stuffing at a location opposite to the portion of the food stuffing where the first corner portion is overlaid; and

means for rolling the second corner portion of the skin up around the thus overlayed food stuffing to complete the rolled food product.

4,439,125

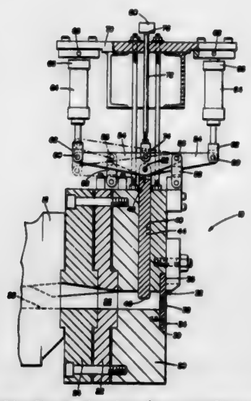
ADJUSTABLE DIE MECHANISM

J. Robert Dieckmann, Akron, Ohio; Richard E. Burg, Grayslake, Ill.; Louis Laurich, Barberton, and J. Richard McCarty, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 31, 1982, Ser. No. 363,976

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—140 **13 Claims**



1. An adjustable die mechanism for extruding a profiled strip of plastic material, comprising:

a. means for providing a flow channel, having a predetermined cross section, for the extrusion therethrough, starting at one end, of said strip of plastic material;

b. a final extrusion die assembly located on the end opposite said one end and having a predetemined profiled opening, of a cross section preferably less than that of said channel, for extruding said strip of plastic material therethrough;

c. a plurality of adjacent segments located upstream and in spaced relation from said extrusion die assembly for variably preforming the profiled strip of plastic material, said plurality of segments being mounted for individual and independent adjustment thereof, each segment having one end thereof capable of extending into said channel, and thus into said strip of plastic material;

d. means for moving said segments relative to said profiled opening in a predetermined manner such that moving said segments into the projection of said profiled opening modifies the flow of said strip of plastic material downstream of said segments as said strip emerges from said die assembly; and,

e. control means for selectively operating said means for moving said segments, thereby producing a strip of plastic material having the desired characteristics.

4,439,126

APPARATUS FOR THE PRODUCTION OF BLOW MOLDED ARTICLES ACCOMPANIED WITH THE, RECOVERY OF A BLOWING GAS

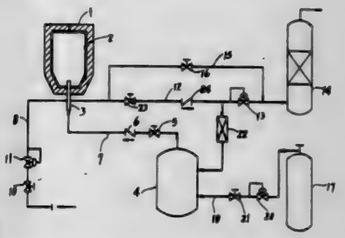
Hatahiko Fukushima, Katano; Tadahiko Handa, Takarazuka, and Kenji Kodama, Hirakata, all of Japan, assignors to Air Products and Chemicals, Inc., Allentown, Pa. and Daido Oxygen Company Ltd., Osaka, Japan

Division of Ser. No. 259,140, Apr. 30, 1981, Pat. No. 4,394,333. This application Feb. 7, 1983, Ser. No. 464,241

Claims priority, application Japan, May 9, 1980, 55-062086

Int. Cl.³ B29C *17/07, 25/00*

U.S. Cl. 425—135 **4 Claims**



1. In an apparatus for blow molding an article comprising in combination a blowing mold having an internal surface corresponding to the contour of the article to be produced and into which an expandable parison is introduced and blow pin means for injection into the interior of the parison enclosed within said blowing mold a blowing gas containing a reactive gas component capable of reacting with the inner walls of the parison, the improvement which comprises:

(a) storage means for holding the blowing gas; blowing gas line means for introducing the blowing gas at a given pressure from said storage means into the interior of the parison;

(b) purging gas line means for introducing a purging gas into the interior of the resulting blow molded article;

(c) recovery gas line means for recovering a mixture of purging gas and blowing gas while still containing a high concentration of the reactive gas component during an initial stage of purging from the article and introducing the gas into said storage means;

(d) means for controlling the pressure of the gas within said storage means to slightly greater than the pressure of the blowing gas; and

(e) an exhaust means for exhausting said mixture of purging and blowing gas after the pressure and reactive gas component concentration in said storage means reaches a preselected level.

4,439,127

MACHINE FOR PRODUCING BLOWN HOLLOW SYNTHETIC RESIN WORKPIECES

Walter Frohn, Geiselgasteigstrasse 100, D-8000 Munich 5, Fed. Rep. of Germany

PCT No. PCT/DE81/00017, § 371 Date Sep. 21, 1981, § 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02134, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 22, 1981, Ser. No. 308,639

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002191; Oct. 3, 1980, 8026528[U]

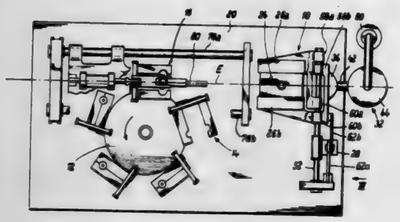
Int. Cl.³ B29C *17/07, 17/12*

U.S. Cl. 425—155 **37 Claims**

1. In a machine for producing blown hollow synthetic resin workpieces of the type having a machine bed, a preform delivery unit mounted on the machine bed for delivering a preform from an extruder head to a blow mold shutting unit, a blow mold shutting unit comprising two blow mold supports for taking up the blow mold halves of a blow mold split along an

upright parting plane, said blow mold shutting unit being movable mounted on said machine bed for movement between an upper preform hand-over position and a lower blowing position, a blow mandrel movably mounted on said machine bed for movement between an inoperative and operative blow position, in the latter of which it is inserted into a blow opening of the blow mold, and at least one after processing unit for after-processing the blown hollow workpieces, the improvement comprising:

a turntable having a plurality of rests for the blown hollow articles spaced about its periphery, said turntable being mounted on said machine bed for stepwise movement;



blow mold shutting unit drive means for moving said turntable in a successive stepwise manner between a takeover position located at said parting plane of said blow mold shutting unit at which position a blown hollow article is transferred to a turntable rest by means of the blowing mandrel and at least one after-processing unit;

an oscillatable blow mandrel carriage which supports said blowing mandrel and is horizontally movable in said parting plane of said blow mold shutting unit between said takeover and said blowing positions; and,

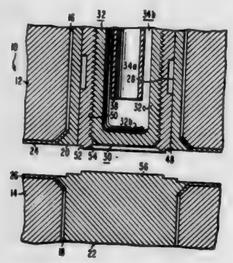
said blow mold shutting unit having a side distal to said blow mandrel carriage, on which side horizontal guides are disposed for said blow mold supports.

4,439,128

APPARATUS FOR MOLDING A RECORDED DISC HAVING A MOLDED-IN CENTER HOLE

Leonard Loulk, and Richard E. Ballard, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,111
Int. Cl.³ B29D *17/00*
U.S. Cl. 425—290 **5 Claims**



1. In a mold for molding recorded discs which includes a pair of opposed mold plates and a center hole forming pin slidably mounted in an opening in one of said mold plates for movement toward and away from the other mold plate, the improvement comprising:

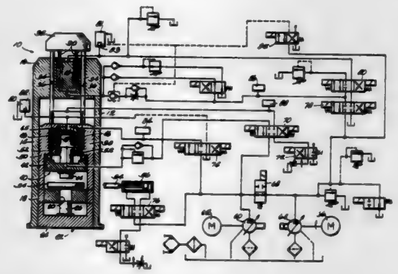
said center hole forming pin including an elongated rod having a passage therethrough to a closed end, said passage adapted to receive a flow of a heat control medium and a tubular sleeve cap having a longitudinal opening completely therethrough removably mounted around the rod at said closed end, said cap projecting beyond said closed end and forming with said closed end a recess with the closed end being the bottom of the recess.

4,439,129

HYDRAULIC REFRACTORY PRESS INCLUDING FLOATING UPPER AND LOWER PLUNGER ASSEMBLIES

Gary R. Long, Bolingbrook, and Hideo Okunami, Calumet Park, both of Ill., assignors to Weir Corporation, Milwaukee, Wis.

Filed Oct. 26, 1982, Ser. No. 436,698
Int. Cl.³ B30B *11/04, 1/32*
U.S. Cl. 425—352 **6 Claims**



1. A hydraulic press comprising

a frame including a pair of spaced-apart vertical side members and a crown,

a mold box rigidly supported between said vertical members, said mold box including at least one vertically extending mold cavity,

a lower plunger assembly positioned below said mold box, said lower plunger assembly including a lower crosshead and at least one plunger supported by said lower crosshead and adapted to extend upwardly into said mold cavity,

means for causing selective vertical movement of said lower crosshead, said means including an ejection cylinder assembly supported by said crown,

an upper plunger assembly positioned above said mold box and including an upper crosshead and at least one upper plunger supported by said crosshead and adapted to extend downwardly into said mold cavity,

means for supporting said upper crosshead for vertical movement with respect to said mold box and said lower crosshead including a hydraulic cylinder, means for fixidly connecting said hydraulic cylinder to said lower crosshead, a ram housed in said cylinder and adapted to selectively drive said upper crosshead downwardly, and a kicker cylinder assembly,

a first fluid pressure source and a second fluid pressure source, and means for selectively connecting said first fluid pressure source to said ejection cylinder and to said hydraulic cylinder and for selectively connecting said second fluid pressure source to said ejection cylinder and said hydraulic cylinder,

said means for selectively connecting includes a flow separator valve positioned between said first fluid pressure source and said second fluid pressure source,

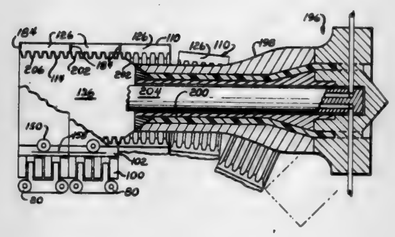
said first fluid pressure source is a first variable volume variable pressure pump and wherein said second fluid pressure source is a second variable volume variable pressure pump.

4,439,130

PLASTIC TILE CORRUGATOR

Heinrich Dickhut, Chebanse, and Alfred Lilienthal, Bourbonnais, both of Ill., assignors to Cullom Machine Tool & Die, Inc., Cullom, Ill.

Filed Nov. 23, 1981, Ser. No. 324,371
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—388 **26 Claims**



14. A corrugator for receiving plastic from an extruder and molding the same into a corrugated plastic tile, said corrugator comprising:

a frame having thereon a forward trackway, a return trackway and having front and rear trackways, the trackways cooperating to define an endless trackway about said frame;

a plurality of individual mold assemblies each of which has a pivotable carriage with rollers disposed on said endless trackway for rolling action therealong and a pair of mold blocks mounted to said carriage for opening and closing transversely with respect to said endless trackway, said mold blocks when closed forming a corrugated tile mold extending therethrough;

a driven sprocket, said sprocket including a plurality of tongues to sequentially engage said mold assemblies and continuously drive them about said frame, said carriages of adjacent mold assemblies being pushed in abutting relationship to arrange said mold blocks of adjacent mold assemblies contiguous to one another along said forward trackway;

a cam surface along said forward trackway to pivot said carriages and close said mold blocks therealong to form a molding section defined by a corrugated tunnel to receive, move with and mold extruded plastic, said cam surface pivoting said carriages to open said mold blocks radially away from said molded tile at the end of the molding section;

an annular opening in said mold blocks and around the tunnel, said opening being in communication with radially spaced longitudinal bores in said mold blocks which are in turn in communication with said tunnel through a plurality of slits; and

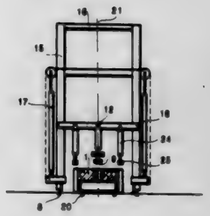
a vacuum manifold spaced closely from said mold blocks along said forward trackway, said manifold communicating with said annular opening through a port in said mold blocks which registers with said manifold along said molding section.

4,439,131

APPARATUS FOR PRODUCING CONCRETE ELEMENTS OF HIGH DIMENSIONAL ACCURACY

Laszlo Nagy; Laszlo Papp; Laszlo Toth; Endre Jankovics, and Zoltan Varnagy, all of Budapest, Hungary, assignors to Beton- es Vasbetonipari Muvek, Budapest, Hungary

Continuation-in-part of Ser. No. 344,091, Jan. 29, 1982, abandoned, which is a continuation of Ser. No. 95,144, Sep. 6, 1979, abandoned, which is a continuation of Ser. No. 906,576, May 16, 1978, abandoned, which is a continuation of Ser. No. 725,795, Sep. 23, 1976, abandoned. This application Feb. 11, 1982, Ser. No. 347,870
Claims priority, application Hungary, Sep. 24, 1975, BE 1241
Int. Cl.³ B28B *1/08*
U.S. Cl. 425—436 R **3 Claims**

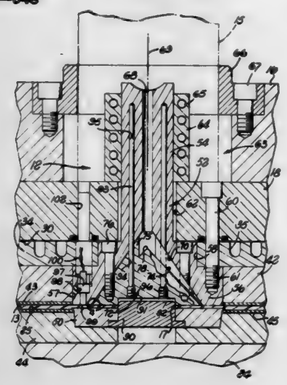


1. A rigid apparatus of undemountable construction for the serial production of prefabricated concrete and reinforced concrete elements or formed products of a high dimensional accuracy that do not require solid inner cores, the apparatus comprising, in combination: rigid form means for the products; means for filling said form means with concrete and providing vibration to produce the formed products; and means for removing the said formed products from said form means; wherein, said form means is an assembled, solid, coreless, rigid, high-strength form having an opening at its top, with a base plate at its bottom, for shaping at least bottom and side surfaces of the products, wherein at least one oriented and temporarily fixed circular liner element is on and conforms to the shape of at least two opposite side surfaces of said opening in said form means, and which has depressions to receive a lifting means which has spreading extension elements and a wedge means which, when pulled upward spreads the extension elements apart so they fit into the liner depressions, wherein the form side surfaces of said form means that shape the product side surfaces have a surface roughness coefficient having an arithmetical mean deviation from the mean line of the profile of at most, $R_a = 1.25\ \mu m$ and are substantially parallel to the pulling force of said lifting means and substantially perpendicular to the base plate, which lifting means includes means for at least partly lifting the formed product substantially vertically out of the top opening of said filled form means; and further comprise means for securing said filled form in a rigid, fixed position during product removal therefrom, constituted by tie-down elements braceable against said filled form by the aid of dual-acting work cylinders, while immobilizing means which includes supporting elements operable by dual-acting work cylinders which force said securing means against said filled form immobilizing said filled form and the product itself against tilting with respect to said filled form means while lifting out the formed products from said filled form in a substantially vertical direction substantially parallel with the preceding position of said products within said form; wherein said lifting means includes a rollable frame having posts in a central part of said frame, said posts forming part of said lifting means together with a lifting frame operable by said dual-acting work cylinders for substantially vertically moving said frame, the latter carrying thereon a removing member for lifting the formed products out of said filling form, in cooperation with said securing and immobilizing means.

4,439,132
HOT SPRUE ASSEMBLY FOR AN INJECTION MOLDING MACHINE

Rocky V. Morrison, Redondo Beach, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Jun. 10, 1981, Ser. No. 272,432
Int. Cl.³ B29D *17/00*
U.S. Cl. 425—548 30 Claims



1. In an injection molding machine for producing centrally apertured record discs, apparatus for controlling flow of molten disc-forming material into a disc-shaped mold cavity, comprising:

a sprue assembly forming permanently open and relatively narrow annular gate for passage of the molten disc-forming material into the mold cavity, said gate being disposed in a plane recessed slightly toward the center of the mold cavity from the general plane of one surface of the disc to be formed within the mold cavity; and

heater means for controlled elevation of the temperature of said sprue assembly to create a preselected temperature gradient between said sprue assembly and the mold cavity for permitting solidification of the disc-forming material within the mold cavity up to the gate without substantial solidification of disc-forming material within said sprue assembly.

4,439,133
TURRET-TYPE INJECTION-MOLDING MACHINE

Herbert Rees, Willowdale; Paul Brown, Orangeville, and Miroslaw Grund, Brampton, all of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Division of Ser. No. 237,678, Feb. 24, 1981, Pat. No. 4,330,257.
This application Oct. 16, 1981, Ser. No. 312,135
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ B29F *1/14*; B29C *5/00*
U.S. Cl. 425—556 3 Claims

1. An injection-molding machine comprising:

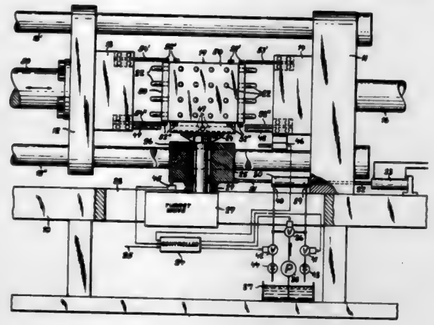
a first platen stationary on a machine bed;

a second platen slidable on two pairs of the tie bars secured to said first platen;

a mold plate with at least one cavity on one of said platens communicating with a source of plastic material for forming a workpiece in said cavity upon relative movement of said platens toward each other into a mold-closed position;

a turret with a plurality of faces rotatable into a like plurality of operating positions about an axis transverse to the path of platen motion, said turret being journaled on a carriage which is slidable on one of said pairs of tie bars in timed relationship with the displacement of said second platen upon relative movement of said platens away from each other into a mold-open position, said turret being provided with a core on each of said faces receivable in said cavity in a respective operating position for releasably extracting a freshly molded workpiece from said path of platen motion;

drive means on said carriage coupled with said turret for sequentially rotating same into said operating positions; and

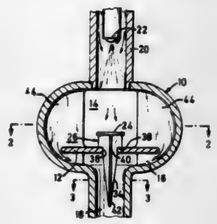


indexing means including coacting formations on at least one of said platens and on said turret for positively locking said turret in any operating position during incipient relative movement of said platens into said mold-closed position, thereby preventing untimely rotation of said turret by said drive means.

4,439,134
COMBUSTION CHAMBER FOR PULSATING COMBUSTION

Karl B. Olsson, Kivik, Sweden, assignor to Mareck B.V., Amsterdam, Netherlands

PCT No. PCT/SE81/00228, § 371 Date Apr. 8, 1982, § 102(e) Date Apr. 8, 1982, PCT Pub. No. WO82/00702, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 12, 1981, Ser. No. 369,018
Claims priority, application Sweden, Aug. 12, 1980, 8005680
Int. Cl.³ F23C *11/04*; F23D *13/12*
U.S. Cl. 431—1 9 Claims

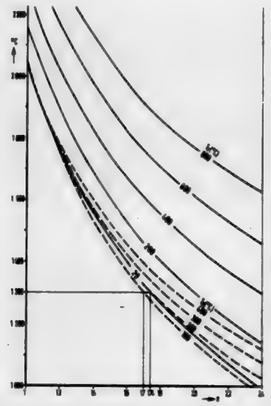


1. A combustion chamber for pulsating combustion of a fuel-air mixture, the combustion chamber having a first chamber, a second chamber and a plurality of side chambers and including an inlet and an outlet having a common axis and providing substantially axial inflow of the fuel-air mixture to the first chamber and substantially axial outflow for the second chamber, as well as a partition wall situated substantially in a radial plane relative to said axis and separating the inlet and outlet chambers to guide the stream of gases over the edges of the partition wall from the first chamber via the plurality of side chambers to the second chamber, characterized in that an elongated member extends axially through a central opening in the partition wall and through the second chamber and into the outlet so as to be heated by the gases, the member having an end disposed between said partition wall and the inlet, said end having associated therewith a hot body located in the first chamber to serve as a hot fuel spreader.

4,439,135
PROCESS FOR THE OPERATION OF PREMIXTURE BURNERS AND BURNER FOR CARRYING OUT THE PROCESS

Detlef Altemark, Dorsten; Hans Sommers, Essen, and Manfred Weid, Haltern, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 160,892
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926278
Int. Cl.³ F23D *13/00*
U.S. Cl. 431—2 6 Claims



1. A process for the operation of a pre-mixing burner under at least normal pressure with gaseous fuels, or with fuels which are liquid at normal temperature and completely vaporized before combustion, at low combustion temperatures, forming waste gases having a low content of noxious substances, comprising the steps of

feeding to the burner a homogeneous mixture comprising a fuel in gaseous or respectively vaporized state, a combustion air quantity which is required for the complete combustion of the fuel and a cooling gas quantity serving for setting the combustion temperature of 1100° C. to 1700° C.,

combusting the mixture in the burner in at least one central main flame which is surrounded by several support flame rings, and

protecting the arising total flame against access of ambient air and/or waste gas and against cooling or heating until burning is completed, and wherein

the fuel, air and cooling gas are homogeneously mixed substantially in advance of being fed to the burner.

4,439,136
THERMAL SHOCK RESISTANT SPHERICAL PLATE STRUCTURES

William C. Pfefferle, Middletown, N.J., assignor to The United States of America as represented by Administrator of Environmental Protection Agency, Washington, D.C.

Filed May 13, 1980, Ser. No. 149,458
Int. Cl.³ F23D *3/40, 13/12*
U.S. Cl. 431—7 9 Claims

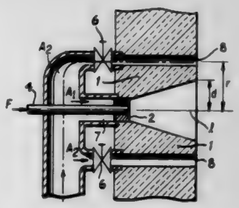
1. A method of combusting fuels with a catalyst structure which obviates the effects of thermal shock, including the steps of providing a monolithic structure which is comprised of a catalytic ceramic material, said structure being formed in the shape of a domed plate comprised of a plurality of open-ended cells having integral walls with the cell walls defining parallel flow-through passages, directing a mixture of fuel and air across the plate and through the passages, catalytically combusting the mixture passing through the passages, and causing the domed shape of the plate to flex concave and convex under thermal expansion and contraction for minimizing thermally-generated stresses within the structure.



4,439,137
METHOD AND APPARATUS FOR COMBUSTION WITH A MINIMUM OF NOX EMISSION

Tomio Suzuki, and Kotaro Morimoto, both of Kobe, Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Continuation of Ser. No. 106,001, Dec. 21, 1979, abandoned.
This application Sep. 28, 1982, Ser. No. 425,701
Claims priority, application Japan, Dec. 21, 1978, 53-159054; Apr. 23, 1979, 54-050728
Int. Cl.³ F23M *3/04*
U.S. Cl. 431—8 7 Claims



1. A method of combustion with a minimum of emission of oxides of nitrogen from furnaces or boilers having a burner tile forming a burner wall including a bore formed therein, a burner disposed within said bore, a burner tip integral with said burner, an air baffle including an axial bore having a longitudinal axis and disposed within said burner tile, said baffle surrounding said burner and having at least one air injection opening formed therein and communicating with said axial bore for defining an arcuate axial air flow path about said burner having a longitudinal axis through said tile, a material to be heated, and means for supplying fluid fuels to said furnaces or boilers for combustion with air, wherein said method comprises:

introducing said air through said burner tile via said at least one air injection opening;

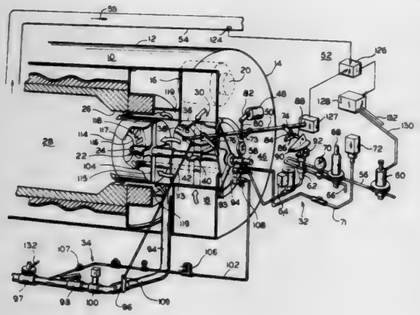
axially channeling said air through said at least one air injection opening such that said air is injected into said furnaces or boilers through a flow path included within an arc of less than 240° about said axis of said air baffle;

forming an arcuate flow of air included within said arc flowing asymmetrically about said axis of said air baffle;

directing said arcuate flow of air in an axial direction with respect to said axis of said air baffle; and

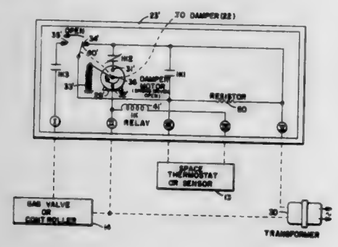
injecting said fluid fuels through said burner tip at an angle from 5° to 45° with respect to said axis of said burner and away from said arcuate flow of air.

4,439,138
COMBUSTION CONTROL APPARATUS
Glenn D. Craig, Menomonee Falls; Ronald K. Wilhelm, and Roy M. Rulech, both of Milwaukee, all of Wis., assignors to Aqua-Chem, Inc., Milwaukee, Wis.
Filed Jun. 12, 1978, Ser. No. 914,348
Int. Cl.³ F23N 1/00, 5/00
U.S. Cl. 431—12 12 Claims



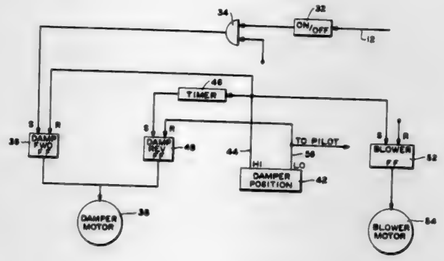
6. A method of controlling a combustion process, the steps of delivering fuel to a combustion chamber,
delivering air to said combustion chamber, regulating the ratio of fuel and air delivered to said combustion chamber,
sensing the level of oxygen in the gaseous combustion products exhausting from said combustion chamber,
modulating the delivery of said fuel to said combustion chamber in relation to the level of oxygen sensed in said discharge gases.

4,439,139
FURNACE STACK DAMPER CONTROL APPARATUS
Lorne W. Nelson, Bloomington, and Ralph H. Torborg, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 26, 1982, Ser. No. 352,814
Int. Cl.³ F23N 3/00
U.S. Cl. 431—20 4 Claims



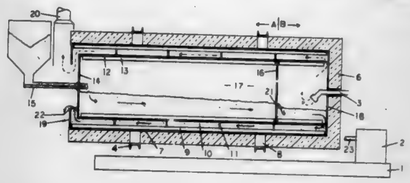
1. A stack damper control apparatus adapted to be connected to a damper in the exhaust stack of a fuel burning temperature conditioning apparatus and connected to a space temperature responsive switch means and a source of power for energizing fuel control means comprising,
motor means having a first energization circuit and an output connected to said damper to drive said damper to a closed position upon energization of said motor means,
a spring return means connected to said motor means for driving said output to drive said damper to an open position,
relay means having second energization circuit and two normally open switch means and a normally closed switch means controlled thereby,
switch means connected to said output of said motor means having two circuits, a first of said two circuits of said switch means being closed when said motor is in an energized position and the damper is closed, and a second of said two circuits of said switch means being closed when said motor is in a de-energized position and said damper is open,
first circuit means including said first circuit of said switch means adapted to connect said second energization circuit of said relay means in series with the space temperature responsive switch means and the source of power whereby upon a call for heat by the responsive means, said relay means is energized,
second circuit means comprising said normally closed switch means adapted to connect said first energization circuit of said motor means to the source of power whereby upon said relay means being energized upon a call for heat by the responsive means, said motor means is de-energized and said spring return drives said output and said damper to an open position,
third circuit means comprising a first and a second of said normally open switch means and said second circuit of said switch means adapted to connect the fuel control means to the source of power for operating the temperature conditioning apparatus, and
fourth circuit means connecting said second of said normally open switch means in parallel with said first circuit of said switch means to maintain said relay means energized while the damper is open.

4,439,140
ENERGY SAVING BOILER PURGE SEQUENCE CONTROL
Mark E. Stout, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 29, 1982, Ser. No. 362,697
Int. Cl.³ F23N 5/20
U.S. Cl. 431—31 2 Claims



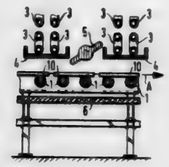
1. An improved purge control for purging a boiler, which has a damper regulated draft, prior to lighting the boiler, comprising in combination:
means for generating a signal to move a damper to a predetermined position which is a substantial percentage of its high fire position;
means responsive to a signal indicating said damper has reached said predetermined position for generating a signal to energize a blower to create a purging draft in said boiler; and
timing means responsive to a signal indicating the energization of said blower to generate a signal to move said damper toward its low fire position after a predetermined purge interval has elapsed.

4,439,141
RECUPERATIVE DOUBLE CHAMBER ROTARY FURNACE
George J. Deckebach, 6553 Wesselman Rd., Cincinnati, Ohio 45248
Filed May 5, 1982, Ser. No. 374,930
Int. Cl.³ F27B 15/00, 7/02; F26B 11/02; F28D 11/02
U.S. Cl. 432—14 8 Claims



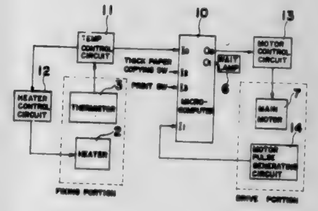
8. A method for treating granular material, comprising the following steps:
(a) selecting first and second cylinders, each having a bore, an outer diameter, a closed end, and an open end;
(b) supporting said first cylinder on a base with its cylindrical axis in a generally horizontal attitude;
(c) mounting said second cylinder coaxially within said first cylinder with its open end disposed towards and located proximal said first cylinder closed end;
(d) rotating said cylinders;
(e) feeding granular material into said first cylinder through said first cylinder closed end;
(f) moving said granular material continuously through said first and second cylinders;
(g) heating said granular material in a region proximal said second cylinder open end;
(h) venting heating combustion gases through said first cylinder closed end to said first cylinder open end.

4,439,142
COOLING ZONE FOR A FIRING KILN WITH TRANSPORT ROLLERS
Gottfried Cremer, Steyrer Weg 6, D-5000 Koln 40/Junkersdorf, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 297,426, Aug. 28, 1981, abandoned. This application Dec. 14, 1981, Ser. No. 330,381
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032450
Int. Cl.³ F26B 9/12; F27D 15/02, 1/12
U.S. Cl. 432—18 4 Claims



4. In a process for minimizing oxidation of ceramic tile after firing, providing a separate and defined cooling zone into which the tile are introduced from the firing chamber at a continuous, predetermined rate; maintaining a substantially static non-oxidizing atmosphere in the cooling zone substantially isolated from the exterior atmosphere and from atmosphere withdrawal into the firing chamber; cooling the tile solely by heat transfer from the tile to a liquid cooled heat absorption means both above and below the tile utilizing only convection currents in said atmosphere and controlling the rate of cooling solely by regulating the rate of flow of the atmosphere between the tile and heat absorption means.

4,439,143
HEAT ROLLER FIXING DEVICE
Hiroyuki Hanamoto, and Yoshihiro Horie, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Feb. 25, 1982, Ser. No. 352,251
Claims priority, application Japan, Mar. 12, 1981, 56-36172
Int. Cl.³ F27B 1/26, 9/28
U.S. Cl. 432—36 3 Claims

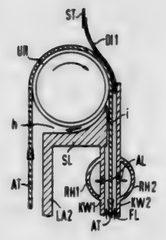


1. A heat roller fixing device comprising:
a heating roller which is provided with a heating means;
a pressure roller which is held in pressure contact with said heating roller;
a temperature detecting means for detecting surface temperature of said heating roller;
a temperature control means for controlling said surface temperature of said heating roller so as to cause said surface temperature to be equal to a predetermined temperature by respectively turning said heating means on and off before and when said surface temperature of said heating roller, as detected by said temperature detecting means, has reached said predetermined temperature;
a drive means for rotating said heating roller and said pressure roller when said heating roller is being held in pressure contact with said pressure roller;
a changeover means which is selectively changed over to a thick copy mode in accordance with a thickness of a copy paper;
a first means for turning said drive means on when said changeover means has been changed over to a thick copy paper mode; and
a second means for turning said drive means off when said surface temperature of said heating roller, as detected by said temperature detecting means, has reached said predetermined temperature and said changeover means has been changed over to said thick copy paper mode;
wherein said heating roller and said pressure roller are rotated in response to said drive means being turned on so as to preheat said pressure roller through absorption of heat from said heating roller by said pressure roller, and said heating means is kept turned on by said temperature control means until said surface temperature of said heating roller, having been below said predetermined temperature is restored to said predetermined temperature, whereby it is possible for a copying apparatus including said fixing device to perform a copying operation on thick copy paper.

4,439,144
DEVICE FOR FIXING RECORDINGS CONSISTING OF POWDERY MATERIAL APPLIED TO A TAPE-SHAPE RECORDING MEDIUM WITH THE ASSISTANCE OF SOLVENT VAPOR

Eduard Mair, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,888
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116828
Int. Cl.³ F27B 9/28; F27D 1/18; F26B 13/00, 25/00
U.S. Cl. 432—59 9 Claims



9. For use with a fixing station assembly for fixing toner powder images applied to a recording medium with a solvent vapor comprising a housing containing said solvent vapor having an upper end opening and a guidance mechanism for conducting said recording medium over a guide member disposed in said opening and about a first rotary drum disposed in a solvent vapor zone adjacent the lower end of said housing and a second rotary drum disposed in said opening beneath said guide member for exit from said housing, apparatus for removing residues from said recording medium exiting said housing in a manner preventing smearing of said toner powder images comprising:

a channel structure disposed exterior of said housing and having sidewalls enclosing a longitudinally extending from space, said sidewalls defining an upper end opening adjacent said second drum and a lower end opening connected by said free space for receiving therethrough said recording medium passing from said second drum,

flow openings disposed adjacent the upper end of said channel structure and laterally extending in opposed said sidewalls communicating with said free space, and

a source of suction pressure connected to said flow openings for drawing an airflow from said lower end opening over said recording medium in counterflow relation to movement of said recording medium through said channel structure.

4,439,145
ALUMINUM FURNACE AND PREHEATER THEREFOR

Richard J. Strassman, Milwaukee, Wis., assignor to Badger Die Casting Corp., Milwaukee, Wis.

Continuation of Ser. No. 312,782, Oct. 19, 1981, abandoned.
This application Nov. 20, 1981, Ser. No. 323,362
Int. Cl.³ F27B 3/04, 3/20; C21B 7/00
U.S. Cl. 432—164 6 Claims

1. An improved aluminum furnace comprising:

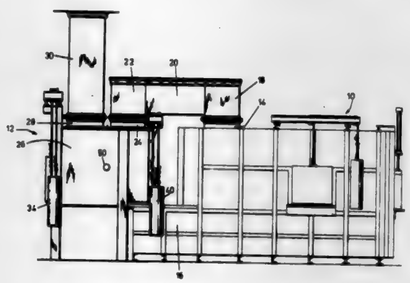
a furnace chamber (10) in which aluminum is heated;

an aluminum preheater chamber (26) located adjacent to the furnace chamber (10);

at least one openable door (32,38) opening into the preheater chamber (26) so that material to be melted in the furnace may be introduced therein and removed therefrom;

an exhaust stack (30) exiting vertically from the preheater chamber (26); and

a flue gas duct connecting the furnace chamber (10) to the preheater chamber (26) which includes a furnace exhaust flue (14) provided on the furnace chamber (10) to direct combustion exhaust gases upwardly therefrom, an exit flue junction (18) connected to the exhaust flue (14), a generally horizontal flue duct (20) connected to the exit flue junction (18), a second flue duct junction (22) connected to the horizontal flue duct (20) over a preheater chamber (26), the exit flue junction (18), horizontal flue duct (20) and second flue duct junction (23) conveying the exhaust gases in a generally horizontal direction, and a

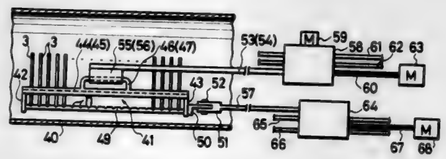


flue inlet (24) provided on the preheater chamber (26) and connected to the second flue duct junction (22) to convey exhaust gases downwardly into the preheater chamber (26) toward its floor (48) to heat metal therein wherefrom the exhaust gases are drawn upwardly into the exhaust stack (30), whereby the downward conveyance of flue gases into the preheater chamber (26) reduces the effect of the draw from the exhaust stack (30) on the pressure in the furnace chamber (10).

4,439,146
HEAT TREATMENT APPARATUS

Kazuhiro Sugita, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 426,734
Claims priority, application Japan, Jun. 14, 1982, 57-101552
Int. Cl.³ F27D 5/00; F27B 9/00
U.S. Cl. 432—253 1 Claim



1. A heat treatment apparatus comprising:

a tube having its axis in the horizontal direction for containing objects to be treated by heat;

a holder of a plurality of objects;

first and second supporting means located outside said tube;

means for connecting said first supporting means and said holder;

a first operating means for moving said holder in the horizontal direction;

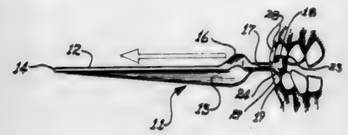
means attached to said second supporting means for grasping a grip means of said holder by the rotation along its axis; and

a second operating means for moving said holder in the horizontal and vertical directions.

4,439,147
BITE-TAKING DEVICE

Thomas S. Magill, 2024 Willow Ave. N., Minneapolis, Minn. 55411, and Deborah A. Keys, 2200 Grand Ave. S. #2, Minneapolis, Minn. 55405

Filed Jan. 2, 1981, Ser. No. 222,126
Int. Cl.³ A61C 7/00
U.S. Cl. 433—3 7 Claims

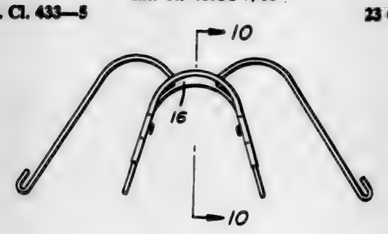


1. A bite-aligning device comprising a handle, a biting panel integral to one end of the handle and having a depth of at least one millimeter and a width in excess of the distance between the upper and lower incisor teeth, a first pair of upper and lower stops secured between the handle and the biting panel, and a second pair of upper and lower stops secured opposite the first pair, the first pair of stops extending above the level of the biting panel to a height sufficient to contact only a portion of the upper and lower incisors.

4,439,148
ORTHODONTIC APPLIANCES AND METHOD OF TREATMENT

Andrew J. Haas, 1234 Portage Trail, Cuyahoga Falls, Ohio 44221

Filed Feb. 18, 1982, Ser. No. 349,993
Int. Cl.³ A61C 7/00
U.S. Cl. 433—5 23 Claims



1. An orthodontic face bow appliance, comprising:

(A) an outer arch wire having an arcuate central portion;

(B) an inner arch wire having an arcuate central portion and being interconnected to said outer arch wire adjacent their arcuate central portions;

(C) a shield carried by said inner arch wire and projecting only in a vertical plane above and below the plane of said arch wires to engage and exert pressure on the soft tissues of the mouth;

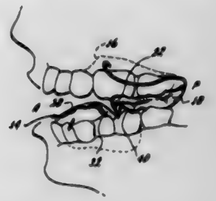
1. Whereby orthodontic correction of the teeth and orthopedic correction of the structure of the mouth are achieved simultaneously,

(D) means carried by said outer wire for attachment of said appliance to the head of the user thereof.

4,439,149
VERTICALLY-INDEXED POSTERIOR BITE PLATES

John Devincenzo, 1312 Garden St., San Luis Obispo, Calif. 93401

Filed Sep. 16, 1982, Ser. No. 418,670
Int. Cl.³ A61C 7/00
U.S. Cl. 433—6 2 Claims



1. An orthodontic appliance comprising:

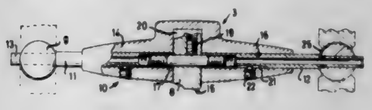
an upper bite plate including a vertical anterior-facing indexing plane, said upper bite plate secured to the upper posterior teeth;

a lower bite plate including a vertical posterior-facing indexing plane, said lower bite plate bearing against the lower front teeth, said vertical posterior-facing indexing plane contacting said vertical anterior-facing indexing plane to prevent retraction of said lower bite plate and sliding on said vertical anterior-facing indexing plane as the jaw opens and closes.

4,439,150
ARTICULATOR FOR USE IN MAKING DENTURES OR PARTS THEREOF

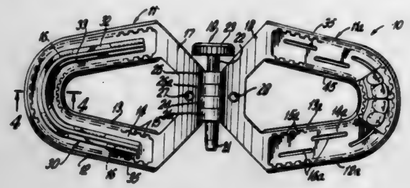
Svante R. Edwardson, Solna, Sweden, assignor to AB Dentatus, Hagersten, Sweden

Filed May 18, 1982, Ser. No. 379,460
Int. Cl.³ A61C 11/00
U.S. Cl. 433—56 4 Claims



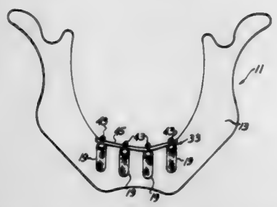
1. An articulator, for use in making dentures or parts thereof, comprising a lower and an upper principal member which are interconnected by means of a condylar mechanism that allows relative movement between said principal members, one of said principal members being provided with condylar track members that are included in said condylar mechanism, the other of said principal members being provided with a condylar shaft means which comprises two shaft members, each of which has an end portion axially displaceably inserted into a bore in a condylar ball that is mounted in one of said condylar track members, said two shaft members being mutually movable in an axial direction and being interconnected by an intermediate part, characterized in that said condylar shaft means comprises adjustment means enabling simultaneous axial movement of said shaft members in opposite directions, said adjustment means comprising a rotatable wheel means which is held axially fixed in an opening in said one principal member, and which is rotatable together with the intermediate part to displace said shaft members, each of said shaft members being non-rotatably mounted in said one principal member and being in threaded engagement with said intermediate part, which has two oppositely directed threads, one for each shaft member.

4,439,151
DENTAL DEVICE
Cahal Whelan, Highview Rd., Pound Ridge, N.Y. 10576
Filed Jun. 30, 1980, Ser. No. 164,842
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—60 8 Claims



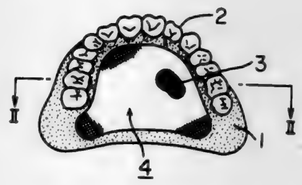
1. A dental device for fabricating models comprising:
a recessed tray having a base and inner and outer walls extending upwardly therefrom, said base having apertures extending therethrough in a predetermined pattern and a rear portion extending upwardly from the tray and having a pair of spaced, hollow cylindrical members at the end thereof, and
a member mounted within the tray, having predetermined lower portions extending through the apertures in the base of the tray, a base, and an upwardly extending portion integrally engageable by the model which is formed within the tray wherein the model may be readily ejected from the tray by pressing on the lower projecting portions thereof.

4,439,152
METHOD OF JAWBONE ABUTMENT IMPLANT FOR DENTAL PROSTHESES AND IMPLANT DEVICE
Irwin A. Small, 6861 Orinoco Cir., Birmingham, Mich. 48010
Filed Mar. 4, 1982, Ser. No. 354,789
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 22 Claims



1. The method of implanting a bone fastening device within a jawbone for orthopedic, oral and maxillofacial surgery which comprises the steps of:
locating the approximate area for implantation;
surgically cutting the mucosa at said area and turning back the adjacent tissue exposing the bone;
drilling a hole into the bone of a predetermined depth and diameter;
selecting a hollow porous cylinder of titanium wire mesh of appreciable wall thickness of a height and diameter corresponding to said hole depth and diameter;
threading a temporary nylon plug into said cylinder;
tapping the assembled cylinder and plug down into the filling said jawbone bone;
reassembling the severed mucosa snugly overlying and bridging said cylinder and plug;
retaining said cylinder and plug for a predetermined healing period of two to three months while adjacent bone tissue migrates and grows into, around and through the cylinder wire framework for a mechanical interlock therewith, firmly anchoring and fixing the cylinder within said jawbone;
cutting the mucosa and surgically reexposing said cylinder and turning back the adjacent tissue;
unthreading and removing said plug from said cylinder;
and successively threading into said cylinder a replacement abutment retaining device of titanium;
an axial portion thereof projecting from said jawbone and mucosa to which a dental or orthopedic prosthesis may be attached.

4,439,153
BIO-FUNCTIONAL DENTURE
Haruyuki Kawahara, Moriguchi; Nobuhiro Ishizaki, Uozakikitamachi, and Hiroki Wada, Suita, all of Japan, assignors to Wada Seimitsu Shiken Kabushiki Kaisha, Osaka, Japan
Filed Dec. 17, 1982, Ser. No. 450,751
Int. Cl.³ A61C *13/00*
U.S. Cl. 433—200 7 Claims

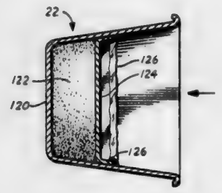


1. A denture having a porous metal gauze as a denture plate, said porous metal gauze being formed of plural wire nets with a straight wire used as warps and wefts, said nets being laid one over another in layers so as to stagger the meshes thereof with respect to the direction of thickness and to bring the warps and wefts into a parallel relation with each other with respect to the direction of extent, said layered nets being pressed in the direction of thickness, and the crossing portions of said warps and wefts in the same plane and the crossing portions of said warps and wefts in contact with each other in the direction of thickness being sintered to form a plurality of minute and complicatedly curved pores in said porous metal gauze.

4,439,154
PERMANENT IDENTIFICATION METHOD FOR REMOVABLE DENTAL PROSTHESIS AND STRUCTURE
Thomas J. Mayclin, 5705 Dale Ave., Edina, Minn. 55436
Filed Jul. 13, 1981, Ser. No. 282,543
Int. Cl.³ A61C *13/00*
U.S. Cl. 433—229 9 Claims

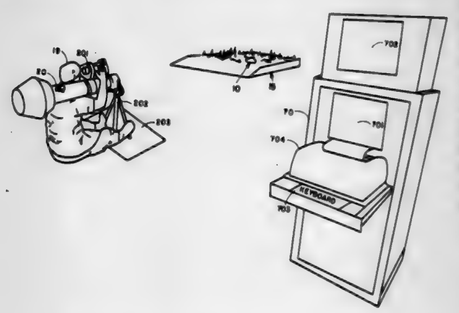
1. An identification method adapted for use in removable dental prosthesis comprising the steps of:
forming a recessed slot in a section of said dental prosthesis;
transcribing written information on the surface of an information carrier film, said information carrier film being an inert, heat shrinkable film;
applying heat to said information carrier film to reduce the surface area of said film and to reduce the size of said written information carried on said film;
placing the reduced information carrier film in said recessed slot; and
covering said information carrier film with a clear overlay material compatible with the material of said dental prosthesis.

4,439,155
END CAPS FOR USE WITH A LAUNCH ENVIRONMENT SIMULATOR PROCESS AND STRUCTURE
George W. Roe, Rockledge, Fla., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Division of Ser. No. 105,991, Dec. 21, 1979, Pat. No. 4,326,847.
This application May 11, 1981, Ser. No. 262,463
Int. Cl.³ F41F *27/00*; G01B *9/00*
U.S. Cl. 434—12 6 Claims



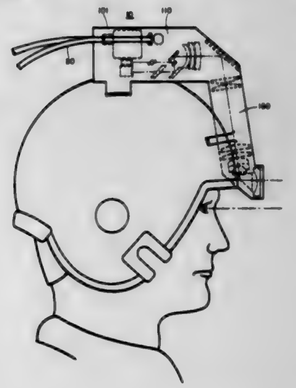
1. An end cap for use with a launch environment simulation apparatus comprising:
an outer shell formed substantially in the shape of a frustum of a cone having a closed end at its smaller diameter and an opposite open end;
a particulate solid received within the outer shell adjacent to its closed end; and
an inner shell nested within the outer shell such that the solid is confined and substantially sealed between the inner and the outer shells
wherein the end cap is removably attached to and within at least one end of a launch environment simulation apparatus, the apparatus comprising an elongated combustion chamber, means for charging the combustion chamber with a combustible gas mixture, and means for igniting the gas mixture selectable by an operator of the apparatus.

4,439,156
ANTI-ARMOR WEAPONS TRAINER
Albert H. Marshall, Orlando; Herbert C. Towle, Maitland; Gary M. Bond, Orlando, and Bon F. Shaw, Winter Park, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 11, 1982, Ser. No. 338,696
Int. Cl.³ F41G *3/00*
U.S. Cl. 434—12 13 Claims



1. An apparatus for simulating anti-armor training with gunner controlled guided missiles comprising:
means for simulating a moving target in a realistic scenario;
a simulated weapon;
means for sensing a gunner's aiming error with respect to said target;
means for monitoring utilization of said simulated weapon;
means for simulating optical and audio transient effects of utilization of said weapon;
a controllable stepper motor operably connected to drive said target simulating means;
controlling means having a first output to said controllable stepper motor, a second output to said monitoring means, a plurality of outputs to said transient effects simulating means, a first input from said sensing means, an input from said monitoring means, and an input from said simulated weapon, said controlling means having knowledge of said simulated target position and said simulated weapon's flight characteristics, and utilizing said knowledge and said inputs to provide real time simulation of said missile's flight.

4,439,157
HELMET MOUNTED DISPLAY PROJECTOR
Denis R. Breglia, Altamonte Springs, Fla.; Daniel R. Lobb, Kent, England, and Archer M. Spooner, Orlando, Fla., assignors to The United states of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 3, 1982, Ser. No. 374,875
Int. Cl.³ G09B *9/08*
U.S. Cl. 434—40 8 Claims

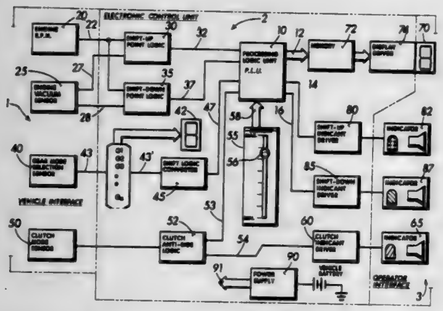


1. An improved apparatus for visual simulation utilizing a domed retroreflective screen, a dual channel computer image generator, with one channel dedicated to a high resolution area of interest and a second channel dedicated to a lower resolution instantaneous field of view, a laser modulation and line scanning system for outputting a plurality of laser line scans in accordance with said computer image generator channels, a plurality of flexible coherent fiber optic bundles for transmitting said line scans, a projector housing operably connected to said fiber optic bundle, and a helmet to be worn on an observer's head adapted for mounting said housing thereon, wherein said improvement comprises:
an optical system mounted within said projector housing comprising,
means for generating frame scan for each projected laser line scan, connected to receive transmission from said laser modulation and line scanning system via said fiber bundles, said generating means including means for combining said laser line scans in a single projected frame such that a projected image is formed having a high resolution area of interest bounded by a lower resolution instantaneous field of view;
means for controlling said scan generating means operably

connected to receive control signals from said computer image generator; and

means for projecting said laser raster through a wide angle onto said domed screen operably positioned to receive said raster from said scan generating means.

4,439,158
TEACHING INDICATOR FOR EFFICIENT VEHICLE GEARSHIFT OPERATION
Harold J. Weber, P.O. Box 315, 20 Whitney Dr., Sherborn, Mass. 01770
Filed Jan. 7, 1982, Ser. No. 337,585
Int. Cl.³ G09B 9/04
U.S. Cl. 434—71 25 Claims



1. Driving aid apparatus coupled with a motor vehicle means including manual gearshift transmission means, wherein the apparatus combines at least two dynamic signals provided by means responsive to the condition of engine speed, gearing selection, and effective load coupling, to provide driver indication for obtaining opportune gearshift changes, furthermore comprising:

signal combining means coupled with said dynamic signals and effective to combine the instant values thereof to produce at least a gearshift indicant signal output therefrom;

predetermining means coupled with said combining means and effective therewith to variously modify the effective combination of the dynamic signals in proportion to any predetermined signal values; and,

indicator means coupled with said indicant signal and effective to provide the driver with indication for at least one of impending upshift, impending downshift, and a figurative signal of which gearing range should be engaged.

4,439,159
SKETCHING AID
James B. Hunter, 313 Echo Valley La., Newtown Square, Pa. 19073
Continuation of Ser. No. 218,450, Dec. 19, 1980, abandoned. This application Jan. 21, 1983, Ser. No. 459,984
Int. Cl.³ G09B 11/06
U.S. Cl. 434—85 17 Claims

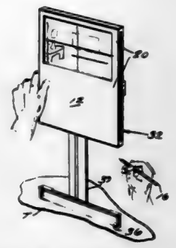
1. A sketching aid comprising:

an opaque frame member having a first portion thereof large enough to be readily grasped by a human hand, and small enough to be readily supported by a human hand alone, and a second portion distinct from said first portion and comprising means defining an opening therein extending from one side to the other;

a rigid transparent plate;

means for operatively attaching said rigid transparent plate to said opaque frame, and within said frame opening, so that said plate is held stationary with respect to said frame, and so that one can view through the frame opening and transparent plate objects on one side of the plate from the other side of the plate;

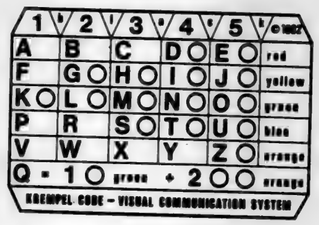
means associated with said frame for holding a transparent drawing film of substantially the same size as said rigid



transparent plate in face-to-face contact with said plate; and

storage means for holding a supply of transparent drawing films, said storage means formed in said first portion of said opaque frame member.

4,439,160
VISUAL COMMUNICATION SYSTEM
Ralf Krempel, 2400 Pacific Ave., San Francisco, Calif. 94115
Filed Jul. 26, 1982, Ser. No. 401,627
Int. Cl.³ G09B 19/00
U.S. Cl. 434—170 2 Claims



1. A visual communication device comprising;

a code carrier means divided into a plurality of rows and columns;

each of said rows being designated by a different color indicium;

each of said columns being designated by a different number indicium;

letters of an alphabet located in said rows and columns of said code carrier means;

whereby each of said letters can be designated by a quantity of symbols of the same color as, and equal in number to, the color and number indicia which designates the row and column on the code carrier means where the alphabet letter is located.

4,439,161
TAUGHT LEARNING AID
Richard H. Wiggins, Dallas; George Doddington, Richardson, both of Tex., and Craig J. Cato, Littleton, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Sep. 11, 1981, Ser. No. 301,090
Int. Cl.³ G09B 23/02
U.S. Cl. 434—201 16 Claims

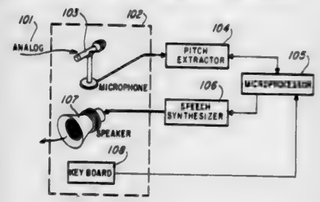
1. A learning aid comprising:

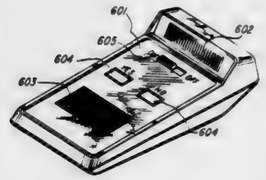
control means having defined therein a response data set and a set of messages, said control means having

means for selecting a first response data from said set of response data in response to an operator generated problem, and for selecting a second response data from said set of response data in response to an operator generated evaluation input,

memory means for storage of said response data set;

said means for selecting a first response data including means for randomly choosing an incorrect response data from said response data set as said first response;



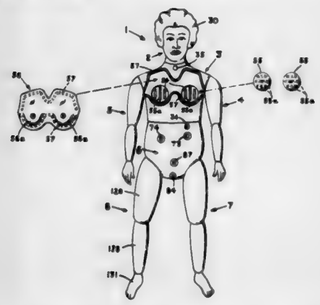


said means for selecting a second particular response data including means for evaluating if said first response data is appropriate with said operator generated problem; and

operator interface means communicating with said control means, said operator interface means having

means for receiving said operator generated problem, for receiving said operator generated evaluation data, and for communicating to the operator said first response data and said second response data.

4,439,162
TRAINING MANIKIN FOR MEDICAL INSTRUCTION
George Blaine, 5830 Leonardo St., Coral Gables, Fla. 33146
Filed Jan. 21, 1982, Ser. No. 341,319
Int. Cl.³ G09B 23/34
U.S. Cl. 434—268 20 Claims



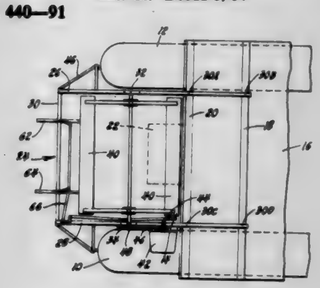
1. An instructional training manikin comprising a body including a torso, legs, arms and a head, interchangeable male and female breasts including means for detachable connection of said breasts to said body, said body further including male and female sexual organs adapted for selective operative association with said body, said torso being hollow and including fluid reservoir means therein, said body being provided with opening means permitting flow and fluid to and from said reservoir means for simulating various body functions and treatments.

4,439,163
OUTBOARD MOTOR WITH INTERLOCK MECHANISM FOR TRANSMISSION AND FOR STARTING MECHANISM
Dennis N. Burmeister, Libertyville, Ill.; Thomas A. Busse, Bristol, Wis., and Wesley C. Jones, Antioch, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Oct. 1, 1980, Ser. No. 192,917
Int. Cl.³ F02N 17/00
U.S. Cl. 440—86 14 Claims



8. An outboard motor comprising a steerable and tiltable propulsion unit including an engine having a timer plate movable from an idle speed setting to a range of advanced speed settings, a transmission shiftable between a neutral position and a drive position, and means on said timer plate for preventing shifting of said transmission to neutral when said timer plate is at a setting advanced from the idle setting.

4,439,164
PADDLE WHEEL KIT FOR PONTOON BOAT
Don D. Daugherty, 9535 Five Mile Rd., Northville, Mich. 48167
Filed Aug. 27, 1981, Ser. No. 296,819
Int. Cl.³ B63H 1/04
U.S. Cl. 440—91 3 Claims



3. A method for converting a pontoon boat having a pair of spaced, parallel, elongated pontoons, a frame mounted on the pontoons, engine support means mounted on the frame between the pontoons, a steering control member mounted on the frame and a steering linkage connected to the steering control member, comprising the steps of

removing the engine support means,

removably mounting a paddle wheel power assembly including support means having spaced pair of legs, a cross-member secured to and extending between one end of the pair of legs, bearing means, a rotatable shaft, a paddle wheel mounted on the shaft, engine means drivingly connected to the shaft and rudder means mounted on the cross member rearwardly of the paddle wheel, by attaching the spaced pair of legs of the support means to the frame, and

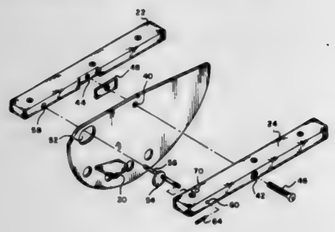
connecting the steering linkage of the rudder means for moving the rudders means between selected steering positions.

4,439,165
AQUATIC BODY BOARD
Andrew M. Rothstein, Santa Monica, Calif., assignor to Harold Louis Rothstein and Arthur Rothstein, both of Los Angeles, Calif.
Filed Aug. 17, 1981, Ser. No. 293,391
Int. Cl.³ A63C *15/05*
U.S. Cl. 441—74 **6 Claims**



1. In a relatively thin substantially planar body board of the type used for supporting a rider's torso in ocean surf and having an upper side, an underside, a forward end and a rear end, and a pair of lateral edges, the improvement comprising:
a substantially rigid arcuate control handle member having two handle ends and a convex intermediate portion;
said arcuate control member being secured in fixed spaced relationship to said upper side between said forward end and said rear end of the body board, said arcuate control member spanning the greater part of the width of said board between said lateral edges with said convex intermediate portion oriented towards the forward end of the body board and said handle ends extending rearwardly and terminating substantially flush with said upper side to form a substantially smooth transition from the upper surface of said board to the upper surface of the control handle such that a rider's hands can easily slide from said lateral edges onto and along said arcuate member at a continuously selectable point between said two handle ends to obtain variably optimal leverage for positive steering control over said body board under shifting load and surf conditions.

4,439,166
ADJUSTABLE WATER SKI FIN AND WING
Ralph A. Maxwell, Box 245, Sweetwater, Hammonton, N.J. 08037
Filed Sep. 21, 1981, Ser. No. 303,883
Int. Cl.³ A63C *15/00*
U.S. Cl. 441—79 **8 Claims**



1. An adjustable water ski fin and wing assembly comprising:
a shallow substantially rectangularly shaped mounting means, said mounting means being adapted to overlie an elongated longitudinally extending slot in the rear end of a water ski;
means for securing said mounting means to the upper surface of said ski;
a fin including a top edge lying substantially totally within said mounting means and extending downwardly therefrom through said slot;
a pivot pin located adjacent said top edge of said fin for pivotally fastening said fin to said mounting means, said pin extending transversely of said mounting means;
a wing extending outwardly from either side of said fin and substantially perpendicular thereto;
means for manually pivoting said fin including a first cam element located within said mounting means and including a handle portion extending to the exterior of said mounting means and a second cam element carried by said fin adjacent one end of said top edge in cooperative relationship with said first cam element, and
means for locking said fin to prevent pivotal movement thereof.

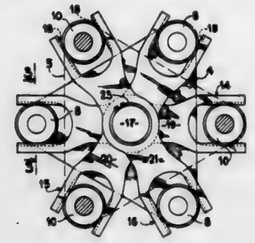
4,439,167
SHOCK ABSORBER ASSEMBLY
Thomas R. Bishop; Archie W. Pell, both of Houston; Wayne A. Kovar, Missouri City, and Roger D. Chancey, Humble, all of Tex., assignors to Bowen Tools, Inc., Houston, Tex.
Filed Mar. 1, 1982, Ser. No. 353,624
Int. Cl.³ E21B *17/00*
U.S. Cl. 464—20 **7 Claims**



1. A shock absorber assembly adapted to be used with a drill string for dampening intermittant shocks and vibrational forces encountered with the drill string during drilling operations, comprising:
a mandrel having a mandrel bore adapted to be mounted with the lower end of the drill string;
an elongated tubular body having an open upper end for receiving said mandrel therein, said elongated tubular body mounted for longitudinal reciprocal movement with respect to said mandrel;
dampening means including an annular chamber and flex means for dampening the intermittant shocks and vibrational forces;
said annular chamber formed between said mandrel and said elongated tubular body;
said flex means being an impervious wall forming a part of said mandrel adjacent said annular chamber for inward flexing of said impervious wall toward said mandrel bore of said mandrel; and,

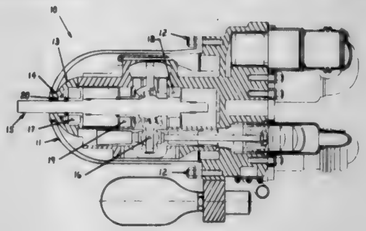
said annular chamber adapted to be filled with a compressible fluid whereby the intermittant shock and vibrational forces on said mandrel cause compression of said compressible fluid within said annular chamber whereby said compressed fluid exerts a uniform force within said annular chamber along the substantial length of said flex means thereby causing flexure of said flex means to effectuate the dampening of the intermittant shock and vibrational forces encountered with the drill string.

4,439,168
COUPLING BETWEEN TWO ROTARY SHAFTS
Michel Orain, Conflans Ste Honorine, France, assignor to Glaenzer Spicer, Poissy, France
Filed Mar. 25, 1981, Ser. No. 247,504
Claims priority, application France, Mar. 31, 1980, 80 07156
Int. Cl.³ B61C *9/00*; F16D *3/30*
U.S. Cl. 464—69 **7 Claims**



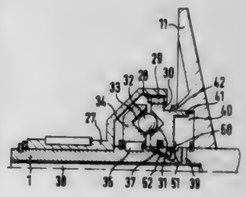
1. A coupling between a first rotary shaft and a second rotary shaft, said coupling comprising a first plate coaxial with and rigid with said first shaft, a second plate coaxial with and rigid with said second shaft, said first and second shafts having a common axis under ideal conditions,
means for providing for relative axial telescopic displacement of said shafts along said common axis, angular displacement of said shafts, and radial displacement of said shafts, said means for providing including
a floating intermediate device comprising at least three levers and a center articulation pivotally assembling said levers, and further including
means for connecting the opposite end portions of said levers to said plates, one end portion of each lever being connected to one plate, the other end portion being connected to the other plate, means for providing movement of said connecting means within said end portions in a radial direction relative to said common axis, said means for providing movement in a radial direction including rollers which roll in a radial direction engaged within the end portions of said levers, said end portions having track means extending in said radial direction for receiving said rollers, said connecting means including journals on which said rollers are mounted and which are connected to said plates, at least one of said rollers mounted on a journal being provided with means for preventing movement of said roller along the length of said journal, said journals extending parallel to said common axis under said ideal conditions when said first and second shafts are aligned.

4,439,169
PRESSURE CONTAINMENT DEVICE
Roelf J. Meijer; Robert J. Brown, and Benjamin Zipb, all of Ann Arbor, Mich., assignors to Stirling Thermal Motors, Inc., Ann Arbor, Mich.
Filed Aug. 6, 1982, Ser. No. 405,750
Int. Cl.³ F16C *35/02*
U.S. Cl. 464—170 **4 Claims**



1. A device for containment of drive mechanism housing pressure in a Stirling engine having a variable swashplate drive mechanism connected to an output shaft comprising: a rotating shaft seal rigidly connected to said drive mechanism housing and slidably connected to said output shaft located therein, such that a seal is formed therebetween; a thrust bearing for supporting said output shaft rigidly connected to said drive mechanism housing; and a pressure hull enclosing said drive mechanism housing having a first end slidably connected to said drive mechanism housing extending therethrough and a second end rigidly connected to said drive mechanism housing.

4,439,170
INFINITELY VARIABLE CONE PULLEY TRANSMISSION
Herbert K. Steuer, Bad Homburg, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Werner Reimers, GmbH & Co. KG, Bad Hamburg, Fed. Rep. of Germany
Filed Jul. 10, 1981, Ser. No. 281,924
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028490
Int. Cl.³ F16H *11/04*
U.S. Cl. 474—28 **9 Claims**



1. In an infinitely variable cone pulley transmission including a driving shaft and a driven shaft, a first and a second pulley mounted on said driving and driven shafts, respectively, an endless transmission member trained about said pulleys for transmitting driving torque from said driving shaft to said driven shaft; each pulley being formed of first and second pulley discs; each said first pulley disc being torque-transmittingly and axially slidably mounted on the respective said shaft; hydraulic means for setting and maintaining each said first pulley disc by hydraulic pressure in an axial position corresponding to a desired transmission ratio between the driving and the driven shafts; each said second pulley disc being torque-transmittingly and axially immovably mounted on the respective said shaft; a torque sensor mounted on at least one of

said shafts adjacent a said second pulley disc for receiving and transmitting a torque; said torque sensor including pressing means mounted for axial displacement as a function of said torque and for generating load-dependent pressing forces; a first ring forming part of said pressing means and being torque-transmittingly and axially immovably mounted on the shaft carrying the torque sensor; torque transmitting means for transmitting torque from one said ring to the other; said torque transmitting means comprising cooperating first and second camming surfaces oriented towards one another; roller members in engagement with the camming surfaces for transmitting forces from one camming surface to the other; said first camming surface being carried by said first ring; and load-dependent valving means arranged for displacement by said pressing means for varying said hydraulic pressure; the improvement wherein said shaft carrying the torque sensor is a one-piece shaft; the improvement further comprising a second ring forming part of said pressing means and being relatively rotatably and axially slidably mounted on the shaft carrying the torque sensor; said second ring being situated between said second pulley disc and said first ring and forming a movable part of said valving means; said second camming surface being provided on said second ring, whereby said second ring is axially displaceable with respect to said first ring as a function of a torque applied to said second ring; and means operatively coupled with said second ring for introducing said torque into or taking said torque out of said transmission with the intermediary of said second ring.

4,439,171

DERAILLEUR MECHANISM

Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 936,569, Aug. 22, 1978, Pat. No. 4,231,264. This application Nov. 4, 1980, Ser. No. 203,969

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739543

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.³ F16H *9/00*

U.S. Cl. 474—80 **1 Claim**



1. A derailleur mechanism for a chain on a bicycle and like vehicle which chain is selectively engageable with a plurality of chain wheels having a common axis of rotation comprising:

(A) a support element,

(B) mounting means for mounting said support element on said vehicle in a fixed position relative to the common axis of rotation of said chain wheels,

(C) an elongated link member,

(D) an elongated guide member, each of said link member and guide member including first and second longitudinal end portions,

(E) first and second pivot means respectively connecting said first longitudinal end portions to said support element for angular movement of said link member and guide member relative to said support element,

(F) a carrier element,

(G) third and fourth pivot means respectively connecting said second longitudinal end portions to said carrier element for angular movement of said link member and guide member relative to said carrier element,

(H) fifth pivot means connecting respective crossing portions of said link member and guide member intermediate said first and second end portions thereof for relative angular movement of said link member and guide member,

(1) said pivot means defining respective pivot axes extending in a common direction,

(2) three of said pivot means preventing significant relative translatory movement of the connected said link member and guide member and support element and carrier element transversely of the respective pivot axes,

(3) the other two of said pivot means permitting said translatory movement,

(I) a chain mover element mounted on said carrier element, and

(J) operating means for moving said link member and guide member relative to each other about the axis of said fifth pivot means.

4,439,172

CHAIN GEAR AND CRANK MOUNTING ASSEMBLY

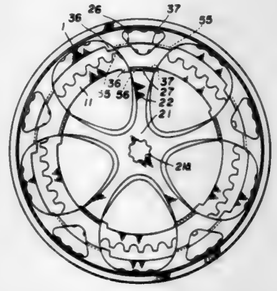
Takashi Segawa, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 972,372, Dec. 22, 1978, abandoned. This application Mar. 31, 1981, Ser. No. 249,476

Claims priority, application Japan, Dec. 28, 1977, 52-157659; Feb. 27, 1978, 53-25550

Int. Cl.³ F16H *55/30, 55/12*

U.S. Cl. 474—160 **4 Claims**



1. A chain gear and crank assembly for a bicycle comprising a crank arm having a shaft, a larger and a smaller diameter chain gear, said larger and smaller diameter chain gears having a different number of peripheral teeth, and an adapter for mounting said chain gears to said crank arm, each of said chain gears being formed in an annular shape and having at an inner periphery thereof engaging projections extending radially inwardly which function as first mounting means for mounting each said chain gear to said adapter, said adapter comprising a boss having a bore insertably engageable with said shaft of said crank arm, a plurality of legs extending radially outwardly from said boss, and at least one annular member connecting the radially distal ends of said legs, each of said legs having respective mounting portions for each of said chain gears, said respective mounting portions being axially offset for the respective chain gears and each containing a second mounting means comprising grooves respectively insertably engageable with said engaging projections of said first mounting means of said chain gears for fixing said chain gears axially offset from one another to said adapter, said annular member having a larger diameter than the diameter of said larger diameter chain gear and being displaced axially from said larger diameter chain gear to function as a chain guide.

4,439,173

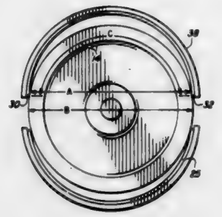
REPLACEABLE LAGGING FOR DRUM-TYPE PULLEYS

Peter Fokos, 1624 E. Redfield Dr., Tempe, Ariz. 85283

Filed Dec. 17, 1981, Ser. No. 331,525

Int. Cl.³ F16H *55/48, 55/36*

U.S. Cl. 474—191 **5 Claims**



1. A replaceable lagging section for a drum-type pulley of the type having a continuous cylindrical outer surface, said lagging section comprising an arcuate shell being a segment of a cylinder having an arcuate inner surface generally conforming to the exterior of said drum, an outer surface, opposite lateral ends and opposite longitudinal edges, said shell in an unstressed condition having a chord dimension measured on a straight line between the opposite longitudinal edges of said shell less than a corresponding dimension of the drum to which the shell is to be applied, said shell further having a facing material applied to the outer surface of said shell whereby said shell may be tightly engageable about said drum by expanding the longitudinal edges and tack welded in place at selected locations at said shell in substantially abutting relationship with other similar sections to provide a substantially continuous facing around said pulley.

4,439,174

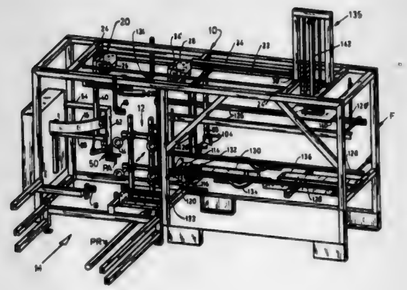
BOX-ERECTING MACHINE

Edward J. Derderian, 4514 N. Wilson, Fresno, Calif. 93704

Filed Aug. 24, 1981, Ser. No. 295,530

Int. Cl.³ B31B *5/02*

U.S. Cl. 493—125 **4 Claims**



1. A box-erecting machine comprising:

A. a machine frame including means defining a linear path extended through said machine and a box blank receiving station disposed at one end of said path;

B. box blank delivery means for delivering squared box blanks to said receiving station, said blanks being characterized by depending leading and trailing minor flaps and depending major flaps extended between the minor flaps;

C. a glue applicator station, a major flap-folding station, and a compression station arranged in mutually spaced relation and aligned within said path;

D. a reciprocating carriage frame including a rear pusher assembly for advancing box blanks from said receiving station to a rest position and a leading box blank pusher assembly for advancing box blanks from said rest position toward said compression station along said linear path;

E. means supporting said carriage for rectilinear motion including a pair of rails arranged in mutual parallelism and extended across said box blank receiving station, said glue applicator station, said major flap folding station and terminating adjacent to said compression station, a pair of mutually spaced interconnected trucks mounted on said rails and supported thereby for fore-and-aft rolling motion supporting said carriage frame for reciprocation along said rails, and means including a first air motor for driving said trucks in rolling motion along said rails;

F. a trailing minor flap tucker assembly mounted on said rear pusher assembly for forwardly infolding the trailing minor flap for each of said blanks including a pair of mutually spaced fingers, each finger of said pair being characterized by integral, normally related base and distal segments supported for pivotal displacement from an initial position to an operative position, means for displacing the distal segment from said initial position to said operative position wherein the distal segment is caused to engage the trailing minor flap and infold the flap beneath said box blank, said fingers being disposed in supporting relation with said blank when disposed in said operative position;

G. a second air motor and drive linkage interconnecting said fingers and said second air motor for pivotally displacing said fingers from said initial to said operative positions; and

H. means for rearwardly infolding the leading minor flap to a box-closing disposition comprising a leading minor flap tucker assembly including a rigid tongue of an arcuated configuration affixed to said frame and supported within said linear path adjacent to said glue application station over which each box blank is advanced as it is advanced from said receiving station to said rest position.

4,439,175

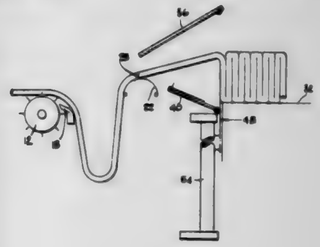
APPARATUS FOR FORMING THERMAL INSULATION BLOCKS

Anthony E. Cimochowski, Sedalia, and Brad A. Heffelmire, Littleton, both of Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed Oct. 13, 1981, Ser. No. 311,104

Int. Cl.³ B31D *5/04;* B65H *45/20*

U.S. Cl. 493—413 **12 Claims**



1. Apparatus for forming blocks of folded fibrous materials comprising:

(a) a planar support member having first and second faces;

(b) means for feeding a strip of fibrous material in a direction

generally aligned with the first face of said planar support member;

(c) a first folder vane which rotationally oscillates about a first generally fixed axis that is positioned adjacent the first face of said support member, said first folder vane engaging said strip of fibrous material and creating a fold therein by deflecting the material so that it extends toward said first face;

(d) a second folder vane which rotationally oscillates about a second generally fixed axis that is positioned adjacent the second face of said support member, said second vane engaging said strip of fibrous material and creating a fold therein by deflecting the material so that it extends away from said first face, said first and second folder vanes alternating to form a block of folded fibrous material with a centerline intermediate said folds;

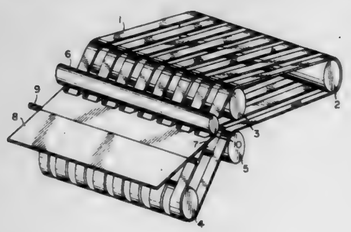
(e) a support vane which reciprocates in a plane that is generally perpendicular to said planar support member between a first position in which the support vane is in a material non-engaging position on one side of the block's centerline and a second position where at least a portion of said support vane extends to the other side of the block's centerline into engagement with said fibrous material to support said previously formed folds when the first and second folder vanes are being disengaged therefrom.

4,439,176

APPARATUS FOR FOLDING SHEET MATERIAL, PREFERABLY LAUNDRY

Jorn M. Jensen, Bern, Switzerland, assignor to Ejnar Jensen & Son A/S, Bornholm, Denmark

Filed Mar. 25, 1982, Ser. No. 361,770
Claims priority, application Denmark, Mar. 25, 1981, 340/81
Int. Cl.³ B65H 45/14
U.S. Cl. 493—419 **4 Claims**



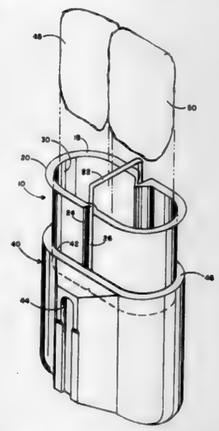
1. In apparatus for folding flexible sheet material, for example, pieces of laundry, along a folding line perpendicular to the direction in which the sheets are conveyed, said apparatus including conveyor means upon which the sheet to be folded is placed and conveyed thereby from an inlet station to at least one folding station, said folding station including lifting means for lifting a portion of the sheet from the conveyor means and moving it to a second position above the conveyor means where the sheet is pressed by the lifting means against a backing means, the improvement wherein said conveyor means at said folding station declines downwardly and forwardly in the direction of movement of the conveyor means; and said backing means comprising friction roller means for engaging and moving the sheet material; means for driving the friction roller means synchronously with the conveyor means so that a bottom portion of the roller means against which the sheet is pressed by said lifting means moves in a direction opposite to that of the conveyor means so as to reverse the direction of movement of the portion of the sheet material located downstream thereof, and there is provided downstream of the folding station support means above the downwardly declining portion of the conveyor means for receiving the leading portion of the sheet to be folded which has moved past said folding station, the rear margin of which is to be pressed by said lifting means against said roller means, the friction roller means when said lifting means presses the rear margin of said leading portion thereagainst reverses the direction of movement of the leading portion of the sheet to form a fold thereat and direct the portion of the sheet being folded down upon the downwardly declining portion of the conveyor.

4,439,177

ROTOR BUCKET LINER

George E. Conway, Newark, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 26, 1981, Ser. No. 315,091
Int. Cl.³ B04B 15/02
U.S. Cl. 494—20 **8 Claims**



1. In a centrifuge rotor for operation in a centrifuge, a combination comprising:

a swinging bucket attached to said rotor;

a thin-walled liner mounted in said bucket, said liner having an interior cavity for holding at least two flexible fluid sample holding bags;

a channel indented along the exterior sides and the bottom of said liner forming a protrusion in the interior of said liner defining a separation ridge therein;

said separation ridge dividing said liner cavity into two compartments, each adapted for receiving one of said sampleholding bags;

a handle attached to said liner for removing said liner from said bucket, said handle having an integral strap configured to snap into said channel of said liner; and

said liner having an outside flange at the upper periphery of said cavity of said liner.

4,439,178

SEALLESS CENTRIFUGE PROCESSING CHANNEL AND TUBE SYSTEM

Alfred P. Mulzet, Princeton, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,904
Int. Cl.³ B04B 11/00
U.S. Cl. 494—85 **5 Claims**

1. A limited use 2ω sealless centrifuge processing member and tube systems, in which a processing channel is clamped to a lumen tube which interconnects to nonrotating support structure via a stationary clamp—characterized—

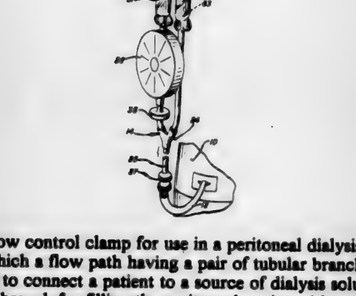
(a) a processing member;

(b) a lumen tube operatively connected to said processing member, having a processing member end and a stationary clamp end;

(c) a first reinforcing tube encasing a first portion of said lumen tube at the processing member end, having also a free end;

(d) a second reinforcing tube encasing a second portion of said lumen tube at the stationary clamp end, having also a free end;

(e) a first reinforcing tube thrust drive bearing at the free end of said first reinforcing tube; and



(f) a second reinforcing tube thrust drive bearing at the free end of said second reinforcing tube;

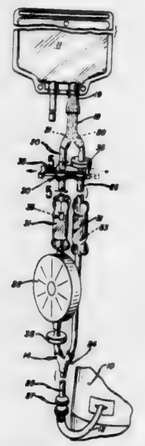
whereby the system may be mounted in a 2ω sealless centrifuge with a minimum of threading and with portions of said lumen tube supportable by said reinforcing tubes and thrust drive bearings during centrifuge operation.

4,439,179

DUAL TUBING CLAMP

Arthur Lueders, Mundelein, and Marc Bellotti, Winnetka, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 16, 1982, Ser. No. 349,274
Int. Cl.³ A61M 1/03; F16L 55/14
U.S. Cl. 604—34 **24 Claims**



1. A flow control clamp for use in a peritoneal dialysis system in which a flow path having a pair of tubular branches is provided to connect a patient to a source of dialysis solution, with one branch for filling the peritoneal cavity with solution and one branch for draining the peritoneal cavity; said clamp selectively and alternatingly preventing flow in at least one branch and for preventing simultaneous flow in both branches, said clamp comprising an elongated slide member that includes a body portion having spaced ribs to define an open branch-receiving opening adjacent each end of said ribs and a narrowed branch-grasping and closing slot intermediate said openings between the ribs, and slide housing means constructed to retain said slide member in sliding relation therewith, said housing means having a pair of aperture means through which said branches pass, said aperture means being spaced apart a distance less than the distance between the open branch-receiving openings so as to prevent simultaneous alignment between the branches and both open branch-receiving openings, so that both branches cannot be open at the same time.

4,439,180

FLOWABLE SUBSTANCE APPLICATOR WITH PLUNGER PROJECTION

Larry H. Kline, 18 Broad St., Suite 805, Charleston, S.C. 29401

Continuation-in-part of Ser. No. 300,037, Sep. 8, 1981, Pat. No. 4,365,631. This application Sep. 17, 1982, Ser. No. 419,223
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.³ A61M 3/00
U.S. Cl. 604—54 **24 Claims**



1. A device for holding a flowable substance and applying said flowable substance to an orifice of a body comprising an applicator section comprising:

a. a nozzle, sized and shaped to fit within said orifice of said body, with a sloped base, an elongated section, and a plurality of openings in said sloped base and said elongated section;

b. a plunger section within said device, sized and shaped to fit within said sloped base and said elongated section of said nozzle, extending from said sloped base of said nozzle toward the tip of said nozzle;

c. said nozzle and said plunger section being spaced apart to form a cavity which is sized and shaped to fit between said nozzle and said plunger section from said sloped base through said elongated section, said cavity operative to hold said flowable substance; and

d. a plunger projection secured to said plunger section and operative to move said plunger section toward the interior wall of said nozzle,

whereby when said nozzle is placed in said orifice and said plunger projection is pressed toward said tip of said nozzle, said flowable substance will be forced from said cavity through said plurality of openings in said nozzle and out from said device into said orifice.

4,439,181

POLYOL-HORMONE MIXTURE FOR USE IN CHRONIC PARENTERAL HORMONE ADMINISTRATION

Perry J. Blackshear, Cambridge; John L. Palmer, Watertown, both of Mass., and Thomas D. Rohde, Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jan. 26, 1981, Ser. No. 228,097
Int. Cl.³ A61M 5/00
U.S. Cl. 604—56 **14 Claims**

1. A method of maintaining the fluidity of protein solutions for parenteral administration at a low flow rate to a chronically ill patient suffering from a protein-deficiency disease from a drug delivery device that depends on the fluidity of the infu-

sate for proper functioning, without loss of biological activity, which method comprises:

(A) dissolving an effective amount between about 10 and 90 percent by weight/volume, sufficient to prevent precipitation of the protein, of a biocompatible C-4 to C-18 polyol in the protein solution prior to injection into the drug storage chamber of the delivery device, and

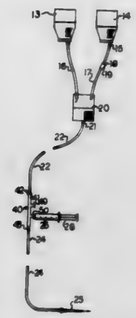
(B) charging the drug storage chamber of the drug delivery device with said protein-polyol solution.

4,439,182

VALVULAR INFUSION DEVICE

Shing S. J. Huang, 521 Cape May St., Englewood, N.J. 07631

Filed Mar. 15, 1982, Ser. No. 357,854
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—85 **17 Claims**



1. A valvular infusion device for the administration of a parenteral fluid and at least one supplemental fluid or drug for intravenous infusion to a patient, said valvular infusion device having non-movable valve means positioned in a valve chamber for the one-way flow of the supplemental fluid into the parenteral fluid stream, said device comprising:

a. a main conduit for generally the continual flow therethrough of a parenteral fluid, said main conduit being generally an elongated, walled passage having an interior and an exterior wall surface, an inlet end and an outlet end, said main conduit further having at least one aperture which extends through said passage wall from said interior to said exterior wall surface and which is disposed between said inlet end and said outlet end of said conduit,

b. at least one second conduit extending from and being in communication with said main conduit for receiving and the flow therethrough of a supplemental fluid or drug, said second conduit being a walled passage having an inlet portion, an outlet portion and an inwardly extending stricture therebetween, said outlet portion of said second conduit extending generally outwardly from and congruous with said main conduit and being disposed about said aperture in said main conduit,

c. a valve chamber in said second conduit for receiving a non-movable, one-way valve therein, said chamber being disposed at said outlet end of said second conduit in adjacent proximity and about said aperture of said main conduit said valve chamber being generally defined by the exterior surface of said wall structure about said aperture of said main conduit exposed within said second conduit and said inwardly extending stricture within said second conduit, and,

d. a non-movable, compressible and resilient valve means for permitting one-way flow of a supplemental fluid or drug from said inlet portion of said second conduit through said valve chamber and through said aperture in said main conduit wall and into said main conduit, said valve means being located in said valve chamber in a sealing, contact configuration with said second conduit stricture and said exterior wall structure surface of said main conduit disposed within said valve chamber, whereby, a supplemental fluid or drug under pressure introduced into said inlet portion of said second conduit interrupts said sealing contact of said valve means by compressing said valve means into itself in said valve cavity, and to, thereby, permit the passage of the supplemental fluid or drug, between the cavity walls and the valve means by compressing it, and through said main conduit wall aperture for transfer with the parenteral fluid into the vein of a patient, and, whereby, subsequent to the release of the pressure of the supplemental fluid said compressible and resilient valve reseals said stricture in said second conduit.

4,439,183

PARENTERAL AGENT DISPENSING EQUIPMENT

Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 310,047, Oct. 9, 1981. This application May 13, 1982, Ser. No. 377,831
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—85 **6 Claims**



1. A formulation chamber for use in a parenteral delivery system, comprising:

(a) a wall surrounding an internal lumen;

(b) an inlet for admitting a fluid into the chamber;

(c) an outlet for letting a fluid leave the chamber; and,

(d) an erodible delivery system in the chamber, comprising:

(1) a matrix formed of a parenterally-acceptable material that erodes in the presence of a parenteral fluid over time, and;

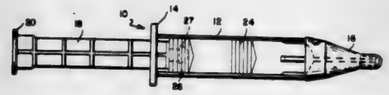
(2) a beneficial agent dispersed in the matrix that is delivered by the erodible delivery system into parenteral fluid that enters the formulation chamber.

4,439,184

TWO-DOSE SYRINGE

Robert P. Wheeler, Keene, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.

Filed May 3, 1982, Ser. No. 373,867
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—90 **18 Claims**



1. A syringe for delivering two separated bodies of fluid, said syringe comprising:

a first piston made of a compressible, resilient material for separating said two bodies of fluid;

a second piston for pushing said two bodies of fluid out of said syringe; and

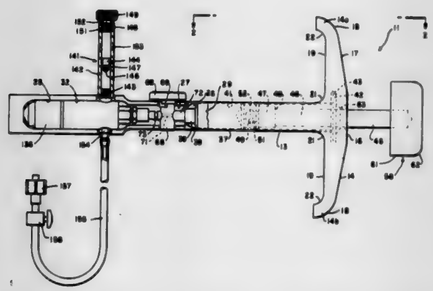
a walled fluid chamber having a no-pass zone in which said pistons can slide and which has a cross section shaped so that each of said pistons can conform to its wall, preventing the passing of fluid around said pistons when they are in said no-pass zone; an output zone to direct fluid pushed out of said syringe by said pistons; and a bypass zone, for receiving said first piston, which connects said no-pass and output zones and which has at least one ridge projecting into said fluid chamber from its wall to push a portion of said first piston away from said wall when said first piston enters said bypass zone so that the fluid between said first and second pistons can pass around said first piston to said output zone.

4,439,185

INFLATING AND DEFLATING DEVICE FOR VASCULAR DILATING CATHETER ASSEMBLY

Ingemar H. Lundquist, Oakland, Calif., assignor to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.

Filed Oct. 21, 1981, Ser. No. 313,383
Int. Cl.³ A61M *29/00, 25/00*
U.S. Cl. 604—97 **16 Claims**



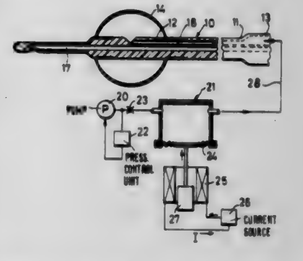
1. In an inflating and deflating device adapted to be used by a human hand, a housing, a syringe carried by the housing, said syringe comprising a syringe body mounted in the housing and having an outlet through which liquid can pass, a piston slidably mounted in said body and forming a sealing engagement with the body, a piston rod secured to said piston and extending out of said body, a tubular member, connecting means carried by the housing connecting said tubular member to the outlet of said syringe body, said connecting means including valve means for controlling the flow of fluid between the outlet of the syringe body and the tubular member, pressure gauge means carried by the housing and in communication with the tubular member for measuring the pressure of the fluid in the tubular member and handle means carried by the housing and secured to said syringe for causing relative movement between the piston and the syringe body, said handle means including first and second portions movable with respect to each other, said first portion being secured to one of said piston rod and said syringe body and the other said portions being secured to the other of said piston rod and said syringe body, said first portion being of a size so as to be adapted to engaged by all of the fingers of the hand and the second portion being adapted to be engaged by the palm of the hand during the time that the fingers of the hand are engaging the first portion whereby a force to cause relative movement between the piston and the syringe body can be created by the hand.

4,439,186

DILATION DEVICE

Adolf Kuhl, Finkenhof 3b, D-3000 Hannover 61, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 408,831
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138620
Int. Cl.³ A61M *25/00*; A61B *19/00*
U.S. Cl. 604—99 **8 Claims**



1. A dilation device for dilating or closing blood vessels and other body cavities comprising:

a catheter having a radially expandable dilation element, said element having a volume-pressure characteristic including a first zone in which the rate of increase in volume with increasing pressure is relatively low, a second zone in which said rate is substantially higher and substantially linear, and an inflection point separating said first and second zones, and

a source of fluid pressure connected to said catheter,

control means for said fluid pressure source for producing a pulsating pressure between a lower value lying closely below said inflection point and an upper value lying in said second zone,

said dilation element having a structure capable of responding to pressure pulses in said pulsating pressure at a frequency of 0.5 to 3 Hz.

4,439,187

HYPODERMIC SYRINGE

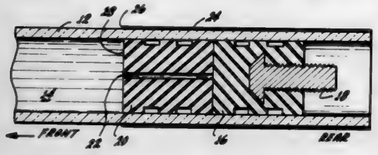
Ida M. Butterfield, Santa Maria, Calif., assignor to Butterfield Group, Santa Maria, Calif.

Filed Mar. 31, 1982, Ser. No. 364,006
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—111 **11 Claims**

1. An improvement for use in a hypodermic syringe cartridge of the type having a front end to which a hypodermic needle is normally attached and having a rear end opposite the front end, and in which a non-retractable stopper having a longitudinal passage, a front end and a rear end is located within a tubular member in front of a drive piston having a front end and a rear end, the cartridge normally supplied with the rear end of the non-retractable stopper substantially in

contact with the front end of the drive piston near the rear end of the cartridge, the improvement comprising:

substantially opaque means being a permanent part of the tubular member of the hypodermic syringe cartridge as supplied for use and so located axially as to obstruct from



view the non-retractable stopper when the non-retractable stopper is in its original position and having a front end that terminates at the front end of the non-retractable stopper when the non-retractable stopper is in its original position so that any forward movement of said non-retractable stopper will expose to view a portion of the non-retractable stopper.

4,439,188

TUBE CONNECTOR

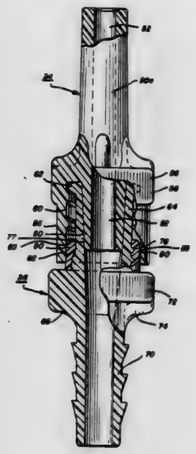
T. Michael Dennehey, Arlington Heights; Richard J. Greff, Ingleside, and Ludwig Wolf, Jr., Crystal Lake, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 187,008, Sep. 15, 1980, Pat. No. 4,346,703, which is a continuation-in-part of Ser. No. 27,419, Apr. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 5,748, Jan. 23, 1979, abandoned. This application May 13, 1982, Ser. No. 378,029

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ A61M 5/00

U.S. Cl. 604—283 12 Claims



8. A luer lock connector system which comprises a female luer lock connector in locked relation with a male luer lock connector, said female luer lock connector comprising a main tubular member sealingly receiving said male luer lock connector within the bore of said main tubular member, said main tubular member being provided with flange shaped protrusion means extending radially outwardly, the outer wall of said female tubular member being provided with an annular area spaced from the ends thereof and also spaced from the protrusion means, said annular area defining an enlarged diameter for annular engagement with the male connector to form a sealing area, said female luer lock connector being free of an integrally attached sleeve surrounding said annular area and main tubular member; said male luer lock connector having a central tubular luer portion defining an axial bore projecting in sealing relation into the bore of the main tubular member, said male luer lock connector also defining an outer sheath which surrounds both said central tubular luer portion and the main tubular member and is positioned beyond said central tubular luer portion to circumferentially enclose the entire length of said central tubular luer portion within said outer sheath, said outer sheath having a generally circular cross-sectional configuration and defining a free annular end, a portion of said outer sheath defining a threaded internal wall portion in locking engagement with the flange-shaped protrusion means of the female luer lock connector, said threaded internal wall portion being spaced from the free annular end of said sheath by a portion of the inner surface of said sheath which defines an annular sealing area free of threads, said annular sealing area surrounding said flange-shaped protrusion means in annular sealing relation thereto, said outer sheath being made of a resiliently deformable material and said female luer lock connector being made of rigid material.

4,439,189

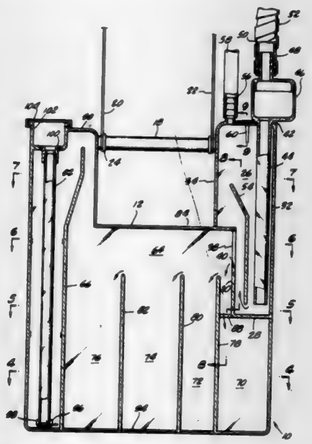
PLEURAL DRAINAGE SYSTEM

John E. Sargeant, Los Alamitos, and Jack L. Hoffa, Brea, both of Calif., assignors to Bentley Laboratories, Inc., Irvine, Calif.

Filed Jun. 18, 1981, Ser. No. 274,788

Int. Cl.³ A61M 1/00

U.S. Cl. 604—317 2 Claims



1. A pleural drainage system, comprising

a container having a first cavity, a second cavity, and a wall therebetween, said wall having a port, the lower edge of said port defining a first level, said port allowing unrestricted fluid communication above said first level between said first and second cavities;

an inlet tube extending downwardly into said first cavity to an opening at a second level below said first level;

a third cavity in said inlet tube, said third cavity having a volume greater than the volume of said first cavity below said first level; and

a vacuum source above said first level.

4,439,190

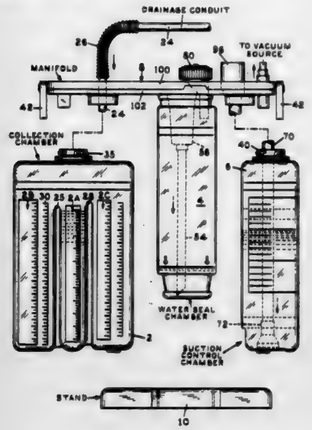
UNDERWATER DRAINAGE DEVICE

Donald E. Protzmann, Litchfield; Ronald P. Roveda, Monroe, both of Conn., and John Uhoch, Warwich, R.I., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Apr. 27, 1981, Ser. No. 257,953

Int. Cl.³ A61M 1/00

U.S. Cl. 604—319 28 Claims



15. In an underwater drainage device having a collection chamber adapted to be connected in fluid communication with the pleural cavity of a patient, a liquid seal chamber in fluid communication with said collection chamber and a suction chamber in fluid communication with said seal chamber; retarding means comprising:

(a) a water seal tube extending into said liquid seal chamber in fluid communication with said collection chamber;

(b) an open ended cylinder connected to said water seal tube;

(c) a liquid retarding frame means having a plurality of vertical struts interconnected by a plurality of circular support means adapted to position within said open ended cylinder;

(d) a membranous material connected to said frame so as to retard the flow of liquid from the water seal chamber towards said collection chamber.

4,439,191

OSTOMY BAG COVER

Elizabeth R. Hogan, 309 Dartmore P.O. Box 194, Whitmore Lake, Mich. 48189

Filed Jul. 14, 1982, Ser. No. 397,994

Int. Cl.³ A61F 5/44

U.S. Cl. 604—332 6 Claims



1. A combination cover and ostomy bag of the type having an inlet, means for connecting the inlet in communication with a stoma on a body and a closeable outlet located at the bottom of the ostomy bag for emptying the contents therefrom, the combination comprising:

a ostomy bag;

a hollow body;

a first aperture formed in the hollow body and adapted to be disposed in registry with the inlet of the ostomy bag and to receive the connecting means therethrough;

a second aperture means formed in the lower portion of the hollow body, the second aperture means disposed in proximity with the outlet of the ostomy bag so as to foldably receive the outlet of the ostomy bag therethrough; and

means for releasable closing the second aperture in the hollow body to enable the oulet of the ostomy bag to be stored within the hollow body and passed through the second aperture to empty the contents of the ostomy bag therefrom.

4,439,192

CONTAINER FOR LIQUIDS FOR USE IN MEDICINE AND SURGERY

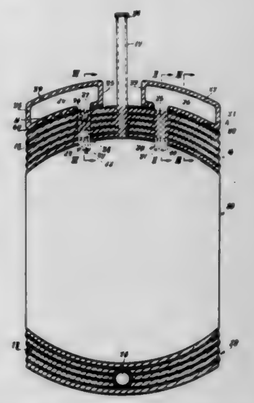
Hendrik J. Leurink, Lisse, Netherlands, assignor to Stichting Centraal Laboratorium Van De Bloedtransfusiedienst Van Het Nederlandse Rode Kruis, Amsterdam, Netherlands

Continuation of Ser. No. 95,975, Nov. 20, 1979, abandoned, which is a continuation of Ser. No. 869,102, Jan. 13, 1978, abandoned, which is a continuation of Ser. No. 690,731, May 27, 1976, abandoned. This application Oct. 16, 1980, Ser. No. 197,476

Claims priority, application United Kingdom, May 30, 1975, 23632/75

Int. Cl.³ A61M 5/00

U.S. Cl. 604—408 1 Claim



1. A container for liquids, comprising two layers of flexible plastic film, said film layers being joined together to define an enclosure for liquid, said joining being accomplished by a peel resistant fusion weld, at least one duct of plastic material sealed between said film in an end weld region, said duct communicating at its inner end with the interior of said enclosure and at its outer end with the interior of an expansion chamber formed by an area within said end weld region in which said film is left unwelded, said duct having internal obstruction means including a rupturable sealing membrane extending across it spaced inwardly from said outer end of said duct thereby isolating from said liquid enclosure the portion of the duct interior which extends outwardly from said membrane, said expansion chamber being dimensioned to accommodate during sterilization, without pressure induced film separation of said welds, expansion of gas contained in the combined space of said expansion chamber and said portion of the duct outwardly of said membrane, means for defining a tear line in said film so that said expansion chamber can be removed to expose said outer

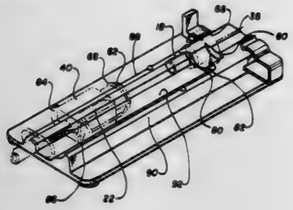
end of said duct by tearing away said film outwardly of said tear line, said tear line being interrupted by the duct and the duct being locally thinned in this region to facilitate rupture thereof when the expansion chamber is torn away, said obstruction means in said duct being spaced inwardly from said tear line and from the outer end of the seal between said duct and said film.

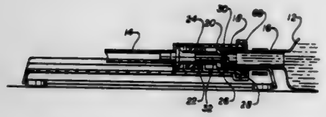
4,439,193

APPARATUS FOR CONNECTING MEDICAL LIQUID CONTAINERS

Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 19, 1982, Ser. No. 350,468
Int. Cl.³ A61M 5/00
U.S. Cl. 604—411 **23 Claims**





1. An improved apparatus for aseptically connecting medical liquid containers to a length of flexible tubing comprising:
- a tubular port member extending from the medical liquid container;
- a pierceable diaphragm positioned within and sealing said tubular port member;
- a hollow tubular piercing pin connected at its proximal end to said length of flexible tubing and having a sharpened tip at its distal end adapted for penetration of said pierceable diaphragm and further describing a plurality of flange members extending laterally therefrom;
- an alignment tray having a cavity integrally formed therein adapted for the reception and fixed positioning of said tubular port member therein;
- a clasp member constructed and arranged for the selective enclosure of said piercing pin and retention of said piercing pin within said tubular port member, said clasp member including first and second substantially C-shaped portions hingedly connected to each other and further including latching means at opposing ends thereof;
- a tubular shroud distally extending from said clasp member constructed and arranged for telescopic connection to said tubular port member;
- threading means integrally formed and helically arrayed about said tubular shroud;
- lock nut means concentrically disposed about said tubular port member, constructed and arranged for threadable engagement with said threading means on said tubular shroud;
- a linear trough integrally formed along the base of said alignment tray, said trough being constructed and arranged so as to substantially conform to the width and depth of said clasp member; and
- a lock nut cavity integrally formed in said alignment tray, constructed and arranged for clearance from said lock nut when said tubular port member is positioned within said alignment tray;

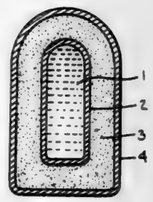
whereby said clasp member with said hollow tubular piercing pin contained therein may be snugly received in and linearly advanced along said linear trough in substantial axial alignment with said tubular port member so that said piercing pin penetrates said pierceable diaphragm and said threading means on said tubular shroud threadably engages said lock nut so that when said lock nut is rotated within said lock nut cavity, said container will be fixedly attached to said flexible tubing without touch contamination of said port member or said piercing pin.

4,439,194

WATER AND DRUG DELIVERY SYSTEM FOR SUPPOSITORY USE

Richard J. Harwood, Bensalem, and Joseph V. Bondi, Collegeville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 8, 1981, Ser. No. 300,370
Int. Cl.³ A61L 15/06
U.S. Cl. 604—890 **5 Claims**



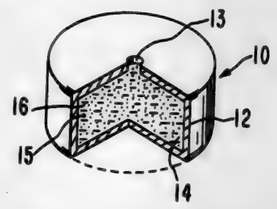
1. A drug delivery system comprising an aqueous core in a waxy housing, which housing melts at body temperature, surrounded by a matrix, shaped and sized for rectal or vaginal suppository use, comprising drug which is solubilized by the aqueous solution contained in the waxy core and water soluble or dispersible excipients.

4,439,195

THEOPHYLLINE THERAPY

David Swanson, Palo Alto, and David Edgren, El Granada, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 196,219, Oct. 14, 1980, Pat. No. 4,326,525. This application Feb. 1, 1982, Ser. No. 344,785
Int. Cl.³ A61L 15/06
U.S. Cl. 604—890 **4 Claims**



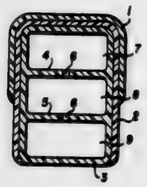
1. An oral, osmotic device for the controlled delivery of a beneficial drug, comprising:
- (a) a shaped wall formed of a member selected from the group comprising cellulose acrylate, cellulose diacylate, cellulose triacylate, and mixtures thereof, which wall is permeable to the passage of an external fluid and substantially impermeable to the passage of drug, the wall surrounding and forming:
- (b) a compartment containing the beneficial drug theophylline, and a buffer that is soluble in fluid imbibed into the compartment and provides an environment in the compartment that aids in the delivery of theophylline from the device, the buffer a member selected from the group consisting of sodium glycinate, sodium citrate, sodium tartrate, sodium succinate, sodium potassium tartrate, and sodium maleate, which buffer interacts with the drug theophylline and produces the salt of the drug theophylline; and,
- (c) a passageway in the wall for delivering the salt of the drug theophylline from the compartment at a controlled rate over a prolonged period of time.

4,439,196

OSMOTIC DRUG DELIVERY SYSTEM

Takeru Higuchi, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 18, 1982, Ser. No. 359,447
Int. Cl.³ A61K 9/22
U.S. Cl. 604—890 **14 Claims**



1. An osmotic delivery system shaped and sized for oral ingestion, implantation, rectal, vaginal or ocular insertion, for delivery of a drug or other beneficial substance comprising a compartment consisting of 2 or more chambers in series, the chambers being adapted to house osmotically active agents, adsorption adjuvants, drugs, and pro-drugs, the chambers being formed by an external shell and 1 or more chamber-dividing walls, each chamber-dividing wall having a micro-orifice connecting adjacent chambers, the external shell and chamber-dividing walls being of a rigid microporous material; one or more succesive overlayers of a semipermeable membrane, the first overlayer completely covering the external shell of all but one chamber and substantially covering the external shell of the one chamber leaving exposed a microporous drug-emitting surface; and each successive overlayer completely covering all but one more chamber and substantially covering the one more chamber; and optionally including a quick release loading dose of drug external to and covering the microporous drug-emitting surface.

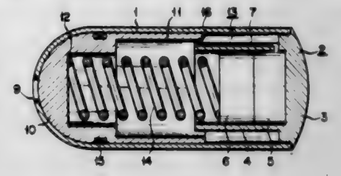
4,439,197

MEDICAL CAPSULE DEVICE

Mikio Honda; Koichi Matsui; Kitijiro Kohri; Kazuo Misawa, and Koji Kambara, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,112
Claims priority, application Japan, Mar. 23, 1981, 56-41878
Int. Cl.³ A61M 7/00
U.S. Cl. 604—891 **5 Claims**

1. A medical capsule device comprising:
- a capsule body provided with a chamber inside and a communicating path for communicating the chamber with the outside;
- a movable member arranged in the chamber and movable between a liquid-pushing position at which the volume of said chamber is made smallest and a liquid-receiving position at which the volume of said chamber is made largest;
- a coiled operating member made of a shape memory alloy whose crystalline structure shows martensite or mother phase according to changes of its temperature for selectively moving the movable member to the liquid-receiving or liquid-pushing position according to temperature changes of said operating member itself; and
- a temperature adjustment mechanism arranged in the capsule body including a power supply source electrically connected to the operating member, and a switching



circuit connected between the power supply source and the operating member and capable of being remotely operated to start or stop the flow of current from the power supply source to the operating member, said temperature adjustment mechanism adjusting the temperature of said operating member to selectively move the movable member to the liquid-pushing or liquid-receiving position.

4,439,198

BIODEGRADABLE OCULAR INSERT FOR CONTROLLED DELIVERY OF OPHTHALMIC MEDICATION

Alan H. Brightman, II, and Michael C. Theodorakis, both of Champaign, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Jul. 9, 1981, Ser. No. 281,911
Int. Cl.³ A61M 7/00
U.S. Cl. 604—894 **4 Claims**



1. An ocular insert adapted for attachment to the third eyelid of a mammalian animal comprising a substantially disc-shaped reservoir impregnated with an ophthalmic drug in amount and form to provide continuous, controlled administration of a pre-determined, therapeutically effective dosage of drug to the eye over a prolonged period of time; and a fixed spear of biodegradable material protruding from the reservoir for piercing the third eyelid and attaching the insert thereto, said biodegradable material being selected from the group consisting of polylactic acid, polylactic glyconic acid, polysaccharide derivatives, polyaminoacids, cellulose, and ethyl cellulose.

4,439,199

METHOD FOR ADMINISTERING IMMUNOPOTENTIATOR

Alfred A. Amkraut, and Agusto B. Martins, both of Palo Alto, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 122,124, Feb. 19, 1980. This application Mar. 25, 1982, Ser. No. 361,895
Int. Cl.³ A61L 15/06
U.S. Cl. 604—894 **21 Claims**

1. A method for potentiating the immune response of a host, which method consists essentially of administering to a host needing potentiation of the immune response an immunopotentiating agent, said agent administered from a therapeutic delivery system that limits the contact of the host with the agent until the agent is released oil-free from the system, thereby

lessening the incidence of local inflammation, fever and adverse biological response of the host to the agent, which agent is administered in a therapeutically effective amount of at least one picogram for a prolonged period of time of at least 12 hours for potentiating the immune response.

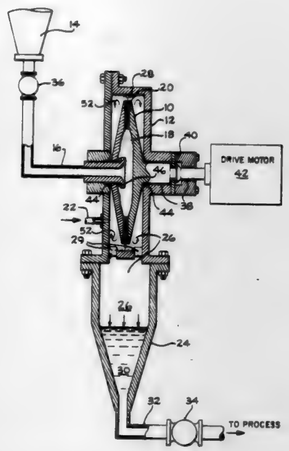
4,439,200

SINGLE STAGE HIGH PRESSURE CENTRIFUGAL SLURRY PUMP

John W. Meyer, Palo Alto; John H. Bonin, Sunnyvale, and Arnold D. Daniel, Alameda, all of Calif., assignors to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Dec. 14, 1981, Ser. No. 330,469
Int. Cl.³ B65G *53/30*
U.S. Cl. 406—99 **2 Claims**

1. A single stage high pressure centrifugal slurry pump for feeding a slurry to a high pressure environment comprising: a housing, an impeller rotatability mounted within said housing; said housing providing substantial clearance for the impeller; means for feeding a slurry consisting of finely divided solids suspended in a liquid to the center of said impeller; said impeller further including passages communicating from the center of said impeller to the periphery of said impeller whereby the rotation of said impeller drives the slurry from the center of said impeller through the passages to the interior of said housing; means for feeding compressed gas to the interior of said housing whereby the rotation of said impeller causes the slurry to be driven away from the impeller and the compressed gas to form a gas bubble immediately surrounding said impeller, said impeller passages further defined as terminating in convergent nozzles, said nozzles accelerating the slurry flow sufficiently to produce a velocity great enough to make the slurry flow stable



against upstream incursion of gas bubbles from the area immediately surrounding said impeller into said passages.

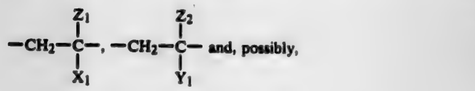
4,439,201

PROCESS FOR RETANNING LEATHER WITH ACRYLIC-BASED OLIGOMERS

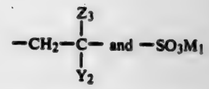
Alain Lauton, Saint-Louis, France, and Albert Würmli, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,114
Claims priority, application Switzerland, Mar. 6, 1981, 1528/81; Dec. 22, 1981, 8201/81
Int. Cl.³ C14C *3/22, 3/28*
U.S. Cl. 8—436 **7 Claims**

1. A process for retanning chrome-tanned leather, which process comprises treating the leather with an aqueous solution containing, as tanning agent, an oligomer which has an average molecular weight no greater than 14,000 and which contains structural units of the formulae



and, possibly,



wherein X_1 is —CN, Y_1 is —COOH or —$COOM_2$, Y_2 is —$CONH_2$, —CH_2OH, —OCH_3 or —OC_2H_5, each of Z_1, Z_2 and Z_3 is hydrogen, methyl or ethyl, and each of M_1 and M_2 is an amine cation, an ammonium cation or an alkali metal cation.

4,439,202

EMBROIDERED TRANSFER AND METHOD OF MAKING SAME

Howard Sernaker, Wynnewood, Pa., assignor to Virginville Patents, Inc., Virginville, Pa.

Filed Jun. 15, 1978, Ser. No. 916,018
Int. Cl.³ D06P *1/16, 1/18, 3/36*
U.S. Cl. 8—471 **20 Claims**

1. A method of making an embroidered transfer or emblem comprising the steps of:

(a) embroidering a pattern on a portion of a substrate while using thread free from oil and with said thread being of a single color and in an amount so that a portion of the pattern is sculptured by having a greater thickness than another portion of the pattern,

(b) separating the pattern and its associated substrate portion from the remainder of the substrate,

(c) providing a transfer print on paper with a dyestuff of at least two different colors and capable of subliming under heat and pressure or vacuum,

(d) registering portions of the print with mating portions of said pattern,

(e) transferring color from said print as a gas to the warp side of the pattern while applying sufficient heat to sublime said dyestuff.

4,439,203

PROCESS FOR IMPROVING THE WETFASTNESS OF DYEINGS, PRINTINGS AND OPTICAL BRIGHTENINGS ON CELLULOSIC SUBSTRATES AND COMPOSITIONS USEFUL THEREFOR

James R. Runyon, Oberwil, and Salvatore Valenti, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed May 10, 1982, Ser. No. 376,901
Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119115; May 18, 1981, 3119672; Jun. 15, 1981, 3123664
Int. Cl.³ C08G *12/10;* D06P *5/22;* D06M *15/54*
U.S. Cl. 8—496 **24 Claims**

1. A process for improving the fastness properties of a dyestuff or optical brightener on a substrate comprising hydroxy group-containing fibers, which process comprises applying to a dyed, printed or brightened substrate a composition comprising

IV. a water soluble precondensate produced by reacting (A) with (B),

V. a water-soluble precondensate produced by reacting (A) and (B) together with (E),

VI. a water-soluble precondensate produced by reacting (A) with (C) in an aqueous medium at 20°–60° C.,

VII. a water-soluble precondensate produced by reacting (A) and (C) together with (E),

VIII. a water-soluble precondensate produced by reacting (A) with (D), or

IX. a water-soluble precondensate produced by reacting (A) and (D) together with (E),

each of V, VI, VII, VIII and IX being in combination with a catalyst (F) and IV optionally being in combination with a catalyst (F) wherein

(A) is the product of reacting a mono- or polyfunctional primary or secondary amine with cyanamide, dicyandiamide, guanidine or biguanidine; with the proviso that up to 50 mole % of the cyanamide, dicyandiamide, guanidine or biguanide may be replaced with a dicarboxylic acid or a mono- or di-ester thereof, said product (A) containing reactive hydrogen atoms bound to nitrogen,

(B) is an epihalohydrin or a precursor thereof,

(C) is formaldehyde or a formaldehyde precursor,

(D) is a dihydroxyalkyleneurea or a methyl ether thereof, followed by formaldehyde or a formaldehyde precursor

(E) is a member selected from the group consisting of N,N'-dimethylol-4,5-dihydroxy-ethyleneurea, N,N'-dimethylol-4,5-dimethoxy-ethyleneurea, N,N'-dimethylol-4-methoxy-5,5-dimethyl-propyleneurea, N,N'-dimethylol-carbamates and the ethers of said compounds, and

(F) is a catalyst for the cross-linking of N-methylol compounds of the type (E) above,

and subsequently carrying out a cross-linking step.

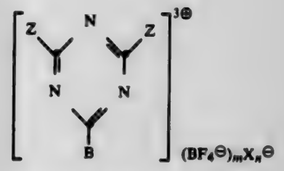
4,439,204

DYE SALTS

Willy Stingelin, Reinach, and Peter Loew, Münchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

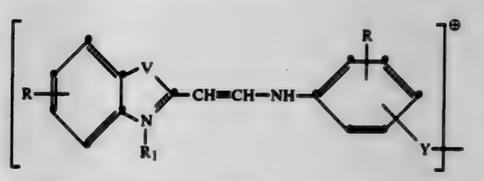
Filed Aug. 30, 1982, Ser. No. 412,741
Claims priority, application Switzerland, Sep. 11, 1981, 5899/81
Int. Cl.³ C08K *5/34;* C09B *23/16*
U.S. Cl. 8—497 **10 Claims**

1. A dye salt of the formula I



(I)

wherein Z is a radical of the formula



in which R is hydrogen, unsubstituted or substituted C_1–C_4al-

kyl, unsubstituted or substituted C_1–C_4alkoxy, the —NO_2 group, unsubstituted or substituted acylamino, or is halogen or the —CN group, R_1 is unsubstituted or substituted C_1–C_4alkyl or is C_3–C_4alkenyl, V is a sulfur atom or the group



wherein both radicals R_1 may be linked together to form a carbocyclic 5- or 6-membered ring, and Y is —NH—, —NR_1, —O— or —S—; B has the same meaning as Z or is a cationic radical which differs from Z, X is an anion other than $BF_4\ominus$, m is 1 to 3 and n is 0 to 2.

4,439,205

AQUEOUS LIQUID DYE COMPOSITION: STORAGE STABLE REACTIVE DYE WITH REDUCTION INHIBITOR

Naoki Harada, Ibaraki, and Sadaharu Abeta, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 20, 1981, Ser. No. 323,365
Claims priority, application Japan, Dec. 22, 1980, 55-182408
Int. Cl.³ C09B 67/26
U.S. Cl. 8—527 **12 Claims**

1. An aqueous liquid dye composition consisting essentially of 5 to 35% by weight of a reactive dye, 0.05 to 30% by weight of at least one reduction inhibitor selected from sodium or potassium nitrite, sodium or potassium chlorate, sodium or potassium perchlorate and sodium or potassium percarbonate, and water.

4,439,206

DYEING PROCESS WITH REACTIVE DYES AND GLYCIDYL COMPOUND

Dietrich Hildebrand, and Udo W. Hendricks, both of Odenthal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

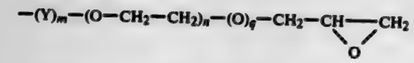
Filed Nov. 3, 1982, Ser. No. 439,099
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147153
Int. Cl.³ D06P 1/64
U.S. Cl. 8—543 **7 Claims**

1. Process for dyeing fibres by the exhaustion principle, characterized in that a reactive dyeing liquor is used which, in addition to the reactive dyestuff or the reactive dyestuff mixture, contains one or more salts, at least one compound having a glycidyl radical, and, if appropriate further auxiliaries, further characterized in that exhaustion liquors are used which contain a compound of the general formula

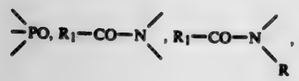
$$Z[Q]_p$$

wherein

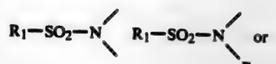
Q denotes a radical of the formula

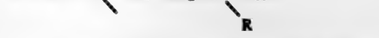


Z denotes a 1-4-valent aliphatic hydrocarbon radical which can be interrupted by S atoms, a cycloaliphatic hydrocarbon radical, a saturated heterocyclic radical or the groups



-continued

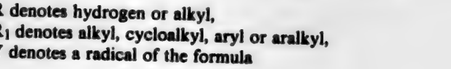




R denotes hydrogen or alkyl,

R_1 denotes alkyl, cycloalkyl, aryl or aralkyl,

Y denotes a radical of the formula



A denotes alkylene or arylene,

m denotes 0 or 1,

n denotes 0–10,

q denotes 0 or 1 and

p denotes 1–4.

4,439,207

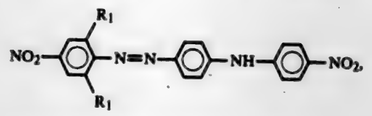
STABLE DISPERSE DYE COMPOSITIONS COMPRISING AT LEAST TWO MONOAZO DYES

Ruedi Altermatt, Buckten, and Hans Jakob, Oberwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 5, 1982, Ser. No. 405,500
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131270
Int. Cl.³ C09B 67/38; D06P 1/18
U.S. Cl. 8—639 **20 Claims**

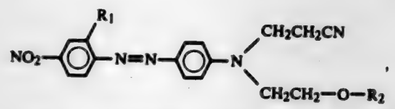
1. A disperse dye composition comprising

(a) 20–55% by weight of a dye of the formula



wherein each R_1 is independently halo,

(b) 5–40% by weight of at least one dye of the formula



wherein R_1 is halo, and R_2 is hydrogen, (C_1–$_4$alkyl)carbonyl or benzoyl, and

(c) 30–60% by weight of (i) a dispersing agent, (ii) a mixture of dispersing agents, (iii) a mixture of at least one dispersing agent and at least one other additive or dye or (iv) a mixture of at least one dispersing agent, at least one other additive and at least one other dye,

with the proviso that Components (a), (b) and (c) together constitute 100% of the dry weight of the composition.

4,439,208

METHOD FOR IMPROVING THE FASTNESS OF DYEINGS WITH BASIC DYES ON CELLULOSIC SUBSTRATES

Helmut Moser, Oberwil, and Tibor Robinson, Birsfelden, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jun. 22, 1982, Ser. No. 391,014
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1981, 3124400; Jun. 22, 1981, 3124472; Jun. 22, 1981, 3124477
Int. Cl.³ D06P 3/58; D06M 15/54
U.S. Cl. 8—556 **27 Claims**

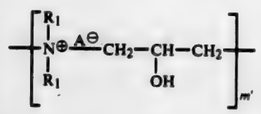
1. A method for improving the fastness of a dyeing or printing made with a basic dyestuff on a cellulosic fibrous substrate which comprises applying to the substrate, either in admixture with or subsequently to the basic dyestuff, a fixing agent comprising:

I. a water-soluble precondensate of (A) with (C),
II. a mixture of (A) and (C),
III. a water-soluble precondensate of (A) with (D),
IV. a mixture of (A) and (D),
V. a water-soluble precondensate of (A) with (C) and (D),
VI. a mixture of (A), (C) and (D),
VII. a water-soluble precondensate of (B) with (C),
VIII. a mixture of (B) and (C),
IX. a water-soluble precondensate of (B) with (D),
X. a mixture of (B) and (D),
XI. a water-soluble precondensate of (B) with (C) and (D) or,
XII. a mixture of (B), (C) and (D),

wherein

(A) is the product of reacting a mono- or polyfunctional primary or secondary amine with cyanamide, dicyandiamide, guanidine or biguanidine, with the proviso that up to 50 mole % of the cyanamide, dicyandiamide, guanidine or biguanidine may be replaced with a dicarboxylic acid or a mono- or di-ester thereof, said product (A) containing reactive hydrogen atoms bound to nitrogen,

(B) is a quaternary polyalkylene polyamine having recurring units of the formula II'



II'

where

R_1 is C_1–$_4$alkyl

m' is 20–30 and,

$A\ominus$ is an anion.

(C) is formaldehyde or a formaldehyde precursor and,

(D) is an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide.

4,439,209

THERMAL DECOMPOSITION APPARATUS

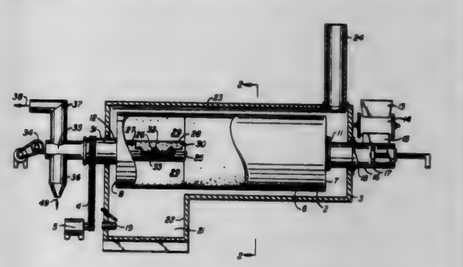
Carl M. Wilwerding, 2444 SE. Booth St., Roseburg, Oreg. 97470, and Robert S. Williams, Rte. 1, Box 719, Sutherlin, Oreg. 97479

Filed Aug. 25, 1982, Ser. No. 411,179
Int. Cl.³ C10J 3/00
U.S. Cl. 48—76 **7 Claims**

1. An apparatus for the continuous non-oxidative thermal decomposition of heat-dissociable organic matter to a solid carbon residue and gaseous products, said apparatus comprising:

a cylindrical drum rotatably mounted inside a furnace in a substantially horizontal position for rotation about its axis, said drum comprising a cylindrical wall and two end faces designated, respectively, an upstream end and a downstream end, said upstream end containing an inlet port at approximately the center thereof for receiving said heat-dissociable organic matter, and said downstream end containing an outlet port at approximately the center thereof for discharging both said solid carbon residue and said gaseous products such that the entire reaction mixture flows from said upstream end to said downstream end, the interior space of said drum comprising two zones in axial relation, the zone at said upstream end being designated a reaction zone and the zone at said downstream end being designated a removal zone,

means positioned externally of said drum and at said downstream end of said drum for providing heat within said furnace in the form of heated gases directed at the outer surface of said drum wall toward said downstream end to effect the flow of heated gases in a direction generally counter-current to the flow of said process mixture, thereby producing a temperature gradient within said drum increasing in the direction of flow of said process mixture,



feed means for the feed of said heat-dissociable organic matter through said inlet port in the substantial absence of air,

a screw conveyor within said removal zone extending through said outlet port, said screw conveyor comprising a non-rotatable trough with an opening at the top thereof to receive both solids and vapors, and a spiral flight mounted on a shaft rotatably mounted within said trough, the outer edge of said flight being sufficiently close to the bottom of said trough to convey substantially all solid matter in said trough out through said outlet port, the cross-section of said flight leaving sufficient open space in said outlet port to permit the passage of said gaseous products therethrough, and

centripetal conveying means within said removal zone for conveying substantially all of said solid residue within said removal zone into said trough opening.

4,439,210

METHOD OF CATALYTIC GASIFICATION WITH INCREASED ASH FUSION TEMPERATURE

Michael S. Lancet, Pittsburgh, Pa., assignor to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 305,654, Sep. 25, 1981. This application Oct. 15, 1981, Ser. No. 311,681
Int. Cl.³ C10J 3/14, 3/16
U.S. Cl. 48—202 **9 Claims**

1. A process for producing a gaseous product comprising hydrogen and carbon monoxide by high ash fusion temperature catalyzed gasification of bituminous coal at temperatures at least 100° F. above the initial deformation temperature without substantial ash fusion comprising the sequence of steps as follows:

(a) providing a mixture consisting essentially of 50 to 80 weight percent finely divided bituminous coal particles of a size of 65 mesh or smaller than 65 mesh and 20 to 50 weight percent finely divided calcium compound particles of a size smaller than 65 mesh, said calcium compound being selected from the group consisting of calcium oxide,

calcium carbonate and calcium hydroxide, said bituminous coal having the property of becoming liquid with sufficient heating,

(b) briquetting said mixture to form a briquetted mixture,

(c) feeding said briquetted mixture into the top of a fixed bed gasifier,

(d) catalytically gasifying said briquetted mixture with steam in said gasifier to form a gaseous product comprising hydrogen and carbon monoxide, said hydrogen and said carbon monoxide each comprising a substantial portion of said gaseous product,

said gasifying comprising

(i) heating said briquetted mixture of finely divided coal and finely divided calcium compound in said fixed bed gasifier to an operating temperature at least 100° F. above the intial deformation temperature of the ash of said bituminous coal and, said heating forming a catalyzed coke, said catalyzed coke reacting with said added steam to form said gaseous product,

(ii) adding steam to said gasifier, said operating temperature being below the initial deformation temperature of the ash of said mixture of said bituminous coal and said calcium compound,

whereby said calcium compound catalyzes said gasification, the rate of said catalyzed gasification being substantially increased from the rate of uncatalyzed gasification of said bituminous coal, and said catalyzed gasification being without ash fusion.

4,439,211

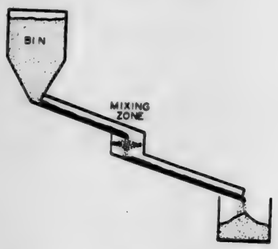
SUPPRESSION OF FOOD DUSTS AND THE LIKE

Donald E. Anderson, Maumee; Glenn E. Hall, Toledo, and Kevin M. Foley, Maumee, all of Ohio, assignors to The Andersons, Maumee, Ohio

Continuation-in-part of Ser. No. 302,729, Sep. 16, 1981, abandoned. This application Jan. 29, 1982, Ser. No. 343,729

Int. Cl.³ B01D *50/00*

U.S. Cl. 55—1 **24 Claims**



1. A method of reducing the liberation of dust particles from a dry particulate material that is transported in a material stream to a location where it falls through the air, said method comprising: introducing a small amount of water onto contain ones of said particles in said material stream prior to reaching such location, said water being in an amount of at least 0.01% and no more than 1% of the weight of the dry particulate material, causing such wetted particles to constant and be distributed generally uniformly throughout the remainder of the material prior to reaching such location, delaying the delivering of the wetted particles by a period of at least one second prior to reaching such location, and providing a smooth path for the material stream after such uniform distribution and prior to discharge at such location, whereby agitation of the material stream is minimized after such uniform distribution and prior to discharge.

4,439,212

PROCESS AND DEVICE FOR GASEOUS ATMOSPHERE SEPARATION IN PLANTS FOR HEAT TREATMENT UNDER ATOMOSPHERE

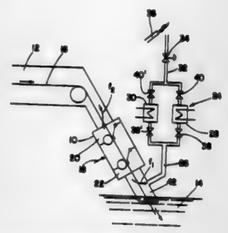
Robert Wang, Wissous, France, assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 242,752, Mar. 11, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 486,113

Claims priority, application France, Mar. 14, 1980, 80 05763

Int. Cl.³ B01D *5/00*

U.S. Cl. 55—27 **16 Claims**



1. A process comprising:

(a) continuously conveying a metal strip through a furnace;

(b) downstream from the furnace, continuously conveying the metal strip through a bath of heated coating metal, coating metal vapor tending to travel upstream adjacent the metal strip from the bath toward the furnace;

(c) between the furnace and bath, injecting a gas flow around the conveyed metal strip, directing a first portion of the gas flow downstream toward the bath, and directing a second portion of the gas upstream toward the furnace;

(d) upstream from the bath, sweeping the coating metal vapor from adjacent the metal strip with the gas flow first portion to an exhaust;

(e) directing the gas flow in the exhaust through at least one of at least two exchangers connected in parallel, each exchanger selectively connected to the exhaust by a shut-off valve; and,

(f) recovering the coating metal vapor from the gas flow first portion in the exhaust, by condensing the metal vapor from at least one exchanger.

4,439,213

NITROGEN GENERATION SYSTEM

Bill Frey, Ellicott City; Mark Haynie, Glen Burnie, and John Psaras, Arnold, all of Md., assignors to The C. M. Kemp Manufacturing Co., Glen Burnie, Md.

Filed Dec. 30, 1981, Ser. No. 334,463

Int. Cl.³ B01D *53/04*

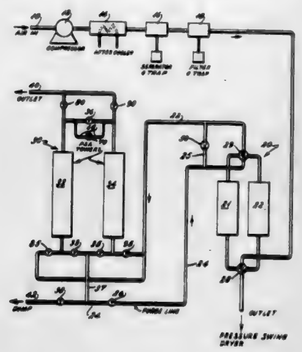
U.S. Cl. 55—31 **4 Claims**

1. In a process for generating high purity nitrogen from compressed air by a pressure swing multi-tower adsorption system operated through successive adsorption and desorption cycles the improvements which comprise purging the tower undergoing desorption with from 5-30% of the high purity nitrogen offtake from the tower producing nitrogen through adsorption and drying the compressed air in a pressure swing solid desiccant twin tower air dryer, employing oxygen enriched gas effluent from desorption of the multi-tower adsorption system at ambient pressures for desiccant regeneration purposes in the twin tower air dryer.

3. In an apparatus for producing high purity nitrogen including a pressure swing multi-tower adsorption system with a length to diameter ratio of the towers in said adsorption system from 3.5:1 to 10:1, operated through successive adsorption and desorption cycles and a source of compressed air therefor, the improvements which comprise:

a cross-connection bleed line between the towers of said adsorption system adapted to pass from 5-30% of the high purity nitrogen leaving the tower producing nitrogen through adsorption into the top of the tower undergoing desorption; and

a twin tower pressure swing solid desiccant air dryer be-



tween the compressed air source and said multi-tower adsorption system connected so as to feed dried compressed air to said multi-tower adsorption system for recovery of high purity nitrogen therefrom, and to receive ambient pressure oxygen enriched gas effluent therefrom for regenerating the desiccant in the air dryer.

4,439,214

ADSORPTION DEVICE FOR THE DRY PURIFICATION OF GASES

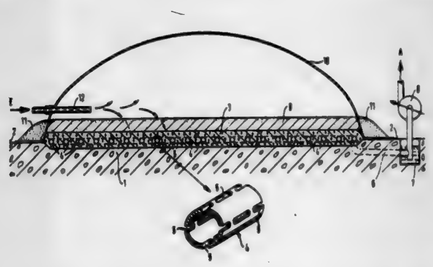
Gunther Wiebke, deceased, late of Munich, Fed. Rep. of Germany (by Peter Wieloch, executor); Gunter Maurer, Munich, Fed. Rep. of Germany; Piet J. L. Laurijsen, LN Bedum, Netherlands, and Roman Kurth, Wildpoldsried, Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,675

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129077

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—74 **16 Claims**



1. An adsorption device for the purification of gases which comprises a layer of particulate adsorbent material over the ground, a sheet-like flexible gas impermeable cover over the layer of adsorbent material said sheet-like flexible cover being in contact with the ground about its margin, means for introducing gases underneath the cover and means for removing the gases which have passed through the layer of adsorbent material from under the cover and pressure control means in communication with said device to control the gas pressure.

16. A method for dry purification of gases at low pressure by a fixed bed of adsorbent material which comprises: introducing the gas to be purified above the surface of a layer of particulate adsorbent material spread over the ground, the entire surface of said layer of adsorbent material being covered by a gas-impermeable flexible plastic foil whose margin is in contact with the ground, collecting the gas which has passed through the layer of adsorbent material underneath the layer of adsorbent material and passing the gas which has passed through the layer of adsorbent material outside the cover.

4,439,215

APPARATUS AND METHOD FOR EXTRACTING DUST FROM AIR

Bogdan J. Rawicki, 17, Stanwick Rd., London, W14 8TZ, England

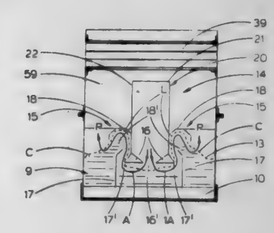
Continuation of Ser. No. 65,837, Aug. 13, 1979, Pat. No. 4,290,784, which is a continuation of Ser. No. 964,195, Nov. 28, 1978, abandoned. This application May 8, 1981, Ser. No. 261,954

Claims priority, application United Kingdom, Nov. 30, 1977, 49873/77

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.³ B01D *47/02*

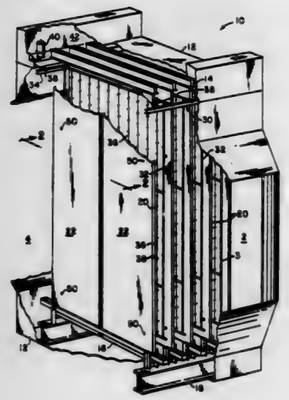
U.S. Cl. 55—95 **20 Claims**



1. A dust extraction apparatus which comprises inlet means for receiving air carrying dust therein, a water reservoir, means for directing the air from the inlet means to said water reservoir having a main channel with side walls at least one of which is designed for shaping the water in said reservoir during use in cooperation with at least one additional plate so as to form an essentially static mass of water having an indulating shape with a curvilinear surface and for constraining the air to move through said mass of water in an extended sinuous or tortuous internal path such that the air enters the surface of said mass medially via one region and leaves the surface of said mass laterally via another region without creating significant spray or turbulence, and an outlet means for discharging the air after cleaning.

17. A method of extracting air from dust which comprises passing air carrying dust therein through water in a reservoir, said reservoir being positioned between an inlet and an outlet, said air being directed from the air inlet to the water reservoir through a main channel having side walls which cooperate with at least one additional upstanding plate which shapes the water to form an essentially undulating shaped static mass and constrains the air to move through the mass of water in an extended sinuous or tortuous path such that the air enters the surface of said mass medially via one region and leaves the surface of said mass laterally via another region without creating significant spray or turbulence, at least one of said side walls of said channel having a lower end terminating as a flange positioned adjacent said upstanding plate with an inwardly bent flange mounted to the bottom of said reservoir lateral to said respective flange of said wall, said wall further comprising an exterior flange projecting from the lateral surface thereof juxtapositioned above said upstanding plate, and thereafter introducing the air leaving said water into a stripping means for removing residual water from said air.

4,439,216
ELECTROSTATIC PRECIPITATOR HAVING APPARATUS FOR SENSING ELECTROSTATIC FIELD STRENGTHS
John W. Perryman, Chelsea, Ala., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jul. 28, 1982, Ser. No. 402,504
Int. Cl.³ B03C 3/08
U.S. Cl. 55—104 4 Claims

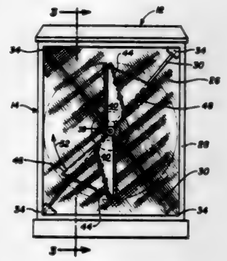


1. An electrostatic precipitator comprising:
a. a casing for conveying a horizontal flow of gas to be cleaned;
b. a discharge electrode suspended within the casing in a vertical plane parallel to the gas flow direction therethrough and to which a voltage is applied to generate an electrostatic field on each side thereof;
c. first and second collecting electrode plates disposed within the casing in spaced vertical planes parallel to the gas flow direction therethrough and positioned substantially equally distance from said discharge electrode on opposite sides thereof;
d. paired probe means comprising first and second probe means aligned oppositely each other on opposite sides of said discharge electrode, said first probe means mounted to said first collecting electrode plate and arranged to face said discharge electrode for sensing the strength of the electrostatic field generated by said discharge electrode and incident upon said first collecting electrode plate and second probe means mounted to said second collecting electrode plate and arranged to face said discharge electrode for sensing the strength of the electrostatic field generated by said discharge electrode and incident upon said second collecting electrode plate; and
e. means operatively positioned and arranged with respect to said paired probe means for comparing the electrostatic field strengths sensed by said first and second probe means and for providing an indication of the degree of imbalance between said sensed electrostatic field strengths.

4,439,217
PERMSELECTIVE ELEMENT FOR GAS SEPARATION
Masaaki Yamabe, Machida, and Katsuyuki Akiyama, Yotsukaidoh, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan
Filed Nov. 5, 1982, Ser. No. 439,579
Claims priority, application Japan, Nov. 27, 1981, 56-189264
Int. Cl.³ B01D 53/22
U.S. Cl. 55—158 6 Claims

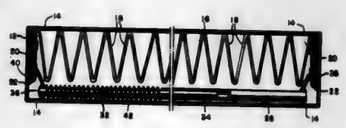
1. A permselective element for gas separation which comprises a permselective layer composed of an organic polymer having $-OCOC(CH_3)_3$ groups in its side chains.

4,439,218
SCREEN CLEANING MEANS
Edward H. Priepke, Lancaster, and Ronald L. McAllister, New Holland, both of Pa., assignors to Sperry Corporation, New Holland, Pa.
Filed Jul. 6, 1982, Ser. No. 395,564
Int. Cl.³ B01D 46/10
U.S. Cl. 55—288 3 Claims



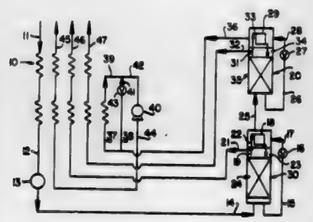
1. In combination with a screen of planar configuration having an air-intake side and an air-discharge side, cleaning means for said screen comprising:
(a) a frame supporting said screen;
(b) a shaft supported by said frame and extending through said screen for rotation relative to said screen;
(c) a sweep arm connected to said shaft and disposed on said air-intake side of said screen;
(d) a baffle member connected to said shaft and disposed on said air-discharge side of said screen opposite said sweep arm;
(e) means to rotate said shaft causing said sweep arm and said baffle member to rotate together so that said baffle member blocks off successive portions of said screen on said air-discharge side to thereby permit said sweep arm to sweep debris from said air-intake side of said screen; and
(f) a flexible member mounted on said sweep arm in wiping engagement with said air-intake side of said screen, said flexible member having an inner end and an outer end with said inner end being located closer to said shaft than said outer end, and said flexible member being arranged so that said inner end moves in advance of said outer end during rotation of said sweep arm thereby causing debris accumulating on said air-intake side of said screen to be pushed outwardly in a direction away from said shaft.

4,439,219
FILTER ASSEMBLY HAVING FILTER RETAINER APPARATUS
Leonard S. Lambrecht, 2231 N. 73rd Ct., Elmwood Park, Ill. 60635
Filed Jun. 18, 1982, Ser. No. 389,595
Int. Cl.³ B01D 46/52
U.S. Cl. 55—499 4 Claims



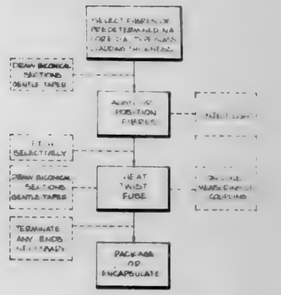
1. A filter assembly comprising, in combination, an open sided rectangular frame with side walls spaced-apart to define a width, a disposable pleated filter element located within said frame and a filter element retainer overlying said filter element between said side walls and comprising elongated telescoping members having interfitting and outer ends, a pair of transversely oriented and outwardly projecting flanges engaging said pleated filter element, one of said flanges secured to each of said outer ends of said telescoping members, and resilient means interposed between said flanges and positioned to urge said telescoping members to a length greater than the width of said frame so that said filter retainer apparatus securely holds said pleated filter element in said frame.

4,439,220
DUAL COLUMN HIGH PRESSURE NITROGEN PROCESS
Walter J. Olszewski, Tonawanda; Ravindra F. Pahade, North Tonawanda, and John H. Ziemer, Grand Island, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.
Filed Dec. 2, 1982, Ser. No. 446,235
Int. Cl.³ F25J 3/04
U.S. Cl. 62—31 17 Claims



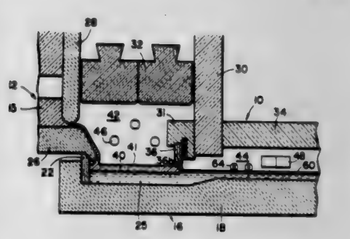
1. A process for the production of nitrogen gas at greater than atmospheric pressure by the separation of air by rectification comprising:
(A) introducing cleaned, cooled feed air at greater than atmospheric pressure into a high pressure column having a top condenser, and operating at a pressure of from about 80 to 300 psia;
(B) separating said feed air by rectification in said high pressure column into a first nitrogen-rich vapor fraction and a first oxygen-enriched liquid fraction;
(C) recovering from about 20 to 60 percent of said first nitrogen-rich vapor fraction as high pressure nitrogen gas at a pressure of from about 80 to 300 psia and a purity of at least 99 mole percent;
(D) condensing a portion of said first nitrogen-rich vapor fraction by indirect heat exchange with said first oxygen-enriched liquid fraction thereby producing a first nitrogen-rich liquid portion and a first oxygen-enriched vapor fraction;
(E) employing said first nitrogen-rich liquid portion as liquid reflux for said high pressure column;
(F) introducing said first oxygen-enriched vapor fraction into a medium pressure column having a top condenser, and operating at a pressure, lower than that of said high pressure column pressure, of from about 40 to 150 psia;
(G) separating said first oxygen-enriched vapor fraction by rectification in said medium pressure column into a second nitrogen-rich vapor fraction and a second oxygen-enriched liquid fraction;
(H) recovering from about 20 to 60 percent of said second nitrogen-rich vapor fraction as medium pressure nitrogen gas at a pressure of from about 40 to 150 psia and a purity of at least 99 mole percent;
(I) condensing a portion of said second nitrogen-rich vapor fraction by indirect heat exchange with said second oxygen-enriched liquid fraction thereby producing a second nitrogen-rich liquid portion and a second oxygen-enriched vapor fraction;
(J) employing said second nitrogen-rich liquid portion as liquid reflux for said medium pressure column; and
(K) removing from the process said second oxygen-enriched vapor fraction.

4,439,221
METHOD FOR MAKING OPTICAL FIBER COUPLERS
Lawrence C. Smyth, Kirkland, and Alexander W. Lightstone, Montreal, both of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence, Ottawa, Canada
Continuation of Ser. No. 169,988, Jul. 18, 1980, abandoned. This application Jan. 14, 1983, Ser. No. 458,021
Claims priority, application Canada, Nov. 1, 1979, 339409
Int. Cl.³ C03B 37/14; C03C 25/06
U.S. Cl. 65—4.21 11 Claims



1. A method of making an optical fiber coupler from a pair of optical fibers, comprising:
positioning said fibers in a predetermined orientation in a protective tube;
applying a tensile load to at least one of said fibers;
heating said fibers by applying heat to said tube which thereby functions as a furnace for distributing heat uniformly to said fiber portions therein to cause softening of the same;
twisting said fibers together when hot to fuse the same to one another and
sealing said fibers within said tube to fix the fibers and produce a protective package for said coupler.

4,439,222
METHOD OF PRODUCING THIN SHEET GLASS OF HIGH QUALITY BY FLOAT PROCESS
Takayoshi Kandachi; Keizi Sueda, and Minoru Suzuki, all of Matsusaka, Japan, assignors to Central Glass Company Limited, Ube, Japan
Filed Jul. 30, 1982, Ser. No. 403,321
Claims priority, application Japan, Jul. 31, 1981, 56-120265; Sep. 11, 1981, 56-143317
Int. Cl.³ C03B 18/02
U.S. Cl. 65—99.2 10 Claims



1. In a method of producing a relatively thin sheet glass in a glass forming chamber which includes a molten metal bath constituted of a bottom structure, two opposite side walls, a molten glass inlet structure at one end and a sheet glass outlet structure at the other end and a roof structure defining an

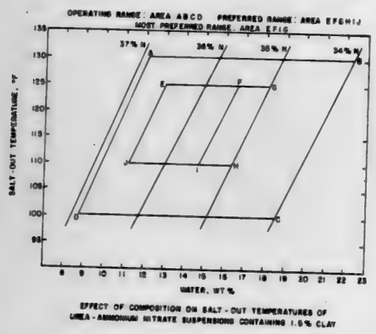
interior space above the molten metal bath, the method being of the type having the steps of feeding molten glass onto the surface of the molten metal in the bath, allowing the molten glass to spread on the surface of the molten metal to form a molten glass layer, stretching the molten glass layer in a direction substantially parallel to the side walls so as to reduce the thickness of the molten glass layer and to advance the molten glass layer toward the outlet structure and cooling the molten glass layer, and further having the step of providing a sluice-forming wall in said interior space at a distance downstream from the inlet structure so as to extend widthways of the molten metal bath and to leave a vertically narrow gap between a lower end of the sluice-forming wall and the surface of the molten metal in the bath thereby producing a pool of the molten glass on the molten metal in a region between the inlet structure and the sluice-forming wall to form said molten glass layer by allowing the molten glass to flow out of said pool through said vertically narrow gap,

the improvement comprising using a practically isotropic graphite which is not greater than 23% in porosity as the material of said sluice-forming wall at least in its lower end portion making contact with the molten glass, a front side of the sluice-forming wall facing said pool being formed with a slant surface contiguous to the lower end of the sluice-forming wall such that the surface of the molten glass in said pool intersects said slant surface and that the vertical distance of said slant surface from the surface of the molten metal decreases as the horizontal distance of said slant surface from said inlet structure increases.

4,439,223
PRODUCTION OF UREA-AMMONIUM NITRATE SUSPENSION FERTILIZER

Jeffrey L. Boles, Florence, and Thomas M. Jones, Sheffield, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 448,568, Dec. 10, 1982. This application Apr. 18, 1983, Ser. No. 485,785
Int. Cl.³ C05C 9/00
U.S. Cl. 71—30 7 Claims



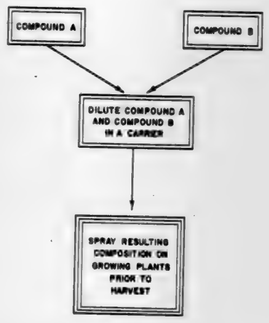
EFFECT OF COMPOSITION ON SALT-OUT TEMPERATURES OF UREA-AMMONIUM NITRATE SUSPENSIONS CONTAINING 1.5% CLAY

1. As a new composition of matter a fertilizer suspension containing urea, ammonium nitrate, water, and gelling agent, said suspension having (A) a solid phase consisting of urea and a liquid phase, said liquid phase having a density ranging from less than to substantially equal to that of said solid phase, and (B) said suspension defined within the area ABCD of FIG. 2.

4,439,224
PLANT GROWTH REGULATOR AND METHOD FOR THE USE THEREOF

David T. Schulteis, Fresno, Calif., assignor to Wilbur-Ellis Company, Fresno, Calif.

Continuation of Ser. No. 173,112, Jul. 28, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,496
Int. Cl.³ A01N 43/40
U.S. Cl. 71—76 4 Claims



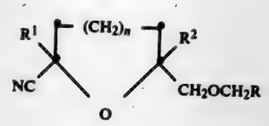
1. A method of regulating the growth of cotton plants comprising applying to the foliage of the cotton plants prior to harvest a composition consisting essentially of on a weight basis: a mixture of about 20 parts of poly[oxyethylene(dimethyliminio)ethylene(dimethyliminio)ethylene dichloride] to about 1 part N,N-dimethylpiperidinium chloride diluted in an inert carrier and applied in an amount sufficient to inhibit the growth of the cotton plants and increase the yield thereof.

4,439,225
HERBICIDAL CYANO-TETRAHYDROFURANYLMETHYL ETHER AND CYANO-TETRAHYDROPYRANYLMETHYL ETHER DERIVATIVES

Willy D. Kollmeyer, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 14, 1982, Ser. No. 388,048
Int. Cl.³ A01N 43/06; C07D 307/24
U.S. Cl. 71—88 10 Claims

1. A compound of the formula



wherein R^1 and R^2 each independently is a hydrogen atom or an alkyl group containing 1 to 6 carbon atoms; n is 0 or 1; and R is an alkenyl or alkynyl group containing 2 to 4 carbon atoms; a 2-pyridinyl group; a 2-pyridazinyl group; a pyrazinyl group; a pyrimidinyl group, a 2-furanyl group; or a phenyl group optionally substituted by one or more of halogen, cyano, amino, or an alkoxy or alkylthio group containing 1 to 3 carbon atoms each optionally substituted by one or more halogen atoms having an atomic number of 9 or 17, or by an alkyl group containing 1 or 2 carbon atoms optionally substituted by one or more halogen atoms having an atomic number of 9 or 17, hydroxy or alkoxy or alkylthio containing 1 to 2 carbon atoms.

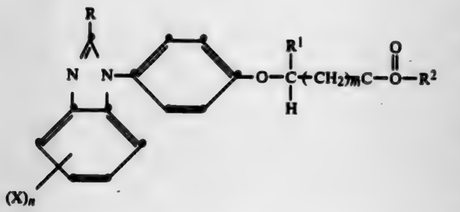
10. A method of regulating plant growth at a locus comprises applying to the locus or the plants an effective amount of a compound according to claim 1.

4,439,226
HERBICIDAL 4-((BENZIMIDAZOL-1-YL)PHENOXY)ALKANOIC ACIDS, ESTERS AND SALTS

Kurt H. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 20, 1982, Ser. No. 419,865
Int. Cl.³ A01N 43/52; C07D 235/08
U.S. Cl. 71—92 6 Claims

1. A compound of the formula:



wherein n is 1 and X is trifluoromethyl, R is hydrogen, methyl or ethyl, R^1 is methyl, ethyl or methoxymethyl; m is 0, 1 or 2; and R^2 is hydrogen, alkyl of from one to four carbon atoms, or when R^2 is hydrogen, an alkali metal, or ammonium ($N(R^3)_3$), salt wherein each R^3 is hydrogen or alkyl of from one to six carbon atoms.

5. A method for controlling growth of unwanted plants at a locus which comprises applying to that locus an effective amount of a compound of claim 1.

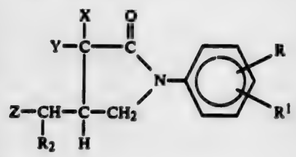
4,439,227
DIALLYL DICHLOROACETMIDE HERBICIDE ANTIDOTE

Laddie L. Green, San Jose, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 30, 1981, Ser. No. 335,949
Int. Cl.³ A01N 25/32
U.S. Cl. 71—95 4 Claims

3. A method of controlling undesirable vegetation and reducing pyrrolidone-type herbicidal crop injury which comprises applying to the locus where control is desired an herbicidally effective amount of a composition comprising:

(a) an herbicidally effective amount of a pyrrolidone compound of the formula



in which

X is hydrogen, chlorine or methyl;

Y is hydrogen, chlorine, or bromine;

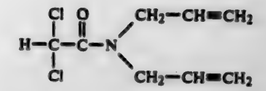
Z is chlorine is bromine;

R is hydrogen, alkyl, acetyl, chlorine, bromine, fluorine, iodine, trifluoromethyl, nitro, cyano, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, trifluoromethylthio, trifluoromethylsulfinyl, trifluoromethylsulfonyl, pentafluoropropionamido, or 3-methylureido;

R_1 is hydrogen, alkyl, chlorine, or trifluoromethyl; and,

R_2 is alkyl or hydrogen; and,

(b) a non-phytotoxic antidotally effective amount of a compound of the formula

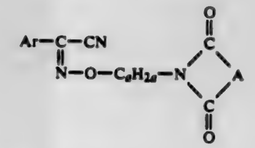


4,439,228
OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

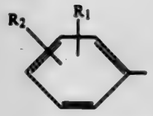
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,735. This application Jul. 14, 1982, Ser. No. 398,453
Claims priority, application Switzerland, Aug. 31, 1978, 9201/78
Int. Cl.³ A01N 43/36; C07D 207/24
U.S. Cl. 71—95 4 Claims

1. A compound of the formula



wherein

Ar is 1-naphthyl or



in which R_1 is hydrogen, lower alkyl, halogen or nitro, and R_2 is hydrogen or lower alkoxy,

a is the integer 1 or 2, and

A is ethylene or vinylene optionally di-substituted by halogen or lower alkyl.

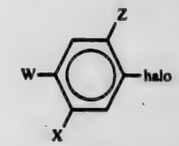
4. An antidote composition for use in safening plants against the harmful effects of potent herbicides, which comprises (1) an antidotally effective amount of a compound according to claim 1 and (2) an inert carrier.

4,439,229
SUBSTITUTED PHTHALIMIDES HERBICIDES

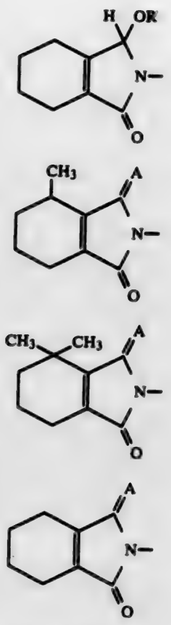
Colin Swithenbank, Perkasie, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 278,241, Jun. 29, 1981, abandoned. This application May 6, 1982, Ser. No. 375,248
Int. Cl.³ A01N 43/38; C07D 209/48
U.S. Cl. 71—96 21 Claims

1. A compound of the formula



where W is a substituted heterocyclic selected from:



wherein A is O or S; halo is chloro, bromo or fluoro; R^1 and R^2 are the same or different radicals selected from hydrogen or lower alkyl; X is hydrogen or halo; Z is cyanoalkoxy; R is hydrogen or lower alkyl.

8. A herbicidal composition comprising a herbicidally effective amount of a compound according to claim 1 in an agronomically acceptable carrier.

4,439,230

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

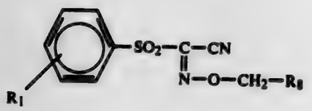
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,935. This application Jul. 14, 1982, Ser. No. 398,166

Claims priority, application Switzerland, Aug. 31, 1978, 9201/78

Int. Cl.³ A01N *43/38*; C07D *209/48*

U.S. Cl. 71—96 3 Claims

1. A compound of the formula



wherein

R_1 is hydrogen or halogen, and

R_8 is phthalimido, 4,5,6,7-tetrahydrophthalimido or 3a,4,7-,7a-tetrahydrophthalimido attached at the nitrogen atom to the remainder of the molecule.

3. An antidote composition for use in safening plants against the harmful effects of potent herbicides which comprises (1) an antidotally effective amount of a compound according to claim 1 and (2) an inert carrier.

4,439,231

PREPARATION OF ACICULAR FERROMAGNETIC METAL PARTICLES CONSISTING ESSENTIALLY OF IRON

Werner Stock, Ludwigshafen; Peter Rudolf, Neuhofen; Wilhelm Sarnecki, Limburgerhof; Werner Loeser, Ludwigshafen; Jenoe Kovacs, Hessheim, and Helmut Jakusch, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,000

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228669

Int. Cl.³ B22F *9/22*

U.S. Cl. 75—0.5 AA 2 Claims

1. A process for the preparation of acicular ferromagnetic metal particles consisting essentially of iron by reducing acicular iron(III) oxide hydroxide provided with a shape-stabilizing surface coating, or the iron(III) oxide obtained therefrom by dehydration, wherein the reduction is carried out with a decomposable organic compound and hydrogen at from 270° to 450° C.

4,439,232

SAMARIUM METAL PRODUCTION

Mohammad H. Ghandehari, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 26, 1982, Ser. No. 352,891

Int. Cl.³ C22B *4/00*

U.S. Cl. 75—10 R 13 Claims

1. A method for producing samarium metal which comprises reducing samarium oxide in a container with rare earth metal, vaporizing the reduced samarium, and condensing a samarium metal product, wherein the container for the samarium oxide and rare earth metal is lined on its inner surface with resistant metal, said resistant metal having a thickness from about 0.001 inches to about 0.02 inches.

4,439,233

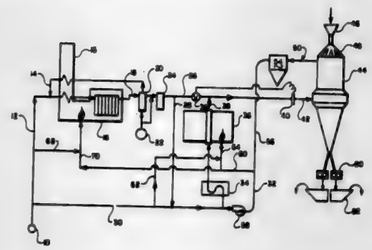
DIRECT REDUCTION OF IRON

Dominic M. Faccone, Matthews, N.C., assignor to Midrex Corporation, Charlotte, N.C.

Filed May 9, 1983, Ser. No. 492,526

Int. Cl.³ C21B *13/02*

U.S. Cl. 75—35 11 Claims



1. A method of making a high quality reducing gas for the direct reduction of iron, comprising:

introducing natural gas and steam into a reformer to form a high temperature reducing gas;

cooling said high temperature reducing gas to remove excess steam and form a cooled reducing gas;

dividing said cooled reducing gas into a first stream and a second stream;

withdrawing reacted top gas from a direct reduction shaft furnace, cooling and cleaning said reacted top gas, and mixing said reacted top gas with said first stream of reducing gas to form a gas mixture;

passing said gas mixture through a stoichiometric reformer to form a second hot reducing gas;

tempering said second hot reducing gas with said second stream of cooled reducing gas to form a high quality reducing gas; and

introducing said high quality reducing gas into a shaft furnace for the direct reduction of iron oxide therein and forming a reacted top gas.

4,439,234

METHOD OF INCREASING THE COLD MATERIAL CHARGING CAPACITY IN THE TOP-BLOWING PRODUCTION OF STEEL

Francois Schleimer; Romain Henrion; Ferdinand Goedert, and Fernand Thill, all of Esch-sur-Alzette, Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Feb. 16, 1983, Ser. No. 466,843

Claims priority, application Luxembourg, Feb. 17, 1982, 83954

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—52 12 Claims

1. In a method of refining a pig iron melt which comprises top-blowing said melt with oxygen while introducing an inert gas into the bottom of said melt and incorporating a cold solid charge into the melt, the improvement which comprises minimizing slag formation on said melt by adding slag-forming lime to said melt only in proportion to the buildup of slag components therein by the refining operation and over the duration of such buildup, thereby increasing the charge-receiving capacity of the melt.

4,439,235

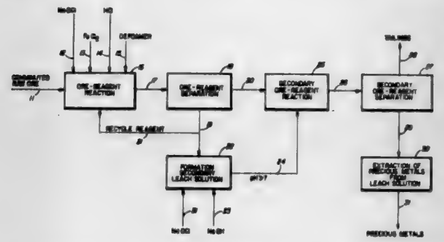
CHLORINATION PROCESS FOR REMOVING PRECIOUS METALS FROM ORE

Charles H. Simpson, Scottsdale, Ariz., assignor to James J. Shepard, Jr., Bedford, Pa.

Continuation-in-part of Ser. No. 345,597, Feb. 4, 1982, abandoned. This application Jun. 14, 1982, Ser. No. 388,112

Int. Cl.³ C22B *3/00*, *11/04*; C01G *55/00*, *7/00*

U.S. Cl. 75—101 R 2 Claims



1. A process for removing precious metal values from comminuted carbonaceous ores, comprising the steps of

(a) contacting said comminuted ore at an elevated temperature below 100° C. with an effective amount of an acidic aqueous solution of hypochlorite, iron ion and an acid to form an extraction mixture slurry including

(i) an aqueous liquid component including said hypochlorite, iron ion and acid and containing precious metal values from said comminuted ore dissolved therein, and

(ii) a solid component comprising said comminuted extracted ore,

(b) separating said liquid and solid components of said extraction mixture slurry,

(c) contacting said separated solid component of said extraction mixture slurry at an elevated temperature below 100° C. with an effective amount of an aqueous solution of hypochlorite and iron having a pH greater than 7 to form a secondary extraction mixture slurry including

(i) a secondary aqueous liquid component including said hypochlorite and iron ion and containing precious metal values from said comminuted ore dissolved therein; and

(ii) a secondary solid component comprising twice extracted comminuted ore,

(d) separating said liquid and solid components of said secondary extraction mixture slurry; and

(e) removing said precious metal values from said separated secondary liquid component.

4,439,236

COMPLEX BORIDE PARTICLE CONTAINING ALLOYS

Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 23,379, Mar. 23, 1979, Pat. No. 4,365,994. This application Apr. 26, 1982, Ser. No. 371,758

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ C22C *29/00*, *38/32*

U.S. Cl. 75—123 B 33 Claims



1. Boron-containing transition metal alloys, based on one or more of iron, cobalt and nickel, containing at least two metal components, said alloys being composed of ultrafine grains of a primary solid solution phase randomly interspersed with particles of complex borides, wherein said ultrafine grains of the primary solid solution phase have an average diameter, measured in its longest dimension, of less than about 3 micrometers, and wherein said complex boride particles have an average particle size, measured in its largest dimension, of less than about 1 micrometer, as viewed on a microphotograph of an electron microscope.

4,439,237

METALLURGICALLY BONDED DIAMOND-METAL COMPOSITE SINTERED MATERIALS AND METHOD OF MAKING SAME

Shiro Kuminitsu, Kawasaki; Izumi Hayakawa, Tokyo; Seizo Kitatani, Ina, and Akira Emura, Tokyo, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 51,179, Jun. 22, 1979, abandoned. This application Sep. 25, 1981, Ser. No. 305,751

Claims priority, application Japan, Jun. 27, 1978, 53-77787

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—243 8 Claims

1. A metallurgically bonded, sintered, diamond-metal composite, comprised of a matrix consisting essentially of a metal selected from the group consisting of nickel, cobalt and mixture thereof, diamond powder uniformly dispersed in said matrix and particles of hard, brittle, intermetallic compound uniformly dispersed in said matrix, said composite having been prepared by mixing powder of said matrix metal, said diamond powder and powder of substance capable of combining with said matrix metal to form said intermetallic compound, said substance being selected from the group consisting of tin, antimony, zinc and mixture thereof, the amount of said substance being from 5 to 40 wt.%, and then sintering the mixture until said intermetallic compound is formed.

2. A metallurgically bonded, sintered, diamond-metal com-

posite, comprised of a matrix consisting essentially of a metal selected from the group consisting of nickel, cobalt and mixture thereof, diamond powder uniformly dispersed in said matrix and particles of hard, brittle, intermetallic compound uniformly dispersed in said matrix, said composite having been prepared by mixing powder of said matrix metal, said diamond powder and powder of substance capable of combining with said matrix metal to form said intermetallic compound, said substance being selected from the group consisting of phosphorus, sulfur and mixture thereof, the amount of said substance being from 0.2 to 3 wt.%, and then sintering the mixture until said intermetallic compound is formed.

4,439,238

COPPER PHTHALOCYANINE PIGMENTS THEIR PREPARATION PROCESS AND THEIR USE

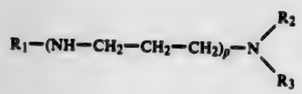
Daniel Pignasse, Rouen, France, assignor to I.C.I. Francolor S.A., Cedex, France

Continuation of Ser. No. 249,520, Mar. 31, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,931
Claims priority, application France, Apr. 18, 1980, 80 08722
Int. Cl.³ C09D 11/00
U.S. Cl. 106—20 **18 Claims**

1. Process for the preparation of a copper phthalocyanine pigment which comprises grinding a grinding mass consisting essentially of raw copper phthalocyanine without mineral substrate and incorporating either:

(1) before or during the grinding:

(a) 0.5 to 10% by weight of at least one fatty amine of formula (I):



(I)

in which R_1 represents a non-aromatic, C_1 to C_{22} aliphatic or alicyclic hydrocarbon chain, R_2 represents hydrogen or a non-aromatic, C_1 to C_{22} aliphatic or alicyclic hydrocarbon chain, the sum of the carbon atoms of chains R_1 and R_2 is between 6 and 50, R_3 represents hydrogen or a C_1 to C_4 aliphatic radical, and p is a number from 0 to 20;

(b) said fatty amine and 1 to 10% by weight relative to pure copper phthalocyanine of at least one solvent whose miscibility with water is at least 3% at a temperature between ordinary temperature and 100° C., the overall content of amine and solvent not exceeding 15% by weight;

(c) said fatty amine and 1 to 10% by weight relative to pure copper phthalocyanine of at least one non-volatile compound comprising a hydrocarbon chain of 6 to 22 carbon atoms and one or more polar functions, the overall content of amine and non-volatile compound not exceeding 12% by weight; or

(d) said fatty amine, said solvent and said non-volatile compound, the overall content of amine, solvent and non-volatile compound not exceeding 15% by weight, and eventually treating the mass in aqueous medium to eliminate impurities; or

(2) after the grinding and during an aqueous treatment to purify the copper phthalocyanine:

(a) 1 to 10% by weight of at least one fatty amine of said formula (I); or

(b) said fatty amine and 1 to 10% by weight of at least one non-volatile compound.

4,439,239

PIGMENTED COATING COMPOSITION CONTAINING A MIXTURE OF ALKOXYSILANES

Paul P. Greigger, Allison Park; William G. Boberski, Gibsonia, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 2, 1982, Ser. No. 384,369
Int. Cl.³ C09K 3/14; B32B 9/04
U.S. Cl. 106—287.16 **7 Claims**

1. A composition comprising:

I. a pigment in an amount ranging from about 10 to about 80 percent by volume solids based on the total volume of solids present in said composition; in

II. a vehicle comprising,

A. a dispersion of colloidal silica,

B. a mixture of (i) a hydrolyzable trialkoxysilane and (ii) a hydrolyzable dialkoxysilane,

C. an alcohol,

D. water, and

E. sufficient acidifying agent to provide a pH of the vehicle ranging from about 2.8 to about 6.0, wherein the ratio of the weight of the pigment to the weight of the sum of colloidal silica solids and alkoxysilane solids ranges from 0.1/1 to about 10/1, the alkoxysilane solids calculated assuming theoretically complete hydrolysis of the respective alkoxysilanes to the corresponding silanols, and wherein said composition cures to provide an opaque film.

4,439,240

AQUEOUS MILLING OF QUINACRIDONE PIGMENT

James B. Ganci, Wilmington, Del., assignor to E. I. Du Pont De Nemours & Company, Wilmington, Del.

Filed Feb. 16, 1983, Ser. No. 466,938
Int. Cl.³ C08J 3/00
U.S. Cl. 106—288 Q **5 Claims**

1. A process comprising dry ball milling crude quinacridone to convert it to a highly agglomerated low crystallinity form, followed by milling the low crystallinity material with shot in water in the presence of a minor amount of base and recovering a pigmentary particle size pigment.

4,439,241

CLEANING PROCESS FOR INTERNAL PASSAGES OF SUPERALLOY AIRFOILS

Earle A. Ault, South Windsor, and Charles E. Bevan, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 1, 1982, Ser. No. 353,764
Int. Cl.³ B08B 3/08
U.S. Cl. 134—22.17 **3 Claims**

1. The method for removing deposits from interior cavities of a component made of superalloy, comprising the steps of contacting the interior of the component with an aqueous solution of 20–45 weight percent alkaline corrosive at a pressure of 10.4–24 kPa (150–350 psi) and a temperature of 150°–235° C. (300°–450° F.) to soften the deposits without significantly attacking the superalloy; removing the component from contact with the aqueous solution, thereby leaving some of the softened deposits physically intact within the interior cavities; impinging on said deposits a flowing stream of liquid at a pressure of at least 13.8 MPa (2,000 psi), to physically remove the deposits; and wherein the component is contacted with an aqueous environment to prevent drying of the softened deposits between the time of removal of the component from said aqueous solution and the time of impinging said flowing stream of liquid on the softened deposits.

4,439,242

LOW HOT WATER VOLUME WAREWASHER

James P. Hadden, Tipp City, Ohio, assignor to Hobart Corporation, Troy, Ohio

Continuation of Ser. No. 263,956, May 15, 1980, abandoned. This application Oct. 18, 1982, Ser. No. 435,019
Int. Cl.³ B08B 3/02
U.S. Cl. 134—25.2 **4 Claims**

1. In a commercial dishwasher, a complete warewasher cycle for (1) washing food soil from successive racks of ware such as dishes and utensils with a cleaning solution of water and detergent, (2) rinsing the ware with fresh water, and (3) effectively sanitizing the ware to a cumulative heat factor level over the complete cycle to meet accepted heat sanitization practices, comprising the steps of:

(a) loading soiled ware into the racks and placing a loaded rack in a substantially enclosed wash chamber of a warewashing machine,

(b) recirculating a supply of cleaning solution in said chamber under pressure through nozzles which direct the solution over the ware in sufficient volume and at a predetermined washing temperature with sufficient velocity and for a predetermined washing time period effective to strip the soil from and thereby wash the ware,

(c) maintaining said cleaning solution supply at a minimum washing temperature during the washing time period,

(d) upon completion of the washing time period, providing a short dwell period during which soiled solution can drain from the ware, then

(e) sanitizing the ware by sequentially:

(i) rinsing the ware for a predetermined rinse period with fresh rinse water heated to a minimum sanitizing temperature greater than said washing temperature and delivered through rinse nozzles dedicated solely to said rinse water and directed toward the ware, said rinse water being delivered in a volume sufficient to rinse loose food soil and remaining cleaning solution from the ware and achieve a substantial reduction in water volume in order to conserve energy, and said rinse period being of a duration whereby the surfaces of the ware rise from the temperature achieved during washing to a higher temperature to apply heat unit equivalents per second of time to said ware between an approximate minimum of 40% but less than 100% of the cumulative heat factor level required by accepted sanitization practices to achieve effective sanitization, and,

(ii) upon completion of the rinse period and while the ware is still exposed to the accumulated rinse water and cleaning solution, maintaining the ware within a substantially enclosed chamber for a time period, in addition to any inherent time delay of a cycle controller, sufficient to allow the heated humid atmosphere within said chamber achieved without further addition of heat except from the heated fresh rinse water to apply to the ware surfaces additional heat unit equivalents, which, coupled with those applied during prior washing and rinsing, raises the cumulative heat factor for the complete warewasher cycle above the minimum level required to effectively sanitize the ware, and then

(f) removing the clean, sanitized ware from the machine.

4,439,243

APPARATUS AND METHOD OF MATERIAL REMOVAL WITH FLUID FLOW WITHIN A SLOT

Stephen D. Titus, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1982, Ser. No. 404,678
Int. Cl.³ B08B 7/00
U.S. Cl. 134—33 **16 Claims**

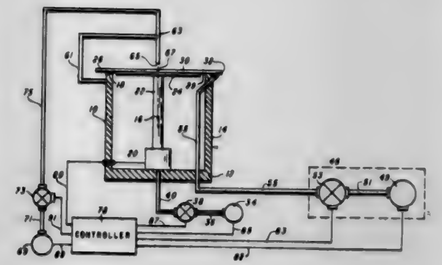
1. Apparatus for removing material from a convex outer edge of an object having a flat surface adjacent thereto, comprising:

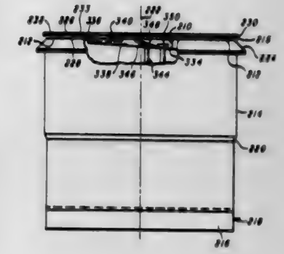
a. a means defining a source of fluid under pressure to dissolve said material;

b. a support provided with a planar surface having an arcuate slot therein elongated in a certain direction and in hydraulic communication with said source for receiving fluid therefrom through an opening, said slot with a bottom extending from one end in said first direction to another opposite end and having a first depth from said planar surface at said one end and sloping to a second depth from said planar surface less than said first depth at said one end;

c. a baffle attached to said support within said slot and extending adjacent to said opening to direct said fluid in said certain direction; and

d. a chuck movably mounted onto said support and adapted to engage said object with said flat surface closely adjacent said planar surface for moving said flat surface adjacent said slot in said certain direction transferring said fluid by contact to said flat surface and by centrifugal force to said edge.





18. A method of removing material from a convex, outer edge of an object having a flat surface adjacent said edge comprising the steps of:

a. providing a fluid under pressure to dissolve said material at an arcuate slot in a planar surface of a support with said slot elongated in a certain direction and sloping from one end to another end opposite said one end in said certain direction and toward said flat surface;

b. directing said fluid from adjacent said one end toward said another end; and

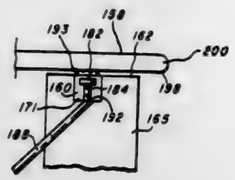
c. moving said flat surface parallel to said planar surface and closely adjacent said slot to transfer said fluid by contact to said flat surface and from said flat surface by centrifugal force onto said edge.

4,439,244

APPARATUS AND METHOD OF MATERIAL REMOVAL HAVING A FLUID FILLED SLOT

Tony E. Allevato, Stafford, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1982, Ser. No. 404,798
Int. Cl.³ B08B 7/00
U.S. Cl. 134—33 9 Claims



1. Apparatus for removal of material from a convex outer edge of an object with a flat surface adjacent said edge comprising:
a. a support;
b. a chuck rotatably mounted about an axis on said support, said chuck adapted to engage said object with said flat surface in a plane substantially perpendicular to said axis and with a certain location on said support closely adjacent said plane;
c. a means defining a source of fluid to dissolve said material;
d. a motor attached to said chuck to rotate said chuck in a first direction; and
wherein said support includes at said certain location an arcuate elongated slot extending from one end to another opposite end approximately in said first direction and in hydraulic communication with said source to transfer said fluid to said flat surface while said object is rotated.

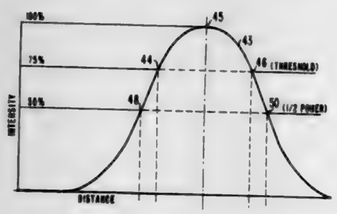
8. A method for removing material from a convex outer edge of an object having a flat surface adjacent said edge comprising the steps of:
a. supplying fluid under pressure for dissolving said material into a slot in a planar surface with said slot elongated in a certain direction and provided with a baffle for directing said fluid parallel to said certain direction; and
b. rotating said flat surface closely adjacent said planar surface substantially parallel said certain direction adjacent said slot to transfer said fluid to said flat surface by contact and onto said edge by centrifugal force.

4,439,245

ELECTROMAGNETIC RADIATION ANNEALING OF SEMICONDUCTOR MATERIAL

Chung P. Wu, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 25, 1982, Ser. No. 342,473
Int. Cl.³ H01L 21/263; B23K 27/00
U.S. Cl. 148—1.5 7 Claims



1. A method of annealing a semiconductor material having covalent bonds comprising the steps of:
irradiating the surface of a body of said material with a beam of electromagnetic radiation having a wavelength that is sufficiently small to absorb the photon energy of the beam substantially only to the desired depth of the surface to be annealed and sufficient power only to break the covalent bonds without undue melting of the material;
pulsing the beam to provide a duration of each pulse that is 50 nanoseconds or less so as to reduce towards a minimum the diffusion depth of electrons and holes in said material caused by the absorbed energy; and
providing the diameter of the beam to be significantly greater than the desired annealing depth to reduce convective flow of the material;
whereby said material is crystallized into a single crystal by annealing without raising the temperature of said material to its melting temperature.

4,439,246

METHOD OF MAKING HOLLOW BODIES UNDER PRESSURE FROM ALUMINUM ALLOYS

Roger Develay, Seyssinet Pariset, and Marc Anagnostidis, Chamalieres, both of France, assignors to Societe Metallurgique de Gerzat, Paris, France

Filed Jul. 1, 1982, Ser. No. 394,179
Claims priority, application France, Jul. 22, 1981, 81 14790
Int. Cl.³ C22F 1/04; C22C 21/10
U.S. Cl. 148—2 5 Claims



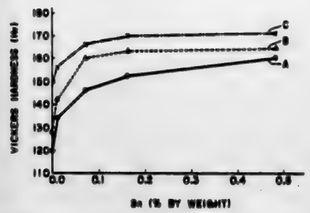
1. A method of manufacturing a hollow body under pressure from an aluminum alloy, comprising the steps of:
(1) preparing an alloy of a composition consisting of (by weight) $5.6 \leq Zn \leq 6.1$, $2.0 \leq Mg \leq 2.4$, $1.3 \leq Cu \leq 1.7$, $0.15 \leq Cr \leq 0.25$, $Fe \leq 0.10$, $Fe+Si \leq 0.25$, $Mn \leq 0.04$, $Zr \leq 0.03$, $Ti \leq 0.04$, with the remainder of the alloy being aluminum and impurities with the total amount of impurities being no more than 0.15 with the maximum amount of any given impurity being 0.05;
(2) casting the alloy in the form of a billet;
(3) hot extruding a billet at a temperature between 350° and 450° C. by the indirect process into the form of a case;
(4) drawing out the resultant case hot then cold;
(5) hot necking the drawn case between 350° and 450° C.;
(6) solution annealing the hot necked case between 450°and 490° C. and quenching the case with water at a temperature below 40° C; and
(7) two step tempering (type T73) the quenched case.

4,439,247

METHOD FOR MANUFACTURE OF HIGH-STRENGTH HIGH-ELECTROCONDUCTIVITY COPPER ALLOY

Kishio Arita; Toshio Takahashi, both of Musashino; Akio Miyoshi; Hajime Izumimori, both of Ichikawa, and Mitsushi Ishida, Tokyo, all of Japan, assignors to Sumitomo Metal Mining Company Limited; Nippon Telegraph and Telephone Public Corporation and Nippon Telecommunication Engineering Company Limited, all of Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,556
Claims priority, application Japan, Nov. 30, 1981, 56-193392
Int. Cl.³ C22F 1/08
U.S. Cl. 148—2 6 Claims



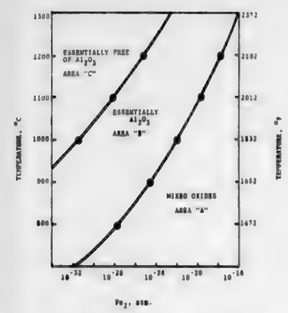
1. A method for manufacturing a copper alloy which displays a tensile strength of 50 kg/mm² or more and an electroconductivity of 80% I.A.C.S. or more and is useful in fabricating lead frames for integrated circuits, said method avoiding any solid solution treatment steps and comprising
(a) providing a copper alloy mass which consists essentially of 0.2 to 1.5% by weight chromium, 0.01 to 0.5% by weight tin, the balance being copper,
(b) casting said copper alloy mass of step (a) without quenching,
(c) hot working the cast copper alloy mass of step (b) at a temperature of between 800° to 950° C.,
(d) cooling said hot worked, cast copper alloy mass of step (c),
(e) cold working said cooled, cast copper alloy mass of step (d), and
(f) aging the cold worked, cast copper alloy mass of step (e).

4,439,248

METHOD OF HEAT TREATING NICRALY ALLOYS FOR USE AS CERAMIC KILN AND FURNACE HARDWARE

Robert B. Herchenroeder, Kokomo, and George Y. Lai, Carmel, both of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Filed Feb. 2, 1982, Ser. No. 345,260
Int. Cl.³ C22F 1/00
U.S. Cl. 148—6.2 7 Claims



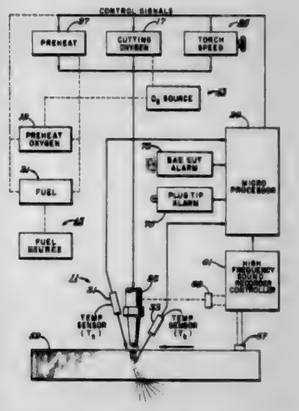
1. The method for producing furnace and kiln hardware articles for use in the manufacture of metallic and ceramic products including the steps of:
a. providing an alloy consisting essentially of, in weight percent, 8 to 25 chromium, 2.5 to 8 aluminum, a small but effective yttrium content not exceeding 0.1, and the balance nickel and impurities plus modifying elements optionally selected from the groups; up to 15 total Mo, Rh, Hf, W, Ta and Cb; up to 0.5 total C, B, Mg, Zr and Ca; up to 1 Si, up to 2 Mn, up to 20 Co, up to 5 Ti, and up to 30 Fe, and
b. fashioning said alloy into said article with a required shape for said use, and characterized by heat treating said fashioned article for an effective time in an oxygen potential controlled atmosphere with an oxygen partial pressure and between about 1500° and 2372° F. as indicated in area "B" in the attached FIG. 1 to provide an essentially aluminum oxide film on the surface of said article.

4,439,249

AUTOMATED CUTTING OF PLATE STEEL

Gurvinder P. Singh, and William D. Jolly, both of San Antonio, Tex., assignors to Victor Equipment Company, Denton, Tex. and ESAB North America, Inc., Fort Collins, Colo.

Filed Jun. 22, 1983, Ser. No. 506,863
Int. Cl.³ B23K 7/02
U.S. Cl. 148—9 R 27 Claims



1. In a method of cutting metallic plate in which fuel and oxygen are admixed and burned as they exit from a torch tip as a pre-heat flame for heating a spot on the metal plate, in which cutting oxygen is directed through the hot molten metal spot on the plate to complete a cut therethrough, in the process forming a kerf, and in which the torch tip is moved along a predetermined path to cut the metallic plate therealong, the improvement comprising:
a. sensing the temperatures at a plurality of points adjacent the top and in the kerf of the cut of the metal plate; and
b. responsive to the sensed temperatures, making appropriate pre-designated changes to effect more nearly optimum cut of the steel plate.

4,439,250

SOLDER/BRAZE-STOP COMPOSITION

Shankar C. Acharya, Beacon; Thomas C. Prizzia, Wappingers Falls, and Otha Rutigliano, Beacon, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,802
Int. Cl.³ B23K 35/34
U.S. Cl. 148—23 9 Claims

1. A solder/braze-stop composition, comprising by weight:
40–57% Al_2O_3 powder;
27–43% Methyl Isobutyl Ketone; and
12–22% of a vehicle comprising by weight:

15–20% Ethyl Cellulose;
75–80% 2-(2-Butoxyethoxy)Ethyl Acetate; and,
5–10% Oleoyl Sarcosine.

4,439,251

NON-ORIENTED ELECTRIC IRON SHEET AND METHOD FOR PRODUCING THE SAME

Yoshiaki Shimoyama; Ichiro Tachino, and Shigenobu Koga, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 76,734, Sep. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 47,995, Jun. 13, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 286,754
Claims priority, application Japan, Jun. 16, 1978, 53-72097
Int. Cl.³ C04B *35/00*
U.S. Cl. 148—31.55 **4 Claims**

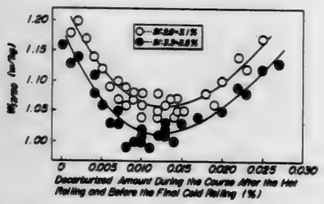
1. A non-oriented magnetic material produced by hot-rolling a slab consisting essentially of ≦0.065% C, ≦0.10% Al, 0.31 to 3.15% Si, ≦0.020% O, ≦0.01% N and B being present in such amounts that the ratio of B/N is in the range of 0.50 to 2.50, and the rest being Fe and unavoidable impurities to obtain a hot-rolled sheet, subjecting the thus-obtained hot-rolled sheet to at least one cold-rolling step with intermediate annealing, when a plurality of steps is used, followed by a continuous annealing step to produce a non-oriented magnetic material.

4,439,252

METHOD OF PRODUCING GRAIN-ORIENTED SILICON STEEL SHEETS HAVING EXCELLENT MAGNETIC PROPERTIES

Katsuo Iwamoto, Kakogawa; Tomomichi Goto, Kobe; Yoshinori Kobayashi, Takarazuka; Yoshiaki Iida, and Isao Matoba, both of Kobe, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sep. 23, 1982, Ser. No. 421,809
Claims priority, application Japan, Sep. 26, 1981, 56-152466
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—111 **8 Claims**



1. In a method of producing grain-oriented silicon steel sheets having excellent magnetic properties, comprising a step of hot rolling a silicon steel having a composition containing, in % by weight, 2.8–4.0% of Si, 0.02–0.15% of Mn and 0.008–0.080% of a total amount of at least one of S and Se into a hot rolled steel sheet, a step of coiling the hot rolled steel sheet, a step of subjecting the coiled steel sheet to two or more cold rollings with an intermediate annealing between them, wherein the final cold rolling is carried out at a reduction rate of 40–80%, to produce a finally cold rolled steel sheet having a final gauge, and steps of subjecting the finally cold rolled steel sheet to a decarburization annealing and then to a final annealing, an improvement comprising said silicon steel having a C content, depending upon the Si content, within the range defined by the following formula

$$0.37[Si\%]+0.27 \leq \log([C\%]\times 10^3) \leq 0.37[Si\%]+0.57$$

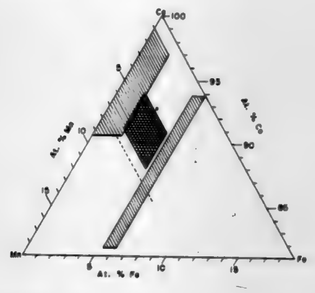
wherein [Si%] and [C%] represents contents (% by weight) of Si and C in the steel, respectively; and removing 0.006–0.020% by weight of C from the steel during the course after the completion of the above described hot rolling and just before the beginning of the above described final cold rolling.

4,439,253

COBALT RICH MANGANESE CONTAINING NEAR-ZERO MAGNETOSTRICTIVE METALLIC GLASSES HAVING HIGH SATURATION INDUCTION

V. R. V. Ramanan, Randolph, N.J., assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 4, 1982, Ser. No. 354,824
Int. Cl.³ C22C *19/00*
U.S. Cl. 148—403 **24 Claims**



1. A magnetic alloy which is at least about 70% glassy, has a combination of near-zero magnetostriction ranging from about −1 ppm to +5 ppm, high permeability of at least about 5,000, when measured with a driving field of 1 kHz frequency that produces an induction level of 0.01 T, and high saturation induction of at least about 1.09 T, and which is described by the formula $[Co_aFe_{1-a}]_{100-(b+c)}Mn_bB_{c-d}Si_d$, where "a" ranges from about 0.90 to 0.99, "b" ranges from about 2 to 6 atom percent, "c" ranges from about 14 to 20 atom percent and "d" ranges from about 0 to 7 atom percent with the proviso that the minimum B present is 10 atom percent.

4,439,254

SOLID SENSITIZERS IN WATER GEL EXPLOSIVES AND METHOD

John J. Mullay, Hazelton, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Filed Apr. 5, 1982, Ser. No. 365,788
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **30 Claims**

1. In a water gel explosive composition comprising inorganic oxidizing agents, water, and gelling agents, the improvement comprising including therein:
a sensitizing agent comprising a mixture of aluminum and a densifying agent, said mixture being admixed prior to incorporation into the water gel explosive composition.

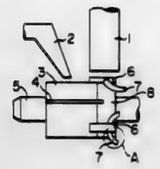
4,439,255

PROCESS FOR PRODUCTION OF HEAT RESISTANT INSULATED ELECTRIC WIRE AND CABLE

Takeshi Imai, Oobu, and Naohiro Kako, Takahama, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 131,767, Mar. 19, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,502
Claims priority, application Japan, Mar. 23, 1979, 54-34790; Mar. 23, 1979, 54-34791; Dec. 10, 1979, 54-160674
Int. Cl.³ B21F *15/02*; H01B *13/00*
U.S. Cl. 156—49 **11 Claims**

1. A method for connecting a heat-resistant insulated electric wire to another electrical conductor which methods comprises the steps of:
(1) applying an insulating layer on a conductor by coating the conductor with a dispersion of an inorganic substance which dispersion contains a binder therein;
(2) heating said inorganic dispersion layer to a temperature below the melting point of the inorganic substance; then
(3) forming an organic insulating layer on said inorganic substance layer to form an insulated electric wire;
(4) pushing the insulated electric wire against another electric conductor; and



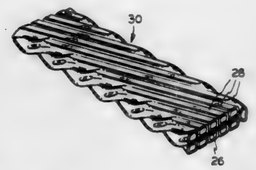
(5) passing an electric current through said another electric conductor while continuing said pushing thereby heating only the part of the wire being pushed to a high temperature thereby deforming the insulating layer and destroying the insulating layers, consisting of said organic insulating layer and said inorganic substance insulating layer, by the high temperature and the pushing force on only that portion of the wire being pushed, thereby electrically wlding said electric conductor to said another electric conductor to form an electrical connection between them.

4,439,256

METHOD OF PRODUCING FLAT STRANDED MAGNETIC CONDUCTOR CABLE

Robert F. Meserve, Lisbon, N.H., assignor to New England Electric Wire Corporation, Lisbon, N.H.

Filed Feb. 18, 1981, Ser. No. 235,706
Int. Cl.³ H01B *13/00*
U.S. Cl. 156—50 **2 Claims**



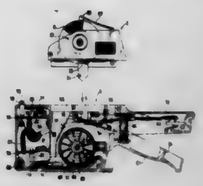
1. In a method for the manufacture of a flat, rectangular cable comprised of two layers of compacted, helically wound coated conductors and an interposed strip of insulating sheet material, the steps comprising:
(a) continuously supplying to a forming station a longitudinally advancing and rotating generally circular array of at least four coated conductors, and forming the conductors into a helical configuration of circular cross-section;
(b) gradually transforming the cross-section of said array from circular to a flat elliptical configuration;
(c) continuously feeding a strip of insulating sheet material longitudinally into the center of said array of conductors;
(d) comprising said conductors tightly about said insulating strip to transform said elliptical structure into a cable of generally rectangular cross-section in which said conductors are densely packed to provide less than about 15 percent of void space in said cable and are disposed substantially in two layers with said strip interposed therebetween, said strip and the coating on said conductors providing electrical insulation between said layers as well as between the individual conductors; and
(e) continuously withdrawing the cable so produced from said forming station.

4,439,257

LABEL PRINTING AND APPLYING APPARATUS

Yo Sato, Tokyo; Tadao Kashiwaba, Kitagami, and Yasuhiko Matsuda, Hanamaki, all of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Mar. 2, 1982, Ser. No. 354,060
Claims priority, application Japan, Mar. 5, 1981, 56-30525
Int. Cl.³ B65C *9/18*, *11/00*
U.S. Cl. 156—64 **20 Claims**



1. A label printing and applying apparatus, comprising:
a printer for printing labels in a web of a series of labels, the printer including printing means for printing labels as the web of labels is moved past the printing means, and including feed means for advancing the web of labels past the printing means to a receiving means;
a label holder having a body adapted to seat upon the printer; removably attachable to the printer, the label holder including receiving means supported on the label holder body for receiving and holding the label web that is fed to the receiving means by the feed means, after label printing by the printing means; and
a label applier, the label holder body also being adapted to seat upon the label applier and being removably attachable to the label applier; the label applier including means for feeding the label web from the label holder to the label applier; the label applier including an exit for labels of the label web, where labels may be removed from the label applier, and the label applier feeding means feeding the label web to the exit of the label applier.

14. A label printing and applying apparatus, comprising:
a printer for printing labels in a web of a series of labels, the printer including printing means for printing labels as the web of labels is moved past the printing means, and including feed means for advancing the web of labels past the printing means to a receiving means;
a label holder removably attachable to the printer, the label holder including receiving means for receiving and holding the label web that is fed to the receiving means by the feed means, after label printing by the printing means; and
a label applier, the label holder being removably attachable to the label applier; the label applier including means for feeding the label web from the label holder to the label applier; the label applier including an exit for labels of the label web, where labels may be removed from the label applier, and the label applier feeding means feeding the label web to the exit of the label applier;
memory circuit means at the label holder for remembering the indicia printed upon the labels at the printing means while the label holder is attached to the printer and for providing an indication of the remembered indicia when the label holder is attached to the label applier.

4,439,258

METHOD FOR COVERING WITH CYLINDRICALLY SHAPED HEAT-SHRINKABLE FILM

Hitoshi Toma; Tomohiro Kimura, both of Kawasaki, and Hideyo Kondo, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

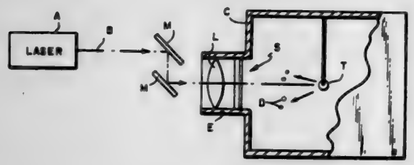
Filed May 13, 1982, Ser. No. 377,928
Claims priority, application Japan, May 26, 1981, 56-80622
Int. Cl.³ B29C *27/20*
U.S. Cl. 156—86 **4 Claims**

1. A method for covering with a cylindrically shaped heat-shrinkable film, which comprises the steps of:

covering a substrate with a cylindrically shaped heat-shrinkable film;
subjecting said cylindrically shaped heat-shrinkable film to a first shrinking at the portion of the film corresponding to the lower end of said substrate at a temperature of the higher temperature zone in the heat-shrinkable temperature range of said film;
subjecting said film, except for the portion corresponding to the upper end of said substrate, to a second shrinking at a temperature of the lower temperature zone in said temperature range; and
subjecting said film wholly to a third shrinking at a temperature of the higher temperature zone in said temperature range, using a liquid heating medium for heating in the above steps of shrinking.

4,439,259
METHOD OF MAKING LASER FUSION DEBRIS SHIELD

Bruce K. Flint, Acton, Mass., assignor to Acton Research Corporation, Acton, Mass.
Division of Ser. No. 227,984, Jan. 23, 1981, abandoned. This application Oct. 1, 1982, Ser. No. 432,274
Int. Cl.³ G02B *1/04*; B29G *1/00*
U.S. Cl. 156—245 **6 Claims**

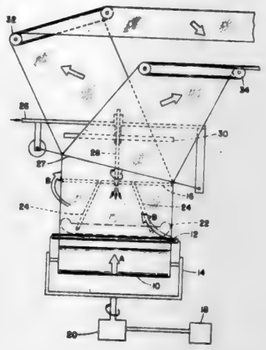


1. The method of making a high energy reaction debris shield comprising:
applying a release coat to the opposable faces of two supports;
applying a liquid, transparent epoxy compound on the coat of one support and pressing the two supports face to face to shape an epoxy shield between the faces, and allowing the epoxy to cure;
removing at least one support at the release coat and attaching a holder at the periphery of the shield; and
removing the release coat from the shield to form a window optically transparent and physically resistant to the high energy and physically obstructive of reaction debris.

4,439,260
METHOD AND APPARATUS FOR FORMING CROSS-LAMINATED THERMOPLASTIC FILM

Peter J. Canterino, Towaco, and Craig E. Allen, Clark, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed May 17, 1982, Ser. No. 378,705
Int. Cl.³ B32B *31/02*
U.S. Cl. 156—259 **20 Claims**

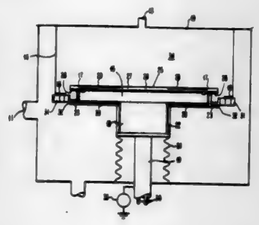
1. A method for forming a continuous cross-laminated, bias-slit web from a supply roll of a layflat, highly machine direction oriented tubular thermoplastic film comprising the steps of:
(a) advancing the tubular film over a mandrel in the longitudinal direction of the film while concurrently rotating said supply roll about a rotation axis perpendicular to an axis of said roll, thereby imparting rotation to said film without molecularly orienting it;
(b) inflating said tubular film intermediate said supply roll and said mandrel to a pressure preventing collapse of said film;
(c) slitting said tubular film downstream of said mandrel at a predetermined bias relative to the movement thereof providing at least two film strips adapted to be superimposed to form said continuous laminated web, said steps (a), (b) and (c) being performed in a manner which does not change the molecular orientation inherent in said tubular film, but which produces in said two strips slit from said tubular film a molecular orientation which has



components in both the machine and transverse direction, with the molecular orientation in one of said strips crossing that in the other of said strips; and
(d) laminating said two strips together so that the molecular orientation of one crosses the molecular orientation of the other to form a cross-biased laminated film.

4,439,261
COMPOSITE PALLET

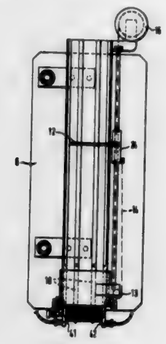
Peter J. Pavone, and Richard D. Van Demark, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 26, 1983, Ser. No. 526,745
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—345 **11 Claims**



1. A reactive ion etching system comprising:
a vessel;
a disc-shaped cathode within said vessel, said cathode being connected to a radio frequency source; and
a disc-shaped pallet including a top insulating layer for holding a plurality of semiconductor wafers thereon, and a bottom conducting layer, the diameter of said pallet being greater than the diameter of the cathode and said pallet bottom conducting layer being adjacent said cathode and electrically connected thereto,
whereby said bottom conducting layer is an extension of said cathode over the entire pallet diameter to achieve uniform reactive ion etching on all portions of the pallet.

4,439,262
LABELING STATION FOR ARTICLES LIKE BOTTLES

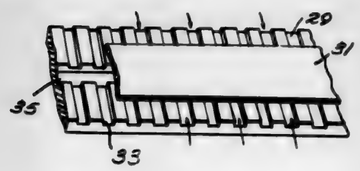
Rudolf Zodrow, Düsseldorf; Egon Höveler, Haan, and Heinz-Jürgen Rosenberg, Neuss, all of Fed. Rep. of Germany, assignors to Jagenberg AG, Düsseldorf, Fed. Rep. of Germany
Filed Mar. 22, 1982, Ser. No. 360,143
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112077; Feb. 16, 1982, 3205414
Int. Cl.³ B65C *9/10*, *9/16*
U.S. Cl. 156—364 **16 Claims**



1. In a labeling station that is intended for articles like bottles, that has at least one revolving or pivoting label grasper-applicator with a capture-and-release surface for taking a label from a stack and applying it to an article to be labeled, and that has holders that hold the edge of the stack of labels, the improvement which comprises controls for the holders (41, 42) or supplementary holders (45, 46) that hold the edge of the stack so that the retentive force the holders exert on the labels can be adjusted to be made greater than the attractive force exerted by the catpure-and-release surface of the grasper-applicator (2, 3, 4) and, when the stack is held in a moving magazine, than the inertia exerted by the stack of labels on the stack holders as the magazine (6) moves backwards, the controls haivng a detector that scans the series of articles to be labeled and actuates the controls and the holders (41, 42 or 45, 46) when it senses a conditon calling for a label not to be applied.

4,439,263
METHOD AND APPARATUS FOR BONDING PLASTIC MATERIALS

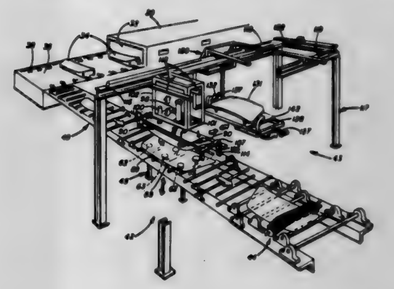
James S. Hardigg, South Deerfield; E. Wayne Turner, Deerfield, and Joseph C. Strzegowski, Jr., Conway, all of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.
Continuation of Ser. No. 68,560, Aug. 22, 1979, abandoned, which is a continuation of Ser. No. 862,560, Dec. 20, 1977, abandoned. This application May 19, 1981, Ser. No. 265,215
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—497 **9 Claims**



1. A system for welding two pieces of thermoplastic material to one another consisting essentially of:
means for heating at least one edge of each of said pieces to at least the fusion temperature of the thermoplastic;
means for joining said heated edges to one another under pressure to thereby form a welded junction, said pressure causing a bead of plastic material to be formed on at least one side of said welded junction; and
means for quickly heating said bead of plastic material to about its fusion temperature and rapidly cooling said heated bead to a temperature below said fusion temperature, wherein said means for heating and cooling comprises:
a continuous strip of electrically conducting material of high electrical resistivity, attached to a source of electricity;
means for supporting said strip, having an opening in the center thereof, wherein said strip is disposed over said opening;
a frame, defining an enclosed space and having an opening in a surface thereof which allows access from outside of the frame into said enclosed space, to which said strip and support means are attached, so that the opening in said support coincides with the opening in said surface;
means, in communication with said enclosed space, for drawing ambient air from the outside, through an opening of said support and, in turn, through the opening into said enclosed space; and
whereby heat can be generated by passing an electric current through said strip and whereby cooling can be effected by actuating said means for drawing ambient air under reduced pressure to draw said air through said opening in said support means and, in turn, through the opening in the surface of said frame.

4,439,264
METHOD AND APPARATUS FOR ASSEMBLING SANDWICHES COMPRISING HOT BENT GLASS SHEETS

James L. Valimont, Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 287,598, Jul. 28, 1981, Pat. No. 4,367,106. This application Aug. 30, 1982, Ser. No. 412,759
Int. Cl.³ B32B *31/06*; B65H *39/00*
U.S. Cl. 156—556 **5 Claims**



1. Apparatus for assembling a sandwich comprising a pair of bent glass sheets of matching configuration and a sheet of flexible interlayer material therebetween, said apparatus comprising:
an exit station for removing said pair of bent glass sheets from a glass sheet bending lehr while said glass sheets are still hot from bending,
an assembly station located a short distance from said exit station;
a conveyor for conveying said pair of bent glass sheets through said short distance having a minimum length slightly longer than the length of the longest of said glass sheets to be assembled and a maximum length such that said apparatus assembles said pair of bent glass sheets and said sheet of flexible interlayer material in a maximum of 35 seconds in order to deliver said pair of bent glass sheets

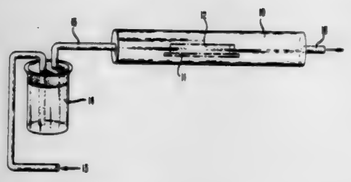
from said exit station to said assembly station at a temperature sufficient to make said interlayer tacky,
means for separating said pair of bent glass sheets from one another to provide a gap between said separated bent glass sheets while maintaining said bent glass sheets in alignment at said assembly station,
means for supporting said sheet of flexible interlayer material,
means for moving said supporting means into said assembly station to apply said sheet of flexible interlayer material against one of said bent glass sheets so as to form a subassembly therewith and to separate said supporting means from said subassembly,
means for removing said supporting means from said assembly station, and
means for positioning the other of said bent glass sheets to engage said sheet of flexible interlayer material,
said various means and said conveyor being constructed and arranged free from heating means and in such a manner that said conveyor means transfers said bent glass sheets from said exit station to said assembly station as a pair and said other means separate said glass sheets and bring the latter into engagement with said sheet of flexible interlayer material in a maximum of 35 seconds to enable the residual heat imparted to said bent glass sheets in said bending lehr to cause said sheet of flexible interlayer material to become tacky on engagement with said bent glass sheets at said assembly station without requiring any additional heat during the interval between the removal of said pair of bent glass sheets from said exit station and their assembly to said sheet of flexible interlayer material.

4,439,265

FABRICATION METHOD FOR $LINBO_3$ AND $LITAO_3$ INTEGRATED OPTICS DEVICES

Rodney C. Alferness, Holmdel; Lawrence L. Buhl, New Monmouth; Janet L. Jackel, Holmdel; Susan P. Lyman, Matawan, and Vellayan Ramaswamy, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 17, 1981, Ser. No. 284,472
Int. Cl.³ C30B *31/06*
U.S. Cl. 156—606 **4 Claims**



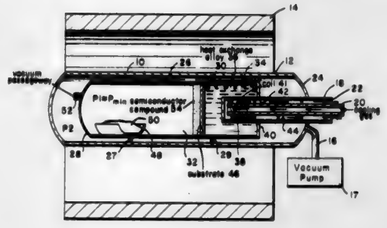
1. Method for manufacturing an optical device comprising an in-diffused strip lightguiding region in a substrate comprising material selected from the group consisting of $LiNbO_3$ and $LiTaO_3$, the method comprising
diffusing metal atoms into the substrate during a high-temperature diffusion step comprising heating the substrate to a temperature greater than about 700° C.,
characterized in that the method further comprises
contacting at least part of the substrate with an atmosphere comprising at least a minimum effective concentration of a hydrogen donor, the contact occurring during at least part of the time the substrate is, during the diffusion step, at the temperature greater than about 700° C., thereby preventing a substantial decrease of the Li concentrations in the contacted surface region of the substrate.

4,439,266

VAPOR TRANSPORT PROCESS FOR GROWING SELECTED COMPOUND SEMICONDUCTORS OF HIGH PURITY

Anthony L. Gentile, Thousand Oaks; John L. Bowers, Pacific Palisades, and Oscar M. Stafsudd, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 92,607, Nov. 8, 1979, Pat. No. 4,299,649, which is a continuation of Ser. No. 877,927, Feb. 15, 1978, abandoned, which is a continuation of Ser. No. 734,925, Oct. 22, 1976, abandoned. This application May 1, 1981, Ser. No. 259,384
Int. Cl.³ C30B *23/06*
U.S. Cl. 156—614 **2 Claims**



1. A process for growing II-VI semiconductor crystals which comprises:
(a) providing both a II-VI semiconductor source material and a crystal growth support member in a predetermined dynamic vacuum sufficient to create a predetermined overpressure at said source material and to remove impurities therefrom;
(b) raising the temperature of said support member to a predetermined level above the temperature of said source material, thereby preventing vapor transport between the two; and then
(c) lowering the temperature of said support member to a predetermined value below that of said source material to produce a dissociation of elemental gases from said source material and initiate controlled vapor transport of said elemental gases from said source material to said support member where said gases deposit in the formation of II-VI compound semiconductor crystals of high purity and stoichiometry.

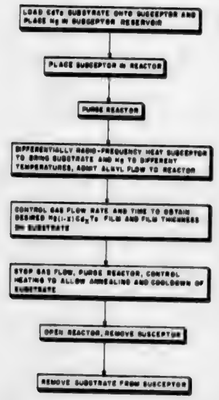
4,439,267

VAPOR-PHASE METHOD FOR GROWING MERCURY CADMIUM TELLURIDE

David A. Jackson, Jr., Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,428
Int. Cl.³ C30B *25/12*
U.S. Cl. 156—614 **3 Claims**

1. A method of growing mercury cadmium telluride of the chemical notation $Hg_{(1-x)}Cd_xTe$, in a cold wall reactor, wherein x is greater than zero and less than 1, on a semiconductor substrate, including the steps of:
loading said substrate onto a susceptor;
loading mercury in a reservoir in said susceptor;
placing said suceptor and its load into a reactor;
purging said reactor;
differentially radio-frequency heating said susceptor to bring said substrate and said mercury to different predetermined temperatures whereby mercury vapor pervades said reactor and, as said temperatures are reached;
admitting alkyl gases to said reactor;
controlling the time and the flow rates of said gases, whereby said gases are thermally decomposed in the vicinity of said substrate and at least some of the decomposition products of the gases combine with the mercury vapor to form mercury cadmium telluride on said substrate;
stopping the flow of gases, purging the reactor, and controlling the temperature of susceptor to allow annealing of the substrate and cooldown;
removing the susceptor and its load from the reactor, and;
removing the substrate from the susceptor.

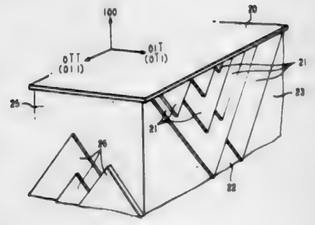


4,439,268

ORIENTATION OF INP SUBSTRATE WAFERS

Larry A. Coldren, Holmdel, and Lawrence W. Stulz, Shark River Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 6, 1983, Ser. No. 529,286
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 **9 Claims**



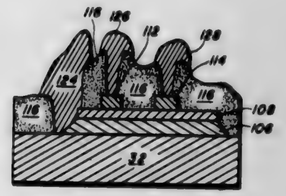
1. A method of determining the orientation of a (100) InP substrate wafer, the method comprising the steps of
contacting at least a portion of the substrate wafer with a chemical etchant to expose a plurality of features having a predetermined shape on the portion of substrate wafer, and
designating a crystallographic direction on the substrate wafer in accordance with the orientation of the features on the portion of the substrate wafer, the method being characterized in that the portion of the substrate wafer includes at least one surface being substantially perpendicular to the (100) plane.

4,439,269

METHOD FOR MAKING JOSEPHSON JUNCTIONS WITH CONTAMINATION-FREE INTERFACES UTILIZING A ZNO CONTACT INSULATOR

Edward J. Cukauskas, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 431,977
Int. Cl.³ H01L *39/24*
U.S. Cl. 156—643 **5 Claims**



1. A method of fabricating a Josephson junction integrated circuit device with contamination-free interfaces, comprising the steps of:
providing a quartz substrate located in an ultra-high vacuum chamber;
pumping said ultra-high vacuum chamber down to an ultra-high vacuum on the order of $1-5\times10^{-9}$ torr;
depositing by RF sputtering onto said quartz substrate a 300 nm lower layer of NbN, said lower layer being deposited at 600°–700° C. under a partial pressure of Ar on the order of 11×10^{-3} torr;
depositing by RF sputtering at 300° C. a 4 nm layer of hydrogenated silicon onto said lower layer of NbN;
oxidizing said layer of hydrogenated silicon in an oxygen atmosphere at 300° C.;
depositing by RF sputtering onto said hydrogenated silicon layer a 20–50 nm upper layer of NbN, said upper layer being deposited under a partial pressure of Ar in the range of $20–30\times10^{-3}$ torr, all said depositing and oxidizing steps being done in said ultra-high vacuum chamber during a single pump-down thereof;
sculpturing by anisotropic etching said deposited and oxidized layers to form base electrodes;
anisotropically etching through said upper layer and said oxidized silicon layer to form pedestals of counter electrodes and barriers;
depositing a 500 nm layer of ZnO over said device;
etching via holes through said ZnO layer to the base and counter electrodes;
depositing a 100 nm layer of a contact/lead superconducting material over said device, said contact/lead layer contacting said base and counter electrodes through said via holes in said ZnO layer; and
etching said contact/lead layer to form a contact and lead pattern.

4,439,270

PROCESS FOR THE CONTROLLED ETCHING OF TAPERED VIAS IN BOROSILICATE GLASS DIELECTRICS

Jimmie L. Powell, Wappingers Falls; Charles L. Standley, Hopewell Junction, both of N.Y., and John Sulerveld, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 8, 1983, Ser. No. 521,461
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—644 **6 Claims**

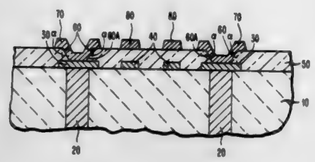
1. A process for etching openings in a relatively thick layer of borosilicate glass while controlling the degree of taper of the

side walls of the opening, the taper being in excess of about 45°, which process comprises:

depositing a layer of silicon nitride that contains silicon in an amount in excess of stoichoimetric in Si_3N_4,

densifying the silicon nitride layer,

depositing a layer of resist,



exposing and developing the layer of resist to define a desired pattern of openings in the borosilicate glass layer,

removing the exposed silicon nitride areas, and

subjecting the resultant exposed borosilicate glass surface to an etchant for the glass.

4,439,271

PROCESS FOR THE OXYGEN BLEACHING OF CELLULOSE PULP

Hans O. Samuelson, Gothenberg, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Jun. 4, 1981, Ser. No. 270,438

Claims priority, application Sweden, Jun. 5, 1980, 8004184

Int. Cl.³ D21C *3/02, 9/00*

U.S. Cl. 162—19 **29 Claims**

1. A two stage process for the delignification of cellulose pulp, including chemical pulp prepared from the digestion of lignoscellulosic material, including an activation stage followed by an oxygen gas bleaching stage, the activation stage leading to a quick delignification in the oxygen gas bleaching stage, and also to a deactivation of the pulp in such a manner that degradation of the carbohydrates during the oxygen gas bleaching stage becomes slower, which comprises bringing the cellulose pulp in the activation stage in the presence of water in contact with a gas phase containing nitrogen dioxide and modifying the lignin content of the cellulose pulp to increase the rate of delignification in the oxygen gas bleaching stage by reaction with nitrogen dioxide over a reaction time within the range from about 5 seconds to about 30 minutes; adding oxygen gas to the activating reaction in an amount within the range from about 0.1 to about 5 moles per mole of NO_2 and in an amount within the range from about 0.6 to about 5 moles per mole of NO, nitrogen monoxide formed in the activation being utilized in the activation reaction; and then in the oxygen gas bleaching stage, subjecting the pulp to an oxygen gas bleaching in the presence of an alkaline-reacting neutralization medium or neutralizing agent, thereby obtaining an increased rate of delignification and a reduced degradation of the carbohydrates during the oxygen gas bleaching.

4,439,272

PULP MILL RESIDUAL LIQUOR RECOVERY PROCESS

Xuan T. Nguyen, 7375 Maynard, Montreal, Quebec, Canada

Filed Jan. 13, 1982, Ser. No. 339,114

Int. Cl.³ D21C *11/04*

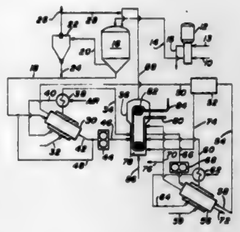
U.S. Cl. 162—30.11 **4 Claims**

1. A method for the recovery of chemical from residual liquor resulting from kraft pulping of cellulosic material which sequentially comprises:

(a) initially feeding all of the residual liquor to a first reaction zone and in the first reaction zone pyrolyzing the residual liquor to produce a reducing gas containing sulfur compounds and residual materials consisting of inorganic and organic components, with the proviso that said residual materials are in a solid or in a liquor of solid state,

(b) in a second reaction zone oxidizing in a fluidized bed provided therein with an internal heat extraction system said residual materials from the first reaction zone as to burn substantially all of said organic component and to accumulate said inorganic component as inorganic solids within said bed, said solids comprising at least a portion of sodium carbonate and sodium sulfate,

(c) thereafter in a third reaction zone reducing said inorganic solids in solid phase with said reducing gas of said first reaction zone said residual liquor from said first reaction



zone being sufficient to generate the amount of said reducing gas required for reducing in said third reaction zone said inorganic solids combined with said sulfur compounds and removing reduced inorganic solids comprising sodium carbonate and sodium sulfide from said third reaction zone,

(d) directing the spent reducing gas containing sulfur compounds from said third reaction zone into said second reaction zone to convert said sulfur compounds of said reducing gas into sulfur dioxide gas and combining said sulfur dioxide gas with said inorganic solids in step b, and thereby at least partly to convert said sodium carbonate into sodium sulfate.

4,439,273

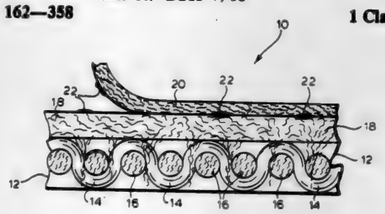
WET PRESS FELT FOR PAPERMAKING MACHINE

Thomas H. Curry, Clifton Park, N.Y., assignor to Albany International Corp., Albany, N.Y.

Continuation-in-part of Ser. No. 214,707, Dec. 10, 1980, abandoned. This application Aug. 11, 1982, Ser. No. 408,176

Int. Cl.³ D21F *7/08*

U.S. Cl. 162—358 **1 Claim**



1. In a wet press felt for use in a papermaking machine, which comprises an outer textile face layer for receiving and supporting a wet paper sheet during its passage through the nip of a wet press in the papermaking machine;

a lower backside layer for supporting the felt on the papermaking machine; and

an intermediate textile fabric layer between the outer textile face layer and the lower backside layer, the improvement, which comprises; said outer textile face layer being a sheet of spun-bonded, formed fabric comprising a substantially uniform layer of non-woven, synethetic organic filaments, said filaments being substantially round in cross-section and randomly distributed throughout the layer and so disposed as to be substantially separate and independent of each other except at filament cross-over points, where the filaments are bonded together, said layer presenting a smooth, substantially unbroken surface which is porous, permitting only particles of less than about 35 microns in diameter to pass through, said face layer being secured to the intermediate layer by an adhesive disposed in disperse locations between the face layer and the intermediate layer so that porosity of the felt is not impaired.

4,439,274

METHOD AND CHIMNEY FOR REDUCING THE EMISSION OF SOLID PARTICLES

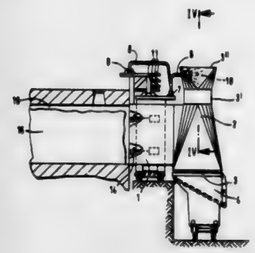
Walter Goossens, Wuerselen-Bardenberg, and Wolfgang Schrank, Alsdorf, both of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,784

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038519

Int. Cl.³ C10B *31/00*

U.S. Cl. 201—41 **8 Claims**



1. A method for reducing the emission of solid particles from a chimney forming a channel in which an air, gas, and solid particle mixture rises substantially vertically due to a heat convection current of given upward draft resulting from the discharge and collapse of a batch of hot coke from a horizontal coking chamber, comprising the following steps: avoiding any quenching of the hot coke being discharged for permitting the development of said heat convection current without any steam in said mixture, then exposing the substantially vertically rising mixture of hot air, gas and solid particles to a shower of scrubbing liquid drops which are directed substantially horizontally into the rising mixture again without causing any quenching of the coke being discharged, adjusting in combination the initial volume of the individual liquid drops, the initial surface tension of the individual liquid drops, the initial density of the individual liquid drops, and their initial substantially horizontal speed relative to each other so that the scrubbing liquid drops remain suspended in said given upward convection current draft for loading with solid particles until the loaded drops become too heavy for remaining suspended in the upward convection current draft and sink downwardly solely by gravity in countercurrent flow to the upward draft of the convection current, collecting the liquid drops laden with solid particles below said shower without contacting said hot coke for preventing substantially any steam generation to maintain said upward convection current draft undisturbed, and discharging the collected liquid without condensation from the chimney by preventing a direct contact between the loaded drops and the coke as the latter is being pressed out of the coking chamber.

4,439,275

COKE CALCINING APPARATUS

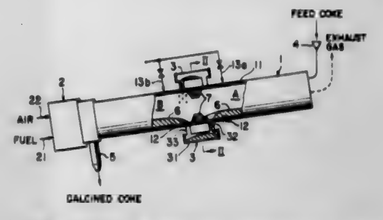
Kosaku Noguchi, Tokyo, Japan, assignor to Kos Oil Company, Limited, Chiyoda, Japan

Filed Dec. 9, 1982, Ser. No. 448,502

Claims priority, application Japan, Apr. 26, 1982, 57-69762

Int. Cl.³ C10B *1/10, 39/00, 39/12*

U.S. Cl. 202—100 **8 Claims**



1. A coke calcining apparatus comprising: a rotary kiln structure of the shape of a hollow cylinder the axis of which is declined relative to the horizontal, whereby coke introduced into the kiln structure at an upstream end thereof flows therethrough in the declination direction to the opposite downstream end thereof; an intermediate cooler extending along the outer wall surface of the kiln structure at an intermediate part thereof as considered in the longitudinal direction thereof and having inlet and outlet parts respectively communicating with upstream and downstream interiors of the kiln structure; and guide means for causing the entire quantity of coke which has flowed through the upstream interior to flow through the intermediate cooler, said coke being subjected to a first-stage heating in the upstream interior and then, after being cooled in the intermediate cooler, being subjected to a second-stage heating.

4,439,276

FILLING ARRANGEMENT FOR COKE OVEN CHAMBERS

Manfred Galow, Essen, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 384,165

Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121587

Int. Cl.³ C10B *31/02, 31/04*

U.S. Cl. 202—239 **6 Claims**



1. An arrangement for filling at least one coke oven chamber having a filling opening, comprising

transport means arranged to transport coal;

a chute member arranged under said transport means to guide coal to a filling opening of a coke oven chamber;

at least one closing member arranged between said chute member and the filling opening of the coke oven chamber; and

closure means located in an upper portion of said chute

member and including a housing formed laterally on and of one piece with said chute member and a sliding plate movable in an upper portion of said chute member and closely under said transport means, into one region of said housing so as to assume an open position in which said sliding plate releases coal into said chute member and into another region of said housing so as to assume a closing position in which said sliding plate prevents coal from entering said chute member and only a small coal layer can lie on said sliding plate, said housing having a bottom part, and said sliding plate and said bottom part of said housing in said one region being inclined relative to the horizontal, so that said sliding plate is inclined relative to the horizontal at a predetermined angle, whereas said bottom part of said housing is inclined relative to the horizontal at an angle exceeding the angle of inclination of said sliding plate.

4,439,277

COKE-OVEN DOOR WITH Z-PROFILE SEALING FRAME

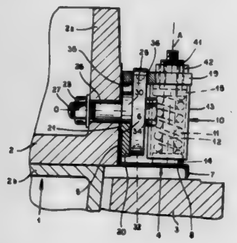
Kurt E. Dix, Auf dem Knust 25, 4630 Bochum, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,705

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130587; Jun. 16, 1982, 3222553

Int. Cl.³ C10B *1/06, 25/06*

U.S. Cl. 202—248 **10 Claims**



1. In a coke-oven door wherein a sealing frame of generally Z-shaped cross-section extends around the door body and has an inner rim hugging the peripheral door surface, said sealing frame further having a cantilevered web integral with said rim terminating in a free edge confronting a face of a door frame of an associated coking chamber,

the improvement wherein said door is provided with clamping means partly overlying said rim and holding same against said peripheral door surface while being shiftable along the latter, and a multiplicity of retaining disks individually rotatable about axes perpendicular to said door surface and provided with frame-shifting cams bearing upon said clamping means for adjustably backstopping same against pressure exerted upon said free edge by contact thereof with said door frame, said rim being coupled with said clamping means for local entrainment thereby under pressure of said frame-shifting cams.

4,439,278

PROCESS INHIBITOR FOR READILY POLYMERIZABLE ETHYLENICALLY UNSATURATED AROMATIC COMPOUNDS

Ted L. Douglas; Ambrose J. Clonce, and Glean C. Jones, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 390,489, Jun. 21, 1982, Pat. No. 4,389,285. This application Apr. 28, 1983, Ser. No. 489,678

Int. Cl.³ C07C *7/20*; B01D *3/34*

U.S. Cl. 203—9 **8 Claims**

7. In a process for the preparation of styrene which includes a distillation step at elevated temperature and/or reduced pressure, the improvement which comprises providing a substance selected from methyl-3,5-dinitrosalicylate, phenyl-3,5-dinitrosalicylate, 3,5-dinitro-4-hydroxybenzoic acid, and mixtures thereof to the distilland in a concentration of about 250 to 2,000 ppm.

4,439,279

METHOD FOR ELECTROCHEMICAL OXIDIZING TO THE PU (VI)

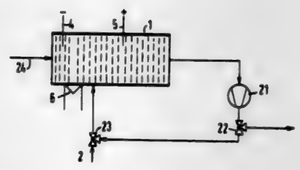
Fritz Herrmann, Hanau, and Christian Ost, Mainaschaff, both of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,543

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929122

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—1.5 **8 Claims**



1. Method for electrochemically treating Pu in nitric acid solutions containing U^6 to increase the Pu to the six-valent state without forming quadri-valent uranium which comprises circulating a starting solution of U^6 and Pu^4-nitrates and HNO_3 through an electrolysis cell at an electrode voltage of about 3 volts to increase the oxidation state to Pu (VI).

4,439,280

PHENOTHIAZINE LEUCODYES FOR ELECTROCHROMIC RECORDING

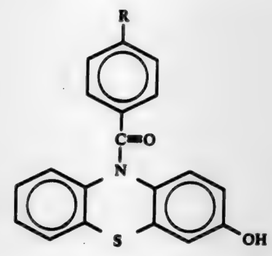
Paul L. Gendler, and Robert J. Twieg, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,478

Int. Cl.³ B21H *1/20*; B41C *3/08*

U.S. Cl. 204—2 **8 Claims**

1. A substrate for electrochromic recording comprising bromide ions and characterized by also comprising a leucodye having the structure



wherein R is lower alkyl, lower alkoxy, lower thioalkyl, lower dialkylamino, or diarylamino.

4,439,281

PROCESS FOR PRODUCING A STABLE CONNECTION BETWEEN AN ELECTRODE STRUCTURE MADE FROM A METALLIZED BODY OF A FIBROUS NATURE AND A CURRENT LEAD OUT TAB

Claus Schneider, Feilbach, and Gabor Benczur-Ürmössy, Stuttgart, both of Fed. Rep. of Germany, assignors to Deutsche Automobilgesellschaft, Mettingen, Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,700

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142091

Int. Cl.³ H01M *10/44*

U.S. Cl. 204—2.1 **14 Claims**

1. A process for producing a stable connection between an electrode structure, made from a metallized body of a fibrous nature, and a current lead-out tab, comprising reinforcing one edge of the electrode structure by means of an electrodeposited metal coating and attaching the current lead-out tab to this edge.

4,439,282

TREATMENT OF METALS TO ENHANCE ADHESIVE BONDING

Norman R. Byrd, Villa Park, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 1, 1982, Ser. No. 383,504

Int. Cl.³ C25D *5/00, 5/44*; C23F *7/06*

U.S. Cl. 204—38 R **25 Claims**

1. In a process for enhancing adhesive bonding of an aluminum substrate by the steps of treating said substrate to increase the surface area and to roughen said surface, and then applying an adhesive coating to said surface, the improvement which comprises the step prior to adhesive bonding, of treating said substrate with a basic solution containing a complex ion of copper, to cause said substrate metal to become oxidized and go into solution as an ion, and the copper ion of said solution to deposit on said substrate in a complex form, and to form a copper salt with said aluminum substrate.

4,439,283

ZINC COBALT ALLOY PLATING

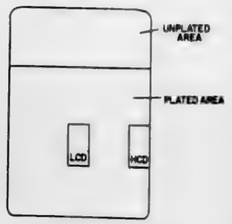
Wim J. C. Verberne, and John S. Hadley, both of 's-Hertogenbosch, Netherlands, assignors to OMI International Corporation, Warren, Mich.

Filed Jan. 27, 1983, Ser. No. 461,358

Claims priority, application United Kingdom, Jan. 29, 1982, 8202581; Jan. 29, 1982, 8202580; Jun. 2, 1982, 8216049; Nov. 22, 1982, 8233238

Int. Cl.³ C25D *3/56, 5/10, 5/48*

U.S. Cl. 204—38 R **24 Claims**



1. An aqueous acidic electroplating bath for producing zinc-cobalt electrodeposits which comprises: as Ingredient A, zinc ions; as ingredient B, cobalt ions; as ingredient C, chloride ions; as ingredient E, benzoic acid, salicylic acid or nicotinic acid and the bath compatible alkali metal and ammonium salts thereof; as ingredient F, benzylidene acetone; as ingredient G, a compound selected from the group consisting of N-allyl thiourea and a compound having the formula:



wherein:

R^1 represents an alkyl group having 1 to Y carbon atoms or an alkyl group having from 1 to Y carbon atoms at least one of which is substituted by a hydroxyl group; and

R^2 and R^3 or both represent a hydrogen atom or an alkyl group of 1 to Y carbon atoms or an alkyl group of 1 to Y carbon atoms at least one of which is substituted by a hydroxyl group or an amino group and R^2 and R^3 may be the same or different and may be the same as or different to R^1, Y being an integer from 2 to 6; and as ingredient H, an ethoxylated long chain acetylenic alcohol; an ethoxylated alkylamine; a polyether having a molecular weight ranging from about 100 to about 1,000,000; a polyalkylene glycol; a polyglycidol; an ethoxylated phenol; an ethoxylated naphthol; an ethoxylated olefin glycol; an ethoxylated acetylenic glycol and mixtures thereof; the bath containing ingredients A, B, and C and at least one of ingredients E, F, G and H.

17. A process for producing a semi-bright to bright zinc cobalt electrodeposit on a conductive substrate which comprises the steps of immersing a substrate in the bath as defined in claim 1, cathodically electrifying the substrate and passing current between an anode and the substrate for a period of time sufficient to deposit the desired thickness of a zinc cobalt electrodeposit thereon.

21. The process as defined in claim 17 including the further steps of extracting the substrate having the zinc cobalt electrodeposit thereon from the bath, and thereafter applying a passivate coating on the zinc-cobalt electrodeposit.

4,439,284

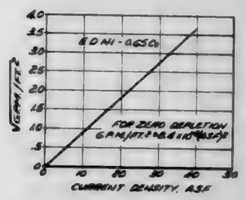
COMPOSITION CONTROL OF ELECTRODEPOSITED NICKEL-COBALT ALLOYS

Robert J. Walter, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 17, 1980, Ser. No. 160,336

Int. Cl.³ C25D *3/56*

U.S. Cl. 204—43 T **5 Claims**



1. A process for controlling the composition of electrodeposited nickel-cobalt, EDNi-Co, comprises the steps of:

immersing an anode comprising at least one non-reactive basket containing nickel, and at least one non-reactive basket containing cobalt, and a cathodic substrate into an electrolyte having a predetermined Ni^{++}/Co^{++} ratio;

controlling said predetermined electrolyte Ni^{++}/Co^{++} ratio constant by passing a current from said nickel anode to said cathodic substrate through a first power source or rectifier and by passing a current from said cobalt anode to said cathodic substrate through a second power source or rectifier: and

agitating the electrolyte in the vicinity of said cathodic substrate above the cathodic starvation agitation level.

4,439,285
TRIVALENT CHROMIUM ELECTROLYTE AND PROCESS EMPLOYING NEODYMIUM REDUCING AGENT

Thaddeus W. Tomaszewski, Dearborn, Mich., assignor to OMI International Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 205,406, Nov. 10, 1980, Pat. No. 4,392,922. This application May 12, 1983, Ser. No. 492,304
Int. Cl.³ C25D 3/06
U.S. Cl. 204—51 20 Claims

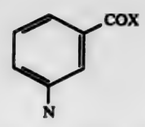
1. An aqueous acidic trivalent chromium electrolyte containing trivalent chromium ions, a complexing agent for maintaining the trivalent chromium ions in solution, halide ions, ammonium ions, hydrogen ions to provide a pH on the acid side, and a reducing agent comprising neodymium ions present in an amount effective to maintain the concentration of hexavalent chromium ions at a level at which satisfactory chromium electrodeposits are obtained.

4,439,286
ELECTROLYTE FOR THE DEPOSITION OF BRIGHT TIN COATINGS

Ivan V. Todorov; Vera V. Mircheva; Stefan R. Stefanov, and Ivan M. Todorov, all of Sofia, Bulgaria, assignors to Edinen Centar Po Chimia, Sofia, Bulgaria

Filed Jul. 14, 1982, Ser. No. 398,365
Claims priority, application Bulgaria, Jul. 14, 1981, 52924
Int. Cl.³ C25D 3/32
U.S. Cl. 204—54 R 1 Claim

1. Electrolyte for the deposition of bright tin coatings, which is composed of sulphuric acid in a concentration from 100 to 180 g/l; tin sulphate in a concentration from 20 to 60 g/l; formalin in a concentration of about 4 ml/l, benzalacetone in a concentration 0.2 to 0.8 g/l and surfactant of a general formula $C_nH_{2n}YO(CH_2CH_2O)_mX$ where Y is hydrogen or aryl, X is H, SO_2H or SO_3H, n is a number from 8 to 18, m is a number from 4 to 25, in a concentration from 3 to 15 g/l, comprising in that said electrolyte includes also a derivative of the nicotinic acid of the general formula



where X is —OH, —NH_2, —$O(CH_2CH_2O)_qH$, —$NH(CH_2CH_2O)_pH$, and q, p are integers from 1 to 4, in a concentration from 0.05 to 0.8 g/l.

4,439,287
METHOD FOR ANODIZING ALUMINUM MATERIALS AND ALUMINIZED PARTS

Siegfried Birkle, Hochstadt; Klaus Stoger, Nuremberg, both of Fed. Rep. of Germany, and Hans De Vries, Heerde, Netherlands, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 480,072
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211759
Int. Cl.³ C25D 11/08
U.S. Cl. 204—58 8 Claims



1. A method for oxidatively anodizing aluminum or aluminized parts comprising performing the oxidative anodization of said parts in an aqueous alkaline, anodizing electrolyte containing 10 to 200 g trisodium phosphate or tripotassium phosphate, at temperatures of 0° to 15° C., while conducting carbon dioxide free or low content carbon dioxide air through the solution, to produce an outer aluminum oxide layer more than about 4 microns thick on said parts, said outer aluminum oxide layer being dull rather than shiny and being free of a forming layer generated by the reaction of aluminum oxide and carbonate anion, said forming layer being able to limit the thickness of an aluminum oxide layer generated by anodic oxidation.

4,439,288
PROCESS FOR REDUCING ZN CONSUMPTION IN ZINC ELECTROLYTE PURIFICATION

James E. Hoffmann, Houston, Tex., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jul. 11, 1983, Ser. No. 512,453
Int. Cl.³ C23B 5/10; C25B 11/03
U.S. Cl. 204—114 8 Claims

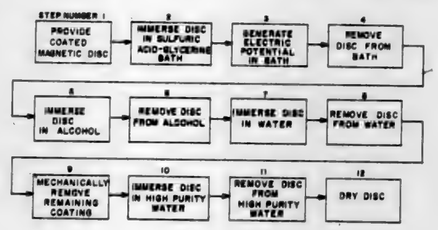
1. In the purification of neutral leach filtrates containing oxidants for the electrowinning of zinc, the improvement comprising:

treating the neutral leach filtrate with a reducing agent selected from $ZnSO_3$, SO_2 or mixtures thereof in amounts sufficient to substantially reduce all the oxidant present in the neutral leach filtrate and to provide a treated zinc leachate having a predetermined pH.

4,439,289
PROCESS FOR REMOVAL OF MAGNETIC COATINGS FROM COMPUTER MEMORY DISCS

Gaetano T. Viglione, Amesbury, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jul. 6, 1981, Ser. No. 280,738
Int. Cl.³ C25F 5/00; C23G 1/02; B29C 17/08; C09K 13/04
U.S. Cl. 204—146 18 Claims



7. A method for removal of magnetic coatings, including a binder and metal oxide, from computer memory discs, comprising the steps of:

providing an acid solution which does not readily react with aluminum yet will cause disassociation of the binder from the disc substrate, said acid solution comprising sulfuric acid and a wetting agent;

immersing the discs in said solution;

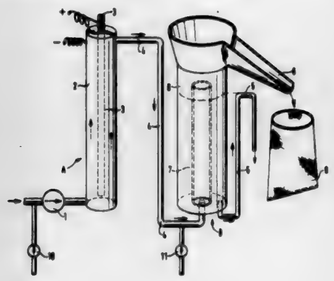
generating an electrical potential in said acid solution; and

applying ultrasonic energy.

4,439,290
PROCESS FOR THE SEPARATION OF OIL-IN-WATER EMULSIONS BY ELECTROLYSIS

Hans-Rudolf Marfurt, and August Zürer, both of Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 28, 1981, Ser. No. 267,310
Claims priority, application Switzerland, Jun. 4, 1980, 4333/80
Int. Cl.³ C02F 1/46
U.S. Cl. 204—149 14 Claims



1. A process for the continuous separation on an oil-in-water emulsion, comprising the steps of adding a coagulating agent thereto, electrolyzing said emulsion at a pH value of 5 to 10, under a potential of at least 1.5 volts to form discrete oil particles, floating these oil particles with the aid of hydrogen gas formed simultaneously at the cathode, separating off the oil phase thus formed, and adding a flocculating agent to condense the oil phase.

4,439,291
ACRYLATE-CONTAINING COMPOSITIONS AND THEIR POLYMERIZATION

Edward Irving, Burwell, and George E. Green, Stapleford, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

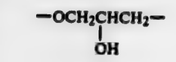
Continuation of Ser. No. 214,920, Dec. 10, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 400,784
Claims priority, application United Kingdom, Dec. 22, 1979, 7944319; Apr. 22, 1980, 8013262
Int. Cl.³ C08F 2/50; C08G 75/04
U.S. Cl. 204—159.23 14 Claims

1. A polymerizable composition comprising

(a) a compound containing in the molecule both

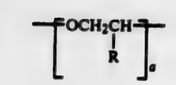
(i) at least one group chosen from acryloyloxy and methacryloyloxy groups,

said acryloyloxy or methacryloyloxy group in compound (a) being attached to a carbon atom of an aromatic nucleus, directly or through the (terminal) ether oxygen atom of a group of formula



I

or



II

where

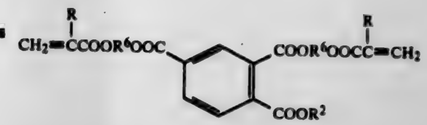
R denotes a hydrogen atom or a methyl group and

a is an integer of from 1 to 6, and

(ii) at least one group chosen from allyl, methallyl, and 1-propenyl groups, which allyl, methallyl or 1-propenyl group is attached directly to a carbon atom which forms part of an aromatic nucleus, to an oxygen atom or to an oxycarbonyl group which oxygen or oxycarbonyl is in turn directly attached to such a carbon atom,

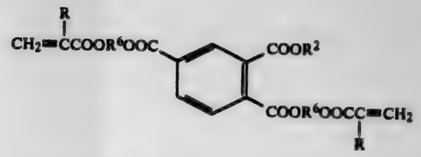
the total of the said groups (i) and (ii) being at least three, or

in which compound (a) is of the formula



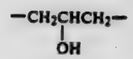
XVI

or



XVII

where each R^6 denotes a group of formula



or

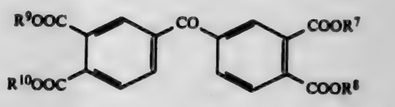


wherein R denotes a hydrogen atom or a methyl group and

a is an integer of from 1 to 6, and

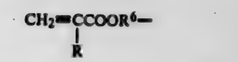
each R^2 denotes an allyl, methallyl, or 1-propenyl group, or

in which compound (a) is of the formula



XIX

where one of R^7 and R^8, and one of R^9 and R^{10}, have the same meaning and each denotes an allyl or methallyl group, and each of the remaining symbols of R^7 and R^8, and R^9 and R^{10}, represent a group of formula



XX

where R and R^6 are defined as above, and

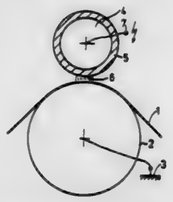
(b) a compound containing, per molecule, at least two mercaptan groups directly attached to aliphatic carbon atoms, in a proportion such as to supply at least 0.8 such mercaptan group per group selected from allyl, methallyl, and 1-propenyl groups in (a) but less than 1.0 such mercaptan group per group selected from acryloyl, methacryloyl, allyl, methallyl, and 1-propenyl groups in (a).

4,439,292

TREATMENT OF PERFLUORINATED POLYMER MEMBRANES CONTAINING CARBOXYL GROUPS

Helmut Klotz, Bergisch-Gladbach, and Hans G. Fitzky, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,757
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3131978; May 3, 1982, 3216417
Int. Cl.³ C08F 2/54; C25C 7/09
U.S. Cl. 204—165 10 Claims



1. In the treatment of a perfluorinated polymer membrane containing acid ion exchanger groups in a corona discharge, the improvement which comprises employing a membrane containing carboxyl groups and maintaining the membrane at a temperature below about 80° C. during the discharge treatment.

4,439,293

ELECTRODIALYTIC PURIFICATION PROCESS

Daniel J. Vaughan, 36 Paxon Dr., Wilmington, Del. 19803

Continuation-in-part of Ser. No. 241,520, Mar. 9, 1981, Pat. No. 4,325,792. This application Feb. 19, 1982, Ser. No. 350,415
The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.
Int. Cl.³ B01D 57/02
U.S. Cl. 204—180 P 17 Claims

1. In an electrodialysis process of passing an electric current through an electrodialysis cell comprising

(a) a catholytic compartment containing a cathode and a catholyte,

(b) an anolyte compartment containing an anode and an anolyte comprising an acidic aqueous solution containing dissolved multivalent metal cations and selected from (1) aqueous electroplating-type acids, (2) aqueous salt of a cation and an anion containing a multivalent metal ion, (3) aqueous salt of a multivalent metal cation and an anion of an acid containing sulfur, phosphorus, halogen or carbon, and (4) mixtures thereof,

(c) the anolyte and catholyte compartments being separated by a cation-permeable membrane,

the improvement comprising employing as the catholyte an aqueous solution of an inorganic carbonate, bicarbonate or hydroxide or mixtures thereof which form carbon dioxide and/or water upon contact with said acidic anolyte, whereby the electrodialysis can be carried out at high efficiency and high capacity without adversely affecting the capacity of the electrodialysis cell by precipitation of salts in the separating membrane and the quality of the anolyte by reverse migration of anions from the catholyte to the anolyte.

4,439,294

REACTIVE ION ETCHING OF SOFT-MAGNETIC SUBSTRATES

Thijs W. Bril, Sunnyvale, Calif., and Willibrordus G. M. van den Hoek, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1983, Ser. No. 463,202
Claims priority, application Netherlands, Feb. 12, 1982, 8200532
Int. Cl.³ C23C 15/00
U.S. Cl. 204—192 E 7 Claims

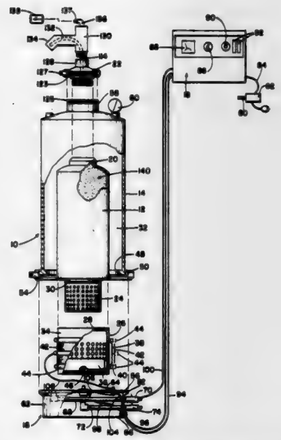
1. A method of providing grooves in a substrate of a soft-magnetic, iron-containing material selected from the group consisting of ferrites, Ni-Fe alloys and Al-Fe-Si alloys, comprising reactive ion etching the substrate in a chlorine-containing or bromine-containing plasma, the substrate areas not to be etched being covered by a mask of an inorganic material which is not substantially more rapidly etched than the soft-magnetic, iron-containing material.

4,439,295

CHLORINE GENERATING APPARATUS

Joseph M. Richards, 2819 E. 49th, Tulsa, Okla. 74105

Filed Mar. 31, 1983, Ser. No. 480,880
Int. Cl.³ C25B 15/02, 15/08, 9/00, 1/26
U.S. Cl. 204—229 8 Claims



1. A chlorine generating apparatus for chlorination of a body of water, the chlorine generating apparatus comprising a pair of concentrically arranged inner and outer tanks having concentrically arranged ports providing independent access to the interior of each tank, the inner tank being a salt tank, anode chamber means, disposed below said salt tank and in communication therewith, perforated means providing said communication between the interior of the salt tank and the anode chamber means, an annulus provided between the anode chamber means and outer tanks forming a cathode chamber, gas trap assembly means removably engagable simultaneously with the concentrically arranged ports and having the interior thereof independently in communication with the interior of the salt tank and cathode chamber, chlorine tube means extending into the gas trap assembly means to provide said communication between the interior of the salt tank and the interior of the gas trap assembly means whereby chlorine evolved in the anode chamber is discharged into the gas trap assembly, fluid inlet means provided for admitting water from the body of water into the cathode chamber for movement upwardly therethrough and into the interior of the gas trap assembly means whereby the chlorine discharged into the gas trap assembly means is mixed with the water, and water discharge means

provided for the gas trap assembly means for discharge of the chlorine water mixture therefrom for return to the body of water.

2. A chlorine generating apparatus as set forth in claim 1 and including remote power supply means operably connected with the anode chamber means and cathode chamber for activation thereof to produce chlorine in the anode chamber.

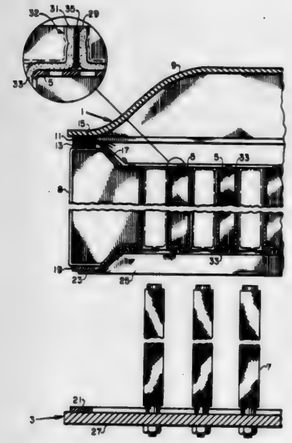
3. A chlorine generating apparatus as set forth in claim 2 and including pressure switch means operably connected between the power supply means and the interior of at least one of the tanks for controlling the supply of electric current to the power supply means in accordance with the internal pressure conditions of the said one tank.

4,439,296

METHOD FOR REPAIRING PERFLUORINATED POLYMERIC MICROPOROUS ELECTROLYTIC CELL SEPARATORS BY HEAT SEALING

Rajeshwar Swarup, Williamsville, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,198
Int. Cl.³ C25B 9/00, 13/02, 13/08; H01M 2/16
U.S. Cl. 204—253 4 Claims



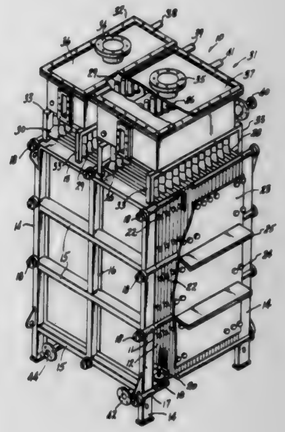
1. A method for repairing electrolytic cell separator panels, said electrolytic cell comprising a plurality of anodes and cathodes in alternating arrangement separated by a PTFE microporous separator into anolyte and catholyte compartments, said separator being formed by joining and heat sealing together a multiplicity of separator panels encasing the anodes or the cathodes and being fastened to the cell structure by means of a flange at an end thereof, the method comprising (a) removing only defective or damaged panel(s) of the separator by breaking their heat seals, and (b) installing replacement panel(s) by joining the same to the edge(s) of the broken heat seals of the remaining non-defective/damaged panels of the separator to form new panel joints, said panels being affixed together by means of a PTFE sealant strip located between the panel joints and sealed by the application of heat and pressure.

4,439,297

MONOPOLAR MEMBRANE ELECTROLYTIC CELL

Morton S. Kircher, Clearwater, Fla.; David D. Justice, Cleveland, Tenn.; Kenneth E. Woodard, Jr., Cleveland, Tenn., and Charles H. Harrison, Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 1, 1981, Ser. No. 307,352
Int. Cl.³ C25B 9/00, 11/03, 11/06, 13/08
U.S. Cl. 204—257 9 Claims

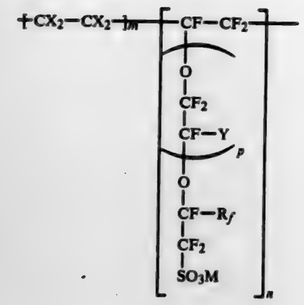


1. A monopolar membrane electrolytic cell which comprises:

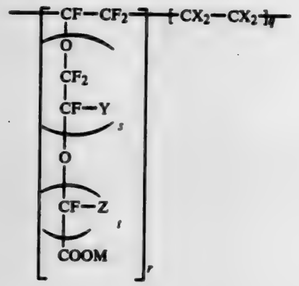
(a) a plurality of anodes wherein each anode is comprised of a first foraminous surface and a second foraminous surface positioned in parallel and spaced apart, and a frame enclosing said first and said second foraminous surfaces, said frame having two side members, a top member, and a bottom member attached to said foraminous surfaces, a chamber formed between said foraminous surfaces and bounded by said frame, conductor rods passing through one of said side members of said frame into said chamber, said conductor rods being spaced apart from said foraminous surfaces, foraminous conductive connectors positioned in said chamber and attached to said conductor rods and to said foraminous surfaces;

(b) a plurality of cathodes wherein each said cathode is comprised of at least one foraminous surface having a catalytic coating of a Beta phase Raney nickel-molybdenum alloy, and a frame enclosing said foraminous surface, said cathodes being alternatingly interleaved with said anodes;

(c) a plurality of sheets of cation exchange membrane material, each of said sheets being pressed between each opposite pair of said anodes and said cathodes, said sheets being in direct contact with said anodes, said cation exchange membrane material being compriaed of a blend of 10 to 90 percent by weight of a first fluorinated polymer which has repeating units



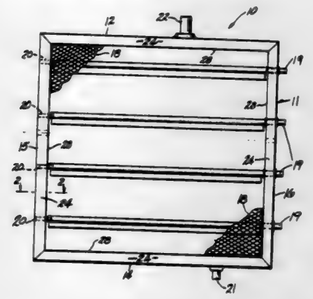
where
m is 3 to 15,
n is 1 to 10,
p is 0, 1, or 2,
the X's taken together are four fluorines or three fluorines and one chlorine,
Y is F or CF_3,
R_f is F, Cl, or a C_1 to C_{10} perfluoroalkyl radical, and
M is H or alkali metal, and
90 to 10 percent by weight of a second fluorinated polymer which has repeating units



where
q is 3 to 15,
r is 1 to 10,
s is 0, 1, or 2,
t is 2,
the X's taken together are four fluorines or three fluorines and one chlorine,
Y is F or CF_3,
Z is F or CF_3, and
M is H or alkali metal;
(d) raw material supply conduits and product withdrawal conduits communicating with the interior of each of said anodes and said cathodes;
(e) means for supplying electric current to said anodes and removing electric current from said cathodes; and
(f) pressing means for pressing said anodes and said cathodes together to form a substantially fluid-tight cell.

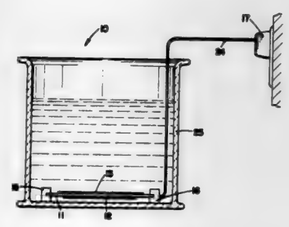
4,439,298
COMPOSITE FIBER REINFORCED PLASTIC FRAME
James M. Ford; Robert A. Dean; Kenneth E. Woodard, Jr., all of Cleveland, Tenn., and Antonio Branco, Prospect, Ky., assignors to Olin Corporation, New Haven, Conn.
Filed Jul. 26, 1982, Ser. No. 402,200
Int. Cl.³ C25B 9/04, 11/03, 11/00
U.S. Cl. 204—258 24 Claims

1. A composite fiber reinforced plastic frame for use with a pair of opposing electrode surfaces, comprising in combination:
a. generally parallel top and bottom members of predetermined length interconnected by opposing, generally parallel, vertically positioned first and second side members of predetermined length at a plurality of junctions to form a generally rectangularly shaped frame structure, the top and bottom members and the first and second side members further being generally rectangular in cross section



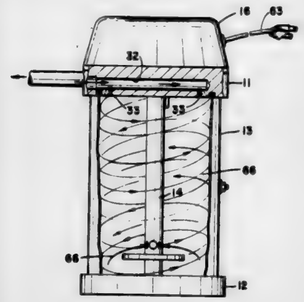
with four faces to form a hollow center section into which the opposing electrode surfaces fit;
b. thermoplastic corrosion resistant liner material covering three of the four faces having an inner surface and an outer surface;
c. a core material filling the generally rectangular cross section within the liner material; and
d. reinforcing means inserted in the core material at predetermined locations adjacent at least one of the plurality of junctions.

4,439,299
ELECTROLYTIC METAL RECLAMATION DEVICE
Kenneth R. Houseman, Westlake, Ohio, assignor to General Dental, Inc., St. Louis, Mo.
Filed Dec. 1, 1982, Ser. No. 445,965
Int. Cl.³ C25C 1/20, 7/00; C25B 11/10, 11/12
U.S. Cl. 204—271 5 Claims



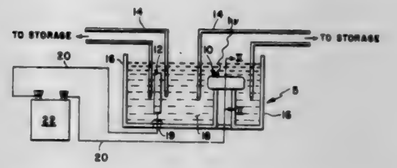
1. In combination, a container for an aqueous bath generating metal ions and a device immersed in said container and positioned flat on the bottom thereof for recovering metal by electrolytic deposition from said aqueous bath, said device comprising:
a direct current source;
a non-conductive flat structural base plate;
a positively charged electrical polar means formed on one face of said base plate and operatively connected to said direct current source;
a negatively charged electrical polar means formed on the other face of said base plate and operatively connected to said direct current source;
a flat planar anodic surface layer comprising a flexible plastic material containing conductive particles formed on said one face of said base plate overlying and contacting said positively charged polar means for charging said anodic surface layer positively;
a flat planar cathodic surface layer comprising a flexible plastic material containing conductive particles formed on said other face of said base plate overlying and contacting said negatively charged polar means for charging said cathodic surface layer negatively;
means for supporting said base plate in said aqueous bath lying flat on the bottom of said container with said anodic and cathodic surface layers exposed in their entirety to said aqueous bath;
whereby to cause metal from said metal-ion-containing aqueous bath to be plated onto said cathodic surface layer.

4,439,300
VORTEX TYPE METAL COLLECTOR
Kenneth R. Houseman, Westlake, Ohio, assignor to General Dental, Inc., St. Louis, Mo.
Filed Apr. 1, 1983, Ser. No. 481,469
Int. Cl.³ C25C 7/00, 1/20
U.S. Cl. 204—272 8 Claims



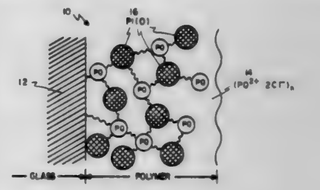
1. Apparatus for collecting ionized metal from a liquid solution comprising a fluidtight housing, the housing including a cylindrical shell and opposed end walls enclosing a cylindrical collection chamber, at least one end wall removeable from said shell and closing one end of the chamber, means forming a cathode at the interior wall of the shell chamber, an anode in the chamber extending generally along its axis, terminal means associated with each of the cathode and anode for establishing electrical current therebetween through the liquid in the chamber, an inlet for admitting fluid into the chamber adjacent one of its ends including nozzles, the anode being hollow for a major portion of its length, said anode including intake means adjacent one of its ends adjacent an end of the chamber opposite said one end, said anode including means for releasably securing said releasable end wall in assembled relation to said shell, said inlet including a bore in the associated end wall in a plane generally transverse to the axis of the chamber, a plurality of slots each extending through an inner face of the associated end wall and communicating with said bore, said slots each being elongated in a direction tangent to a circle concentric with the axis of the chamber whereby solution discharged into said chamber through said inlet slots is induced to flow in spiral currents towards said anode intake means.

4,439,301
PHOTOELECTROCHEMICAL CELLS INCLUDING CHALCOGENOPHOSPHATE PHOTOELECTRODES
Benjamin Reichman, Birmingham, Mich., and Charles E. Byvik, Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Oct. 7, 1982, Ser. No. 433,196
Int. Cl.³ C25B 1/02; H01M 6/36
U.S. Cl. 204—278 6 Claims



1. In a device for converting photo energy into another form of energy:
a photoelectrode made from a layered transition metal chalcogenophosphate (MPX_3) selected from $SnPS_3$, $FePS_3$ and $NiPS_3$;
a counter electrode;
an acidic electrolyte solution surrounding said photoelectrode and said counter electrode; and
an external electrical circuit connected to the two electrodes.

4,439,302
REDOX MEDIATION AND HYDROGEN-GENERATION WITH BIPYRIDINIUM REAGENTS
Mark S. Wrighton, Winchester, Mass.; Dana C. Bookbinder, East Greenwich, R.I.; James A. Bruce, Somerville, Mass.; Raymond N. Dominey, Pensacola, Fla., and Nathan S. Lewis, Palo Alto, Calif., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Nov. 24, 1981, Ser. No. 324,496
Int. Cl.³ C25F 7/00
U.S. Cl. 204—290 R 14 Claims

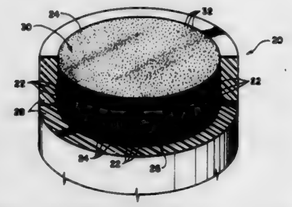


1. An apparatus for redox mediation comprising:
(a) a substrate;
(b) a substrate bound reagent comprising molecules having a redox-active bipyridinium center and binding groups which permit substrate-binding and cross-linking; and
(c) at least one noble metal catalyst dispersed within the substrate-bound reagent.

4,439,303
CRYSTALLOGRAPHICALLY-ORIENTED SPATIALLY-DISPERSED CONDUCTIVE FIBER ELECTRODE
Maurice Cocchi, 4007 W. 27th Ave., Denver, Colo. 80212
Filed Jan. 28, 1982, Ser. No. 393,128
Int. Cl.³ G01N 27/26; B01K 3/04
U.S. Cl. 204—434 12 Claims

1. An electrode for electrochemical stripping analysis, com-

prising a core of a plurality of generally uniformly oriented and laterally spatially displaced electrically conductive fibers having a crystallographic structure of conducting planes of greatest electrical conductivity extending parallel to the longitudinal dimension of the fiber, an electrically insulating bonding material connected to and substantially completely filling the lateral spaces throughout the core between the laterally spatially displaced fibers and bonding the fibers into the core,



an electrode face extending generally transversely with respect to and intersecting the ends of the fibers to maximumly expose the ends of the conducting planes for electron flow at the electrode face, and

an electrical conductor directly electrically connected to each fiber at the other end of each fiber opposite of the electrode face, each fiber extending continuously between its ends at the electrode face and at the electrical conductor.

4,439,304

PROCESS FOR BENEFICIATING HIGH SULFUR, HIGH FLUIDITY COAL

John D. Sudbury, and Clyde W. Zielke, both of McMurray, Pa., assignors to Conoco Inc., Wilmington, Del.

Filed Jul. 9, 1982, Ser. No. 396,978
Int. Cl.³ C10G *1/00, 1/06*
U.S. Cl. 208—8 LE **17 Claims**

1. A method of forming a liquefied coal product having a lower sulfur percent by weight than the high sulfur solid coal feed from which it is derived consisting essentially of the sequence of steps as follows:

(a) providing solid coal having at least two percent by weight sulfur and a particle size less than about 14 Tyler mesh,

(b) providing calcium oxide of a particle size less than about 40 Tyler mesh,

(c) mixing said solid coal and said calcium oxide with liquefaction solvent to form a liquefaction mixture,

(d) hydrogenating and heating said liquefaction mixture to at least about 750° F. forming a mixture of low sulfur liquefied coal liquid, residual coal solids and calcium sulfide solids.

said liquefied coal having a liquefied coal sulfur percent by weight which is substantially less than said two percent by weight sulfur of said solid coal, whereby a substantial proportion of said sulfur of said coal reacts with said calcium oxide to form said calcium sulfide,

(e) filtering said liquefied coal from said residual solids and said calcium sulfide solids to separate a low sulfur liquefied coal liquid product.

4,439,305

PROCESS FOR PYROLYSIS OF CARBONOUS MATERIALS

Richard P. Rhodes, Westfield, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 220,684, Dec. 20, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 401,002
Int. Cl.³ C10G *1/00, 1/06*
U.S. Cl. 208—10 **24 Claims**

1. A method for converting a carbonous material selected from the group consisting of subbituminous coal, oil-shale, lignite, and peat, to liquid and gaseous products, the method consisting essentially of:

(a) impregnating the carbonous material with one or more soluble iron salts;

(b) treating the impregnated carbonous material in such a way as to precipitate, into the structure of the carbonous material, said metal as its oxide or in a form which can be readily converted to its oxide under the pyrolysis conditions of step (c) below; and

(c) pyrolyzing the treated carbonous material at a temperature from about 400° C. to about 700° C., at gas residence times of less than about 30 seconds and solids residence times from about 5 to 100 minutes, wherein a reducing gas consisting essentially of hydrogen is introduced during pyrolysis.

13. A method for converting a carbonous material selected from the group consisting of subbituminous coal, oil-shale, lignite, and peat, to liquid and gaseous products, the method comprising:

(a) impregnating the carbonous material with one or more water soluble zinc salts;

(b) treating the impregnated carbonous material in such a way as to precipitate, into the structure of the carbonous material, said metal as its oxide or in a form which can be readily converted to its oxide under the pyrolysis conditions of step (c) below; and

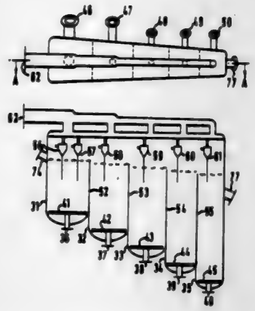
(c) pyrolyzing the treated carbonous material at a temperature from about 400° C. to about 700° C., at gas residence times of less than about 30 seconds and solids residence times from about 5 to 100 minutes, wherein a reducing gas consisting essentially of hydrogen is introduced during pyrolysis.

4,439,306

PROCESS FOR THE EXTRACTION OF HYDROCARBONS FROM A HYDROCARBON-BEARING SUBSTRATE AND AN APPARATUS THEREFOR

Heinz Voetter; Hubrecht C. A. van Meurs; Richard C. Darton, all of The Hague, and Rajamani Krishna, Amsterdam, all of Netherlands, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Apr. 19, 1982, Ser. No. 369,685
Claims priority, application United Kingdom, Apr. 22, 1981, 8112490; Dec. 30, 1981, 8139075
Int. Cl.³ C10G *1/02*
U.S. Cl. 208—11 R **20 Claims**



1. In a process for the extraction of hydrocarbons from a hydrocarbon-bearing oil shale, comprising the steps of: heating the hydrocarbon-bearing oil shale in the substantial absence of oxygen at a temperature in the range of from 400° C. to 600° C. by mixing it with hot spent oil shale, said heating of the hydrocarbon-bearing oil shale yielding a coke-bearing spent oil shale and liberated hydrocarbons; recovering the liberated hydrocarbons; and combusting by separate combustion the coke-

bearing spent oil shale to produce the hot spent oil shale for mixing with the hydrocarbon-bearing oil shale, the improvement comprising the steps of:

passing the hydrocarbon-bearing oil shale in the form of particles having a diameter of 0.5 to 5 mm through a plurality of horizontally disposed retorting stages in a substantially fluidized bed condition, in at least some of which stages the hydrocarbon-bearing oil shale is mixed with hot spent oil shale wherein hydrocarbon-bearing shale is fed to a first stage and treated coke-bearing shale is withdrawn from a last stage; and

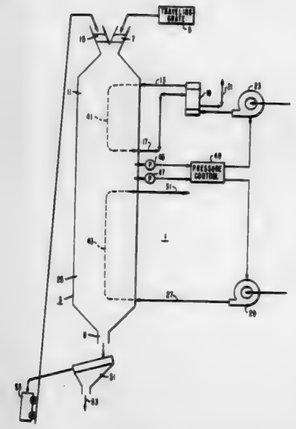
passing an inert stripping gas in cross-current flow with respect to the passage of the hydrocarbon-bearing oil shale particles and at a flow rate in the range of from 0.1 to 2.0 m/s to thereby remove the liberated hydrocarbons from each stage as product.

4,439,307

HEATING PROCESS GAS FOR INDIRECT SHALE OIL RETORTING THROUGH THE COMBUSTION OF RESIDUAL CARBON IN OIL DEPLETED SHALE

Louis H. Jaquay, Upper St. Clair, Pa., and Albert C. Mengon, deceased, late of Beaver, Pa. (by Mary A. Mengon, administratrix), assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 1, 1983, Ser. No. 510,290
Int. Cl.³ C10G *1/02*; C10B *49/02, 53/06*
U.S. Cl. 208—11 R **7 Claims**



1. A process for reheating recycle gas used in indirect retorting of oil from oil shale and from which the oil has been removed, utilizing the residual carbon in hot oil depleted shale said method comprising the steps of:

charging hot oil depleted shale containing residual carbon into the top of a vertical shaft furnace for descending passage therethrough;

feeding an oxygen containing gas into the upper portion of said furnace for concurrent downward flow with the hot shale to effect combustion of the residual carbon therein in the upper portions of said vertical shaft furnace and resulting in the generation of hot spent shale and combustion gases;

withdrawing the combustion gases from the lower part of the upper portion of said furnace;

introducing said recycle gas into the bottom of the vertical shaft furnace for ascending flow countercurrent to the descending flow of the hot spent shale to heat said recycle gas and cool said spent shale;

withdrawing the heated recycle gas from the upper part of the lower portion of the furnace below the point at which the downwardly flowing combustion gases are withdrawn, for use in retorting additional oil shale;

removing the cooled spent shale from the bottom of the vertical shaft furnace; and

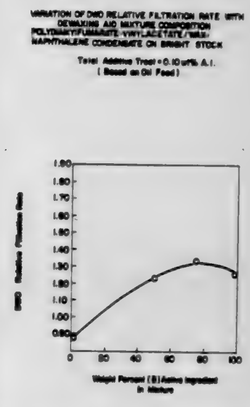
recycling a portion of the cooled spent shale to the top of the vertical shaft furnace to control the temperature of combustion of the residual carbon in the hot oil depleted shale charged into said furnace.

4,439,308

SOLVENT DEWAXING WAXY BRIGHT STOCK USING A COMBINATION POLYDIALKYLFUMARATE-VINYL ACETATE COPOLYMER AND WAX-NAPHTHALENE CONDENSATE DEWAXING AID

David A. Gudelis, and Lloyd E. Reid, both of Sarnia, Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 29, 1982, Ser. No. 426,712
Int. Cl.³ C10G *73/04*
U.S. Cl. 208—33 **5 Claims**



1. A solvent dewaxing process comprising mixing a waxy hydrocarbon oil bright stock with dewaxing solvent and a dewaxing aid wherein said dewaxing aid comprises a mixture of:

A. poly di alkyl fumarate/vinyl acetate copolymer having alkyl side chain moieties of from C_{16}–C_{24}+ in length with an average pendent side chain length of predominantly (>50%) C_{20}; and

B. a wax naphthalene condensation product, wherein components (a) and (b) are used in a weight ratio to each other ranging from about 45/55 to 1/100 of (a) to (b); and chilling said oil/dewaxing solvent/dewaxing aid mixture to form a slurry comprising solid particles of wax and a solution of dewaxed oil and dewaxing solvent and separating said wax from said solution.

4,439,309

TWO-STAGE HYDROGEN DONOR SOLVENT CRACKING PROCESS

Marvin I. Greene, Orndell, and Abraham P. Gelbein, Morristown, both of N.J., assignors to Chem Systems Inc., Tarrytown, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,657
Int. Cl.³ C10G *69/06*
U.S. Cl. 208—51 **34 Claims**

1. A process for the cracking of a carbonaceous liquid feedstock comprising the steps of:

(a) separating a carbonaceous liquid feedstock into a first middle distillate fraction, having a boiling temperature, at atmospheric pressure, in the range of between 175° and 300° C. and a first residual fraction, having an initial boil-

ing temperature, at atmospheric pressure, in the range of between 260° and 540° C.;

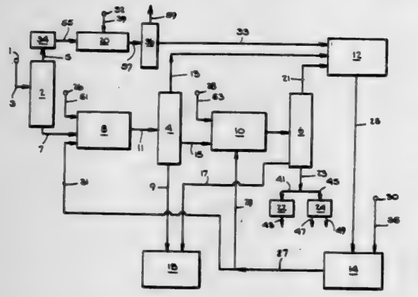
(b) supplying a first reaction mixture comprising a recycle stream of hydrogen-donating material and said first residual fraction, recovered from step (a), to a first cracking reaction zone;

(c) reacting said first reaction mixture in said first cracking reaction zone at a temperature in the range of between 250° and 800° C. and a pressure in the range of between 30 and 200 atmospheres for a period in a range of between 15 seconds and 5 hours whereby a first cracked product stream is obtained;

(d) separating said first cracked product stream into a second middle distillate fraction having a boiling temperature, at atmospheric pressure, in the range of between 175° and 300° C., a second residual fraction having an initial boiling temperature, at atmospheric pressure, in the range of between 260° and 540° C., and a first distillate hydrogen enriched stream having an initial boiling temperature, at atmospheric pressure, in the range of between 40° and 540° C.;

(e) supplying a second reaction mixture comprising a recycle stream of hydrogen-donating material and said second residual fraction, recovered in step (d), to a second cracking reaction zone;

(f) reacting said second reaction mixture in said second cracking rection zone at a temperature in the range of between 250° and 800° C. and a pressure in the range of



between 30 and 200 atmospheres for a period in the range of between 15 seconds and 5 hours whereby a second cracked product stream is obtained;

(g) separating said second cracked product stream into a third middle distillate fraction, having a boiling temperature, at atmospheric pressure, in the range of between 175° and 300° C., a third residual fraction having an initial boiling temperature, at atmospheric pressure, of at least 425° C. and a second distillate hydrogen enriched stream having an initial boiling temperature, at atmospheric pressure, in the range of between 40° and 540° C.;

(h) dehydroisomerizing said first middle distillate fraction in the presence of gaseous hydrogen and a reforming catalyst whereby a fourth middle distillate fraction is formed and comprises at least 30% by weight of two and three ring aromatics having ten to twenty carbon atoms per molecule;

(i) hydrogenating said second, said third and said fourth middle distillate fractions in the presence of gaseous hydrogen and a solid base metal catalyst whereby a hydrogen-donating material comprising at least 30% by weight of 2-ring hydroaromatics having ten to twenty carbon atoms per molecule is formed;

(j) recycling said hydrogen donating material formed in step (i), to said first cracking reaction zone, in accordance with step (b), and to said second cracking reaction zone, in accordance with step (e); and

(k) recovering said first distillate hydrogen enriched stream and said second distillate hydrogen enriched stream as products.

4,439,310

PETROLEUM PROCESSING WITH LOW ACIDITY CATALYST

Costandi A. Audeh, and Eric J. Y. Scott, both of Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,136
Int. Cl.³ C10G *47/16, 11/05*
U.S. Cl. 208—111 **15 Claims**

1. A process for upgrading a high boiling hydrocarbon oil, in which process, at least a portion of the waxy or non-waxy crackable constituents of said oil are cracked to normally liquid products of lower boiling range, which process comprises contacting said hydrocarbon oil with a catalyst of enhanced gasoline and distillate selectivity which is a heat-stable crystalline zeolite having a silica to alumina ratio greater than 12 and a constraint index of 1 to about 12 in a matrix comprising an amorphous siliceous oxide which is a thermally degraded heat-sensitive crystalline zeolite, said catalyst having an acid activity measured by the alpha scale of less than 10, with said contacting being conducted at 650 to 850 degrees F. and at a pressure not less than about 200 psi.

4,439,311

REREFINING USED LUBRICATING OIL WITH HYDRIDE REDUCING AGENTS

Richard H. O'Blasny, Natchitoches, La., assignor to Delta Central Refining, Inc., Natchitoches, La.

Filed Jan. 4, 1982, Ser. No. 336,900
Int. Cl.³ C10G *7/10, 7/00;* C10M *11/00*
U.S. Cl. 208—179 **17 Claims**

1. A method of rerefining used lubricating oil comprising contacting the used lubricating oil with at least one hydride reducing agent selected from the group consisting of sodium borohydride, potassium borohydride, zinc borohydride, sodium cyanoborohydride, sodium sulfurated borohydride, sodium trioxyacetal borohydride, sodium trialkoxy borohydride, sodium hydroxyl borohydride, sodium borohydride anilide, tetrahydrofuran borohydride, di-methyl-butyl borohydride, lithium-aluminum hydride, lithium-aluminum tri-oxymethyl hydride, sodium-aluminum-2-methoxyethoxy hydride, and aluminum hydride.

4,439,312

CATALYST FOR HYDROTREATING HEAVY HYDROCARBON OILS, METHOD OF PREPARING SAME AND PROCESS FOR HYDROTREATING HEAVY HYDROCARBON OILS

Sachio Asaoka; Takeo Ono, and Yoshimi Shiroto, all of c/o Chiyoda Chemical Engineering & Construction Co., Ltd. 12-1, Tsurumi-Chuo 2-chome, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, Japan

Division of Ser. No. 210,049, Nov. 24, 1980, Pat. No. 4,367,165. This application May 19, 1982, Ser. No. 379,926
Claims priority, application Japan, Nov. 27, 1979, 54-153132
Int. Cl.³ C10G *45/08*
U.S. Cl. 208—216 PP **8 Claims**

1. A process for hydrotreating a heavy hydrocarbon oil containing asphaltenes and heavy metals, comprising the step of reacting the heavy hydrocarbon oil with hydrogen at a temperature of between 350° and 450° C., a pressure of between 30 and 250 Kg/cm^2G and a liquid space velocity of between 0.1 and 10 $hour^{-1}$, with a hydrogen to oil ratio of between 100 and 2000 Nl/l, in the presence of a catalyst comprising

a carrier which is a calcined composite of a mixture of a clay mineral consisting mainly of magnesium silicate having a double-chain structure and a pseudoboehmite which shows a powder X-ray diffraction spectrum obtained by applying a CuK_{60} ray such that the half value width of the

peak on the (020) plane is between about 0.8° and 4.0° and the intensity of said peak is between 1.2 and 8.0 times as high as that at $2\theta = 10°$; and

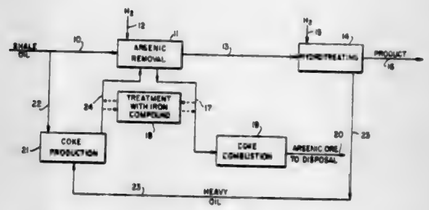
at least one catalytic metal component composited with said carrier, the metal of said catalytic metal component being selected from the group consisting of the metals belonging to Groups VB, VIB, VIII and IB of the Periodic Table.

4,439,313

REMOVAL OF ARSENIC IMPURITY FROM HYDROCARBONS

Harvey D. Schindler, Fairlawn, and Morgan C. Sze, Portsmouth, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 213,202, Dec. 5, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,662
Int. Cl.³ C10G *25/00;* C01G *28/00, 28/02;* C10L *9/02*
U.S. Cl. 208—251 H **10 Claims**



1. In a process for removing arsenic from a hydrocarbon containing feed including arsenic as an impurity by depositing arsenic impurity on a solid contact material, the improvement comprising:

heating said contact material including deposited arsenic in the presence of an iron compound added to the contact material, said iron compound being a compound which reacts with arsenic to produce an iron-arsenic compound suitable for disposal, said heating being to a temperature of at least 1200° F. and at which the iron compound reacts with the deposited arsenic to produce said iron-arsenic compound.

4,439,314

FLOTATION REAGENTS

Robert M. Pariman, and Clarence R. Bresson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 9, 1982, Ser. No. 406,156
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—166 **7 Claims**

1. A composition useful in the collection of metal-containing substances via the froth flotation of ores containing them which comprises:

(a) sodium isopropylxanthate,

(b) n-dodecylmercaptan, and

(c) at least one dispersant containing a polyalkylene glycol conforming to the general formula

$$HO—(R^2—O)_x—R^3$$

where R^2 is a branched or straight chain alkylene radical of about 3 to about 5 carbon atoms with the proviso that at least 2 carbon atoms separate the oxygen atoms, R^3 is hydrogen, methyl, or ethyl, and x is an integer from about 6 to about 17.

4,439,315

METHANE GENERATOR

C. H. Whiteside, 2600 Dudley Rd., Kilgore, Tex. 75662

Filed Jun. 8, 1982, Ser. No. 386,226
Int. Cl.³ C02F *11/04*
U.S. Cl. 210—90 **10 Claims**

1. A biogas generator comprising, in combination:

a liquid reservoir having first and second distinct zones and a liquid which supports plant growth in said reservoir and therefore said zones,

a first said zone of said reservoir growing a supply of plant biomass therein,

a second said zone of said reservoir contiguous with said first zone to receive and biodegrade said plant biomass producing a biogas,

collection means including an imperforate opaque top wall to encourage plant decomposition overlying said second zone to collect said biogas produced therein,



conveying means at a boundary of said zones to convey said plant biomass from said first zone to said second zone as needed to control the amount of biogas produced,

and scavenging means to draw off biogas from said collection means to a site of storage and use

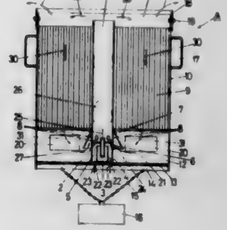
whereby said plant biomass is continuously harvestable and biodegraded to produce a biogas to be used as an energy source and said plant biomass once degraded serves as nutrient for further plant biomass growth defining a continous closed system.

4,439,316

WATER PURIFIER

Sadao Kozima, Tokyo, and Hisao Makino, Chiba, both of Japan, assignors to Kaiyo Koggyo Co. Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,471
Int. Cl.³ C02F *3/06*
U.S. Cl. 210—150 **5 Claims**



1. A water purifier comprising:

a cylinder having a partition thereacross defining an air chamber at the lower end thereof and having water suction openings therein just above said partition and opening into said cylinder, the bottom of said air chamber having bottom openings therein;

a sleeve on the bottom of said air chamber and extending up into said chamber to a point spaced from said partition, said bottom openings being around the outside of said sleeve;

a ventilation tube extending through said partition into said cylinder from within said sleeve;

means for introducing compressed air into said air chamber for producing successive flows of air upwardly through said ventilation tube into said cylinder to form a plurality of successive masses of air filling said cylinder and moving upwardly in said cylinder for pumping successive masses of water to be purified up said cylinder;

a plurality of unfilled tubes packed in a side-by-side relation in at least one honeycomb tube structure around and laterally supported by said cylinder with the tops open to receive water from the successive masses of water from

the top of said cylinder and extending straight through the honeycomb structure to cause the water to flow down through the tubes for purification, the bottoms of the tubes ending at a position above the level of said water suction openings and being open for discharging the water into the space around said cylinder adjacent said suction openings; and

a protecting sleeve around and protecting said honeycomb structure.

4,439,317

SEWAGE TREATMENT SYSTEM

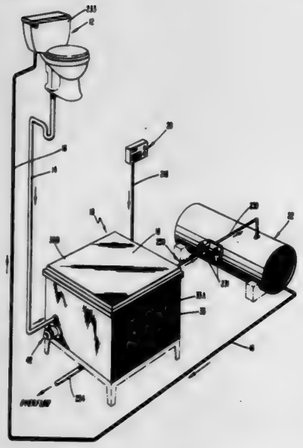
Donald Jarrell, 4510 Glendale Pl., Nashville, Tenn. 37215, assignor to Donald Jarrell; John G. Logan, III and Richard H. Carpenter, all of Nashville, Tenn., a part interest

Division of Ser. No. 213,665, Dec. 5, 1980, Pat. No. 4,350,587. This application Mar. 31, 1982, Ser. No. 363,948

The portion of the term of this patent subsequent to Sep. 21, 1999, has been disclaimed.

Int. Cl.³ C02F *3/04*

U.S. Cl. 210—151 **9 Claims**



1. In a waste treatment apparatus of the type comprising tank means, means for delivering waste liquid to said tank means, nozzles submerged in said tank means, means for delivering oxygen-containing gas to said nozzles, which gas is converted by said nozzles into minute oxygen-containing bubbles which permeate the liquid and support the aerobic digestive action of bacteria in the liquid, and means for delivering ozone gas to the treated liquid to disinfect same for delivery to an outlet, the improvement wherein:

said tank means comprises:

aerobic pre-treatment compartment means including at least one aerobic pre-treatment compartment having an inlet communicating with said liquid delivering means for receiving waste liquid, and including an outlet for pre-treated waste liquid,

some of said nozzles being submerged in said pre-treatment compartment means to saturate the latter with minute oxygen-containing bubbles to support aerobic digestive action of bacteria,

an intensive aerobic treatment compartment connected with said outlet of said pre-treatment compartment means to receive pre-treated waste liquid,

said intensive treatment compartment including on outer wall and containing therein an upright porous member forming a closed loop which is spaced inwardly from said outer wall, said porous member supporting the growth of bacteria thereon for consuming waste matter,

said porous member being disposed across the path of travel of the pre-treated liquid, and having its lower end sealed against the passage of liquid therebeneath, so that all of the pre-treated liquid is required to pass through the porous member,

some of said nozzles being disposed in said intensive treatment compartment between said wall and said porous member to saturate said intensive treatment compartment with minute oxygen-containing bubbles, said last-named nozzles having their outlets oriented for establishing a circular flow of liquid in one direction around said porous member,

a disinfecting compartment communicating by gravity flow with liquid that has passed through said porous member,

nozzle means submerged in said disinfecting compartment and communicating with a source

of ozone gas for saturating the liquid in said disinfecting compartment with ozone gas bubbles to disinfect the liquid.

4,439,318

SYSTEM FOR TREATING RADIOACTIVE WASTE

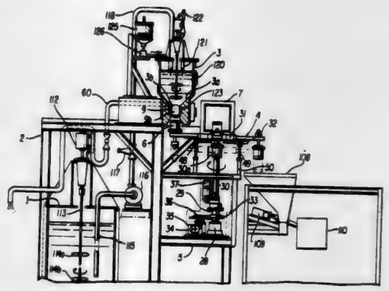
Masaru Hayashi, Tokyo; Atsushi Tagusagawa, Kobe; Fumiaki Komatsu; Yoshihisa Sawada, both of Nishinomiya, and Yorihisa Sakaki, Akashi, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Dec. 29, 1980, Ser. No. 221,355

Claims priority, application Japan, Dec. 28, 1979, 54-184308[U]; May 6, 1980, 55-060291

Int. Cl.³ G21F *9/20, 9/06, 9/10*

U.S. Cl. 210—208 **6 Claims**



1. A system for treating radioactive waste, comprising:

a storage tank holding a slurry of the radioactive waste;

a condensing tank for condensing the slurry of radioactive waste received from said storage tank;

a dryer for drying the condensed radioactive waste;

a hopper for receiving the dried radioactive waste;

a rotary mechanism for transferring the radioactive waste from said condensing tank and to said dryer and hopper, said rotary mechanism comprising a plurality of containers for holding the radioactive waste, rotary arms for supporting said containers, a rotational drive mechanism for rotating said rotary arms, means for discharging the radioactive waste from said containers to said hopper, and a lift mechanism for vertically lifting said containers up and down; and

a rotary collector positioned in a lower portion of said condensing tank for receiving the condensed radioactive waste and selectively transferring it to said containers.

4,439,319

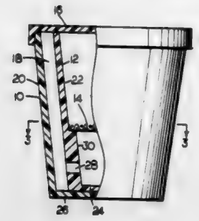
RECEPTACLE FOR THE COLLECTION OF MEDICAL SPECIMENS AND THE LIKE

John G. Rock, 130 Forest Rd., Davenport, Iowa 52803

Filed Jul. 16, 1982, Ser. No. 398,741

Int. Cl.³ B01D *29/02*

U.S. Cl. 210—238 **6 Claims**



1. Receptacle means for use in the collection of medical specimens and the like, comprising an open-toppd outer container liquid-impervious material having a bottom and an annular wall, an open-topped inner container disposed removably within the outer container and having a bottom and annular wall, said inner container being formed of liquid-impervious material except for the provision of at least one fluid drain aperture in its wall spaced relatively closely above its bottom, a foraminous partition intermediate the top and bottom of the inner container and dividing said inner container into upper and lower compartments, said partition being spaced above the drain aperture, means supporting the partition in the inner container for upward removal thereof from said inner container, and cover means for removably covering the open top of the outer container and thus also closing the open top of the inner container.

4,439,320

SOLIDS CONCENTRATOR

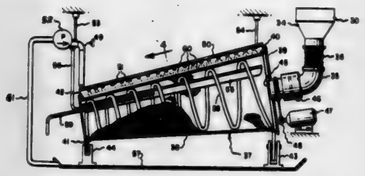
Arie Blok, 1422 Overlea Dr., Dunedin, Fla. 33528

Continuation of Ser. No. 858,775, Dec. 8, 1977, abandoned, Continuation-in-part of Ser. No. 703,126, Jul. 7, 1976, Pat. No. 4,062,776. This application Jun. 29, 1981, Ser. No. 278,063

The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.

Int. Cl.³ B01D *33/10*

U.S. Cl. 210—394 **4 Claims**



1. A solids concentrator comprising a frusto-conical drum including a foraminous side wall screen and having a large inlet end and a smaller open outlet end, said frusto-conical drum including a series of spaced elongated frame members extending lengthwise of said drum externally of said side wall screen, said side wall screen being comprised of a series of separate screen portions, and means for fastening each of said screen portions between respective pairs of said series of spaced elongated frame members, each of said frame members including a bar portion lying in a radial plane, and said screen portions each having a free edge portion clamped to a radially extending face of a respective bar portion, said screen having a straight line taper from said large inlet end to said smaller open outlet end, means for introducing a mixture of solids and liquid into said inlet end, means for rotating said drum, and conveying means disposed within said drum for conveying the solids toward said open outlet end thereof as the liquid escapes through said screen, said conveying means comprising a spiral vane fixedly disposed within said drum along and closely adjacent an inner periphery of said foraminous side wall for constantly urging liquid through said side wall, said spiral vane being in the form of a helix having a large diameter end adjacent said inlet end and a small diameter end adjacent said outlet end, said spiral vane having a constant taper corresponding to that of said side wall screen and a decreasing pitch and diameter as said vane extends from said large inlet end toward said smaller outlet end, said solids concentrator further including spraying means for spraying a cleansing liquid along a top portion of said side wall screen for constantly cleansing said side wall screen, and a pan contained within said screen for receiving the cleansing liquid and foreign matter carried thereby and discharging said cleansing liquid and foreign matter separately from said drum, a sump disposed beneath said drum for collecting liquid draining through said side wall screen, and means for drawing liquid from said sump and for supplying it under pressure to said spraying means.

4,439,321

FILTER MEANS

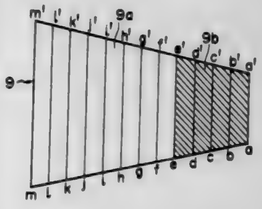
Yoshihiro Taki, Nagoya; Hajime Akado, Anjo; Toshiaki Fukuta, Anjo, and Susumu Miyakawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 14, 1982, Ser. No. 388,169

Claims priority, application Japan, Jun. 23, 1981, 56-97036; Jun. 23, 1981, 56-97037

Int. Cl.³ B01D *27/06, 50/00*

U.S. Cl. 210—493.1 **4 Claims**



1. A fluid cleaner assembly comprising:

a casing;

a generally circular filter means for filtering fluid disposed within said casing;

an inlet port provided in said casing so as to be communicated with one axial end of said filter means; and

an output port provided on said casing so as to be communicated with the other axial end of said filter means and so as to be located adjacent to a substantial centre portion of said filter means,

said filter means having two-dimensional wave forms spreading radially from an axis of said filter means and has a first and a second filter sections which are made of one sheet material,

said first filter section having a higher permeability than said second filter section,

said first filter section being disposed adjacent to a substantial centre portion of said filter means, and

said first and second filter sections being arranged in parallel to each other with respect to an axial direction of said filter means.

4,439,322

POLYMETHYL METHACRYLATE MEMBRANE

Takeshi Sonoda; Yoshitaka Tanaka; Shigenori Takenaka, all of Kamakura, and Tatsuo Nogi, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,570
Claims priority, application Japan, Jul. 2, 1980, 55-89100
Int. Cl.³ B01D 31/00
U.S. Cl. 210—500.2 19 Claims

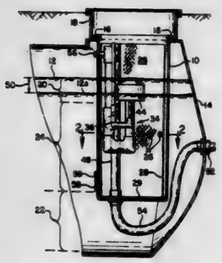
1. A ionically crosslinked polymethyl methacrylate separation membrane which is impermeable to red and white blood cells and platelets having an albumin permeability of at least about 30%, and having a water permeation rate of about 0.1 to 60 liters/hr.m².mmHg.

4,439,323

METHOD OF DISCHARGING SEPTIC TANK FILTERED EFFLUENT

Harold L. Ball, Roseburg, Oreg., assignor to Orenco Systems, Inc., Roseburg, Oreg.

Division of Ser. No. 279,959, Jul. 2, 1981, abandoned. This application May 24, 1982, Ser. No. 381,029
Int. Cl.³ C02F 3/28
U.S. Cl. 210—608 4 Claims



1. A method of discharging filtered effluent from a septic tank containing waste water having a significant concentration of waste solids distributed into a lower horizontal sludge layer and an upper horizontal scum layer with a relatively clear horizontal layer therebetween through which waste solids migrate in a generally vertical direction between said sludge and scum layers, said method comprising:

(a) providing a hollow filter enclosure, having a filtering surface with exterior and interior sides, respectively, within said septic tank;

(b) exposing the exterior side of said filtering surface to waste water occupying a predetermined level within said septic tank located above said sludge layer and below said scum layer, while simultaneously preventing exposure of said exterior side of said filtering surface to waste water within said septic tank which does not occupy said predetermined level by surrounding said filtering surface with a housing having apertures located in said housing to correspond to said predetermined level of said waste water, said housing being otherwise impervious to the passage of said waste water;

(c) exposing an incremental effluent discharge apparatus, communicating between the interior and exterior of said septic tank and having a cross sectional area for conducting effluent which is smaller than the area of said filtering surface, operatively to the interior side of said filtering surface while preventing operative exposure of said discharge apparatus to waste water exterior of said filtering surface; and

(d) passing effluent, from said waste water occupying said predetermined level, through said aperatures and said filtering surface from the exterior side to the interior side thereof and thence through said incremental effluent discharge apparatus to the exterior of said septic tank by passing said effluent through said incremental effluent discharge apparatus in predetermined incremental amounts which are insufficient to permit said scum layer to descend into said pedetermined level.

4,439,324

REMOVAL OF OIL FROM WATER

Alfred F. Crotti, 5, Deanery St., London, W1Y 5LH, England

Continuation of Ser. No. 194,976, Oct. 8, 1980, abandoned. This application Jun. 18, 1982, Ser. No. 389,760
Claims priority, application United Kingdom, Oct. 10, 1979, 7935253; Mar. 11, 1980, 8008198
Int. Cl.³ E02B 15/04
U.S. Cl. 210—691 8 Claims



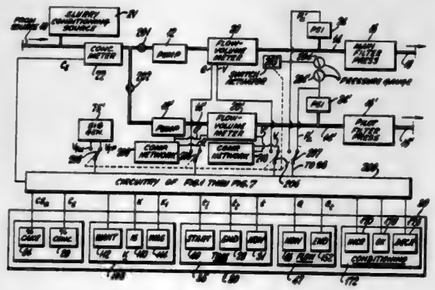
1. A method of removing oil from water, which method comprises the steps of applying to water to be treated at least one bag loosely containing washed and dried chicken or turkey feathers, the or each bag having means defining openings sufficiently large to permit oil to contact the feathers yet sufficiently small to retain feathers within the bag, and allowing feathers to take up the oil.

4,439,325

PRESSURIZED FILTRATION SYSTEM

Norman J. Blais, Fiskdale, Mass., assignor to CPC Engineering Corporation, Sturbridge, Mass.

Continuation-in-part of Ser. No. 405,910, Aug. 6, 1982, abandoned, which is a continuation of Ser. No. 214,523, Dec. 9, 1980, abandoned. This application Jul. 11, 1983, Ser. No. 512,774
Int. Cl.³ B01D 25/12
U.S. Cl. 210—740 11 Claims



11. In the filtration of a liquid-solids composition utilizing a cyclically operated filter press of a known volume having an inlet and outlet and a recommended terminal pressure of the composition fed to said inlet, the method of determining the quality of the cake formed in said filter press comprising the steps of measuring the volume of the composition delivered to said filter press, the concentration of particulates contained in said composition and the density of said particulates, determining the percent of the dry solids CS per unit mass of cake contained in the volume of said filter press, measuring the elapsed time t_c of the filtering cycle, measuring the pressure of composition fed to said filter, determining a quantity K representing the rate at which the liquid will permeate the cake being formed according to the following equation when said pressure is equal to at least 90% of the recommended terminal pressure:

$$K = CS^2/t_c^x,$$

where x = 0.54 to 0.8

modifying the composition to achieve a value of K previously determined experimentally to effect the desired quality of cake in said filter within a predetermined period of time and continuing the cycle of operation until the cake approximately fills said filter.

4,439,326

PROCESS FOR REMOVING AMMONIUM NITRATE FROM AQUEOUS SOLUTIONS

Michael Heilgeist, Linkenheim, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,667
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048002
Int. Cl.³ G21F 9/06
U.S. Cl. 210—757 5 Claims

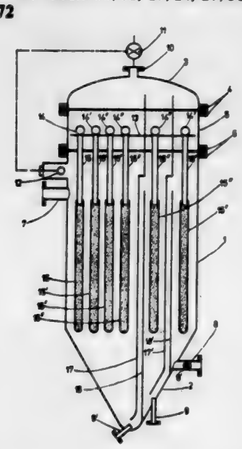
1. Process for removing ammonium nitrate of NH_4NO_3 (AN) from an aqueous solution, comprising adding at least one nitrogen-oxygen (N-O) compound which is a nitrous oxide in the form of NO, NO_2 or N_2O_4, to the aqueous solution containing the AN, the N-O compound being in gaseous or liquid state, at a temperature above room temperature but below the boiling point of the solution containing the AN and under normal pressure.

4,439,327

BACKWASH MULTIPLE ALLUVIAL FILTER AND METHOD OF FILTERING THEREWITH

Hans Müller, Erlenbach, Switzerland, assignor to Dr. Muller AG, Maennedorf, Switzerland

Filed Jun. 29, 1982, Ser. No. 393,361
Claims priority, application Switzerland, Jul. 16, 1981, 4653/81
Int. Cl.³ B01D 35/12, 29/24, 29/38
U.S. Cl. 210—772 15 Claims



1. A backwashing multiple alluvial filter, comprising a vertical filter container having a bottom; inlet and outlet means in said container; a plurality of collecting pipes removably mounted in said container; a plurality of rows of filter elements suspended on said collecting pipes; means for subdividing the interior of said filter container into at least two vertical chambers connected with one another by narrow vertical overflow shafts and each accommodating at least one of said rows of filter elements; and said subdividing means including separating walls which have different heights and some of which are spaced from said bottom so as to form said overflow shafts.

4,439,328

WELL SERVICING FLUID ADDITIVE

Randolph M. Molty, 208 Interlaken Dr., New Iberia, La. 70560

Filed Dec. 28, 1981, Ser. No. 334,837
Int. Cl.³ C09K 7/00
U.S. Cl. 252—8.5 LC 9 Claims

1. A fluid, pourable well servicing fluid additive comprising an oleaginous liquid, a water-soluble polymer selected from the group consisting of hydroxyethyl cellulose, carboxymethyl cellulose, hydroxyethyl carboxymethyl cellulose, guar gum, hydroxypropyl guar gum, hydroxyethyl guar gum, carboxymethyl guar gum, biopolymer gums derived from a bacterium of the genus xanthomonas, and mixtures thereof, an alkaline earth metal base, an organophilic clay gellant for said oleaginous liquid, and a fibrous material, wherein said oleaginous liquid is an organic liquid which has no substantial swelling effect on said water-soluble polymer, and wherein said fibrous material is derived from natural materials selected from the group consisting of asbestos, cotton, wood, bagasse, peat, sphagum moss, animal hair, and mixtures thereof.

4,439,329

AQUEOUS BASED FIRE FIGHTING FOAM COMPOSITIONS CONTAINING HYDROCARBYL SULFIDE TERMINATED OLIGOMER STABILIZERS

Eduard K. Kleiner, Pound Ridge, and Robert A. Falk, New City, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1981, Ser. No. 335,119
Int. Cl.³ A62D 1/04, 1/02; A62C 1/12
U.S. Cl. 252—8.05 21 Claims

1. An aqueous based fire fighting foam concentrate for 1 to 6% by volume proportioning, comprising

A. between about 0.1 and 10% by weight of an oligomer of the formula

$$R_1\text{-}E\text{-}S(O)_n[M_1]_x[M_2]_y[M_3]_zH \quad (I)$$

wherein

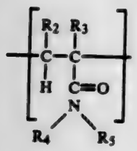
R_1 is an oleophilic aryl, araliphatic, aliphatic or cycloaliphatic group selected from the group consisting of: phenyl or naphthyl each of which are unsubstituted or substituted by alkyl of up to 18 carbon atoms, alkoxy of up to 18 carbon atoms, chloro, bromo, alkanoyl of up to 18 carbon atoms, alkanoyloxy of up to 18 carbon atoms, or alkanoylamino of up to 18 carbon atoms;

alkyl or alkenyl of up to 12 carbon atoms, each of which is substituted by phenyl or naphthyl which is, in turn, unsubstituted or substituted by alkyl of up to 18 carbon atoms, alkoxy of up to 18 carbon atoms, chloro, bromo, alkanoyl of up to 18 carbon atoms, alkanoyloxy of up to 18 carbon atoms, or alkanoylamino of up to 18 carbon atoms;

alkyl or alkenyl of up to 25 carbon atoms, each of which are unsubstituted or substituted by hydroxy, alkoxy of up to 18 carbon atoms, chloro, bromo, alkanoyl of up to 18 carbon atoms, alkanoyloxy of up to 18 carbon atoms or alkanoylamino of up to 18 carbon atoms; and

cycloalkyl of 5 to 7 carbon atoms, bicycloalkyl of 7 to 10 carbon atoms, cycloalkylalkylene of 6 to 12 carbon atoms or bicycloalkyl alkylene of 8 to 14 carbon atoms, each of which are unsubstituted or substituted by alkyl of up to 18 carbon atoms, alkoxy of up to 18 carbon atoms, chloro, bromo, alkanoyl of up to 18 carbon atoms, alkanoyloxy of up to 18 carbon atoms or alkanoylamino of up to 18 carbon atoms;

E is a direct bond or an organic covalently bonded linking group;
n is 0, 1 or 2;
$[M_1]$ is a hydrophilic optionally substituted acrylamido monomer unit;
$[M_2]$ is a copolymerizable non-acrylamido hydrophilic monomer unit;
$[M_3]$ is a copolymerizable hydrophobic monomer unit; wherein the acrylamido monomer units, $[M_1]$, are within the scope of the formula

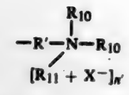


(II)

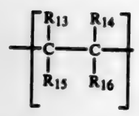
wherein R_2 and R_3 are independently hydrogen, chloro or bromo, or one of R_2 and R_3 is alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or alkanoylamido of 2 to 4 carbon atoms and the other is hydrogen;
and each of R_4 and R_5 independently represent hydrogen, alkyl of 1 to 18 carbon atoms which is unsubstituted or substituted by hydroxy, alkoxy of 1 to 4 carbon atoms, alkanoyl of 1 to 4 carbon atoms; alkanoyloxy of 1 to 4 carbon atoms; alkanoylamino of 1 to 4 carbon atoms; cyano; carboxy; ureido; alkylureido or dialkylureido wherein the alkyl group in each case contains 1 to 4 carbon atoms; amido; N-alkylamido or N,N-dialkylamido wherein the alkyl group in each case contains 1 to 4 carbon atoms; allyloxy; bromo; chloro; amino; N-alkylamino, N,N-dialkylamino or N,N,N-trialkylamino halide wherein the alkyl group in each case contains 1 to 4 carbon atoms; N-carboxyalkylamino, N-(carboxyalkyl)-N-alkylamino or N-(carboxyalkyl)-N,N-dialkylamino wherein the alkyl group in each case contains 1 to 4 carbon atoms; mercapto; alkylthio of 1 to 4 carbon atoms; morpholino; phenyl; or tolyl or is phenyl or phenyl substituted by carboxy, chloro, nitro, sulfo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; or is allyl, amino, naphthyl, cycloalkyl of 6 to 12 carbon atoms, phenylamino, N-alkylamino, N,N-dialkylamino or N,N,N-trialkylamino halide where in each case the alkyl group has 1 to 4 carbon atoms; or R_4 and R_5 taken together with the nitrogen to which they are attached represent morpholino, aziridino, piperidino or pyrrolidino;
with the proviso that the sum total of carbon atoms in R_2, R_3, R_4 and R_5 together contain no more than 10 carbon toms;
the copolymerizable non-acrylamido hydrophilic monomer units, $[M_2]$, are those of the formula

(III)

wherein
R_6 is hydrogen, carboxy, $-COOR_9$ or alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by carboxy or hydroxy;
R_7 is hydrogen or alkyl of 1 to 4 carbon atoms; and R_8 is carboxy, carboxyalkyl of 2 to 5 carbon atoms, carboxyphenyl, a 5 to 6 membered nitrogeneous heterocyclic moiety, hydroxyalkyl of 1 to 4 carbon atoms, sulfophenyl, sulfo, $-COOR_9$, $-SO_2NR_{10}R_{10}$, $-NHCOR_9$, $-COR_9$, $-SO_2R_9$, $-OR_{10}$, $-OCOR_9$ or



wherein
R_9 is alkyl of 2 to 6 carbon atoms substituted by sulfo, carboxy, hydroxy, methoxy, or $R_{12}(OCH_2CH_2)_mO-$ where R_{12} is hydrogen or alkyl of 1 to 4 carbon atoms and m is 1 to 20;
R_{10} is hydrogen, or lower alkyl of 1 to 5 carbon atoms which is substituted by sulfo, carboxy, hydroxy, methoxy or $R_{12}(OCH_2CH_2)_mO-$ where R_{12} and m are as defined above;
R′ is a direct bond, alkylene of 1 to 6 carbon atoms or phenylene;
R_{11} is lower alkyl of 1 to 4 carbon atoms, phenyl or benzyl;
X is halo; and
n′ is 0 or 1, and
the hydrophobic copolymerizable monomer units, $[M_3]$, are those of formula II above wherein the sum total of carbon toms in R_2, R_3, R_4 and R_5 together contain a total of more than 10 carbon atoms or are of the formula IV



(IV)

wherein
R_{13} and R_{14} are independently hydrogen, chloro, bromo, fluoro, or alkyl of 1 to 4 carbon atoms; R_{15} is hydrogen, chloro, bromo, fluoro, alkyl of 1 to 8 carbon toms, or $-COOR_{17}$; and
R_{16} is hydrogen, chloro, bromo, fluoro, alkenyl of 2 to 18 carbon atoms, alkyl of 1 to 18 carbon atoms, cyano, phenyl, phenyl substituted by alkyl of 1 to 4 carbon atoms or chloro, $-COOR_{17}$, $-SO_2NR_1R_{17}$ $-NHCOR_{17}$, $-COR_{17}$, $-SO_2R_{17}$, $-OR_{17}$ or $-OCOR_{17}$ wherein R_{17} is alkyl of 1 to 18 carbon atoms which is unsubstituted or substituted by chloro, bromo or phenyl, or alkenyl of 2 to 18 carbon atoms which is unsubstituted or substituted by chloro, bromo or phenyl;
the average of the sum of x, y and z is between about 3 and about 500; and
x/x+y+z is between 1 and about 0.5;
B. between about 0.1 to 60% by weight of fire fighting foam surfactants, fire fighting foam synergist/surfactant mixtures or fire-fighting foam protein hydrolyzates or mixtures thereof;
C. between 0 to about 70% by weight of thickeners, stabilizers, thixotropes, solvents or mixtures thereof;
D. between 0 to about 10% by weight of electrolytes; and
E. water in an amount sufficient to make up the balance of 100%.

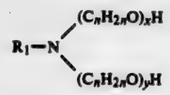
4,439,330

TEXTILE TREATMENT COMPOSITIONS

Julius Ooms, Langdorp, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 12, 1982, Ser. No. 338,950
Claims priority, application United Kingdom, Jan. 16, 1981, 8101358
Int. Cl.³ D06M *13/46*
U.S. Cl. 252—8.8 **4 Claims**

1. An aqueous textile treatment composition comprising:
(a) from 13.5% to 20% of substantially water-insoluble cationic fabric softener or of a mixture thereof with nonionic fabric softener in a weight ratio of cationic softener:nonionic softener of at least 2.5:1, said cationic softener being selected from the group consisting of di-C_{12}–C_{24} alkyl and alkenyl quaternary ammonium salts, di-C_{12}–C_{24} alkyl and alkenyl imidazolinium salts and mixtures thereof,
(b) from 0.3% to 2.5% of an alkoxylated amine, or ammonium derivative thereof, of the general formula:



wherein R_1 is a C_{16}–C_{22} alkyl or alkenyl group, n is 2 and x and y are each a number average in the range from 1 to 2, the sum total of x and y being 2 or 3,
(c) from 600 to 1000 parts per million of electrolyte, and
(d) from 0.1% to 5% of a polyethyleneglycol having an average molecular weight in the range from 1000 to 40,000,
wherein the composition has a pH in the range from 3.5 to 7.0 and is in the form of a particulate dispersion of cationic fabric softener in an aqueous solution of alkoxylated amine or ammonium derivative thereof.

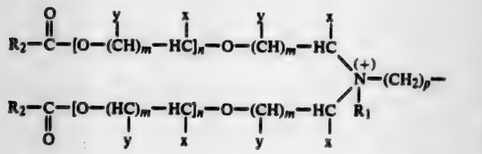
4,439,331

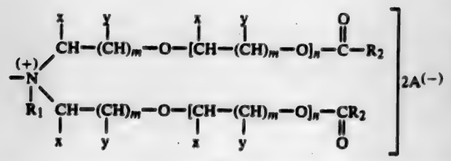
TEXTILE SOFTENER

Siegfried Billenstein, Burgkirchen; Adolf May, Hofheim am Taunus, and Hans-Walter Bücking, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,141
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135014
Int. Cl.³ D06M *13/46*
U.S. Cl. 252—8.8 **8 Claims**

1. Liquid textile softener composed of an aquous solution or dispersion of compounds of the formula





wherein R_1 denotes C_1–C_4 alkyl, x and y each denote hydrogen or methyl, it being excluded, however, for x and y to denote simultaneously methyl, n is an integer of from 1 to 10, m is the integer 1 or 2, p is an integer of from 1 to 5, R_2 denotes C_8–C_{30} alkyl and A denotes an anion, and, if appropriate, other auxiliaries.

4,439,332

STABLE EMULSION COPOLYMERS OF ACRYLAMIDE AND AMMONIUM ACRYLATE FOR USE IN ENHANCED OIL RECOVERY

Simon Frank, Stamford; Anthony T. Coscia, South Norwalk, and Joseph M. Schmitt, Ridgefield, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 933,225, Aug. 14, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,962
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **6 Claims**

1. A process for recovering oil from a subterranean-oil-bearing formation which comprises: introducing through a well bore into said formation a stable, aqueous flooding menstruum comprising an acrylamide-ammonium acrylate copolymer having a molecular weight above about one million and recovering enhanced yields of oil therefrom, said copolymer being prepared in the form of an emulsion, said emulsion comprising:
(1) an aqueous phase constituting from 70% to about 95% of the total weight of (1) and (2) said aqueous phase comprising 40 to 73% by wt water and dissolved therein from 27% to 60% by weight of emulsion polymerized, water-soluble copolymer having a molecular weight of at least one million said copolymer consisting essentially of about 50% to 75% by wt of copolymerized acrylamide and about 25% to 50% by wt of copolymerized ammonium acrylate said copolymer being the product of emulsion polymerization in the aqueous phase of said emulsion, of acrylamide and ammonium acrylate comonomers, and said ammonium acrylate monomer being prepared by neutralizing acrylic acid in said aqueous phase with ammonium hydroxide to pH in the range from about pH 6.5 to about pH 7.5 before being copolymerized with acrylamide in said emulsion;
(2) a liquid hydrocarbon oil in an amount ranging from about 5% to about 30%, by weight, based on the total weight of (1) and (2),
(3) a water-in-oil emulsifying agent disposed between said aqueous phase and said liquid hydrocarbon at a concentration of about 0.1% to 15.0%, by weight, based on the total weight of (1), (2) and (3), and optionally,
(4) an inverting hydrophilic surfactant of an ethoxylated octyl or nonyl phenol, the amount of said ethoxylated octyl or nonyl phenol ranging from about 1.5% to about 2.5%, by weight, said weight being based on the total weight of (1), (2), (3) and (4).

4,439,333

HEAVY BRINE VISCOSIFIERS

Roy F. House, Houston, and Lonnie D. Hoover, Chappell Hill, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed May 8, 1981, Ser. No. 261,897
Int. Cl.³ C09K *7/00*; B01F *3/00*
U.S. Cl. 252—8.55 R **5 Claims**

1. A polymeric composition useful for viscosifying aqueous brines at ambient temperature which comprises:
(a) from about 10% to about 30% by weight hydroxyethyl cellulose;
(b) from about 10% to about 40% by weight of a solid organic activating agent selected from the group consisting of phenol and substituted phenols wherein from 1 to 5 substituent groups are present in the molecule, the substituent groups being selected from the group consisting of OH, NH_2, NO_2, Cl, Br, and mixtures thereof; and
(c) an organic solvent for said activating agent which has no appreciable swelling effect on the hydroxyethyl cellulose.

4,439,334

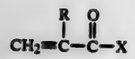
ENHANCED OIL RECOVERY METHODS AND SYSTEMS

John K. Borchardt, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 14, 1981, Ser. No. 283,251
Int. Cl.³ C09K 3/00
U.S. Cl. 252—8.55 D 22 Claims

1. A method of enhancing the recovery of oil from a subterranean oil-containing formation wherein a viscous aqueous solution containing one or more water-soluble organic polymers is injected into the formation by way of at least one injection well penetrating the formation and forced through the formation towards at least one production well penetrating the formation, comprising:

preparing an aqueous injection solution of desired viscosity and other properties at the site of said injection and production wells by: combining one or more vinyl monomers with a substantially oxygen-free aqueous solvent, said vinyl monomers being selected from the group consisting of monomers and mixtures of monomers having the general formula:



wherein:
R is hydrogen or —CH_3;
X is —NH_2, —NHR^1,



—OR^3 or —OM, with the restriction that X is not —OM when the aqueous polymerization solvent contains divalent metal;
R^1 is an alkyl radical having in the range of from 1 to 4 carbon atoms or
R^1 is R^4—Y;
R^2 is an alkyl radical having in the range of from 1 to 3 carbon atoms;
R^3 is an alkyl radical having in the range of from 1 to 3 carbon atoms;
R^4 is an alkyl radical having in the range of from 1 to 4 carbon atoms;
Y is —SO_3H, —CO_2H, —SO_3M or —CO_2M; and
M is hydrogen or a metal from Group IA of the Periodic Table of the Elements; and

combining a free radical polymerization initiator with the resultant solution to cause the polymerization of said monomers and the formation of a concentrated aqueous viscous polymer solution; and

diluting said concentrated viscous aqueous polymer solution with additional amounts of the same substantially oxygen-free aqueous solvent to thereby form said aqueous injection fluid; and

injecting said aqueous injection fluid into said formation by way of said injection well.

4,439,335

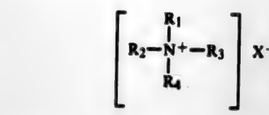
CONCENTRATED FABRIC SOFTENING COMPOSITIONS

Michael E. Burns, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 17, 1981, Ser. No. 322,315
Int. Cl.³ D06M 13/46
U.S. Cl. 252—8.75 14 Claims

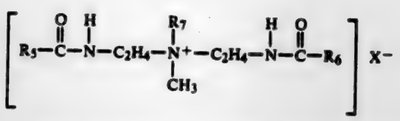
1. Concentrated aqueous fabric softener compositions which are pourable at 40° F., the said compositions comprising:

A. from 8% to about 12.5% of a mono nitrogen quaternary ammonium cationic softener salt having the formula



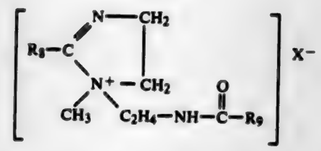
wherein R_1 and R_2 can be the same or different from each other and are selected from the group consisting of C_{14} to C_{20} alkyl and alkenyl groups, R_3 and R_4 can be the same or different and are selected from the group consisting of C_1 to C_3 alkyl or $—(C_nH_{2n}O)_xH$ groups wherein n is 2 or 3, x is from 1 to about 3, and wherein X^- is an anion selected from halide, methylsulfate or ethylsulfate;

B. from about 5% to about 18% of a second cationic softener salt selected from the group consisting of



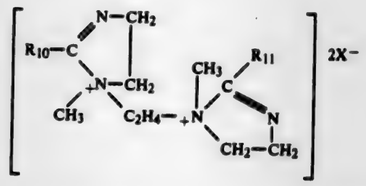
(1)

wherein R_5 and R_6 are the same or different from each other and are selected from the group consisting of C_{14} to C_{20} alkyl and alkenyl groups, wherein R_7 is selected from the group consisting of H, methyl, ethyl and $(C_nH_{2n}O)_xH$ wherein n is 2 or 3 and x is from 1 to about 5 and wherein X^- is selected from halide, ethylsulfate or methylsulfate;



(2)

wherein R_8 and R_9 are the same or different from each other and are selected from the group consisting of C_{14} to C_{20} alkyl and alkenyl groups, wherein X^- is halide, ethylsulfate or methylsulfate;



(3)

wherein R_{10} and R_{11} can be the same or different from each other and are selected from the group consisting of C_{14} to C_{20} alkyl and alkenyl and X^- is halide, methylsulfate or ethylsulfate;

C. from about 0.05% to 0.6% of an inorganic water-soluble ionizable salt; and

D. water;

wherein the total amount of Components A+B is from about 15% to about 23%, wherein there is unsaturation present on at least one of Components A or B such that the cationic active system has an Iodine Value of at least about 5.7.

4,439,336

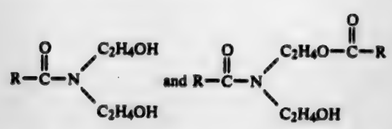
LUBRICANT COMPOSITION CONTAINING MIXED FATTY ACID ESTER AND AMIDE OF DIETHANOLAMINE

Edward F. Zaweski, Town and Country, Mo., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 126,726, Mar. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 959,935, Nov. 13, 1978, Pat. No. 4,208,293. This application Jul. 1, 1981, Ser. No. 279,588
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.
Int. Cl.³ C10M 1/48
U.S. Cl. 252—32.7 E 8 Claims

1. In a lubricating oil composition formulated for use in the crankcase of an internal combustion engine, said composition containing 0.01–3 weight percent zinc in the form of zinc dihydrocarbyldithiophosphate, the improvement of including in said composition about 0.05–5 weight percent of a reaction product formed by the process comprising reacting (a) about 1–3 moles of a C_{8-20} fatty acid with (b) one mole of diethanolamine while removing water formed in the reaction, said reaction product consisting mainly of N,N-bis-(2-hydroxyethyl) fatty amide and fatty acid ester thereof, said improvement resulting in reduced engine friction and improved fuel economy.

4. In a lubricating oil formulated for use in the crankcase of an internal combustion engine, said composition containing 0.01–0.3 weight percent zinc in the form of zinc dihydrocarbyldithiophosphate, the improvement of including in said formulated oil about 0.05–5 weight percent of an ester-amide mixture comprising as principal components:



wherein R is the aliphatic hydrocarbon residue of a fatty acid, said fatty acid containing about 8–20 carbon atoms, said improvement resulting in reduced engine friction and increased fuel economy.

4,439,337

COMPOSITION AND METHOD FOR PREVENTING FREEZING TOGETHER OF VARIOUS SURFACES

Kenneth H. Nimerick, Tulsa, and Claude T. Copeland, Broken Arrow, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 20, 1981, Ser. No. 323,159
Int. Cl.³ C09K 3/18
U.S. Cl. 252—70 18 Claims

1. A composition comprising in amounts sufficient to provide a composition which when applied to a surface reduces the tendency of the surface to become frozen to another surface in the presence of moisture under freezing conditions:

at least one of substantially water soluble components (1), (2), (3) comprising (1)about 5.0 to about 95.0 percent a polyhydroxy compound or monoalkyl ether thereof, (2) about 0.1 to about 10.0 percent an organic non-volatile compound having at least one hydrophilic group, (2) being different than (1), (3) optionally about 0.1 to about 45.0 percent a salt which functions to reduce the freezing point of water, (4) an organic polymer which functions to increase the viscosity and tackiness of the composition sufficiently to maintain the composition on a non-horizontal surface for a sufficient period of time to function to reduce the tendency of a surface to become frozen to another surface in the presence of moisture under freezing conditions and (5) about 5.0 to about 75 percent water.

4,439,338

SOLUTION FOR STRIPPING A LAYER OF TIN OR TIN-LEAD ALLOY FROM A SUBSTRATE BY MEANS OF A SPRAYING OPERATION

Francesco Tomaiuolo, Turin, and Michele Capano, Rivalta, both of Italy, assignors to Alfachimici S.p.A., Turin, Italy

Filed Sep. 21, 1982, Ser. No. 420,918
Claims priority, application Italy, Oct. 14, 1981, 68323 A/81
Int. Cl.³ C09K 13/00
U.S. Cl. 252—79.1 10 Claims

1. A solution for selectively stripping a layer of tin or tin-lead alloy from a substrate, comprising in aqueous solution:

a first component being an organic acid of the group consisting of the alkylsulfonic acids having a number of carbon atoms from 1 to 4;

a second component being an organic oxidizer of the group consisting of the aromatic nitro-substituted and polynitro-substituted compounds having at least one group —NO_2 and a solubilizing group —SO_3H or —COOH, and their alkaline salts; and

a third component being a compound of the group consisting of thiourea and alkyl-substituted or aryl-substituted thioureas having low molecular weight.

4,439,339

DESCALER COMPOSITION AND METHOD

Carl J. Doumit, 703 Hemlock St., Columbus, Miss. 39701

Filed Feb. 8, 1983, Ser. No. 464,943
Int. Cl.³ C02F 5/08
U.S. Cl. 252—80 6 Claims

1. A composition for descaling fresh water production and storage equipment which comprises: hydrochloric acid at a concentration of about 2.6 to 3.4 M; dichloroacetic acid at a concentration of about 0.4 to 0.8 M; acetic acid at a concentration of about 3.6 to 4.5 M; about 5 to 10% by weight of a compound selected from the group consisting of isopropyl alcohol, isobutyl alcohol and esters of said isopropyl or isobutyl alcohol with hydrochloric acid, dichloroacetic acid or acetic acid, and mixtures thereof; and about 40 to 60% by weight of water.

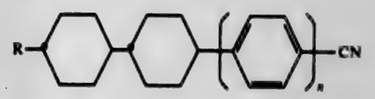
4,439,340

CYANO-MONO-OR DIPHENYLBICYCLOHEXANE DERIVATIVES

Tetsuhiko Kojima; Masakazu Tsuji, and Shigeru Sugimori, all of Kanagawaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jul. 8, 1982, Ser. No. 396,484
Claims priority, application Japan, Jul. 9, 1981, 56-107382; Aug. 18, 1981, 56-129069
Int. Cl.³ C09K 3/34; C07C 121/60
U.S. Cl. 252—299.63 4 Claims

1. A compound expressed by the formula



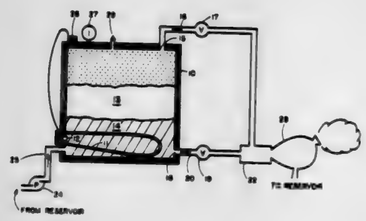
wherein R represents hydrogen or an alkyl group of 1 to 15 carbon atoms, and n is 1 or 2.

4. A liquid crystal composition which comprises a mixture of compounds at least one of which is a compound of claim 1.

4,439,341
SMOKE GENERATOR FOR USE WITH WATER AND SMOKE GENERANT

Edmund Swiatosz, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 21, 1983, Ser. No. 477,208
Int. Cl.³ C09K 3/30; B01J 13/00; B05B 1/24
U.S. Cl. 252—305 16 Claims



1. An apparatus for generating smoke comprising, in combination:

means for heating a quantity of liquid comprising smoke generant liquid and water within a container such that the water held within said container is heated above its boiling point;

means for removing steam under pressure from said container, operably connected thereto;

independent means for removing liquid from said container, operably connected thereto;

means for mixing said steam and said liquid in such a manner as to generate a smoke via an outlet and having inputs from said steam removing means and said liquid removing means; and

means for replenishing said smoke generant liquid and said water, operably connected to said container.

10. An apparatus for generating smoke comprising in combination:

a boiler chamber having a plurality of inlet and outlet means;

means for supplying heat to fluids within said chamber disposed within said lower portion of said boiler chamber;

a first conduit operably connected to said chamber for removing gaseous effluents generated within said chamber;

a second conduit operably connected to said chamber for removing non-gaseous fluids therefrom;

an atomizing nozzle operably connected to receive input from said first and second conduits, and having an output; and

means for supplying water and a smoke generant liquid to said chamber.

13. A method of generating smoke comprising the steps of:

placing a liquid smoke generant within a container;

placing water within said container with said liquid;

applying heat within said container sufficient to generate steam from said water;

withdrawing controlled quantities of said steam and smoke generant by independent means;

mixing said steam and smoke generant such that a smoke is formed having the majority of its particles of a size less than ten microns in diameter.

4,439,342
AEROSOL PREPARATION

James J. Albanese, House Springs, Mo., assignor to United Industries Corporation, St. Louis, Mo.

PCT No. PCT/US80/00036, § 371 Date Sep. 2, 1980, § 102(e) Date Sep. 2, 1980
Continuation-in-part of Ser. No. 58,732, Jul. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,211, Aug. 9, 1978, abandoned. This PCT application Jan. 17, 1980, Ser. No. 237,155
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.³ C09K 3/30
U.S. Cl. 252—305 23 Claims

1. As aerosol preparation being non-emulsified and in the form of a dispersion for providing upon dispensing and applying to a surface a continuous, uninterrupted film comprising an active ingredient from the class consisting of initially pre-emulsified or partially pre-emulsified water insoluble compounds within the range of approximately 1 to 94.5% by weight of the preparation, a propellant from the class consisting of liquefied hydrocarbons and halocarbons, compressed gases, and combinations thereof, a film controlling agent within the range of approximately 1% to 20% by weight of the preparation for controlling the manner in which the propellant leaves the provided film, said propellant being soluble or insoluble in said agent, and a dispersal agent consisting of cocodiethanolamide within the range of 0.5 to 10% by weight of the preparation and being within such range in such relative amount as to be in excess of that required for stabilization of said active ingredient in emulsion form, said cocodiethanolamide being an amber liquid having a congealing point of approximately 6 degrees C., a specific gravity at 25 degrees C. of about 0.99, containing a maximum of about 3–4 percent free or unreacted fatty acid (as lauric acid) and having a pH value of 8–9 as a one percent dispersion in water, and being soluble in alcohols, glycols, ketones, esters, aromatic and aliphatic hydrocarbons, and chlorinated solvents, and also being dispersible in water at low concentrations of 1% to 2%.

4,439,343
AEROSOL PREPARATION

James J. Albanese, House Springs, Mo., assignor to United Industries Corporation, St. Louis, Mo.

Continuation of Ser. No. 58,732, Jul. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,211, Aug. 9, 1978, abandoned. Filed Jul. 10, 1981, Ser. No. 282,050
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.³ C09K 3/30
U.S. Cl. 252—305 37 Claims

1. An aerosol preparation in the form of a dispersion comprising first and second phases in non-emulsified relationship, said first and second phases being immiscible and being normally distinctly separate to render the preparation unhomogenized, said first phase being aqueous and said second phase containing a water insoluble active ingredient in an amount approximately 0.1% to 50% by weight of the preparation, said preparation also containing a dispersal agent consisting of cocodiethanolamide within the range of 2½% to 10% by weight of the preparation, said cocodiethanolamide being an amber liquid having a congealing point of approximately 6 degrees C., a specific gravity at 25 degrees C. of about 0.99, containing a maximum of about 3–4 percent free or unreacted fatty acid (as lauric acid) and having a pH value of 8–9 as a one percent dispersion in water, and being soluble in alcohols, glycols, ketones, esters, aromatic and aliphatic hydrocarbons, and chlorinated solvents, and also being dispersible in water at low concentrations of 1% to 2%, there being a propellant from the class selected from gaseous and liquefied gaseous propellants and mixtures of the same under pressure adequate to disperse the preparation and an organic auxiliary solvent compatible with the selected propellant; said first phase being in an amount constituting between approximately 10% to 75% by weight of the preparation, with the quantity being dependent upon the character of the selected propellant.

4,439,344
WATER DISPERSIONS

James J. Albanese, House Springs, Mo., assignor to United Industries Corporation, St. Louis, Mo.

PCT No. PCT/US80/00037, § 371 Date Sep. 2, 1980, § 102(e) Date Sep. 2, 1980, PCT Pub. No. WO81/01964, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 17, 1980, Ser. No. 250,745
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.³ B01J 13/00; C08L 31/04, 33/08
U.S. Cl. 252—312 15 Claims

1. A non-aerosolized preparation in the form of a water dispersion for providing an uninterrupted, continuous film consisting essentially of an active ingredient from the class consisting of water soluble and water insoluble compositions, said water insoluble compositions being initially non-pre-emulsified, a dispersal agent consisting of cocodiethanolamide within a range of 2.5% to 10% by weight of the preparation, said cocodiethanolamide being an amber liquid having a congealing point of approximately 6 degrees C., a specific gravity at 25 degrees C. of about 0.99, containing a maximum of about 3–14 percent free or unreacted fatty acid (as lauric acid) and having a pH value of 8–9 as a one percent dispersion in water, and being soluble in alcohols, glycols, ketones, esters, aromatic and aliphatic hydrocarbons, and chlorinated solvents, and also being dispersible in water at low concentrations of 1% to 2%, said active ingredient being within a range of approximately 0.05% to 80% by weight of the preparation, any requisite balance of said preparation being water, said preparation being non-emulsified.

4,439,345
DEMULSIFICATION OF A CRUDE OIL MIDDLE PHASE EMULSION

Roy B. Duke, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jun. 11, 1981, Ser. No. 272,621
Int. Cl.³ B01D 17/04
U.S. Cl. 252—330 15 Claims

1. A process for the demulsification of a middle phase emulsion of a crude oil emulsion produced by a surfactant flood comprising contacting the middle phase emulsion with a water-soluble alkali metal hydroxide selected from the group consisting of sodium hydroxide and potassium hydroxide in an amount sufficient to cause demulsification of the emulsion.

9. A process for the demulsification of a middle phase emulsion of a crude oil produced by a surfactant flood comprising:

(a) contacting the middle phase emulsion with a water-soluble metal hydroxide selected from the group consisting of sodium hydroxide and potassium hydroxide in an amount of from about 0.05 to about 5 weight percent based on volume of middle phase emulsions;

(b) heating the mixture of step (a) to a temperature of from about 75° F. to about 400° F. and allowing the mixture to separate into phases wherein one of the phases is an oil phase;

(c) separating the oil phase;

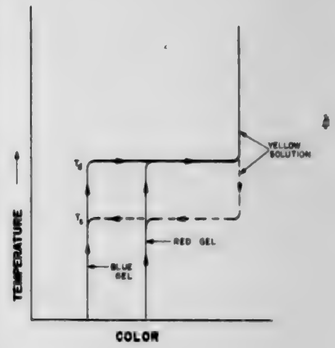
(d) contacting the oil phase of step (c) with an acid selected from the group consisting of a carboxylic acid selected from the group consisting of tartaric, mucic, citric, ethylenediaminetetrascetic, nitrilotriacetic, gluconic, lactic, glycolic and acetic acid and amine salts of said carboxylic acids; sulfuric and phosphoric acid in order to obtain a pH of less than about 8 and allowing the mixture to separate into phases wherein one phase is an oil phase; and

(e) separating the oil phase from the mixture of step (d).

4,439,346
POLYDIACETYLENE GELS

Gordhanbhai N. Patel, Morris Plains, and Dawn M. Ivory, Randolph, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1978, Ser. No. 938,292
Int. Cl.³ C09K 3/00
U.S. Cl. 252—408.1 12 Claims



1. A composition consisting essentially of (A) at least one polydiacetylene selected from the group consisting of 1,4 addition polymers of conjugated diacetylene monomers having the formula R—C≡C—C≡C—R¹ wherein R and R¹ are urethane groups independently selected from

(I):—$(CH_2)_n$—O—CONH—CH_2—COOA, where n is an integer of 1–10 and A is C_1–C_{10} linear or branched alkyl; and polymers of diacetylene monomers having said formula R—C≡C—C≡C—R¹ wherein R and R¹ are identical urethane groups selected from:

(II):—$(CH_2)_n$—O—CONHB wherein

(a) n is 2 and B is ethyl, n-butyl or m-chlorophenyl; or

(b) n is 3 and B is methyl, ethyl, phenyl or m-tolyl; or

(c) n is 4 and B is methyl, ethyl, 2-chloroethyl, o-chlorophenyl, p-chlorophenyl, n-butyl or m-methoxyphenyl;

said composition also consisting essentially of (B) a liquid capable of forming a gel with said polydiacetylene and of forming a solution of said polydiacetylene upon elevation of the temperature of the gel to at least the dissolution temperature, said gel containing about 0.001 to 50 weight percent of said polydiacetylene, and said solution having a different color from that of said gel and being capable of reversibly reforming the gel in its original color upon cooling to the gelation temperature; said liquid being at least one member of the group consisting of linear or branched C_5–C_{10} paraffinic hydrocarbons, linear or branched C_1–C_5 halogenated alkanes containing 1–4 halogen atoms, C_2–C_4 linear or cyclic alkyl sulfoxides, C_4–C_6 cyclic sulfones, C_2–C_7 N,N-dialkylalkanoamides, C_6–C_{10} aromatic hydrocarbons, C_6–C_{10} halogenated aromatic hydrocarbons containing 1 to 4 halogen atoms, C_4–C_6 linear or cyclic mono-or diethers, C_2–C_4 alkanoic acid and ethyl esters therof, C_3–C_6 linear alkyl ketones and C_2–C_4 halogenated alkanoic acids containing 1 to 3 halogen atoms.

4,439,347

PHOTOMETRIC ACCURACY AND LINEARITY TEST SOLUTION

Lilia S. San, Seal Beach, and John C. Anderson, Burbank, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 15, 1981, Ser. No. 330,974
Int. Cl.³ G01N 31/00, 33/00; G01D 18/00; G01B 13/00
U.S. Cl. 252—408.1 3 Claims

1. A solution of the type comprising cobalt ammonium sulfate and sulfuric acid, characterized in that said sulfuric acid is present therein in an amount from about 0.020 to about 0.040 N.

4,439,348

CATALYST SYSTEM FOR FURAN RESINS

Denis W. Akerberg, Huntley, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 255,586, Apr. 20, 1981, abandoned. This application Feb. 5, 1982, Ser. No. 346,353
Int. Cl.³ B01J 31/02; C08L 61/04
U.S. Cl. 252—426 2 Claims

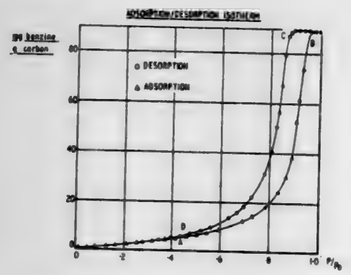
1. A catalytic system for curing a furan polymer concrete comprising a silica aggregate, silica flour, and a furan resin wherein said catalyst system comprises a mixture of an aromatic sulfonic acid selected from the group consisting of phenolsulfonic acid, benzenesulfonic acid, toluenesulfonic acid, and xylenesulfonic acid, and urea salt of said aromatic sulfonic acid, wherein the sulfonic acid is combined with urea salt in a ratio of acid to salt from 1/1 to 1/10, thereby controlling the catalytic activity of said system for regulation of the working life of said furan polymer concrete.

4,439,349

MESOPOROUS CARBONS

Douglas H. Everett, 35 Downleaze, Bristol, BS9 LLX; Stephen G. Bligh, 33 Tennyson Ave., Twickenham, Middlesex, TW1 4QX, and Fernando Rojas, Flat 8, Sinclair House, Clifton Rd., Bristol 8, all of England

PCT No. PCT/GB81/00076, § 371 Date Dec. 28, 1981, § 102(e) Date Dec. 28, 1981, PCT Pub. No. WO81/03167, PCT Pub. Date Nov. 12, 1981
PCT Filed Apr. 28, 1981, Ser. No. 336,396
Claims priority, application United Kingdom, Apr. 28, 1980, 8013932
Int. Cl.³ B01J 21/18; C01B 31/02
U.S. Cl. 502—180 12 Claims



1. An adsorbant carbon comprising a form-stable assembly of a family of contiguous carbon particles wherein the surfaces of adjacent contiguous particles define interstitial pores characterised in that

(a) the maximum diameters of at least 90% by number of the particles of the family lie in the range 8 to 3000 nm,

(b) the root mean square deviation of the maximum diameters of the particles of the family is less than 15% and Ser. No. 336,396 - Everett et al.

(c) in at least one section of the adsorbant carbon, particles are cubic or hexagonal close packed to an extent that the volume of interstitial pores in said section is from 18 to 40% of the volume of said section.

5. A method for making adsorbant carbon characterised in that

(a) a colloidal dispersion of a family of spheroidal particles of carbonisable organic polymer is formed in a liquid wherein the maximum diameters of at least 90% by number of the particles of the family lie in the range 10 to 3500 nm and the root mean square deviation of those maximum diameters within a family is less than 15%.

(b) the particles are caused to deposit from the liquid by a packing force exerted on them,

(c) the deposited particles are heated to a temperature which is below the softening point of the polymer but which is high enough to cause at least partial degradation of the polymer and thereby create a form-stable assembly of particles and

(d) the form-stable assembly is heated to ensure complete carbonisation of the polymer.

4,439,350

CONTACT STRUCTURE FOR USE IN CATALYTIC DISTILLATION

Edward M. Jones, Jr., Friendswood, Tex., assignor to Chemical Research & Licensing Company, Houston, Tex.

Filed Jun. 21, 1982, Ser. No. 390,395
Int. Cl.³ B01J 35/04
U.S. Cl. 502—527 9 Claims

1. A contact catalyst structure comprising a plurality of porous closed containers, containing therein solid particulate catalyst and clip means, for holding and spacing said containers as a unit for disposition above a distillation tray of a distillation column, said clip means comprising at least one structure comprising a base member and a plurality of resilient pairs of members extending substantially perpendicular therefrom for grasping and holding said containers, one each between each of said pair of resilient members.

4,439,351

USE OF ANIONIC OR CATIONIC POLYMERS TO LOWER THE ELECTRICAL RESISTIVITY OF FLY ASH

Rabindra K. Sinha, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Jul. 6, 1982, Ser. No. 395,390
Int. Cl.³ H01B 1/02
U.S. Cl. 252—500 10 Claims

1. A process for lowering the electrical resistivity of fly ash comprising adding a cationic polymer, selected from the group consisting of polymers made from dimethyldiallyl ammonium chloride, ethyleneamine, methacrylamido propyl trimethyl ammonium chloride, 2-methacryloyloxyethyl trimethyl ammonium chloride, 2-methacryloyloxyethyl trimethyl ammonium methosulfate and diquaternary ionene, or an anionic polymer, selected from the group consisting of polymers made from acrylic acid, methyacrylic acid, vinyl acetic acid, crotonic acid, allylacetic acid, 4-methyl-4 pentonic acid, vinyl sulfonate, styrene sulfonate and acrylamido methyl propane sulfonic acid or selected from the group of anionic copolymers made by combining any of the above listed anionic monomers with acrylamide, vinyl acetate, styrene, butadiene or vinyl pyrrolidone, to the fly ash.

4,439,352

RESISTOR COMPOSITIONS AND RESISTORS PRODUCED THEREFROM

Eiichi Asada, Tokyo; Toshio Inokuma, Fujisawa, and Hiroyuku Saito, Oume, all of Japan, assignors to Shoei Chemical Inc., Tokyo, Japan

Filed Dec. 1, 1982, Ser. No. 446,084
Claims priority, application Japan, Dec. 29, 1981, 56-210207; Oct. 1, 1982, 57-173708
Int. Cl.³ A01B 1/06
U.S. Cl. 252—518 11 Claims

1. A composition adapted to form a resistor by coating said composition onto an electrically insulating substrate and firing the coated substrate, which consists essentially of (a) ruthenium oxide; (b) glass; (c) at least one metal oxide selected from the group consisting of lanthanum oxide, neodymium oxide, praseodymium oxide and samarium oxide; and (d) a liquid organic vehicle, wherein the weight ratio of said ruthenium oxide (a) to said glass (b) is in the range of 30:70 to 5:95 and the total amount of said metal oxide (c) is in the range of 0.05 to 7 parts by weight per 100 parts by combined weight of said ruthenium oxide (a) and said glass (b), said composition being in the form of finely divided particles dispersed in said vehicle (d).

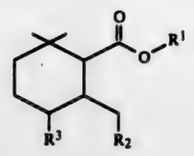
4,439,353

ESTERS OF SUBSTITUTED 2,2-DIMETHYLCYCLOHEXANOIC ACID

Hanspeter Schenk, Zumikon, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed Dec. 1, 1981, Ser. No. 326,443
Claims priority, application Switzerland, Dec. 10, 1980, 9103/80; Oct. 14, 1981, 6573/81
Int. Cl.³ C07C 69/75; C11B 9/00
U.S. Cl. 252—522 R 12 Claims

1. A compound of the formula



I

wherein:

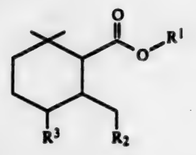
R^1 represents an alkyl group of one to four carbons;

R^2 represents hydrogen or methyl;

R^3 represents hydrogen or methyl; but

R^2 and R^3 are never both hydrogen.

9. A fragrance and/or flavoring composition comprising an effective amount of a compound of the formula



I

wherein:

R^1 represents an alkyl group of one to four carbons;

R^2 represents hydrogen or methyl;

R^3 represents hydrogen or methyl; but

R^2 and R^3 are never both hydrogen

and at least one other fragrance and/or flavoring substance.

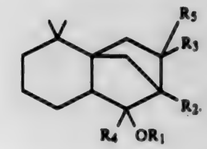
4,439,354

TRICYCLIC ALCOHOLS, ETHERS AND ESTERS, PROCESS FOR PREPARING SAME AND USE THEREOF IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERITES OF CONSUMABLE MATERIALS

Kenneth K. Light, N. Ogden, Utah; Joseph A. McGhie, Montclair, N.J.; Futoshi Fujioka, Wanamassa, N.J., and Takao Yoshida, West Long Branch, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,649, Nov. 13, 1980. This application Oct. 13, 1981, Ser. No. 311,291
The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.
Int. Cl.³ C07C 49/453
U.S. Cl. 252—522 R 16 Claims

1. A process for augmenting or enchancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of at least one tricyclic compound having the structure:



wherein R_1 represents hydrogen, methyl or acetyl and wherein R_2, R_3, R_4 and R_5 may be the same or different and each is hydrogen, methyl or ethyl.

4,439,355

ELASTIC DETERGENT PRODUCT OF IMPROVED FOAMING POWER AFTER USE

Divaker B. Kenkare, South Plainfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 746,998, Dec. 2, 1976, Pat. No. 4,207,198. This application Jan. 17, 1980, Ser. No. 112,730
The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.
Int. Cl.³ C11D 17/00
U.S. Cl. 252—541 13 Claims

1. A hand squeezable, elastic, solid molded detergent product of improved form-retaining ability and foaming power after use, which is sufficiently elastic so that a 2 centimeter thickness thereof can be pressed between a thumb and forefinger to a 1 cm. thickness and upon release of such pressure will return within five seconds to within 1 mm. of the 2 cm. thickness, which comprises about 10 to 70% of an organic detergent or mixture of such detergents selected from the group consisting of ammonium and lower alkanolammonium anionic organic detergent salts and mixtures of such anionic organic detergent(s) and amphoteric synthetic organic detergent(s), about 8 to 35% of gelatin and about 20 to 65% of a lower pluralhydric alcohol selected from the group consisting of lower di- and polyhydric alcohols and mixtures thereof, and which is substantially free of water.

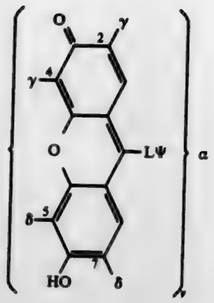
4,439,356

UNSYMMETRICAL FLUORESCEIN DERIVATIVES

Pyare Khanna, San Jose, and Warren Colvin, Redwood City, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Mar. 3, 1981, Ser. No. 240,031
Int. Cl.³ A61K 39/385, 39/44; C07G 7/00
U.S. Cl. 260—112 R 22 Claims

1. A compound of the formula



wherein:

one of the γs will be of the formula —(O)$_\epsilon$ρ and the other is δ;

wherein ε is 0 or 1 and ρ is an aliphatic group of from about 1 to 12 carbon atoms and 0–1 carboxyl groups;

the δ's are the same or different and are hydrogen or halogen of atomic number 17 to 80;

L is a bond or divalent organic radical of up to 20 carbon atoms;

α may be taken together with Ψ to define an active group capable of forming a stable covalent bond with carbon, nitrogen or oxygen or is an organic compound, and is at other than the ortho position when L is benzene and Ψ and α are taken together to define carboxy;

Ψ, when not taken together with α is a linking group to α;

v is 1 when Ψ is taken together with α and is otherwise on the average at least 1 and not more than the molecular weight of α divided by 500.

with the proviso that when ε is 0, one of the δ's may be an aliphatic group of from about 1 to 12 carbon atoms asymmetrically substituted in relation to ρ.

4,439,357

PROCESS FOR OBTAINING HEPATITIS-SAFE, STERILE HEMOGLOBIN SOLUTIONS FREE OF PYROGENS AND STROMA

Klaus Bonhard, Hanau; Bertram Eichentopf, Bad Soden, and Norbert Kothe, Kronberg, all of Fed. Rep. of Germany, assignors to Biotest-Serum-Institut GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 404,197

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130770

Int. Cl.³ A61K *35/18, 37/02;* C07G *7/00;* C07C *103/52*

U.S. Cl. 260—112 B 7 Claims

1. A process for obtaining hepatitis-safe, sterile, pyrogen- and stroma-free hemoglobin solutions of low potassium content comprising stirring an erythrocyte concentrate with about 1 to 6-times its volume of an about 5 to 15% aqueous solution of a sugar, sugar alcohol or high-molecular-weight colloid, adJusting the pH of the resulting suspension to about 5 to 6.5 with an acid which is physiologically tolerable as salt, allowing the erythrocytes to settle, removing the supernatant from the sediments, adjusting the pH of the sediment to about 7 to 8, homogenizing the sediment, adjusting its hematocrit to about 55 to 60%, treating the mass with a dilute beta-propiolactone solution, hemolyzing the residual solids and forming a suspension thereof, contacting the suspension with a cation exchanger in H^+ form until the pH has decreased to about 5 to 5.5 thereby to precipitate the stroma, separating from the liquid the cation exchanger and precipitated stroma, and adjusting the pH to about 7.2 to 7.6.

4,439,358

METHOD OF PREPARING ALPHA-1-PROTEINASE INHIBITOR

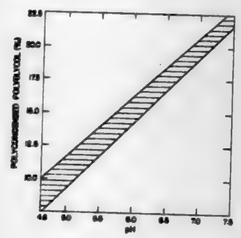
Michael H. Coan, El Cerrito, and William J. Brockway, San Leandro, both of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 389,202, Jun. 17, 1982, Pat. No. 4,379,087. This application Jan. 27, 1983, Ser. No. 461,422

The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 B 19 Claims



1. A method for separating alpha-1-proteinase inhibitor from a blood plasma fraction containing the same, which comprises the steps of

(a) holding an aqueous solution of the blood plasma fraction at a pH of about 6.5–8.5, and a temperature of about 2°–50° C. for a period of about 0.2–24 hours,

(b) mixing the solution with a polycondensed polyglycol and adjusting the pH of the mixture to selectively precipitate unwanted proteins from the solution without precipitation of alpha-1-proteinase inhibitor, the amount of polycondensed polyglycol and the pH of the mixture being determined according to FIG. 1, and

(c) separating alpha-1-proteinase inhibitor from the solution.

4,439,359

CYCLIC OCTAPEPTIDE ANALOGS OF NEUROTENSIN

Frederick W. Holly, deceased, late of Glenside, Pa. (by Evelyn H. Holly, executrix); Marcia E. Christy, Perkasie, Pa.; Kenneth L. Shepard, West Point, Pa.; Robert G. Strachan, Warrington, Pa.; Sandor L. Varga, Harleysville, Pa., and Daniel F. Veber, Ambler, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 2, 1982, Ser. No. 394,750

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R 6 Claims

1. A cyclic octapeptide having the formula

Cyclo(D-Lys-Pro-B-B-Pro-C-Ile-Leu) (I)

wherein:

B is a basic amino acid residue selected from the group consisting of 2,4-diamino butyric acid, lysine, arginine, ornithine, and homoarginine; and

C is tyrosine, or tryptophane.

4,439,360

RETRO-INVERSO ANALOGUES OF C-TERMINAL PENTA AND HEXAPEPTIDES OF SUBSTANCE P

Antonio S. Verdini, and Giuseppe C. Viscomi, both of Monterotondo, Italy, assignors to Anic S.p.A., Palermo, Italy

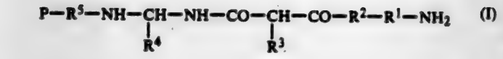
Filed Dec. 10, 1982, Ser. No. 448,832

Claims priority, application Italy, Dec. 22, 1981, 25753 A/81

Int. Cl.³ C07C *103/52;* A61R *37/00*

U.S. Cl. 260—112.5 R 20 Claims

1. Compounds of general formula (I):



(I)

in which

P is hydrogen, a linear or branched aliphatic alkyl group of 1–6 carbon atoms, or a saturated or unsaturated linear or branched chain aliphtic acyl group, such as formyl, acetyl, propionyl, n-butyryl, isobutyryl, n-valeryl, isovaleryl, hexanoyl, isohexanoyl, heptanoyl, octanoyl, crotonoyl, methacryloyl, acryloyl; or a substituted acyl group such as hydroxyacetyl, 2-hydroxypropionyl, 3-hydroxypropionyl, aminoacetyl, 4-hydroxyphenylacetyl, 4-hydroxyphenylpropionyl, 2-aminopropionyl, 3-aminopropionyl, 0-ethylmalonyl, ethoxyformyl, methoxyacetyl, 3-methoxypropionyl, 3-ethoxypropionyl, chloroacetyl, dichloroacetyl, 2-chloropropionyl, 3-chloropropionyl, 2,3-dichloropropionyl, bromoacetyl, 4-hydroxy-3,5-diiodophenylacetyl, 3-oxobutyryl, 3-oxovaleryl, 4-oxovaleryl, methylthioacetyl, 3-methylthiopropionyl, ethylthioacetyl, 3-ethylthiopropionyl, nicotinoyl, γ aminobutyryl, N^{α}-[1-(9-adenyl)-β-D-ribofuranuronosyl], N^{α}-[1-(9-hypoxanthyl)-β-D-ribofuranuronosyl]; or a group such as benzyloxycarbonyl, tert-butyloxycarbonyl, tert-amyloxycarbonyl, isobornyloxycarbonyl, adamantyloxycarbonyl, chloro or nitro-substituted benzyloxycarbonyl;

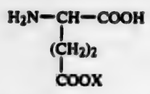
R^1 is a residue of methionine sulphoxide, methionine sulphone, selenomethionine, leucine, norleucine, valine or norvaline;

R^2 is a residue of leucine, norleucine, valine, norvaline, alanine or isoleucine;

R^3 is hydrogen or methyl;

R^4 is the side-chain of aminoacids such as phenylalanine, tryptophan, tyrosine, valine, norvaline, leucine, norleucine, isoleucine, serine or derivatives, threonine or derivatives, histidine or derivatives, methionine, S-methyl methionine, methionine sulphone, arginine or derivatives, lysine or derivatives, ornithine or derivatives, 2,4-diaminobutyric acid or derivatives, 2,3-diaminopropionic acid or derivatives, glutamic acid or aspartic acid or their suitable derivatives;

R^5 is a peptide fragment containing 1 or 2 aminoacid residues which constitutes the quintultimate and sextultimate residue from the carboxyamide end, and of which the quintultimate can be: phenylalanine, tyrosine, 4-chlorophenylalanine, 0-benzyltyrosine (or their acetyl, cyclopentyl, tert-butyloxycarbonyl or 4-hydroxyphenylacetyl derivatives) or glycine; and the sextultimate can be: glutamine, pyroglutamic acid, alanine, tyrosine, lysine or derivatives, proline, N-formyl-proline, β-alanine, N-acetyl-β-alanine, glycine, desaminophenylalanine, desaminoglutamine, desaminoaspartic acid, γ-methyldesaminoaspartic acid, or γ-esters of glutamic acid represented by the general formula (II)



in which X is methyl, ethyl, methoxyethyl, methoxy (ethoxy)$_n$ ethyl where n=1, 2, 3, or their tert-butyloxycarbonyl derivatives.

4,439,361

PROCESS FOR CONTROLLING DIAZOTIZATION REACTIONS INVOLVING NITROUS REACTANT BY TESTING THE AIR ABOVE THE REACTION BATCH FOR ITS CONTENT OF NITROUS GASES AND FEEDING NITROUS REACTANT IN ACCORDANCE WITH SAID CONTENT

Kurt Karrenbauer; Hartmut Behringer, both of Erftstadt, and Heinrich Rehberg, Hürth-Hermülheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,487

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 3104375

Int. Cl.³ C07C *113/04*

U.S. Cl. 260—141 11 Claims

1. A process for controlling diazotization reactions, which comprises: vigorously agitating a reaction batch containing an aromatic amine and nitrous acid, and thereby continuously renewing the surface area of the batch; exhausting the air above said surface area at a constant rate; testing the exhausted air for its content of nitrous gases originating from partially decomposed nitrous acid; and supplying nitrous acid or dissolved matter forming nitrous acid under the reaction conditions to the feed amine in the proportions necessary to provide for a content between 5 and 300 ppm nitrous gases in the exhausted air.

4,439,362

AZO COMPOUNDS HAVING ONE OR TWO 1,4-DIOXANYLMETHOXYCARBONYL-ALKYL OR -ALKOXYALKYL GROUPS

Klaus Koerte, Ettingen, Switzerland, assignor to Sandox Ltd., Basel, Switzerland

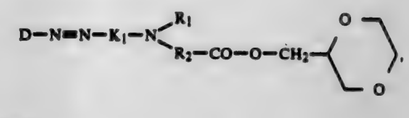
Filed Jul. 7, 1977, Ser. No. 813,485

Claims priority, application Switzerland, Jul. 12, 1977, 8904/76

Int. Cl.³ C09B *29/36, 31/14;* D06P *3/26, 3/54*

U.S. Cl. 260—152 7 Claims

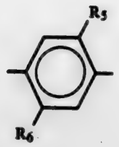
1. A compound of the formula



wherein

D is substituted thienyl having 1to 3 substituents, each of which is independently chloro, bromo, nitro, cyano, methyl, phenyl, (C_{1-2}alkyl)carbonyl or (C_{1-2})alkoxy)carbonyl, with the proviso that the maximum number of any one member of the group consisting of chloro, bromo, nitro, cyano and methyl is two and the maximum number of any one member of the group consisting of phenyl, (C_{1-2}alkyl)carbonyl and (C_{1-2}alkoxy)carbonyl is one; thiazolyl; benzothiazolyl; benzoisothiazolyl; substituted thiazolyl, substituted benzothiazolyl or substituted benzoisothiazolyl having 1 or 2 substituents each of which is independently chloro, bromo, nitro, cyano, methyl, thiocyano, sulfamoyl or C_{1-2}alkylsulfonyl, with the proviso that the maximum number of any one member of the group consisting of methyl, thiocyano, sulfamoyl and C_{1-2}alkylsulfonyl is one; 5-phenyl-1,3,4-thiadiazolyl-2 or 4-phenyl-1,3,5-thiadiazolyl-2,

K_1 is



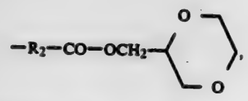
or 1,4-naphthylene,

wherein

R_5 is hydrogen, chloro, bromo, methyl, methoxy or ethoxy, and

R_6 is hydrogen, chloro, bromo, methyl, methoxy, ethoxy, (C_{1-2}alkyl)carbonylamino or chloroacetamido,

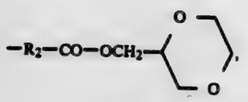
R_1 is hydrogen; C_{1-4}alkyl; C_{2-4}alkenyl; C_{2-4}alkyl or C_{2-4}alkenyl monosubstituted by chloro, bromo, hydroxy, cyano, C_{1-4}alkoxy, phenoxy, phenyl, formyloxy, (C_{1-4}alkyl)carbonyloxy, benzoyloxy, (C_{1-4}alkoxy)carbonyl, (C_{1-4}alkoxy)carbonyloxy, (C_{1-4}alkyl)carbamoyloxy or di-(C_{1-4}alkyl)carbamoyloxy or



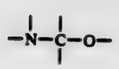
with the proviso that R_1 is hydrogen, C_{1-4}alkyl or C_{2-4}alkenyl when K_1 is 1,4-naphthylene, and

each

R_2 is C_{1-4}alkylene or C_{2-4}alkylene-O-C_{2-4}alkylene, with the proviso that when R_1 is



the two R_2's are identical, with the proviso that the molecule is free of



radicals.

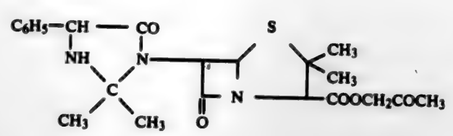
4,439,363

ACETYLMETHYL ESTER OF HETACYLLIN AND/OR SALTS OF THIS ESTER

Wojciech A. Gruszecki, Gdansk; Irena M. Busko-Oszczopowicz, Warsaw; Maria Gdulewicz-Gruszecka, Gdansk; Jerzy J. Cieslak, Warsaw; Edward Borowski, Gdansk, and Teresa Gumienina, Warsaw, all of Poland, assignors to Politechnika Gdanska, Gdansk and Instytut Przemyslu Farmaceutycznego Majakowskiego, Warsaw, both of, Poland

Continuation of Ser. No. 158,399, Jun. 11, 1980, abandoned. This application Feb. 25, 1982, Ser. No. 352,118
Claims priority, application Poland, Jun. 20, 1979, 216450
Int. Cl.³ C07D *499/46;* A61K *31/43*
U.S. Cl. 260—239.1 2 Claims

1. An acetylmethyl ester of hetacyllin of the formula:



and the non-toxic, pharmaceutically acceptable salts thereof.

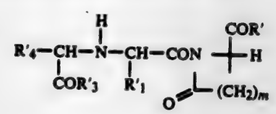
4,439,364

PROCESS FOR PREPARING ANTIHYPERTENSIVE 1-SUBSTITUTED CYCLIC LACTAM-2-CARBOXYLIC ACIDS AND THEIR DERIVATIVES

Alexander L. Johnson, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Sep. 1, 1982, Ser. No. 413,786
Int. Cl.³ C07D *223/10*
U.S. Cl. 260—239.3 R 4 Claims

1. A process for preparing compounds of the formula:



where

R′ is OX, C_1–C_4 alkoxy or benzyloxy;

R_1′ is H, CH_3, C_2H_5, CF_3, isobutyl, isoamyl, $-(CH_2)_nN-R_5-X^1$ or $-(CH_2)_pNH-C(=NH)NH-X^2$;

R_3′ is OX^3, C_1–C_4 alkoxy or benzyloxy;

R_4′ is C_1–C_{10} alkyl, $-(CH_2)_qC_6H_5$ or $-(CH_2)_rNH-X^4$;

R_5 is H or C_1–C_4 alkyl;

m is 2, 3 or 4;

n is an integer from 1–6;

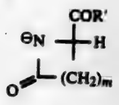
p is an integer from 1–6;

q is an integer from 0–6;

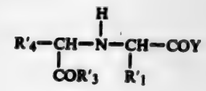
r is an integer from 1–6; and

X, X^1, X^2, X^3 and X^4 are protective groups;

consisting essentially of coupling an anion of the formula



with an amino-diacid of the formula



where Y is a carboxyl-activating group.

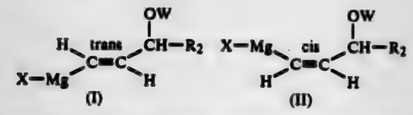
4,439,365

NOVEL HYDROXY SUBSTITUTED PROSTANOIC ACIDS, ESTERS, CONGENERS, INTERMEDIATES AND PROCESS

Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; John F. Poletto, Nanuet, N.Y.; Robert E. Schaub, Upper Saddle River, and Karel F. Bernady, Belle Mead, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 922,285, Jul. 6, 1978, which is a division of Ser. No. 806,871, May 30, 1978, which is a continuation-in-part of Ser. No. 540,052, Jan. 10, 1975, which is a division of Ser. No. 355,349, Apr. 7, 1973, Pat. No. 3,873,607, which is a division of Ser. No. 274,768, Jul. 24, 1972. This application Jul. 18, 1979, Ser. No. 58,415
Int. Cl.³ C09B *11/06*
U.S. Cl. 260—395 3 Claims

1. A compound selected from the group consisting of those of the formulae:



wherein W is selected from the group consisting of triphenylmethyl, X is selected from the group consisting of chloro and bromo; and R_2 is selected from the group consisting of a straight chain alkyl group having from 2 to 10 carbon atoms, a straight chain alkyl group having from 2 to 10 carbon atoms, and substituted with an alkyl group having from one to three carbon atoms, a straight chain alkenyl group having from 2 to 10 carbon atoms and substituted with one or two alkyl groups having between them 2 to 5 carbon atoms, and a straight chain alkynyl group having from 2 to 10 carbon atoms.

4,439,366

DERIVATIVES OF CHENODEOXYCHOLIC ACID

Carlo Scolastico, Vallisneri St., 13 B-Milan; Cesare Sirtori, Bossi St., 1 Milan, both of Italy, and David Kritchevsky, 36 St. at Spruce, Philadelphia, Pa. 19105

Filed Jun. 28, 1982, Ser. No. 392,891
Claims priority, application Italy, Jul. 24, 1981, 23109 A/81
Int. Cl.³ C07J *13/00*
U.S. Cl. 260—397.1 1 Claim

1. The compound 7-oleyl chenodeoxycholic acid.

4,439,367

Patent Not Issued For This Number

4,439,368

ONE SOLVENT PROCESS FOR PREPARATION OF ESTERS OF 3,5-DIBROMO-4-HYDROXYBENZONITRILE

Richard E. Sheeds, Durham, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1982, Ser. No. 426,705
Int. Cl.³ C07C *121/75*
U.S. Cl. 260—404 12 Claims

1. A method of preparing esters of 3,5-dibromo-4-hydroxybenzonitrile from 4-cyanophenol which comprises:

(a) reacting said 4-cyanophenol with a reactant(s) selected from the group consisting of bromine; bromine and chlorine; and preformed bromine chloride;

(b) sequentially reacting the 3,5-dibromo-4-hydroxybenzonitrile intermediate so formed with an acid halide selected from the group consisting of an aliphatic, cycloaliphatic and aromatic acid halide; and

(c) conducting both of the above process steps in a single, halogenated alkane reaction medium.

4,439,369

HALOGENATED, TERTIARY DIISOCYANATES AND THEIR PREPARATION

Karl-Heinz Koenig, Frankenthal, and Volker Schwendemann, Wiesenbach, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,090
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102089
The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.
Int. Cl.³ C07C *118/00, 119/045*
U.S. Cl. 260—453 P 8 Claims

1. A process for the preparation of a halogenated, tertiary diisocyanate of the formula I

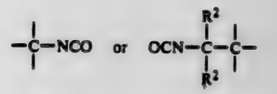


I

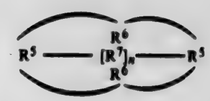
where n is 0 or 1 and the individual radicals R^1 are identical or different and, if n is 0, are



or, if n is 1, are



the individual radicals R^2 are identical or different and are aliphatic radicals, or two adjacent radicals R^2 linked by a carbon atom can be members of a halogen-free or halogenated alicyclic ring, and the individual radicals R^3 and R^4 can be identical or different and are aliphatic radicals, the end product having more halogen atoms than the starting material II, by halogenation of an isocyanate, wherein a tertiary diisocyanate of the formula II



II

where R^5 has the meanings of R^1, R^6 has the meanings of R^4 and R^7 has the meanings of R^3, the above radicals overall having a smaller number of halogen atoms than R^1, R^4 and R^3 or being halogen-free, is reacted with halogen, sulfuryl chloride and/or sulfuryl bromide.

2. A halogenated tertiary diisocyanate of the formula I

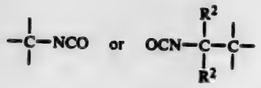


I

where n is 0 or 1 and the individual radicals R^1 are identical or different and, if n is 0, are



or, if n is 1, are



the individual radicals R^2 are identical or different and are aliphatic radicals, or two adjacent radicals R^2 linked by a carbon atom can be members of a halogen-free or halogenated alicyclic ring, and the individual radicals R^3 and R^4 can be identical or different and are aliphatic radicals.

4,439,370

PREPARATION OF TRANS CYCLOHEXANE 1,4-DIISOCYANATE

Hans Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 215,415, Dec. 11, 1980, which is a division of Ser. No. 49,112, Jun. 18, 1979, Pat. No. 4,275,223, which is a division of Ser. No. 883,949, Mar. 6, 1978, Pat. No. 4,203,916. This application Sep. 20, 1982, Ser. No. 420,184

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710595

Int. Cl.³ C07C *118/00, 119/045*

U.S. Cl. 260—453 P **1 Claim**

1. A process for preparing a trans-cyclohexane-1,4-diisocyanate which comprises reacting ammonia with cyclohexane-1,4-dicarboxylic acid, a lower alkyl ester, an oligomeric ester or a polyester thereof or a mixture of such compounds at an ammonia partial pressure of from 0.1 to 50 bars in a polyhydric alcohol at from about 25° C. to about 200° C., separating the resulting solid dicarboxylic acid diamide from the reaction mixture, freeing the said solid diamide from water soluble constituents adhering thereto, suspending the resulting solid diamide in an aqueous mineral acid or in water, reacting the chloramide in aqueous dimethyl formamide containing an alkali metal hydroxide with a primary sulphonamide to form a trans-cyclohexane-1,4-sulphonyl urea, and heating said trans-cyclohexane-1,4-sulphonyl urea to form trans-cyclohexane-1,4-diisocyanate.

4,439,371

METHOD FOR PREPARING PHTHALONITRILES

Ramiz G. K. O. Rizaev, ulitsa Sharif-Zade, 148, kv. 67; Mirabdulla M. O. Mirataev, ulitsa Patrisa Lumumby, 59 blok 1, kv. 20; Viktor E. Sheinin, ulitsa Pervomaiskaya, 251, kv. 28; Zemfira J. K. Magerramova, ulitsa Chicherina, 6, kv. 11; Jury N. Litvishkov, ulitsa 28 Aprelya, 11, kv. 38; Sekher G. K. Gusein-Zade, ulitsa Basina, 53, kv. 42; Tofik S. O. Farzullaev, ulitsa B.Avakiana, 55, kv. 10, and Nazaket M. K. Ilyasova, Moskovsky prospekt, 95a, kv. 39,, all of Baku, U.S.S.R.

Filed Mar. 9, 1981, Ser. No. 247,537

Int. Cl.³ C07C *120/14*

U.S. Cl. 260—465 C **3 Claims**

1. A method for preparing phthalonitriles by oxidative ammonolysis of xylene at a temperature within the range of from 340° to 480° C. in the presence of a catalyst containing oxides of antimony, bismuth, vanadium, or molybdenum deposited onto an inert carrier, characterized in that a catalyst is used additionally containing ferric oxide, the components being present in the following proportions, percent by weight:
antimony oxide: 1–25
bismuth oxide: 1–20
vanadium oxide or molybdenum oxide: 0.2–15
ferric oxide: 0.1–25
carrier: the balance.

4,439,372

PROCESS FOR THE PREPARATION OF STYRYL DYESTUFFS

Herbert Hugl, Bergisch-Gladbach; Gerhard Wolfrum, Leverkusen, and Klaus-Friedrich Lehment, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

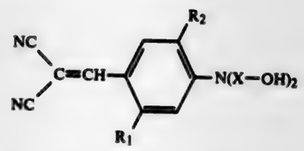
Filed Jun. 28, 1982, Ser. No. 392,493

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128159

Int. Cl.³ C07C *121/80*

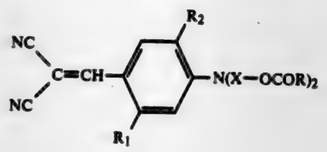
U.S. Cl. 260—465 E **12 Claims**

1. Process for the preparation of styryl dyestuffs of the formula



(I)

in which
R_1 and R_2 denote hydrogen, alkyl, alkoxy or halogen and
X denotes an alkylene radical, characterised in that compounds of the formula



(II)

in which
X, R_1 and R_2 have the meaning indicated for formula (I) and
R denotes alkyl or aryl,
are hydrolysed by means of mineral acid to give compounds of the formula (I) and the latter are isolated.

4,439,373

PROCESS FOR PREPARING PHOSPHONOMETHYLATED AMINO ACIDS

Sreeramulu Nagubandi, Bedford Hills, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 27, 1982, Ser. No. 453,661

Int. Cl.³ C07F *9/38*

U.S. Cl. 260—502.5 F **18 Claims**

1. A process for preparing phosphonomethylated amino acids comprising:
reacting a primary amino acid ester or salt with a carbon dioxide protecting group to form a protected amino compound;
phosphonomethylating said protected amino compound to obtain a phosphonomethylated protected amino compound; and
acidifying said phosphonomethylated protected amino compound to expel said carbon dioxide protecting group and yield a phosphonomethylated amino acid or acid derivative.

4,439,374

PROCESS FOR SULFONATING IMPURE ORTHO ALKYLPHENOL

Lester P. J. Burton, Pleasant Ridge, and Ronald L. Shubkin, West Bloomfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 28, 1982, Ser. No. 392,656

Int. Cl.³ C07C *143/44, 79/28*

U.S. Cl. 260—512 R **11 Claims**

1. In a process for sulfonating an impure o-alkylphenol to form a disulfonated o-alkylphenol, said process comprising reacting an impure o-alkylphenol with concentrated sulfuric acid, the improvement comprising adding about 0.001–0.5 weight percent of an aliphatic polybasic carboxylic acid having 2–12 carbon atoms or salt thereof to said o-alkylphenol whereby the ratio of disulfonated to monosulfonated o-alkylphenol is increased.

7. A process for making 2,4-dinitro-6-alkylphenol, said process comprising
(a) mixing about 0.001–0.5 weight percent of an aliphatic polybasic carboxylic acid or salt thereof with an impure o-alkylphenol,
(b) reacting said impure o-alkylphenol containing said polybasic carboxylic acid or salt with concentrated sulfuric acid in an amount of at least 2.0 moles of sulfuric acid per mole of said o-alkylphenol at a temperature of about 30°–150° C. to form sulfonated o-alkylphenol,
(c) reacting said sulfonated o-alkylphenol with a nitrating agent selected from the group consisting of nitric acid and salts thereof in an amount of at least 2.0 moles of nitrating agent per mole of said o-alkylphenol at a temperature of about 30°–150° C., and
(d) recovering a dinitro-o-alkylphenol product of high purity being substantially free of insoluble tar.

4,439,375

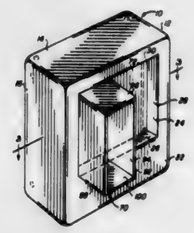
EVAPORATIVE COOLER APPARATUS

Robert L. Koble, Jr., Phoenix, Ariz., assignor to Phoenix Manufacturing, Inc., Phoenix, Ariz.

Filed Jul. 6, 1982, Ser. No. 395,099

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—29 **6 Claims**



1. Evaporative cooler apparatus, comprising, in combination:
relatively thin housing means, including
a front panel,
a back panel,
a pad means disposed in the back panel,
a sump for holding a quantity of water, and
water means for providing a flow of water through the pad means; and
blower module means adapted to be disposed in any one of a plurality of orientations, and including
a plate securable to the front panel in a plurality of orientations,
a blower secured to and supported by the plate for causing a flow of air through the pad means, and
an air nozzle asymmetrically secured to the front plate for receiving the flow of air from the blower and for directing the flow of air out of the housing means from different locations with respect to the housing means as the orientation of the plate is changed on the front panel.

4,439,376

FLOW PROPORTIONING DEVICE

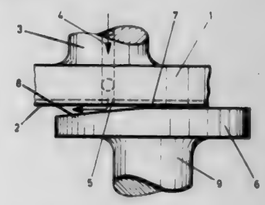
Günter Härtel, Neuss, and Armin Schürfeld, Meerbusch, both of Fed. Rep. of Germany, assignors to Bosch & Pierburg System oHG, Neuss, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 384,992

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3123983

Int. Cl.³ F16K *3/32, 47/04*

U.S. Cl. 261—50 A **16 Claims**



1. A proportioning device for controlling the flow of a fluid according to demand, said device comprising a disc shaped rotary slider mounted to rotate about a first axis, a planar slide face on said rotary slider and lying in a plane perpendicular to said first axis, a passage through said rotary slider for carrying the fluid flow to be controlled and terminating in a flow outlet in said slide face, a contoured disc mounted to rotate about a second axis parallel to said first axis, a planar contact face on said contoured disc and lying in a plane perpendicular to said second axis, said contact face being in abutting contact with said slide face, a relief-like contoured area on said contoured disc around said contact face and spaced axially from said flow outlet to define a free cross-sectional area which determines the flow of fluid from said outlet, said contoured area being shaped whereby rotation of either of said rotary slider and said contoured disc may vary the axial spacing between said contoured area and said flow outlet and hence vary said free cross-sectional area of flow, and positioning means for rotating said rotary slider and said contoured disc independently of each other.

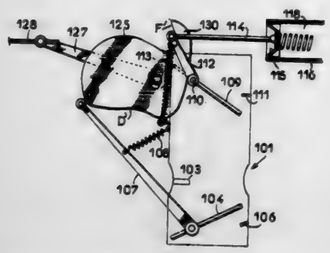
11. A device as claimed in claim 1, in combination with a constant-pressure carburetor to control the flow of fuel from a float chamber of said carburetor for mixture with the air flow through a constant-pressure stage of said carburetor, said carburetor having a space in which said contoured disc is located, means communicating said space with said constant-pressure stage of said carburetor, and means which communicates said flow passage of said rotary slider with said float chamber whereby fuel can flow from said float chamber to said flow outlet in said slide face of said rotary slider, said positioning means for said contoured disc being connected to rotate said disc in correspondence with the throughput of air in said carburetor, and said positioning means for said rotary slider comprising an electric-motor driven member and electronic control apparatus therefor.

4,439,377

CARBURETOR FOR AN INTERNAL COMBUSTION MOTOR

Andre Nartowski, Marly le Roi, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Feb. 18, 1982, Ser. No. 349,902
Claims priority, application France, Mar. 3, 1981, 81 04185
Int. Cl.³ F02M 1/14
U.S. Cl. 261—52 4 Claims



1. A carburetor comprising:
at least one body defining a barrel extending between the atmosphere and an intake manifold, whereby air can flow through said barrel into said manifold;
a fuel nozzle extending into said barrel;
a choke valve rotatably mounted in said barrel upstream from said nozzle;
a butterfly valve rotatably mounted in said barrel downstream from said nozzle;
means for biasing said choke valve into a first position wherein said choke valve is completely closed;
pressure sensitive means movable in response to variations in the pressure in said intake manifold;
linkage means connected between said choke valve and said pressure sensitive means, said linkage means including at least one articulation and being movable by said pressure sensitive means to permit said choke valve to move between said first position and a second fully open position;
a cam rotatably mounted on said at least one body, said cam including an appendage fixed thereto; and
means for moving said cam between first, second and third positions, wherein said appendage is in a displacement path of said at least one articulation when said cam is in said first position and wherein said appendage is outside of said displacement path when said cam is in said second position, whereby said appendage limits the opening of said choke valve only when said cam is in said first position.

4,439,378

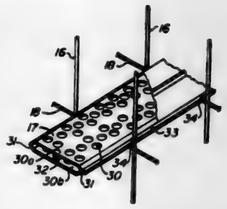
COOLING TOWER SPLASH BAR METHOD AND APPARATUS

John C. Ovard, 3465 Ridgeview Dr., Santa Rosa, Calif. 95404

Filed May 23, 1983, Ser. No. 496,931
Int. Cl.³ B01F 3/04
U.S. Cl. 261—111 14 Claims

8. A foldable member for forming a cooling tower splash bar comprising
a first elongate perforated flat surface member;
a second elongate perforated flat surface member substantially coplanar with said first surface member and positioned adjacent thereto;
upwardly inclined third and fourth elongate surface members connected respectively to the adjacent elongate edges of said first and second surface members;
said third and fourth surface members flexibly joined together by an elongate joint extending substantially parallel to said adjacent elongate edges; and
upwardly outwardly inclined fifth and sixth elongate surface members connected respectively to the remote elongate edges of said first and second surface members;
whereby first, third and fifth surface members can be folded over along said joint and on top of said second, fourth and sixth surface members to form a hollow member with the remote elongate edges of said fifth and sixth surface members then adjacent one another.

14. A method of cooling a liquid in a cross flow cooling tower includes a matrix of longitudinally extending splash bars each having upper and lower elongate perforated surfaces held in parallel spaced apart relation to one another by laterally outwardly projecting edge supports connecting the adjacent elongate edges of said surfaces, said method comprising the steps of:
flowing air horizontally through said matrix;
splashing warm liquid through said matrix in crossflow within said air flow;



directing a first portion of said liquid downwardly to impinge upon said upper surface of said splash bars to fragment and laterally disperse said first portion;
directing a second portion of said liquid and a first subportion of said first portion of said liquid laterally dispersed on said upper surface downwardly to pass through the perforations of said upper surface to impinge upon said lower surface of said second portion and said first subportion;
deflecting said first subportion and the second subportion of said first portion, and said second portion laterally of air flow through said matrix; and
repeating said flowing, splashing, directing and deflecting steps through said matrix to fragment said liquid into uniformly dispersed droplets for creating maximum heat exchange surface between said liquid and air.

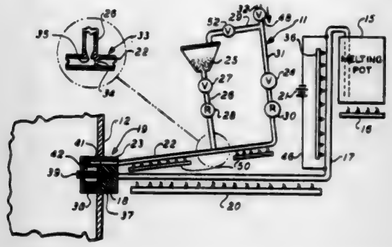
4,439,379

METHOD FOR THE CONTINUOUS MANUFACTURE OF FINELY DIVIDED METALS, PARTICULARLY MAGNESIUM

Robert J. Hart, 190 Briarwood Crossing, Cedarhurst, N.Y. 11516

Division of Ser. No. 244,249, Mar. 16, 1981, Pat. No. 4,374,633.
This application Jan. 31, 1983, Ser. No. 462,628
Int. Cl.³ B01J 2/04
U.S. Cl. 264—12 5 Claims

1. A method for manufacturing finely divided particles of magnesium comprising:
(a) projecting a stream of molten magnesium into an enclosed chamber containing a gaseous atmosphere inert to said magnesium;
(b) projecting at a velocity exceeding that of the magnesium a stream of inert gas to contact and atomize said magnesium stream into a spray of finely divided droplets, said droplets being dispersed and cooled by said inert gas within said chamber to solidification; and
(c) entraining in said inert gas stream prior to contact with said magnesium stream a finely divided abrasive particulate comprising an oxide of magnesium which combines



with said formed droplets and said solid magnesium particles.

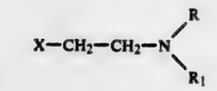
4,439,380

PHOTOPOLYMERIZABLE COMPOSITION, ESPECIALLY FOR DENTAL PURPOSES

Rudy Michl, Schaan, and Hanspeter Willi, Vaduz, both of Liechtenstein, assignors to Etablissement Dentaire Ivoclar, Schaan, Liechtenstein

Filed Jul. 17, 1981, Ser. No. 284,294
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029276
Int. Cl.³ C08F 2/50; A61C 13/00, 13/08
U.S. Cl. 264—16 22 Claims

1. A photopolymerizable composition comprising a photopolymerizable olefin, at least one ketone and one amine, said amine having the formula



wherein the symbols have the following meaning:
X represents cyan, chlorine, bromine or iodine; R represents the group $X—CH_2—CH_2$ (where X has the meaning given above) or an alkyl group of 1 to 6 carbon atoms or a hydroxy alkyl group of 2 to 6 carbon atoms;
R_1 represents a benzyl, phenyl or styryl radical optionally substituted by chlorine, bromine or iodine, or by a carboxy, carbalkoxy, lower alkyl, alkoxy or hydroxyalkyl, cyano or nitro group.

4,439,381

METHODS OF PREPARING POLYIMIDES AND ARTIFACTS COMPOSED THEREOF

John Gagliani; Raymond Lee, and Anthony L. Wilcoxson, all of San Diego, Calif., assignors to I M L Corporation, Elk Grove Village, Ill.

Division of Ser. No. 186,629, Sep. 12, 1980, Pat. No. 4,305,796.
This application May 11, 1981, Ser. No. 262,519
Int. Cl.³ B29H 5/26
U.S. Cl. 264—26 28 Claims

1. A method of preparing a polyimide from a non-polymeric precursor comprising an ester of a tetracarboxylic acid and one or more primary diamines which includes the step of exposing said precursor to microwave radiation having a frequency of at least 915 mHz for periods of sufficient duration to develop a cellular physical structure and to at least partially develop a polyimide chemical structure, said precursor being supported while it is exposed to microwave radiation on an inflexible, temperature resistant substrate that is compatible with such radiation.

4,439,382

TITANIUM DIBORIDE-GRAPHITE COMPOSITES

Louis A. Joo', Johnson City; Kenneth W. Tucker, Elizabethton, and Frank E. McCown, Jr., Bristol, all of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,124
Int. Cl.³ C25B 11/04; C25C 3/12
U.S. Cl. 264—29.5 19 Claims

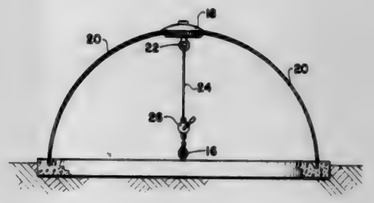
1. A process for manufacturing a carbon-TiB_2 composite article comprising blending coke, a first carbonizable binder and a first TiB_2 forming reactant to form a dispersion, shaping said article, baking said article to carbonize said binder, impregnating said article under alternate cycles of vacuum and pressure at least once with a second TiB_2-forming reactant in liquid form, and heating said article to a TiB_2-forming temperature to form said carbon-TiB_2 composite article.

4,439,383

METHOD OF CONSTRUCTING SHELL-FORMED STRUCTURES

Billy J. Collins, P.O. Box 1327, Claremore, Okla. 74017

Filed Sep. 7, 1982, Ser. No. 414,660
Int. Cl.³ E04B 1/32
U.S. Cl. 264—32 6 Claims



1. A method of constructing a shell-form structure comprising:
constructing a base for such structure, the base having retention means defining an area of contact of the finished building wall with the base;
supporting a top yoke above the base;
positioning a plurality of spaced apart flexible slats, each with one end in engagement with the base retention means and an other end in engagement with said top yoke;
lowering said top yoke to cause said flexible slats to bow uniformly into a generally quarter-circular or quarter-elliptical configuration generally defining a desired exterior configuration of the structure;
attaching a covering to the bowed slats;
applying a covering layer of settable material to the covering;
allowing the settable material to set to thereby form a structure of the desired configuration.

4,439,384

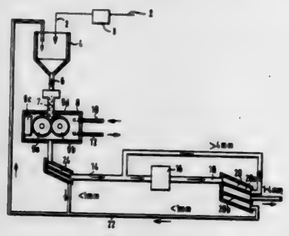
METHOD FOR MANUFACTURING GRAULES FROM POTASSIUM CHLORIDE FINES

Hans G. Bergendahl, Bochum-Weitmar, Fed. Rep. of Germany, assignor to Maschinenfabrick Koppern GmbH & Co. KG, Hattingen, Fed. Rep. of Germany

Filed Dec. 16, 1981, Ser. No. 331,355
Int. Cl.³ B01J 2/22
U.S. Cl. 264—37 5 Claims

1. A method of manufacturing granules from potassium chloride fines comprising:
a. feeding potassium chloride fines by means of filling screws to a roll press having a pair of rolls arranged side by side with parallel rotational axes in a roller frame, one of said rolls being rotatable about a substantially stationary axis and the other roll being laterally displaceable against a

hydraulic roller setting system, said filling screws being mounted on said roller frame for feeding into the nip of the two rolls, said fines having a temperature of at least 120° C. when entering said nip, said rolls having profiled surfaces with honeycomb-like depressions therein, the depressions on the opposite rolls being laterally and circumferentially offset by approximately 50% relative to each other, said rolls being internally cooled to operate with surface temperatures of less than 80° C., being driven with circumferential velocities of between 0.55 and 0.75 meters per second, and having specific press forces therebetween of at least 4.5 metric tons per linear centimeter of



roll length, and said profile on said profiled surfaces and the distance between said surfaces being chosen to form said fines into a sheet of compacted potassium chloride having a thickness of at least 10 mm;

b. feeding said sheet to a granulator to form granules;

c. sieving said granules to separate therefrom granules of greater than approximately 4 mm and less than approximately 1 mm in dimension;

d. recycling said granules of greater than approximately 4 mm in dimension to said granulator;

e. recycling said granules of less than approximately 1 mm in dimension to said roll press.

4,439,385

CONTINUOUS PROCESS FOR THE AGGLOMERATION OF PTFE POWDERS IN A LIQUID MEDIUM

Jürgen Kuhls; Eduard Weiss, both of Burghausen, and Gottfried Burgstaller, Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,716

Int. Cl.³ B01J 2/12

U.S. Cl. 264—37 **8 Claims**

1. A process for the continuous production of an agglomerated molding powder from a granular non-melt-fabricable tetrafluoroethylene polymer primary powder in which the average particle diameter d_{50} of the primary particles is 20 to 80 μm, in a liquid medium which passes through the whole process and consists of water and an organic liquid which is capable of wetting such a tetrafluoroethylene polymer and is soluble in water to the extent of not more than 15% by weight, the weight/volume ratio of primary powder to organic liquid being 7:1 to 1.3:1 and the volume/volume ratio of organic liquid to water being 1:1.4 to 1:50, with mechanical agitation at temperatures of 5° to 90° C., which comprises passing the primary powder, together with the liquid medium, through a three-stage cascade in which, initially, the primary powder, the water and the organic liquid, in the ratio mentioned,

(a) are continuously introduced into a pretreatment stage filled with the liquid medium and are moved forward in the former, where the primary powder is first drawn in a conveying zone into the liquid medium, and is suspended in the latter, by means of a stirring element which effects the conveyance, then arrives in a directly adjacent dispersing zone and is there converted, by the action of a stirring element having a dispersing action within the range of the specific stirring energy applied, into a form which is essentially uniformly finely distributed within the liquid medium, then arrives in a directly adjacent homogenizing zone and is pre-agglomerated there by the action of a turbine-shaped stirring element to give secondary particles having an average particle diameter d_{50} of about 100 to about 400 μm, the pretreatment stage being passed through at an average dwell time of 3 to 30 minutes and the specific stirring energy introduced there being 5 to 100 W/l, this pretreated suspension then

(b) passes through an agglomeration stage in which the pre-agglomerated primary powder is further agglomerated by the gentle action of stirring elements which, within the range of specific stirring energy applied, exert essentially no comminuting action, producing an adequate contact between particles in the liquid medium, to give a powder having tertiary particles of an average particle diameter d_{50} of 150 to 1,000 μm, the agglomeration stage being passed through at an average dwell time of 5 to 50 minutes and the specific stirring energy introduced there being 2 to 30 W/l, this suspension then

(c) is passed through an after-treatment stage in which, by maintaining an average dwell time of 6 to 60 minutes and by the action of a multi-bladed stirrer element which introduces a specific stirring energy of 5 to 30 W/l into the suspension, the final formation of the particle shape takes place without a further essential change in the average particle size, and finally

(d) is discharged continually from the after-treatment stage, and the agglomerated powder is separated from the liquid medium in a known manner.

4,439,386

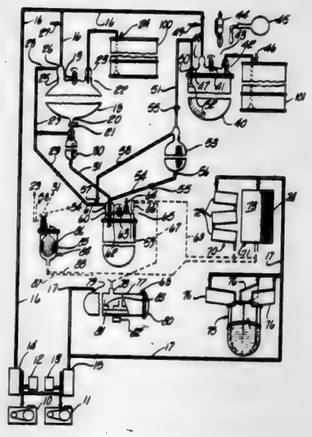
VACUUM INJECTION MOLDING PROCESS

Thaddeus Antczak, 32431 Helmich, Warren, Mich. 48092

Filed Oct. 22, 1980, Ser. No. 199,689

Int. Cl.³ B29F 1/00

U.S. Cl. 264—102 **18 Claims**



1. A process for forming void free solid polyurethane bodies from a first reactant comprising polyol and a second reactant comprising polyisocyanate, said reactants being selected so as to form a solid, rigid polyurethane body, said process comprising the steps of:

(a) evacuating a vessel of said first reactant and a container of said second reactant to thereby dehumidify and degas said first reactant and said second reactant;

(b) flowing said first reactant and second reactant into a common chamber under vacuum;

(c) mixing said first reactant and said second reactant in said chamber under vacuum;

(d) flowing the mixture of said first reactant and said second reactant into a mold under vacuum; and

(e) standing said mixture in said mold under vacuum to thereby form a solid polymeric body.

4,439,387

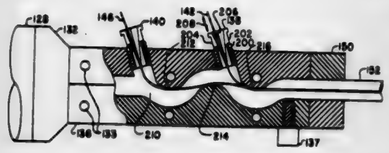
METHOD OF MANUFACTURING A COMPOSITE REINFORCING STRUCTURE

Ronald C. Hawley, Winona, Minn., assignor to Polymer Composites, Inc., Winona, Minn.

Division of Ser. No. 75,116, Sep. 13, 1979, Pat. No. 4,312,917. This application Nov. 16, 1981, Ser. No. 321,375

Int. Cl.³ B29F 3/10

U.S. Cl. 264—108 **2 Claims**



1. A method of manufacturing a composite reinforcing structure comprising the steps of:

extruding a mass of fluid thermoplastic resin material in a flowable state and having no discrete shape into and longitudinally through an elongated, stationary die having no relatively movable components, said die having a continuous, fully open central passage extending longitudinally therethrough, and a plurality of lobes projecting radially inwardly into said central passage from spaced apart locations along the length of the inside, opposite side walls of said central passage in interleaving relation to each other to form a convoluted passage through which said thermoplastic resin material flows;

simultaneously introducing a plurality of continuous lengths of reinforcing fiber strands into said die central passage at different locations therein;

separately passing each of said fiber strands longitudinally within and along the length of said central passage over and between said interleaving lobes in the presence of said flowing mass of thermoplastic material to thoroughly contact and coat each of said fiber strands with said thermoplastic material; and

drawing said thermoplastic resin material and said coated fiber strands from said die, longitudinally thereof, to thereby produce a solid plastic rod member having said fiber strands extending longitudinally therein generally parallel to the longitudinal axis of said rod member inside of said plastic material.

4,439,388

PROCESS FOR CROSSLINKING OF POLYMERS AND COPOLYMERS USING FREE RADICAL FORMING AGENTS

Jurgen Groepper, Gunzburg, Fed. Rep. of Germany, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 3, 1982, Ser. No. 405,019

Int. Cl.³ B29H 21/04; B29C 25/00

U.S. Cl. 264—130 **2 Claims**

1. A process for the crosslinking of crosslinkable polymers or copolymers comprising molding the crosslinkable polymers or copolymers into the desired shaped articles, pretreating the shaped articles in order to prevent the surfaces from being sticky by coating on the shaped articles a member selected from the group consisting of boric acid, boric acid anhydride, and mixtures thereof, and crosslinking the coated shaped articles with free radical initators of organic peroxides in the presence of oxygen wherein the crosslinked shaped articles have non-sticky surfaces.

4,439,389

METHOD FOR SHAPEFORMING ACRYLONITRILE POLYMER AQUAGEL FILM

Randal J. Hasenauer, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,127

Int. Cl.³ B29C 17/04; B29D 7/02

U.S. Cl. 264—216 **9 Claims**

6. The method of thermoforming acrylonitrile polymer film comprising:

(a) providing acrylonitrile polymer aquagel film by applying onto a film supporting cooled surface a concentrated solution of an acrylonitrile polymer in a solvent therefor that is water soluble, to provide a film comprising said polymer and said solvent, contacting the resulting film with an aqueous medium to at least substantially remove and replace with water the solvent in the film and recover an aquagel film consisting essentially of acrylonitrile polymer and from about 20 to about 70 percent by weight water;

(b) preheating said film to a temperature sufficient to facilitate thermoforming;

(c) conforming the preheated aquagel film into the desired shape;

(d) while in said shape, heat-removing at least substantially all of the water from said aquagel film; and

(e) cooling the shaped-water-free film.

4,439,390

PROCESS FOR INJECTION MOLDING OF THERMOPLASTICS AND SPLIT MOLD FOR EFFECTING SAME

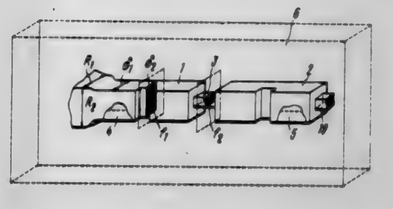
Vsevolod V. Abramov, Poklonnaya ulitsa, 6, kv. 4; Vsevolod V. Kuznetsov, Komsomolsky prospekt, 38/16, kv. 92; Alexandr V. Veselov, ulitsa K. Marxa, 21/4, kv. 20; Vitaly S. Tikhal, ulitsa Veshnyakovskaya, 25/2, kv. 227, all of Moscow; Nikolai I. Rysin, ulitsa Kirova, 22, korpus 1, kv. 27, gorod Solntsevo, Moskovskaya oblast, and Vasily I. Gerasimov, Derbenevskaya naberezhnaya, 1/2, kv. 81, Moscow, all of U.S.S.R.

Filed Oct. 2, 1981, Ser. No. 307,739

Claims priority, application U.S.S.R., Apr. 27, 1979, 2789560; Jun. 12, 1980, 2939423

Int. Cl.³ B29F 1/06

U.S. Cl. 264—297.2 **4 Claims**



1. A process for injection molding of a thermoplastic polymer in a mold having molding surfaces which define interconnected molding cavities, arranged in series, interconnected by inlet and outlet openings wherein at least a molding cavity in the series provides an opening for the thermoplastic polymer to exit the molding cavity which comprises: (a) forcing a fluid polymer to flow serially through said interconnected cavities in a continuous flow under pressure, at a temperature lower than about 50° C. above the melt point or flow point of the polymer, through an inlet opening into the cavities in series; (b) maintaining the polymer under a pressure of from about 900 to 3000 Kg f/cm² until the polymer solidifies in the cavities wherein the temperature of the molding surfaces are maintained at a temperature from about −20° C. to the melt or flow point of the polymer.

4,439,391

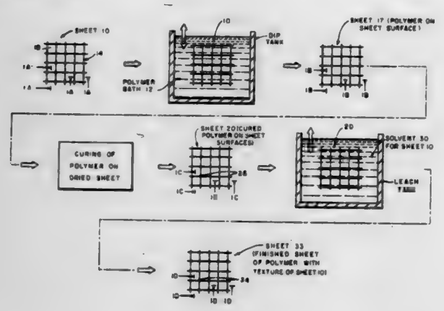
POLYMERIC SHEETS

John H. Hung, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Division of Ser. No. 52,221, Jun. 26, 1979, Pat. No. 4,289,125, which is a continuation of Ser. No. 735,671, Nov. 1, 1976, Pat. No. 4,175,557, which is a continuation-in-part of Ser. No. 634,908, Nov. 24, 1975, Pat. No. 4,034,751. This application Jan. 7, 1981, Ser. No. 223,118

Int. Cl.³ B29C *1/14*; B29D *27/00*

U.S. Cl. 264—317 40 Claims



1. A process for preparing a sheet of polymeric material having a fabric texture on at least one surface thereof, which comprises:

(1) applying a liquid containing a polymer to a mesh-like skeleton sheet of a first material to encase the first material within a shell of the polymer, the polymer being different from the first material;

(2) curing or hardening the polymer to form a polymeric sheet having at least one surface substantially conforming to the surface of the encased first material; and

(3) treating the product from step (2) with a solvent in which the first material is soluble but in which the cured or hardened polymer is substantially insoluble to dissolve the first material and produce within the polymeric sheet a network of voids conforming to the configuration of the dissolved first material and extending between the edges of the polymeric sheet.

4,439,392

METHOD AND APPARATUS FOR MAKING A GLASS LAMINATED STRUCTURE

Jerome C. Schutzler, El Toro, and Kurt E. Jechel, Santa Ana, both of Calif., assignors to PDA Engineering, Santa Ana, Calif.

Filed Nov. 22, 1982, Ser. No. 443,590

Int. Cl.³ B29C *6/04*

U.S. Cl. 264—511 23 Claims

1. A method of making a glass laminated structure comprising:

retaining first and second glass panels against first and second platens, respectively, and in spaced generally parallel relationship using differential fluid pressure acting across said panels;

introducing a curable flowable material into the space between said panels during said step of retaining;

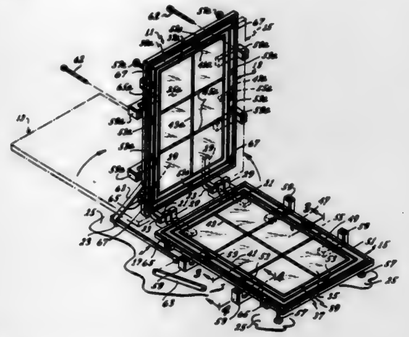
curing the flowable material to provide said glass laminated structure; and said first glass panel and the first platen have confronting faces of somewhat different configurations and said step of retaining holds the first panel against the first platen with sufficient force to deform the first panel to more closely conform the face of the first panel to the face of the first platen to improve the optical characteristics of the laminated glass structure.

11. A method of making a glass laminated structure comprising:

retaining first and second glass panels against first and second platens, respectively, and in spaced generally parallel relationship using differential fluid pressure acting across said panels;

introducing a curable flowable material into the space between said panels during said step of retaining;

curing the flowable material to provide said glass laminated structure;



retaining first and second frames against the first and second platens, respectively, in confronting generally parallel relationship using differential fluid pressure acting across said frames and with the first and second frames at least partially circumscribing the first and second panels, respectively;

first and second gaps between the first frame and the first panel and between the second frame and the second panel, respectively; and

placing first and second deformable seals in the first and second gaps, respectively.

4,439,393

METHOD OF PRODUCING SYNTHETIC RESIN BOTTLE WITH HANDLE

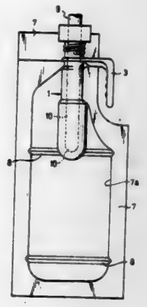
Tadao Saito; Masao Akutsu; Hiroaki Sugiura, and Shuzo Endo, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 113,352, Jan. 18, 1980, Pat. No. 4,311,246. This application Jun. 15, 1981, Ser. No. 273,827

Claims priority, application Japan, Feb. 9, 1979, 54-14521

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—532 8 Claims



1. A method of forming a nonsymmetrical container having walls of equal thickness, comprising the steps of: forming a parison having a top portion, a central portion, a lower portion, and a handle extending laterally of said top portion and said central portion, said parison defining an axially off-center annular cavity in its central section whereby said central section is formed with a first thin wall portion adjacent said handle and a circumferentially opposing second wall portion thicker than said first wall portion; heating at least said central and lower portion of said parison; placing said parison in at least one mold defining the shape of said nonsymmetrical container such that said thin wall portion lies in direct contact with said mold; and inserting a blow pipe into said parison and blowing air under high pressure into said parison, said thin wall portion being prevented from undesirable expansion by said contact with said mold while said central and lower portions other than said thin wall portion expand and are biaxially oriented upon said blowing.

4,439,394

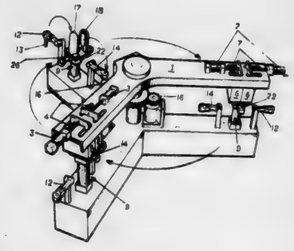
HEAT SETTING METHOD

John A. Appleyard, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 5, 1982, Ser. No. 439,259

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—535 8 Claims



1. A method of effecting orientation blow molding, heat setting and cooling of a thermally crystallizable polymer comprising

(a) providing a hollow parison of an essentially amorphous, thermally crystallizable polymer, preheated to a temperature range conducive to orientation during stretching,

(b) enclosing said parison in the halves of a blow mold of low mass capable of rapidly conducting heat,

(c) enclosing said blow mold within the halves of a mold of much greater mass than said blow mold, preheated to a heat setting temperature at least as high as the orientation temperature of said parison, the interior contour of said preheated mold in closed position being essentially identical with and in contact with the exterior surface of said blow mold,

(d) step (c) heating said blow mold to essentially the heat setting temperature of said preheated mold,

(e) orientation blow molding said parison, by application of internal pneumatic pressure thereto, so that said parison tightly conforms to the interior contour of said blow mold and heat is transferred to the blown article by the hot walls thereof at said heat setting temperature, thus heat setting the blown hollow article, and thereafter

(f) while maintaining at least sufficient pressure on said heat set article to prevent shrinkage thereof and thus to keep it in firm contact with the interior walls of said blow mold, removing said blow mold without cooling from said preheated mold and then

(g) repeating the foregoing steps using another hollow parison and another blow mold of low mass, but using the same, still preheated mold in step (c).

4,439,395

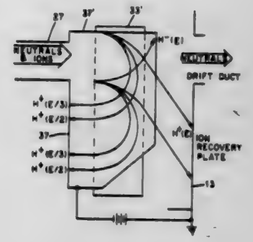
NEUTRAL BEAMLINE WITH IMPROVED ION ENERGY RECOVERY

Jinchoon Kim, San Diego, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 13, 1981, Ser. No. 253,953

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—130 1 Claim



1. In for a neutral particle beam injector system wherein a neutral particle beam is generated and directed along a beamline, including a substantially ground-potential-operated ion source from which ions of a selected isotopic species are accelerated to a desired kinetic energy level along said beamline through a neutralizer, said neutralizer being operated at a selected ion acceleration potential relative to said ion source to provide said desired kinetic energy level and wherein a significant portion of said ions are converted into energetic neutral particles together with electrons, full kinetic energy atomic ions and fractional kinetic energy atomic ions derived from molecular ions of said selected species accelerated into said neutralizer, an ion energy recovery system including a magnetic field generating means for producing a magnetic field (B) transverse to said beamline in a beam exit region at the beam exit end of said neutralizer and of sufficient strength to substantially block electrons from exiting said neutralizer and deflecting said full energy ions from said beamline along separate paths from said beamline, and at least one ground potential full energy ion charge collector surface disposed in the path of the full energy ions deflected from said beamline for decelerating and collecting the charge from said full energy ions directed to said ion collector, the improvement in said ion energy recovery system comprising:

a non-magnetic, electrically conductive enclosing structure attached to and forming an enlarged exit end of said neutralizer at said exit region of said neutralizer, said structure being operated at the same potential as said neutralizer to form an electric field shield about said exit region defined by said structure, said structure having a pair of opposite sides which extend in parallel planes perpendicular to said magnetic field (B), said structure having a down stream opening along the paths of said beamline and the full energy ions deflected from said beamline, said structure having an upstream surface extending from the exit end of said neutralizer perpendicular to said beamline and in a direction toward the direction of said ions deflected from said beamline so that the fractional energy ions are magnetically reflected back onto the inner walls of said enclosing structure while said full energy ions which are deflected from said beamline and neutral particles pass out of said downstream end opening of said structure; wherein said magnetic field generating means includes a pair of magnet pole pieces disposed on opposite sides of said enclosing structure parallel to said pair of opposite sides of said enclosing structure, said pole piece being operated at ground potential and electrically insulatably spaced from said sides of said enclosing structure so that said enclosing structure side walls electrically shield said exit region

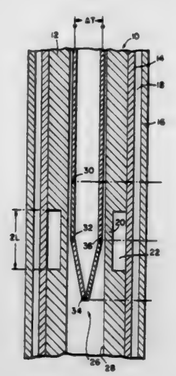
from electric fields induced by the close proximity of the ground operated magnetic pole pieces, said enclosing structure being an electrically conducting metal box of generally rectangular shape having its downstream end open along a path extending transversely to said beamline and the path of said full energy ions exiting said exit region; said source being a positive ion source and further including a power source connected between said neutralizer and ground potential for applying a negative acceleration voltage to said neutralizer and said box structure relative to said ion source; said neutral beam injector including an electrically conductive vacuum containment vessel enclosing said beamline therein, said vessel having a beam exit drift tube adapted for passage of said energetic neutral particle beam exiting said vessel, said vessel being connected to ground potential and comprises one of said at least one ground potential ion collector surface; and an electron collecting means for collecting electrons which tend to exit said downstream opening of said enclosing structure said electron collecting means including an electrically conductive collar uniformly insulatably spaced from said box structure and disposed about said downstream opening of said box structure, said collar extending downstream beyond said downstream opening of said box structure and biased sufficiently positive relative to said box structure to intercept electrons which are forced to drift toward said collector due to the transverse magnetic and electric fields present at said downstream opening of said box structure.

4,439,396

MULTIJUNCTION DIFFERENCE THERMOCOUPLES FOR GAMMA SENSORS

Erik Rolstad, Halden, Norway, assignor to Scandpower, Inc., Bethesda, Md.

Filed Apr. 24, 1981, Ser. No. 256,992
Int. Cl.³ G21C *17/00*; G01H *25/00*
U.S. Cl. 376—247 **14 Claims**



1. In combination with a power monitoring sensor for a nuclear reactor, including an axially elongated body internally heated by gamma radiation and differential temperature sensing means mounted internally within said body for measuring temperatures therein, said body having axially spaced thermal resistance portions establishing differential temperature regions including a relatively hot region located axially between two relatively cold regions, said temperature sensing means having two axially spaced thermocouple junctions interconnected in series and respectively located centrally within the hot region and in one of the two cold regions to produce a differential temperature signal, the improvement residing in means for eliminating signal error from the temperature signal arising from axially asymmetrical heat distribution in the body, comprising additional thermocouple junctions connected in series with said two junctions, at least one of the additional junctions being located in the other of the two cold regions within the body and another of the additional junctions being located centrally within the hot region of the body.

4,439,397

PROCESS FOR ADJUSTING THE COMPOSITION OF A ZINC ALLOY USED IN THE GALVANIZATION OF STEEL

Noël Dreulle, 6 rue Foucques, 59500 Douai, France

Filed Mar. 23, 1982, Ser. No. 361,081
Claims priority, application France, Mar. 25, 1981, 81 05955
Int. Cl.³ C22C *18/00*
U.S. Cl. 420—519 **13 Claims**

1. A process for adjusting the composition of a zinc alloy suitable for the dip galvanization of steels, including silicon steels, said alloy consisting essentially of zinc of commercial purity, containing 1,000 to 15,000 ppm by weight of lead, and, as additives, aluminum, tin and magnesium in the following amounts:

Al: 100 to 5,000 ppm by weight
Sn: 300 to 20,000 ppm by weight
Mg: 10 to 1,000 ppm by weight

said alloy being deficient in at least one of aluminum and magnesium, said process comprising adding to the zinc alloy at least one metal composition which is soluble in molten zinc and which contains a substantially greater proportion of the said deficient aluminum or magnesium than that of said alloy, the amount of the metal composition added being such that the deficit is compensated, the metal composition for the magnesium deficit being a ternary zinc/magnesium/aluminum alloy containing 5,000 to 50,000 ppm by weight of magnesium and 10 to 500 ppm of aluminum; and the metal composition for an aluminum deficit being a binary zinc/aluminum alloy containing of the order to 5% by weight of aluminum, and added in an amount which takes account of the possible addition of said ternary zinc/magnesium/aluminum alloy; and compensating any tin deficit in the zinc alloy by adding a sufficient amount of virtually pure tin.

4,439,398

METHOD OF ALLOYING CALCIUM AND ALUMINUM INTO LEAD

Raymond D. Prengaman, Arlington, Tex., assignor to RSR Corporation, Dallas, Tex.

Filed Nov. 13, 1981, Ser. No. 321,051
Int. Cl.³ C22C *11/00*
U.S. Cl. 420—564 **3 Claims**

1. A method of making a lead-calcium-aluminum alloy at low temperature, without an inert flux and with minimal losses of aluminum and calcium comprising:

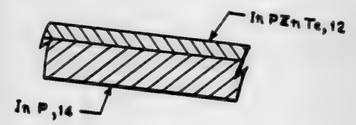
(a) melting lead;
(b) heating the molten lead; and
(c) stirring a eutectic calcium-aluminum alloy into the heated molten lead.

4,439,399

QUATERNARY ALLOY

Frank Z. Hawrylo, Trenton, N.J., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 6, 1982, Ser. No. 375,642
Int. Cl.³ C22C *30/00*
U.S. Cl. 420—580 **2 Claims**



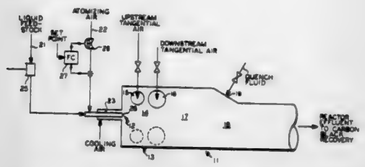
1. A semiconductor quarternary alloy being a solid solution consisting of indium, phosphoros, zinc, and tellurium.

4,439,400

APPARATUS FOR PRODUCING CARBON BLACK

Paul J. Cheng, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 186,794, Sep. 12, 1980, Pat. No. 4,328,199.
This application Jan. 29, 1982, Ser. No. 344,147
Int. Cl.³ C09C *1/48*; B01J *10/00*
U.S. Cl. 422—111 **3 Claims**



1. In a carbon black reactor comprising an atomizing bifluid nozzle and a means for introducing hot gases into contact with a make hydrocarbon introduced into the reactor through the atomizing bifluid nozzle for decomposition of the make hydrocarbon to form carbon black, a source of make hydrocarbon and a means for connecting the source of make hydrocarbon to the atomizing bifluid nozzle and a source of gaseous atomizing fluid and a means for connecting the source of gaseous atomizing fluid to the atomizing bifluid nozzle,

wherein the atomizing bifluid nozzle becomes coked thereby diminishing the flow rate of at least one of the make hydrocarbon and the atomizing fluid,

the improvement comprising:

a valve means associated with the means connecting the source of gaseous, atomizing fluid with the atomizing bifluid nozzle for interrupting flow of the gaseous atomizing fluid independently of the flow of make hydrocarbon to effect cleaning of the atomizing bifluid nozzle, and

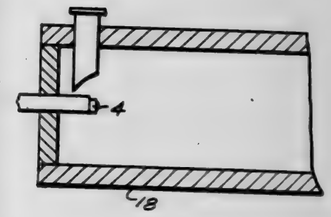
a timing means connected to the valve means for stopping the flow of atomizing fluid for a predetermined time interval.

4,439,401

PROCESS AND APPARATUS FOR THE PRODUCTION OF CARBON BLACK

Manfred Voll, Greifenhagenstrasse 11, 6450 Hanau 9; Lothar Rothbühr, Volkerstrasse 10, 503 Hermülheim, and Gerhard Kühner, Liesingstrasse 1, 6450 Hanau 9, all of Fed. Rep. of Germany

Continuation of Ser. No. 191,519, Sep. 29, 1980, abandoned, which is a continuation of Ser. No. 946,420, Sep. 25, 1978, abandoned, which is a division of Ser. No. 769,785, Feb. 17, 1977, abandoned. This application Mar. 19, 1982, Ser. No. 359,856
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1976, 2608417
Int. Cl.³ C09C *1/48*; B05B *1/14*
U.S. Cl. 422—150 **4 Claims**



1. In an apparatus for producing carbon black, including, in combination, a carbon black reactor furnace and nozzle means disposed in said furnace for spraying a liquid feedstock hydrocarbon and a propellant gas into a stream of hot reaction gases produced by burning a fuel, said nozzle means being of the binary type having a first feed channel for the liquid feedstock hydrocarbon and a second separate feed channel for the propellant gas, the improvement comprising said nozzle means having a longitudinal axis, a nozzle chamber, an inlet orifice at one end of said chamber, a head outlet at the opposite end of said nozzle chamber, said first and second feed channels of said nozzle means both terminating at said inlet orifice, said nozzle chamber having an inner diameter, said inlet orifice of said nozzle chamber being spaced from said head outlet a distance from 1-6 times said inner diameter of said nozzle chamber, said head outlet of said nozzle means having a plurality of channels therein distributed about said longitudinal axis with said channels being distributed over the circumference so that they make with each other an angle of 15° so that the liquid will be sprayed in a hollow cone pattern having an opening angle of between 45° and 120°.

4,439,402

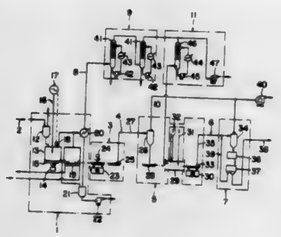
NUCLEAR FUEL CONVERSION SYSTEMS

Kohei Tarutani, Yokohama; Takeo Tamura, Mito, and Hirofumi Oshima, Tokai, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa and Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, both of, Japan

Filed Dec. 10, 1981, Ser. No. 329,580
Claims priority, application Japan, Dec. 16, 1980, 55-177930
Int. Cl.³ B65G *53/60*; B01D *35/02*; G21F *9/08*; B01J *19/12*
U.S. Cl. 422—159 **1 Claim**

1. In a nuclear fuel conversion system of the type comprising a microwave generator unit for heating and denitrifying a nitric acid solution of uranyl nitrate, plutonium nitrate or a mixture thereof, means connected to said microwave generator heating and denitrifying unit for grinding denitrified products, means connected to said grinding means through a first conveying means for roasting and reducing ground products, means connected to said roasting and reducing means through a second conveying means for further grinding and sieving roasted and reduced products, and means connected to said microwave generator heating and denitrifying unit and said roasting and reducing means for disposing of waste gases and

waste liquor therefrom, the improvement in which said microwave generator heating and denitrifying unit includes a cooling device for solidifying denitrified products and said first and second conveying means comprise pneumatic carrier means



each of which comprises a suction nozzle, a cyclone for collecting products connected to said suction nozzle through a carrier pipe, and a blower connected to said cyclone through a carrier pipe for creating a reduced pressure condition in said carrier pipe.

4,439,403

APPARATUS FOR CONDITIONING BIOINJURIOUS WASTE

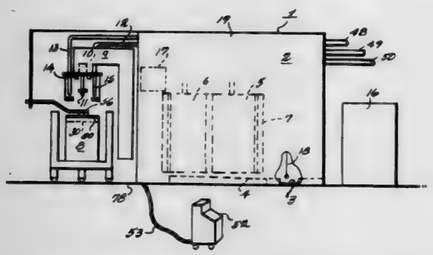
Herbert Brunner, Grünaustrasse 15, 6450 Hanau 9; Bernhard Christ, Schwalbenstrasse 22, 6090 Rüsselsheim; Wilhelm Henau, Gartenstrasse 5 a, 6454 Bruchköbel; Werner Pfeifer, Mittelweg 34, 6380 Bad Homburg, and Klaus Scheuermann, Am Höhenblick 27, 6476 Hirzenhain, all of Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,829

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009005

Int. Cl.³ G21F *9/22*

U.S. Cl. 422—159 **17 Claims**



1. An apparatus for conditioning of biologically injurious waste, such as radioactive material and the like, the apparatus including a chamber for receiving the waste material and having means for discharging the waste material to a filling station located adjacent the exterior of said chamber, said filling station having at least one storage container and including shielded means for holding said at least one container to be filled, movable lift means having means for handling the waste material, said lift means being movable toward and away from one end of said container in said filling station, said means for handling including a coupling member carried by said lift means for transmitting power to a stirring means associated with said container, driving means for driving said coupling member, a filling conduit for supplying waste material from said lift means to a storage container, a waste gas return conduit on said lift means connectable to said storage container for returning gas from the storage container to said chamber when said storage container is being filled with waste material, said apparatus further including means for securing a closure on said storage container before removal of said storage container from said filling station, said storage container having at one end thereof a closure member, said closure member having means for mounting a stirrer within the interior of said container and a coupling means for coupling with the coupling member of said lift means, said closure member having spaced apertures therein, with one of said apertures being adapted to be connected to said filling conduit of said lift means and the other aperture being adapted to be connected to said waste gas return conduit of said lift means, said lift means including spaced locating members and said closure member of said storage container having means for cooperating with said locating members of said lift means,

said waste supply conduit and said waste gas return conduit on said lift means each having closure means, each said closure means including a pan connected to a shaft, means for pivoting said shaft about an axis in one direction when said shaft is moved to contact a surface of said storage container to thereby move the associated pan away from the associated conduit and for moving the pan in the opposite direction when said shaft is moved out of contact with the surface of said container to bring the associated pan into a closing relationship with respect to the associated conduit, each said shaft being carried by said lift means so as to be movable therewith toward and away from the surface of said storage container.

4,439,404

SEPARATION OF URANIUM ISOTOPES

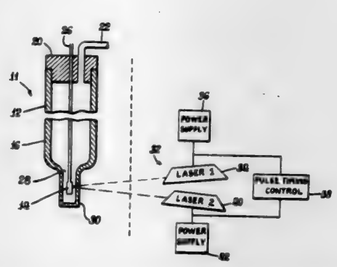
John T. Porter, II, Del Mar, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 747,102, Dec. 3, 1976, Pat. No. 4,200,507. This application Nov. 21, 1979, Ser. No. 96,442

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.³ B01D *59/00*

U.S. Cl. 423—3 **4 Claims**



1. A method for separating uranium isotopes comprising the steps of providing a solid, crystalline, uranyl salt source material which is photochemically reactive to reduce uranyl cations of said uranyl salt source material to tetravalent uranium ions, selectively irradiating said photochemically reactive uranyl source material at an electronic absorption wavelength in the range of from about 20,000 to about 27,000 cm^{-1} which is selective to a desired isotope of said uranyl source material at an effective cryogenic temperature for isotope spectral line splitting below about 77° K. without substantial photochemical reduction of the source material, further irradiating said source material within the fluorescent lifetime of the selectively irradiated source material at a vibrational absorption wavelength of a bond of atoms or an ionic group respectively adjacent the uranyl cations of the electronically excited source material to selectively photochemically reduce the selectively excited isotopic species, and chemically separating the reduced isotope species from the remaining uranyl salt compound.

4,439,405

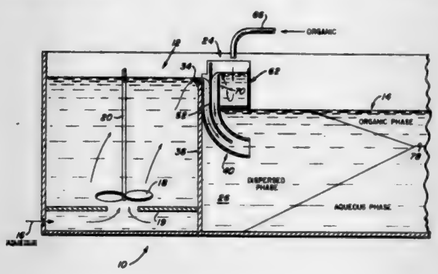
METHOD FOR VARYING THE MIXING TIME AND PROPORTIONS IN THE CONTACTING OF SUBSTANTIALLY IMMISCIBLE LIQUIDS

Ernst C. Bailey, Lakeland; William E. Vickers, Brandon, and Donald B. Stain, Lakeland, all of Fla., assignors to UNC Recovery Corporation, Mulberry, Fla.

Continuation of Ser. No. 190,266, Sep. 24, 1980. This application Sep. 27, 1982, Ser. No. 423,743

Int. Cl.³ C22B *60/02*; B01D *11/00*

U.S. Cl. 423—10 **7 Claims**



1. A method for producing a dispersion of a first liquid in a second liquid, said liquids being substantially immiscible, comprising flowing said liquids through a conduit, said conduit having an upstream section divided into first and second separate channels of variable length, said first liquid being flowed through said first channel and said second liquid being flowed through said second channel, causing said first and second liquids to mix in a downstream section of said conduit to form said dispersion of said first liquid in said second liquid, varying the length of said downstream section of said conduit wherein said first and second liquids are mixed, and varying the width of said first and second channels independently of said length variation to change the volume ratio of said first and second liquids mixed in said downstream section of said conduit.

2. The method of claim 1 in which said first liquid is an extractant for uranium and said second liquid is phosphoric acid.

4,439,406

METHOD OF CAPTURING SULFUR

Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 148,339, May 9, 1980, Pat. No. 4,333,909. This application Apr. 2, 1982, Ser. No. 364,918

Int. Cl.³ B01J *8/00*; C01B *17/00*

U.S. Cl. 423—244 **19 Claims**

1. A method of capturing sulfur in a fluidized bed boiler comprising the steps of passing air through a bed of particulate material containing fuel and supported in a housing to fluidize said particulate material, establishing an area to one side of said fluidized bed and isolated from said fluidized bed, introducing into said area a raw acceptor for the sulfur produced as a result of combustion of said fuel, said area being in a heat transfer relation to the heat generated by said fluidized bed to calcine said acceptor, then introducing said calcined acceptor from said area into said bed where it reacts with said sulfur and discharging the sulfated acceptor from said housing.

4,439,407

METHOD FOR IMPROVING FILTERABILITY OF GYPSUM AND WET PROCESS PHOSPHORIC ACID

Kenneth L. Parks, Plant City, Fla., assignor to Agrico Chemical Company, Tulsa, Okla.

Filed Jan. 19, 1983, Ser. No. 459,257

Int. Cl.³ C01B *25/16*; C01F *1/00, 11/46*

U.S. Cl. 423—317 **8 Claims**

1. A method to increase the filterability of wet process phosphoric acid comprising the steps of:

(a) analyzing said wet process phosphoric acid to determine the total iron concentration and the relative concentrations of ferric ions and ferrous ions;

(b) adding iron to said wet process phosphoric acid as necessary to maintain the total iron content in the range of from about 0.5% to about 0.9% expressed as % Fe; and

(c) adjusting the ratio of said ferric ions to said ferrous ions above about 1.0.

4,439,408

PROCESS AND EXTRACTANT FOR REMOVING FLUORINE COMPOUNDS FROM AQUEOUS PHOSPHORIC ACID

Avraham M. Baniel, Jerusalem, and Aharon M. Eyal, Kibbutz Ramat Rachel, both of Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Filed Jun. 1, 1982, Ser. No. 384,008

Claims priority, application Israel, Jun. 15, 1981, 63097

Int. Cl.³ C01B *25/16, 7/00*

U.S. Cl. 423—321 S **9 Claims**

1. A process for selectively extracting fluorine compounds from aqueous phosphoric acid containing the same, said process comprising contacting said phosphoric acid with an extractant comprising phosphoric acid and an oil soluble amine, said phosphoric acid being present in said extractant in an amount of at least 0.25 moles for each mole of amine therein, said amine being substantially water insoluble both in free and in salt form and said extractant being substantially free of fluorine, sulfate and metal impurities.

4,439,409

CRYSTALLINE ALUMINOSILICATE PSH-3 AND ITS PROCESS OF PREPARATION

Lothar Puppe, Leverkusen, and Jürgen Weisser, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1982, Ser. No. 368,055

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117135

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—328 **2 Claims**

1. A crystalline aluminosilicate having a composition corresponding to the formula (in molar ratios of the oxides):

$$M_{2/n}O.Al_2O_3.(20\text{–}150)SiO_2$$

wherein M represents an n-valent cation and having essentially the following powder X-ray diagram:

d-value	Intensity
12.63	very strong
10.92	medium
8.84	very strong
6.86	weak
6.15	strong
5.50	weak
4.91	weak
4.60	weak
4.39	weak
4.09	weak
3.91	medium

-continued

d-value	Intensity
3.75	weak
3.56	weak
3.41	very strong
3.30	weak
3.19	weak
3.11	weak
2.836	weak
2.694	weak
2.592	weak
2.392	weak
2.206	weak
2.122	weak
2.036	weak
1.973	weak
1.873	weak
1.855	weak

4,439,410

METHOD OF MANUFACTURING SILICON FROM POWDERED MATERIAL CONTAINING SILICA

Sven Santen, Hofors, and John O. Edström, Stocksund, both of Sweden, assignors to SKF Steel Engineering Aktiebolag, Sweden

Filed Aug. 2, 1982, Ser. No. 404,403
Claims priority, application Sweden, Oct. 20, 1981, 8106179
Int. Cl.³ C01B 33/02
U.S. Cl. 423—350 9 Claims

1. A continuous method of manufacturing silicon from silica-containing powdered material, which comprises the steps of: continuously injecting the silica-containing powdered material with a carrier gas, and optionally a reducing agent, into a gas plasma to heat the silica-containing powdered material, introducing the heated silica-containing powdered material, the reducing agent, if present and energy-rich plasma gas, into a reaction zone in a furnace which contains a solid reducing agent in lump form, said reaction zone being surrounded by said solid reducing agent in lump form, reacting said silica-containing powdered material with reducing agent so as to produce silicon, and continuously charging said furnace with said solid reducing agent in lump form as said solid reducing agent in lump form is consumed by the reaction of the silica-containing powdered material.

4,439,411

PRODUCTION OF SODIUM HYDROSULFIDE

James L. Mangnaro, Hightstown, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jan. 22, 1981, Ser. No. 227,307
Int. Cl.³ C01B 17/32, 17/42
U.S. Cl. 423—560 8 Claims

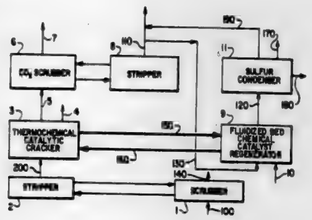
1. A continuous process for producing sodium hydrosulfide by the reaction of gaseous hydrogen sulfide with a solution of sodium sulfide comprising establishing, in a closed reaction system including a reaction chamber, an aqueous product solution resulting from the reaction of hydrogen sulfide with an aqueous solution of sodium sulfide and maintaining said reaction system in an unvented condition while maintaining a source of hydrogen sulfide, containing one or more other gases inert to the reaction in an amount not more than about 5 percent, in pressure demand relationship with said product solution in said reaction chamber and while continuously introducing a quantity of aqueous sodium sulfide feed solution into said reaction system and continuously withdrawing a corresponding quantity of product solution from said system, and periodically venting the reaction system to purge the system of accumulated gases which do not react with the sodium sulfide solution.

4,439,412

PROCESS FOR PRODUCING HYDROGEN FROM HYDROGEN SULPHIDE IN A GAS FLUIDIZED BED REACTOR

Leo A. Behie, 2532 Chicoutimi Dr.; Dimitrios Berk, 1340 University Dr., Apt. 207; P. Raj Bishnoi, 712 Varsity Estates Pl., and William Y. Svrcek, 4836 Verona Dr., NW., all of Calgary, Alberta, Canada

Filed Jul. 1, 1982, Ser. No. 394,105
Claims priority, application Canada, Jul. 6, 1981, 381149
Int. Cl.³ C01B 17/04, 3/04
U.S. Cl. 423—573 G 14 Claims



1. A method of producing hydrogen and sulfur from hydrogen sulfide gas comprising the steps of:

(a) introducing hydrogen sulfide gas into a gas fluidized bed reactor containing at least one bed of a metal chemical catalyst;

(b) maintaining said bed at a substantially constant operating temperature between 350° C. and 550° C. for a predetermined time whereby the hydrogen sulfide gas is cracked and the sulfur of said hydrogen sulfide is bound chemically to at least some of the particles of said metal chemical catalyst;

(c) raising the temperature of the said bed for a predetermined time whereby said metal chemical catalyst is regenerated and said sulfur is exhausted from said reactor as sulfur gas.

4,439,413

RADIOACTIVE DIAGNOSTIC AGENT FOR BONE SCANNING AND NON-RADIOACTIVE CARRIER THEREFOR

Miki Hayashi; Keietsu Takahashi, both of Takarazuka, and Masaaki Hazue, Amagasaki, all of Japan, assignors to Nihon Medi-Physics Company, Ltd., Japan

Filed Sep. 11, 1981, Ser. No. 300,876
Claims priority, application Japan, Sep. 13, 1980, 55/127690
Int. Cl.³ A61K 43/00, 49/00
U.S. Cl. 424—1.1 16 Claims

1. A non-radioactive carrier, which comprises (A) methanehydroxydiphosphonic acid or a pharmaceutically acceptable water soluble salt thereof and (B) at least one reducing agent for pertechnetates in a weight ratio of about 1:1 to 7:1.

4,439,414

1-^{11}C-D-GLUCOSE AND RELATED COMPOUNDS

Chyng-Yann Shiue, Wading River, and Alfred P. Wolf, Setauket, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,684
Int. Cl.³ A61K 49/02
U.S. Cl. 424—1.1 6 Claims

3. A method for the preparation of a compound selected from the group consisting of 1-^{11} C-D-glucose, 2-^{11}C-D-glucose, 1-^{11}C-D-mannose, 2-^{11}C-D-mannose, 1-^{11}C-D-galactose and 2-^{11}C-D-galactose which comprises:

(1) for the production of 1-^{11}C-D-glucose and 1-^{11}C-D-mannose reacting D-arabinose, and for the production of 1-^{11}C-D-galactose reacting D-lyxose respectively with an alkali metal cyanide having an ^{11}C label in an aqueous media at pH 7.5 to 9, reducing resulting cyano compounds with Raney alloy and separating the desired D-glucose and D-mannose compounds from the mixture resulting from the use of D-arabinose as the starting compound and the desired D-galactose from mixture resulting from the use of D-lyxose as the starting compound; and

(2) for the production of 2-^{11}C-D-glucose or 2-^{11}C-D-mannose reacting D-erythrose or for the production of 2-^{11}C-galactose reacting D-threose respectively with an alkali metal cyanide having an ^{11}C label in an aqueous media at pH 7.5 to 9, reducing resulting cyano compounds with Raney alloy and separating 1-^{11}C-D-arabinose from the mixture resulting from the use of D-erythrose as the starting compound and 1-^{11}C-D-lyxose from the mixture resulting from the use of D-threose as the starting compound, and repeating the same reactions on the said 1-^{11}C-D-arabinose and 1-^{11}C-D-lyxose except for the use of an alkali metal cyanide with the ^{12}C isotope of carbon.

4,439,415

DEVICE INTENDED FOR DISPENSING INSECTICIDE VAPORS

Claude Hennart, Seraincourt, and Jacques Courdent, Lavausseau, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Mar. 13, 1981, Ser. No. 243,671
Claims priority, application Luxembourg, Mar. 21, 1980, 82279; Oct. 20, 1980, 82867
Int. Cl.³ A01N 25/26, 25/34, 37/00, 37/08
U.S. Cl. 424—16 6 Claims

1. A device for dispensing insecticidal vapors which comprises a cellulosic absorptive substrate having two different pyrethrinoids absorbed into separate sections thereof, said pyrethrinoids being selected from the group consisting of allethrin, bioallethrin, tetramethrin, d-phenothrin and d-allethrin and being present in weight ratios relative one to the other ranging from 1:1 to 3:1.

4,439,416

SELF-HEATING SHAVING COMPOSITION

Martin Cordon, Somerset, and Alan Dillarstone, Highland Park, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 344,314, Mar. 23, 1973, abandoned, which is a continuation of Ser. No. 56,082, Jun. 22, 1970, abandoned, which is a continuation of Ser. No. 560,140, Jun. 24, 1966, abandoned. This application Mar. 5, 1979, Ser. No. 17,777
Int. Cl.³ A61K 7/15
U.S. Cl. 424—47 5 Claims



1. A package for dispensing a self-heating, self-foaming shaving cream composition, said package having two compartments for separate storage of ingredients of said composition from which the ingredients are adapted to be dispensed for mixing with each other with the generation of heat, the first compartment having therein about 9% sodium borohydride, about 85% heavy paraffin oil, about 5% paraffin wax and about 1% finely divided anhydrous silica, the borohydride being of a particle size of about 100 microns and the silica being less than about 45 microns; and, in the other compartment about 12% of glyceraldehyde, about 18% water, about 4% lauric-coconut diethanolamide, about 0.4% citric acid and about 65.6% of a shaving cream base comprising a mixture of about 7% stearic acid, 3% potassium hydroxide, 1% sodium hydroxide, 1% coconut oil fatty acids and water: the first compartment being pressurized with n-butane and the second compartment being pressurized with a mixture of isobutane and propane.

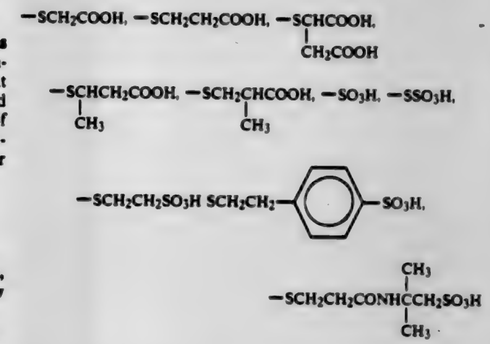
4,439,417

SHAMPOO COMPOSITION

Kiajiro Matsunaga, Miyashiro; Takeo Okumura, Sakura; Sachio Naito, Tokyo, and Rikio Tsushima, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,489
Claims priority, application Japan, Nov. 14, 1980, 55-160357
Int. Cl.³ A61K 7/06, 7/09, 7/11
U.S. Cl. 424—70 8 Claims

1. A shampoo composition comprising a shampoo base containing at least one anionic surface active agent in an amount of 5–30% by weight of said shampoo composition and an oxidation or reduction decomposition derivative of keratin material in an amount of from 0.05–10% by weight having a thiol group selected from the group consisting of



$SCH_2CH_2SO_2CH_2COOH$ and a mixture thereof.

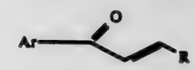
4,439,418

TOPICAL PREPARATIONS FOR THE TREATMENT OF SEBORRHEA AND PROCESS FOR INHIBITING SEBUM PRODUCTION

Hinrich Möller; Siegfried Wallat, both of Monheim, and Friedhelm Bartnik, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,079
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129667
Int. Cl.³ A61K 7/06, 7/15
U.S. Cl. 424—70 4 Claims

1. A process for reducing sebaceous cell sebum production in a mammal in need thereof which comprises contacting said sebaceous cell in the skin of said mammal with an effective amount to reduce sebum production of at least one unsaturated aryl ketone compound having the formula



wherein Ar represents a member selected from the group consisting of phenyl, phenyl substituted with at least one group selected from the group consisting of alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 4 carbon atoms, hydroxy and halo, and naphthyl, and R represents a member selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms, alkanoyl having from 1 to 4 carbon atoms, aryl and arylcarbonyl, where aryl has the same meaning as Ar.

4,439,419

METHOD OF TREATING GASTRIC HYPERACIDITY IN HUMANS EMPLOYING A COPOLYMER OF POLYETHYLENEPOLYAMINE AND A BIFUNCTIONAL SUBSTANCE AS EPICHLORHYDRIN

Thomas J. Vecchio, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 122,873, Feb. 20, 1980, abandoned. This application Mar. 25, 1981, Ser. No. 247,487
Int. Cl.³ A61K *31/74*
U.S. Cl. 424—78 4 Claims

1. A method of reducing gastric acidity in the absence of bile acid reflux in an affected mammal or human which consists essentially of orally administering to said mammal or human an effective amount for reducing gastric acidity in said animal or human of the free base or partial acid addition salt form of a cross-linked copolymerization product of (a) a polyethylenepolyamine containing from about 2 to about 10 ethylene units and (b) a member selected from the group consisting of epichlorohydrin, glycerol-1,3-dichlorohydrin, 1,2:3,4-diepoxybutane, bis-epoxypropyl ether, ethylene glycol bis-eopxypropyl ether and 1,4-butanediol bis-epoxypropyl ether.

4,439,420

ABSORBABLE HEMOSTATIC COMPOSITION

Frank V. Mattei, Piscataway, N.J.; Martin Stephenson; Allin K. Gordon, both of Peterborough, Canada, and Namassivaya Doddi, Upland, Calif., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 16, 1982, Ser. No. 442,219
Int. Cl.³ A61K *31/23, 31/74*
U.S. Cl. 424—78 22 Claims

1. An absorbable hemostatic composition for use in the control of osseous hemorrhage, comprising:

(i) a component (A) comprising either a biocompatible fatty acid salt alone, which comprises between 45% and 80% by weight based on the weight of the total composition; or a mixture of said fatty acid salt with a biocompatible in vivo absorption enhancing agent, in which said mixture comprises between 35% and 45% by weight of said fatty acid salt based on the weight of the total composition, and between 25% and 35% by weight of said absorption enhancing agent, based on the weight of the total composition; and

(ii) a component (B) comprising a body absorbable biocompatible base selected from the group consisting of ethylene oxide/proplylene oxide block copolymers, polyethylene glycols and methoxypolyethylene glycols, triglycerides and fatty acid esters,

the cation of said fatty acid salt being selected from the group consisting of calcium, magnesium, zinc, aluminum, lithium and barium, the fatty acid anion being saturated or unsaturated and containing from 10 to 22 carbon atoms in the chain, said composition having a putty-like consistency at room temperature, and a tackiness sufficient for it to adhere readily to a bloody bone surface.

4,439,421

STABILIZED GAMMA GLOBULIN CONCENTRATE

John A. Hooper, Santa Ana; Samia Mankarious, Costa Mesa, and Catherine R. Liu-Rash, Mission Viejo, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 30, 1982, Ser. No. 413,060
Int. Cl.³ A61K *39/00, 35/14*
U.S. Cl. 424—85 27 Claims

1. A stabilized gamma globulin concentrate comprising gamma globulin (a) a water soluble, physiologically acceptable, substantially nonsurface-active hydrophilic macromolecule having a molecular weight greater than about 1000 Daltons, (b) a water soluble, physiologically acceptable protein other than gamma globulin and (c) a water soluble, physiologically acceptable polyol having a molecular weight less than the average molecular weight of the hydrophilic macromolecule, said macromolecule, protein and polyol being present, respectively, in a weight ratio to total protein in the concentrate of (a) about from 0.0075:1 to 0.062:1, (b) about from 0.01:1 to 0.125:1 and (c) about from 0.05:1 1.25:1.

4,439,422

GROUP B STREPTOCOCCUS ANTIGENS AND VACCINES

Robert M. Swenson; Gerald D. Shockman, both of Philadelphia; Toby K. Eisenstein, Wyndmoor, all of Pa., and Roberta B. Carey, Princeton Junction, N.J., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 109,147, Jan. 2, 1980, abandoned, which is a continuation of Ser. No. 802, Jan. 4, 1979, abandoned. This application Feb. 2, 1982, Ser. No. 345,054
Int. Cl.³ A61K *39/02;* C08B *37/00;* C12P *19/04*
U.S. Cl. 424—92 6 Claims

1. A process for producing pure Group B Streptococcus antigen and the pure Type III Streptococcus antigen of Group B Streptococcus which comprises:

(a) growing Group B, Type III Streptococcus in a nutrient culture medium at pH 7 which is free of animal protein and lipids and which contains essential nutrients, including from about 1% to 5% by weight glucose and about 0.04 M to 0.16 M phosphate, at about 34° to 38° C. for from about 12 to 72 hours.

(b) cooling the culture medium to about 4° C.;

(c) removing the bacterial cells from the culture medium;

(d) dialyzing the culture medium produced in step (c) against distilled water, while adding sufficient buffer to provide the equivalent of 0.01 Tris, pH 7.0;

(e) treating the buffered dialyzed culture medium with an anion exchanger equilibrated with the same buffer as in the medium, to thereby bind the negatively charged Group B and Type III antigens;

(f) eluting from the ion exchanger with a linear sodium chloride gradient of 0 to 0.75 M sodium chloride in the same buffer whereby the Group B antigen is eluted at 0.02 to 0.15 M sodium chloride, and the Type III antigen is eluted at 0.15 to 0.22 M sodium chloride;

(g) collecting each of Group B antigen and Type III antigen separately and buffering each with a buffer at pH 7, then eluting each through an agarose gel column containing 4% by weight of agarose, having a particle size of 40 to 190 microns and a fractionation range of 3×10^4 to 5×10^6 with the same buffer, and collecting pure Group B antigen and pure Type III antigen.

4,439,423

CHYMOPAPAIN AND METHOD FOR ITS USE

William S. Smith, Libertyville, Ill., assignor to Smith Laboratories, Inc., Rosemont, Ill.

Filed May 13, 1981, Ser. No. 263,197
Int. Cl.³ A61K *37/48*
U.S. Cl. 424—94 17 Claims

1. A pharmaceutical composition consisting of an effective amount of a purified chymopapain product essentially free of proteolytically inactive component materials and characterized by the absence of precipitate formation when a 10% weight/volume solution of said purified chymopapain is acidified with hydrochloric acid followed by treatment with barium chloride; and a minor amount of a pharmaceutically acceptable, non-toxic, reducing agent said composition being further characterized as being free of bisulfite additives.

4,439,424

SYNTHETIC WHOLE BLOOD

Charles S. Ecanow, Skokie, and Bernard Ecanow, Wilmette, both of Ill., assignors to Neomed Inc., Wilmette, Ill.

Continuation of Ser. No. 222,564, Jan. 5, 1981, Pat. No. 4,343,797, which is a continuation-in-part of Ser. No. 146,029, May 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 47,021, Jun. 11, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,868
The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.
Int. Cl.³ A61K *33/14, 37/00*
U.S. Cl. 424—153 23 Claims

1. A semi-prepared synthetic whole blood product comprising about 0.855–0.675% weight to volume NaCl, about 0.75–4.75% weight to volume urea, about 0.0075–9.5% weight to volume of a phospholipid, about 63.07–73.5% weight to volume H_2O, and about 5–25% weight to volume albumin,said components forming a coacervate system having a coacervate phase and an equilibrium bulk water phase.

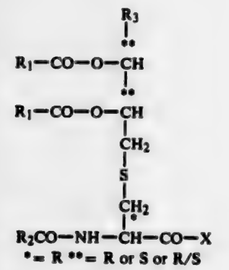
4,439,425

PEPTIDE DERIVATIVES

Lajos Tarcsay, Grenzach-Wyhlen, Fed. Rep. of Germany; Bruno Kamber, Arlesheim, Switzerland; Jaroslav Stanek, Birsfelden, Switzerland; Gerhard Baschang, Bettingen, Switzerland, and Albert Hartmann, Grenzach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 225,277, Jan. 15, 1981, abandoned, which is a continuation of Ser. No. 104,246, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 53,573, Jun. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 915,699, Jun. 15, 9178, abandoned. This application Jun. 7, 1982, Ser. No. 385,594
Claims priority, application Switzerland, Dec. 20, 1979, 12942/78
Int. Cl.³ A61K *37/00*
U.S. Cl. 424—177 14 Claims

1. Compounds of the formula



(I)

wherein R_1 and R_2 each represent a saturated or unsaturated aliphatic or mixed aliphatic-cycloaliphatic hydrocarbon radical which has 11-21 C atoms and which is unsubstituted or substituted by hydroxyl or epoxy, R_3 represents hydrogen or the radical R_1—CO—O—CH_2—, where R_1 has the same meaning, and X represents an amino acid X_1 or a sequence of 5 amino acids selected from the groups X_1–X_5, wherein

X_1 is selected from the group consisting of Ser, Phe, Glu, Val, Ala, Thr, D-Ser, D-Thr, Gln, Asn and Asp,

X_2 is selected from the group consisting of Ser, Phe, Glu, Ile, Lys, Thr, D-Ser, D-Phe, Gln, Asn and Asp,

X_3 is selected from the group consisting of Phe, Asn, Ile, Val, Gly, Ala, Tyr, D-Asn, D-Phe and D-Ala,

X_4 is selected from the group consisting of Ala, Phe, Tyr, Val, Glu, D-Glu and D-Ala and

X_5 is selected from the group consisting of Glu, Lys, Ala, Pro, D-Glu and Val, or X represents a sequence of amino acids resulting from the addition of any of the series Asp-Glu, Ala-Pro or -Ile-Asp-Glu to said 5 membered series, with the proviso that the amino acid X_1 and the sequence X_1–X_5 is different from Ser or any of the series -Ser-Ser-Asn-Ala-Lys, -Ser-Ser-Asn-Ala, -Ser-Ser-Asn and -Ser-Ser, respectively, in compounds of formula (I), the terminal carboxyl group being in the free form or the form of the amide or a substituted amide having one or two alkyl groups with 1–7 C atoms or in the form of an ester group having from 1 to 7 C atoms, the amino acids being natural ones in the case of compounds of formula (I), and to diastereomeric mixtures and salts of said compounds.

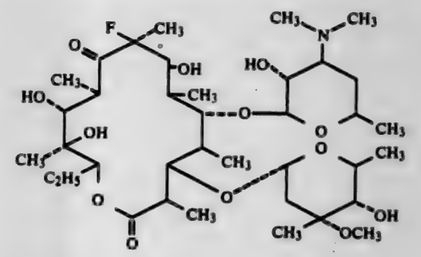
4,439,426

SEMISYNTHETIC MACROLIDIC ANTIBIOTICS, INTERMEDIATE COMPOUNDS FOR THEIR PREPARATION AND RELATED PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Luciano Toscano, Milan, Italy, and Leonardo M. Cappelletti, Fayetteville, N.Y., assignors to Pierrel S.p.A., Napoli, Italy

Filed Jan. 8, 1982, Ser. No. 338,105
Claims priority, application Italy, Jan. 9, 1981, 19082 A/81; Nov. 27, 1981, 25344 A/81; Nov. 27, 1981, 25346 A/81
Int. Cl.³ A61K *31/71;* C07D *313/00;* C07H *17/08;* C12P *19/62*
U.S. Cl. 424—181 25 Claims

9. (8S)-8-fluoroerythromycin A, having the formula



or the pharmaceutically acceptable salts thereof.

16. Pharmaceutical composition containing an antibiotic-effective amount of a compound of any one of claims 9, 10, 11, 12, 13 or 14 with a pharmaceutically acceptable excipient therefor.

4,439,427

METHOD AND COMPOSITION FOR TREATING PEDICULOSIS

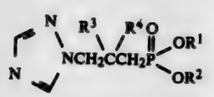
Joel E. Bernstein, Deerfield, Ill., assignor to Soft Sheen Products, Inc., Chicago, Ill.

Filed Oct. 18, 1982, Ser. No. 434,858
Int. Cl.³ A61K *31/27, 31/685*
U.S. Cl. 424—199 20 Claims

1. A method of treating lice infestations comprising topically applying to the lice-infected area of a subject an effective amount of one or more of the pediculocide agents selected from the class consisting of the acid salts of demecarium, echothiopate, edrophonium, neostigmine, pyridostigmine and ambenonium; isoflurophate; and combinations thereof for a time sufficient to interrupt the breeding cycle of the lice.

4,439,428
HERBICIDE
John M. Cox, Bracknell, England, assignor to Imperial Chemical Industries PLC, London, England
Filed Oct. 14, 1982, Ser. No. 434,227
Claims priority, application United Kingdom, Nov. 2, 1981, 8132982
Int. Cl.³ A01N 57/00; C07F 9/65
U.S. Cl. 424—200 7 Claims

1. A phosphonic acid derivative of the formula (I)



(I)

wherein R^1 and R^2 each represent a hydrogen atom; a cation; an alkyl radical of 1 to 6 carbon atoms, or an alkenyl or alkynyl radical of 3 to 6 carbon atoms each of which may be substituted with hydroxy, alkoxy of 1 to 6 carbon atoms, halogen or phenyl;

a cyclopentyl or cyclohexyl radical;

or a phenyl radical optionally substituted with hydroxy, alkoxy of 1 to 6 carbon atoms, halogen, or alkyl of 1 to 4 carbon atoms;

R^3 may be hydrogen or alkyl of 1 to 3 carbon atoms;

R^4 may be (a) hydrogen, hydroxy, fluoro, amino, (b) alkoxy of 1 to 6 carbon atoms or alkenyloxy or alkynyloxy of 2 to 6 carbon atom, the last three foregoing radicals being optionally substituted by halogen, alkoxy of 1 to 6 carbon atoms, carboxy, alkoxycarbonyl or phenyl, (c) alkylcarbonyloxy of 2 to 6 carbon atoms optionally substituted by halogen, phosphonomethylamino, or phenyl (d) benzoyloxy optionally substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, halogen, or alkyl of 1 to 4 carbon atoms (e) a mono- or dialkylcarbamoyloxy radical wherein the alkyl group or groups contain from 1 to 6 carbon atoms (f) a benzyloxycarbonyloxy or phenoxycarbonyloxy radical optionally substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, halogen, or alkyl of 1 to 4 carbon atoms (g) alkoxycarbonyloxy of 2 to 6 carbon atoms or R^3 and R^4 may, together with the carbon atom to which they are attached, form a keto group or an oxime, hydrazone, phenylhydrazone, semi-carbazone, or ketal thereof; or, in the case where neither of R^1 and R^2 is a cation, an acid addition salt of a phosphonic acid derivative of formula (I).

7. A method of controlling the growth of unwanted plants, which comprises applying to the plants, or to the locus of the plants a herbicidal amount of a compound of formula (I) as defined in claim 1.

4,439,429
METHOD OF ALLEVIATING SYSTEMIC MYCOTIC INFECTIONS
Joseph E. Gray, Norwich, N.Y., assignor to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.
Filed Oct. 30, 1981, Ser. No. 316,859
Int. Cl.³ A61K 31/34
U.S. Cl. 424—285 1 Claim

1. A method for alleviating systemic mycotic infection caused by the organism *Torulopsis glabrata* which consists in perorally administering to a host in need of said treatment a composition containing an antimycotic effective amount of the compound 5-(p-chlorophenyl)-2-furaldehyde oxime.

4,439,430
O,O-DIETHYL O-[(P-TERTIARYBUTYLTHIO)PHENYL]PHOSPHOROTHIOATES AND ITS INSECTICIDAL USE
Walter Reifschneider, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 2, 1981, Ser. No. 307,964
Int. Cl.³ A01N 57/14; C07K 9/165
U.S. Cl. 424—216 3 Claims

1. A method for killing and controlling the larvae of the western spotted cucumber beetle which comprises contacting said larvae or their habitat with a composition containing as an active ingredient an insecticidally effective amount of O,O-diethyl O-[4-(t-butylsulfinyl)phenyl]phosphorothioate in intimate admixture with an inert carrier.

2. The compound O,O-diethyl O-[4-(t-butylsulfinyl)phenyl]-phosphorothioate.

4,439,431
O,O-DIETHYL O-((4-TERTIARYBUTYLSULFONYL)M-TOLYL)PHOSPHOROTHIOATE AND ITS INSECTICIDAL USE
Walter Reifschneider, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 2, 1981, Ser. No. 307,980
Int. Cl.³ A01N 57/14; C07F 9/165
U.S. Cl. 424—216 4 Claims

1. A method for killing and controlling the copper bottle fly which comprises contacting said fly or their habitat with a composition containing, as an active ingredient, an insecticidally effective amount of O,O-diethyl O-(4-(t-butylsulfonyl)-m-tolyl) phosphorothioate in intimate admixture with an inert carrier therefor.

2. A method for killing and controlling the southern cattle tick which comprises contacting said tick or their habitat with a composition containing, as an active ingredient, an insecticidally effective amount of O,O-diethyl O-(4-(t-butylsulfonyl)-m-tolyl) phosphorothioate in intimate admixture with an inert carrier therefor.

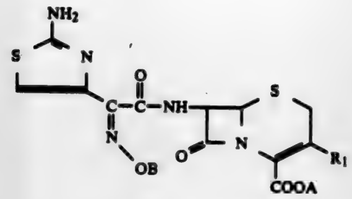
3. The compound O,O-diethyl O-(4-(t-butylsulfonyl)-m-tolyl) phosphorothioate.

4,439,432
TREATMENT OF PROGESTERONE DEFICIENCY AND RELATED CONDITIONS WITH A STABLE COMPOSITION OF PROGESTERONE AND TOCOPHEROLS
Raymond F. Peat, 300½ N. Jefferson St., Eugene, Oreg. 97402
Filed Mar. 22, 1982, Ser. No. 360,587
Int. Cl.³ A61K 31/56
U.S. Cl. 424—240 10 Claims

1. A composition consisting essentially of progesterone solubilized in tocopherol.

4,439,433
OXIMES
Rene Heymes, Romainville, and Michel Vignau, Neuilly-sur-Seine, both of France, assignors to Roussel Uclaf, Paris, France
Division of Ser. No. 25,666, Mar. 30, 1979, abandoned. This application May 27, 1981, Ser. No. 267,638
Claims priority, application France, Mar. 31, 1978, 78 09617; Aug. 24, 1978, 78 24563
Int. Cl.³ A61K 31/545; C07D 501/34
U.S. Cl. 424—246 20 Claims

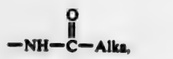
1. A compound selected from the group consisting of oximes of the syn isomers of 7-[2-(2-amino-4-thiazolyl)-acetamido]-ceph-3-eme-4-carboxylic acid compounds of the formula



wherein B is $-(CH_2)_{n'}-R_5$, n' is an integer from 1 to 4, R_5 is



R_6 and R_7 are individually selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and when taken together with the nitrogen to which they are attached are selected from the group consisting of phthalimido and 1-pyridinyl, R_1 is selected from the group consisting of CH_3O-, alkyl and alkylthio of 1 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms, $-CH_2-S-R_{12}$, acetoxymethyl, carbamoyloxymethyl and

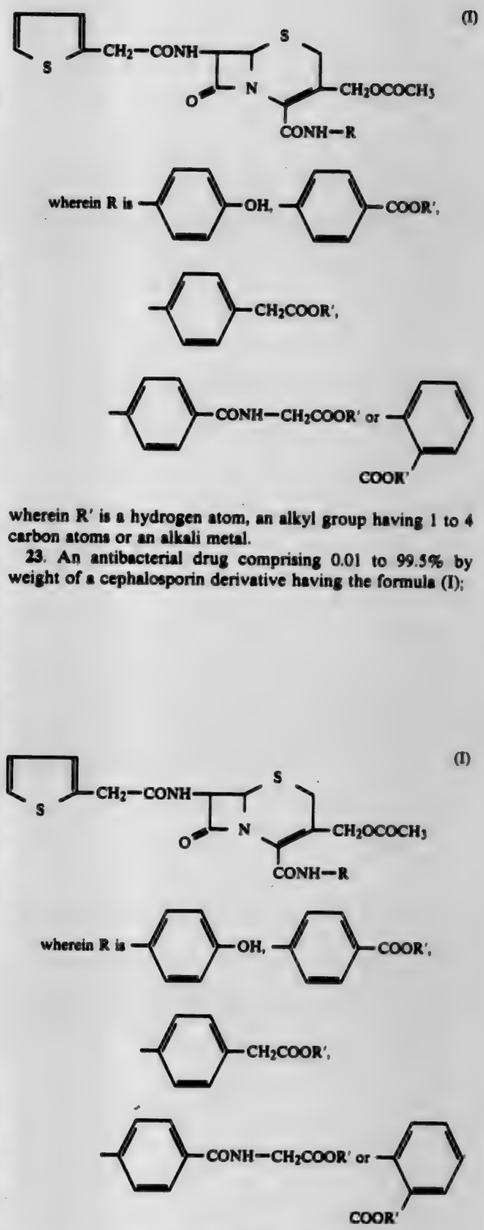


R_{12} is selected from the group consisting of 2-oxo-(3H)-thiazolin-4-yl-carbonyl, 3-methyl-1,2-oxazol-5-yl-carbonyl, acyl of an alkanoic acid of 2 to 4 carbon atoms and a nitrogen heterocycle selected from the group consisting of 1,2,3-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,4-thiadiazolyl, 1H-tetrazolyl, 1,3-thiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,3,4-triazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl and 1,3,4-oxadiazolyl, the said heterocycles being optionally substituted with at least one substituent selected from the group consisting of methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, amino, hydroxycarbonylmethyl, dimethylaminoethyl and diethylaminoethyl, Alk_6 is alkyl of 1 to 4 carbon atoms and A is selected from the group consisting of hydrogen, $-NH_4$, alkali metal, alkaline earth metal, magnesium, a non-toxic, pharmaceutically acceptable organic amine and easily cleaved ester and their non-toxic, pharmaceutically acceptable acid addition salts.

7. An antibacterial composition comprising an antibacterically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

4,439,434
CEPHALOSPORIN DERIVATIVE AND PHARMACEUTICAL COMPOSITION CONTAINING THE DERIVATIVE
Shigeaki Muto, Tokyo; Kouichi Niimura, Sayama; Takao Ando, Tokyo; Masahiko Fujii, Komae; Takao Furusho, Machida, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan
Filed Sep. 16, 1982, Ser. No. 418,761
Claims priority, application Japan, Sep. 18, 1981, 56-147577; Sep. 22, 1981, 56-149868
Int. Cl.³ A61K 31/545; C07D 501/34
U.S. Cl. 424—246 23 Claims

1. A cephalosporin derivative having the general formula (I);



(I)

wherein R' is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkali metal.

23. An antibacterial drug comprising 0.01 to 99.5% by weight of a cephalosporin derivative having the formula (I);

(I)

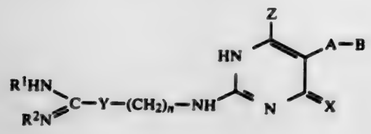
wherein R' is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkali metal, and a pharmaceutically acceptable carrier therefor.

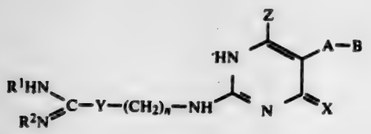
4,439,435
ISOUREAS AND ISOTHIOUREAS

Charon R. Ganellin, Welwyn; Robert J. Ife, Stevenage, and David A. A. Owen, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Ltd., Welwyn Garden City, England

Division of Ser. No. 56,171, Jul. 10, 1979, Pat. No. 4,305,945. This application Aug. 6, 1981, Ser. No. 290,628
Claims priority, application United Kingdom, Jul. 15, 1978, 29999/78
Int. Cl.³ C07D *239/47;* A61K *31/505*
U.S. Cl. 424—251 11 Claims

1. A compound of the formula





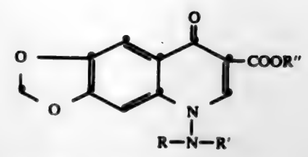
in which
R^1 and R^2 are hydrogen or lower alkyl;
Y is sulphur or oxygen;
n is from 3 to 8;
X is oxygen or sulphur;
Z is hydrogen or lower alkyl;
A is straight or branched C_1-C_5 alkylene or $-(CH_2)_pW(CH_2)_q-$ where W is oxygen or sulphur and the sum of p and q is 1 to 4; and
B is methyl, C_3-C_6 cycloalkyl, a heteroaryl group selected from furyl, thienyl, thiazolyl, oxazolyl, isothiazolyl, imidazolyl, thiadiazolyl, benzimidazolyl and benzthiazolyl, said heteroaryl being optionally substituted by one or more lower alkyl, lower alkoxy, halo, hydroxy or amino groups or B is a naphthyl, 5- or 6-(2,3-dihydro-1,4-benzodioxinyl) or 4- or 5-(1,3-benzodioxolyl) group, or a phenyl group optionally substituted with one or more lower alkyl, lower alkoxy, halogen, phenyl(lower alkoxy), hydroxy, lower alkoxy-lower alkoxy, trifluoromethyl, di(lower alkyl)amino, phenoxy, halophenoxy, lower alkoxyphenoxy, phenyl, halophenyl or lower alkoxyphenyl group, or, provided A is alkylene, B can be hydrogen, in the form of the free base or a pharmaceutically acceptable acid addition salt thereof.

4,439,436
1,3-DIOXOLO(4,5-G)QUINOLINE COMPOUNDS

Mark P. Westland, North Greenbush, and Denis M. Bailey, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 4, 1982, Ser. No. 405,263
Int. Cl.³ C07D *491/04;* A61K *31/47*
U.S. Cl. 424—258 21 Claims

1. A compound of the formula



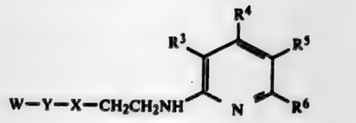
where R is hydrogen or alkyl of 1–3 carbon atoms; R′ is hydrogen, formyl, alkyl of 1–3 carbon atoms, or alkoxycarbonyl where the alkyl moiety of the latter group is identical with R; and R″ is hydrogen or lower-alkyl; or an alkali metal salt or N-methylglucamine salt of a compound where R″ is hydrogen.

4,439,437
2-[2-THIAZOLYL OR 2-GUANIDINO-4-THIAZOLYL METHYLTHIOETHYL(OR BUTYL)AMINO]-3-(HYDROXY OR CARBOXY)PYRIDINES, COMPOSITIONS CONTAINING SAME AND METHOD OF USE

Martin Jones, Stevenage, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, United Kingdom

Filed Apr. 5, 1982, Ser. No. 365,224
Claims priority, application United Kingdom, Apr. 28, 1981, 8112986
Int. Cl.³ C07D *417/12;* A61K *31/44*
U.S. Cl. 424—263 8 Claims

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof where:
W is 2-thiazolyl or 2-guanidino-4-thiazolyl;
X is methylene or sulphur;
Y is methylene;
R^3 is carboxy or hydroxy;
R^4 is hydrogen or C_{1-4} alkyl;
R^5 is hydrogen, C_{1-4} alkyl or benzyl; and
R^6 is hydrogen or C_{1-4} alkyl.

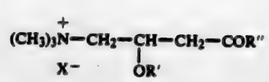
8. A method of blocking histamine H_2-receptors which comprises administering to an animal in need of such treatment an effective amount to block said receptors of a compound according to claim 1.

4,439,438
ESTERS OF ACYL-CARNITINES, PROCESS FOR PREPARING SAME AND PHARMACEUTICAL COMPOSITIONS CONTAINING SUCH ESTERS

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

Continuation of Ser. No. 142,503, Apr. 21, 1980, abandoned. This application May 26, 1982, Ser. No. 382,319
Claims priority, application Italy, Apr. 23, 1979, 48816 A/79
Int. Cl.³ A61K *31/44;* C07C *211/72*
U.S. Cl. 424—263 5 Claims

1. Esters of acyl-carnitines represented by the general formula (I):



X is halogen;
R′ is: acetyl; halogen-substituted acetyl isobutyryl; β-hydroxy butyryl; acetoacetyl; pantothenyl and linoleyl; and
R″ is: methoxy, ethoxy, propyloxy, butyloxy, isopropyloxy, isobutyloxy, trichloroethyloxy, trifluoroethyloxy, 3-carbethoxy-2-propyloxy, 3-pyridyl-methoxy, 2-diethylaminoethoxy, 2-acetamido-3-methyl-butyroxy, 2-acetamido-4-methyl-penthyloxy, 2-acetamido-3-methyl-pentyloxy and 4-hydroxymethyl-5-hydroxy-6-methyl pyrid-3-yl methoxy radicals provided that when R″ is methoxy, ethoxy, propyloxy or butyloxy then R′ is not acetyl.

2. A method of treating depression comprising administering to a patient afflicted by depression an ester of formula (I) as defined in claim 1 in an amount effective in the treatment of depression.

4,439,439
NON-IRRITATING TETRAMISOLE- OR LEVAMISOLE POUR-ON COMPOSITIONS

John M. Ballany, Cumbernauld, Scotland, and David Henderson, Carlisle, England, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Mar. 10, 1982, Ser. No. 356,666
Int. Cl.³ A61K *31/425*
U.S. Cl. 424—270 13 Claims

1. A pour-on composition for combating helmintic infestations in non-human animals comprising from 4 to 30% by weight of dl- and/or l-2,3,5,6-tetrahydro-6-phenylimidazo[2,1-b]thiazole in a liquid medium, said medium comprising at least 50% by weight of one or more alcohols of the formula

$$HO-(CH_2-CH_2-O)_m-R \quad (I)$$

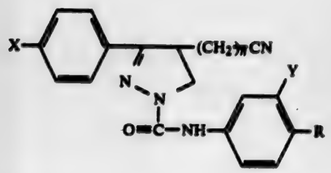
wherein m is the integer 1, 2 or 3; and R is a lower alkyl radical.

4,439,440
1-ALKOXYCARBONYLPHENYLCARBAMOYL-3-PHENYL-4-CYANOALKYL-2-PYRAZOLINES AND USE AS INSECTICIDES

Roelof van Hes, and Arnoldus C. Grosscurt, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed May 7, 1982, Ser. No. 375,869
Claims priority, application Netherlands, May 12, 1981, 8102310
Int. Cl.³ A01N *43/56;* C07D *231/06*
U.S. Cl. 424—273 P 7 Claims

1. A pyrazoline of the formula



wherein
R is an alkoxycarbonyl group having 2 to 6 carbon atoms,
X and Y are equal or different and represent hydrogen atoms or halogen atoms, and
n is 2, 3 or 4.

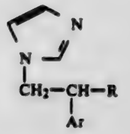
7. A method of controlling insects, characterized in that the infested area is treated with a composition as claimed in any one of claims 4–6 in a dosage from 0.01 to 1 kg of active substance per hectare.

4,439,441
CONTRACEPTIVE COMPOSITIONS AND METHODS EMPLOYING 1-SUBSTITUTED IMIDAZOLE DERIVATIVES

Duane W. Hallesy, Palo Alto; Richard E. Jones, Woodside; Brian H. Vickery, Cupertino, and Keith A. M. Walker, Los Altos Hills, all of Calif., assignors to SYNTEX (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 225,173, Jan. 15, 1981, abandoned, which is a continuation of Ser. No. 2,637, Jan. 11, 1979, Pat. No. 4,247,582. This application Jul. 19, 1982, Ser. No. 399,675
The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R 2 Claims

1. A method of contraception in a female mammal comprising administering intravaginally, to a subject clinically asymptomatic of vaginal microbial infection, prior to coitus, a spermatostatically effective amount of a 1-substituted imidazole of the formula



wherein:
Ar is a member selected from the group consisting of phenyl, mono-, di- and tri-halophenyl, loweralkylphenyl, nitrophenyl, cyanophenyl and trifluoromethyl phenyl, and
R is a member selected from the group consisting of alkyl, having from 1 to 10 carbons, cycloalkyl, lower alkenyl, aryl-lower alkyl and aryl-loweralkenyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, loweralkylphenyl, loweralkyloxyphenyl, nitrophenyl and trifluoromethylphenyl;
or a pharmaceutically acceptable acid addition salt thereof.

4,439,442
NAFTIDROFURYL CITRATE AND THERAPEUTIC APPLICATIONS

Jacques A. Chick, Sevres; Alain Heymes, Sisteron, and Carlo Biasioli, Toulouse, all of France, assignors to SANOFI, Toulouse, France

Filed May 14, 1982, Ser. No. 378,333
Claims priority, application France, May 14, 1981, 81 09890
Int. Cl.³ A61K *31/34;* C07D *307/16*
U.S. Cl. 424—285 6 Claims

1. Naftidrofuryl citrate.

5. A method for promoting cardiovasular activity in a host which comprises administering to said host an effective amount of the compound of claim 1 and a biologically acceptable carrier and stimulating cardiovasular activity and vasodilation, the vasodilation being of delayed and prolonged effect.

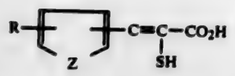
4,439,443
SNAKE BITE THERAPY

Eugene L. Giroux, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

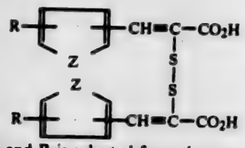
Division of Ser. No. 290,906, Aug. 7, 1981, Pat. No. 4,347,258, which is a continuation of Ser. No. 140,446, Apr. 17, 1980, abandoned. This application Jul. 2, 1982, Ser. No. 394,967
Int. Cl.³ A61K *31/34, 31/38, 31/40*
U.S. Cl. 424—285 6 Claims

1. A method of reducing local hemorrhage and tissue necro-

sis in mammals resulting from the bite or sting of a venomous snake which comprises administering to said mammal a local hemorrhage and tissure necrosis reducing amount of a compound having the formula



or a corresponding disulfide of the formula



wherein Z is S and R is selected from the group consisting of H, methyl, ethyl, hydroxy, methoxy, ethoxy, fluoro, chloro, bromo, iodo and trifluoromethyl; or a pharmaceutically acceptable salt thereof.

4,439,444

AMIDOBENZAMIDES, THEIR SALTS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Dino Niasto, Pavia; Sergio Boveri, Tortona; Alberto Bianchetti, Milan, all of Italy; Romeo Roncucci, Paris, France, and Paolo Carminati, Milan, Italy, assignors to Sanofi, Paris, France

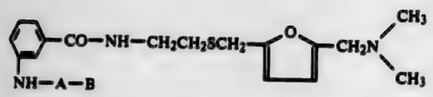
Filed Jul. 7, 1982, Ser. No. 396,100

Claims priority, application France, Jul. 8, 1981, 81 13420; Oct. 23, 1981, 81 19967; Dec. 10, 1981, 81 23084

Int. Cl.³ A61K *31/34*; C07D *307/54*

U.S. Cl. 424—285 **6 Claims**

1. An amidobenzamide selected from the group consisting of compounds of formula



wherein A represents a CO or SO_2 group and B represents an alkyl group of from 1 to 6 carbon atoms or a phenyl, pyridyl, pyridyl 1-oxyde, pyrazinyl or thienyl group; or a pharmaceutically acceptable acid addition salt thereof.

4,439,445

CYTOPROTECTIVE USE OF OXAMATE DERIVATIVES

Andre Robert, and Cleo Lancaster, both of Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 8, 1982, Ser. No. 366,818

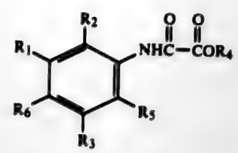
Int. Cl.³ A61K *31/275, 31/24, 31/195, 31/44*

U.S. Cl. 424—304 **3 Claims**

1. A method for preventing gastrointestinal ulcers, in a mammal highly susceptible to said ulcers, due to one of the following conditions:

(a) a previous history of gastric or duodenal ulcer,
(b) stresseful environmental conditions,
(c) chronic and excessive alcohol consumption,
(d) exposure to cytodestructive doses of ionizing radiation,
(e) acute or chronic ingestion of noxious, gastrointestinal cytodestructive or gastrointestinal cytotoxic chemical agents,
(f) treatment with non-steroidal antiinflammatory compounds (NOSAC), or
(g) exposure to pathogens capable of producing untoward gastric symptoms; which comprises:

administering systemically to said mammal an amount effective to prevent the development of said ulcers of a compound of the Formula I



I

wherein R_1 is hydrogen, —NH—CO—CO—OR_4, —NH—CO—CO—$N(CH_3)_2$, —NO_2 or —NH_2;
wherein R_2 is hydrogen, —NO_2, chloro, fluoro, bromo, —COOH, or —C≡N;
wherein R_3 is hydrogen, acetyl, carboxy, —CF_3, or —C≡N;
wherein R_4 is hydrogen or (C_1–C_3)alkyl;
wherein R_5 is hydrogen, hydroxy, or —C≡N; and
wherein R_6 is hydrogen, —NO_2, or —NH—(-CO—CO—OR_4; and the pharmacologically acceptable acid addition salts thereof when R_2, R_3 or R_5 is —C≡N; with the following provisos:

(1) at least one of R_2, R_3, R_5 and R_6 is other than hydrogen and
(2) R_6 is —NH—CO—CO—OH only when R_1 is not hydrogen.

4,439,446

FLUORINE-CONTAINING OXYIMINOCYCLOPROPANECARBOXYLATES

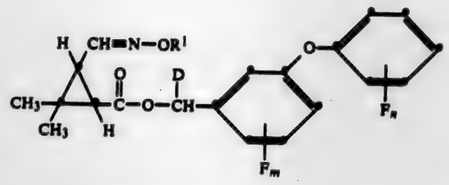
Samuel B. Soloway, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 332,621, Dec. 21, 1981, abandoned. This application Sep. 13, 1982, Ser. No. 416,418

Int. Cl.³ A01N *53/00*; C07C *69/743, 121/78*

U.S. Cl. 424—304 **17 Claims**

1. A compound of the formula



wherein R^1 is a hydrogen atom; an alkyl group containing from 1 to 10 carbon atoms; a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms and a total of from 4 to 9 carbon atoms; a cycloalkyl group containing from 3 to 7 ring carbon atoms; an alkenyl or alkynyl group containing from 2 to 4 carbon atoms; an aryl group containing from 6 to 12 carbon atoms; or an aralkyl group containing from 7 to 11 carbon atoms; m and n each independently is 0 or 1 and m+n is 1 or 2; and D is a hydrogen atom, a cyano group or an ethynyl group, with the proviso that when D is cyano or ethynyl then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.

17. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of a compound according to claim 1.

4,439,447

FUNGICIDAL ACYL ANILIDES

Adolf Hubele, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 101,355, Dec. 7, 1979, Pat. No. 4,294,850, which is a division of Ser. No. 923,604, Jul. 11, 1978, Pat. No. 4,206,228, which is a division of Ser. No. 723,826, Sep. 16, 1976, Pat. No. 4,151,299, which is a continuation of Ser. No. 565,037, Apr. 4, 1975, abandoned. This application Jun. 15, 1981, Ser. No. 273,801

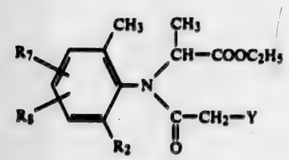
Claims priority, application Switzerland, Apr. 9, 1974, 4998/74; Mar. 14, 1975, 3259/75

The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.

Int. Cl.³ A01N *37/10*; C07C *149/40, 101/44*

U.S. Cl. 424—309 **14 Claims**

1. A compound of the formula



wherein

R_2 represents methyl, ethyl or chlorine,
each of R_7 and R_8 independently represents hydrogen or methyl, and
Y represents —OR_4 or —SR_4 in which R_4 represents methyl, ethyl, propyl, isopropyl, butyl, sec.butyl or tert.butyl.

6. A method of combating phytophathogenic fungi which comprises applying thereto a fungicidally effective amount of a compound according claim 1.

4,439,448

GLUTAMINE DERIVATIVES

Hiroaki Munakata, Sagamihara; Makio Kobayashi, Machida; Kazuo Wagatsuma, Machida; Shigeru Sato, Machida; Makoto Tsurufuji, Tokyo; Hiroshi Enomoto, Kyoto, all of Japan, and Shingo Matsumura, deceased, late of Kyoto, Japan (by Rumiko Matsumura, administrator), assignors to Mitsubishi Chemical Industries Ltd., Tokyo and Nippon Shinyaku Co., Ltd., Kyoto, both of, Japan

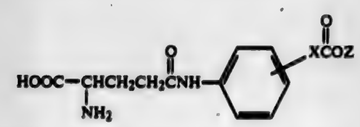
Filed Nov. 10, 1981, Ser. No. 319,992

Claims priority, application Japan, Nov. 12, 1980, 55-159319; Nov. 12, 1980, 55-159320

Int. Cl.³ C07C *101/447, 101/453*; A61K *31/24, 31/195*

U.S. Cl. 424—309 **7 Claims**

1. Glutamine derivative of the formula:



wherein X is (i) an alkylene of the formula: (—CH_2—)$_n$ where n is an integer of 1 to 4, or vinylene, or (ii) a group of the formula:



where R^1 and R^2 may be the same or different and are hydrogen or a lower alkyl with the proviso that at least one of R^1 and R^2 is a lower alkyl; and Z is hydrogen or a lower alkyl or a nontoxic salt thereof.

6. An immunomodulating composition comprising an effective amount of at least one compound represented by the formula (I) as described in claim 1 and at least one non-toxic carrier.

4,439,449

MEDICAMENT FOR DIMINUTION OF OXALATE DEVELOPMENT AND EXCRETION IN URINE

Dieter Hötzel, Sankt Augustin, Fed. Rep. of Germany, assignor to Dr. Madaus & Co., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 957,968, Nov. 6, 1978, abandoned. This application Nov. 24, 1981, Ser. No. 324,802

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749618

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **8 Claims**

1. Method for the relapse-prophylactive treatment of undesired uroliths, which method comprises treating a subject with an effective amount of benzoic acid.

4,439,450

TREATMENT OF THE BLOOD-BRAIN BARRIER WITH IBUPROFEN

James H. Coleman, Cumberland, R.I., assignor to The Upjohn Manufacturing Company M, Barceloneta, P.R.

Filed Jun. 30, 1983, Ser. No. 509,906

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **2 Claims**

1. A process for therapeutic treatment of the blood-brain barrier comprising the systemic administration to a human or animal having a damaged blood-brain barrier of an effective amount of p-isobutylhydratropic acid or an alkyl ester of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, or a pharmacologically acceptable salt thereof.

4,439,451

TREATMENT OF THE BLOOD-BRAIN BARRIER WITH FLURBIPROFEN

James H. Coleman, Cumberland, R.I., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 30, 1983, Ser. No. 509,908

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **2 Claims**

1. A process for therapeutic treatment of the blood-brain barrier comprising the systemic administration to a human or animal having a damaged blood-brain barrier of an effective amount of 3-fluoro-4-phenylhydratropic acid or an alkyl ester of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, or a pharmacologically acceptable salt thereof.

4,439,452

CLASS OF ANALGESICS AND/OR ANTI-INFLAMMATORY AGENTS CONSISTING OF INHIBITORS OF BREAKDOWN OF ENDOGENOUS ENKEPHALIN AND/OR ENDORPHIN, AND COMBINATIONS OF SAID ANALGESICS WITH ANTIPYRETIC, ANTI-INFLAMMATORY (ASPIRIN-TYPE) DRUGS

Seymour Ehrenpreis, 4339 Birchwood Ave., Skokie, Ill. 60076; Joseph E. Comaty, Des Plaines, and Reuben C. Balagot, Chicago, both of Ill., assignors to Seymour Ehrenpreis, Skokie, Ill.

Continuation-in-part of Ser. No. 12,043, Feb. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 882,975, Mar. 3, 1978, abandoned. This application Sep. 14, 1979, Ser. No. 75,663

Int. Cl.³ A61K *31/195, 31/615*

U.S. Cl. 424—319 **14 Claims**

1. A method for effecting anti-inflammatory relief in animals

or humans by the step of administering to the animal or human suffering inflammation a substance intended to inhibit the destruction of endogenous substances such as enkephalins and endorphins, the substance administered being D-phenylalanine in an effective amount for effecting anti-inflammatory relief.

4,439,453

DIRECTLY COMPRESSIBLE ACETAMINOPHEN GRANULATION

Stephen H. Vogel, Collinsville, Ill., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 219,290, Dec. 22, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,212
Int. Cl.³ A61K *9/16, 9/34, 9/60, 9/62*
U.S. Cl. 424—324 15 Claims

1. A directly compressible analgesic granulation comprising from about 80% to about 90% by weight acetaminophen, from about 0.1% to about 5.0% by weight ground crosslinked sodium carboxymethylcellulose fiber, from about 1.0% to about 15.0% binder and from about 0.1% to about 2.0% by weight lubricant.

4,439,454

PROCESS FOR CHOLINE AND VITAMIN STABILIZATION

Giuseppe Riva, Piazza Repubblica, 1, 24100 Bergamo, Italy

Filed Jun. 15, 1981, Ser. No. 274,001
Claims priority, application Italy, Jun. 24, 1980, 2918 A/80
Int. Cl.³ A61K *31/14;* C07D *211/72, 211/84, 213/70*
U.S. Cl. 424—329 7 Claims

1. A process for stabilizing choline by preparing a non-hygroscopic form thereof, comprising the steps of:
(a) forming a reaction mixture containing about 32–77.1% by weight choline chloride, about 7.1–14.88% by weight formurea and about 7.8–11.8% by weight urea;
(b) adding from 0% to about 53% by weight of a vitamin supplement;
(c) heating the reaction mixture to about 45°–85° C.; and
(d) adding from 0% to about 1.24% by weight of 18.5% hydrochloric acid to said reaction mixture; whereby said reaction mixture forms a solidified reaction product.

4,439,455

ENZYMATIC TREATMENT OF WINE AND MUST

Jean-Claude Villettaz, Arlesheim, Switzerland, assignor to Novo Industri A/S, Denmark

Filed Jun. 10, 1982, Ser. No. 387,204
Claims priority, application Denmark, Jun. 11, 1981, 2532/81
Int. Cl.³ C12G *1/00, 1/02;* C12R *1/885*
U.S. Cl. 426—12 8 Claims

1. A process for improving the filterability of must from Botrytis infected grapes and of wine produced by fermentation thereof, which comprises contacting said must or wine with a glucanase product exhibiting betaglucanase activity produced by *Trichoderma harzianum* in amount effective to improve filterability for between 8 hours and 2 weeks at a temperature in the range of from 15° C. to 50° C. and at a pH in the range of from 3 to 5.

4,439,456

PROCESS FOR PRODUCING FIBROUS FOOD PRODUCTS

Youichi Kammuri; Takafumi Yamauchi, and Toshikatsu Takahashi, all of Hachioji, Japan, assignors to Nippon Suisan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,893
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—276 4 Claims

1. A process for producing a fibrous food product which comprises the steps of: adding 1–10% sodium chloride to fish and/or animal meat; kneading the resulting mixture to prepare a paste; and extruding the paste into an aqueous solution of a protein denaturing agent through a nozzle having fine orifices to produce filaments.

4,439,457

AGRICULTURAL APPLICATIONS OF THIXOTROPIC ALUMINUM HYDROXIDE CHLORIDE

Bert Kuy, Holzestrasse 28, Zurich 8042, Switzerland

Division of Ser. No. 169,479, Jul. 15, 1980, Pat. No. 4,355,020, which is a continuation-in-part of Ser. No. 957,333, Nov. 3, 1978, abandoned. This application Oct. 18, 1982, Ser. No. 434,831
Claims priority, application United Kingdom, Nov. 12, 1977, 47170/77
Int. Cl.³ A23B *7/16;* A23L *3/34*
U.S. Cl. 426—310 1 Claim

1. A method for protecting fruits or vegetables from decay comprising applying to the fruit or vegetable an effective amount in the form of a thin layer of a thixotropic aluminum hydroxide chloride having an aluminum to chlorine ratio of 5:1 to 6:1 which is the chlorination product of pseudoboehmite.

4,439,458

PREPARATION OF CITRUS JUICES, CONCENTRATES AND DRIED POWDERS WHICH ARE REDUCED IN BITTERNESS

Ajai Puri, Altamonte Springs, Fla., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Apr. 26, 1982, Ser. No. 371,861
Int. Cl.³ A23L *2/00*
U.S. Cl. 426—330.5 19 Claims

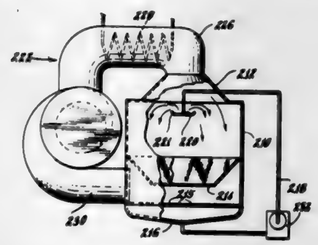
1. A process for reducing either flavanoid or limonoid induced bitterness in citrus fruit juice or both flavanoid and limonoid induced bitterness in citrus fruit juice, wherein said process comprises:
contacting the citrus juice for an effective period of time with an effective volume of a styrene-divinylbenzene cross-linked copolymer absorbent resin in the absence of an added enzyme, whereby a substantial amount of flavanoid and limonoid compounds present in the citrus juice are adsorbed by the resin.

4,439,459

CONVECTION FOOD HEATING

John S. Swartley, 7 Wendy La., Westport, Conn. 06880

Filed Mar. 8, 1982, Ser. No. 356,229
Int. Cl.³ A23L *1/00;* A47J *37/00;* A21B *1/00*
U.S. Cl. 426—438 16 Claims



1. A process for frying food which comprises: placing food on a foraminous support within a heating chamber, creating a flow of air about a heat source to increase the temperature thereof to a predetermined temperature sufficient to fry said food when admixed with a liquid heat exchange medium comprising a fat, circulating said air flow about the food within said chamber while introducing said heat exchange medium into said air flow, and continuously circulating the air containing dispersed fat between the food and said heat source for a period of time sufficient to fry said food.

4,439,460

DIPEPTIDE SWEETENER SULFATE AND SULFONATE SALTS

Josef H. Tsau, Prospect Heights, and James G. Young, Northbrook, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 1, 1982, Ser. No. 383,393
Int. Cl.³ A23L *1/236*
U.S. Cl. 426—548 9 Claims

1. A dipeptide sweetener salt of the formula

[APM.H]$_2$SO$_4$ or [APM.H]SO$_3$R

wherein APM represents aspartyl-phenylalanine methyl ester and R is lower alkyl containing 1 to 3 carbon atoms.

4. A sweetened food comprising a mixture of dry, fatty or oily foodstuff ingredients in combination with a sweetener salt of claim 1.

4,439,461

PROCESS FOR CHILLING AND PLASTICIZING FATTY MATERIALS

Ted S. Czyzewski, Bloomingdale, and Bartley A. Greenwell, Crystal Lake, both of Ill., assignors to Groen Division - Dover Corporation, Elk Grove Village, Ill.

Filed Mar. 11, 1982, Ser. No. 356,958
Int. Cl.³ A23D *5/02*
U.S. Cl. 426—601 3 Claims

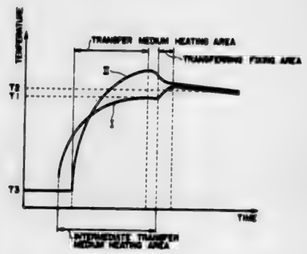
1. A process for chilling and plasticizing a fatty material comprising the steps of cooling and partially crystallizing a molten fatty material in a first zone and at a first temperature, and conveying said cooled and partially crystallized fatty material from said first zone to a second zone wherein a shearing action is imparted to said partially crystallized fatty material that is provided by a motionless mixer which causes a rotational circulation of said material around its own hydraulic center to cause radial mixing of said material, thereby producing a plasticized fatty material having a fine crystal structure which is well distributed and in substantial equilibrium.

4,439,462

METHOD FOR TRANSFERRING AND FIXING A TONER IMAGE

Noriyoshi Tarumi; Kiyoshi Kimura; Hiroshi Tokunaga; Yukio Okamoto, and Makoto Tomono, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,540
Claims priority, application Japan, Apr. 3, 1981, 56-49298
Int. Cl.³ G03G *13/16*
U.S. Cl. 427—14.1 4 Claims



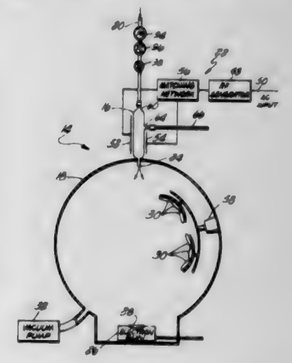
1. In the method of transferring a toner image on a toner image carrier onto a transfer medium by bringing the former into pressure contact with the latter, and subsequently applying said transferred image onto transfer material over a transferring fixing contact area, the improvement comprising the steps of heating the transfer medium bearing the toner image to a temperature at which the toner remains in a nonfluid condition immediately prior to said transferring fixing contact area, heating said transfer material to a temperature substantially greater than the melting temperature of the toner immediately prior to said transferring fixing contact area, and bringing said super-heated transfer material into pressure contact with the under-heated transfer medium throughout said transferring fixing contact area, whereby the super-heated transfer material raises the temperature of the under-heated transfer medium to a temperature sufficient to effect transfer of the toner image from the transfer medium to the transfer material.

4,439,463

PLASMA ASSISTED DEPOSITION SYSTEM

Stephen C. Miller, Simi Valley, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 18, 1982, Ser. No. 349,892
Int. Cl.³ C23C *11/00*
U.S. Cl. 427—39 2 Claims



1. A process for use in the deposition of a semiconductor film, comprising:
producing a stream of reactive gaseous species within a first chamber by exposing a flow of a gaseous material to an electrical discharge, the reactive species containing a semiconductor material;
passing the reactive species to a work environment which is distinct from the first chamber and is maintained at substantially atmospheric pressure; and
continuously depositing the semiconductor material from the reactive species onto a substrate passed through the work environment.

4,439,464

COMPOSITION AND METHOD FOR FORMING AMORPHOUS CHALCOGENIDE FILMS FROM SOLUTION

Imants R. Lauks, Sewell, N.J., assignor to University Patents, Inc., Norwalk, Conn.

Filed May 11, 1982, Ser. No. 377,222
Int. Cl.³ G03C *5/00*
U.S. Cl. 427—76 9 Claims

1. A method of forming an amorphous chalcogenide film on a substrate, comprising the steps of:
(a) preparing a solution containing a glass-forming chalcogenide compound dissolved in a non-aqueous vaporizable solvent, said solution being substantially free from particulate or crystallizable material;
(b) coating said solution onto said substrate in a non-vacuumized environment; and
(c) evaporating the solvent from the coating so as to form an

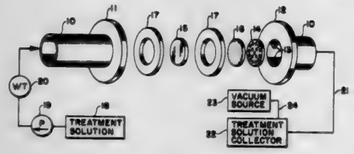
amorphous chalcogenide film substantially free from particulate and microstructure.

4,439,465

METHOD OF MAKING A LIGHT WEIGHT BATTERY PLAQUE

Margaret A. Reid; Robert E. Post, both of Bay Village, and Daniel G. Soltis, Broadview Heights, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 350,476
Int. Cl.³ B05D 5/12; H01M 6/00
U.S. Cl. 427—115 **14 Claims**



1. A method of making a nickel battery plaque comprising the steps of:

providing a flexible, platable, plastic substrate having a nickel wire grid embedded therein and having a porosity greater than 65%;

providing a perforated non-platable support member;

providing a non-platable diffuser having a porosity substantially greater than that of said substrate;

sandwiching said diffuser between said substrate and said support member and in contact with each;

flowing through said substrate, said diffuser and said support plate in that order the following solutions in the order named:

a nickel plating sensitizer solution;

water;

a nickel plating catalyst solution;

water; and

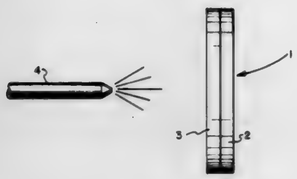
a nickel electroless plating solution.

4,439,466

RANEY NICKEL ELECTRODE FOR NI-H_2 CELL

Alan K. P. Chu, Granada Hills, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 1, 1983, Ser. No. 481,440
Int. Cl.³ B05D 1/08, 5/12
U.S. Cl. 427—123 **9 Claims**



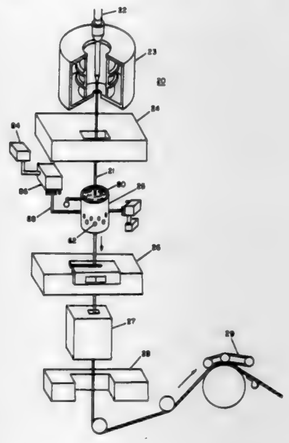
1. A method for making a Raney nickel electrode body without a pressure compacting step comprising providing a substrate, coating said substrate with a Raney nickel-aluminum alloy by plasma deposition, coating said body with a hydrophobic material, and leaching said coated body to remove at least part of the aluminum out of said Raney alloy coating and provide a coated porous electrode body.

4,439,467

METHODS OF COATING LIGHTGUIDE FIBER AND PRODUCT PRODUCED THEREBY

Bahiru Kassahun, Roosevelt Township, Monmouth County, and Montri Viriyayuthakorn, Hamilton Township, Mercer County, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,317
Int. Cl.³ G02B 5/14; B05D 7/20
U.S. Cl. 427—163 **4 Claims**



1. A method of coating an elongated material to provide a substantially bubble-free covering, said method including the steps of:

advancing the elongated material through a continuum of liquid coating material, which extends from a free surface in a reservoir through communicating first and second dies at a velocity which causes air to become entrained in the coating material, the advancing of the elongated material being in a direction from the reservoir to the second die and causing a pressure gradient to be established between the reservoir and an exit orifice of the second die with the pressure increasing from the free surface to a location prior to the exit orifice of the second die; and

flowing coating material into the vicinity of the exit orifice of the first die at a pressure which sufficiently enhances the pressure gradient between portions of the first die and second die and which establishes sufficient volumetric flow of the coating material from a chamber into the reservoir to cause the removal of bubbles from the elongated material and to cause the coating material in the chamber and on the coated elongated material to be substantially bubble-free and removing bubble entrained fluid entering the reservoir through fluid exit means in the lower portion of the reservoir before such bubbles can substantially coalesce.

4,439,468

PLATINUM COATED SILVER POWDER

Anthony Liang, Belmont, and Hsiao L. Cheng, Sunnyvale, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 257,073, Apr. 24, 1981. This application Aug. 25, 1982, Ser. No. 412,366
Int. Cl.³ C09D 5/24; C23C 3/02; B22F 1/02
U.S. Cl. 427—216 **2 Claims**

1. A process for producing a platinum coated silver powder comprising

(a) forming a first composition of a slurry comprising of from about 20 to about 30% by weight of a relatively finely divided silver powder relatively uniformly dispersed in said slurry, from about 0.3 to about 0.4% by weight of lignosulfonate and from about 0.7 to about 1.5% by weight of ammonia, balance water,

(b) forming a second composition of a slurry comprising from about 5 to about 7.5% by weight of platinum as a platinum-ammonium complex as a solid, relatively uniformly dispersed in a water soluble alkanol,

(c) mixing a sufficient ammount of said second compositions with said first composition to achieve a weight ratio of Ag to Pt from about 90:10 to about 95:5,

(d) adjusting the pH of said mixture of from about 8 to about 10,

(e) adding a sufficient amount of hydrazine to said mixture to achieve a weight ratio of hydrazine to platinum of from about 7 to 5,

(f) maintaining the resultant slurry at a temperature of from about 40° C. to about 60° C. for a sufficient time to coat essentially all of said platinum onto said silver and

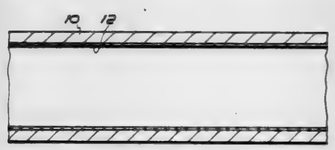
(g) separating the platinum coated silver powder from the remainder of the slurry.

4,439,469

FORMATION OF A LINING IN PIPELINES

Eric Wood, Northants, England, assignor to Insituform International N.V., Curacao, Netherlands Antilles

Filed Mar. 4, 1982, Ser. No. 354,756
Claims priority, application United Kingdom, Mar. 5, 1981, 816942
Int. Cl.³ B05D 7/22, 1/28, 1/02, 1/36
U.S. Cl. 427—230 **7 Claims**



1. A method of forming a lining in a pipeline, which method comprises the steps of

(a) forming on the inner surface of the pipeline a film of initiator,

(b) depositing on the inner surface of the film of initiator produced in accordance with step (a) a layer of resin whereupon accelerated curing of the resin takes place,

(c) repeating steps (a) and (b) any desired number of times until a cured lining of the desired thickness has been built up on the interior of the pipeline.

4,439,470

METHOD FOR FORMING TERNARY ALLOYS USING PRECIOUS METALS AND INTERDISPERSED PHASE

George K. Sievers, 1110 Kenwood St., Burbank, Calif. 91505, assignor to George Kelly Sievers, Burbank, Calif.

Continuation-in-part of Ser. No. 207,246, Nov. 17, 1980, Pat. No. 4,352,840. This application May 7, 1982, Ser. No. 376,107
Int. Cl.³ C23C 11/00, 13/00
U.S. Cl. 427—252 **31 Claims**

1. Method of forming on a nickel, cobalt or iron base metal structure a diffusion coating case of a preselected thickness and containing a precious metal ternary alloy and an interdispersed phase to impart improved corrosion, erosion and wear properties to a surface of said structure, which includes applying onto said structure surface an adherent layer of a precious metal in an amount less than normally required for a case of said preselected depth, applying a layer of an interdispersed phase-forming discrete particulate matter to said surface in a predetermined amount, forming a ternary alloy of said base metal, said precious metal and an alloying element by interdiffusing under nonoxidizing conditions said layer-applied structure surface from a diffusion pack containing said alloying element, and distributing said predetermined amount of interdispersed phase-forming matter as a separate entity comprising discrete particulate matter through said ternary alloy sufficient to increase the thickness of said ternary alloy containing case on said structure surface to said preselected thickness, whereby said case has the corrosion resistance properties characteristic of said ternary alloy, and the erosion and wear properties characteristic of said interdispersed phase matter.

4,439,471

TENNIS BALL WITH FABRIC COVERING

Francois R. Lacoste, Neuilly sur Seine, and Francoise M. H. Biard, Paris, both of France, assignors to Patentex S.A., Fribourg, Switzerland

Continuation of Ser. No. 51,046, Jun. 22, 1979, abandoned, which is a continuation of Ser. No. 808,028, Jun. 20, 1977, abandoned. This application Oct. 14, 1980, Ser. No. 196,865
Claims priority, application France, Jun. 21, 1976, 76 18777
Int. Cl.³ A63B 39/00
U.S. Cl. 428—35 **19 Claims**



1. A tennis ball comprising a hollow elastic core, a textile covering, and an adhesive bonding said covering to said core, said covering comprising fibers including monofilament synthetic fibers, the percentage-weighted average denier size of all fibers in said covering being at least 18;

the specific weight of all said fibers in the volume comprised between the outer surface of said core and the outer surface of said ball being less than 0.22 g/cm³.

4,439,472

UPHOLSTERY COMPONENTS

Raymond W. H. Bell, Great Kingshill, England, assignor to Dunlop Limited, London, England

Continuation of Ser. No. 181,818, Jul. 24, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,821
Int. Cl.³ B32B 3/26, 5/18
U.S. Cl. 428—71 **5 Claims**

1. An upholstery component which retards smouldering, comprising:

an unimpregnated core made of flame-collapsible polyurethane foam which collapses on application of a flame thereto, thereby presenting a reduced surface area of the flame without sustained burning; and

a layer of a non-flame-collapsible foam material wrapped about said core, said layer having been impregnated with a flame-retardant substance, said substance being a suspension of a hydrated alumina in a latex, whereby said layer and said core cooperate to produce said upholstery component.

4,439,473

HYDROPHOBIC FOAM FABRIC COATING

Jerry Lippman, 7855 Boulevard East, North Bergen, N.J. 07047

Filed Sep. 30, 1982, Ser. No. 430,781
Int. Cl.³ B32B 5/18; B05D 3/02
U.S. Cl. 428—90 **25 Claims**

1. An open cell foam coated fabric comprising a fabric substrate and a breathable fine cell foam coating adhered to the fabric substrate, wherein the foam coating is comprised of an open cell foam polymer lattice, and a hydrophobic material which coats substantially all of the surfaces of the polymeric lattice, and renders the breathable foam coating water repellant and waterproof.

4,439,474
DISPOSABLE FLOOR MAT WITH IMPROVED WET SOIL ABSORPTIVITY
Paul J. Segel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 30, 1981, Ser. No. 316,477
Int. Cl.³ B32B 33/00
U.S. Cl. 428—90 12 Claims

1. A fibrous floor mat comprising: a primary mat backing and assembled fibers, the bases of which are attached to said primary backing; characterized in that said fibrous mat has a surfactant disposed thereon at a level of less than 0.5 surfactant/mat weight ratio percent, wherein said mat has a Surfactant Mobility Test contact angle value of from 75° to 86°, whereby a minimal amount of surfactant and wet soil would be tracked off the mat, and wherein said mat has significantly improved wet soil absorbency performance over a fibrous floor mat without any surfactant disposed thereon according to the Wet Soil Absorbency Test.

4,439,475
NAP MAT OR CARPET OF WASHABLE TYPE HAVING INCREASED LIQUID REMOVAL THEREFROM DURING WASHING THEREOF
Aage Lang, Kolind, Denmark, assignor to Clean-Tex, Morke, Denmark
Filed Apr. 30, 1982, Ser. No. 373,688
Claims priority, application Denmark, May 26, 1981, 2287/81
Int. Cl.³ B32B 3/02
U.S. Cl. 428—92 15 Claims

1. Floor covering such as a nap mat or carpet of the washable type having a nap of fibers on the face side thereof and a rubber-like backing material on the other side thereof, said backing material having a plurality of perforations formed therein which are normally closed and are opened upon the application of a pressing force on the face side of said floor covering.

4,439,476
TUFTED FABRICS AND METHOD OF MAKING
George A. Guild, Kirriemuir, Scotland, assignor to Don Brothers, Buist P.L.C., Scotland
Continuation of Ser. No. 212,014, Dec. 1, 1980, abandoned. This application Dec. 21, 1982, Ser. No. 451,817
Claims priority, application United Kingdom, Nov. 29, 1979, 7941164
Int. Cl.³ B32B 3/02; A46D 1/00
U.S. Cl. 428—96 16 Claims



1. A tufted pile fabric comprising a primary backing, meltable fibrous material needled through said backing to provide a first surface-covering layer on one side of the backing and a second tuft-anchoring layer on the opposed side of the backing, said first and second layers being interconnected through said backing by fibres of said fibrous material, a plurality of pile tufts inserted through the primary backing and said first and second layers, said tufts extending through the backing and projecting on the same side of the backing as said first layer in order to form the pile, and at least said tuft-anchoring layer being melted in order to secure the tufts in the backing and provide an anchor coat for the fabric.

9. A process of producing a tufted pile fabric comprising the steps of providing a primary backing, needling a meltable fibrous material through said backing so as to provide a first surface-covering layer on one side of the backing and a second tuft-anchoring layer on the opposed side of said backing, said first and second layers being interconnected through said backing by fibres of said fibrous material, inserting a plurality of pile tufts through the primary backing and said first and second layers so that said tufts extend through the backing and project on the same side of the backing as said first layer in order to form the pile, and melting at least said second tuft-anchoring layer to secure the tufts in the backing and provide an anchor coat for the fabric.

4,439,477
FIBER MAT FOR PRODUCING A THREE DIMENSIONAL MOLDED MOLDING BY THE DRY PROCESS
Günter H. Kiss, Berlin, Fed. Rep. of Germany, assignor to Lignotock Verfahrenstechnik GmbH, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 202,316, Oct. 30, 1980, abandoned. This application Dec. 20, 1982, Ser. No. 450,924
Int. Cl.³ B32B 3/06
U.S. Cl. 428—102 18 Claims

1. A fiber mat for producing three-dimensional molded moldings by means of the dry process comprising:
a fibrous central layer;
a pair of supporting layers joined to opposed sides of the central layer, the supporting layers being formed of creped foil material; and wherein
the form and depth of creping of the supporting layers and the overlapping length of the fibers in the central layer are adjusted with respect to each other such that the local elongation of the creping does not interrupt the central layer.

4,439,478
HEAT SEALABLE, MULTI-PLY POLYPROPYLENE FILM
Daniel F. Ferguson, Spartanburg; Frederick D. Stringer, Greenville, and Michael D. Esakov, Greer, all of S.C., assignors to W. R. Grace & Co., Cryovac Division
Continuation of Ser. No. 152,970, May 23, 1980, abandoned. This application Apr. 15, 1982, Ser. No. 368,598
Int. Cl.³ B32B 27/08
U.S. Cl. 428—137 6 Claims

1. A heat-sealable, multi-layer film for packaging comprising:
(a) a base layer comprising propylene homopolymer; and,
(b) a skin layer affixed to one surface of said base layer comprising a blend of 60% to 80% by weight of film grade, thermoplastic propylene-ethylene copolymer with 40% to 20% by weight of propylene homopolymer, the ratio of thickness of the base layer to skin layer being at least 4:1.

4,439,479
SLIPPERY BIAXIALLY STRETCHED POLYESTER FILMS
Tamaki Kanai, Sagamihara; Hirofumi Yoshikawa, Hachioji; Takashi Yamagishi, Yokohama; Kenji Suzuki, and Yoshikatsu Ohta, both of Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan
Filed Jan. 11, 1982, Ser. No. 338,652
Int. Cl.³ B32B 3/00
U.S. Cl. 428—148 6 Claims

1. A slippery biaxially stretched polyester film having a substantially continuous coating with numerous protrusions substantially having form retention, said coating being formed substantially all over on at least one surface of the film and at least comprising a film-forming polymeric compound and a metal salt having the composition of formula (I)

$$Me_y(CH_2{=}\underset{\displaystyle R}{\underset{|}{C}}COO)_y(O)_z(X)_w \qquad (I)$$

wherein Me represents a metal ion having a valence of 2 to 6, R is a hydrogen atom or a methyl group, X is one equivalent of an anion, y is a number of from 1 to 6, z is a number of from 0 to 2, w is a number of from 0 to 8, and p is a number equal to the quotient obtained by dividing the total of $y+2z+w$ by the atomic valence of Me, provided that when y is a number of 2 or more, two or more R groups may be identical or different, when w is a number of 2 or more, two or more X ions may be identical or different, and the group

$$CH_2{=}\underset{\displaystyle CH_3}{\underset{|}{C}}COO$$

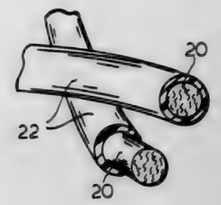
in the case of R=methyl is contained in a number of not more than 2 for each Me, and said coating consisting of a substantially continuous base coating layer in contact with the surface of the polyester base film and numerous minute protrusions integral with the base coating layer and extending outwardly therefrom.

4,439,480
RADIATION CURED COATING AND PROCESS THEREFOR
Peter R. Sachs, New Windsor, and James W. Sears, Newburgh, both of N.Y., assignors to Tarkett AB, Ronneby, Sweden
Continuation of Ser. No. 192,587, Oct. 1, 1980, Pat. No. 4,326,001. This application Apr. 19, 1982, Ser. No. 369,752
Int. Cl.³ B05D 3/06
U.S. Cl. 428—161 22 Claims

1. Method of forming a pigmented, radiation cured coating on a substrate comprising:
(a) applying to the substrate a pigmented first layer between about 0.01 and about 0.1 mm thick of radiation curable material and subjecting such layer to ionizing irradiation or ultraviolet light in an atmosphere containing at least about 5,000 ppm oxygen until the radiation curable material is cured except for its surface; and
(b) then applying to selected areas of the surface of the thus partially cured first layer an unpigmented second layer of the same or a different radiation curable material and subjecting the second layer to ionizing irradiation or ultraviolet light in an inert atmosphere containing less than about 1,000 ppm oxygen to thereby completely cure said second layer and complete the cure of the first layer.

4,439,481
RESOLE TREATED PAPERMAKERS FELT AND METHOD OF FABRICATION
Cary P. Johnson, Clifton Park, and Jerry G. Sokaris, Troy, both of N.Y., assignors to Albany International Corp., Albany, N.Y.
Filed Mar. 4, 1983, Ser. No. 472,080
Int. Cl.³ B32B 5/02
U.S. Cl. 428—235 6 Claims

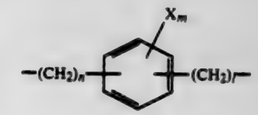
1. An intermediate wet-press felt fabric, which comprises;
a first layer of interwoven machine direction and cross-machine direction yarns; and
a second layer of non-woven staple fibers, needled to the first layer;



said yarns and fibers having a coating of a synthetic, cross-linkable, polymeric resin.

4,439,482
PRESSURE-SENSITIVE ADHESIVE TAPE
Masakazu Suematsu, Ibaraki, Japan, assignor to Teijin Limited, Osaka, Japan
Filed Nov. 12, 1981, Ser. No. 320,847
Claims priority, application Japan, Nov. 17, 1980, 55-163345[U]
Int. Cl.³ B32B 7/00
U.S. Cl. 428—252 9 Claims

1. A pressure-sensitive adhesive tape having an ultimate elongation in the lengthwise direction of 10–15% comprising:
(A) a base woven fabric which comprises as the warp a flat yarn of polyester fibers containing a residue of the following formula in the molecular chain:



in which X is $-SO_3Na$, $-X'$, $-OR$, $-R'$ or $-OAr$, X' is halogen, R and R' are independently alkyl, Ar is an aromatic radical which may optionally be substituted, m is 1 to 3, n and l are independently 0 to 2, and the bonding positions of the $(CH_2)_n-$ and $-(CH_2)_l-$ may be ortho-, meta- or para-positions;
(B) a resin layer laminated to at least one side of said base fabric without an intermediate adhesive layer to form a laminate;
(C) a releasing agent on one surface of said laminate; and
(D) an adhesive on the other surface of said laminate;
wherein said yarn has a tensile strength of greater than about 2 g/d and an elongation of greater than about 20% and having a strength in the weft direction of at least 15 Kg/25 mm width also having a tearing strength of no more than 400 g.

4,439,483
SPRAY-SUPPRESSION DEVICE
Earle R. Ellis, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 365,342, Apr. 5, 1982, Pat. No. 4,391,870. This application May 9, 1983, Ser. No. 492,528
The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.
Int. Cl.³ B32B 7/02
U.S. Cl. 428—287 9 Claims

1. A laminated spray-suppression device comprising a non-woven fabric core layer encapsulated on each side with an adhesive layer, a polymeric backing layer fusion-bonded to one of the adhesive layers and a polymeric grass-like, three-dimensional layer fusion-bonded to the other adhesive layer.

4,439,484
MULTI-LAYER BEARING WITH COATING OF TETRAFLUOROETHYLENE-PERFLUOROALKYLVINYL EITHER COPOLYMER RESIN AND POLYTETRAFLUOROETHYLENE RESIN
Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan
Filed Aug. 3, 1982, Ser. No. 404,673
Claims priority, application Japan, Aug. 12, 1981, 56-126125
Int. Cl.³ B32B 15/00, 27/00
U.S. Cl. 428—318.4 2 Claims

1. A multi-layer bearing comprising:
a metal backing layer; and
a porous material layer lined with said metal backing layer, said porous material layer being impregnated in its interior, and coated on its surface with a composition containing, by volume, 0.1–50% tetrafluoroethylene-perfluoroalkylvinyl ether copolymer resin and the balance essentially polytetrafluoroethylene.

4,439,485
ELECTRIC DISCHARGE RECORDING MATERIALS
Shuji Takemura, Chibe; Yoshihiko Kawano, and Kazumi Hirakawa, both of Tokyo, all of Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 28, 1981, Ser. No. 316,051
Claims priority, application Japan, Oct. 31, 1980, 55-153463
Int. Cl.³ B05D 5/12; B32B 5/16; B41M 5/24
U.S. Cl. 428—323 8 Claims

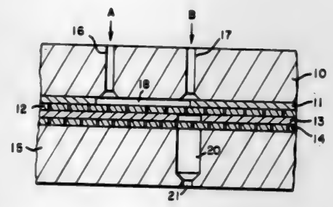


1. A discharge recording material which comprises a support, a colored layer on the support, and a metal layer deposited on the colored layer, the colored layer comprising carbon-black aggregates and a binder as main components, the carbon-black aggregates having a mean size within a range of from 0.5 to 5.0μ and being an aggregate of carbonblack particles coated with a plasticizer.

4,439,486
MAGNETIC RECORDING MEDIUM
Yasuyuki Yamada; Masaaki Fujiyama, and Nobuo Tsuji, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 12, 1982, Ser. No. 357,448
Claims priority, application Japan, Mar. 12, 1981, 56-35891
Int. Cl.³ G11B 5/70
U.S. Cl. 428—332 16 Claims

1. A magnetic recording medium, comprising:
a nonmagnetic support base; and
a magnetic layer formed on a surface of the base, the magnetic layer consisting essentially of:
ferromagnetic particles having a specific surface area of 30 m^2/g or more; and
a binder consisting essentially of a nitrocellulose having an average degree of polymerization of about 50 to 300 and a degree of nitration of 10.7 to 13.0, a polymer selected from the group consisting of a thermoplastic polyurethane resin and a polyurethane prepolymer, and a polyisocyanate compound.

4,439,487
POLYESTER/NYLON BICOMPONENT FLAMENT
Uel D. Jennings, Signal Mountain, Tenn., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.
Filed Dec. 17, 1982, Ser. No. 450,778
Int. Cl.³ D02G 3/00
U.S. Cl. 428—397 6 Claims



1. A bicomponent filament having a dumbbell cross-sectional shape, consisting of between 35 and 65% by volume antimony-free polyethylene terephthalate modified with 0.5 to 3 mole percent 5-(sodium sulfo) isophthalate units, and a complementary amount of polyhexamethylene adipamide, the exterior surface of said bicomponent filament being at least 75% but not more than 95% of one of the polymeric components, the interfacial junction between the two polymeric components being at least in part jagged, said bicomponent filament being readily crimpable and dyeable, and having a high resistance to longitudinal splitting.

4,439,488
ENCAPSULATION BY ENTRAPMENT WITHIN POLYHYDROXY POLYMER BORATES
Donald Trimnell, and Baruch S. Shasha, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Feb. 26, 1982, Ser. No. 352,662
Int. Cl.³ B01J 13/02; B32B 23/12, 27/04
U.S. Cl. 428—402.24 15 Claims

1. A method of encapsulating a chemical biological agent comprising the steps of:
a. preparing a solution or dispersion of a suitable chemical biological agent in a matrix-forming material comprising an aqueous paste of a gel-forming polyhydroxy polymer (PHP), wherein said paste has a solids concentration of said PHP of from about 10–40%, and wherein the relative amount of said PHP with respect to said biological agent is sufficient to entrap said agent within a matrix of said PHP;
b. reacting from a single phase at an alkaline pH said PHP with boric acid or a boric acid derivative to form a continuous insolubilized matrix gel having entrapped therein uniformly dispersed, discontinuous domains of said agent; and
c. recovering free-flowing particles of said entrapped chemical biological agent.

11. A composition of matter produced by the process of claim 1.

4,439,489
PARTICLES COVERED WITH A CURED INFUSIBLE THERMOSET FILM AND PROCESS FOR THEIR PRODUCTION
Calvin K. Johnson, Lockport, and David R. Armbruster, Forest Park, both of Ill., assignors to Acme Resin Corporation, Forest Park, Ill.
Filed Feb. 16, 1982, Ser. No. 349,222
Int. Cl.³ B32B 27/42
U.S. Cl. 428—404 22 Claims

1. A process for the preparation of particulate matter coated with a cured phenolic resin wherein the improvement comprises mixing an uncured resin with particulate matter resistant to melting or decomposition at temperatures below about 450° F., preheated to a temperature of from about 300° F. to about 450° F., adding with continued mixing from about 0.03% to about 0.5% by weight, based on the weight of the particulate matter, of a lubricant to the mix of resin and particulate matter and maintaining the resultant mixture above about 300° F. for a sufficient time to cure the resin, whereby there is obtained a product containing individually coated particles having high abrasion resistance and improved crush resistance suitable for use as a propping agent in subterranean formations.

12. Coated particulate matter consisting essentially of particles individually coated with a cured phenolic resin prepared by mixing an uncured resin with particulate matter resistant to melting or decomposition at temperatures below about 450° F., preheated to a temperature of from about 300° F. to about 450° F., adding with continued mixing from about 0.03% to about 0.5% by weight, based on the weight of the particulate matter, of a lubricant to the mix of resin and particulate matter and maintaining the resultant mixture above about 300° F. for a sufficient time to cure the resin.

13. The coated particulate matter of claim 12 wherein the particulate matter is sand.

4,439,490
EXPANDABLE POLYMERIC STYRENE PARTICLES
Richard A. Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.
Division of Ser. No. 483,406, Apr. 8, 1983, Pat. No. 4,429,058.
This application Oct. 24, 1983, Ser. No. 544,919
Int. Cl.³ C08J 9/22
U.S. Cl. 428—407 3 Claims

1. An expandable polymeric styrene particle having incorporated therein a blowing agent, 0.025% to about 1.0% by weight of pentaerythritol tetrastearate and an overcoat of 0.04% to about 0.4% of finely divided glyceryl monostearate.

4,439,491
OXIDATION RETARDANT FOR GRAPHITE
William F. Wilson, Elizabethton, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.
Filed Nov. 18, 1982, Ser. No. 442,651
Int. Cl.³ B32B 9/00; C09K 15/32
U.S. Cl. 428—408 4 Claims

1. An oxidation retardant solution for carbon and graphite comprising a solution of monobasic ammonium phosphate, zinc orthophosphate, phosphoric acid, boric acid and cupric oxide.

3. A graphite electrode treated with the solution of claim 1.

4,439,492
INJECTION MOLDED ARTICLES WITH IMPROVED SURFACE CHARACTERISTICS
Akihiro Wada, Inagi; Kichiya Tazaki, Yokohama; Tamotsu Tahara, Omiya; Hiroshi Suzuki, Tokyo, and Yukihisa Mizutani, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan
Division of Ser. No. 177,184, Aug. 11, 1980, Pat. No. 4,340,551.
This application Mar. 29, 1982, Ser. No. 363,025
Int. Cl.³ B32B 9/00, 9/04
U.S. Cl. 428—409 6 Claims

1. Injection molded articles of thermoplastic resin compositions containing at least one of reinforcing materials and fillers in an amount at least 4% by weight, and comprising a smooth skin layer constituted substantially of only the resin component over the outer surface of the molded article, said layer bestowing on the molded article a mirror surface having surface gloss (ASTM D 523; 60°) well maintained within a decrement of



reflectivity of 10% or less, based on the ideal perfect mirror reflection of the intrinsic resin employed.

4,439,493
MULTILAYER HEAT SEALABLE ORIENTED PACKAGING FILM AND METHOD OF FORMING SAME
Carl C. Hein, Pittsford; John R. Wagner, Jr., Rochester, and Mark S. Powell, Egypt, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Feb. 4, 1983, Ser. No. 463,744
Int. Cl.³ B32B 27/08, 27/30, 27/32; B65D 65/40
U.S. Cl. 428—414 12 Claims

1. A heat sealable multilayer structure comprising:
(I) a substrate comprising a polyolefin film;
(II) a layer on at least one surface of (I), said layer consisting essentially of a random copolymer of ethylene and propylene containing from about 0.5 to about 6% by weight of ethylene;
(III) a primer coating on at least one surface of said layer (II); and
(IV) a heat sealable layer on said coating (III), said heat sealable layer comprising an interpolymer of (a) a minor amount by weight of acrylic acid, methacrylic acid or mixtures thereof and (b) a major amount of neutral monomer esters comprising (1) methyl acrylate or ethyl acrylate and (2) methyl methacrylate.

4,439,494
SILYL-POLYACRYLATES FOR POLYCARBONATE SUBSTRATES
Daniel R. Olson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 1, 1982, Ser. No. 353,685
Int. Cl.³ B32B 9/04; B05D 3/02
U.S. Cl. 428—412 14 Claims

10. A method of improving the abrasion resistance of a thermoplastic substrate which comprises
(1) treating the surface of the thermoplastic substrate with a heat curable hardcoat composition and
(2) heating the treated substrate to a temperature in the range of from 85° C. to 140° C., where the heat curable hardcoat composition comprises by weight,
(A) 20 to 80% of colloidal silica,
(B) 80 to 20% of a silyl-containing acrylate selected from the class consisting of
(i) an alkylacrylate-acryloxyalkyl polyalkoxysilane copolymer or
(ii) a mixture of alkylacrylateacrylic acid copolymer and a glycidoxyalkylpolyalkoxysilane
(C) 1% to 20% of a UV absorber, based on the weight of (A), (B), and (C).

14. A polycarbonate substrate treated in accordance with claim 10.

4,439,495

ACRYLIC MODIFIED ANIONIC WATER DISPERSIBLE STYRENE (METH)ACRYLONITRILE COPOLYMERS

Michael A. Tobias, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 275,000, Jun. 18, 1981, Pat. No. 4,360,642. This application Sep. 29, 1982, Ser. No. 426,404
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—463 8 Claims

1. A coating composition comprising:

(A) a graft copolymer of an acrylic monomer or monomers or of acrylic monomer or monomers and other monomers copolymerizable therewith and a random copolymer of a styrene and between about 20 weight percent and about 30 weight percent of the random copolymer of (meth)acrylonitrile, in which at least about 8 percent of the total weight of said graft copolymer is derived from acrylic acid, methacrylic acid, or both, said graft copolymer being neutralized with ammonia, ammonium hydroxide, or a tertiary amine; and

(B) a cross-linking agent;

said composition being diluted with water to a solids content of between about 10 weight percent and about 40 weight percent.

4,439,496

WATER-PROOF PHOTOGRAPHIC SUPPORT

Shigehisa Tamagawa; Tetsuro Fuchizawa, both of Fujinomiya, and Minoru Ono, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1982, Ser. No. 372,818
Claims priority, application Japan, May 29, 1981, 56-82162
Int. Cl.³ B32B *23/08, 27/08;* D21H *3/44*
U.S. Cl. 428—513 10 Claims

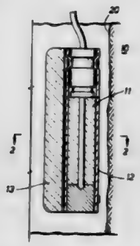
1. A water-proof photographic support comprising a paper sheet coated with a polyolefin on both surfaces thereof, in which the paper sheet is sized with a combination of an alkylketene dimer, a cationic polyacrylamide and an anionic polyacrylamide, the alkylketene dimer being present in an amount of 0.2 to 3.0% by weight and the total amount of cationic polyacrylamide and anionic polyacrylamide being 0.5 to 4.0% by weight, all percent by weight being based on the weight of the absolutely dried pulp constituting the paper sheet.

4,439,497

ULTRASONIC SOUND ABSORBER

Rocco DiFoggio, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 27, 1982, Ser. No. 382,535
Int. Cl.³ F16F *7/00, 13/00*
U.S. Cl. 428—539.5 5 Claims



1. A compact ultrasonic sound adsorbing material for use with the transducer of an acoustical logging system comprising:

a sound adsorber, said adsorber being formed of sintered porous metal powder shaped to surround a portion of the transducer to adsorb acoustic waves arriving from predetermined directions, the surface of said adsorber facing said predetermined direction being retained in the as molded condition and free of any covering; and

a viscous liquid, said liquid filling the pore space of the sound adsorber.

4,439,498

CORROSION RESISTANT STAINLESS STEEL COVERED ELECTRODE

Edward P. Sadowski, Ringwood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 717,093, Aug. 24, 1976. This application Aug. 21, 1978, Ser. No. 935,349
Int. Cl.³ B22F *7/04*
U.S. Cl. 428—558 1 Claim

1. A stainless steel welding electrode exhibiting corrosion resistant characteristics in chloride containing environments, the electrode comprising a core wire and a flux coating, the core wire including up to about 0.06% carbon, about 0.5% silicon, from about 23% to about 27% nickel, from about 19% to about 22% chromium, from about 5.5% to about 8% molybdenum, from about 0.2% to about 2% manganese, up to about 0.2% aluminum, up to about 0.1% titanium, from about 0.005% to about 0.1% of an element selected from the group consisting of calcium and magnesium, and the balance essentially iron; and the flux coating containing, in parts by weight, about 23 parts to about 27 parts calcium carbonate, from about 16 parts to about 20 parts of titania, from about 14 parts to about 20 parts of a compound selected from the group consisting of manganese dioxide and manganese carbonate, from about 16 parts to about 20 parts of cryolite, from about 16 parts to about 20 parts of columbium, and from about 2 parts to about 4 parts of a material selected from the group consisting of bentonite and mica.

4,439,499

STRATIFIED CORROSION-RESISTANT COMPLEX

Michel E. Royer, La Balme de Sillingy, France, assignor to S. T. Dupont, Paris, France

Continuation of Ser. No. 236,376, Feb. 20, 1980. This application Feb. 23, 1983, Ser. No. 469,057
Claims priority, application France, Feb. 20, 1980, 80 03699
Int. Cl.³ C22C *19/05;* B32B *15/04*
U.S. Cl. 428—670 6 Claims

1. A corrosion-resistant metal laminate, comprising:

a metal alloy substrate comprising, by weight, at least 45% nickel, at least 7% chromium, at least 7% molybdenum, and balance composition of up to 15%; and

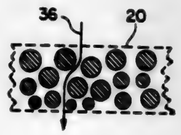
an exterior layer formed on said substrate, said exterior layer being chosen from the group consisting of the noble metals and Chinese lacquer.

4,439,500

GAS SWITCH

Henry F. Gibbard, Schaumburg; Richard C. Murray, Palatine, and Jay M. Cech, Elmhurst, all of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 27, 1982, Ser. No. 402,382
Int. Cl.³ H01M *12/06*
U.S. Cl. 429—27 10 Claims



1. An air cell battery comprising:

an anode casing containing anode material and a cathode casing containing cathode material, said cathode casing having an opening;

an insulator located between and attached to said anode casing, and said cathode casing and a separator positioned between said anode material and said cathode material;

a bidirectional gas switch comprising;

a single membrane covering said opening in said cathode casing, said membrane having at least first and second sides and having at least one formed passageway having a predetermined geometry, said membrane and said cathode and anode casings thereby defining an inner region within said air cell battery and an outer region external to the air cell battery;

a liquid having a low vapor pressure contained at least within said passageway of said membrane when a pressure difference across said membrane between said inner and outer regions is less than a first predetermined value, thereby preventing an exchange of gas between said inner region and said outer region, said liquid flowing substantially out of said passageway and onto a side of said membrane adjacent said gas containing region having a lower pressure value when the air cell battery supplies electrical current and oxygen is extracted from said inner region to cause said pressure difference across said membrane to exceed a second predetermined value thereby opening said passageway and allowing oxygen from said outer region to move into said inner region,

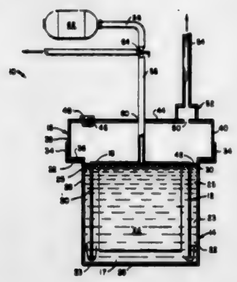
and wherein, when the air cell battery ceases to supply electrical current, said pressure difference becomes less than said first predetermined value and said liquid flows back into said passageway thereby closing said passageway.

4,439,501

CHARGE-RETENTION STORAGE BATTERY

Hugh L. Flanagan, 22 Randolph St., Canton, Mass. 02021

Filed Sep. 8, 1982, Ser. No. 416,081
Int. Cl.³ H01M *2/38, 6/38*
U.S. Cl. 429—70 6 Claims



1. Electric storage battery capable of retaining a charge even during prolonged periods of non-use comprising:

(a) an inner casing defined by a planar, horizontally disposed top surface, first and second parallel vertically disposed end walls and parallel first and second vertically disposed side walls whereby to provide a sealed compartment open at the bottom; a multiplicity of battery cells being provided within said inner casing for the containment of electrolyte, each said battery cell being provided with spaced apart positive and negative electrodes, and a test and fill port being provided in said top surface for each said battery cell;

(b) an outer casing of generally cubic shape larger in dimension than said inner casing defined by a planar, horizontally disposed bottom parallel to said horizontally disposed top surface and vertically disposed side and end walls open at its top, said inner casing being located and supported within said outer casing and spaced apart from said bottom and side and end walls of said outer casing in such a manner that a passageway is provided on each side of said inner casing for the flow of electrolyte to and from the battery cells inside of said inner casing through the said open bottom of the inner casing and between the vertical end and side walls of the said inner and outer casings;

(c) a reservoir for electrolyte defined by a horizontally disposed top surface and vertically disposed sides and ends extending downwardly therefrom, open at its bottom, and connected to said outer casing and disposed with respect thereto at a location above the outer casing into which electrolyte is transferred from said inner casing under pressure of inert gas during periods of non-use of the battery;

(d) a cubic-shaped pressure chamber defined by a horizontally disposed top surface and connected to said horizontally disposed top surface of said reservoir, and a multiplicity of test and fill ports in said top surface of said pressure chamber corresponding in number to those provided in the inner casing top surface;

(e) a first conduit means connected to said pressure chamber for connection to an inert gas source and for introduction of inert gas into the said pressure chamber;

(f) a second conduit means comprising a plurality of tubes each interconnected with said top surface of said pressure chamber and said top surface of said inner casing extending through said reservoir and pressure chamber and terminating in the said test and fill ports; and an opening being provided in each said tube in that portion located within the said pressure chamber whereby inert gas introduced into said pressure chamber can be provided at equal pressure and sufficient pressure to each said battery cell within said inner casing to case said electrolyte to flow out of said inner casing into said reservoir while simultaneously blanketing the exposed electrodes and protecting them against oxidation, and electrolyte can be added to the said battery cells as and when desired; and

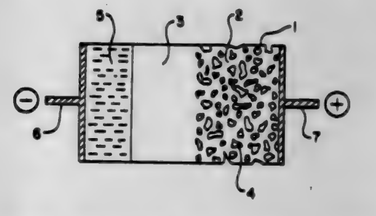
(g) means connected to the said reservoir for venting the reservoir to the atmosphere whereby once the inert gas pressure is released the electrolyte will flow back from the reservoir under gravity into the battery cells in the said inner casing.

4,439,502

GALVANIC ELEMENT HAVING A POROUS SOLID-ELECTROLYTE SINTER FRAMEWORK CONTAINING THE CATHODE MATERIAL

Rainer Bittihn, and Eren Yalcin, both of Kelkheim, Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,408
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129679
Int. Cl.³ H01M *4/36*
U.S. Cl. 429—104 11 Claims



1. A galvanic element with solid electrolyte, a negative alkali metal electrode and positive electrode, wherein

the solid electrolyte forms a self-supporting porous sinter framework in at least one electrode.

4,439,503

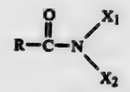
METAL-ORGANIC LIQUID DEPOLARIZER ELECTROCHEMICAL CELL

Narayan Doddapaneni, Glenside, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 21, 1983, Ser. No. 506,463
Int. Cl.³ H01M 6/14
U.S. Cl. 429—108 8 Claims

1. In a non-aqueous electrochemical cell system having an active metal anode, a cathode and a non-aqueous electrolyte, the improvement comprising

an organic cathode depolarizer represented by the formula



where R is a group selected from those consisting of alkyl, alkoxy, phenyl or phenoxy groups and

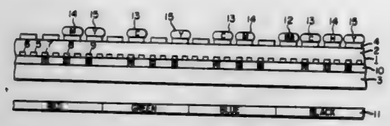
where X_1 and X_2 are halogens.

4,439,504

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND COLOR ELECTROPHOTOGRAPHIC PROCESS

Shunichi Ishihara, Kodaira; Nobuo Kitajima, Toride; Yuji Nishigaki, Tokyo, and Nobuko Kitahara, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 302,235
Claims priority, application Japan, Sep. 18, 1980, 55-130236
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.³ G03G 13/01, 5/14
U.S. Cl. 430—42 6 Claims



1. A color electrophotographic process which comprises:

applying voltage between a non-transparent electrode and a color filter electrode of an electrophotographic photosensitive member comprising isolated conductive members forming picture elements, a photoconductive layer, non-transparent electrodes and color filter electrodes;

conducting imagewise exposure from the side where color filter electrodes are arranged, resulting in formation of a difference in distribution voltage between the area wherein light passes through the color filter electrode and the area wherein light does not pass through the color filter electrode with regard to the voltage distribution between the non-transparent electrode and the isolated conductive member and between the color filter electrode and the isolated conductive member;

thereby forming a voltage image depending upon the change of the voltage of the isolated conductive member caused corresponding to a difference in distribution voltage; and

developing said voltage image with a color toner corresponding to a color light passing through the color filter electrode.

4,439,505

ELECTRICAL CONDUCTIVE COMPOSITIONS

Jerome H. Perlstein, Rochester, and Neil F. Haley, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 21, 1982, Ser. No. 341,418
Int. Cl.³ G03G 5/14
U.S. Cl. 430—58 8 Claims

1. An electrically conducting composition comprising an electrically insulating polymer and a charge transfer complex characterized in that the charge transfer complex (a) is in the form of dendrite crystals throughout the polymer and (b) is a salt consisting of a cation of 2-(4,5-dihydronaphtho[1,2-d]-1,3-dithiol-2-ylidene)-4,5-dihydronaphtho[1,2-d]-1,3-dithiole and an anion selected from the group consisting of 7,7,8,8− tetracyanoquinodimethane, ClO_4^-, BF_4^-, PF_6^-, F^-, Cl^-, I^-, and I_3^-.

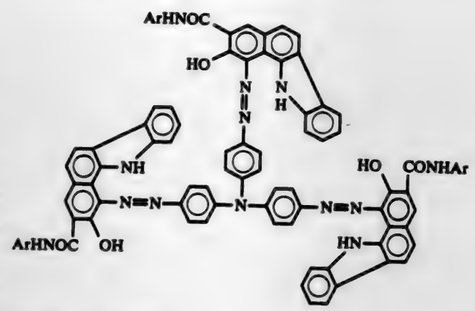
4,439,506

MULTILAYER ELECTROPHOTOGRAPHIC ELEMENT CONTAINING A TRISAZO CHARGE CARRIER GENERATING SUBSTANCE AND AN ANTHRACENE OR DIVINYL BENZENE CHARGE CARRIER TRANSFER SUBSTANCE

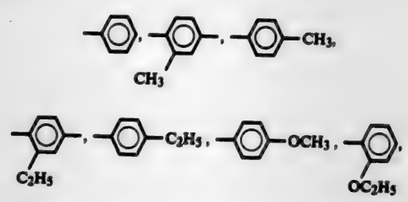
Masafumi Ohta, and Masaomi Sasaki, both of Susono, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,849
Claims priority, application Japan, May 28, 1981, 56-80157; May 28, 1981, 56-80159; May 28, 1981, 56-80167; May 28, 1981, 56-80169; May 29, 1981, 56-82239; May 29, 1981, 56-82241; Jun. 10, 1981, 56-88107; Jun. 10, 1981, 56-88109; Jun. 10, 1981, 56-88114; Jun. 12, 1981, 56-90615; Jun. 12, 1981, 56-90616; Jan. 18, 1982, 57-5687; Jan. 18, 1982, 57-5689
Int. Cl.³ G03G 5/06
U.S. Cl. 430—58 14 Claims

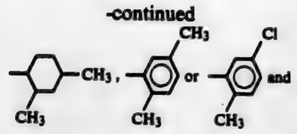
1. An electrophotographic element comprising an electrically conductive substrate, a charge carrier generating layer and a charge transfer layer superimposed on said substrate, wherein said charge carrier generating layer contains a triasazo compound having the general formula (I):



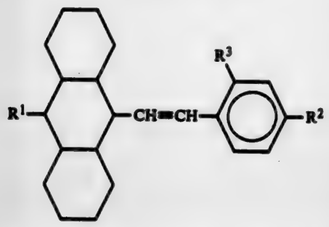
wherein, Ar represents



-continued

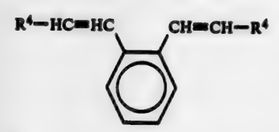


said charge transfer layer contains a charge transfer substance having the general formula (II) or (III):



(II)

wherein, R^1 represents a hydrogen or halogen atom, R^2 represents hydrogen, an alkyl group having 1–4 carbon atoms, an alkoxy group having 1–4 carbon atoms, a dialkylamino group, or a substituted or non-substituted diaralkylamino group, and R^3 represents hydrogen, an alkyl group or a halogen atom



(III)

wherein, R^4 represents a carbazolyl group, a pyridyl group, a thienyl group, an indolyl group, a furyl group or a substituted or non-substituted phenyl, styryl, naphthyl or anthryl group, said substituent being one selected from the group consisting of dialkylamino, alkyl, alkoxy, halogen atom, aralkylamino, N-alkyl-N-aralkylamino, and amino groups

and a binder.

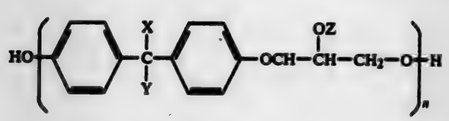
4,439,507

LAYERED PHOTORESPONSIVE IMAGING DEVICE WITH PHOTOGENERATING PIGMENTS DISPERSED IN A POLYHYDROXY ETHER COMPOSITION

Frank Y. Pan, Rochester; Ian D. Morrison, and Leon A. Teuscher, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 420,961
Int. Cl.³ G03G 5/00, 5/04
U.S. Cl. 430 26 Claims

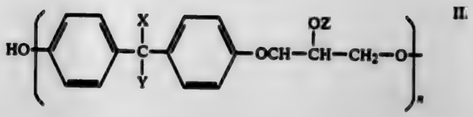
1. An improved layered photoresponsive imaging device comprised in the order stated of (1) an optional supporting substrate, (2) a conductive layer, (3) a photogenerating layer comprised of an inorganic photoconductive composition, or an organic photoconductive composition, dispersed in a resinous binder material comprised of a poly(hydroxyether) material selected from the group consisting of those of the following formulas:



I.

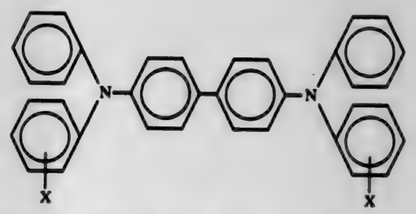
and

-continued



II.

wherein X and Y are independently selected from the group consisting of aliphatic groups and aromatic groups, Z is hydrogen, an aliphatic group, or an aromatic group, and n is a number of from about 50 to about 200, and (4) in contact with the photogenerating layer a charge transport layer comprised of an electrically active composition dispersed in an insulating organic resinous binder, which composition is of the following formula:



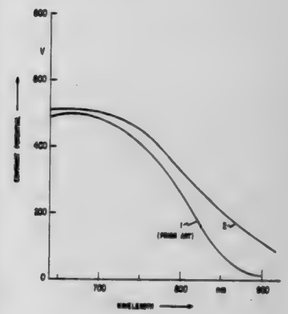
wherein X is selected from the group consisting of ortho (CH_3), meta (CH_3), para (CH_3), ortho (CL), meta (CL) and para (CL).

4,439,508

ELECTROPHOTOGRAPHIC RECORDING MATERIAL COMPRISES ARSENIC, SELENIUM AND TELLURIUM

Manfred Lutz, and Bernd Reimer, both of Warstein, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,943
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020940
Int. Cl.³ G03G 5/08
U.S. Cl. 430—84 5 Claims



1. In an electrophotographic recording material comprising a photoconductor made of a selenium compound applied as a layer on an electrically conductive substrate, the improvement wherein the photoconductor comprises a compound of ar-

senic, selenium and tellurium of the formula $As_2Se_{3-x}Te_x$, where $0.05<x<0.5$, and said layer of said compound is the sole photoconductive layer in the electrophotographic recording material.

4,439,509

PROCESS FOR PREPARING OVERCOATED ELECTROPHOTOGRAPHIC IMAGING MEMBERS

Richard L. Schank, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,870
Int. Cl.³ G03G 5/04
U.S. Cl. 430—132 **11 Claims**

1. A process for forming an overcoated electrophotographic imaging member comprising the steps of providing an electrophotographic imaging member, applying a coating in liquid form of a cross-linkable siloxanol-colloidal silica hybrid material having at least one silicon bonded hydroxyl group per every three —SiO— units on said electrophotographic imaging member, and contacting said coating with an ammonia gas condensation catalyst until the siloxanol-colloidal silica hybrid material forms a hard cross-linked solid organosiloxane-silica hybrid polymer layer.

4,439,510

METHOD FOR THE PRODUCTION OF DRY TONER FOR ELECTROSTATOGRAPHY USING INTERFACIAL POLYCONDENSATION TECHNIQUES

Arthur R. McLoughlin, Adelaide, Australia, assignor to Research Holdings Pty Limited, Eastwood, Australia

PCT No. PCT/AU81/00179, § 371 Date Aug. 10, 1982, § 102(e) Date Aug. 10, 1982, PCT Pub. No. WO82/02005, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 3, 1981, Ser. No. 414,321
Claims priority, application Australia, Dec. 11, 1980, PE6894
Int. Cl.³ G03G 9/16
U.S. Cl. 430—137 **9 Claims**

1. A method for the preparation of electroscopic marking particles comprising the steps of

blending coloring matter, pressure fixable material and if necessary solvent therefore to form an ink,

adding to said ink in dissolved form a first reactive substance and homogenising said first reactive substance with said ink,

preparing an aqueous phase emulsification solution containing a water soluble emulsion stabiliser and a pH stabiliser,

emulsifying said ink containing said first reactive substance in said emulsification solution in the form of droplets,

adding to said emulsion an aqueous solution of a second reactive substance,

stirring said emulsion and said aqueous solution of said second reactive substance to allow reaction between said first reactive substance and said second reactive substance to encapsulate said emulsified ink droplets by forming a polymeric shell around said emulsified ink droplets, and

spray drying the so formed capsule slurry to produce dry electroscopic marking particles,

characterised by said emulsion stabiliser comprising albumin and said albumin being rendered water insoluble before or during said spray drying step.

4,439,511

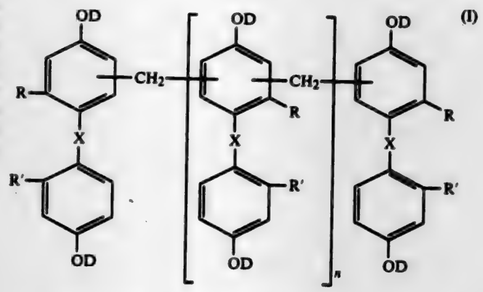
LIGHT-SENSITIVE MIXTURE BASED ON O-NAPHTHOQUINONE DIAZIDE ESTER OF CONDENSATE OF BISPHENOL AND FORMALDEHYDE AND LIGHT-SENSITIVE COPYING MATERIAL PREPARED THEREFROM

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,788
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127754
Int. Cl.³ G03C 1/54, 1/60
U.S. Cl. 430—165 **14 Claims**

1. A light-sensitive mixture, comprising:

a light-sensitive compound selected from a 1,2-naphthoquinone-2-diazide-sulfonic acid ester of a condensation product formed from a bisphenol and formaldehyde, wherein the ester corresponds to the formula I



(I)

in which R and R′ denote hydrogen atoms or lower alkyl groups, X denotes a saturated alkylene, hydroxyalkylene or dihydroxyalkylene group having 6 to 18 carbon atoms, D denotes the 1,2-naphthoquinone-2-diazide-5-sulfonyl radical or the 1,2-naphthoquinone-2-diazide-4-sulfonyl radical and n denotes a number from 1 to 20; and

a binder which is insoluble in water, but is soluble or at least swellable in aqueous alkaline solutions, wherein said ester and said binder are present in amounts sufficient to promote, upon exposure to light, a differentiation of solubility between exposed and unexposed portions of said mixture in dilute aqueous-alkaline solutions.

4,439,512

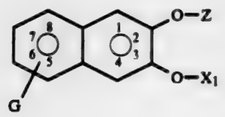
CHROMOGENIC COMPOSITIONS CONTAINING STABILIZED PHENOLIC COUPLER COMPOUNDS, RECORDING MATERIALS AND PROCESSES UTILIZING SAME

Claude Ceintrey, Paris, France, assignor to La Cellophane, Paris, France

Division of Ser. No. 215,067, Dec. 10, 1980, abandoned, which is a continuation of Ser. No. 911,718, Jun. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 905,360, May 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 747,976, Dec. 6, 1976, abandoned. This application Nov. 18, 1982, Ser. No. 442,782
Claims priority, application France, Dec. 5, 1975, 75 37228
Int. Cl.³ G03C 1/52
U.S. Cl. 430—180 **23 Claims**

1. A recording or reproduction material comprising a support and a coating of a sensitive layer on said support, said sensitive layer containing, as essential color forming reactants, a chromogenic compound capable of reacting with a phenolic coupler compound to form a colored reaction product selected from the group consisting of spiropyram compounds, triarylmethane compounds, chromogenic ferric salts, non-photosensitive chromogenic silver salts and diazonium compounds, and

a hydroxyl group-blocked phenolic coupler compound which is the reaction product of a phenolic coupler compound and a hydroxyl group reactive compound capable of replacing the hydrogen atom of each phenolic hydroxyl group of the phenolic coupler compound, the stabilized phenolic compound being non-reactive to the chromogenic compound and being capable of producing the phenolic coupler compound by decomposition in situ wherein the stablized phenolic coupler compound is a derivative of 2,3-dihydroxynaphthalene of the formula

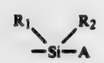


wherein

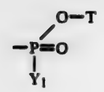
G represents a hydrogen atom, a sulfonic group or a sulfonate of ammonium or an amine and represented by the formula:

$$-SO_3^-, EH^+]$$

in which E represents ammonia or a primary, secondary or tertiary aromatic or aliphatic amine; Z represents a radical of the following formula (IIa), (IIb), or (IIc)



(IIa)



(IIb)

or

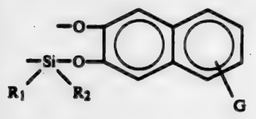
$$C_nH_{2n+1} \quad \text{(IIc)}$$

wherein n is an integer of from 1 to 5 and when Z represents a radical of formula (IIa) then A is a radical R_3 selected from the group consisting of a straight or branched alkyl or alkenyl group of from 1 to 6 carbon atoms which may be substituted by at least one substituent selected from the group consisting of a chlorine atom, a nitrile group, phenyl and alkyl phenyl in which the alkyl has from 1 to 4 carbon atoms; and

X_1 is a triorganosilyl radical of the formula

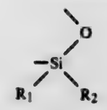


wherein R_1, R_2 and R_3 may be the same or different, and R_1 and R_2 have the same meaning as R_3; or X_1 and A may be linked together to form a divalent radical of the following formula (Va), (Vb) or (Vc):



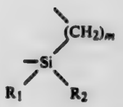
(Va)

-continued



(Vb)

or



(Vc)

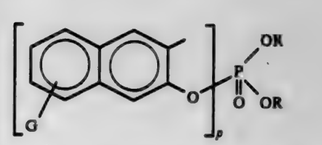
in which the silicon atom is linked to the oxygen atom at the 3-position of the naphthyl group; R_1 and R_2 may be the same or different and are as defined above, m is 1, 2 or 3 and G is as defined above, with the proviso that when there is more than one G group in the molecule they are identical; when Z represent a radical of formula (IIb) then X_1, Y_1 and T are defined according to (A), (B) or (C):

(A) Y_1 represents a radical OR in which R is branched or straight alkyl of from 1 to 8 carbon atoms or the group

$$-O^-, EH^+]$$

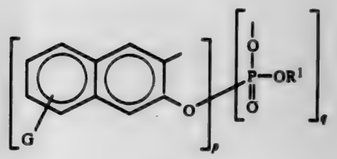
wherein E is as previously defined,

T has the same meaning as R or ammonia, and X_1 is a radical of the formula:



wherein p is 0, 1, 2 or 3 and G and R have the previously given definitions, with the provisos that when there is more than one G group in the molecule they are identical; when one OR group is an oxyammonium group the other OR group is identical and G is a hydrogen atom or a sulfonate group $-SO_3^-$, EH^+ with the EH^+ groups representing the identical radical;

(B) T is a radical OR^1 wherein R^1 is a hydrogen atom or the radical R as previously defined, and Y_1 and X_1 together form a divalent radical of the following formula:



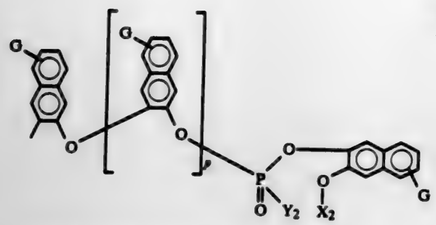
wherein p is 0, 1, 2 or 3, q is 0 or 1 and G and R^1 are as defined above, with the provisos that when q is 1, the atoms of phosphorous are bound by an oxygen atom; when p and q are both 0, X_1 and Y_1 form a valence link; when there is more than one G group in the molecule they are identical; all radicals OR^1 in the molecule are identical to each other and when OR^1 represents an oxyammonium group, the group G is a hydrogen atom or a sulfonate group

$$-SO_3^-, EH^+]$$

in which all EH^+ radicals are identical; or

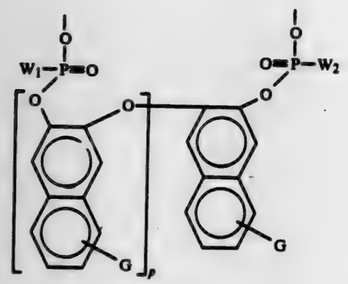
(C) T is a radical of the following formula (IIb_3)

(IIb3)



wherein p and G are as defined above;
X_2 and Y_2 together form a valency link; and
X_1 and Y_1 form a valency link; or
Y_1 and Y_2 together form a radical of the following formula (IIb4)

(IIb4)



in which the groups W_1 and X_1 and W_2 and X_2 each represent a valency link; and when Z represents a radical of formula (IIc) then X_1 also represents the same radical of formula (IIc); or Z and X_1 together for the radical

>C=O.

4,439,513

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH NAPHTHOL REDOX DYE RELEASER

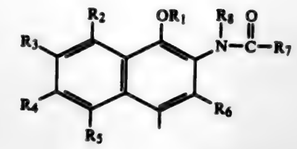
Koso Sato; Shinsaku Fujita; Hideki Naito, and Hiroshi Hara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1982, Ser. No. 453,975
Claims priority, application Japan, Dec. 29, 1981, 56-213111
Int. Cl.³ G03C 1/40, 1/10, 5/54
U.S. Cl. 430—203 26 Claims

22. A method of forming a color image comprising:
(1) imagewise exposing a silver halide color photographic light-sensitive material comprising a support having thereon a layer containing at least one kind of dye releasing 2-acylamino-1-naphthol derivative represented by the following general formula (I):

R—L—D (I)

wherein R represents a reducing group represented by the following general formula (II):

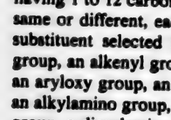


(II)

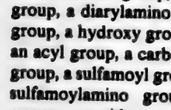
wherein R_1 represents a hydrogen atom or an acyl group having 1 to 12 carbon atoms; R_2 to R_8, which may be the same or different, each represents a hydrogen atom or a substituent selected from an alkyl group, a cycloalkyl group, an alkenyl group, an aryl group, an alkoxy group, an aryloxy group, an aralkyl group, an acylamino group, an alkylamino group, a dialkylamino group, an arylamino group, a diarylamino group, a halogen atom, an acyloxy group, a hydroxy group, a carboxy group, a cyano group, an acyl group, a carbonyl group, a substituted carbamoyl group, a sulfamoyl group, a substituted sulfamoyl group, a sulfamoylamino group, a substituted sulfamoylamino group, a ureido group, a substituted ureido group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfonylamino group, an arylsulfonylamino group, a sulfamoylamino group, a substituted sulfamoylamino group and a nitro group, and the alkyl moiety or the aryl moiety in the above described substituents may be further substituted with an alkoxy group, an aryloxy group, an acyloxy group, a halogen atom, a hydroxy group, a carboxy group, a cyano group, an acyl group, a sulfamoyl group, a substituted sulfamoyl group, a carbamoyl group, a substituted carbamoyl group, an acylamino group, a ureido group, a substituted ureido group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfonylamino group or an arylsulfonylamino group; the groups represented by R_2, R_3, R_4 or R_5 may contain up to 12 carbon atoms, and groups represented by R_6, R_7 or R_8 may contain up to 22 carbon atoms and at least one of them should contain not smaller than 8 carbon atoms; L represents a divalent connecting group between R and D selected from the group represented by the following formulae:

n = [0~3] 0, 1, 2 or 3

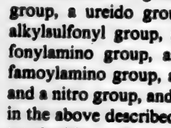
n = [1~2] 1 or 2



n = [1~2] 1 or 2

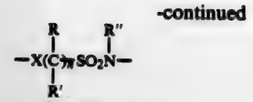


n = [0~3] 0, 1, 2 or 3

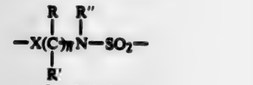


n = [1~3] 1, 2 or 3

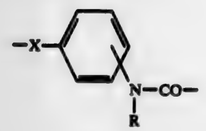
-continued

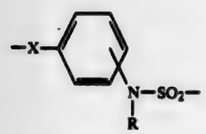


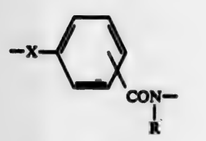
n = [0~3] 0, 1, 2 or 3

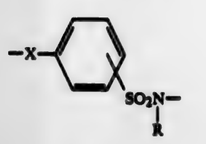


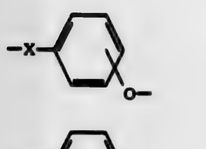
n = [1~3] 1, 2 or 3

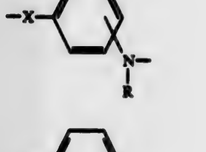


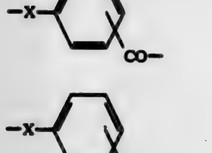


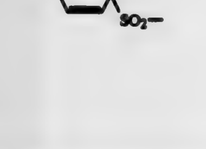




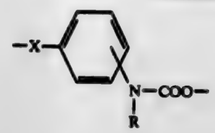


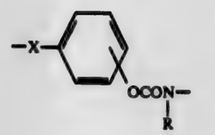


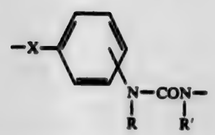




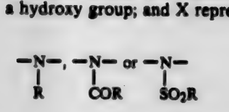
-continued







wherein R, R', R'' and R''', which may be the same or different, each represents a hydrogen atom or a substituent selected from a methyl group, an ethyl group, a hydroxymethyl group, a methoxymethyl group, a carboxymethyl group, a cyanomethyl group, a hydroxyethyl group, a methoxyethyl group, a carboxyethyl group and a cyanoethyl group; the benzene ring may be further substituted with an alkyl group, an alkoxy group, a halogen atom or a hydroxy group; and X represents —O—, —S—,



(wherein R has the same meaning as defined above); and D represents a dye or a precursor of dye,
(2) developing the exposed photographic material to release a diffusible dye and diffusing the diffusible dye into a dye receiving layer.

24. A method of forming a color image as claimed in claim 22, wherein the development is carried out by heating.

4,439,514

PHOTORESISTIVE COMPOSITIONS

Anthony F. Garito, Radnor, Pa., assignor to University Patents, Inc., Norwalk, Conn.

Continuation of Ser. No. 113,552, Jan. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,007, Jun. 25, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 340,471
Int. Cl.³ G03C 1/68
U.S. Cl. 430—272 16 Claims

1. A photographic or photolithographic article comprising a substrate and at least one substantially continuous layer on said subetrate of a polymerizable composition comprising at least one material having at least two acetylenic bonds, at least two of said bonds being in conjugation with one another, said layer comprising a plurality of domains, each of said domains having average dimensions less than 10,000 Angstroms and having a substantially regular array of said composition, so that said layer is imagewise polymerizable with improved resolving power upon the application of radiation to selected portions thereof.

4,439,515

LIGHT-SENSITIVE ETHYLENICALLY UNSATURATED MATERIALS CONTAINING BENZANTHRONES AND NOVEL SENSITIZERS

Fumiaki Shinozaki; Yasuo Washizawa; Tomoaki Ikeda; Sho Nakao, and Syunichi Kondoh, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 240,433, Mar. 4, 1981, Pat. No. 4,386,153, which is a division of Ser. No. 57,149, Jul. 12, 1979, Pat. No. 4,298,679, which is a division of Ser. No. 832,684, Sep. 13, 1977, Pat. No. 4,175,971. This application Apr. 14, 1983, Ser. No. 484,818

Claims priority, application Japan, Sep. 14, 1976, 51-110151

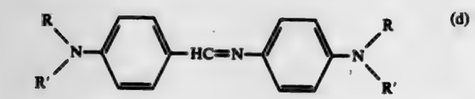
Int. Cl.³ G03C 1/68

U.S. Cl. 430—285 4 Claims

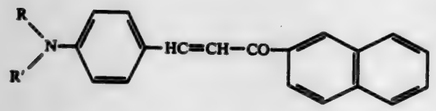
1. A light-sensitive composition consisting essentially of at least one ester of an ethylenically unsaturated double bond-containing organic acid and an aliphatic polyhydric alcohol, said ester having a molecular weight of about 1000 or less, and a photopolymerization initiator, said photopolymerization initiator consisting essentially of a combination of the components

(1) benzanthrone, a benzanthrone substituted with one or more of halogen atoms, alkyl groups having 1 to 5 carbon atoms or alkoxy groups having 1 to 5 carbon atoms, a 1,2-benzanthraquinone or a benzanthraquinone substituted with one or more of halogen atoms, alkyl groups having 1 to 5 carbon atoms or alkoxy groups having 1 to 5 carbon atoms, or a mixture thereof and

(2) a compound represented by the following general formula (d) or (e):



(d)



(e)

wherein R and R′, which may be the same or different, each represents a methyl group or an ethyl group, wherein the weight ratio of component (1) to component (2) of said photopolymerization initiator ranges from about 10:1 to about 1:100 and the amount of said photopolymerization initiator ranges from about 0.1 to about 20% by weight to the weight of the ester.

4,439,516

HIGH TEMPERATURE POSITIVE DIAZO PHOTORESIST PROCESSING USING POLYVINYL PHENOL

George J. Cerniglaro, Framingham, and Charles R. Shipley, Newton, both of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed Mar. 15, 1982, Ser. No. 357,971

Int. Cl.³ G03F 7/08; G03C 5/00; B05D 3/02

U.S. Cl. 430—323 17 Claims

1. A process for increasing the photoresist distortion temperature of a photoresist film comprising a high temperature, positive working diazo sensitizer and a resin system of a thermoplastic polyvinyl phenol to in excess of the flow temperature of the polyvinyl phenol and in excess of 200° C., said sensitizer having a secondary decomposition temperature and said polyvinyl phenol having a flow temperature in excess of 200° C. and in excess of the temperature at which reaction occurs between the two, said process comprising the steps of exposing said film to activating radiation in an image pattern, developing said film and heating said film to a temperature in excess of 200° C. and for a time at least sufficient to cause reaction to occur between said sensitizer and said polyvinyl phenol, said heating step occuring during or subsequent to imaging.

4,439,517

PROCESS FOR THE FORMATION OF IMAGES WITH EPOXIDE RESIN

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 10, 1983, Ser. No. 457,107

Claims priority, application United Kingdom, Jan. 21, 1982, 8201726

Int. Cl.³ G03C 1/68

U.S. Cl. 430—328 14 Claims

1. A process for the formation of an image on a substrate which comprises

(1) exposing imagewise to actinic radiation a layer of a photoresist composition on the substrate, the photoresist composition comprising

(A) an epoxide resin and

(B) an effective amount, for curing, of

(i) a benzenoid polyamine

(ii) an aromatic compound which liberates an acid on exposure to actinic radiation, selected from

(a) chlorides, bromides, and iodides of onium bases of elements in Group VA, VIA, or VIIA of the Periodic Table,

(b) N-sulfonyloxyimides, and esters of sulfonic acids with β-hydroxypropiophenones or with o-hydroxyacylphenones,

(c) o-nitrobenzaldehydes, and

(d) α-chloroacylphenones and α-bromoacylphenones,

(2) heating the composition on the substrate such that the part or parts of the composition which have been struck by the radiation are substantially cured whereas the part or parts thereof which have not been so struck remain substantially uncured, and then

(3) treating the composition on the substrate with a solvent developer to remove the part or parts of the composition which remain substantially uncured.

4,439,518

PROCESS FOR THE PRODUCTION OF A PHOTOGRAPHIC IMAGE

Stephen R. Postle, Brentwood, England, assignor to Ciba-Geigy A.G., Basel, Switzerland

Filed Jun. 18, 1982, Ser. No. 389,729

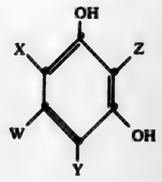
Claims priority, application United Kingdom, Jun. 19, 1981, 8119060

Int. Cl.³ G03C 5/24, 1/02

U.S. Cl. 430—402 10 Claims

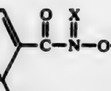
1. A process for the production of a photographic black dye image which comprises

(a) imagewise exposing photographic silver halide material comprising at least one silver halide emulsion layer coated on a support, there being present in the silver halide emulsion layer (s) or in a layer in operative contact with at least one silver halide emulsion layer, a colour coupler consisting essentially of at least one compound of the formula



(I)

where each of W, Y and Z is hydrogen, chlorine or bromine, a nitrogen-linked heterocyclic, —SR_1, where R_1 is optionally substituted alkyl having from 1 to 20 carbon atoms, optionally substituted aryl or an optionally substituted heterocycle or W, Y or Z is a group —R_3 where —R_3 is optionally substituted primary or secondary alkyl having from 1 to 20 carbon atoms of the formula



where L is an alkylene linking group —$(CH_2)_m$— where m is 0 to 20, R_4 is hydrogen, alkyl having from 1 to 20 carbon atoms, or R_4 together with L form a saturated 5- or 6-membered carbocyclic ring linking group, and Q is hydrogen or a group selected from —CO_2R_5 or —$OCOR_5$ where R_5 is alkyl having from 1 to 20 carbon atoms; —OR_6 or —$CONHR_6$ or —$NHCOR_6$ where R_6 is an alkyl group having from 1 to 20 carbon atoms or is an optionally substituted aryl group; —SO_3M where M is hydrogen or a cation; —$P(O)(OR_5)_2$ where R_5 is as defined above; or —NR_7R_8 where each of R_7 and R_8 are hydrogen or optionally substituted alkyl or aryl; or R_3 is unsubstituted tertiary alkyl, wherein the teriary atom of the alkyl group is adjacent to the benzene ring or secondary or tertiary cycloalkyl having from 3 to 20 carbon atoms or R_3 is primary, secondary or tertiary aralkyl, having from 7 to 20 carbon atoms, or Z alone is —CO—R_1 where R_1 is as defined above but at least one of W, Y and Z must be —R_3, and X is hydrogen, chlorine or bromine, a nitrogen-linked heterocycle or —SR_1 where R_1 is as defined above,

(b) colour developing the exposed material using a colour developing solution which comprises an aqueous alkaline solution of a primary aromatic amine colour developing agent to form simultaneously a silver image and a black dye image,

(c) optionally bleaching the silver image, and then

(d) fixing out all the silver halide in the material using an aqueous solution of a silver halide solvent.

4,439,519

SILVER-HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobutaka Ohki; Ken Kawata, and Isamu Itoh, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 5, 1983, Ser. No. 491,829

Claims priority, application Japan, May 6, 1982, 57-75807

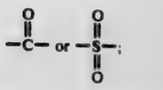
Int. Cl.³ G03C 7/30

U.S. Cl. 430—405 18 Claims

1. A silver halide photographic light-sensitive material, comprising a support having provided thereon a diffusion resistant coupler, a light-sensitive silver halide and a compound represented by the following general formula (I)

(I)

wherein R^1 and R^2 independently represent an alkyl group having from 1 to 5 carbon atoms, a hydroxyalkyl group having from 1 to 5 carbon atoms, an alkoxyalkyl group having from 2 to 10 carbon atoms or an alkylsulfonamidoalkyl group having from 2 to 10 carbon atoms; R^3 represents a hydrogen atom, an alkyl group having from 1 to 5 carbon atoms or an alkoxy group having from 1 to 5 carbon atoms; X represents a hydrogen atom or a group capable of being removed with alkali; Y represents



and Z represents an alkyl group, an alkenyl group, an aryl group or a heterocyclic group.

4,439,520

SENSITIZED HIGH ASPECT RATIO SILVER HALIDE EMULSIONS AND PHOTOGRAPHIC ELEMENTS

James T. Kofron, Rochester; Robert E. Booms, Churchville; Cynthia G. Jones, Bergen; John A. Haefner, Webster; Herbert S. Wilgus, Conesus, and Francis J. Evans, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,904, Nov. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,407

Int. Cl.³ G03C 1/04, 1/12, 1/46, 7/26

U.S. Cl. 430—434 64 Claims

1. A radiation-sensitive high aspect ratio tabular grain silver halide emulsion comprised of

a dispersing medium and

silver halide grains, wherein at least 50 percent of the total projected area of said silver halide grains is provided by chemically and spectrally sensitized tabular silver halide grains having a thickness of less than 0.3 micron, a diameter of at least 0.6 micron, and an average aspect ratio of greater than 8:1.

29. In a photographic element comprised of

a support and, located thereon,

a first silver halide emulsion layer positioned to receive substantially specularly transmitted light, and

a second silver halide emulsion layer positioned to receive light transmitted through said first silver halide emulsion layer,

the improvement wherein, said first silver halide emulsion layer contains chemically and spectrally sensitized tabular silver halide grains having a thickness of less than 0.5 micron, a diameter of at least 0.6 micron, an average aspect ratio of at least 12:1, and an average diameter of at least 1.0 micron, which account for at least 70 percent of the total projected area of the silver halide grains present in said first emulsion layer.

4,439,521

METHOD FOR PRODUCING SELF-REPRODUCING MAMMALIAN PANCREATIC ISLET-LIKE STRUCTURES

Michael C. Archer, Mississauga, and Kanti Jain, Toronto, both of Canada, assignors to Ontario Cancer Institute, Toronto, Canada

Filed Oct. 21, 1981, Ser. No. 313,494

Int. Cl.³ A01N 1/02; C12N 5/00, 5/02

U.S. Cl. 435—1 80 Claims

1. A method for producing mammalian pancreatic islet-like structures hereinafter called ILS's, having histological characteristics and insulin-producing properties corresponding to those of natural isolated fetal pancreatic islets and islets obtained from adult animals maintained in culture, comprising establishing under conditions promoting the growth of mammalian cells, a culture comprising at least one pancreatic tissue-derived body attached to a substrate compatible with mammalian cells and capable of accepting the attachment of mammalian pancreatic islet tissue thereto, and immersed in a liquid tissue culture medium capable of sustaining mammalian cell growth, said body being selected from the group consisting of:

(a) intact mammalian pancreatic islets isolated directly from postpartal pancreatic tissue and present in the culture at an islet population density of less than about 10 islets per ml of the liquid culture medium;

(b) pieces of mammalian postpartal pancreatic duct;

(c) clusters of coherent pancreatic cells obtained by mild digestion of pieces of whole mammalian postpartal pancreas with a solution of a connective tissue-lysing enzyme, said clusters being substantially free of pancreatic exocrine tissue;

(d) cells characterized by having an oblong flat configuration with highly serrated ends and tenacious attachment to the substrate and obtained by culturing a body selected from the group consisting of said bodies (a), (b), and (c) above and (e) below for prolonged periods in said culture under said mammalian cell-growth promoting conditions;

(e) ILS's obtained by culturing a body selected from the group consisting of said bodies (a), (b), (c), and (d) for prolonged periods under said mammalian cell-growth promoting conditions; and maintaining said culture for a period sufficient to permit neogenesis of discrete ILS's connected to cell tissue outgrowing from the body and attached to the substrate; detaching said ILS's from the said outgrowing tissue; and recovering said detached ILS's from the culture.

4,439,522

PROTEOLYTIC ENZYME COMPOSITION

Roy U. Schenk, Madison, Wis., assignor to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation of Ser. No. 55,770, Jul. 9, 1979, abandoned, which is a continuation of Ser. No. 922,646, Jul. 7, 1978, abandoned, which is a continuation of Ser. No. 855,008, Nov. 25, 1977, abandoned, which is a continuation of Ser. No. 763,132, Jan. 27, 1977, abandoned, which is a continuation of Ser. No. 432,167, Jan. 10, 1974, abandoned. This application Jun. 5, 1980, Ser. No. 157,152

Int. Cl.³ C12N *9/96, 9/54;* C07G *7/00;* C12R *1/085*

U.S. Cl. 435—188 **1 Claim**

1. A proteolytic enzyme-containing composition having stabilized proteolytic enzyme activity and the ability to convert scleroproteins to water soluble products without racemization consisting essentially of an anionic detergent selected from the group consisting of alkyl sulfates, alkyl sulfonates, alkyl-aryl sulfates and alkyl-aryl sulfonates, and an enzyme system consisting of a proteolytic enzyme oligomer derived from *Bacillus cereus* that is retained by an ultrafilter membrane that retains molecules larger than 10,000 molecular weight and is reversibily interconvertible with a proteolytic active subcomponent that passes through the same membrane that retains the oligomer, said enzyme system retaining more than 75% of its proteolytic activity for at least 5 hours when said composition is mixed with a 2% corn gluten slurry and said enzyme system converts said corn gluten to water soluble products during said 5 hours.

4,439,523

PRODUCTION OF SINGLE CELL PROTEIN MATERIAL

Emil A. Malick; John W. Vanderveen; Donald O. Hitzman, and Eugene H. Wegner, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 7, 1981, Ser. No. 280,963

Int. Cl.³ C12N *1/00, 1/02*

U.S. Cl. 435—243 **6 Claims**

1. A process for producing a cellular product comprising:

(a) withdrawing a fermentation effluent from a first fermentation zone;

(b) subjecting said fermentation effluent to sterilizing conditions to produce a sterilized fermentation effluent;

(c) utilizing said sterilized fermentation effluent as at least a portion of the nutrient media for a high cell density fermentation process conducted within a high cell density fermentation zone;

(d) removing a stream containing microbial cells from said high cell density fermentation zone; and

(e) drying said stream containing microbial cells to produce a dried cellular product.

4,439,524

STEREOSELECTIVE RESOLUTION OF PHENYLGLYCINE DERIVATIVES WITH ENZYME RESINS

Hermann Schutt, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 161,811, Jun. 23, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,569

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927535

Int. Cl.³ C07B *20/00*

U.S. Cl. 435—280 **10 Claims**

1. In a process for the stereoselective resolution of DL-phenylglycine derivatives by hydrolysing the ester or amide grooups of N-acyl-L-phenylglycine esters or amides in N-acyl-DL-phenylglycine esters or amides by the action of enzymes, separating the N-acyl-D-phenylglycine esters or amides from the N-acyl-L-phenylglycines and then, if desired, subjecting the esters or amide groups of the D-enantiomers and the acyl groups to acid hydrolysis, the improvement which comprises allowing enzymes selected from the group consisting of a sevine or sulfhydryl protease which are bonded to carriers to act on the N-acyl-DL-phenylglycine esters or amides in an inert two-phase solvent mixture consisting of water-immiscible organic solvent and water in a pH range of 6–8.

4,439,525

HIGH METHIONINE CONTENT *PICHIA PASTORIS* YEASTS

Lucas K. Shay, and Eugene H. Wegner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 9, 1981, Ser. No. 300,521

Int. Cl.³ C12N *1/32, 1/16;* C12R *1/84*

U.S. Cl. 435—247 **37 Claims**

1. A method of producing a single cell protein material which comprises culturing under aerobic aqueous fermentation conditions at least one high methionine producing *Pichia pastoris* species in aqueous ferment employing effective amounts of oxygenated hydrocarbon energy substrate, assimilable nitrogen source, and mineral salts medium, and recovering the resulting cellular products as a single cell protein material, wherein said high methionine producing *Pichia pastoris* species is selected from the group consisting of:

Pichia pastoris Y-12439,
Pichia pastoris Y-12440,
Pichia pastoris Y-12441,
Pichia pastoris Y-12442,
Pichia pastoris Y-12443,
Pichia pastoris Y-12444,
Pichia pastoris Y-12445,
Pichia pastoris Y-12446,
Pichia pastoris Y-12448,
Pichia pastoris Y-12449,
Pichia pastoris Y-12450,
Pichia pastoris Y-12451,
Pichia pastoris Y-12452,
Pichia pastoris Y-12453,
Pichia pastoris Y-12454,
Pichia pastoris Y-12455,
Pichia pastoris Y-12456,
Pichia pastoris Y-12458,
Pichia pastoris Y-12459,
Pichia pastoris Y-12460,
Pichia pastoris Y-12461,
Pichia pastoris Y-12462,
Pichia pastoris Y-12463,
Pichia pastoris Y-12465,
Pichia pastoris Y-12466,
Pichia pastoris Y-12467,
Pichia pastoris Y-12469,
Pichia pastoris Y-12470, and
Pichia pastoris Y-12493.

4,439,526

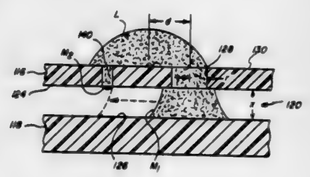
CLUSTERED INGRESS APERTURES FOR CAPILLARY TRANSPORT DEVICES AND METHOD OF USE

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,753

Int. Cl.³ G01N *27/28, 1/00*

U.S. Cl. 436—180 **7 Claims**



5. A method for introducing a quantity of liquid into an interior capillary transport passage of a liquid transport device, the method comprising the steps of

(a) positioning such transport device having an exterior surface that includes a cluster of at least two apertures extending to said interior passage, only one of said apertures having a maximum flow-through dimension sufficiently large as to allow liquid to independently initiate transport in said passage when placed at said cluster, with said one larger aperture located within a predetermined error range measured from a desired metering position, the others of said apertures being sized to deliver to said passage a meniscus at a position that is capable of coalescing with liquid advancing within said passage, but not independently intiating flow within said passage and

(b) depositing such liquid onto said surface so as to encompass said one larger aperture and at least one other aperture of said cluster.

4,439,527

COMPOSITION AND METHOD FOR THE DETECTION OF HYDROGEN PEROXIDE

Bernd Pakebusch, Hessheim; Carsten A. Carstensen, Heuchelheim; Bernward Sojka, Viernheim, and Hans Lange, Lampertheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 385,760

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125667

Int. Cl.³ G01N *21/78, 33/50*

U.S. Cl. 436—135 **6 Claims**

6. Method as claimed in claim 5 for determining a hydrogen peroxide forming substrate, wherein the combined detection composition also contains a reagent necessary to release hydrogen peroxide from a hydrogen peroxide forming substrate.

4,439,528

SPONTANEOUS OPAL GLASS COMPOSITIONS

Roger J. Araujo, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,565

Int. Cl.³ C03C *3/04, 3/10, 3/30*

U.S. Cl. 501—32 **3 Claims**

1. A spontaneous opal glass having a softening point in excess of 750° C., a coefficient of thermal expansion between about 60–90×10^{-7}/°C., a crystal liquidus temperature below 1350° C., a viscosity at the liquidus temperature of at least 200 poises, excellent resistance to attack by alkalies, and wherein spherically-shaped, glassy droplets constitute the opal phase, said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of about

SiO_2	50–72	Na_2O	0–8
CaO	10–40	Al_2O_3	0–2
ZnO	4–40	F	0–5

4,439,529

GLASS AND GLASS OBJECTS

Hendrik J. M. Joormann; Hendrik Verweij, and Jan Haisma, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 119,324, Feb. 7, 1980, abandoned. This application Aug. 31, 1981, Ser. No. 298,131

Claims priority, application Netherlands, May 18, 1979, 7903914

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ C03C *3/16*

U.S. Cl. 501—45 **6 Claims**

1. A glass consisting essentially of phosphorous pentoxide, lead monoxide, an alkali earth oxide, and an alkali oxide, said glass having a composition of 45–55 mol.% P_2O_5, 15–40 mol.% BaO, 5–35 mol.% PbO, 5–15 mol.% Li_2O, 0–2 mol.% Al_2O_3 and 0–6 mol.% F, wherein up to 25% of said BaO may be replaced by an equimolar quantity of at least one of CaO, MgO, and SrO, and wherein up to 25% of said Li_2O may be replaced by an equimolar quantity of at least one other alkali metal oxide, said glass having a corrosion resistance such that after having been stored at 50° C. in relative humidity of 99%, the glass is free from stains.

4,439,530

OPTICAL GLASS

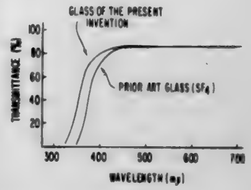
Hidemi Tajima, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Jan. 20, 1983, Ser. No. 459,552

Claims priority, application Japan, Jan. 25, 1982, 57-8991

Int. Cl.³ C03C *3/16*

U.S. Cl. 501—45 **1 Claim**



1. An optical glass consisting essentially of, in % by weight,
18 to 38% P_2O_5;
3 to 30% Na_2O+K_2O,
with the proviso of
0 to 30% Na_2O and
0 to 30% K_2O;
15 to 65% PbO;
1 to 45% Ta_2O_5;
0 to 20% Nb_2O_5;
0 to 15% TiO_2+WO_3;
0 to 25% $BaO+CaO+ZnO+SrO+MgO$,
with the proviso of
0 to 25% BaO,
0 to 5% CaO,
0 to 25% ZnO,
0 to 20% SrO,
0 to 10% MgO, and
0 to 32% K_2O+BaO;
0 to 15% B_2O_3;

0 to 3% Li_2O;
0 to 3% Al_2O_3;
0 to 3% ZrO_2;
0 to 3% Y_2O_3;
0 to 3% Gd_2O_3; and
0 to 3% La_2O_3.

4,439,531

CDO-THO_2-FREE, HIGHLY REFRACTIVE OPTICAL GLASS

Karl Mennemann, Taunusstein, and Volkmar Geiler, Mainz-Finthen, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,968
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130039
Int. Cl.³ C03C *3/08, 3/10*
U.S. Cl. 501—75 **5 Claims**

1. CdO- and ThO-free, highly refractive optical glass which are stable to devitrification and have a refractive index nd of 1.85–2.05 and an Abbe index vd of 25–43, consisting essentially of the following composition (in percent by weight):

SiO_2	5–15
B_2O_3	2.5–8
$SiO_2 + B_2O_3$	7–23
SiO_2/B_2O_3	1.6–1.9
La_2O_3	43–56
Gd_2O_3	0–14
$La_2O_3 + Gd_2O_3$	43–60
ZrO_2	5–9
Nb_2O_5	0–15
Ta_2O_5	0–20
$Nb_2O_5 + Ta_2O_5$	11–22

4,439,532

CASTING SLIP MADE FROM SPINEL AND SPINEL REFRACTORIES

Greene W. Strother, Jr., Brazoria, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 26, 1981, Ser. No. 296,605
Int. Cl.³ C04B *35/04*
U.S. Cl. 501—117 **6 Claims**

1. A casting slip comprising a low viscosity slurry comprised of:

(a) spinel of $M^IM_2^{II}O_4$ wherein M^I is one or more metal atoms having a valence of 1, 2 or 4 present such that the atomic ratio of M^I to M^{II} is about 2, M^{II} is the same or a different metal atom having a valence of 2, 3 or 6 different from M^I present such that the total atomic ratio of M^{II} is twice that M^I said spinel being a mixture of spinel precursor calcined to between about 400° C. and 1400° C. and the same or a different spinel or batch of precursor calcined then fired (sintered) above about 1500° C., the calcined spinel being present in from about 10 to 100, of which up to 33% of the total composition may be precursor, and from zero to 67% by weight of sintered spinel, said spinels being present in said slurry to provide about 50 to 75 percent solids content, the balance being

(b) water, and

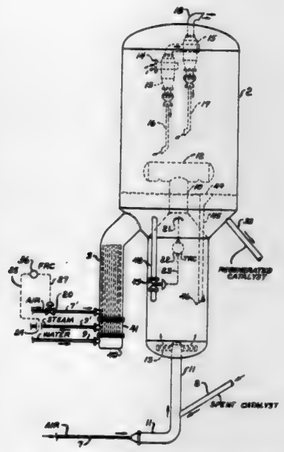
(c) from about 0.1 to 5% of an anti-flocculating agent.

4,439,533

FLUID PARTICLE BACKMIXED COOLING PROCESS

David A. Lomas, Arlington Heights, and Gregory J. Thompson, Waukegan, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 273,296, Jun. 15, 1981, Pat. No. 4,353,812. This application Aug. 30, 1982, Ser. No. 412,698
Int. Cl.³ B01J *29/38*; C10G *11/18*; F28D *13/00*; G06G *7/58*
U.S. Cl. 502—6 **7 Claims**



1. A process for the controlled cooling of hot fluidized catalysts which comprises:

(a) passing spent catalyst having coke deposited thereon, and oxygen-containing regeneration gas to the lowermost portion of a catalytic combustion chamber containing a relatively dense bed of fluidized catalyst to oxidize said coke;

(b) passing said oxidized catalyst upward through said combustion chamber to an uppermost section of said combustion chamber containing catalyst in a relatively dilute phase;

(c) passing said oxidized catalyst through said uppermost section of said combustion chamber to a surmounted disengagement chamber having a relatively dense phase of catalyst collecting in the lowermost portion of said disengagement chamber;

(d) passing said catalyst from said lowermost portion of said disengagement chamber to a heat removal zone extrinsic from said combustion and disengagement chamber;

(e) cooling said catalyst in said extrinsic heat removal zone by indirect heat exchange against a cooling fluid entered and removed from said extrinsic heat removal zone;

(f) fluidizing said catalyst in said heat removal zone by passage of a fluidizing gas in direct contact with said catalyst being cooled and wherein said catalyst is continuously mixed;

(g) passing said cooled catalyst back to said lowermost portion of said disengagement chamber, wherein the extent of fluidization in step (f) is controlled by

(i) sensing the quantity of said cooling fluid being removed from said indirect heat exchange means in step (e);

(ii) comparing that sensed quantity with a predetermined set point to generate a controller output signal; and,

(iii) transmitting said controller output signal to a flow regulation means which regulates the quantity of fluidized gas passed in step (f) to said extrinsic heat removal zone.

2. The process of claim 1 wherein said catalyst in said lowermost portion of said disengagement chamber is passed directly to said combustion chamber.

3. The process of claim 2 wherein the quantity of said catalyst passed from said disengagement chamber to said combustion chamber is controlled by:

(i) sensing the temperature in the upper locus of said combustion zone;

(ii) comparing that sensed temperature with a predetermined set point to generate a catalyst flow control output signal; and

(iii) transmitting said flow control output signal to a flow regulation means which regulates the quantity of said catalyst passed from said disengagement chamber to said combustion chamber.

4,439,534

CATALYST OF CHROMIUM OXIDE MICROSPHERES AND PROCESS FOR ITS PREPARATION

Louis Fouilletier, Oullins, France, assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Nov. 24, 1981, Ser. No. 324,437
Claims priority, application France, Dec. 29, 1980, 80 27659
Int. Cl.³ B01J *21/08, 23/86, 35/08*
U.S. Cl. 502—8 **9 Claims**

1. A catalyst having a chromium oxide base consisting essentially of microspheres of amorphous chromium trioxide having a diameter, between about 100 to 3,000 um.

4,439,535

ZEOLITE ADSORBENT FOR SEPARATION OF PARA-XYLENE

William Smolin, Fishkill, and John H. Estes, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,287
The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.
Int. Cl.³ B01J *29/06*
U.S. Cl. 502—62 **4 Claims**

3. A synthetic crystalline sodium aluminosilicate zeolite HP, containing a pyridine in amount of about 3.3–20 wt.% of said zeolite, having a lattice constant of 25.02–25.10 Å.

4. A synthetic crystalline sodium aluminosilicate zeolite HP, containing a pyridine in amount of at least about 3.3 wt.% of said zeolite as claimed in claim 3 wherein said pyridine is pyridine se or a substituted pyridine selected from the group consisting of 2-picoline, 3-picoline, 4-picoline, 2,4-lutidine, 2,6-lutidine, and 3,4-lutidine.

4,439,536

HYDROCARBON CRACKING CATALYST

Brent J. Bertus, and Dwight L. McKay, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 276,402, Jun. 22, 1981, Pat. No. 4,386,015, which is a division of Ser. No. 139,483, Apr. 11, 1980, Pat. No. 4,334,979. This application Dec. 13, 1982, Ser. No. 449,319
Int. Cl.³ B01J *29/04, 20/18*
U.S. Cl. 502—64 **34 Claims**

1. A process for passivating at least one metal selected from the group consisting of nickel, vanadium and iron, on a zeolite-containing cracking catalyst comprising contacting the cracking catalyst with at least one treating agent selected from germanium and germanium compounds to impart to the cracking catalyst a germanium concentration of from about 0.01 to about 0.5 weight percent.

7. A process as in claim 1 wherein the cracking catalyst is contacted with at least one germanium compound selected from the group consisting of germanium oxide, germanium sulfide, germanium nitride, germanium halide, germanium selenide, germanium telluride and germanium hydride.

22. A process for increasing the activity of a used zeolite-containing cracking catalyst contaminated by at least 3000 ppm vanadium equivalents comprising contacting said cracking catalyst with at least one treating agent selected from the group consisting of germanium and a germanium compound so as to deposit on said cracking catalyst a sufficient amount of treating agent to impart to said cracking catalyst a germanium concentration of between about 0.0001 and about 4 percent by weight of contacted cracking catalyst.

29. A process as in claim 22 further comprising contacting the cracking catalyst with at least one compound selected from the group consisting of antimony, tin and bismuth compounds to impart to said cracking catalyst a concentration of at least one antimony, tin and bismuth of from about 0.001 to about 2 percent by weight of the thus further contacted cracking catalyst.

4,439,537

PROCESS FOR THE PREPARATION OF CATALYST COMPONENT FOR THE POLYMERIZATION OF OLEFINS

Atsushi Murai, Kanagawa; Minoru Terano, Chigasaki; Yoshikazu Hitosugi; Kouhei Kimura, both of Kanagawa; Masuo Inoue, and Katsuyoshi Miyoshi, both of Chigasaki, all of Japan, assignors to Toho Titanium Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,858
Claims priority, application Japan, Jun. 29, 1981, 56-99674; Oct. 2, 1981, 56-156162; Dec. 18, 1981, 56-203589; Dec. 26, 1981, 56-209556; Dec. 26, 1981, 56-209557
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—105 **25 Claims**

1. A process for the preparation of catalyst component for the polymerization of olefins which comprises contacting with each other (a) a fatty acid salt of magnesium, (b) an electron donor compound and (c) a titanium halide of the general formula: TiX_4, wherein X represents a halogen atom, said three ingredients (a), (b) and (c) being copulverized simultaneously in the absence of any solvent, or said fatty acid salt of magnesium being copulverized with said electron donor compound or with said titanium halide in the absence of any solvent to form a copulverization product, said copulverization product then being brought into contact with said titanium halide or with said electron donor compound respectively, said copulverization product formed by the copulverization of the fatty acid salt of magnesium with the electron donor compound forming essentially a solid copulverization product.

2. A process for the preparation of catalyst component for the polymerization of olefins which comprises contacting (a) a fatty acid salt of magnesium, (b) an electron donor compound and (c) a titanium halide of the general formula: TiX_4, wherein X represents a halogen atom, said three ingredients (a), (b) and (c) being mixed simultaneously in the presence of an organic solvent, or any two ingredients selected from said three ingredients (a), (b) and (c) being mixed with each other in the presence of an organic solvent to form a mixed product, said mixed product then being mixed directly or after removing the solvent therefrom with the residual ingredient, said mixed product formed by mixing the fatty acid salt of magnesium with the electron donor compound forming essentially a solid mixed product by removing the solvent therefrom or forming essentially a suspension.

3. A process for the preparation of catalyst component for the polymerization of olefins which comprises contacting (a) a fatty-acid salt of magnesium, (b) an electron donor compound and (c) a titanium halide of the general formula: TiX_4, wherein X represents a halogen atom, said three ingredients (a), (b) and (c) being mixed simultaneously in the absence of any solvent, or any two ingredients selected from said three ingredients (a), (b) and (c) being mixed with each other in the absence of any solvent to form a mixed product, said mixed product then being mixed with the residual ingredient, said mixed product formed by mixing the fatty acid salt of magnesium with the electron donor compound forming essentially a solid mixed product.

4,439,538
SUPPORTED CATALYST FOR POLYMERIZING OLEFINS
Kyoung R. Im Han, Dobbs Ferry, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.
Filed Sep. 24, 1982, Ser. No. 422,634
Int. Cl.³ C08F 4/02, 4/64
U.S. Cl. 502—105 58 Claims

1. A catalytic system for polymerizing olefins comprising:
(a) a component containing an organometallic compound of Groups I–III of the periodic table, and
(b) a component containing titanium obtained by steps comprising:
treating a ferrous chloride support with at least one organic electron donor to form an adduct,
milling the ferrous chloride, and
post-treating the milled ferrous chloride adduct with a liquid titanium compound containing halogen.

4,439,539
CATALYTIC COMPONENT FOR POLYMERIZATION OF α-OLEFIN AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN
Masaru Takitani; Shizuo Tomiyasu, and Keikichi Baba, all of Shinnanyo, Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan
Filed Jun. 9, 1982, Ser. No. 386,585
Claims priority, application Japan, Jun. 11, 1981, 56-89859
Int. Cl.³ C08F 4/64
U.S. Cl. 502—112 2 Claims

1. A catalytic component for polymerization of an α-olefin, prepared through steps including:
(a) a step in which an organo-magnesium compound expressed by the generic formula of R'MgX' (wherein R' represents a hydrocarbon group having 1 to 20 carbon atoms and X' either a halogen atom chosen out of chlorine, bromine and iodine or a hydrocarbon group having 1 to 20 carbon atoms) is allowed to react with carbon tetrahalide in the presence of an electron donor compound to obtain a solid product through a solid-liquid separation process, at a temperature between −50° C. and 100° C.;
(b) a step in which the separated solid is heat treated with a carbon halide at a temperature between 40° C. and 80° C.;
(c) a step in which the heat treated solid product is treated with phenols at a temperature between 90° C. and 180° C., the amount of the phenols used is 0.01 to 10 mol per mol of magnesium contained in the heat treated solid product; and
(d) another step in which the phenol treated product is treated further with a halogenated titanium compound at a temperature between room temperature and 150° C., the amount at the halogenated compound used is at least 0.01 mol per mol of the magnesium contained in the phenol treated product.

4,439,540
CATALYSTS AND COMPONENTS OF CATALYSTS FOR POLYMERIZING OLEFINS
Giuliano Cecchin, Ferrara, and Enrico Albizzati, Arona, both of Italy, assignors to Montedison S.p.A., Milan, Italy
Division of Ser. No. 134,773, Mar. 28, 1980, Pat. No. 4,294,721, which is a continuation of Ser. No. 921,717, Jul. 3, 1978, abandoned. This application Sep. 29, 1981, Ser. No. 306,719
Claims priority, application Italy, Jul. 4, 1977, 25345 A/77
Int. Cl.³ C08F 4/64
U.S. Cl. 502—125 3 Claims

1. Catalysts for the polymerization of olefins comprising the product obtained by mixing:
(A) an alkyl Al compound or an alkyl Al compound of which from 5 to 90% is in a combined form with an electron-donor compound selected from the group consisting of esters of aromatic carboxylic acids and of inorganic acids, secondary amines and tertiary amines, with
(B) a solid catalyst-forming component obtained by reacting a Ti compound containing at least one Ti-halogen linkage with at least one of the following substances:
(1) a hydrocarbyl electron-donor compound ED which does not contain active hydrogen atoms and an adduct (a) of a Mg dihalide with at least one hydrocarbyl electron-donor compound AH containing active hydrogen atoms and present in the adduct in an amount of at least 0.5 mole/mole of Mg dihalide, electron-donor compound ED being reacted in an amount of not less than 0.05 mole/mole of compound AH of the adduct;
(2) an adduct (b) of at least a Mg dihalide with a compound AH and ED, as defined in (1) above, compound ED being present in an amount ranging from 0.05 to 1.0 mole/mole of compound AH, and adducts (a) and (b) being prepared without co-grinding of the Mg dihalide with compounds AH and ED;
the amount of compound ED which remains in the solid after extraction thereof with $TiCl_4$ at 80° C. for two hours being comprised between 0.3 and 3.0 moles/gram atom of Ti, and the amount of Ti compounds extractable with $TiCl_4$ at 80° C. being lower than 50%.

2. Catalysts according to claim 1, in which the alkyl Al compound of component (A) is an Al trialkyl and the electron-donor compound is an ester of silicic acid.

3. Catalysts according to claim 2, in which the silicic acid ester is ethyl silicate.

4,439,541
CATALYTIC COMPONENT FOR POLYMERIZATION OF α-OLEFIN AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN
Masaru Takitani; Shizuo Tomiyasu, and Keikichi Baba, all of Shinnanyo, Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan
Filed Jun. 9, 1982, Ser. No. 386,584
Claims priority, application Japan, Jun. 11, 1981, 56-89860
Int. Cl.³ C08F 4/64
U.S. Cl. 502—125 1 Claim

1. A catalytic component for polymerization of an α-olefin, prepared through steps including:
(a) a step in which an organo-magnesium compound expressed by the generic formula of RMgX (wherein R represents a hydrocarbon group having 1 to 20 carbon atoms and X either a halogen atom or a hydrocarbon group having 1 to 20 carbon atoms) is allowed to react with carbon tetrahalide in the presence of an electron donor compound to obtain a solid product, at a temperature between −50° C. and 100° C.;
(b) a step in which said solid product is reacted with phenols at a temperature between 90° and 180° C.; and
(c) a step in which said phenol solid product of step (b) is reacted with at least 0.01 mol of a halogenated titanium compound per mol of the magnesium contained in the product of step (b), at a temperature between room temperature and 150° C.

4,439,542
NOVEL BORIDE CATALYSTS AND PROCESS FOR THE PREPARATION AND USE THEREOF
Alan Bonny, Shaker Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
Filed Aug. 17, 1982, Ser. No. 408,859
Int. Cl.³ B01J 21/02
U.S. Cl. 502—207 26 Claims

1. A novel heterogeneous boride catalyst for the treatment of carbonaceous materials comprising:
a polyborane anion; and
a Group VIII metal.

4,439,543
CO REDUCED CHROMYL HALIDE ON SILICA CATALYST
Max P. McDaniel, Bartlesville, and Phil M. Stricklen, Ochelata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 5, 1982, Ser. No. 405,486
Int. Cl.³ C08F 4/24
U.S. Cl. 502—228 19 Claims

1. A method comprising:
(1) treating a silica material having surface hydroxy groups in an oxygen containing ambient at a temperature sufficient to remove some but not all of said hydroxy groups;
(2) contacting the thus-treated silica with a chromyl halide at an elevated temperature to give a silica composition having both chromium and halogen as a part thereof; and
(3) thereafter contacting said chromium and halogen containing silica composition with an ambient comprising carbon monoxide at an elevated temperature to give a final silica composition containing both chromium and halogen.

4,439,544
SUPPORT COBALT-SILICA COPRECIPITATED HYDROGENATION CATALYST
James L. Carter, and Allan E. Barnett, both of Westfield, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Continuation of Ser. No. 514, Jan. 2, 1979, abandoned. This application Jun. 24, 1980, Ser. No. 162,810
Int. Cl.³ B01J 21/08, 23/74
U.S. Cl. 502—234 8 Claims

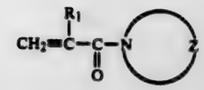
1. A calcined and supported coprecipitated catalyst consisting essentially of cobalt, silica, and solid porous particles, said catalyst being characterized as having a B.E.T. total surface area ranging from about 150 to about 350 m^2/g and a reduced metal surface area ranging from about 5 to about 20 m^2/g as determined by hydrogen chemisorption, after reduction at 400° C., wherein the amount of cobalt in the catalyst ranges from about 25 wt.% to about 70 wt.% based on the total weight of the calcined and reduced catalyst, wherein said catalyst has been prepared by coprecipitating cobalt and silicate ions in the presence of solid porous particles.

2. The catalyst in accordance with claim 1 wherein the catalyst contains about 0.1 wt.% or less sodium based on the total weight of the active catalyst.

3. The catalyst in accordance with claim 1 wherein the solid porous particles are selected from the group consisting of kieselguhr, infusorial earth, diatomaceous earth, siliceous earth, silica and alumina.

4,439,545
ACRYLIC COPOLYMERS OF N-ACRYLOYLPOLYMETHYLENEIMINES OR N-ACRYLOYLDIALKYLAMIDES, N,N'-ACRYLOYLDIAMINOALCANES AND N-ACRYLOYLAMINOACIDS (OR ESTERS) THEIR PREPARATION AND USE AS CATION EXCHANGERS
Christian Aspisi, Boulbon; Bernard Calas, Saint Gely du Fesc; Jacques Daunis, Montpellier; Michel Follet, Aramon; Robert Jacquier, and Joseph Parello, both of Montpellier, all of France, assignors to Societe d "Expansion Scientifique "Expansia", Paris, France
Filed Nov. 10, 1982, Ser. No. 440,441
Claims priority, application United Kingdom, Nov. 19, 1981, 8134861
Int. Cl.³ B01J 39/20; C08F 220/58, 220/60
U.S. Cl. 521—32 7 Claims

1. New acrylic copolymers comprising:
from 30% to 90%, by weight, of a monomer (matrix) corresponding to an N-acryloylpolymethylenimine of formula:



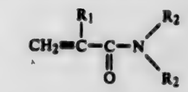
with R_1=H or $-CH_3$

$Z = -(CH_2)_{n_1}-$

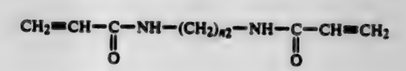
with n_1=4,5 or 6 or

$-(CH_2)_2-X-(CH_2)_2-$ with X = O or $N-CH_3$

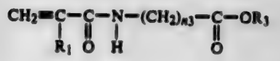
or a N-acryloyldialkylamide, of formula:



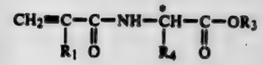
with
R_1 having the same meaning as above
R_2=$-CH_3$ or $-C_2H_5$
from 2% to 50%, by weight, of a monomer (linker) corresponding to an N,N'-diacryloyldiaminoalcane of formula



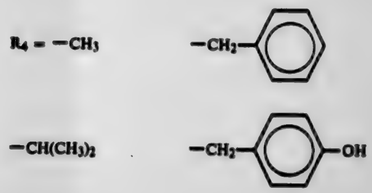
with n_2=1 or 2
and from 2% to 65%, by weight, of a monomer (functionalization agent) corresponding to an acryloylaminoacid or ester, racemic of formula:



with
R_1=H or $-CH_3$
R_3=H or $-CH_3$
n_3=1, 2, 3 or 5
or an asymetric N-acryloylaminoacide (or ester) (L series) of the formula:



with
R_1=H or $-CH_3$
R_3 having the same meaning as above

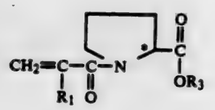


-continued

$-CH_2(CH_3)_2$ $-CH_2-CH_2-S-CH_3$

$-(CH_2)_4-NH_2$

or the N-acryloyl (L) proline, or its methyl ester of the formula:



with
R_1=H or $-CH_3$
R_3 having the same meaning as above.

4,439,546
SCRAP RIM POLYURETHANE MODIFIED EXTENDER POLYOLS
Michael E. Brennan, and Doris M. Rice, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Aug. 5, 1983, Ser. No. 520,884
Int. Cl.³ C08L 67/02
U.S. Cl. 521—48 **20 Claims**

1. A mixture of scrap reaction injection molded polyurethane modified extender polyols, being produced by reacting a dibasic acid with an aklylene glycol and recycled polyethylene terephthalate in the presence of scrap reaction injection molded polyurethane.

4,439,547
ANTI-LUMPING AND FAST-COOL VINYL AROMATIC EXPANDABLE POLYMER PARTICLES
Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Division of Ser. No. 462,157, Jan. 31, 1983. This application May 16, 1983, Ser. No. 495,317
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.³ C08J 9/18
U.S. Cl. 521—56 **4 Claims**

1. Expandable vinyl aromatic polymer particles consisting of vinyl aromatic polymer particles containing dispersed throughout (1) 0.5 to 4.0 percent by weight of a graded diblock rubbery copolymer of 2–50 weight percent of polymerized vinyl aromatic monomer and 50–98 weight percent of polymerized conjugated diene and (2) a blowing agent; said expandable particles exhibiting anti-lumping properties when pre-expanded and fast-cool properties in molded products produced there from.

4,439,548
MODIFIED POLYURETHANE PRODUCT HAVING IMPROVED LOAD-BEARING CHARACTERISTICS
Morey Weisman, 147-23 Charter Rd., Jamaica, N.Y. 11435
Continuation-in-part of Ser. No. 248,228, Mar. 27, 1981, Pat. No. 4,348,489, which is a continuation of Ser. No. 329,754, Feb. 3, 1973, abandoned. This application Sep. 3, 1982, Ser. No. 414,884
Int. Cl.³ C08G 18/14
U.S. Cl. 521—130 **8 Claims**

1. A modified flexible polyurethane foam product of low density derived from a formulation including an intermediate constituted by a mixture of a first polyol of a type adapted to yield a low density foam, and a polymer/polyol produced by polymerization of at least one monomer component in a second polyol in a ratio imparting to the product a predetermined degree of firmness which is greater than that obtainable in a foam derived entirely from the first polyol intermediate and is less than that obtainable in a foam derived entirely from a polymer/polyol intermediate, and a thermoplastic additive whose dielectric loss index is greater than that of a polyurethane foam; the additive being in a relative amount imparting to the modified product a loss index approaching that of polyvinyl chloride to produce an acceptable dielectric heating response in a high-frequency electric field.

4,439,549
NOVEL AROMATIC POLYESTER POLYOL MIXTURES MADE FROM POLYETHYLENE TEREPHTHALATE RESIDUES AND ALKYLENE OXIDES
Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Nov. 22, 1982, Ser. No. 443,727
Int. Cl.³ C08G 18/14
U.S. Cl. 521—131 **18 Claims**

1. A mixture of aromatic polyols having ester functionalities for use in preparing rigid foams, being produced by the process comprising reacting a polyethylene terephthalate residue containing ester functionalities with an alkylene oxide in the presence of a basic catalyst to give an aromatic polyester polyol.

4,439,550
AROMATIC POLYOLS MADE FROM RECYCLED POLYETHYLENE TEREPHTHALATE WASTE STREAMS, ALKYLENE GLYCOL AND DIBASIC ACID WASTE STREAMS
Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Nov. 22, 1982, Ser. No. 443,778
Int. Cl.³ C08G 18/14
U.S. Cl. 521—131 **18 Claims**

1. A mixture of aromatic polyols having hydroxyl and ester functionalities for use in preparing rigid foams, being produced by the process comprising
a. esterifying, in the absence of a catalyst, a residue from dibasic acid manufacture which comprises one or more acids from the group consisting of glutaric acid, succinic acid and adipic acid, with an alkylene glycol to produce a polyester polyol and
b. transesterifying, in the absence of a catalyst, recycled polyethylene terephthalate with the polyester polyol reaction product from the previous step.

4,439,551
PACKAGING FOAM POLYURETHANE COMPOSITION EMPLOYING NOVEL POLYOL BLEND
Ernest L. Yeakey; Michael Cuscurida, and Michael E. Brennan, all of Austin, Tex., assignors to Texaco, Inc., White Plains, N.Y.
Filed Mar. 18, 1983, Ser. No. 476,736
Int. Cl.³ C08G 18/14
U.S. Cl. 521—131 **17 Claims**

1. A method for making low density packaging polyurethane foam comprising reacting in the presence of a tertiary amine catalyst of polyurethane formation and a blowing agent, an organic polyisocyanate and a polyol blend comprising
a. 10 to 25 wt.% of an aromatic polyester polyol having a hydroxyl number of from 210 to 230 which is the reaction product from
(1) esterifying, in the absence of a catalyst, a residue from dibasic acid manufacture which comprises one or more acids from the group consisting of glutaric acid, succinic acid and adipic acid, with an alkylene glycol to produce a polyester polyol intermediate, and
(2) transesterifying, in the absence of a catalyst, recycled polyethylene terephthalate with the polyester polyol intermediate of the previous step,
b. 30 to 50 wt.% of a rigid amino polyol having a hydroxyl number of from 440 to 540 which is based on sucrose or an aromatic amine polyol,
c. 5 to 25 wt.% of an organic surfactant alcohol, and
d. 25 to 35 wt.% of a polyether triol having a molecular weight of at least 4,500 and a primary hydroxyl content of greater than 75%.

4,439,552
METHOD OF PREPARING A URETHANE PREPOLYMER AND POLYMER
Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Chicago, Ill.
Continuation of Ser. No. 262,204, May 8, 1981, Pat. No. 4,329,436. This application Feb. 22, 1982, Ser. No. 350,946
Int. Cl.³ C08G 18/14
U.S. Cl. 521—159 **4 Claims**

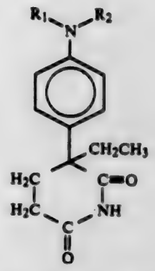
1. A method of forming a hydrophilic urethane prepolymer, said method comprising the steps of:
(a) adding to a polyether or polyester compound under substantially anhydrous conditions a stoichiometric excess of compound containing at least two active isocyanate groups per molecule to form a reaction mixture and initiate an exothermic condensation reaction between said polyether or polyester compound and said isocyanate compound, the temperature of said reactants being such that the temperature of said reaction mixture after addition of isocyanate is greater than about 120° C.;
(b) allowing said reaction to proceed in order to form a hydrophilic urethane prepolymer;
(c) observing the temperature of said reaction mixture as said reaction proceeds; and
(d) adding to said reaction mixture additional anhydrous polyether or polyester compound when said reaction mixture temperature exceeds a predetermined maximum value, whereby said reaction is quenched.

4,439,553
HIGH MOLECULAR WEIGHT AROMATIC AMINE SCAVENGERS AND METHOD OF USE
James L. Guthrie, Ashton, and Clifton L. Kehr, Silver Spring, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Jan. 17, 1983, Ser. No. 458,434
Int. Cl.³ C08G 18/14
U.S. Cl. 521—159 **12 Claims**

1. A process for scavenging aromatic amines from polyurethane foams produced from aromatic polyisocyanates which comprises adding a scavenger consisting essentially of at least one polyol end-capped with an aliphatic polyisocyanate.

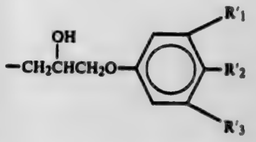
4,439,554
DIOXO-PIPERIDINE SUBSTITUTED TERTIARY AROMATIC AMINE ACCELERATORS IN ACRYLIC RESIN
Harold Argentar, Rockville, Md., assignor to American Dental Association Health Foundation, Chicago, Ill.
Division of Ser. No. 166,383, Jul. 7, 1980, which is a division of Ser. No. 885,275, Mar. 10, 1978, Pat. No. 4,243,763. This application Jun. 11, 1982, Ser. No. 387,592
Int. Cl.³ B01J 27/24; C08F 2/00, 4/00; C07D 211/40
U.S. Cl. 523—115 **16 Claims**

1. Tertiary aromatic amine accelerators for acrylic resins having the following structure:



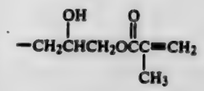
(A)

where R_1 and R_2 are the same or different and are selected from the following groups:
(a) $-CH_3$,
(b) $-CH_2CH_2C_nH_{2n+1}$ with n varying between 0 and 18,

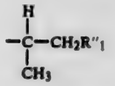


(c)

where R_1', R_2' and R_3' are each either hydrogen, normal alkyl, $-C_nH_{2n+1}$, with n varying between 1 and 20, or t-butyl, but if one R′ is t-butyl, then the adjacent R′ is hydrogen,



(d)



(e)

where R_1'' is $-C_nH_{2n+1}$ with n varying from 0 to 17, or
(f) $-CH_2CH_2OH$; or
(B) a polymeric amine having 10 or fewer amine units which is the reaction product of the amine (A) in which R_1 and R_2 are each hydrogen with the diglycidyl ether of bisphenol A, or the hydrolysis product of this polymeric amine; or
(C) a polymeric amine having a chain of type (B) but having terminal amine groups or type (A), where R_1 or R_2 for these terminal groups is as defined in (A); or
(D) a polymeric amine having 10 or fewer amine units which is the reaction product of the amine (B) with methacrylic or acrylic acid.

8. A restorative dental material comprising a polymerizable resin selected from the group consisting of an acrylate ester, a methacrylate ester and an unsaturated polyester; a peroxide catalyst; and a tertiary aromatic amine as in claim 1.

4,439,555

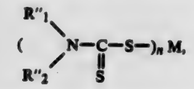
ANTIFOULING COMPOSITION

Hiroshi Doi, Takarazuka; Osamu Kadota, Toyonaka, and Susumu Kohno, Machida, all of Japan, assignors to Nippon Oil and Fats Co., Ltd. and Denki Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,721
Claims priority, application Japan, Mar. 23, 1981, 56-41903; Mar. 24, 1981, 56-42842; Jul. 16, 1981, 56-110080
Int. Cl.³ C08K 5/57
U.S. Cl. 523—122 10 Claims

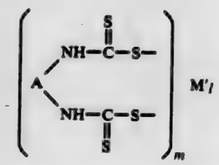
1. An antifouling composition which comprises a mixture of (A) one or more dithiocarbamic acid derivatives selected from the group consisting of

(1) a dithiocarbamate having the formula



wherein R_1'' and R_2'' are the same or different and are selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, phenyl, morpholinyl and piperazinyl, M is Zn, Ni, Mn, Cu, Co, Pb, Fe, Sn, Ag or Hg, and n is the valence of M,

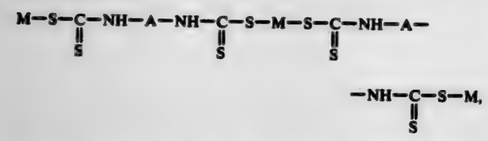
(2) a metal salt of dithiocarbamic acid having the formula



wherein A is ethylene, propylene or butylene, M′ is Zn, Ni, Mn, Cu, Co, Pb, Fe, Sn and Hg, and m and l are integers as follows:

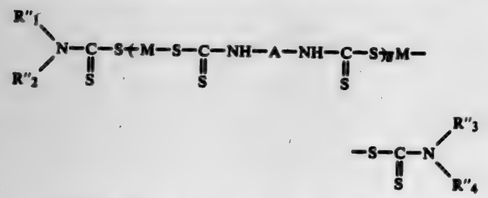
m is 1 and l is 2 when M′ is monovalent,
m is 1 and l is 1 when M′ is divalent,
m is 3 and l is 2 when M′ is trivalent, and
m is 2 and l is 1 when M′ is tetravalent:

(3) a polymer of metal dithiocarbamate having the formula of



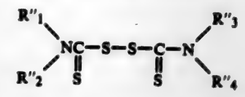
wherein M and A have the same meanings as defined above,

(4) metal salts of dithiocarbamic acid having the formula



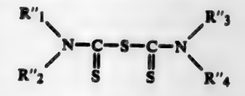
wherein R_3'' and R_4'' are the same or different and are selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, phenyl, morpholinyl and piperazinyl, a is an integer of 1 to 10 and M, A, R_1'' and R_2'' have the same meanings as defined above,

(5) thiuram disulfides having the formula

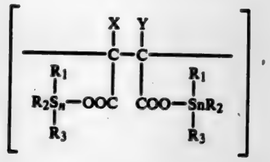


wherein R_1'', R_2'', R_3'' and R_4'' have the same meanings as defined above, and

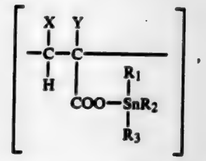
(6) thiuram monosulfides having the formula



wherein R_1'', R_2'', R_3'' and R_4'' have the same meanings as defined above, (B) one or more organotin compounds selected from the group consisting of polymers having recurring, first structural units of the formula



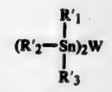
copolymers of monomers having said first structural unit and an acrylic or vinyl monomer, polymers having recurring second structural units of the formula,



copolymers of monomers having said second structural unit and an acrylic or vinyl monomer, organotin compounds having the formula

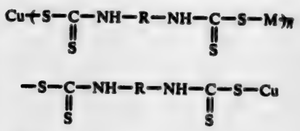


and organotin compounds having the formula

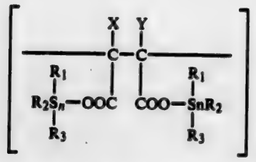


wherein R_1, R_2 and R_3 are the same or different and are selected from the group consisting of alkyl, phenyl and cycloalkyl, X and Y are hydrogen or methyl, R_1', R_2' and R_3' are the same or different and are selected from the group consisting of alkyl, phenyl and cycloalkyl, Z is halogen, ester group, acyl group, a monovalent functional group containing sulfur, a monovalent functional group containing oxygen or an acyl group which is partially substituted by a halogen; and W is a divalent functional group containing oxygen or sulfur.

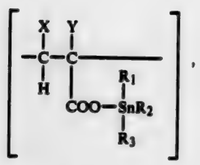
2. An antifouling composition which comprises a mixture of (A) one or more compounds having the formula



wherein R is alkylene having 2 to 6 carbon atoms, M is metal having a valence of 2 or more, and n is zero or an integer of one or more, (B) one or more organotin compounds selected from the group consisting of polymers having recurring, first structural units of the formula



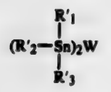
copolymers of monomers having said first structural unit and an acrylic or vinyl monomer, polymers having recurring second structural units of the formula,



copolymers of monomers having said second structural unit and an acrylic or vinyl monomer, organotin compounds having the formula



and organotin compounds having the formula



wherein R_1, R_2 and R_3 are the same or different and are selected from the group consisting of alkyl, phenyl and cycloalkyl, X and Y are hydrogen or methyl, R_1', R_2' and R_3' are the same or different and are selected from the group consisting of alkyl, phenyl and cycloalkyl, Z is halogen, ester group, acyl group, a monovalent functional group containing sulfur, a monovalent functional group containing oxygen or an acyl group which is partially substituted by a halogen; and W is a divalent functional group containing oxygen or sulfur.

4,439,556

AQUEOUS, ADHESIVE COATING COMPOSITION WITH A NON-SELFCROSSLINKABLE ELASTOMER FOR USE WITH FILAMENTARY MATERIALS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 238,725, Feb. 27, 1981, Pat. No. 4,405,746. This application Sep. 29, 1982, Ser. No. 426,587
Int. Cl.³ C08L 61/12; C08K 7/10
U.S. Cl. 523—206 16 Claims

1. An elastomeric matrix material reinforced with filamentary material coated with the dried residue of an aqueous adhesive coating composition, comprising:

A. A vinyl-pyridine-containing elastomeric latex selected from the group consisting of an elastomeric copolymer latex produced from a vinyl pyridine-containing monomer and 1,3-diene hydrocarbon monomer and an elastomeric terpolymer latex produced from vinyl pyridine-containing monomer, 1,3-diene hydrocarbon monomer and a vinyl-containing monomer,

B. phenolic aldehyde condensate polymer,

C. non-self-crosslinkable elastomeric latex having a gel content of less than 40% and an average particle size of less than around 2000 angstroms present in the coating composition in a predominant amount over the amount of the vinyl pyridine-containing copolymer or terpolymer,

D. carboxylated butadiene polymer or carboxylated butadiene-styrene copolymer present in the amount of about 0.5 to about 3 weight percent of the dried solids of the aqueous coating composition,

E. and water.

4,439,557

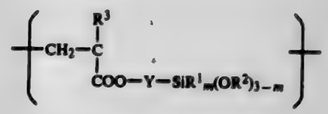
COATING COMPOSITIONS

Hiroshi Kawamura, Kusatsu, and Giro Mibae, Otsu, both of Japan, assignors to Toray Industries, Incorporated, Japan

Filed May 6, 1982, Ser. No. 375,655
Claims priority, application Japan, May 8, 1981, 56-68351; May 8, 1981, 56-68352; May 8, 1981, 56-68353
Int. Cl.³ C08K 3/36
U.S. Cl. 523—216 13 Claims

1. A coating composition comprising:

A. an acrylic polymer having a repeating unit represented by



wherein R^1 is a methyl or ethyl group, R^2 is an alkyl, alkoxyalkyl or acyl group having not more than 4 carbon atoms, R^3 is hydrogen or a methyl group, Y is a divalent aliphatic radical having 2 to 10 carbon atoms and m is 0, 1 or 2;

B. fine particles of silica having an average diameter of particles in the range of 1 to 200 nm; and

C. a curing catalyst.

4,439,558

AQUEOUS PEROXIDE EMULSION FOR USE WITH GLASS FIBERS

Albert E. Tamosauskas, Pittsburgh, and Chester S. Temple, McKees Rocks, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 136,645, Apr. 2, 1980, Pat. No. 4,391,876. This application Feb. 16, 1982, Ser. No. 349,124
Int. Cl.³ C08K 3/40; C08L 91/06; B32B 17/10, 9/00
U.S. Cl. 523—217 4 Claims

1. Polymers reinforced with sized glass fibers having the

dried residue of an aqueous sizing composition, comprising: a film former present in an amount of about 0.5 to 12 weight percent of the aqueous sizing composition, and an aqueous emulsion of peroxide which when subjected to temperatures to decompose the peroxide to free radicals allows for binding of the sized glass fiber strand to the polymer, where the aqueous peroxide emulsion is present in an amount to give an amount of active organic peroxide in the aqueous sizing composition in the range of about 0.1 to about 6 weight percent of the aqueous sizing composition and wherein the aqueous peroxide emulsion has:

(a) at least 1 to about 60 percent by weight of said liquid organic peroxide that is liquid at 20° C. selected from the group consisting of hydroperoxides, α-oxy and α-peroxy hydroperoxides, dialkyl peroxides, aldehyde and ketone peroxides, diacyl peroxides, peroxyesters, peroxy acids, peroxydicarbonates, peroxymonocarbonate and perketals and has a half-life exceeding 60 hours at 212° F. (100° C.) and 20 minutes at 300° F. (149° C.),

(b) about 1 to about 15 weight percent of a nonionic emulsifier blend having three emulsifiers selected from the group consisting of polyalkylene glycol ethers, dialkylarylpolyether alcohols, and polyoxypropylene-polyoxyethylene condensates, phenoxypolyethoxyethanols, polyethylene derivatives of fatty acids, partial esters of sorbitol anhydrides; ethoxylated alcohols, fatty acids, fatty esters and oils, alkylphenols; glycerol esters, sucrose esters and derivatives, monoglycerides and derivatives, and sorbitan derivatives, polyethoxy phenols, alkyl polyether alcohols, ethylene oxide alkylated phenol condensation products, and mixtures thereof wherein one emulsifier has an HLB in the range of about 6 to about 12 and one emulsifier has an HLB in the range of about 9 to 15 and one emulsifier has an HLB in the range of about 12 to about 20 each in proportions to give an overall HLB level for the emulsifier system in the range of about 9 to about 20, and

(c) water in an amount of at least about 35 weight percent of the emulsion.

4,439,559

MOULDING COMPOSITIONS

Trevor R. Osborne, Wellingborough, England, assignor to Scott Bader Company Limited, Northamptonshire, England

Filed Sep. 23, 1982, Ser. No. 422,144
Claims priority, application United Kingdom, Sep. 25, 1981, 8129029
Int. Cl.³ C08L 67/06
U.S. Cl. 523—513 9 Claims

1. A granular composition for moulding, which composition contains

(a) an unsaturated polyester resin, 25–55 mole % of the acid component of which is a symmetrical aromatic saturated dicarboxylic acid and the glycol component of which is 1,6-hexanediol,

(b) a monomer which is selected from monomers which are solids and liquids of low volatility,

(c) at least one inorganic filler, and

(d) reinforcing fibres.

4,439,560

COATING COMPOSITION

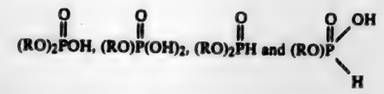
Naomitsu Takashina, Yokohama; Masahiro Shimoi, Hiratsuka, and Yoshinori Iwamoto, Odawara, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,800
Claims priority, application Japan, Aug. 22, 1980, 55/115492
Int. Cl.³ C08K 5/05
U.S. Cl. 523—437 5 Claims

1. An ambient temperature curing coating composition which consist essentially of a solution of (1) components reactive with each other to form a film upon curing at ambient temperature and (2) a solvent; said film-forming components (1) being:

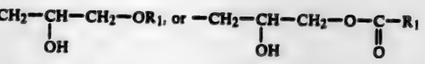
(a) copolymers having pendant epoxy groups prepared by copolymerization of 2 to 60% by weight, on the basis of total monomer, of glycidyl acrylate or methacrylate or allylglycidyl ether with at least one other polymerizable monomer, and

(b) 0.1 to 3.0 equivalents of at least one of acid phosphate ester and acid phosphite ester represented by the following formula, per one equivalent of the epozy groups of the copolymers,



$(RO)_2POH$, $(RO)P(OH)_2$, $(RO)_2PH$ and $(RO)P(=O)(OH)H$

[R is an alkyl group having 3 to 18 carbon atoms, or an aryl group, or substituted aryl group, methacryloyl or acryloyl, $-C_2H_4Cl$,



$-CH_2-CH(OH)-CH_2-OR_1$, or $-CH_2-CH(OH)-CH_2-O-C(=O)-R_1$

(R_1 is an alkyl group having 1 to 15 carbon atoms, or aryl group)] and, said solvent (2) being:

(c) at least 5% by weight, on the basis of the solvent (2), of an alcoholic solvent, and

(d) at least one other organic solvent.

4,439,561

SEALANT COMPOSITION AND METHOD

Alan G. Barber, Woodbury, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 24, 1982, Ser. No. 361,546
Int. Cl.³ C08L 99/00; C09K 3/12
U.S. Cl. 524—13 42 Claims

1. A composition for the stopping of liquid leaks in heat exchange systems which comprises a suspension in a liquid medium of:

(a) particulate material in an amount and of a size sufficient to become entrained in the leak, and

(b) fibrillated fiber coacting with the particulate material to seal the leak by an entwining action.

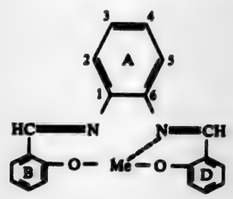
4,439,562

POLYMERIC MATERIAL MASS-DYED WITH CERTAIN METALIZED BIS-AZOMETHINE DYESTUFFS

Hans Bohler, Rheinfelden, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Aug. 16, 1982, Ser. No. 408,190
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133680
Int. Cl.³ C08K 5/23, 5/56; C08J 3/20; C09B 55/00
U.S. Cl. 524—90 27 Claims

1. Mass-dyed polymeric material having dissolved therein, as dyestuff, a compound or a mixture of compounds of formula I



I

wherein

the nucleus A is unsubstituted or substituted by up to two substituents selected from cyano; halogen; nitro; methyl; ethyl; C_{1-4}alkoxy; benzoylamino; benzoylamino the phenyl ring of which is substituted by up to two substituents selected from chlorine, bromine, methyl, benzoyl, methoxy, ethoxy and nitro; C_{2-3}-acylamino; carboxy; alkoxy C_{1-4}-carbonyl; carbamoyl; alkyl C_{1-4}-carbamoyl; di(C_{1-4}alkyl)carbamoyl; phenylcarbamoyl; phenylsulphamoyl; and N-C_{1-4}alkyl-N-phenylcarbamoyl,

the nuclei B and D, independently, are each unsubstituted or substituted by up to three substituents selected from those defined above for nucleus A, and

Me is nickel or copper,

with the proviso that when the nuclei B and D are each substituted by halogen then the nucleus A is substituted in the 3- or 4-position by a substituent other than halogen or nitro.

4,439,563

WATER BASED CONCRETE CURE

John J. Sackis, Bartlett, and Paul H. Anderson, Elgin, both of Ill., assignors to W. R. Meadows, Inc., Elgin, Ill.

Filed Sep. 23, 1982, Ser. No. 421,851
Int. Cl.³ C08K 5/35
U.S. Cl. 524—96 17 Claims

1. A method for making a water based concrete cure comprising the steps of:

melting an aliphatic hydrocarbon resin having a melting point in the range of from about 70° C. to about 105° C., and a paraffinic wax having a combined weight by percentage of the final product of at least 13%;

mixing into the resin and wax an emulsifying agent in an amount of at least 0.96% by weight;

adding water sufficient to form an emulsion of resin and wax in the water.

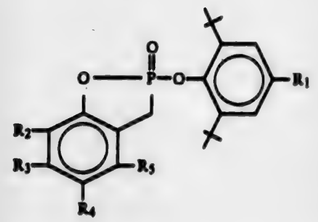
4,439,564

5-MEMBERED CYCLIC PHOSPHONATES AND COMPOSITIONS THEREOF

Dwight W. Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Co., Akron, Ohio

Filed Sep. 29, 1982, Ser. No. 427,362
Int. Cl.³ C07F 9/28; C08K 5/53
U.S. Cl. 524—101 29 Claims

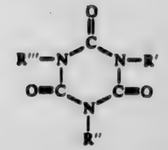
21. A composition comprising organic materials subject to degradation and stabilizing amounts of (1) 2-[alkylphenoxy]-2,3-dihydro-1,2-benzoxaphosphole 2-oxide cyclic phosphonates of the formula:



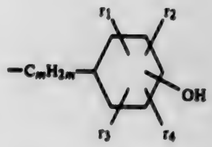
wherein:

is t-butyl; R_1 is hydrogen, an alkyl radical containing 1 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, halogen, an alkoxy radical containing 1 to 8 carbon atoms, phenyl, a $-CH_2CH_2COOR_6$ group wherein R_6 is an alkyl radical containing 1 to 8 carbon atoms, or a t-alkyl radical containing 4 to 8 carbon atoms; R_2 is hydrogen, an alkyl radical containing 1 to 8 carbon atoms, and methoxy or phenyl when R_3, R_4 and R_5 are hydrogen, or when R_3 and R_4 are hydrogen and R_5 is methyl; R_3 is methyl when R_4 is methyl or hydrogen and R_2 and R_5 are hydrogen; R_4 is hydrogen, an alkyl radical containing 1 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, a t-alkyl radical containing 4 to 8 carbon atoms, methoxy, phenyl, halogen or methoxycarbonyl, when R_2 is hydrogen, an alkyl radical containing 1 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms and a t-alkyl radical containing 4 to 8 carbon atoms, and R_3 and R_5 are hydrogen; R_5 is methyl when R_2, R_3 and R_4 are hydrogen, or when R_4 is methyl and R_2 and R_3 are hydrogen, and hydrogen when R_2, R_3, R_4 are the same as above;

and when R_4 and R_5 are $(-CH=CR_7-CH=CH-)$, R_7 is hydrogen or t-butyl, and R_2 is t-butyl or hydrogen and R_3 is hydrogen; and when R_2 and R_3 are $(-CH=CH-)_2$, R_4 and R_5 are hydrogen, and (2) a hydroxyphenylalkyleneyl isocyanurate of the formula



wherein R′ is a hydroxyphenylalkyleneyl radical of the formula



where m is 1 to 4, r_1 is an alkyl radical having 1 to 18 carbon atoms and is positioned immediately adjacent to the hydroxy group on the ring; r_2, r_3, and r_4 are hydrogen or an alkyl radical containing 1 to 18 carbon atoms; and R″ and R‴ are hydrogen, an alkyl radical containing 1 to 18 carbon atoms, or are the same as R′.

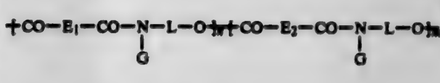
4,439,565

OLIGOMERIC ESTERAMIDES CONTAINING PENDANT HINDERED AMINE GROUPS

Roland A. E. Winter, Armonk; Roger F. Malherbe, Yonkers, both of N.Y., and Frank Tieh-Yin Fu, Taipei, Taiwan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 10, 1982, Ser. No. 440,490
Int. Cl.³ C07D 401/12, 401/14; C08K 5/34
U.S. Cl. 524—103 23 Claims

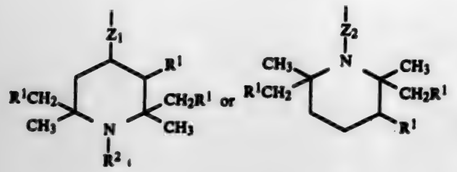
1. An oligomeric esteramide having recurring structural units, jointed in essentially a random fashion, of the formula (A)



(A)

wherein

G is a hindered amine radical of formula I or II



(I) (II)

in which R^1 is hydrogen or alkyl having 1 to 4 carbon atoms, R^2 is hydrogen, alkyl having 1 to 12 carbon atoms, allyl, benzyl, acetyl, acryloyl or cyano, Z_1 is a direct bond, $—NHCH_2CH_2—$, $—NHCH_2CH_2CH_2—$ or $—OCH_2CH_2—$, with the heteroatom attached to the piperidyl ring, Z_2 is ethylene or trimethylene,

E_1 and E_2 are the same or different and are alkylene having 2 to 12 carbon atoms, o-phenylene, m-phenylene, p-phenylene, 5-norbornen-2,3-diyl or vinylene,

L is ethylene, trimethylene or $—CH_2CHR^3—$ where R^3 is alkyl having 1 to 6 carbon atoms, cycloalkyl having 5 or 6 carbon atoms or phenyl,

the sum of n plus m is 2 to 50, and when E_1 and E_2 are different, the ratio of n/m is 49/1 to 1/49.

19. A method of stabilizing an organic material subject to light-induced deterioration which comprises incorporating in said material from 0.05 to 5% by weight of said material of an esteramide according to claim 1.

4,439,566

CARBONATE POLYMERS CONTAINING A SALT OF A CROWN COMPLEX AS AN IGNITION DEPRESSANT

Lowell S. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1982, Ser. No. 369,050
Int. Cl.³ C08K 5/15
U.S. Cl. 524—108 6 Claims

1. A composition comprising a carbonate polymer having dispersed therein a thermally stable crown salt having a cation that is a complex of an alkali metal or alkaline earth metal ion and a crown compound in an amount sufficient to retard combustion when the composition is exposed to a low temperature ignition source.

4,439,567

PROCESS FOR INJECTION MOLDING POLYOLEFIN RESIN COMPOSITIONS

Takeo Inoue; Jun Otsu; Tateyo Sasaki; Hiroyuki Doi, and Keigo Suehiro, all of Hiroshima, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Hiroshima, Japan

Continuation of Ser. No. 280,000, filed as PCT JP79/00290, Nov. 14, 1979, published as WO81/01410, May 28, 1981 §102(e) dated Jul. 2, 1981, abandoned. This application Jul. 8, 1982, Ser. No. 396,202
Int. Cl.³ C08K 5/15
U.S. Cl. 524—108 3 Claims

1. A process for producing injection molded polyolefin products of good transparency without foaming or blistering which comprises forming a polyolefin resin composition by adding to a polyolefin a condensate of sorbitol with an aldehyde compound and a lubricant in an amount of 1/20–½ parts by weight based on 1.0 part by weight of said condensate, wherein said lubricant is at least one member selected from the group consisting of a saturated or unsaturated aliphatic amide having 3–30 carbon atoms and its derivatives, a saturated or unsaturated aliphatic monocarboxylic acid ester having 3–30 carbon atoms, and a silicone compound, and injection molding said polyolefin resin composition.

4,439,568

FABRICATION OF COMPOSITE ARTICLES

Ben R. Bogner, Wheaton, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 6, 1981, Ser. No. 318,958
Int. Cl.³ C08K 5/15
U.S. Cl. 524—111 4 Claims

1. A binder composition comprising a resinous furan binder selected from the group consisting of furfuryl alcohol homopolymer resins, furfuryl alcohol-formaldehyde resins, furfuryl alcohol-furfural-formaldehyde resins, furfuryl alcohol-phenol resins, furfuryl alcohol-urea-formaldehyde resins and furfuryl alcohol-urea-phenol resins diluted with 5-hydroxymethylfurfural in an amount of about 5 to 25% by weight of the binder composition.

4,439,569

POLYMERIC THERMO-SENSITIVE MATERIAL

Shu Hotta, Katano; Yoshio Kishimoto, Hirakata, and Wataru Shimotsuma, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 202,179, Oct. 28, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,577
Claims priority, application Japan, Oct. 30, 1979, 54-140950; Nov. 13, 1979, 54-147298; Mar. 25, 1980, 55-38454
Int. Cl.³ C08K 5/51, 5/53, 3/30
U.S. Cl. 524—128 4 Claims



1. A thermosensitive polyamide composition comprising a polyamide, at least one bis(hydroxyphenyl) sulfide and at least one secondary or tertiary thiophosphorous acid ester,

said bis(hydroxyphenyl) sulfide and said thiophosphorous acid ester, each being employed in the amount of 0.1 to 10 weight parts per 100 weight parts of polyamide.

4,439,570

PHENOLIC ANTIOXIDANT COMPOSITIONS FOR ORGANIC POLYMERS

Giuseppe Messina, Alghero; Loreno Lorenzoni, Porto Torres, and Antonio L. Fadda, Sassari, all of Italy, assignors to Enteco Impianti S.p.A., Milan, Italy

Filed Sep. 27, 1982, Ser. No. 424,766
Claims priority, application Italy, Oct. 20, 1981, 24576 A/81
Int. Cl.³ C08K 5/50
U.S. Cl. 524—154 5 Claims

1. Heat resistant composition suitable for stabilizing styrene-butadiene rubbers, acrylonitrile-butadiene-styrene rubbers or polybutadiene against the deleterious effects of oxygen, light and heat, consisting essentially of a substantially-colourless liquid mixture of a phenolic antioxidant or mixture of phenolic antioxidants selected from the group consisting of the products of the alkylation of phenol or a methylene bisphenol with isobutylene, alpha-methylstyrene, cyclopentene, diisobutylene and nonenes or mixtures thereof; and from 100 to 10,000 ppm by wt. of a phosphine selected from the group consisting of triphenylphosphine, tributylphosphine and trioctylphosphine.

4,439,571

THERMALLY STABILIZED POLYMERS

Daniel L. Dufour, Longmeadow; Alva F. Harris, Wilbraham, and John B. Ott, Greenfield, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 24, 1981, Ser. No. 305,016
Int. Cl.³ C08K 5/15, 5/04, 3/38
U.S. Cl. 524—183 8 Claims

1. A polymeric composition having a reduced tendency to

crosslink during fabrication, which composition comprises polymer units derived from an unsaturated nitrile and from an unsaturated dicarboxylic acid anhydride and which also comprises from 0.1 to 8.0% by weight, based on the composition weights, of a boron compound selected from the group consisting of a boron oxide, boron acids and esters of boron acids wherein the esterifying groups are selected from alkyl, aralkyl, alkaryl, aryl or alkylene groups.

4,439,572

ZINC OXIDE-ZINC SALT SMOKE SUPPRESSANT/FLAME RETARDANTS

Robert H. Kindrick, Grosse Ile, Mich., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 315,336, Oct. 26, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,723
Int. Cl.³ C08K 3/38
U.S. Cl. 524—405 13 Claims

1. A method of improving the flame and smoke suppressant characteristics of halogen-containing polymeric compositions comprising polyvinyl chloride, polyvinylidine chloride, and or polyolefins with chlorinated paraffins which comprises adding to said polymeric compositions effective amounts of an inhibitor consisting essentially of a mixture of zinc oxide and zinc salt selected from the groups consisting of, zinc phosphate and zinc sulfide wherein the zinc salt range from about 5 to 50% by weight of the mixture.

4,439,573

PROPYLENE POLYMER COMPOSITION

Osamu Fukui, Toyonaka; Yoshiro Umemoto, Nagoya; Tsugumi Sanmiya, Toyota; Yutaka Sano, Kishiwada, and Kazuyoshi Tanaka, Sakai, all of Japan, assignors to UBE Industries and Toyota Jidosha Kabushiki Kaisha, both of Osaka, Japan

Filed Dec. 23, 1982, Ser. No. 452,725
Claims priority, application Japan, Dec. 25, 1981, 56-209173
Int. Cl.³ C08K 3/34
U.S. Cl. 524—451 6 Claims

1. A propylene polymer composition comprising

(A) 40% to 75% by weight of at least one crystalline ethylene-propylene block copolymer in which the content of the polymerized ethylene is in the range of from 5% to 10% by weight, in which the polypropylene component has a fraction thereof insoluble in boiling n-heptane, in an amount of 97% or more based on the weight of said polypropylene component, in which a fraction of the block copolymer soluble in p-xylene at room temperature, has an intrinsic viscosity of from 2.5 to 4 determined in decahydronaphthalene at a temperature of 135° C. and which block copolymer has a melt flow index of from 11 to 70;

(B) 20% to 40% by weight of at least one amorphous ethylene-propylene copolymer having an intrinsic viscosity of from 1.0 to 2.0 determined in decahydronaphthalene at a temperature of 135° C., and a Mooney viscosity ML_{1+4} of from 5 to 40 determined at a temperature of 100° C.; and

(C) 5% to 20% by weight of talc in the form of fine particles having an average size of from 0.1 to 5 microns.

4,439,574

PROCESS FOR THE PREPARATION OF LATTICES OF VINYLACETATE/OLEFIN COPOLYMERS

Jean-Luc Schuppiser, Clayes Souilly, and Jean-Claude Daniel, Fontenay-sous-Bois, both of France, assignors to Rhone-Poulenc Specialites Chimiques, France

Filed Aug. 5, 1982, Ser. No. 405,425
Claims priority, application France, Aug. 10, 1981, 81 15437
Int. Cl.³ C08F 2/16, 2/24
U.S. Cl. 524—458 14 Claims

1. A process for the preparation of a latex of a vinyl acetate-/olefin copolymer comprising the step of copolymerizing vinyl acetate with at least one olefin in aqueous emulsion, in the presence of an initiator, an emulsifier and a protective colloid, said protective colloid comprising a water-soluble polymer (a) containing at least one monomer selected from the group consisting of acrylamide, methacrylamide, substituted or unsubstituted N-alkyl derivatives of acrylamide, and substituted or unsubstituted N-alkyl derivatives of methacrylamide, and a water-soluble polymer (b) of ethylene glycol, said polymer (b) having a molecular weight between 1,000 and 50,000.

4,439,575

PROCESS FOR PREPARING AQUEOUS VARNISHES

Günther Schwarz, Münster, Fed. Rep. of Germany, assignor to BASF Farben + Fasern AG, Hamburg, Fed. Rep. of Germany

PCT No. PCT/DE82/00066, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/03402, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 24, 1982, Ser. No. 432,945
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112659
Int. Cl.³ C08L 91/08
U.S. Cl. 524—489 18 Claims

1. In a process for preventing sedimentation in an aqueous varnish containing additives selected from the group consisting of mineral fillers, pigments and mixtures thereof, the improvement comprising:

(a) preparing a hot wax emulsion in water by mixing waxes having a melting point above 60° C. and a cloud point on toluene between 35° C. and 45° C. in water at a temperature between 80° C. and 100° C.; and

(b) adding said hot wax emulsion at said temperature between 80° C. and 100° C. to said aqueous varnish with vigorous stirring.

4,439,576

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickel, Wallingford, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 203,212, Nov. 3, 1980, and a continuation-in-part of Ser. No. 203,213, Nov. 3, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,848
Int. Cl.³ C08K 3/26
U.S. Cl. 524—425 17 Claims

1. A polyurethane liquid polymer composition comprising a polyurethane oligomer, a heat activated free radical generating catalyst and at least one additional component selected from the group consisting of a reinforcing agent and a filler, said polyurethane oligomer having an equivalent ratio of NCO to OH from about 0.8/1 to about 2/1 and being prepared by reacting

(a) an organic polyisocyanate;

(b) a polyether polyol having an average equivalent weight of about 75 to about 500 and an average functionality of at least about 3; and

(c) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate, hydroxyethyl acrylamide, hydroxypropyl acrylamide, and mixtures thereof;

wherein there is employed an equivalent ratio of said isocyanate reactive group-containing unsaturated monomer to said polyether polyol in the range from about 0.6/1 to about 25/1.

4,439,577

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickal, Wallingford, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 203,213, Nov. 3, 1980, abandoned. This application Apr. 1, 1982, Ser. No. 364,575

Int. Cl.³ C08K 3/26

U.S. Cl. 524—425 19 Claims

1. A polyurethane liquid polymer composition comprising a polyurethane oligomer and a heat activated free radical generating catalyst, said polyurethane oligomer having an equivalent ratio of NCO to active hydrogen from about 0.5/1 to about 2/1 and being prepared by reacting

(a) an isocyanate-terminated prepolymer having a final free NCO content ranging from about 0.5% to about 30% which is the product of reacting

(1) an organic polyisocyanate with

(2) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate, hydroxyethyl acrylamide, hydroxypropyl acrylamide, hydroxyethyl methacrylamide, and mixtures thereof, with

(b) a polyol reactant comprising

(1) a high functionality polyol having an average equivalent weight of from about 75 to about 500 and an average functionality of at least about 3, said high functionality polyol being prepared by reacting an alkylene oxide, or a mixture of alkylene oxides, with a polyhydric initiator comprising a carbohydrate or a carbohydrate derivative, and

(2) a chain extender having an average equivalent weight from about 31 to about 4,000 and an average functionality of about 2, said chain extender being employed in an amount ranging from about 20 to about 1,500 parts by weight per 100 parts by weight of said high functionality polyol.

4,439,578

USE OF LIQUID CRYSTAL POLYMER PARTICULATES HAVING A HIGH ASPECT RATIO IN POLYMERIC MOLDING RESINS TO SUPPRESS MELT DRIPPING

Sang N. Kim, Randolph, and John R. Kastelic, Rockaway, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,523

Int. Cl.³ C08L 67/02, 77/02, 77/06

U.S. Cl. 524—538 28 Claims

1. A thermoplastic molding composition possessing desirable resistance to melt dripping comprising a major amount of a thermoplastic polymeric molding resin selected from the group consisting of thermoplastic polyesters and thermoplastic polyamides and a minor amount of particulates comprised of a liquid crystal polymer having an aspect ratio of at least about 10:1 and a length ranging from about 30 microns to about 0.5 inch, the melting temperature of said thermoplastic polymeric molding resin being lower than the temperature at which said liquid crystal polymer will melt or degrade and the temperature at which said polymer will melt or degrade being of sufficient magnitude and said particulates being present in an amount sufficient to enhance the ability of said molding resin to resist melt dripping.

4,439,579

PREPARATION OF AQUEOUS THERMOSETTING ELECTRICAL INSULATING VARNISHES

Udo Reiter, Mutterstadt; Hans-Uwe Schenck, Wachenheim; Helmut Lehmann, Reinbek, and Ferdinand Hanesch, Wedel, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,169

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121306

Int. Cl.³ C08L 79/08

U.S. Cl. 524—602 3 Claims

1. A process for the preparation of aqueous thermosetting electrical insulating varnishes which are suitable for use as wire enamels and impregnating varnishes and are based on polyester-imides which have been obtained by condensing aromatic tricarboxylic acid monoanhydrides, aromatic dicarboxylic acids or their esterifiable or transesterifiable derivatives, diamines, diols, and triols containing an isocyanurate ring, wherein hydroxyl-containing polyester-imides which have kinematic viscosities of from 16 to 30 $mm^2 \cdot s^{-1}$ (measured in a solution of 1 part of polyester-imide in 2 parts of N-methyl-pyrrolidone at 30° C.) and acid numbers of <10 are treated, at from 80° to 130° C., in the presence or absence of up to 5% by weight, based on polyester-imide, of an organic solvent, with from 5 to 15% by weight, based on polyester-imide, of ammonia in the form of an aqueous solution, thereby producing aminolysis and hydrolysis so that a neutral or slightly acidic solution results, which is diluted to a viscosity of from 100 to 10,000 mPa.s by adding demineralized water, from 0.1 to 5% by weight, based on polyester-imide, of a water-soluble curing catalyst being added, if desired, after the treatment with ammonia.

4,439,580

CATIONIC WATER-IN-OIL POLYMER EMULSIONS

Raymond J. Schaper, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1982, Ser. No. 412,338

Int. Cl.³ C08F 2/28

U.S. Cl. 524—801 8 Claims

1. A process for the production of high molecular weight water-in-oil polymer emulsions, comprising the steps of:

(a) preparing a 35 to 75 percent by weight, aqueous solution of at least one cationic monomer containing 0.5 percent, by weight, to saturation, of added salt;

(b) preparing a water-in-oil emulsion of the aqueous solution of (a) in a water-insoluble liquid containing a surfactant, said monomer concentration of the total emulsion being about 20 to 75 percent, by weight; and

(c) polymerizing said monomer emulsion at a pH of 7 to 13 in the presence of a polymerization catalyst to produce an emulsion containing a polymer with an intrinsic viscosity in 1.0 M NaCl of above 1.5 dl/g.

4,439,581

METHOD FOR THE PRODUCTION OF MICROCAPSULES

Shinsuke Irii, Nishinomiya, and Tomoharu Shiozaki, Amagasaki, both of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,923

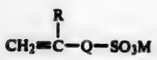
Claims priority, application Japan, Sep. 3, 1981, 56-139504; May 20, 1982, 57-87035

Int. Cl.³ C08L 75/00

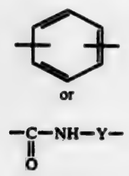
U.S. Cl. 524—839 15 Claims

1. A method for the production of microcapsules comprising the steps of

preparing an aqueous medium dissolving at least one homopolymer or copolymer therein, said homopolymer or copolymer having at least 40% monomer units represented by the general formula:



wherein R is hydrogen or alkyl, M is ammonium, sodium, potassium, lithium or hydrogen and Q is further represented by



wherein Y is methylene, ethylene or polymethylene having 3 to 10 carbon atoms, which methylene, ethylene or polymethylene may be substituted by at least one alkyl,

dispersing a hydrophobic liquid in said aqueous medium to form an emulsion system including microscopic emulsion droplets of said hydrophobic liquid, said hydrophobic liquid including at least one polyvalent isocyanate therein, and

causing interfacial polymerization of said polyvalent isocyanate in said emulsion system to form synthetic microcapsule walls comprising polyurea bonding around said droplets of said hydrophobic liquid.

4,439,582

BLENDS OF AROMATIC POLYCARBONATE WITH RANDOM COPOLYMERS OF A MONOVINYLIDENE AROMATIC AND AN UNSATURATED CARBOXYLIC ACID

David E. Henton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 223,606, Jan. 9, 1981, abandoned. This application Mar. 3, 1982, Ser. No. 354,477

Int. Cl.³ C08L 51/04, 69/00

U.S. Cl. 525—67 10 Claims

1. A heterogeneous blend comprising the following components: (1) a polycarbonate of a dihydric phenol blended with (2) an acid copolymer of a monovinylidene aromatic monomer and an α, β-ethylenically unsaturated carboxylic acid, said components being present in proportions such that the blend has (a) a Gardner Dart impact strength of at least about 100 inch-pounds, (b) a notched Izod impact strength of at least about 3 foot-pounds/inch of notch, (c) a heat resistance of at least about 210° F. as determined by ASTM D-648 (unannealed at 66 pounds per square inch) and (d) a processability (injection pressure) less than about 9000 pounds per square inch at a mold fill time of 3.0 seconds as determined by the test procedure for Injection Pressure set forth in footnote (10) of Table I hereof.

4,439,583

POLYURETHANE DIACRYLATE COMPOSITIONS USEFUL IN FORMING CANULAE

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Division of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558.

This application Sep. 1, 1982, Ser. No. 413,944

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.³ C08F 8/30; C08L 75/00

U.S. Cl. 525—127 19 Claims

1. A canula, the walls of which are formed of a hydrophilic polyurethane diacrylate composition, which will form a hydrogel upon immersion in water and is permeable to gases, ions and other low molecular weight species, which composition is dimensionally stable and exhibits memory, said polyurethane diacrylate composition comprising from about 90 to about 65 weight percent of a hydrophilic polyurethane resin characterized by terminal hydroxyl groups and from about 10 to about 35 weight percent of a diacrylate.

4,439,584

GAS AND ION PERMEABLE MEMBRANES FORMED OF POLYURETHANE DIACRYLATE COMPOSITIONS

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Division of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558.

This application Sep. 1, 1982, Ser. No. 413,943

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.³ C08F 8/30; C08L 75/00

U.S. Cl. 525—127 19 Claims

1. A burn dressing comprising a hydrophylic polyurethane diacrylate composition which will form a hydrogel upon immersion in water and is permeable to gases, ions and other low molecular weight species, which composition is dimensionally stable and exhibits memory, and said polyurethane diacrylate composition comprising from about 90 to about 65 weight percent of a hydrophilic polyurethane resin characterized by terminal hydroxyl groups and from about 10 to about 35 weight percent of a diacrylate.

4,439,585

POLYURETHANE DIACRYLATE COMPOSITIONS AS CARRIER FOR PHARMACOLOGICAL AGENTS

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Division of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558.

This application Sep. 2, 1982, Ser. No. 414,273

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.³ C08F 8/30; C08L 75/00

U.S. Cl. 525—127 18 Claims

1. An oral delivery system comprising a pharmacologically active agent and as a carrier vehicle therefor a hydrophylic polyurethane diacrylate composition which will form a hydrogel upon immersion in water and is permeable to gases, ions and other low molecular weight species, which composition is dimensionally stable and exhibits memory, said polyurethane diacrylate composition comprising from about 90 to about 65 weight percent of a hydrophilic polyurethane resin characterized by terminal hydroxyl groups and from about 10 to about 35 weight percent of a diacrylate.

4,439,586

PROCESS FOR PREPARING POLYARYLATES

James H. Kawakami, Piscataway; Benito See, Belle Mead; Thomas R. Jones, Lebanon, and Louis M. Maresca, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1982, Ser. No. 393,586

Int. Cl.³ C08G 63/18, 63/66

U.S. Cl. 525—169 24 Claims

1. An improved process for preparing a polyarylate having a reduced viscosity of from about 0.1 to greater than 1.0 dl/g which process comprises the following steps:

(a) reacting an acid anhydride derived from an acid containing from 2 to 8 carbon atoms with at least one dihydric phenol to form the corresponding diester; and

(b) reacting said diester with at least one aromatic dicarboxylic acid at a temperature sufficient to form the polyarylate, wherein the improvement comprises carrying out said process in the presence of from about 0.2 to about 2.0 weight percent, based on the weight of the reaction mix-

ture of an adsorbent selected from silica gel, activated charcoal or a molecular sieve.

4,439,587

WATER DISPERSIBLE ACRYLIC MODIFIED CHLORINATED RUBBER

Carlos J. Martinez, Edison, and Albert C. Chen, E. Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,434
Int. Cl.³ C08F 259/02
U.S. Cl. 525—292 3 Claims

1. A graft copolymer of at least one acrylic monomer or of at least one acrylic monomer and other monomers copolymerizable therewith, and chlorinated natural rubber or chlorinated synthetic rubber, in which at least about 8 percent of the total weight of said graft copolymer is derived from acrylic acid, methacrylic acid, or both.

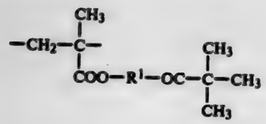
4,439,588

POLYMERS OF PIVALOYLOXYALKYL METHACRYLATES, METHOD FOR THEIR PREPARATION AND MODIFICATION

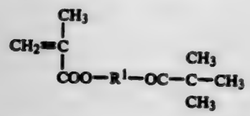
Stanislav Sevcik; Jiri Trekoval; Jan Holata, and Jiri Stamberg, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved., Prague, Czechoslovakia

Division of Ser. No. 89,628, Oct. 29, 1979, Pat. No. 4,267,287, which is a division of Ser. No. 944,392, Sep. 21, 1978, Pat. No. 4,218,552, which is a division of Ser. No. 783,398, Mar. 31, 1977, Pat. No. 4,130,705, which is a continuation-in-part of Ser. No. 590,635, Jun. 26, 1975, abandoned. This application Nov. 6, 1980, Ser. No. 204,615
Claims priority, application Czechoslovakia, Jun. 27, 1974, 4540-74; Jun. 27, 1974, 4541-74; Jun. 27, 1974, 4542-74
Int. Cl.³ C08F 8/12
U.S. Cl. 525—366 11 Claims

1. A method for modification of pivaloyloxyalkyl methacrylate polymer containing structural units having the general formula:



and being prepared by polymerizing a pivaloyloxyalkyl methacrylate having the general formula



where R^1 is $(CH_2)_{n1}$—O or $(CH_2CH_2—O)_{n2}$, n_1 being 2 to 10 and n_2 being 1 to 4, to produce stereoregular or atactic polymers comprising at least partially removing the protective ester —OCC$(CH_3)_3$ groups by a selective chemical reaction.

4,439,589

PROCESS FOR THE PREPARATION OF COPOLYMERS OF STYRENE AND/OR ITS DERIVATIVES

Heinrich Alberts, Cologne; Rüdiger Schubart, Bergisch-Gladbach, and Alfred Pischtschan, Kaerten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 243,612, Mar. 13, 1981, abandoned. This application Jan. 24, 1983, Ser. No. 460,489
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010347
Int. Cl.³ C08F 212/10; C08K 5/06
U.S. Cl. 526—209 6 Claims

1. A process for the preparation of a copolymer of styrene and/or a derivative thereof by polymerization of

(a) 95–20% by weight of at least one aromatic monovinyl compound,

(b) 5–80% by weight of at least one member selected from the group consisting of acrylonitrile and methacrylonitrile, and

(c) 0–75% by weight, based on the combined weight of (a) and (b), of at least one member selected from the group consisting of C_1–C_{20}-alkyl esters of acrylic and methacrylic acid, the sum of

(a), (b) and (c) being 100% by weight, wherein polymerization is carried out in the presence of 0.01 to 10% by weight, based on the total quantity of monomers of at least one enol ether derived from an aliphatic of cycloaliphatic aldehyde or ketone.

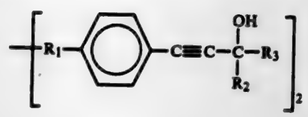
4,439,590

ACETYLENE-TERMINATED AROMATIC ENYNE RESINS AND METHOD OF PRODUCTION THEREOF

Harry T. Hanson, Millburn, N.J., assignor to Celanese Corporation, New York, N.Y.

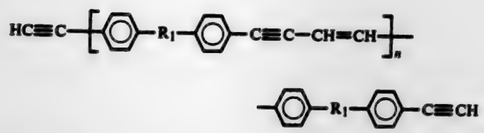
Filed Apr. 19, 1982, Ser. No. 369,393
Int. Cl.³ C08F 138/00
U.S. Cl. 526—285 16 Claims

1. A method for producing a poly-aromatic ethynyl-terminated enyne compound, comprising heating in the presence of a strong base a compound having a structure:



wherein R_1 is —SO_2— or —CO—, and wherein R_2 and R_3 can be the same or different and are selected from the group consisting of hydrogen and lower alkyl groups having from one to four carbon atoms, phenyl, and substituted phenyl, and wherein R_2 and R_3 can form a saturated five or six membered ring.

14. A compound having the structure:



wherein R_1 is a member selected from the group consisting of —SO_2— and —CO—; and wherein n is 1 to 10.

16. The thermoset resin comprised of a cured product of the compound of claims 14 or 15.

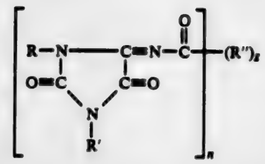
4,439,591

PROCESS FOR THE PRODUCTION OF BLOCKED COMPOUNDS OPTIONALLY CONTAINING FREE HYDROXYL GROUPS AND THEIR USE FOR THE PRODUCTION OF POLYURETHANES

Hans-Ulrich Buschhaus, Cologne; Kurt Findeisen, Odenthal; Hans-Joachim Traeuckner, and Wolfgang Beer, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,493
Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217387
Int. Cl.³ C08G 18/64; C07D 235/30
U.S. Cl. 528—73 6 Claims

1. A process for the production of compounds containing reversibly blocked and, optionally, free alcoholic hydroxyl groups, characterized in that organic compounds containing at least one alcoholic hydroxyl group, but being otherwise inert under the reaction conditions are reacted at about 0° to 140° C. with N,N'-disubstituted 5-acylimino-imidazolidine diones corresponding to the following general formula



in which

R and R' may be the same or different and represent an optionally halogen-, C_1–C_4-alkyl, methoxy-, nitro-, C_1–C_4-alkoxy- or nitrile-group-substituted aliphatic C_1–C_{20} hydrocarbon radical, cycloaliphatic C_3–C_{15} hydrocarbon radical, aromatic C_6–C_{15} hydrocarbon radical or araliphatic C_7–C_{15} hydrocarbon radical,

R'' represents an n-functional aliphatic C_2–C_{20} hydrocarbon radical, cycloaliphatic C_3–C_{15} hydrocarbon radical, aromatic C_6–C_{15} hydrocarbon radical, araliphatic C_7–C_{15} hydrocarbon radical optionally containing inert substituents, a C_1–C_4 alkoxy radical optionally containing inert substituents, a phenoxy radical or a radical of the type obtained by removal of the chlorocarbonyl groups from an n-functional organic carbamic acid chloride containing a total of 2 to 10 carbon atoms,

n=an integer of from 1 to 3 and

z=0 or 1.

6. A process for the production of a polyurethane which comprises

(a) preparing a compound containing at least two partially blocked hydroxyl groups according to the process of claim 3,

(b) mixing the compounds prepared in (a) with an organic polyisocyanate and

(c) heating the mixture formed in (b) to a temperature in excess of 140° C.

4,439,592

PREPARATION OF POLYDIORGANOSILOXANES HAVING TERMINAL TRIORGANOSILYL GROUPS

Günther Maass, Bergisch-Gladbach; Hans J. Lücking, Leverkusen; Karl Bründle, Bergisch-Gladbach, and Hans-Heinrich Moretto, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,720
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139316
Int. Cl.³ C08G 77/06
U.S. Cl. 528—14 6 Claims

1. In the preparation of a triorganosilyl-terminated polydiorganosiloxane by the polymerization at elevated temperature of a cyclic diorganopolysiloxane with a triorganosilyl-terminated siloxane chain length regulator in the presence of a basic catalyst, the improvement which comprises, before polymerization, distilling off a part of the cyclic diorganosiloxane in the presence of the polymerization catalyst at a temperature which is at least 10° C. below the temperature at which polymerization commences.

4,439,593

POLYURETHANE COMPOSITIONS WITH IMPROVED STORAGE STABILITY

Robert G. Kelso, Wexford; Meena S. Ahuja, Pittsburgh, both of Pa., and Peter D. Schmitt, Glen Dale, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 26, 1983, Ser. No. 498,225
Int. Cl.³ C08G 18/80, 18/32, 18/42
U.S. Cl. 528—45 21 Claims

1. A process for improving the storage stability of a composition containing

(a) a blocked polyisocyanate component prepared by blocking the isocyanate groups of an organic polyisocyanate with a blocking agent comprising a di-C_1—C_{12}—alkyl and/or —alkoxyalkyl malonate and

(b) a component comprising a compound containing at least two isocyanate-reactive hydrogens, which comprises incorporating a stabilizing amount of a compound having monofunctional reactivity towards isocyanate groups into said composition by adding said compound to component (a), component (b) or to the mixture of components (a) or (b).

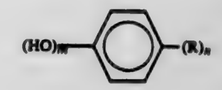
4,439,594

CURABLE EPOXY RESIN COMPOSITIONS

William A. Higgins, Gates Mills, and Alan C. Clark, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

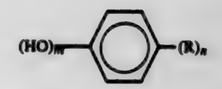
Filed Sep. 17, 1982, Ser. No. 420,171
Int. Cl.³ C08G 59/68, 59/40
U.S. Cl. 528—89 44 Claims

1. A curable epoxy resin composition comprising a mixture of an epoxy resin and a polyvalent metal salt of a phosphorodithioic acid prepared by the reaction of a phosphorus sulfide with a hydroxyl containing compound of the general formula



wherein R is hydrogen or a hydrocarbon-based substituent containing from about 1 to about 100 carbon atoms; m is an integer ranging from 1 to about 3 and n is an integer ranging from 1 to about 5 with the proviso that the sum of m+n does not exceed 6.

7. A curable epoxy resin composition comprising an epoxy resin, and a reaction product of (A) a polyvalent metal salt of a phosphorodithioic acid prepared by the reaction of a phosphorus sulfide with a hydroxyl containing compound corresponding to the general formula

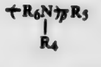


wherein R is a hydrogen or a hydrocarbon based radical containing from about 1 to about 100 carbon atoms; m is an integer ranging from 1 to about 3 and n is an integer ranging from 1 to about 5 with the proviso that the sum of m+ n is an integer not

to exceed 6 with (B) an amine compound corresponding to the general formula



wherein each of R_1 and R_2 is independently hydrogen or a radical selected from the group consisting of hydrocarbon based radicals containing from 1 to about 20 carbon atoms and hydroxyl substituted hydrocarbon based radicals containing from 2 to about 20 carbon atoms, R_3 is independently hydrogen or a radical selected from the group consisting of said radicals R_1 and R_2 and the radical



wherein each of R_4 and R_5 is independently hydrogen or a radical selected from the group consisting of said radicals R_1 and R_2, R_6 is a divalent hydrocarbon-based radical containing from 1 to about 18 carbon atoms and p is an integer ranging from 1 to about 10.

4,439,595

CHLORINATION OF HYDROQUINONE

Chih S. Chiang, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 21, 1983, Ser. No. 477,586
Int. Cl.³ C07C 39/24; C08G 63/68
U.S. Cl. 528—191 6 Claims

1. A process for chlorinating hydroquinone to obtain a chlorinated mixture comprising a major proportion of monochlorohydroquinone which process comprises adding sulfuryl chloride to a slurry or solution of hydroquinone and an alkyl ester having 2–8 carbon atoms, the mole ratio of sulfuryl chloride to hydroquinone being maintained in the range of from about 0.55 to about 1.2.

4,439,596

CHLORINATION OF HYDROQUINONE

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 21, 1983, Ser. No. 477,585
Int. Cl.³ C07C 39/24; C08G 63/68
U.S. Cl. 528—191 3 Claims

1. A process for chlorinating hydroquinone to obtain a chlorinated mixture containing a major proportion of chlorohydroquinone comprising adding sulfuryl chloride to a slurry or solution of hydroquinone and glacial acetic acid, the mole ratio of sulfuryl chloride to hydroquinone being in the range of from about 0.8 to about 1.2.

4,439,597

PROCESS FOR THE PREPARATION OF POLYBUTYLENE TEREPHTHALATE

Henry K. Hall, Jr., and Anne B. Padias, both of Tucson, Ariz., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 181,275, Aug. 25, 1980, Pat. No. 4,346,213. This application Apr. 16, 1982, Ser. No. 369,065
The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.
Int. Cl.³ C08G 63/34
U.S. Cl. 528—272 2 Claims

1. In the process for preparing polybutylene terephthalate in which terephthalic acid and 1,4-butanediol are reacted in a first stage at elevated temperature in the presence of polyesterification catalyst until the clearing point of the reaction is reached, and the reaction products of the aforesaid first stage are further reacted in a second stage at a temperature which is higher than that of the first stage and at substantially less than superatmospheric pressure to distill 1,4-butanediol, in the presence of a polycondensation catalyst to provide polybutylene terephthalate, the improvement is provided which comprises commencing the second stage reaction after a major part of the terephthalic acid has been consumed in the first stage but before the clearing point of the first stage reaction has been reached and when from about 10 weight percent to about 40 weight percent unreacted terephthalic acid remains in the first stage reaction medium.

4,439,598

MODIFIED POLY(TETRAMETHYLENE TEREPHTHALATE)

Bobby J. Sublett, Kingsport, and Samuel D. Hilbert, Jonesboro, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,463
Int. Cl.³ C08G 63/54
U.S. Cl. 528—295.3 6 Claims

1. Copolyester compositions derived from 100 mole % of a dicarboxylic component and 100 mole % of a glycol component, said acid component comprising terephthalic acid modified with about 10–30 mole % of at least one aliphatic dicarboxylic acid having 4 to 12 carbon atoms and said glycol component comprising 1,4-butanediol, said copolyester being further modified with about 10–30 mole % of dimer acid or dimer glycol, and said copolyester composition having a melting point of less than 200° C.

4,439,599

POLYURETHANE HAVING EXCELLENT ELASTIC RECOVERY AND ELASTIC FILAMENT OF THE SAME

Shoji Watanabe; Takuya Miho; Naoki Nakashima, all of Ohtake, and Yoshiyuki Ikemoto, Yokohama, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 426,453
Claims priority, application Japan, Oct. 2, 1981, 56-157181; Aug. 6, 1982, 57-137094
Int. Cl.³ C08G 18/42
U.S. Cl. 528—80 4 Claims

1. A polyurethane having excellent elastic recovery, said polyurethane having been prepared by reacting an organic diisocyanate with a polycaprolactone polyester-diol, said polycaprolactone polyester-diol having been prepared by reacting a reaction mixture consisting essentially of (i) neopentyl glycol, (ii) a dibasic acid, an ester thereof or an anhydride thereof, and (iii) a material selected from the group consisting of epsilon-caprolactone, hydroxycaproic acid and mixture thereof, under conditions effective to form a random copolymer in which units derived from said neopentyl glycol and said component (ii) are randomly distributed in a polycaprolactone chain, said polycaprolactone polyester-diol having a hydroxyl value of 35 to 150 KOH mg/g and containing from 60 to 95% by weight of said material (iii).

4,439,600

CURE TO ELASTOMERS COMPOSITIONS

James P. Moran, Jr., Farmington, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Jun. 3, 1983, Ser. No. 500,777
Int. Cl.³ C08G 81/02, 63/76; C08F 283/04
U.S. Cl. 528—392 74 Claims

1. A cure-to-elastomer composition comprising, in combination:

(a) a moderate-to-long chain di or polyfunctional prepolymer having vinyl reactive ends;

(b) a cross-link controlling material which is (i) reactive with said moderate-to-long chain di or polyfunctional prepolymer, and (ii) soluble in or miscible with said moderate-to-long chain prepolymer; and

(c) a free radical polymerization initiator.

38. A method of forming an elastomeric material, comprising the steps of

(1) providing a cure-to-elastomer composition which comprises at least one moderate-to-long chain di or polyfunctional prepolymer having vinyl reactive ends; and at least one cross-link controlling material which is (i) reactive with said moderate-to-long chain di or polyfunctional prepolymer, and (ii) soluble in or miscible with said moderate-to-long chain prepolymer; and

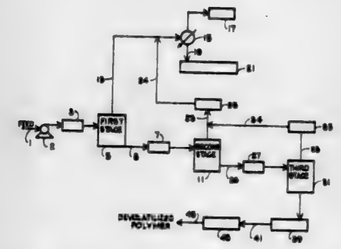
(2) curing the composition of step (1) in the presence of a free radical polymerization initiator.

4,439,601

MULTIPLE STAGE DEVOLATILIZATION PROCESS FOR MASS PROCESSABLE POLYMERS

J. L. McCurdy, Corona Del Mar, and Marvin A. Jarvis, Walnut, both of Calif., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation of Ser. No. 25,736, Mar. 30, 1979, abandoned. This application Jul. 15, 1981, Ser. No. 283,419
Int. Cl.³ C08F 6/10
U.S. Cl. 528—481 13 Claims



1. A multiple-stage vacuum flash devolatilization process for removing volatiles selected from the group consisting essentially of unreacted monomers, dimers, and trimers from a thermoplastic polymeric material consisting essentially of a mass processable polymer containing said volatiles to produce a polymeric material containing less than about 0.1% by weight of volatiles, comprising the steps of:

(a) heating said thermoplastic polymeric material to a temperature at least above its softening point but below its degradation temperature;

(b) feeding said heated thermoplastic polymeric material through a first flash devolatilization zone maintained at a first sub-atmospheric pressure sufficient to vaporize and remove a major portion of said volatiles from said polymeric material but which is above the pressure at which mechanical refrigeration is needed to condense the vaporized volatiles, whereby there is produced in said first flash devolatilization zone a partially devolatilized thermoplastic polymeric material;

(c) withdrawing a first stream of vaporized volatiles at said first sub-atmospheric pressure from said first flash devolatilization zone;

(d) feeding said partially devolatilized thermoplastic polymeric material to at least one additional flash devolatilization zone, maintained at a second sub-atmospheric pressure which is below said first sub-atmospheric pressure of said first flash devolatilization zone and which is sufficient to vaporize and remove the remaining amount of said volatiles from said polymeric material to produce a finally devolatilized thermoplastic polymeric material containing less than about 0.1% by weight of volatiles;

(e) withdrawing a second stream of vaporized volatiles at said second sub-atmospheric pressure from said additional flash devolatilization zone;

(f) feeding the second stream of volatiles from said additional flash devolatilization zone into the first stream of volatiles withdrawn from said first flash devolatilization zone, to produce a combined stream of volatiles at first sub-atmospheric pressure; and

(g) condensing the combined stream of volatiles by contacting said combined stream with a heat transfer surface which has been cooled by cooling water which itself has been cooled without the use of mechanical refrigeration to a temperature sufficient to condense said volatiles at said first sub-atmospheric pressure.

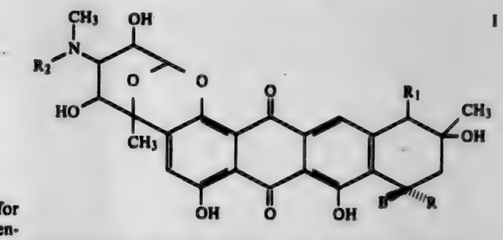
4,439,602

NOGALAMYCIN DERIVATIVES

Paul F. Wiley, Portage, assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 130,894, Mar. 17, 1980, Pat. No. 4,318,790. This application Aug. 20, 1981, Ser. No. 294,655
Int. Cl.³ C07H 15/26
U.S. Cl. 536—6.4 8 Claims

1. A compound having the following structure:



I

wherein R is selected from the group consisting of hydrogen and nogalosyl; R_1 is selected from the group consisting of hydrogen, carboxy and carbomethoxy; R_2 is selected from the group consisting of carboxylic acyl and hydrogen and B is selected from the group consisting of hydrogen and nucleophile selected from the group consisting of lower alkoxy, a sulfide anion, organic acid anion, amino, substituted amine, azide and carbanion; and carboxylic acid acylates thereof with the proviso that when R_2 is hydrogen, 9-hydroxy and the B substituent are in the con-position.

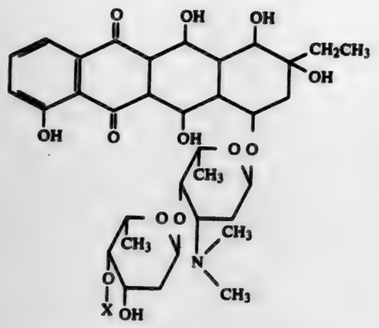
4,439,603

ANTHRACYCLINE DERIVATIVES OF β-RHODOMYCINONE GLYCOSIDES

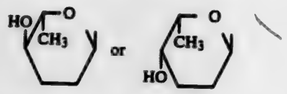
Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Tomoyuki Ishikura, Chigasaki; Akihiro Yoshimoto; Yasuo Matsuzawa, both of Fujisawa, and Yukio Takatsuki, Yokohama, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 436,630
Claims priority, application Japan, Oct. 29, 1981, 56-173465
Int. Cl.³ C07H 15/24
U.S. Cl. 536—6.4 3 Claims

1. Anthracycline derivatives having the formula



wherein X is the following sugar chain moiety



or a non-toxic acid addition salt thereof.

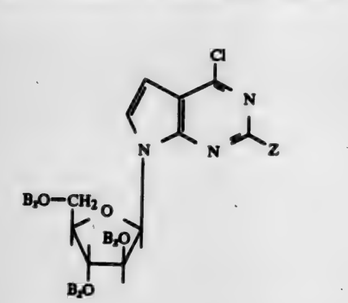
4,439,604

7-β-D-ARABINOFURANOSYL-7H-PYRROLO[2,3-d]PYRIMIDINE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

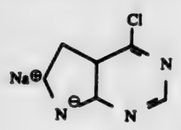
P. Dan Cook, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 229,471, Jan. 29, 1981, Pat. No. 4,352,795. This application Jun. 24, 1982, Ser. No. 391,806
Int. Cl.³ C07H *19/16*
U.S. Cl. 536—24 1 Claim

1. An improved process for producing a compound of the formula



wherein Z is hydrogen or methylmercapto which comprises glycosylating 4-chloro-7H-pyrrolo[2,3-d]pyrimidine with 2,3,5-tri-O-benzyl-α-D-arabinofuranosyl chloride wherein the improvement comprises treating 4-chloro-7H-pyrrolo-[2,3-d]pyrimidin with sodium hydride in a suitable solvent to form the anion having the formula



and β-D-arabinofuranosylating said anion with 2,3,5-tri-O-benzyl-α-D-arabinofuranosyl chloride.

4,439,605

(I) PROCESS FOR PRODUCING CELLULOSE ACETATE

Hideo Yabune, Himeji; Yoshiyuki Ikemoto, Yokohama; Yousuke Kato, Hyogo, and Masabu Uchida, Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Oct. 12, 1982, Ser. No. 433,615
Claims priority, application Japan, Nov. 30, 1981, 56-192042
Int. Cl.³ C08B *3/06*
U.S. Cl. 536—71 10 Claims

1. A process for producing cellulose diacetate which comprises the steps of:

(a) pretreating and activating 100 parts by weight of cellulose to prepare same for acetylation, then adding to said activated cellulose a mixture of 200 to 400 parts by weight of acetic anhydride, 0 to 350 parts by weight of glacial acetic acid, and 0.5 to 5 parts by weight of acid catalyst to form a reaction mixture, raising the temperature of the reaction mixture to a temperature in the range of from 50° C. to 85° C. at an approximately constant rate, and then maintaining said reaction mixture at said temperature for 3 to 20 minutes, thereby acetylating said cellulose to form primary cellulose acetate;

(b) then neutralizing said acid catalyst in the reaction mixture containing the primary cellulose acetate obtained in step (a) and placing said reaction mixture in a pressure system, then introducing steam under pressure into the system to change the temperature of said system to a temperature in the range of 125° C. to 170° C., and then maintaining the system at the latter temperature for 30 minutes to 6 hours, thereby hydrolyzing said primary cellulose acetate to form a secondary cellulose acetate comprising cellulose diacetate;

(c) then flashing said system by discharging same to the ambient atmosphere or a vacuum, recovering by condensation the gas generated by the flashing, said gas having a weight ratio of acetic acid/water of 70–80%/30–20%, and simultaneously cooling the remainder of the reaction mixture to about 100° C., thereby substantially stopping the hydrolysis reaction; and

(d) recovering said cellulose diacetate from said cooled reaction mixture.

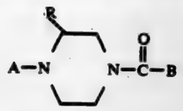
4,439,606

ANTIATHEROSCLEROTIC 1-PIPERAZINECARBONYL COMPOUNDS

Mila T. Du, Suffern, N.Y., and Robert G. Shepherd, Selbyville, Del., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 6, 1982, Ser. No. 375,507
Int. Cl.³ C07D *403/04, 401/04, 401/06;* A61K *31/491*
U.S. Cl. 544—356 30 Claims

1. A compound selected from those of the formula



wherein A is selected from the group consisting of 2-pyrazinyl, 2-quinoxalinyl; B is selected from the group consisting of phenyl, mono- and polysubstituted phenyl (wherein the substituents may be fluoro, alkyl (C_1–C_4), or trifluoromethyl), benzyl, mono- and disubstituted benzyl (wherein the substituents may be chloro, nitro or alkyl (C_1–C_3) alkyl (C_1–C_4), cycloalkyl (C_3–C_6), pyridyl, 2-phenoxypropionyl, (alkyl (C_1–C_4)amino,) polyfluoro(F_7–F_{14})-alkyl(C_3–C_7), mono- and disubstituted phenylamino (wherein the substituents may be chloro, carboxylic acid or ethyl carboxylate), 6-p-chlorophenylhexyl, 5-(p-chlorobenzoyl)butyl, 2-p-chlorophenoxy-2-isopropyl and 1-methylbenzyl; and R is selected from the group comprising hydrogen and alkyl (C_1–C_3).

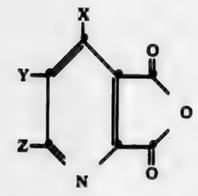
4,439,607

METHOD FOR THE PREPARATION OF CERTAIN PYRIDINE AND QUINOLINE 2,3-DICARBOXYLIC ANHYDRIDES

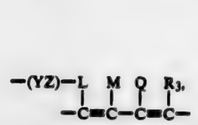
Thomas W. Drabb, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 25, 1982, Ser. No. 381,816
Int. Cl.³ C07D *491/048, 498/04*
U.S. Cl. 546—89 5 Claims

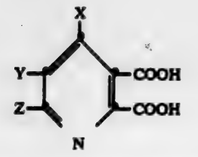
1. A process for the preparation of a compound of formula:



wherein X is hydrogen, halogen or methyl, with the proviso that when Y and Z are taken together to form a ring and YZ is represented by the structure: $-(CH_2)_n-$, where n is 3 or 4, then X is hydrogen; Y and Z each are hydrogen, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_4 alkylthio, phenoxy, C_1–C_4 haloalkyl, nitro, cyano, C_1–C_4 alkylsulfonyl group, or phenyl optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; and, when taken together, Y and Z may form a ring in which —(YZ)— is represented by the structure: $-(CH_2)_n-$, where n is an integer selected from 3 and 4, provided that X is hydrogen; or



where L, M, Q and R_3 are each hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkyl, NO_2, CN, phenyl, phenoxy, chlorophenyl, methylphenyl, or phenoxy substituted with one Cl, CF_3, NO_2 or CH_3 group, with the proviso that only one of L, M, Q or R_3, may represent a substituent other than hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; comprising: reacting one molar equivalent of a compound of formula:



wherein X, Y and Z are as hereinabove defined, with from 1 to 6 molar equivalents of phosgene in the presence of a solvent of aliphatic and aromatic hydrocarbons, alkylnitriles, ethers or mixtures thereof; and in the presence of from 0.05 molar equivalent to 0.75 molar equivalent of dimethylformamide, at a temperature range of from −5° C. to +50° C. for a period of time sufficient to essentially complete the reaction.

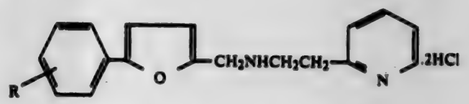
4,439,608

2-[2-(5-PHENYLFURFURYLAMINO)ETHYL]PYRIDINES

Stanford S. Peloni, Jr., and Chia-Nien Yu, both of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Jun. 4, 1982, Ser. No. 384,871
Int. Cl.³ C07D *405/12*
U.S. Cl. 546—283 3 Claims

1. A compound of the formula:



wherein R represents 4-nitro or 3,4-dimethoxy.

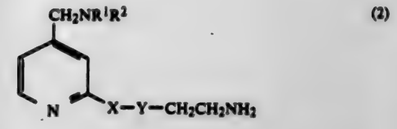
4,439,609

PYRIDINES

David G. Cooper, Letchworth, and George S. Sach, Welwyn, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 302,941, Sep. 16, 1981, Pat. No. 4,388,088. This application Feb. 16, 1983, Ser. No. 467,065
Int. Cl.³ C07D *213/34, 213/64, 213/38, 401/06*
U.S. Cl. 546—334 7 Claims

1. A compound of Structure 2



(2)

in which

R^1 and R^2 are C_1-C_4 alkyl or together with the nitrogen atom to which they are attached form a pyrrolidino or piperidino group;

Y is methylene or sulphur; and

X is methylene or oxygen provided that X is methylene when Y is sulphur.

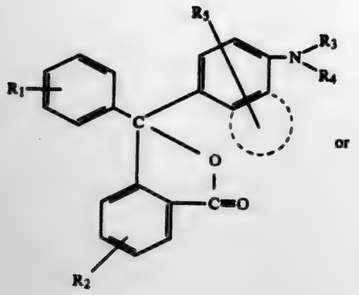
4,439,610

PROCESS FOR PREPARING TRIARYLMETHANE DERIVATIVES

Mitsuru Kondo, Kawanishi; Kiyoshi Yasui, Amagasaki; Makoto Miyake, Nishinomiya; Hiroshi Iwasaki, Kawanishi, and Tetsuo Shiraishi, Nishinomiya, all of Japan, assignors to Kanzaki Paper Manufacturing Company, Ltd., Tokyo, Japan

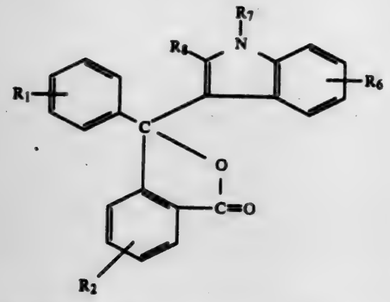
Division of Ser. No. 699,584, Jun. 24, 1976, Pat. No. 4,045,488. This application Mar. 4, 1977, Ser. No. 774,613
Claims priority, application Japan, Jul. 3, 1975, 50-82890
Int. Cl.³ C07D *209/04, 307/77*
U.S. Cl. 548—469 23 Claims

1. A process for preparing a triarylmethane derivative having the structural formula



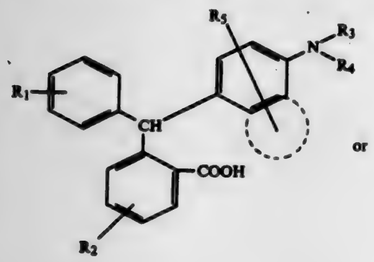
(III)

or



(IV)

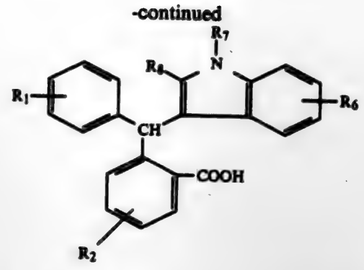
wherein each R_1 and R_2 represents at least one of hydrogen, halogen, nitro group, alkyl group, amino group, alkyl-, benzyl-, phenyl-, tolyl-, or pentylene-substituted amino group, hydroxyl group, alkyl-substituted hydroxyl group, thiohydroxyl group or alkyl-substituted thiohydroxyl group, each R_3 and R_4 represents hydrogen, cyano-, hydroxyl-, halogen-, methoxy-, ethoxy-, or ethoxycarbonyl-substituted or unsubstituted alkyl group, cycloalkyl group, alkyl-substituted or unsubstituted aralkyl group, aryl group, or unsaturated alkyl group, or one or both of R_3 and R_4 together with the adjacent nitrogen atom may form a morpholine ring, a pyrrolidine ring, a pyrazolidine ring, a piperidine ring, an imidazoline ring, a piperazine ring, or a pyrimidine ring, R_5 represents at least one of hydrogen, halogen, alkyl group, nitro group, lower alkyl-substituted or unsubstituted amino group, lower alkyl-substituted or unsubstituted hydroxyl group, or lower alkyl-substituted or unsubstituted thiohydroxyl group, R_6 represents at least one of hydrogen, halogen, lower alkyl group, lower alkoxyl group, amino group, lower alkylamino group, nitro group, phenyl group or phenoxy group, R_7 represents hydrogen, alkyl group, aralkyl group or phenyl group, R_8 represents an alkyl group or alkyl-, halogen-, or alkoxy-substituted or unsubstituted phenyl group which comprises oxidizing a triarylmethane derivative having the structural formula



(I)

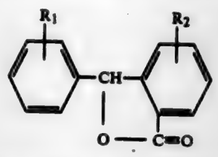
or

-continued



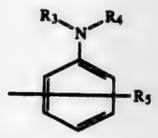
(II)

wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are the same as described hereinbefore, said triarylmethane derivative having the structural formula (I) or (II) being obtained by the reaction of 3-phenylphthalide having the structural formula



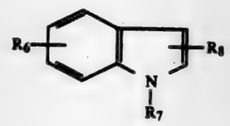
(V)

wherein R_1 and R_2 are the same as described hereinbefore with the aniline derivative having the structural formula



(VI)

wherein R_3, R_4 and R_5 are the same as described hereinbefore, or with the indole derivative having the structural formula



(VII)

wherein R_6, R_7 and R_8 are the same as described hereinbefore in the presence of a Friedel-Crafts type catalyst.

4,439,611

ISOLATION OF [S-(R*, S*)]-1-(3-ACETYLTHIO-3-BENZOYL-2-METHYLPROPIONYL)-L-PROLINE FROM A DIASTEREOMERIC MIXTURE

Sivaraman Raghu, Norwalk; Robert J. Proverb, Stamford, and Steven L. Peake, New Canaan, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 28, 1982, Ser. No. 393,002

Int. Cl.³ C07D 207/16

U.S. Cl. 548—533 **6 Claims**

1. A process for the isolation of [S-(R*,S*)]-1-(3-acetylthio-3-benzoyl-2-methylpropionyl)-L-proline from a mixture thereof with [S-(R*,R*)]-1-(3-acetylthio-3-benzoyl-2-methylpropionyl)-L-proline which comprises dissolving the mixture in a solvent system consisting of one part of trifluoroacetic acid and from about two to about ten parts of an organic solvent inert to trifluoroacetic acid and maintaining the solution at 45°–75° C. for a period of time of 8–24 hours while the [S-(R*,S*)] isomer epimerizes to the [S-(R*,S*)] isomer and the [S-(R*,S*)] isomer crystallizes from the solution.

4,439,612

PREPARATION FOR USE AS LUBE OIL ADDITIVES OF THIOUREAS CONTAINING N-POLYALKYLENEAMINO HYDROCARBYL SUCCINIMIDO GROUPS

Gary T. Bable, Beacon, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,514

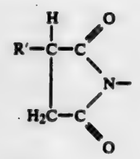
Int. Cl.³ C07D 207/40

U.S. Cl. 548—546 **3 Claims**

1. A compound of the formula:



wherein R is the succinimide residue



in which R' is an alkyl or alkenyl residue having more than 8 carbon atoms; and n is an integer from 2 to 8, prepared by heating to 80° to 130° C. a reaction mixture of an alkyl or alkenylsuccinic anhydride and a polyalkylene amine terminated by two primary amino groups using half of the equimolecular amount of amine per equivalent of anhydride to form a succinimide; removing water; cooling said reaction mixture; adding thiourea; heating said mixture; purging ammonia formed with an inert gas and isolating a product having the above formula.

4,439,613

NOVEL AMINO-DIOXEPANE INTERMEDIATES FOR THE SYNTHESIS OF NEW NON-IONIC CONTRAST MEDIA

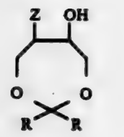
Milos Sovak, La Jolla, and Ramachandran Ranganathan, San Diego, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 141,097, Apr. 17, 1980, Pat. No. 4,341,756, which is a continuation-in-part of Ser. No. 117,151, Jan. 31, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,213

Int. Cl.³ C07D 321/06

U.S. Cl. 549—347 **6 Claims**

1. A compound of the formula:



wherein

Z is azide or HNW, where W is hydrogen or an organic radical of from 1 to 12 carbon atoms,

R is hydrogen or an organic radical of from 1 to 12 carbon atoms, or the two Rs may be taken together to form a ring.

4,439,614

5,6-METHANO-5,6-DIHYDRORETINOIDS

Marcia I. Dawson, Los Altos; Rebecca Chan, Palo Alto, and Peter D. Hobbs, Woodside, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Sep. 22, 1982, Ser. No. 421,065

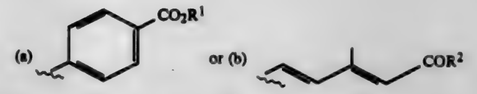
Int. Cl.³ C07C 69/76, 69/74

U.S. Cl. 560—8 **12 Claims**

1. A compound of the formula



where X is



and R^1 is hydrogen, alkyl or aryl and R^2 is hydroxyl alkoxy or NR^3R^4 where R^3 is hydrogen, alkyl, or aryl and R^4 is alkyl or aryl and the 13-cis isomers of those compounds where X is (b).

4,439,615

MERCAPTOPHENOL STABILIZERS

Siegfried Rosenberger; Samuel Evans, both of Riehen, Switzerland, and Bernard Gilg, St. Louis, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

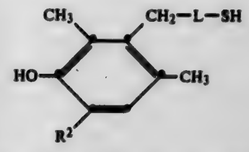
Continuation-in-part of Ser. No. 239,712, Mar. 2, 1981, abandoned. This application Jul. 19, 1982, Ser. No. 399,502

Claims priority, application Switzerland, Mar. 3, 1980, 1665/80

Int. Cl.³ C07C 149/40

U.S. Cl. 560—15 **5 Claims**

1. A compound of the formula V



(V)

wherein R^2 is straight-chain or branched alkyl of 1 to 8 carbon atoms, C_5–C_8-cycloalkyl, C_6–C_{10}-aryl, C_7–C_{10}-alkaryl or C_7–C_{10}-aralkyl, L is one of the bivalent radicals $—SCH_2CO.OCH_2CH_2—$, $—SCH_2CO.O(CH_2CH_2S)_y—CH_2CH_2—$, $—O.CO.C_pH_{2p}—$, $—SC_pH_{2p}—$ or $—O.C_pH_{2p}—$, y is a number from 1 to 3 and p is a number from 1 to 18.

4,439,616

TERTIARY ARALKYL URETHANES AND ISOCYANATES DERIVED THEREFROM

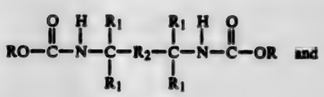
Balwant Singh, Stamford; Laurence W. Chang, Orange, and Peter S. Forgione, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 22, 1982, Ser. No. 400,799

Int. Cl.³ C07C 125/073, 125/065

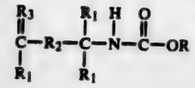
U.S. Cl. 560—25 **25 Claims**

1. Urethanes selected from urethanes having the formulae:



and

-continued

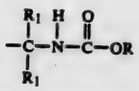


wherein

R is an alkyl radical having from 1 to 18 carbon atoms;

R_1 is an alkyl radical having from 1 to 3 carbon atoms;

R_2 represents an aromatic hydrocarbon moiety selected from phenyl, biphenyl and naphthalyl groups and such groups having halo, methyl and methoxy substituents and substituents of the formula:



and wherein R_3 is an alkylidene radical having from 1 to 3 carbon atoms.

18. A process for production of α,α,α',α'-tetramethyl xylylene diisocyanates which comprises:

a. reacting a diisopropenyl benzene and isopropenyl-α,α-dimethylbenzyl urethane with an excess of methyl carbamate in the presence of moderate heat and an acid catalyst to convert the olefins to urethanes,

b. neutralizing said catalyst in the resultant mixture,

c. stripping unreacted methyl carbamate from the neutralized mixture,

d. thermally cracking the stripped mixture to convert urethanes to isocyanates whereby a mixture including tetramethyl xylylene diisocyanate and isopropenyl dimethylbenzyl isocyanate is obtained,

e. recovering methanol from said mixture during thermal cracking,

f. separating isopropenyl-dimethylbenzyl isocyanate and tetramethyl xylylene diisocyanate from the cracked mixture,

g. reacting said isopropenyl dimethylbenzyl isocyanate and methanol to form isopropenyl-dimethylbenzyl urethane and,

h. recycling said isopropenyl-dimethylbenzyl urethane so formed and said stripped methyl carbamate to said reaction with diisopropenyl benzene.

4,439,617

N-NAPHTHOYLGLYCINE DERIVATIVES

Kazimir Sestanj, St. Laurent; Nedumparambil A. Abraham, Dollard des Ormeaux; Francesco Bellini, Mount Royal, and Adi Treasurywala, Point Claire, all of Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

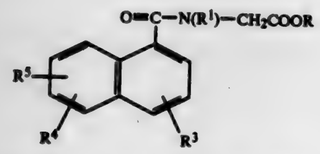
Filed Nov. 13, 1981, Ser. No. 321,306

Claims priority, application Canada, Mar. 2, 1981, 372119

Int. Cl.³ C07C *101/06*

U.S. Cl. 560—39 **3 Claims**

1. A compound of the formula



wherein R^1 is lower alkyl; R^3 is 4-halo, 5-halo or 5-trifluoromethyl and R^4 and R^5 each is hydrogen; or R_3 and R^4 are a pair of substituents on the naphthalene ring selected from the group of pairs consisting of 3-halo-4-lower alkoxy, 5-halo-6-lower alkyl, 5-halo-6-lower alkoxy, 5,7-dihalo and 5-(trifluoromethyl)-6-lower alkoxy, and R^5 is hydrogen; or R^3 is 4-lower alkoxy, R^4 is 5-(trifluoromethyl) and R^5 is 6-lower alkoxy; and R is hydrogen, methyl or ethyl.

4,439,618

PROCESS FOR THE PREPARATION OF METHYL ESTERS OF ARYLPROPIONIC ACIDS OPTICALLY ACTIVE

Giuseppe Cometti, Verbania-Pallanza, and Gian P. Chiusoli, Parma, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Aug. 5, 1982, Ser. No. 405,608

Claims priority, application Italy, Aug. 6, 1981, 23391 A/81

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—56 **17 Claims**

1. A process for the regioselective and enantioselective preparation of methyl esters of arylpropionic acids, by carbonylation of the corresponding vinylaromatic compound, in the presence of palladium catalysts, characterized in that a compound having the formula (II):

$$R—CH=CH_2 \qquad (II)$$

wherein R is selected from the group consisting of aryl radicals and aryl radicals substituted with groups that are inert under the reaction conditions, is made to react with carbon monoxide and with methyl alcohol in the presence of a palladium catalyst associated with the optically active diphenylneomenthylphosphine and in the further presence of trifluoroacetic acid, under a substantially atmospheric pressure and at a temperature comprised between 20° C. and 80° C. about.

4,439,619

FLUORINATED PENTENE DIAMINE DERIVATIVES

Philippe Bey, Strasbourg, France; Fritz Gerhart, Kehl-Leutesheim, Fed. Rep. of Germany, and Michel Jung, Illkirch-Graffenstaden, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

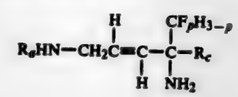
Filed Aug. 21, 1981, Ser. No. 295,152

Claims priority, application United Kingdom, Aug. 23, 1980, 8027519; Nov. 26, 1980, 8037841

Int. Cl.³ C07C *101/24, 87/26*

U.S. Cl. 560—169 **14 Claims**

1. A compound of the formula:



wherein

R_a is hydrogen or L-δ-glutamyl,

R_c is hydrogen or $—COR_3$ wherein R_3 is hydroxy, or when R_a is hydrogen, C_1–C_8 alkoxy, and p is 1 or 2,

or a pharmaceutically acceptable addition salt thereof.

4,439,620

2,4-DICHLORO-5-FLUOROBENZOYL HALIDE AND A PROCESS FOR ITS PREPARATION

Erich Klauke, and Klaus Grohe, both of Odenthal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

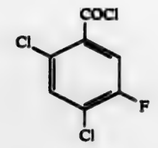
Filed Jul. 14, 1982, Ser. No. 397,958

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142856

Int. Cl.³ C07C *63/04*

U.S. Cl. 562—493 **16 Claims**

1. 2,4-Dichloro-5-fluorobenzoyl chloride of the formula



(I)

4,439,621

OXYDEHYDROGENATION PROCESS

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 2, 1982, Ser. No. 404,206

Int. Cl.³ C07C *67/317, 51/377*

U.S. Cl. 562—599 **3 Claims**

1. In a process for the catalytic conversion of isobutyric acid or ester to the corresponding alpha, beta-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous stream containing said acid or ester and molecular oxygen at an elevated temperature; the improvement comprising carrying out the process at a temperature in the range of from 260° to 450° C. using as catalyst a material having the gram-atom emperical formula $Fe_aP_bSi_cV_d$-Mo_eO_x wherein a is 0.05–1.0, b is 0.05–2.0, c is 0.05–2.0, d is 0.5–6.0, e is 6–12.0, and x is a number that satisfies the sum of the unshared positive valences of the other elements shown in the formula.

4,439,622

PROCESS OF FORMING LARGE CRYSTALLED 1,3,5-TRIAMINOTRINITROBENZENE

Rolf Hansen; Walter Engel, both of Pfinztal, and Hiltmar Schubert, Walzbachtal, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung e. V., Munich, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,364

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101783

Int. Cl.³ C07C *85/00*

U.S. Cl. 564—406 **8 Claims**

1. A process for the manufacture of 1,3,5-triaminotrinitrobenzene having a large crystal size comprising aminating 1,3,5-trichlorotrinitrobenzene with an aminating agent having a decomposition temperature above 160° C. at a temperature greater than about 160° C. in the presence of an effective amount of at least one antioxidant.

4,439,623

PROCESS FOR THE PREPARATION OF MONOCHLOROACETONE

Kenneth H. Krieger, Chatham; Lawrence J. Naldi, Fanwood; Carlos B. Rosas, and Vijay Samant, both of Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 5, 1981, Ser. No. 308,882

Int. Cl.³ C07C *45/62*

U.S. Cl. 568—393 **12 Claims**

1. In a process for the continuous vapor-liquid phase production of monochloroacetone from chlorine and acetone in a reactor and removing the monochloroacetone from the reaction stream in a fractionator, the improvement comprises passing the vapor phase effluent from the fractionator sequentially through a series of 3 temperature controlled condensers with decreasing temperature ranges wherein:

A. the first condenser in maintained at a temperature of from 40° to 55° C. and the condensate therefrom enters a common reflux drum and the vapor phase effluent enters the second condenser;

B. the second condenser in maintained at a temperature of from 10° to 35° C. and the condensate therefrom enters the same common reflux drum as the condensate from the first condenser, and the vapor phase effluent therefrom enters the third condenser;

C. the third condenser is maintained at a temperature of from −20° to −40° C. and the condensate therefrom enters the same common reflux drum as the condensate from the first and second condensers and the vapor phase effluent therefrom consisting entirely of hydrogen chloride is isolated; and

D. the contents of the common reflux drum are fed continuously back into the reactor or to both the reactor and the fractionator for the production of monochloroacetone.

4,439,624

CONVERSION OF DIMETHYL ETHER TO FORMALDEHYDE USING BI-MO-CU CATALYST

Robert M. Lewis, Sugarland; Robert C. Ryan, Houston, and Lynn H. Slaugh, Cypress, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 7, 1982, Ser. No. 433,320

Int. Cl.³ C07C *45/32*

U.S. Cl. 568—470 **4 Claims**

1. A process for converting dimethyl ether to formaldehyde which comprises contacting the dimethyl ether with oxygen at a temperature ranging from about 300° C. to about 600° C. with a catalyst comprising a mixture of oxides of bismuth, molybdenum and copper wherein the catalyst contains about 20 to about 80% by weight of bismuth, measured as a metal, from about 10 to about 50% by weight of molybdenum measured as the metal and from about 0.1 to about 10% by weight of copper, measured as a metal, exclusive of any inert support.

4,439,625

PRODUCTION OF FORMALDEHYDE

Velliyur Nott M. Rao, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1982, Ser. No. 427,418

Int. Cl.³ C07C *45/29, 47/04*

U.S. Cl. 568—473 **8 Claims**

1. An oxidation process comprising contacting methanol in the presence of oxygen with a catalyst comprising silver, silver-gold alloys or copper-gold alloys, at from 450° to 750° C. wherein from 0.001 to 15 parts per million, based on methanol, of phosphorus from a phosphorus source is present in the reaction mixture entering the reactor and recovering formaldehyde.

4,439,626

CATALYST AND REVERSE DISPROPORTIONATION PROCESS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 29, 1982, Ser. No. 403,256

Int. Cl.³ C07C *5/09*

U.S. Cl. 585—435 **13 Claims**

1. A process for the reverse disproportionation of stilbene and ethylene which comprises contacting stilbene and ethylene at reverse disproportionation conditions with an activated catalyst containing catalytically-effective amounts of copper, tungsten, and an alkali or alkaline earth component or compounds thereof supported on a carrier material, to produce styrene.

4,439,627
CATALYST AND REVERSE DISPROPORTIONATION PROCESS
Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Jul. 29, 1982, Ser. No. 403,257
Int. Cl.³ C07C 5/09
U.S. Cl. 585—435 12 Claims

1. A process for the reverse disproportionation of stilbene and ethylene which comprises contacting stilbene and ethylene at reverse disproportionation conditions with an activated catalyst containing catalytically effective amounts of iron, tungsten, and an alkali or alkaline earth component or compounds thereof supported on a carrier material, to produce styrene.

4,439,628
CATALYST AND REVERSE DISPROPORTIONATION PROCESS
Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Jul. 29, 1982, Ser. No. 403,255
Int. Cl.³ C07C 5/09
U.S. Cl. 585—435 12 Claims

1. A process for the reverse disproportionation of stilbene and ethylene which comprises contacting stilbene and ethylene at reverse disproportionation conditions with an activated catalyst containing bismuth, tungsten, and an alkali or alkaline earth component or compounds thereof supported on a carrier material, wherein the atomic ratio of bismuth to tungsten is from 1:20 to 1:2, to produce styrene.

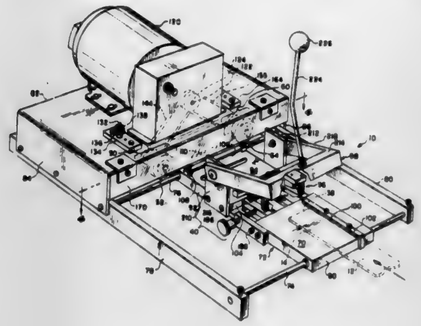
4,439,629
EXTRACTION PROCESS FOR BETA-CAROTENE
Rudolf Riiegg, Bottmingen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Nov. 6, 1981, Ser. No. 318,704
Int. Cl.³ C07C 7/10
U.S. Cl. 585—803 6 Claims

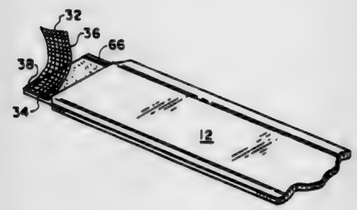
1. A process for extracting beta-carotene from algae containing beta-carotene comprising treating the algae with calcium hydroxide at a temperature of 50° C. to 100° C. to saponify the chlorophyll present in the algae and produce a residue, treating said residue with a solvent for beta-carotene which removes the beta-carotene from said residue, and thereafter recovering beta-carotene from said solvent.

4,439,630
SILICONE COMPOSITIONS FOR BURIED ELECTRICAL SPLICE CLOSURES
Eugene D. Groenhof, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed May 6, 1981, Ser. No. 261,070
Int. Cl.³ H02G 15/24; H01B 7/00
U.S. Cl. 174—21 R 19 Claims

1. In an insulated electrical cable splice employing a dielectric fluid to encapsulate and insulate the splice, the improvement comprising using a silicone fluid having aliphatic hydrocarbon or substituted aliphatic hydrocarbon substituents, with a maximum viscosity of 1000 cs., and with a specific gravity of at least 1.02 as the dielectric fluid.

4,439,631
METHOD AND MACHINE FOR PREPARING AN END PORTION OF A MULTI-CONDUCTOR FLAT CABLE FOR RECEIVING A CONNECTOR THEREON
Charles Shields, 655 Woodland Dr., Crystal Lake, Ill. 60014
Filed Sep. 14, 1981, Ser. No. 302,227
Int. Cl.³ H02G 15/02, 1/14
U.S. Cl. 174—74 R 50 Claims

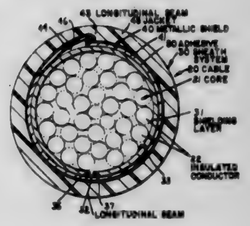




1. A method of preparing a portion of an insulated and electrically shielded multiconductor element for receiving a connector thereon, said method comprising the steps of:
advancing a portion of the element to a cutting station;
cutting notches in the side edges of a portion of the element;
advancing a portion notched at the cutting station to a grinding station;
grinding the portion of the element to remove an insulating surface coating of the element;
moving the portion to a scoring station;
scoring a score line in an exposed portion of an electric shield along the width thereof, said step of scoring providing only a partial cut of the electric shield so that portions of the electric shield on either side of the score line are still attached to each other.

31. A machine for preparing a portion of an insulated and electrically shielded multiconductor element for receiving a connector thereon, comprising, in combination:
a main frame;
means for positioning a portion of the element thereon which portion contains that part of the element to be prepared for reception of a connector thereto, said means for positioning being mounted to a front section of said main frame;
means for cutting off at least one side edge portion of the element at that part which is to be prepared to receive a connector to form at least one set back edge portion in alignment with at least one conductor in the element adjacent the set back edge portion, said means for cutting off being fixedly attached to a portion of said means for positioning a portion of the element, so that that part of the element to be prepared for reception of a connector may be positioned at said means for cutting off at least one side edge portion;
means for grinding an insulating surface coating of the element situated above an electric shield in the element to remove the insulating surface coating along that portion of the element to be prepared for reception of a connector, said means for grinding being mounted to a rear section of said main frame, so that that part of the element to be prepared may be situated at said means for grinding;
means for scoring a lateral edge of the electric shield, said means for scoring forming a score line in the electric shield such that the scored portion of the electric shield remains fixedly connected to the remainder of the electric shield along the length of the score line, said means for scoring also being mounted to said main frame, so that that part of the element to be prepared may be positioned thereat by said means for positioning; and
means for movably mounting said means for positioning a portion of the element for translation between said means for grinding and said means for scoring to thereby perform the necessary operations on the portion of the element to receive a connector thereon; said means for movably mounting connecting said means for positioning to the front section of said main frame for relative movement thereto.

4,439,632
BONDED SHEATH CABLE
Charles J. Aloisio, Jr., Atlanta; George S. Brockway, II, Lawrenceville; Alvin C. Levy, Atlanta; Randy G. Schneider, Marietta, and George M. Yanizeski, Roswell, all of Ga., assignors to Western Electric Co., Inc., New York, N.Y. and Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Continuation of Ser. No. 225,082, Jan. 14, 1981, Pat. No. 4,328,394. This application Apr. 14, 1982, Ser. No. 368,183
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.
Int. Cl.³ H01B 7/18
U.S. Cl. 174—106 D 9 Claims



1. A bonded sheath cable, which comprises:
a core which includes a plurality of conductors; and
a sheath which encloses and which is juxtaposed with said core, said sheath including:
a corrugated steel shield which encloses said core, said shield having inwardly and outwardly facing major sur-

faces with an overlapped seam having overlying and underlying portions formed between overlapping adjacent longitudinal edge portions of said shield, said shield being formed with at least the longitudinal edge portion of the inwardly facing surface of said overlying portion being substantially juxtaposed to the outwardly facing surface of the underlying portion of said shield; and

a jacket which is made of a plastic material and which is adhesively bonded to substantially all of said outwardly facing surface of said corrugated metallic shield with a bond strength which is sufficient to prevent delamination and buckling of the sheath in a temperature range of about −15° C. to about 70° C., said jacket plastic which is notched circumferentially by said corrugated shield and longitudinally by said overlapped seam being made of a plastic material having elongation properties sufficient for the jacket to resist rupture caused by corrugation and seam notching when said jacket is biaxially stressed in said range of temperatures.

4,439,633

CORROSION RESISTANT ARMORED CABLE AND METHOD OF MANUFACTURING SAID CABLE

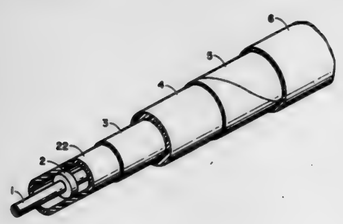
Albertus T. M. Grooten, Waddinxveen, Netherlands, assignor to N.K.F. Groep B.V., Netherlands

Filed Oct. 8, 1982, Ser. No. 433,750

Claims priority, application Netherlands, Oct. 14, 1981, 8104667

Int. Cl.³ H01B 7/22

U.S. Cl. 174—106 R 5 Claims



1. A cable comprising an armoring of a zinc-plated steel band in which the steel band comprises a zinc protective layer on the flat sides only of the band, said protective layer comprising a first layer portion consisting of a zinc iron alloy and a second layer portion on top of said first layer portion, consisting of essentially pure unalloyed zinc in which the thickness of the second layer portion is at least 90% of the total layer thickness.

4. A method of manufacturing an armored cable, comprising:

applying onto both sides of a steel sheet a zinc protective layer such that a first layer portion consisting of zinc-iron alloy is formed and on top of said first layer portion a second layer portion consisting of essentially pure unalloyed zinc is formed whereby the thickness of the second layer portion is at least 90% of the total layer thickness,

cutting said sheet into a plurality of elongated bands having the zinc layer on both sides and having unprotected edges, and

helically wrapping said bands about a cable so as to form an armored cable.

4,439,634

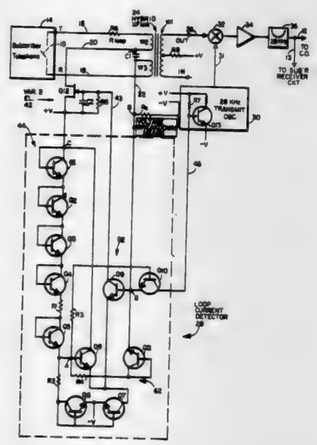
CARRIER SUBSCRIBER TELEPHONE OFF-HOOK DETECTOR

Tom L. Blackburn, San Jose, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Apr. 2, 1982, Ser. No. 364,820

Int. Cl.³ H04M 3/22

U.S. Cl. 179—2.51 28 Claims



1. Apparatus for detecting loop current in a closed path including a DC voltage source, loop resistance, and switch means that is selectively closed for passing a loop current in the path, comprising;

a current sensing resistor in series in the path with one terminal thereof electrically connected to one terminal of the voltage source and the other terminal thereof electrically connected to a first node;

a control transistor having one of its base and emitter electrodes electrically connected to said first node, and having a collector electrode electrically connected to the voltage source;

first means for providing a reference voltage of a prescribed value at a second node and operable for decreasing the value of reference voltage from the prescribed value when current is bled away from said second node;

second means for connecting the other one of said control transistor's base and emitter electrodes to said second node, said reference voltage causing said control transistor to be normally conducting when the switch means is open;

a first resistor and diode means electrically connected in series between said first and second nodes, said diode means being normally conducting when the switch means is open for passing current away from said second node for decreasing the magnitude of the reference voltage from the prescribed value for prebiasing said control transistor in the direction of non-conduction;

said control transistor being responsive to a change in voltage on at least one of said nodes that is caused by current in the loop when the switch means is closed for changing the level of conduction of said control transistor; and

third means responsive to a change in the conduction rate of said control transistor for indicating that loop current is flowing in the path.

4,439,635

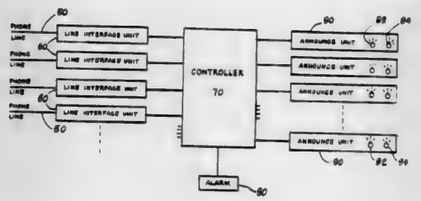
MESSAGE DELIVERY SYSTEM

Peter F. Theis, 3203 Bay View La., McHenry, Ill. 60050, and Gregory Buchberger, Mount Prospect, Ill., assignors to Peter F. Theis, Gurnee, Ill.

Filed Feb. 9, 1982, Ser. No. 347,293

Int. Cl.³ H04M 1/64

U.S. Cl. 179—6.2 16 Claims



1. A message delivery system for repeatedly delivering a predetermined audio message to a plurality of line interface units, each of which is coupled to a respective telephone line, said message delivery system comprising:

first and second message playback units, each comprising means for generating a respective audio signal, the audio signal of the first playback unit forming a first message segment and the audio signal of the second playback unit forming a second message segment;

controller means for automatically activating the first and second message playback units in an automatically repeated sequence, such that the first playback unit is activated for a first time period and the second playback unit is activated for a second time period, immediately following the first time period;

means, included in the controller means, for supplying the audio signals of the activated playback units to the plurality of line interface units such that the audio signal of the first playback unit is supplied to the interface units during the first time period and the audio signal of the second playback unit is supplied to the interface units during the second time period, and the first and second message segments formed by the respective audio signals make up the predetermined message.

4,439,636

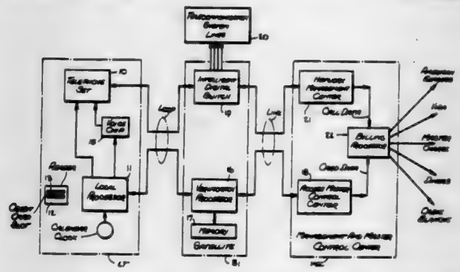
CREDIT CARD ACTUATED TELECOMMUNICATION ACCESS NETWORK

Martha Newkirk, and Larry Newkirk, both of 8 Park La., Madison, N.J. 07940

Filed Mar. 9, 1982, Ser. No. 356,430

Int. Cl.³ H04M 17/02

U.S. Cl. 179—7.1 R 10 Claims



1. A public access network operating in conjunction with telecommunication lines leasable from a common carrier at a bulk rate, making it possible for callers holding a machine-readable credit card provided with a magnetic stripe and issued by any one of a predetermined plurality of credit card companies authorizing the holder to purchase merchandise and services to dial calls from any local station included in the network, the network comprising:

A. a group of satellites each installed at a different location, each satellite having an intelligent digital switch coupled to said telecommunication lines to effect a connection to that one line included in said lines which is appropriate to a call dialed;

B. a verification processor provided with a calendar clock, and means to compare the expiration date on a credit card presented by a caller with the date on which the call is dialed;

C. a plurality of local stations at each location linked to the installed satellite, each station being open to the public and being provided with a communication set which when activated is coupled to the intelligent switch at the installed satellite, a card reader including a magnetic head for scanning the stripe on the caller's card and deriving therefrom a digital signal identifying the company issuing the card, its serial number and expiration date, and activation means responsive to said signal to determine if the scanned card is acceptable to the network, said means transferring the signal to the verification processor which tests the card number against a stored table in invalid card numbers to determine its validity and which, if the card passes this test, then functions to activate the communication set to permit the caller to dial, the activated set being then coupled to said switch which engages said one of said transmission lines to cause the call to go through; and

D. A control central linked to the satellites in the group to supervise the operations thereof, said central extracting information from the intelligent switch at each satellite regarding the duration and placement of each of the calls made at the local stations, which information is coordinated with information it extracts from the verification processor regarding the identity and the serial number of the credit cards of the callers making said calls, from which coordinated information the central generates a billing record for submission to the companies issuing the cards, whereby each company can then directly bill their card holders for calls made through the network without obtaining billing information from the common carrier.

4,439,637

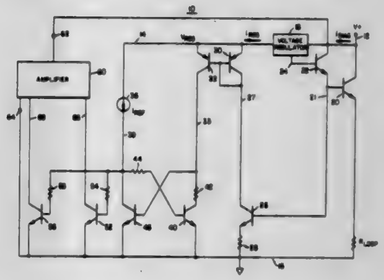
LOW LOOP CURRENT SWITCH LATCH CIRCUIT

Michael B. Terry, Denton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 28, 1981, Ser. No. 335,145

Int. Cl.³ H04B 3/36

U.S. Cl. 179—16 F 5 Claims



1. A switch latch circuit for controlling a bias current of an amplifier in a telephone subscriber's device powered by the telephone lines, comprising:

means for monitoring a residual current to produce a control current proportional to said residual current;

cross-coupled transistor means connected to receive said

control current and switch with hysteresis between a first state and a second state as a function of said control current, and

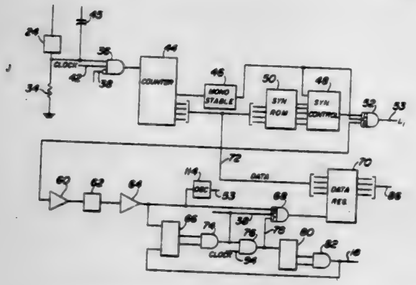
means coupled to said cross-coupled transistor means for drawing a predetermined bias current from said amplifier when said cross-coupled transistor means is in a selected one of said states.

4,439,638

SOUND-ACTIVATED CODE-CONTROLLED DETECTION SYSTEM FOR TELEPHONES AND THE LIKE

Scott Seligsohn, Penn Valley; Duane R. Bolgiano, Bala Cynwyd, and Sherwin I. Seligsohn, Penn Valley, all of Pa., assignors to International Mobile Machines Corp., Philadelphia, Pa.

Filed Jan. 28, 1982, Ser. No. 343,445
Int. Cl.³ H04M *1/26*
U.S. Cl. 179—84 C 10 Claims



1. A function-generating system comprising a receiver station, means at said receiver station to receive a transmitted signal from a sending station and to convert said transmitted signal into an initiating signal which generates an acknowledging sound signal at said receiver station, means to transmit said acknowledging sound signal to said sending station, a memory at said receiver station, means to program said memory in accordance with a predetermined enunciated sound pattern, means to transmit an enunciated sound pattern from said sending station to said memory in response to said acknowledging sound signal, and means to generate a function in response to a signal from said memory when the enunciated sound pattern from said sending station corresponds to the enunciated sound pattern programmed into said memory, said acknowledging sound signal including a series of successive sounds and said enunciated sound pattern from said sending station comprising a series of corresponding successive sounds, each of said corresponding successive sounds successively following the respective successive sounds of said acknowledging sound signal.

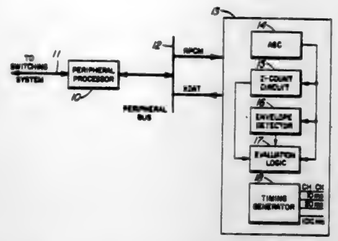
4,439,639

DIGITAL CIRCUIT AND METHOD FOR THE DETECTION OF CALL PROGRESS TONES IN TELEPHONE SYSTEMS

Ernst A. Munter, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 19, 1982, Ser. No. 359,896
Claims priority, application Canada, Feb. 12, 1982, 396210
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 VF 25 Claims

1. A circuit for determining the identity of a call progress tone in a telephone system, comprising: first means responsive to said tone for measuring the level thereof, second means for determining the approximate higher frequency component of the tone, third means for determining the envelope frequency of the tone, and a translation circuit for translating the results



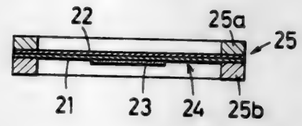
from the first, second and third means into a single signal representing the identity of the call progress tone.

4,439,640

PIEZOELECTRIC LOUDSPEAKER

Tadashi Takaya, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 31, 1981, Ser. No. 336,038
Claims priority, application Japan, Jan. 5, 1981, 56-626
Int. Cl.³ H01L *41/08*
U.S. Cl. 179—110 A 6 Claims



1. A piezoelectric loudspeaker comprising:

a disc-shaped diaphragm formed of a metallic plate;

a disc-shaped film formed of a material having a smaller Q-factor than and substantially equal in diameter to said diaphragm; and

a disc-shaped piezoelectric ceramic plate smaller in diameter than said diaphragm;

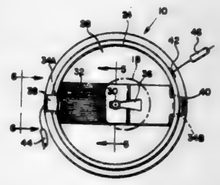
said diaphragm, said film and said piezoelectric ceramic plate being adhered concentrically to each other so as to form an integral member with said piezoelectric ceramic plate located on the outside of said integral member; said integral member being supported at the outer peripheral portion thereof to a frame.

4,439,641

ULTRASONIC TRANSDUCER FOR USE IN A VIBRATORY ENVIRONMENT

Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1981, Ser. No. 298,577
Int. Cl.³ H04R *19/00*
U.S. Cl. 179—111 R 13 Claims



1. An electroacoustical transducer assembly, comprising:

a relatively inflexible backplate having an electrically conductive major surface and having another electrically conductive surface, that is electrically connected to said major surface, on the opposite side thereof;

a relatively flexible diaphragm having electrically conductive and electrically nonconductive surfaces on opposite sides thereof; and

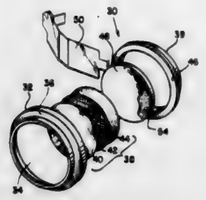
an electrically conductive spring for connecting said backplate to an electrical circuit, for urging said major backplate surface into engagement with said electrically nonconductive diaphragm surface and for properly tensioning said diaphragm, said spring and said backplate having portions thereof adapted for press fit engagement with one another when said spring is mounted on said transducer assembly to urge said backplate into engagement with said diaphragm surface and to properly tension said diaphragm.

4,439,642

HIGH ENERGY ULTRASONIC TRANSDUCER

John M. Reynard, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1981, Ser. No. 334,731
Int. Cl.³ H04R *19/00*
U.S. Cl. 179—111 R 16 Claims



1. An electroacoustical transducer assembly, comprising:

a backplate member;

a flexible vibratile diaphragm comprising a relatively thin conductive film affixed to a flexible support layer with said conductive film facing toward a surface of said backplate member and said supporting layer facing away from said backplate surface; and

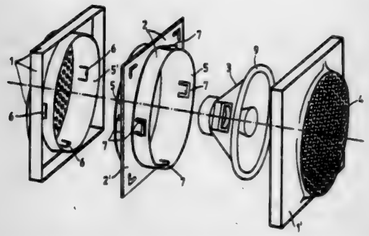
a solid dielectric layer having a thickness that is less than the thickness of said flexible support layer and that is sandwiched between and in contact with facing surfaces of said backplate member and said conductive diaphragm film.

4,439,643

SYSTEM ASSEMBLY FOR MOUNTING ELECTRICAL APPARATUS ON WALLS AND CEILINGS

René Schweizer, Seestrasse 121, 8800 Thalwil, Switzerland

Filed Apr. 2, 1979, Ser. No. 26,286
Int. Cl.³ H04R *1/00*
U.S. Cl. 179—146 E 9 Claims



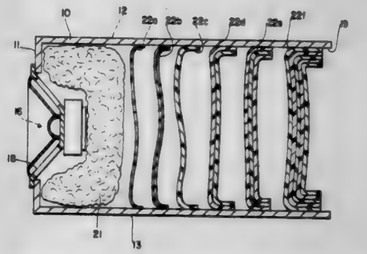
1. A system assembly for mounting electrical apparatus such as loud speakers on ceilings and walls, comprising a base plate, a mounting plate, electricl apparatus, and a front grill; the base plate, and the front grill being connected to the mounting plate by push-fit rings with springy locking clip means, the locking clip means being on the base plate and the front grill and being complementary to second locking clip means on the mounting plate, the locking clip means of the mounting plate, the base plate and the front grill cooperating to form an enclosure and to hold the assembly about an electrical apparatus contained therein.

4,439,644

LOUD SPEAKER ENCLOSURE

Paul F. Bruney, III, New Orleans, La., assignor to Edmund M. Jaskiewicz, Washington, D.C., a part interest

Filed Nov. 24, 1981, Ser. No. 324,412
Int. Cl.³ G10K *13/00*
U.S. Cl. 179—146 E 12 Claims



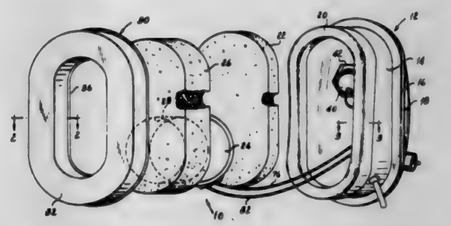
1. An enclosure for a loudspeaker driver comprising means for defining an enclosure having an interior space and adapted for the mounting of a loudspeaker driver having an exposed front face to produce sound waves to be transmitted to a listening space exterior of the loudspeaker enclosure, said enclosure means having at least one opening between the interior and exterior spaces thereof, and a plurality of successive spaced limp nonporous barriers to seal said opening between the interior and exterior spaces of the enclosure to relieve pressure behind the loudspeaker driver while attenuating the rear sound waves.

4,439,645

SOUND ATTENUATING EARCUP ASSEMBLY WITH OUTSIDE COMMUNICATION CAPABILITY

John P. Scalzo, Carbondale, Pa., assignor to Gentex Corporation, Carbondale, Pa.

Continuation of Ser. No. 150,159, May 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 106,909, Dec. 26, 1979, abandoned. This application Mar. 26, 1982, Ser. No. 362,508
Int. Cl.³ H04M *1/19*; H04R *1/10*
U.S. Cl. 179—156 R 2 Claims



1. In a sound attenuating earcup and local ambient communication assembly powered by a battery and adapted to permit the earcup wearer to hear local sounds without removing said

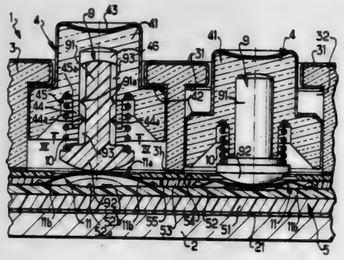
earcup when in a first use independently of an external electronic communication system having a power supply and adapted to a second use in conjunction with said external electronic communication system upon interengagement of electrical connectors leading respectively to said local ambient communication system and to said external electronic communication system, the improvement comprising an electrical connection between said battery and said power supply upon engagement of said connectors to charge said battery in the second use of said assembly.

4,439,646

KEYBOARD SWITCH ASSEMBLY

Andre M. Bouvrande, Boissy St Antoine, France, assignor to Societe de Telecommunications Electronique Aeronautique et Maritime T.E.A.M., France

Filed Apr. 20, 1982, Ser. No. 370,258
Claims priority, application France, Apr. 22, 1981, 81 08024
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A 6 Claims



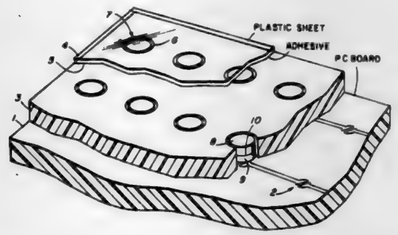
1. A keyboard switch assembly adapted to be removably mounted on a wall of a vehicle dashboard or of another apparatus, said assembly comprising: a front face plate; an assembly of plates removably mounted under the front face plate, said plate assembly including a printed circuit board having electric contact thereon; a plurality of resiliently deformable contact members, each having a concave portion connected to supporting length of said contact member on said circuit board; a plurality of depressable keys projecting through said front face plate, each depressable key including a body portion positioned in a recess in said front face plate and a plunger having an elongated portion axially slidable within a chamber of said body portion and a bulging-shaped head adjacent to said concave portion of said contact member, said head having a flat surface on which bears one end of a compression spring surrounding said plunger, the other end of said spring resting in a cavity in said body portion; each of said keys being depressable to deflect via said bulging-shaped head a respective contact member to establish an electrical contact between contacts on said circuit board; wherein said plate assembly comprises a lower sub-assembly and an upper sub-assembly removably assembled to each other, said lower sub-assembly including three plates jointly assembled to each other and constituted by said printed circuit board interposed between an insulating plate provided with an orifice for accommodating said contact member on said circuit board and a thickness plate adapted to be situated contiguous to the wall of said apparatus, said upper sub-assembly including a resilient membrane secured under a membrane-carrying plate having an aperture through which said contact member projects, said resilient membrane contacting and covering the concave portion of said contact member so as to removably maintain it in the orifice of said insulating plate.

4,439,647

TOUCHPAD KEYBOARD

Nick Calandrello, 7 Andover St., Andover, Mass. 01810; Robert Dimodana, 3 Lucy Ave., Pelham, N.H. 03076; Louis Skarbek, 153 Wilmington Rd., Burlington, Mass. 01803; Don Gove, 3 Highwood Rd., Manchester, Mass. 01944; Edwin Cooper, 143 Helvetia St., and John McKenzie, 11 Ellington Rd., both of Tewksbury, Mass. 01876

Filed Jul. 14, 1982, Ser. No. 398,374
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A 7 Claims



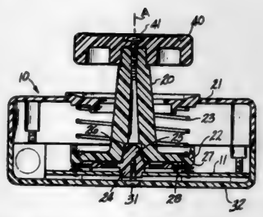
1. A keyboard comprising a printed circuit board, a plurality of spaced conductor pairs on a surface of said printed circuit board, a web of compressible material having one side abutting said surface of said printed circuit board and provided with apertures centered on said conductor pairs, a rigid disc comprising conductive material in each of said apertures and having a flat surface facing each of said conductor pairs, and means comprising a flexible plastic sheet covering the side of said web opposite said one side and connected to the sides of the discs opposite said flat surfaces for retaining said discs in said apertures at a position normally spaced from said printed circuit board, said discs being thinner than said web, whereby pressure on any of said discs in a direction toward said printed circuit board causes the flat surface of said one of said discs to move to a position abutting said printed circuit board and bridging said corresponding conductor pair.

4,439,648

JOYSTICK-TYPE CONTROLLER

Norbert L. Reiner, Wallingford, and Stephen M. Sledesky, East Hartford, both of Conn., assignors to Coleco Industries, Inc., Hartford, Conn.

Filed Jul. 28, 1982, Ser. No. 402,435
Int. Cl.³ H01H *25/04*
U.S. Cl. 200—6 A 5 Claims



1. A controller for causing switch contact closures in response to X-Y coordinate movements, said controller comprising a housing, a substrate including an electrical circuit defined thereon supported in said housing, a handle having a longitudinal axis extending into said housing and having a lower annular flange extending radially therefrom, means in said housing supporting said handle thereon for pivotal movement radially of the axis of said handle, a plurality of switch contacts on said substrate and positioned in a predetermined angular pattern about the axis of said handle, said contacts being located on said substrate beneath said flange so that one of said contacts

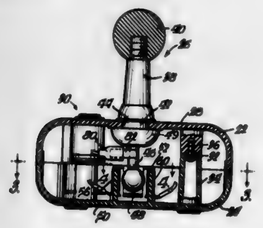
may be operated by said flange by tilt of said handle, a member having a plurality of cantilevered flexible arms extending between said contacts and said flange whereby tilting motion of said handle may cause said arms to engage one of said contacts, projections on said member, each projection associated with one of said arms and extending downwardly toward said substrate radially inwardly of the extremities of each of said arms, whereby when said handle is tilted to close one of said contacts after predetermined movement of one of said arms, the associated projection will bottom on said substrate and transfer force from said flange directly to said substrate through said projection.

4,439,649

JOY STICK SWITCH

Marino Cecchi, Itasca, Ill., assignor to Suncom, Incorporated, Northbrook, Ill.

Filed Aug. 30, 1982, Ser. No. 413,000
Int. Cl.³ H01H *25/04*
U.S. Cl. 200—6 A 17 Claims



1. A joy stick assembly, comprising a housing having top, bottom and side walls and an opening through said top wall; a joy stick extending through said opening, said joy stick having a resilient member around a medial portion thereof secured to said top wall in said opening and pivotally mounting said joy stick therein and on said housing in said opening for pivotal movement within said opening in any direction throughout a 360° arc from an equilibrium position to an operative position and return and a member of electrically conductive material at a lowermost end thereof; and a plurality of contact elements of electrically conductive material on said housing bottom wall in an array in surrounding relationship to said conductive member, said conductive member being out of engagement with said contacts when said joy stick is in said equilibrium position and each said contact being engageable by said conductive member upon movement of said conductive member through an arcuate path as a function of pivotal movement of said joy stick away from said equilibrium position in a predetermined direction to electrically connect said conductive member and said contacts.

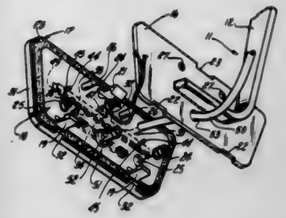
4,439,650

SWITCH ASSEMBLY FOR AUTOMOTIVE PEDAL CONSTRUCTION

William L. Brown, Southfield, Mich., assignor to John D. Leighton, Bloomfield Hills, Mich.

Filed Oct. 14, 1981, Ser. No. 311,191
Int. Cl.³ H01H *3/14*
U.S. Cl. 200—61.89 8 Claims

1. A signal mechanism for a pedal operated device comprising an actuating element for said device, a pedal pad detachably connected to said actuating element for limited relative movement thereto, first and second flexible electrical contacts supported by said pedal pad for movement relative to each other, means including a pair of elements associated with one of said electrical contacts and engageable with said actuating element for effecting relative movement of said contacts into



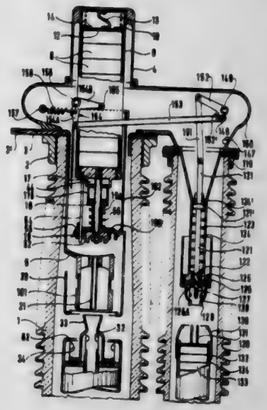
engagement to complete an electrical circuit upon movement of said pedal pad relative to said actuating element.

4,439,651

PRESSURIZED GAS CIRCUIT-BREAKER HAVING OPENING AND CLOSING RESISTORS

Edmond Thuries; Dante Nicoloso, and Doan Pham Van, all of Meyzieu, France, assignors to Alsthom-Atlantique, Paris, France

Filed Aug. 12, 1982, Ser. No. 407,410
Claims priority, application France, Aug. 26, 1981, 81 16291
Int. Cl.³ H01H *33/16*
U.S. Cl. 200—144 AP 2 Claims



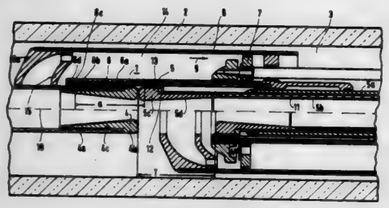
1. A pressurised gas circuit-breaker of the opening and closing resistor type and comprising, in a main insulative enclosure (1), a fixed contact (21, 101), a movable contact (32, 34, 62), a closing resistor (8) and a device (19) for inserting the closing resistor (8) in the form of a semi-movable contact (20) operatively engaging the movable contact (32, 34, 62), said circuit-breaker further comprising, in an auxiliary insulative enclosure (120), a movable auxiliary contact (121), a fixed auxiliary contact (131) and an opening resistor (133), the improvement wherein the circuit-breaker comprises a mechanism disposed in a casing (150) linking both enclosures (1, 120) and on the side of the fixed contact (21, 101), for moving the movable auxiliary contact (121), the mechanism comprising a link-crank assembly (152, 152') and at least one bell-crank lever having two arms (154A, 154B), said assembly and said bell-crank lever being pivoted to respective ends of at least one pushrod (153) with one of the pivots being made via a slot (148) in the pushrod, the crank (152) of the assembly being pivoted to the movable auxiliary contact, a return spring (158) acting on one arm (154A) of the bell-crank lever and the other arm (154B) being fitted with a roller (155) in contact with an extension (102) of

the semi-movable contact (20) for inserting the closing resistor (8).

4,439,652
CONTACT SYSTEM FOR GAS BLAST CIRCUIT BREAKERS

Helmut Beier, Berlin, Fed. Rep. of Germany, assignor to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,101
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126744
Int. Cl.³ H01H *33/70, 33/12*
U.S. Cl. 200—148 A 8 Claims

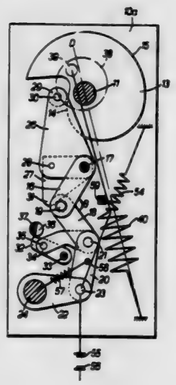


1. A contact system for a gas blast circuit breaker, comprising a nozzle-shaped fixed first contact piece; a coaxially mounted nozzle-shaped, axially movable second contact piece; a movable bridging contact piece common to both the first and second contact pieces; and driving means for driving the system from a contact make position to a contact break position; characterized in that there is further provided spring biasing means for urging the second contact piece against the first contact piece in the contact make position; and wherein the driving means comprises means for separating the bridging contact piece from the first contact piece during the break process, before the second contact piece is separated from the first contact piece.

4,439,653
CIRCUIT BREAKER OPERATING APPARATUS

Hiroshi Umino, Inagi, and Ikuo Takano, Hachiouji, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 12, 1982, Ser. No. 357,660
Claims priority, application Japan, Mar. 19, 1981, 56-38668
Int. Cl.³ H01H *3/06*
U.S. Cl. 200—153 SC 8 Claims



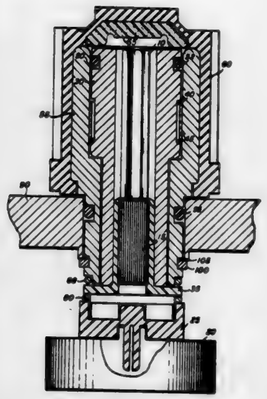
1. A circuit breaker operating apparatus, comprising:
(a) a frame;
(b) a rotatable closing shaft attached to said frame;
(c) first means disposed on one end of said closing shaft for rotating said closing shaft only in one direction;
(d) second means disposed on the other end of said closing shaft for rotating said closing shaft only in said one direction, and alternately with said first means;
(e) a closing cam secured to said closing shaft for rotation therewith;
(f) spring means having one end secured to said frame and another end secured to said closing cam at a point spaced from said closing shaft, whereby the rotation of said closing cam up to a specified angle charges closing energy within said spring mean and rotation of said closing cam beyond said specified angle discharges closing energy charged within said spring mean;
(g) a linkage having one end operatively associated with said closing cam for movement in response to the rotation of said closing cam in a first direction;
(h) a coupling shaft disposed on said frame and coupled to the other end of said linkage for rotation in a first direction in response to rotation of said closing cam in said first direction;
(i) tripping means operating in response to a command based upon occurrence of overcurrent or abnormalities, said tripping means operatively connected to said coupling shaft such that operation of said tripping means rotates said coupling shaft in a second direction, opposite to said first direction; and
(j) contacts movable between an open and a closed position in response to rotation of said coupling shaft, said contacts being closed by rotation of said coupling shaft in said first direction and opened by rotation of said coupling shaft in said second direction; whereby;
(k) rotation of said closing cam beyond said specified angle causes said spring means to discharge closing energy charged therein, causing said coupling shaft to rotate in said first direction, thereby moving said contacts into the closed position, and
(l) operation of said tripping means causes said coupling shaft to rotate in said second direction, thereby moving said contacts into the open position.

4,439,654
WATERPROOF CONTROL KNOB ASSEMBLY WITH INTEGRAL SWITCH

Mark S. Bresin, Coral Springs, and Peter B. Gilmore, Miami, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 29, 1982, Ser. No. 426,334
Int. Cl.³ H01H *13/06, 19/28*
U.S. Cl. 200—302.1 11 Claims

1. A rotatable waterproof control knob assembly including an integral momentary contact switch, comprising:
a conductive inner shaft having a longitudinal axis and an upper and a lower portion;
a conductive outer shaft concentric with said inner shaft and having an upper and a lower portion corresponding to said upper and lower portions respectively of said conductive inner shaft;
means for electrically isolating but mechanically coupling said inner and outer shafts to permit simultaneous concentric rotation of said inner and outer shafts about said longitudinal axis;
a flexible shroud having a top covering and sealing the upper portions of said inner and outer shafts to provide a water barrier for prevention of water entry between said inner and outer shafts at said upper portions of said inner and outer shafts; and
switch contact means, located adjacent said shroud and said upper portions of said inner and outer shafts, for electrically coupling said inner and outer shafts together when the top of said shroud is flexed toward said upper portions of said inner and outer shafts;

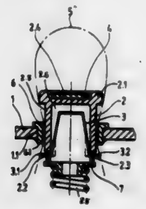


whereby, said momentary switch may be actuated without longitudinal motion of said inner and outer shafts.

4,439,655
PUSH BUTTON FOR ELECTRICAL SWITCH

Ephraim Borter, Buchrain, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Oct. 18, 1982, Ser. No. 434,927
Claims priority, application Switzerland, Nov. 6, 1981, 7103/81
Int. Cl.³ H01H *3/12*
U.S. Cl. 200—340 2 Claims

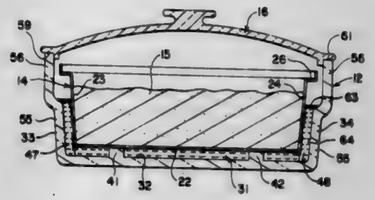


1. A push button, especially for an electrical switch, and which is capable of being guided and retained in a cove plate and can be manually actuated against the force of a push-out spring, comprising:
a push button body;
said push button body being provided with a rigid front flange for limiting an actuation path of the push button;
a rear impact member provided for the push button body for limiting a push-out path of the push button out of the cover plate;
said rear impact member comprising at least two impact detents which are slightly resiliently yieldable;
said impact detents being arranged at opposite sides of the push button body;
said impact detents possessing impact surfaces extending substantially parallel to the cover plate;
said push button body has a hollow space;
a substantially U-shaped blade spring arranged in said hollow space of the push button body;
said substantially U-shaped blade spring having a leg member defining at least one of said impact detents;
said leg member being bent essentially at right angles out of said substantially U-shaped blade spring; and
said push button body having a substantially transversely extending slot through which emerges said leg member out of said push button body.

4,439,656
APPARATUS AND METHOD FOR THE RECONSTITUTION OF FROZEN FOODS IN A MICROWAVE OVEN

Yigal Peleg, Solon, Ohio, assignor to The Stouffer Corporation, Solon, Ohio

Continuation of Ser. No. 251,501, Apr. 6, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,446
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 E 8 Claims



1. In a microwave oven, an apparatus for the reconstitution of frozen foods, such foods being contained in a metallic tray having a bottom wall and continuous side walls of a given height, comprising:
a tray holder of microwave transparent material having a bottom wall and side walls defining a cavity similar in shape to said tray;
spacer means for supporting said tray in said tray holder cavity such that said tray bottom is uniformly spaced from said tray holder rigid bottom wall a distance between one-sixteenth inch and five-sixteenth inch and said tray side walls are spaced from said tray holder side walls throughout said given height and are uniformly spaced from said tray holder side walls a distance between one-sixteenth inch and five sixteenth inch for at least half said tray side walls given height, said tray holder side walls extending above said tray side walls, the space between said tray and said cavity being filled with a microwave absorbing liquid to at least half said tray side walls given height and;
a cover engaging the tops of said tray holder side walls, whereby the space above said tray is in communication with said space between said tray and said cavity.

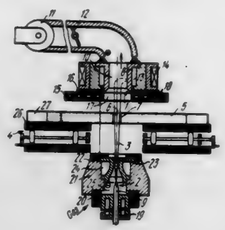
4,439,657
APPARATUS FOR HIGH TEMPERATURE TREATMENT OF RECTILINEAR-GENERATRIX SURFACES OF NONCONDUCTIVE PRODUCTS

Vladimir D. Shimanovich; Andrei K. Shipai, both of Minsk; Vladimir G. Davydenko, Mogilev; Leonid I. Kiselevsky, Minsk; Sergei G. Korotkevich, Minsk; Nelli I. Lipnitskaya, Minsk; Vyacheslav P. Machnev, Minsk; Anatoly I. Zolotovsky, Minsk; Vladislav G. Moskovsky, Minsk, and Nikolai N. Naumenko, Minsk, all of U.S.S.R., assignors to Institut Fiziki Akademii Nauk Belorusskoi SSR, Minsk, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,180
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 PR 14 Claims

1. An apparatus for high temperature treatment of rectilinear-generatrix surfaces of nonconductive products, comprising a plasma generator having an anode arranged opposite to a cathode to create therebetween an arc gap exceeding the length of a generatrix of the surface being treated, said cathode being mounted in a fixed position, and said anode being mounted integrally with said cathode to maintain a fixed position of the arc axis within said arc gap; and a product feeding

device to move said product a desired distance from the arc axis in a plane extending normally to the arc axis when the generatrix of the surface being treated is parallel to the arc axis; means for moving an arc contact spot over the surface of said anode; means for displacing said arc contact spot along the arc



axis; wherein said anode includes a hollow rod having an interior cavity in communication with a suction device; a water-cooled screen attached to the end face of said anode and electrically insulated from said anode, said screen having a central opening which is equal to and coaxial with an opening of said interior cavity of said anode.

4,439,658

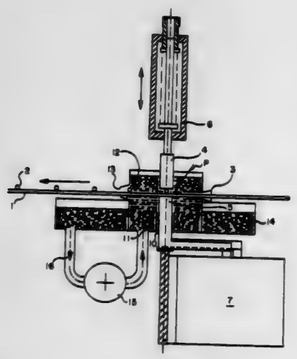
APPARATUS FOR PRODUCING WELDED WIRE GRIDS

Gerhard Schmidt; Klaus Ritter; Gerhard Ritter; Hans Gött, and Josef Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungs Gesellschaft m.b.H., Graz, Austria

Division of Ser. No. 166,299, Jul. 7, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,417

Int. Cl.³ B23K *11/32*

U.S. Cl. 219—56 **2 Claims**



1. Apparatus for use in an electrical resistance welding method for producing welded grids from longitudinal and transverse metal wires crossing one another, wherein said wires are fed between rows of paired cooperating electrodes and are welded together under pressure at the points where said wires cross by means of an electrical current, and in which the resulting cross points of said wires and said associated electrodes are subjected to the action of a liquid coolant,

comprising in combination

first and second tanks, each having sidewalls and an upper boundary formed by upper edges of respective of said sidewalls, said first tank being a catcher tank for said liquid coolant and being open at the top;

guides for guiding said longitudinal wires of said grid through said apparatus, said guides being positioned above said upper boundary of said catcher tank, said upper boundary of said second tank lying above said guides for said longitudinal wires, said sidewalls of said second tank having openings for receiving said guides and an outlet slit for said welded grid;

a pump for conveying said liquid coolant from said catcher tank up to said electrodes, said cross points lying above said catcher tank, and

a pipe connecting said second tank and said pump for conveying said liquid coolant from said catcher tank to said second tank.

4,439,659

ELECTRODE FEED SYSTEM IN ELECTRICAL MACHINING, CAPABLE OF QUICK-RESPONSE ELECTRODE RETRACTION AND RECIPROCATION

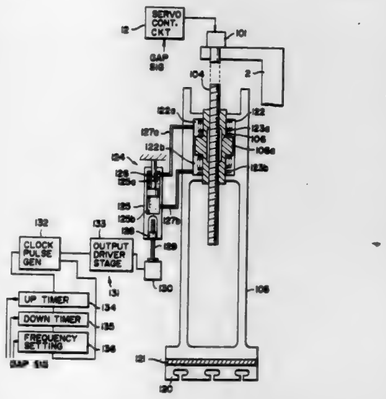
Akihiko Shimizu, Kawasaki, Japan, assignor to Japax Incorporated, Kanagawa, Japan

Filed Jan. 12, 1982, Ser. No. 338,902

Claims priority, application Japan, Jan. 14, 1981, 56-3235

Int. Cl.³ B23P *1/14*

U.S. Cl. 219—69 V **12 Claims**



1. An electrode feed system for use in effecting electrical machining between a working electrode and a workpiece electrode across a machining gap, said system comprising:

an axially movable electrode head for securely supporting one of said electrodes;

a feed screw extending into said electrode head and drivingly coupled with an electric motor for rotation therewith;

a driver circuit for providing a drive signal to rotate said motor;

a feed nut in mesh with said feed screw in said electrode head and restrained from rotation therein for axially moving said head when said feed screw is rotated in response to said drive signal applied to said motor, thereby displacing said one electrode to follow the progress of elctrical machining in said machining gap;

a cylinder formed within said electrode head and having said feed nut slidably received therein for axial movement relative thereto, said nut being constructed and arranged to define a pair of separate chambers in said cylinder; and

reciprocation pump means for alternately pressurizing said two separate chambers in said cylinder with a pressure fluid, thereby axially reciprocating said electrode head.

4,439,660

ELECTROEROSIVE CONTOUR-MACHINING METHOD AND APPARATUS WITH A ROTARY TOOL ELECTRODE

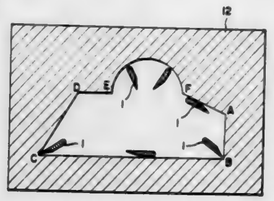
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 2, 1982, Ser. No. 345,050

Claims priority, application Japan, Feb. 3, 1981, 56-13829

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 M **2 Claims**



1. A method of electroerosively machining a contour in a workpiece, comprising the steps of:

(a) supporting said workpiece on a movable worktable to lie in an X-Y plane,

(b) supporting a tool electrode having on its lateral periphery a plurality of divided machining electrode surfaces with a tool support so that each of said divided machining surfaces extends orthogonal to said X-Y plane and said tool electrode is rotatable about an axis extending in parallel with said surfaces;

(c) positioning said tool electrode by rotating said tool support about said axis to establish a predetermined angular orientation of the tool electrode relative to a predetermined angular position whereby at least a portion said electrode surfaces is brought into a machining relationship with said workpiece;

(d) electroerosively removing material from at least a portion of said workpiece juxtaposed with said portion of said surfaces while moving said worktable to displace said workpiece in said X-Y plane so that said portion of the electrode surfaces moves along a portion of said contour in said workpiece;

(e) angularly repositioning said tool electrode through rotation of said tool support about said axis to alter angular orientation of said tool electrode whereby at least another portion of said surfaces is brought into a machining relationship with said workpiece, and effecting step (d) so that said other portion of the electrode surfaces moves along a subsequent portion of said contour in said workpiece; and

(f) repeating step (e) to sequentially machine successive portions of said contour in said workpiece.

4,439,661

APPARATUS AND METHOD FOR DOUBLE END STUD WELDING

Thomas E. Doyle; Daniel Hauser, both of Columbus; Martin, David C. Worthington, all of Ohio, and Michael D. Hayes, Minas Gerais, Brazil, assignors to KSM Fastening Systems Inc., Moorestown, N.J.

Continuation-in-part of Ser. No. 95,322, Nov. 19, 1979, Pat. No. 4,339,653. This application May 19, 1981, Ser. No. 265,239

Claims priority, application Canada, Nov. 18, 1980, 364898

Int. Cl.³ B23K *9/20*

U.S. Cl. 219—99 **15 Claims**

1. The method of simultaneously stud welding the ends of a multi-ended metallic stud to a metallic base member comprising the steps of:

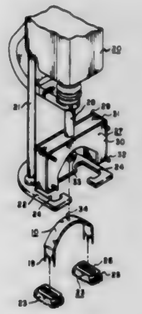
providing on each end of the stud at least one elongate relatively thin metallic extending projection;

applying a controlled pressure upon the stud in the direction of the base member;

applying an electrical potential to the stud from a continuous current power supply;

bringing the metallic projections into contact with the metallic base member; and

controlling the pressure on and the rate of advance of the stud toward the workpiece and controlling the electrical potential upon the stud all in proportion to one another and to the configuration of the projections and stud ends



to (1) provide a current density in the projections to essentially immediately and simultaneously disintegrate the projections to establish arc initiation at all ends of the metallic stud and (2) thereafter maintain a continuous arc at all ends of the metallic stud of duration and current density at least equaling that of drawn arc stud welding to maintain molten metal at each end thereof until the ends of the stud come into contact with the base material.

4,439,662

METHOD OF OPERATING A PLASMA GENERATING APPARATUS

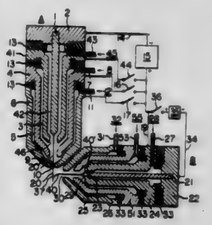
Haruo Tateno, Kiyose, Japan, assignor to Rikagaku Kenkyusho, Japan

Division of Ser. No. 124,938, Feb. 26, 1980, Pat. No. 4,341,941. This application Sep. 30, 1981, Ser. No. 307,312

Claims priority, application Japan, Mar. 1, 1979, 54-23629; Mar. 1, 1979, 54-23630

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PY **6 Claims**



1. A method of operating a plasma generating apparatus that includes a single-plasma torch structure comprising a torch unit having a center electrode and having inner and outer concentric bushings disposed about the electrode so as to define inside and outside annular channels for the passage of gas, the method comprising providing a gas flow rate through the inside channel that is equal to or greater than a critical gas flow rate, and adjusting the gas flow rate through the outside channel such that a predetermined ratio of gas flow rate through the inside channel to gas flow rate through the outside channel is afforded, said critical gas flow rate and said ratio being determined from the valley of a curve representing the

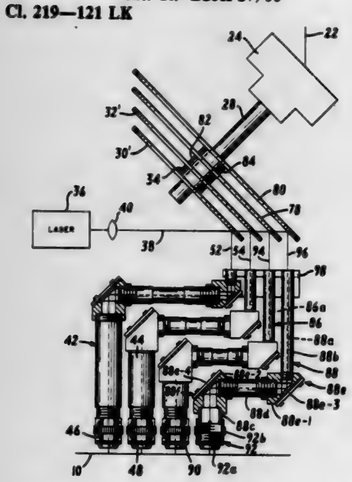
thermal loss of the outer bushing as a function of gas flow rate through the inside channel, said curve being determined by operating said torch unit as a Positive Polarity Torch and another similar torch unit as a Reverse Polarity Torch in a dual-plasma torch structure, establishing a hairpin arc between the Positive Polarity Torch and the Reverse Polarity Torch, providing a total gas flow rate through the inside and outside channels of the Positive Polarity Torch such that the arc is in alignment with a central axis of such torch, varying the gas flow rate through the inside channel while maintaining constant the total gas flow rate, and measuring said thermal loss as a function of the gas flow rate through the inside channel.

4,439,663

METHOD AND SYSTEM FOR LASER PERFORATION OF SHEET MATERIAL

A. Clifton Lilly, Jr., Richmond; Warren E. Claflin, Bon Air; Edward B. Stultz, Richmond; Ulysses A. Brooks, Glen Allen, and Peter Martin, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 932,566, Aug. 10, 1978, abandoned.
This application Jul. 24, 1981, Ser. No. 286,635
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LK 7 Claims



1. A method of forming plural spaced rows of spaced uniform perforations in sheet material, comprising:

(a) projecting an initial beam of light energy from a laser through a lens;

(b) establishing a conveyance plane for said sheet material;

(c) deriving in time succession from said initial beam, a plurality of spaced beams each having an axis of symmetry parallel, at derivation, to the axes of symmetry, at derivation, of the other spaced beams and perpendicular, at derivation, to the conveyance plane, said derived beams having unequal cross-sectional expanse;

(d) establishing a separate light path for each spaced beam from its point of derivative to the conveyance plane such that the distance from the lens to the conveyance plane is the same for each spaced beam so that the cross-sectional areas of said spaced beams at their respective points of contact with said conveyance plane are equivalent and such that the axis of symmetry of each said spaced beam at its point of contact with the conveyance plane is perpendicular thereto and is parallel to the axes of said other spaced beams at their respective points of contact with said plane;

(e) conducting each said spaced beam along its respective light path such that each spaced beam contacts the conveyance plane at a location on the surface of said plane spaced apart from the locations at which the other spaced beams contact the conveyance plane;

(f) passing each modified beam through an issue focus element located at a point in its light path proximate the conveyance plane to focus the beam at a point on the conveyance plane;

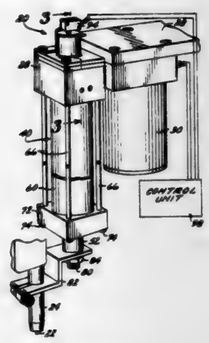
(g) conveying said sheet material past the points at which said beams are focused on the conveyance plane so that, as said sheet material is conveyed past said points, the time successive derivation and the equal light path lengths of said beams result in plural spaced rows of spaced uniform perforations in said sheet material.

4,439,664

WELDING APPARATUS WHEREIN PHYSICAL CONTACT OF WELDING ELECTRODE WITH WORKPIECE IS MECHANICALLY SENSED

William J. Toohey, San Diego, Calif., assignor to Jetline Engineering, Inc., Irvine, Calif.

Filed Apr. 26, 1982, Ser. No. 372,193
Int. Cl.³ B23K 9/12
U.S. Cl. 219—124.02 21 Claims



1. A welding apparatus comprising:

first means adapted for carrying an electrode operatively connected to a power source capable of generating a welding arc between the electrode and a workpiece, in either direction towards or away from the workpiece;

motor means operatively connected with the first means for providing motive power to the first means, the motor means being controllable to move the first means to carry the electrode towards the workpiece, and alternatively to move the first means to carry the electrode away from the workpiece;

sensing and control means including switch means operatively associated with the first means for causing the first means to trip the switch means substantially when the electrode physically contacts a solid body such as a workpiece, and for causing the motor means to reverse movement of the first means for a predetermined time period, whereby after the electrode contacts the workpiece the electrode is carried away by the first means to a predetermined distance from the workpiece; and

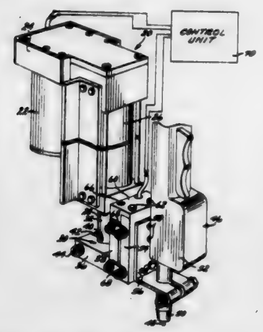
housing means relative to which the motor means are fixedly mounted, and wherein the first means comprise a lead screw and threaded sleeve assembly, the lead screw being rotatably mounted in a bearing incorporated in the housing means and being mechanically connected to the motor to be driven thereby, the threaded sleeve being mounted on the lead screw to move longitudinally relative to the lead screw when said lead screw is rotated, the threaded sleeve being adapted for carrying the electrode, the lead screw having an upper end, the lead screw and the bearing comprising means for allowing the upper end of the lead screw to move in a direction opposite to the motion of the threaded sleeve towards the work surface and therethrough for tripping the switch means.

4,439,665

ARC WELDING APPARATUS HAVING PIVOTABLY MOUNTED ELECTRODE CARRIAGE

William L. Arter, Fullerton, Calif., assignor to Jetline Engineering, Inc., Irvine, Calif.

Filed Apr. 26, 1982, Ser. No. 372,195
Int. Cl.³ B23K 9/12
U.S. Cl. 219—124.02 16 Claims



1. A welding apparatus comprising:

a motor capable of providing a rotational power output in either direction;

translatory motion means operatively connected with the motor and driven thereby for moving in either direction towards or away from a workpiece, the direction of movement of the translatory motion means being dependent on the direction of rotational power output of the motor;

electrode-carrying means adapted for carrying a welding electrode capable of being coupled to a power source to provide an electric arc between the electrode and the workpiece, the electrode-carrying means being carried by the translatory motion means to travel therewith towards or away from the workpiece;

mounting means operatively associated with the electrode-carrying means and with the translatory motion means for normally maintaining the electrode-carrying means in a first position relative to the translatory motion means and for allowing the electrode-carrying means to move into a second position relative to the translatory motion means when the translatory motion means are carrying the electrode-carrying means towards the workpiece and the workpiece is physically contacted by the electrode;

said mounting means being adapted for mounting the electrode-carrying means to the translatory motion means for a limited pivotable motion relative thereto, the electrode-carrying means being gravity biased to the first position, and comprising a plurality of linkage arms, each linkage arm being mounted to the translatory motion means for at least limited pivoting motion relative thereto and to the electrode-carrying means for at least limited pivoting motion relative thereto, whereby the electrode-carrying means are capable of limited pivoting motion relative to the translatory motion means, and whereby the first position of the electrode-carrying means is an extreme pivotable position allowed by the mounting means which the electrode-carrying means are gravity biased to occupy; and

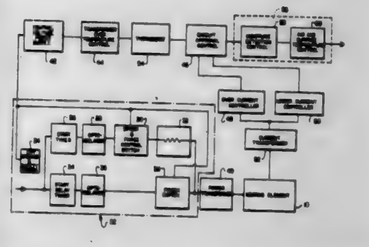
switch and control means operatively associated with the electrode-carrying means for being tripped when the electrode-carrying means are moved from the first position to the second position and for reversing the rotational power output of the motor for a predetermined time period after the switch means are tripped.

4,439,666

ELECTRICAL HEATING SYSTEM

Charles H. Graham, Salt Lake City, Utah, assignor to Intermountain Thermafloor, Salt Lake City, Utah

Filed Oct. 7, 1981, Ser. No. 309,550
Int. Cl.³ H05B 1/00
U.S. Cl. 219—213 18 Claims



1. An electrical heating system for use in heating surfaces, said heating system comprising:

a low voltage heating element positioned substantially parallel to and adjacent the surface to be heated, said heating element comprising a nonferrous, thermally conducting mesh screen, said screen having a mesh density such that the total surface area of the mesh screen is at least substantially equal to the area of that portion of the surface to be heated which is within a perimeter defined by the edges of said screen;

an alternating current power source; and

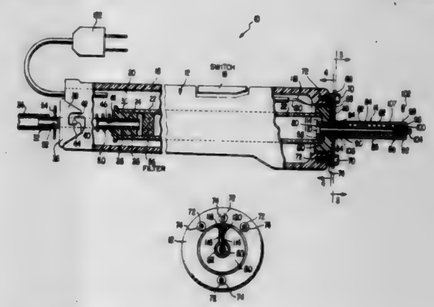
means for connecting the power source to the heating element so as to substantially eliminate transmission of power surges onto the heating system.

4,439,667

DESOLDERING DEVICE AND IMPROVED HEATER ASSEMBLY THEREFOR

Frank Sylvia, Columbia, Md., assignor to Pace Incorporated, Laurel, Md.

Filed Jul. 11, 1980, Ser. No. 168,804
Int. Cl.³ H05B 3/02; B23K 3/04
U.S. Cl. 219—230 21 Claims



1. A desolderer comprising:

a tubular sleeve having external flange means disposed a predetermined distance from one end of the sleeve and wherein the portion of the sleeve between said one end and the flange means defines a seal disposition surface having an opening therein;

a heating wire disposed within said sleeve;

a hollow handle having a forward end, said flange means

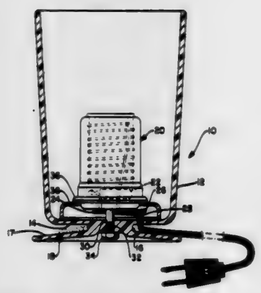
being secured to the forward end of said handle with said portion of the sleeve extending into the handle;
a tubular solder collector chamber open at one end and disposed within said handle and adapted to have a vacuum created therein;
a tubular tip heated by the heating wire so that the tip can melt solder;
means for providing a path for the molten solder from said tip to said solder collection chamber;
a compressible seal means disposed around said sleeve at said seal disposition surface between said solder collection chamber and said flange means, said seal means including a radially extending groove facing the flange means and communicating with the sleeve opening, said seal means sealing said open end of the tubular solder collection chamber;
means biasing said sealing means into engagement with said flange means; and
electrical connecting means for connecting said heating wire to a source of electrical energy outside of said collection chamber, said electrical connecting means extending through the opening in the tubular sleeve and the groove in the seal means as it passes from the inside of said tubular sleeve to the outside of said solder collection chamber, the sealing means being compressed by the biasing to such an extent that the groove closes about the electrical connecting means to block the passage of air therethrough.

4,439,668

PEDESTAL TYPE ELECTRO-HEATED CONTAINER

Alton R. Wells, 4573 W. Trade Winds Ave., Lauderdale-by-the-Sea, Fla. 33308

Filed Aug. 26, 1982, Ser. No. 411,849
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—438 **1 Claim**



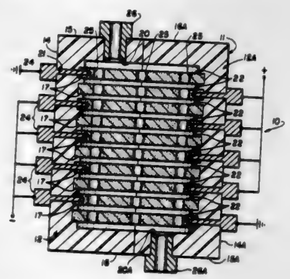
1. An electro-heater container comprising a cup made of electrically insulative material and including a bottom and a support pedestal for the cup extending downwardly from said bottom and formed integrally with the cup, said pedestal including a center stem terminating in a base support disc,
said bottom having an aperture therein offset from said center stem,
a heater unit secured to said bottom and extending up into said cup,
power supply leads extending through and sealed in the aperture in said bottom and connecting to said heater unit, which leads are radially offset from said center stem, said heater unit and power supply leads being electrically insulated;
said support disc having a bottom surface that is concave in vertical section,
means securing said heater unit to said bottom extend through said center stem and include a portion received in the concave portion of said support disc;
said center stem vertically separates said base support disc from said bottom and several convolutions of said leads can be stored on said center stem; and
a support ring engaging said heater unit and positioning it on said bottom, said support ring being in tight engagement with said cup and said heater unit; and said aperture is within the periphery of said ring.

4,439,669

INSTANTANEOUS ELECTRODE-TYPE WATER HEATER

Louis Ryffel, 332 Blue Hill Ter., Wyckoff, N.J. 07481

Filed Nov. 1, 1982, Ser. No. 438,451
Int. Cl.³ H05B *3/60*; F22B *1/30*
U.S. Cl. 219—289 **3 Claims**



1. An instantaneous electric hot water heater comprising: an electrically non-conductive housing formed of two identical complementary members, each of which is provided with sidewall means open at one side and end walls, said sidewall means having spaced apart grooves formed on the interior surfaces thereof parallel to said end walls and apertures extending through said sidewall means into alternate ones of said spaced apart grooves, and one end wall having a port formed therein, one of said members being inverted and joined to the other member with open sides thereof facing each other to form a water-tight hollow housing having a port in each of the opposite ends thereof and in which the grooves formed in each member are aligned and form a plurality of spaced apart continuous grooves on the interior surface of said housing; a plurality of electrodes extending transversely across the interior of said housing, each such electrode being supported in a different groove of said plurality of continuous grooves formed in said housing and being adapted to make electrical contact with an electrical connector projecting through an aperture in the sidewall of said housing into the groove, each electrode being provided with a plurality of apertures for the passage of water through the electrode; and a plurality of electrical connector means, one for each of said electrodes, each of said connector means projecting through an aperture formed in the sidewall means of said housing into the edge of a different electrode.

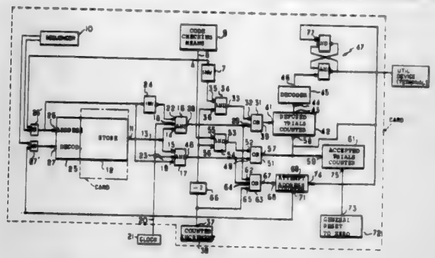
4,439,670

METHOD AND DEVICE FOR THE CHECKING OF THE NUMBER OF ACCESS ATTEMPTS TO AN ELECTRONIC STORE, NOTABLY THAT OF AN INTEGRATED CIRCUIT OF AN OBJECT SUCH AS A CREDIT CARD OR A BUYER'S CARD

Jean-Claude Basset, and Guy Belenfant, both of Paris, France, assignors to Electronique Marcel Dassault, Paris, France

Continuation of Ser. No. 211,969, Dec. 1, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,697
Claims priority, application France, Nov. 30, 1979, 79 29587
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—382 **9 Claims**

1. A data bearing card or the like for gaining access to a utilization device, the card comprising means for storing an identification code which is interrogated for validity during an access attempt, said card further comprising permanent re-



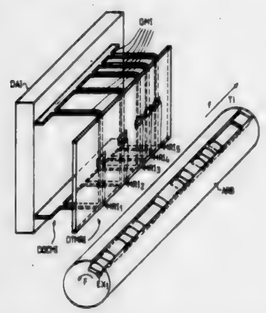
cording means of all valid and invalid access attempts and of the indication resulting from such respective attempts.

4,439,671

MAGNETORESISTANT TRANSDUCTION DEVICE FOR READING LOW DENSITY CODED DATA

Michel Helle, Marcq, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 9, 1982, Ser. No. 356,432
Claims priority, application France, Jun. 19, 1981, 81 12071
Int. Cl.³ G06K *7/08*
U.S. Cl. 235—449 **8 Claims**



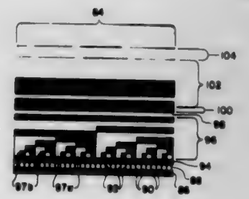
1. A magnetoresistant transduction device for reading coded data, comprising a plurality of magnetoresistances having a larger dimension and and adapted to be disposed opposite the coded data and to be aligned with each other in the direction of their larger dimension, a magnetization device for generating a magnetic field having a value at each of the magnetoresistances which is a function of the coded data placed opposite the corresponding magnetoresistance, a grid of non-remanent magnetic material having a a plurality of parallel focusing elements arranged between the magnetization device and the magnetoresistances, each focusing element being associated with only one magnetoresistance and each focusing element carrying the magnetic field generated by the magnetization device to and focusing the magnetic field on its associated magnetoresistance, such that the magnetic fields acting on the magnetoresistances are independent from each other.

4,439,672

CONTROL SYSTEM FOR AUTOMATED MANIPULATOR DEVICE

Roy G. Salaman, Boulder, Colo., assignor to Lord Electric Company, Inc., New York, N.Y.

Continuation of Ser. No. 132,272, Mar. 20, 1980. This application Jul. 29, 1982, Ser. No. 402,994
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131276
Int. Cl.³ G01F *7/10*
U.S. Cl. 235—463 **16 Claims**



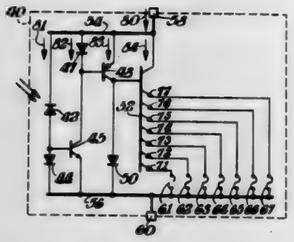
1. In an automated device operative to move along at least one movement track and having motor means for moving the automated device along the movement track, an improved control system for controlling the movement and position of the automated device along the movement track comprising:
means defining a chart having a width and a length and stationarily positioned transversely adjacent the movement track along a predetermined operative portion of the movement track over which the automated device is to be movably controlled, the length of the chart extending along the movement track and the width of the chart extending transversely with respect to the movement track, said chart having a radiation reflective code extending across a portion of the width of the chart and along the operative length of the chart which defines the length of the chart and hence the operative portion of the movement track into a plurality of distance increments, the code further defines each distance increment by a unique predetermined pattern of radiation reflected from the code at each distance increment;
radiation source means for emanating radiation onto the chart at a position adjacent the automated device as the automated device moves along the movement track, the radiation reflected from the code at each distance increment defining the predetermined pattern of reflected radiation unique to that distance increment;
camera means attached to and carried by the automated device during movement along the movement track relative to the chart, said camera means receptive of radiation from said source means reflected in a scanning path extending fully across and beyond the transverse width of the chart to assure reception of the predetermined pattern of radiation reflected from the code at each distance increment under conditions of shifts in transverse position of the chart relative to the movement track;
a part of said code including means reflectively indicative of the beginning and the ending of the transverse width of the code at each distance increment;
said camera means further including means for converting each predetermined pattern of reflected radiation into an increment signal uniquely indicative of the particular distance increment from which the predetermined pattern of reflected radiation was reflected; and
processor means including a memory and an input control means for entering into said memory at least one information signal, each information signal corresponds to an increment signal corresponding to a distance increment along the operative portion of the track, said processor means being connected to said camera means to receive each increment signal from said camera means, said pro-

cessor means further operatively controlling said motor to move said automated device along the movement track in predetermined relation to the information signal and each increment signal supplied by said camera means.

4,439,673
TWO TERMINAL INTEGRATED CIRCUIT LIGHT-SENSOR

Walter S. Gontowski, Jr., Thompson, Conn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 27, 1981, Ser. No. 296,748
Int. Cl.³ H01J 40/14
U.S. Cl. 250—214 A 7 Claims

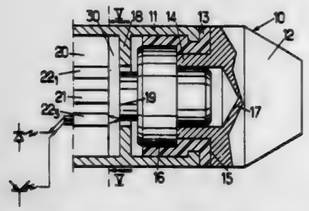


1. An integrated circuit light sensor comprising a die portion of a silicon wafer having formed thereat (a) a pair of terminal conductors; (b) a photo-diode; (c) a current-mirror amplifier; and (d) a conductive buss means for delivering electrical energy to said photo-diode and to said amplifier from said pair of terminal conductors, for connecting said photo-diode to the input of said current-mirror amplifier and for connecting the output branch of said current-mirror amplifier directly between said terminal conductors so that from said pair of terminal conductors said integrated circuit light sensor behaves like a simple photo-diode that may have an unusual combination of small size and a high stable sensitivity.

4,439,674
PREHENSION UNIT AND MANIPULATOR APPARATUS INCLUDING OPTICAL SENSORS

Philippe Amberny, Savigny en Septaine, and Michel O. de Mendez, Montlhery, both of France, assignors to Souriau et Cie and Societe d'Etudes et Applications Techniques S E A T, both of, France

Filed Jul. 6, 1981, Ser. No. 280,779
Claims priority, application France, Jul. 4, 1980, 80 15009
Int. Cl.³ A61F 1/06; G02B 5/14
U.S. Cl. 250—227 9 Claims

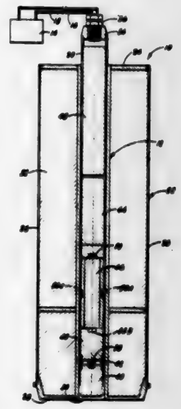


1. A prehension unit having a rigid body; a contact element supported by said body through resiliently deformable means which biases said contact element toward a rest position and cooperating with said body to define a closed space; a plurality of optical sensors carried by said body and cooperating with locally light reflecting surface means on said contact element, wherein said sensors comprise optical fiber means for transmitting light from a remote transducer to an end portion of said optical fiber means terminating in said supporting body in front of a locally reflecting surface of the contact element transverse to a longitudinal axis of said body and optical fiber means for collecting the light reflected by said surface through said space and conveying to a remote receiving transducer, whereby the forces causing movements of said locally reflecting surface in different directions which result in a change of the collected amount of light may be detected.

4,439,675
MOISTURE AND DENSITY GAUGE

Patrick J. Campbell, 130 S. Buchanan Cir., Pacheco, Calif. 94553

Filed Sep. 21, 1981, Ser. No. 304,563
Int. Cl.³ G01V 5/00
U.S. Cl. 250—253 9 Claims



1. A moisture and density gauge for a medium having, in combination, a source of gamma radiation, a source of neutron radiation, and means for receiving signals and transforming the received signals into a representation of the moisture and density of the medium, the improvement comprising:

a. a casing, the gamma radiation and neutron radiation sources being placed in said casing, said casing intended for being placed in the medium;

b. means for detecting and signaling the gamma radiation emanating from the source of gamma radiation after interaction with the medium, said means for detecting and signaling the emanation of gamma radiation being placed in said casing;

c. means for detecting and signaling the neutron radiation from said source of neutron radiation after interaction with the medium, said means for detecting and signaling the radiation of neutrons after interaction with the medium being placed in said casing between said means for detecting and signaling the gamma radiation and the source of gamma radiation, said signals representing the detected neutron and gamma radiation being transmitted to the means for receiving signals.

4,439,676
NATURAL GAMMA RAY LOGGING WITH BOREHOLE EFFECT COMPENSATION

Harry D. Smith, Jr., and Dan M. Arnold, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

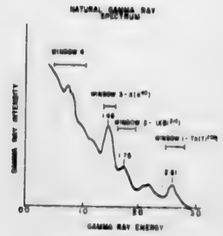
Filed Jun. 5, 1981, Ser. No. 270,937
Int. Cl.³ G01V 5/00
U.S. Cl. 250—256 16 Claims

1. A method of natural gamma ray logging of subsurface formations adjacent a well borehole with a detector in a sonde, while compensating for the effects of borehole conditions on the logging, comprising the steps of:

(a) measuring natural gamma radiation from the formation in a first energy window containing the 2.61 MeV thorium energy peak;

(b) measuring natural gamma radiation from the formation in a second energy window containing the 1.76 MeV uranium energy peak;

(c) measuring natural gamma radiation from the formation in a third energy window containing the 1.46 MeV potassium energy peak;



(d) measuring natural gamma radiation in the formation in a fourth energy window differing at least in part from the other three energy windows; and

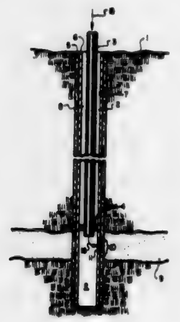
(e) obtaining from the gamma radiation measured in the four energy windows and stripping constants from calibration formations a compensating function indicative of the effects of borehole conditions on the gamma radiation measured;

(f) adjusting the measured natural gamma radiation for different borehole conditions based on the compensating function.

4,439,677
WELLBORE FRACTURE TRACING

F. Glenn Martin, Irving, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 5, 1981, Ser. No. 318,511
Int. Cl.³ G01V 5/04
U.S. Cl. 250—260 4 Claims

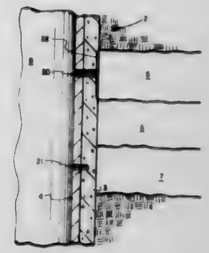


1. A method for determining the vertical extent of a fracture in a wellbore wall comprising providing a fluid loss control composition which carries one or more materials designed to enter into the interior of said fracture without plugging said fracture to form a filter cake on at least one interior wall inside said fracture, at least one of said filter cake forming materials being radioactively tagged, injecting said fluid loss control composition into said wellbore in the vicinity of said fracture to build up a filter cake inside said fracture along the internal vertical height of said fracture, and running a nuclear log survey in said wellbore to determine the vertical extent of said filter cake, thereby determining the vertical extent of said fracture.

4,439,678
WELLBORE TREATMENT

F. Glenn Martin, Irving, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 14, 1981, Ser. No. 330,068
Int. Cl.³ G01V 5/00
U.S. Cl. 250—260 4 Claims



1. A method for determining the success of a multiple perforation operation in a wellbore wherein at least two geologic formations were to be put into fluid communication with said wellbore by way of at least two sets of perforations, wherein said method locates perforations that did not establish such communication and therefore require reperforating, said method comprising providing a fluid loss control composition which carries one or more materials designed to form a filter cake on said wellbore wall, at least one of said filter cake forming materials being radioactively tagged, injecting said fluid loss control composition into said wellbore and into said perforations to build up a filter cake on the wellbore wall behind each set of perforations, and running a nuclear log survey in said wellbore to determine which of said sets of perforations were sufficiently open to establish a filter cake buildup on the wall of the wellbore and which of said sets of perforations were not sufficiently open to establish a filter cake buildup and therefor require reperforating.

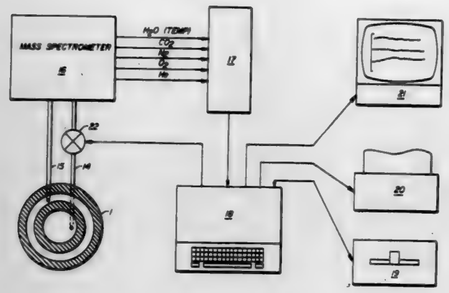
4,439,679
TRANSCUTANEOUS GAS TENSION MEASUREMENT USING A DUAL SAMPLING CHAMBER AND GAS ANALYSIS SYSTEM

Malcolm B. McIlroy, Belvedere, and Ralph C. Targett, El Cerrito, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 10, 1981, Ser. No. 252,886
Int. Cl.³ B01D 59/44
U.S. Cl. 250—282 8 Claims

6. A method of simultaneously measuring the tensions of gases in the blood stream of an animal, including man, and the resistance of the skin of said animal to the flow of said gases comprising the steps of contacting an area of the skin of said animal with the gas permeable boundary walls of two collecting chambers, heating the area of skin defined by said boundary walls, and continuously monitoring the temperature of said area of skin, collecting in said collecting chambers gases which have diffused through said area of skin and passing said gases to a gas analysis instrument, measuring the proportions and changes in proportions of gaseous constituents of the gases flowing from both collecting chambers, halting the flow of gases from one of said chambers to said instrument, measuring the proportions and changes in proportions of the gaseous constituents of the gases flowing from the single collecting

chamber, and determining the resistance of the skin of the subject to the flow of said gaseous constituents, and the tensions of said gaseous constituents in the bloodstream of said animal.

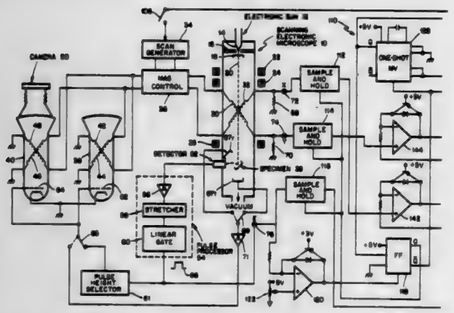


4,439,680

COLOR-CODED MAPPING SYSTEM AND METHOD FOR IDENTIFYING ELEMENTS IN A SPECIMEN

John H. Broadhurst, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 163,219, Jun. 26, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 393,031
Int. Cl.³ H01J 37/00
U.S. Cl. 250—310 18 Claims



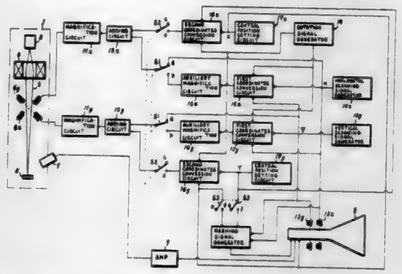
1. A color-coded mapping system comprising means for producing potentials corresponding to the position of a particle beam as it is moved over a specimen to be analyzed, means for producing a short potential pulse each time an X-ray is detected whose height is proportional to the X-ray energy, means for sampling and holding signals representative of the position of said particle beam as it moves over said specimen, means for sampling and holding the short potential pulse occurring at the time each X-ray is detected, a hue modulator for producing bright-up pulses, a color cathode ray tube including three electron guns, each gun providing a primary color, means for activating said guns including a timing element providing a short electrical pulse enabling said hue modulator to activate said electron guns to produce a spot of light on the screen of said cathode ray tube, said hue modulator causing said electron guns to be activated in accordance with the height of the short potential pulse which represents the amount of X-ray energy, whereby colors are produced at various locations on the screen of said cathode ray tube which represent the elemental composition of said specimen.

4,439,681

CHARGED PARTICLE BEAM SCANNING DEVICE

Setsuo Norioka, and Naoki Date, both of Akishimashi, Japan, assignors to Jeol Ltd., Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 312,955
Claims priority, application Japan, Oct. 24, 1980, 55-149165
Int. Cl.³ H01J 37/26
U.S. Cl. 250—310 5 Claims



1. A charged particle beam scanning device enabling the beam to be scanned in a raster over the surface of a specimen such that the size of the raster and/or the angular orientation of the raster and/or the center of the raster can be changed relative to the specimen without moving the specimen, said scanning device comprising:

(a) a scanning signal generator for generating two repetitive scanning signals,

(b) a charged particle beam deflecting means responsive to said scanning signals for deflecting the charged particle beam over the specimen surface in a raster defined by horizontal and vertical scanning directions,

(c) magnification means for adjusting the length of scan of the charged particle beam over the specimen as produced by the deflecting means by adjusting the amplitude of said scanning signals prior to application to said deflecting means,

(d) a rotation signal generator for supplying rotation signals indicative of a desired rotation of the raster,

(e) a first coordinates conversion circuit responsive to the scanning signals and the rotation signals for generating modified scanning signals for rotating the raster and scanning directions of the charged particle beam,

(f) means for generating d.c. signals indicative of a desired shift of the center of the raster,

(g) a second coordinates conversion circuit responsive to the signals indicative of a desired shift and the rotation signals for shifting the raster in the current scanning directions, and

(h) means for adding the outputs of the first and second coordinates conversion circuits and applying said sum signal to said magnification circuit.

4,439,682

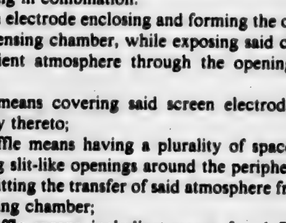
NOISE ERASING METHOD IN A RADIATION IMAGE RECORDING AND REPRODUCING METHOD

Seiji Matsumoto; Masanori Teraoka, and Takao Komaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1982, Ser. No. 338,734
Claims priority, application Japan, Jan. 12, 1981, 56-2970
Int. Cl.³ G01T 1/11
U.S. Cl. 250—327.2 6 Claims

1. In a radiation image information recording and reproducing method where a stimulable phosphor sheet is exposed to a radiation to record a radiation image therein and then exposed to a stimulating ray to cause it to emit light therefrom in the pattern of the stored image, the emitted light is photoelectrically detected and converted to an electric signal, and a visible image corresponding to the radiation image is reproduced by use of the electric signal,

a method of erasing the noise developing in the visible image from a once used stimulable phosphor sheet comprising conducting a first erasing by exposing said used stimulable phosphor sheet to light after said exposure to a stimulating ray so as to erase the remaining radiation energy of said



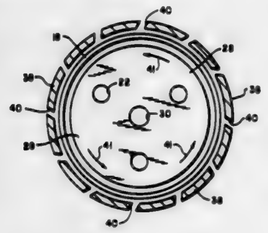
recorded radiation image, and thereafter conducting a second erasing by exposing said stimulable phosphor sheet to light in an exposure amount on a level of 1/5 to 3/10,000 compared with that in said first erasing immediately before the next radiography so as to erase the fog developing in said stimulable phosphor sheet after said first erasing.

4,439,683

IONIZATION SMOKE DETECTOR

John J. Dobrzanski, New Britain, Conn., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 11, 1981, Ser. No. 233,352
Int. Cl.³ H01J 47/02
U.S. Cl. 250—381 6 Claims



1. An ionization smoke detector having a sensing chamber and comprising in combination:

(a) a screen electrode enclosing and forming the outer limits of said sensing chamber, while exposing said chamber to the ambient atmosphere through the openings defined therein;

(b) baffle means covering said screen electrode in close proximity thereto;

(c) said baffle means having a plurality of spaced, axially extending slit-like openings around the periphery thereof for permitting the transfer of said atmosphere from and to said sensing chamber;

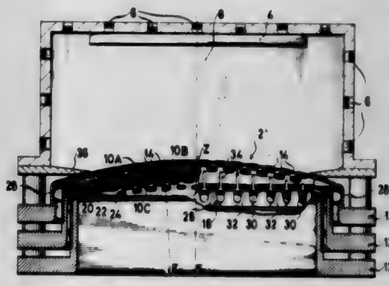
(d) said baffle means including means for deflecting air currents directed normal to the peripheral surface of said baffle means such that the air currents enter said sensing chamber at an angle other than said normal angle and are concentrated at the periphery inside said chamber; said means for deflecting including each of said slit-like openings, said openings being skewed with respect to the radius of said sensing chamber such that they produce said deflection and concentration of said air currents.

4,439,684

ACCELERATING GRID

Johann Hemmerich; Peter Kupschus, both of Jülich, and Helmut Fränkle, Unterhaching, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich and Messerschmitt Bolkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, both of, Fed. Rep. of Germany

Filed May 15, 1981, Ser. No. 263,929
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018623
Int. Cl.³ H01J 3/14, 7/26
U.S. Cl. 250—396 R 9 Claims



1. An accelerating grid for focusing ion beams, said grid comprising:

(a) at least one orifice plate, said plate having:

(i) an ion focusing means, said means having a plurality of through-holes formed therein, each of said through-holes having an axis that converges with other through-hole axes on a common focusing point,

(ii) resilient regions being integrally formed in said plate between said ion focusing means and the outer perimeter of said plate, at least some of said resilient regions including a plurality of parallel slots in the plate rim portion forming mutually separated, resiliently bendable plate connector webs, separating cuts in said plate extending from each of said slots into proximity with the outermost of said through-holes; and other said resilient regions including at least two mutually offset and overlapping parallel rows of slots forming plate connector webs therebetween whereby said resilient regions are elastic and deformable in the direction of the expansion of said plate when said plate is heated,

(b) and support means for fixably securing the outer perimeter of the orifice plate.

4,439,685

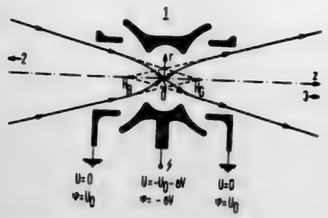
CORPUSCULAR BEAM BLANKING SYSTEM

Erich Plies, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 6, 1981, Ser. No. 290,473
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036659
Int. Cl.³ G21K 1/08; H01J 3/14
U.S. Cl. 250—398 7 Claims

1. A corpuscular beam blanking system, comprising: a source; a target; an electrostatic three-electrode Einzel-lens as a blanking lens between the source and target whose electrodes are designed in the manner of a filter lens; a center electrode of the Einzel-lens being provided at a high voltage and having a

blanking signal supplied to it via a capacitor; and said blanking lens being inserted in the beam path in such manner that a



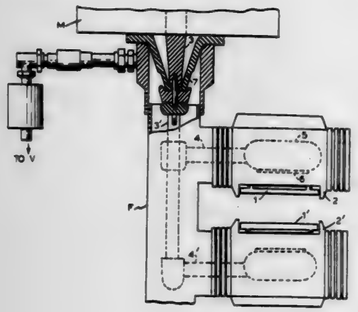
nodal point K_G (here=principal point H_G) of a target side coincides with a virtual source image of the system.

4,439,686

ELECTRON BEAM-IRRADIATING APPARATUS WITH CONICAL BUSHING SEAL-SUPPORT

Richard N. Cheever, Acton, Mass., assignor to Tetra Pak Développement Ltd., Lausanne, Switzerland

Division of Ser. No. 187,736, Sep. 16, 1980, Pat. No. 4,367,412, which is a division of Ser. No. 957,483, Nov. 3, 1978, Pat. No. 4,305,000. This application Sep. 28, 1982, Ser. No. 425,707
Int. Cl.³ A01J 37/00; H05K 5/00
U.S. Cl. 250—492.3 1 Claim



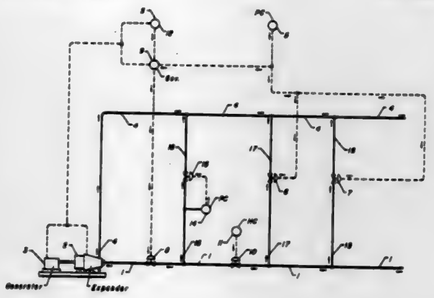
1. Apparatus for electron-beam-irradiating surfaces passed along a predetermined region, having, in combination, electrically triggered repetitive pulse-generating means having a stacked array of discharge gaps connected with a corresponding staggered co-extensive array of capacitors and disposed in a pressurized vessel; evacuated electron gun means provided with electron-pervious window means; means for electrically connecting the pulse-generating means to the electron gun means to draw therefrom electron-beams exiting the window means in response to the pulses generated by the pulse-generating means; and high-voltage insulating means separating said pressurized vessel from said evacuated electron gun means and supporting said electrically connecting means, said high-voltage insulating means comprising a conically-shaped bushing forming a seal between said pressurized vessel and said evacuated electron gun means, with one side of said bushing being exposed to the pressure in said pressurized vessel and the other side of said bushing being exposed to the vacuum in said evacuated electron gun means, said electrically connecting means comprising electrical conductors supported by the apex of said conically-shaped bushing at opposite sides thereof and being electrically connected through said apex, one of said conductors being connected to said pulse-generating means and the other of said conductors being connected to a cathode of said electron gun means.

4,439,687

GENERATOR SYNCHRONIZATION IN POWER RECOVERY UNITS

Charles E. Wood, Schaumburg, and Ronald J. Vangelisti, Marseilles, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 9, 1982, Ser. No. 396,569
Int. Cl.³ H02P 9/04
U.S. Cl. 290—40 R 16 Claims



1. In a system for recovering power by utilizing pressurized gas from a process, wherein a portion of the gas is employed to drive an expander which mechanically drives a generator, wherein the generator provides electrical power to a grid, wherein it is necessary to maintain constant the pressure at which the process operates; a method of synchronizing the frequency of electrical current produced by the generator to the frequency of electrical current in the grid, comprising the steps of:

(a) controlling pressure in a first pipeline supplying a first portion of the gas to the expander at a point upstream of an expander control valve and downstream of a second control valve by adjusting the position of said second control valve and by varying the flow of a second portion of the gas through a first bypass pipeline bypassing the expander;

(b) monitoring the frequency of electrical current produced by the generator;

(c) comparing the generator frequency to the frequency of electrical current flowing in the grid;

(d) adjusting the flow of said first portion of gas through the first pipeline to the expander so that the generator frequency is acceptably equal to the grid frequency; and,

(e) connecting the electrical power output of the generator to the grid.

3. In a system for recovering power by utilizing pressurized gas from a process, wherein a portion of the gas is employed to drive an expander which mechanically drives a generator, wherein the generator provides electrical power to a grid, wherein it is necessary to maintain constant the pressure at which the process operates; a control system for synchronizing the frequency of electrical current produced by the generator to the frequency of electrical current in the grid, comprising:

(a) an expander control valve located in a first pipeline supplying a first portion of the gas to the expander;

(b) means for controlling pressure in the first pipeline at a point upstream of said expander control valve and downstream of a second control valve by use of said second control valve and by varying the flow of a second portion of the gas through a first bypass pipeline, which bypasses said expander;

(c) means for monitoring the frequency of electrical current produced by the generator;

(d) means for comparing the generator frequency to the frequency of electrical current flowing in the grid;

(e) means for adjusting said expander control valve and thereby the flow of said first portion of gas through the first pipeline to the expander so that the generator frequency is acceptabley equal to the grid frequency; and,

(f) means for connecting the electrical power output of the generator to the grid.

11. In a system for recovering power by utilizing pressurized gas from a process, wherein a portion of the gas is employed to drive an expander which mechanically drives a generator, wherein the generator provides electrical power to a grid, wherein it is necessary to maintain constant the pressure at which the process operates; a control system useful in starting operation of the expander which comprises:

(a) an expander control valve located upstream of the expander in a first pipeline feeding a first portion of the gas to the expander;

(b) a first pressure control means comprising a first bypass pipeline having a control valve, said first bypass pipeline communicating with the first pipeline upstream of the expander control valve;

(c) a second control valve located in the first pipeline upstream of the point at which the first bypass pipeline is joined to the first pipeline; and,

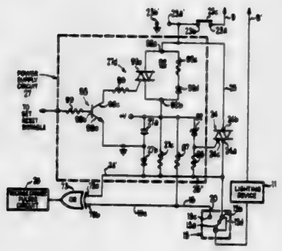
(d) a second pressure control means comprising a controller and two expander bypass pipelines, with each expander bypass pipeline having a control valve and communicating with the first pipeline upstream of the second control valve.

4,439,688

ELECTRICAL CONTROL APPARATUS

Louis W. Schornack, Niles, Ill., assignor to Dynascan Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 132,088, Mar. 20, 1980, which is a continuation-in-part of Ser. No. 22,453, Mar. 21, 1979. This application Apr. 17, 1981, Ser. No. 255,046
Int. Cl.³ H01H 9/00
U.S. Cl. 307—115 19 Claims



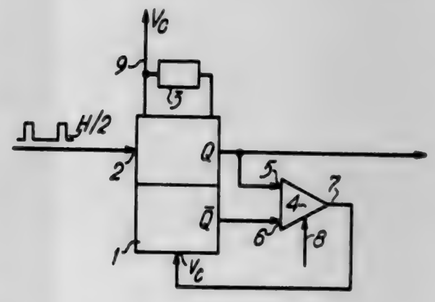
9. In a power control system including a pair of power conductors across which energizing voltage is to be applied, a load device, and power switch means operable between power circuit closing and opening conditions, said power conductors, load device and power switch means being in mutual series circuit relation, the improvement comprising: a single-pole switch interposed in series circuit relation with said load device and power switch means, said single-pole switch having a movable single-pole, at least one stationary contact to which said movable pole can be moved from a first position disconnected from said one stationary contact to a second position where it engages said stationary contact, said single pole being continuously connected in series with said lighting device and power switch means independently of the position of the movable pole; and control means for controlling said power switch means including signal change detecting means, and signal responsive means connected to said one stationary contact of said single-pole switch and responsive to the change of the signal condition on said stationary contact from either a no-signal to a signal condition or from a signal to a no-signal condition occurring as said single-pole is moved from said first to said second position or from said second position to said first position for successively operating said power switch means between said power circuit closing and opening conditions.

4,439,689

CIRCUIT FOR THE CONTROL OF THE CYCLIC RATIO OF A PERIODIC PULSE SIGNAL AND DEVICE MULTIPLYING BY 2^n OF A PULSE SIGNAL FREQUENCY INCORPORATING SAID CONTROL CIRCUIT

Henri Chazenfus, 127, Rue Jeanne d'Arc, 75013 Paris, France

Filed Dec. 9, 1981, Ser. No. 328,806
Claims priority, application France, Dec. 29, 1980, 80 27670
Int. Cl.³ H03K 5/04; H03B 19/00
U.S. Cl. 307—265 2 Claims



1. A circuit for generating a periodic pulse signal with frequency independent duty cycle, the pulse frequency being the same as the frequency of an input periodic signal in a wide range of frequencies, wherein it comprises:

a monostable multivibrator receiving the input signal at its trigger input, said periodic signal being subjected to the only restriction to cross only twice the trigger threshold of said multivibrator during its period, the triggering being inhibited during the falling edge of the input signal;

a capacitor, connected to the pulse length control input of said multivibrator, whose charging rate, which determines the length of the output pulse, is controlled by an error signal generated elsewhere in the circuit in order to maintain the output dry cycle at a given value independently of the frequency of the triggering signal over a wide range of frequencies, and whose capacitance can be chosen to move this frequency range from low frequencies to the highest frequency allowed by the residual built-in capacitance of said multivibrator between said pulse length control input;

identical circuits connected on the direct (Q) and complementary ($\overline{Q}$) outputs of said multivibrator, providing two voltages having continuous components proportional to the mean values of the (Q) and ($\overline{Q}$) signals, with the same frequency independence for a given value of the duty cycle and with the same dependence upon fluctuations of the power supplies voltages;

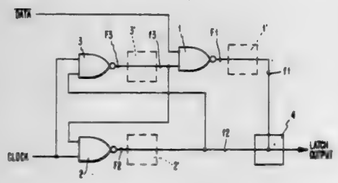
an operational amplifier receiving at its inputs said voltages, the output of said operational amplifier providing said error signal and being connected to the on-state duration control input of said multivibrator, hence changing the charging rate of said capacitor, said charging rate, and therefore the frequency range of operation for a given value of said capacitor, being limited by the output current capability of said operational amplifier, said operational amplifier also comprising a control input for the offset voltage of the continuous voltages applied at its inputs, said control input making it possible to control the duty cycle of the output signals of said multivibrator.

4,439,690

THREE-GATE HAZARD-FREE POLARITY HOLD LATCH

Gerald A. Maley, Fishkill; Raymond H. Warren, Gardiner, and Douglas W. Westcott, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,891
Int. Cl.³ H03K *3/037, 19/20, 17/04*
U.S. Cl. 307—272 R **6 Claims**



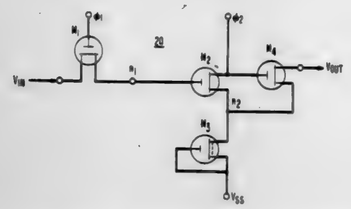
1. A latch comprising
three logic gates, each having a plurality of inputs and one output,
one of said gates in combination with its output loading being relatively faster in operation than a second of said gates in combination with its output loading,
one input of said one and said second gates being connected to receive a clock input,
the output of said one gate being connected to one input of a third of said gates and to another input of said second gate, another input of said third gate being connected to receive a data input,
the output of said third and said second gates being connected to an output terminal,
and
the output of said second gate being connected to another input of said first gate.

4,439,691

NON-INVERTING SHIFT REGISTER STAGE IN MOS TECHNOLOGY

Thomas J. Bartoli, Center Valley, and Yehuda Rotblum, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1981, Ser. No. 333,975
Int. Cl.³ H03K *3/295, 3/29*
U.S. Cl. 307—279 **3 Claims**



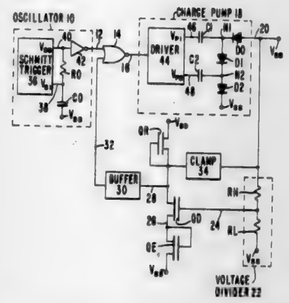
1. A semiconductor integrated circuit comprising a shift register stage including:
(a) a first MOS transistor having a gate electrode and a source and a drain terminal, the gate electrode being connected to a first clock pulse voltage source;
(b) a second MOS transistor whose gate electrode is connected to the drain terminal of the first transistor;
(c) a third MOS transistor whose gate electrode is connected to the source terminal thereof and whose drain terminal is connected to the source of the second transistor, the threshold of the third transistor corresponding to depletion mode; and
(d) a fourth MOS transistor whose source terminal is connected to the drain terminal of the third transistor and whose gate electrode is connected to the drain terminal of the second transistor and to a second, non-overlapping clock pulse voltage source, whereby an input signal applied to the source terminal of the first transistor appears as a delayed, corresponding output signal at the drain of the fourth transistor.

4,439,692

FEEDBACK-CONTROLLED SUBSTRATE BIAS GENERATOR

Jan J. P. M. Beekmans, San Jose, Calif., and John B. Hughes, Saltdean, Near Brighton, England, assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 7, 1981, Ser. No. 327,972
Int. Cl.³ H03L *1/00*; H03K *3/354*
U.S. Cl. 307—297 **17 Claims**



1. A circuit for generating a bias voltage for a semiconductor substrate wherein the circuit has oscillating means for repetitively supplying an oscillating signal at a given frequency, gating means responsive to the oscillating signal and to a feedback signal for supplying a gating signal which varies at the given frequency only when the feedback signal achieves a specified first relationship, pumping means responsive to the gating signal for supplying the bias voltage on an output line and for causing the bias voltage to move unidirectionally toward a desired value only when the gating signal achieves a specified second relationship, and feedback means responsive to the bias voltage for providing the feedback signal, characterized in that the feedback means comprises a field-effect transistor (FET) having a positive threshold voltage and an FET having a negative threshold voltage so arranged that the feedback signal achieves the first relationship when the absolute value of a reference voltage comprising the sum of the threshold voltages is at least equal to the absolute value of an internal voltage bearing a specified third relationship to the bias voltage.

4,439,693

SAMPLE AND HOLD CIRCUIT WITH IMPROVED OFFSET COMPENSATION

Charles H. Lucas, Newport Beach, and Lanny L. Lewyn, Palo Alto, both of Calif., assignors to Hughes Aircraft Co., El Segundo, Calif.

Filed Oct. 30, 1981, Ser. No. 316,453
Int. Cl.³ G11C *27/02*
U.S. Cl. 307—353 **16 Claims**

1. A sample-and-hold circuit having auto-zeroing, comprising:
a differential amplifier having positive and negative inputs and an output;
an input voltage source to be sampled;

a feedback capacitor having two plates, one of said plates being continuously connected to said negative amplifier input;
connecting means for connecting the other of said feedback capacitor plates to a common reference potential while shorting said amplifier output to said negative input, and for disconnecting said amplifier output from said negative input while disconnecting said other capacitor plate from said reference potential and reconnecting it instead to said amplifier output; and



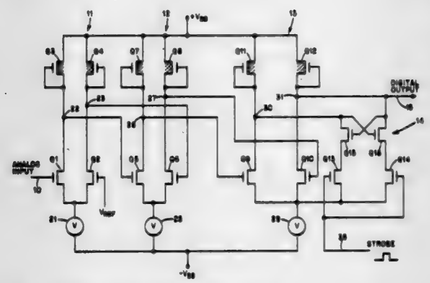
sampling means for sampling said input voltage source comprising a switch for coupling said amplifier negative input to said input voltage source whenever said other plate of said feedback capacitor is connected to said reference potential and for decoupling said negative amplifier input from said input voltage source whenever said other feedback capacitor plate is connected to said amplifier output, said positive amplifier input being connected to said reference potential at least whenever said other feedback capacitor plate is connected to said reference potential.

4,439,694

COMPARATOR CIRCUIT

Jeffrey R. Fox, Concord, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 21, 1981, Ser. No. 332,387
Int. Cl.³ H03K *5/153, 3/356*
U.S. Cl. 307—362 **7 Claims**



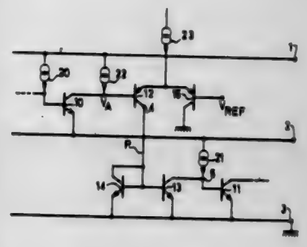
1. A comparator circuit comprising
input differential amplifier means including
first and second field effect transistors,
the input of the first field effect transistor being connected to a signal input terminal and the input of the second field effect transistor being connected to a point of reference potential, and
first and second output connections for producing differential output signals thereon;
latching differential amplifier means including
first and second field effect transistors,
the inputs of the first and second field effect transistors being coupled to the first and second output connections, respectively, of the input differential amplifier means, and
first and second output connections for producing differential output signals thereon; and
regenerative latch means including
first and second latching field effect transistors,
the input of the first latching field effect transistor being connected to the second latching field effect transistor and to the second output connection of the latching differential amplifier means,
the input of the second latching field effect transistor being connected to the first latching field effect transistor and to the first output connection of the latching differential amplifier means,
an output terminal connected to one of said latching field effect transistors,
said first and second latching field effect transistors when enabled being operable in a first set of operating conditions and producing a first output signal at the output terminal in response to differential output signals of one relative polarity at the output connections of the latching differential amplifier means, and being operable in a second set of operating conditions and producing a second output signal at the output terminal in response to differential output signals of the opposite polarity at the output connections of the latching differential amplifier means, and
first and second switching field effect transistors connected to said first and second latching field effect transistors, respectively, and operable in response to a strobe signal applied thereto to enable the first and second latching field effect transistors
whereby in response to a strobe signal said switching field effect transistors enable said latching field effect transistors causing said latching field effect transistors to be switched by regenerative action to said first or second set of operating conditions producing said first or second output signal at the output terminal as determined by the relative polarity of the output signals at the output connections of the latching differential amplifier means.

4,439,695

INTERFACE CIRCUITS BETWEEN INJECTION-LOGIC LAYERS WHICH ARE SUPERIMPOSED AND BIASSED WITH DIFFERENT VOLTAGES

Joël A. Pelletier, Les Essarts le Roi, and Robert Breuillard, Deuil la Barre, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,266
Claims priority, application France, Sep. 26, 1980, 80 20698
Int. Cl.³ H03K *19/092, 19/091*
U.S. Cl. 307—477 **5 Claims**



1. An integrated current-injection logic circuit comprising transistors whose bases are connected to current injectors and to a collector of at least one further transistor, said integrated circuit being formed by a plurality of elementary cells which are arranged in series across a power supply, in such a way that the cells form superimposed stages between which the supply voltage is distributed, a first stage and a second stage at a lower level being logically interconnected by means of an interface

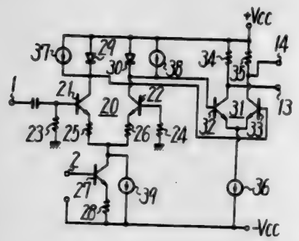
device having a first transistor (10) whose emitter is connected to a reference voltage, its base to a current source and in which the collector of said first transistor, which supplies the signal at the output of the first stage, controls a first auxiliary transistor (12) in said first stage whose conductivity type is opposite to that of said first transistor and whose collector is connected to the base of a second transistor in the second stage, which is not connected to a current injector, characterized in that the collector of said first auxiliary transistor constitutes the input terminal of a current mirror, whose output terminal is constituted by the collector of said second transistor, the emitter of said first auxiliary transistor being connected to the emitter of a second auxiliary transistor of the same conductivity type and situated in the same stage of the first one, whose base is connected to a reference voltage supply and whose collector is connected to ground.

4,439,696

DIVIDING CIRCUIT

Satoshi Yokoya, Chofu, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,551
Claims priority, application Japan, Apr. 6, 1981, 56-51332
Int. Cl.³ H03F *3/45, 3/343;* G06G *7/163*
U.S. Cl. 307—494 **19 Claims**



1. A dividing circuit for producing a divided output signal in response to first and second input signals, comprising:
first differential amplifier means supplied with said first and second input signals and having an output for producing an output quotient signal corresponding to the division of said first input signal by said second input signal;
non-linear load means connected to the output of said first differential amplifier means; and
second differential amplifier means connected in cascade to said first differential amplifier means and having an input supplied with said output quotient signal for providing a compensating effect for the non-linear load means of said first differential amplifier means.

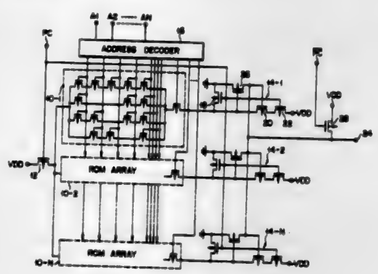
4,439,697

SENSE AMPLIFIER CIRCUIT

Yasoji Suzuki, Yokosuka; Hiroaki Suzuki, and Yukihiro Saeki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 22, 1981, Ser. No. 333,321
Claims priority, application Japan, Jan. 12, 1981, 56-2980
Int. Cl.³ H03K *5/153, 5/24;* G11C *7/06*
U.S. Cl. 307—530 **8 Claims**

1. A sense amplifier circuit which is used for a plurality of read only memory arrays each having a single output terminal in a complementally metal-oxide-semiconductor integrated circuit, and has a plurality of input terminals respectively connected to the output terminals of said read only memory arrays and a single output terminal, said sense amplifier circuit comprising:
first and second power source terminals;
first and second clock terminals supplied with complementary signals;
a plurality of first transistors of a first channel type each connected between said first power source terminal and a corresponding one of said input terminals and each having a control terminal connected to said first clock terminal;
a plurality of second transistors of a second channel type each connected between said second power source terminal and a corresponding one of said input terminals and each having a control terminal connected to said output terminal;



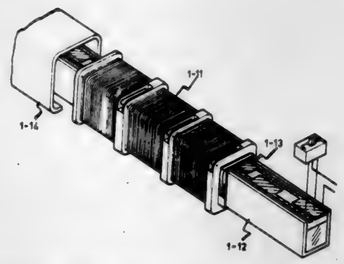
a plurality of third transistors of the first channel type connected between said output terminal and said first power source terminal and each having a control terminal connected to a corresponding one of said input terminals;
a plurality of fourth transistors connected between said first and second power source terminals through a corresponding one of said second and third transistors and each having a control terminal connected to either of said first and second clock terminals; and
a fifth transistor of the second channel type connected between said output terminal and said second power source terminal and having a control terminal connected to said second clock terminal.

4,439,698

LINEAR SLIDING MOTOR DEVICE

Der-Jong Chen, 1 Floor, 77, Section 2, Nei Hu Rd., Taipei, Taiwan

Filed Nov. 27, 1981, Ser. No. 325,487
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—12 **8 Claims**



1. A device for effecting linear movement comprising:
a plurality of solenoid means each having an energized state for creating a magnetic field when electrical current is applied to said solenoid to attract a ferro-magnetic member, and including means defining an interior space, said plurality of solenoid means being linearly assembled one to another, said space of each communicating with the spaces of adjacent ones of said solenoid means to form an elongated cavity;

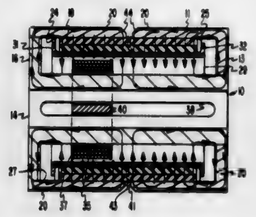
an elevated rail slideably coupled in said cavity and including linearly spaced apart ferro-magnetic members; and
first switching means fixed to and carried with said rail for effecting selective sequential energization of said solenoid means to sequentially create a magnetic field to attract a predetermined one of said ferro-magnetic members and thus effect relative linear sliding movement of said solenoid means with respect to said rail, said first switching means including right and left switching means each defining a continuous tooth-shaped electrically conductive strip disposed along the axial length of said rail, the teeth of said right switching means being alternatively interposed between the teeth of said left switching means, said electrically conductive strips of said right and left switching means defining therebetween an electrically insulated area, opposite adjacent ones of said teeth of said right and left switching means forming a pair of electrically conductive members each associated with a predetermined one of said ferro-magnetic members;
second switching means operatively connected to said right and left switching means for selectively electrically energizing one of said right or left switching means and to selectively electrically degenergize the other of said right or left switching means to establish the direction of said relative linear sliding movement of said solenoid means with respect to said rail; and
brush means associated with each of said solenoid means, each of said brush means sequentially contacting one of said pair of electrically conductive members as said solenoid means moves linearly relative to said rail to sequentially energize said solenoid means to effect linear movement of said solenoid means relative to said rail, wherein said solenoid means linearly moves relative to said rail in a first direction when said right switching means is electrically energized by said second switching means, said brush means of said solenoid means thereby sequentially coming into and out of contact with the teeth of said right switching means, and wherein said solenoid means linearly moves in a second direction, opposite to said first direction, when said left switching means is electrically energized by said second switching means, said brush means of said solenoid means thereby sequentially coming into and out of contact with the teeth of said left switching means.

4,439,699

LINEAR MOVING COIL ACTUATOR

Arthur P. Brende, Byron, and Richard W. Luoma, Chatfield, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,169
Int. Cl.³ H02K *41/02*
U.S. Cl. 310—13 **3 Claims**



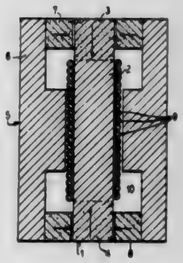
1. A linear actuator for positioning the transducer carriage assembly in a disk file comprising:
a cylindrical outer core element of magnetically permeable material;
a cylindrical inner core element of magnetically permeable material, coaxial and concentrically mounted within said outer core element;
at least one axially extending slotted opening in said inner core element;
end closure means of magnetically permeable material associated with said core elements, whereby said core elements and said end closure means form a substantially totally enclosed annular space;
a continuous cylindrical permanent magnet within said annular space adjacent said outer core element inner wall in concentric relation therewith;
a tubular retaining element of non magnetic conductive material concentrically within said permanent magnet which provides a shorted turn and retains said magnet against said outer core;
annular sealing elements at each axial end of said permanent magnet with said retaining element being flared at each end to cooperate with said annular sealing elements to seal said permanent magnet from said annular space;
a carriage supported for linear motion in the direction of the axis of said core elements with a portion thereof extending within said inner core element;
a drive coil substantially coaxial with said core elements and disposed in said annular space between said inner core element and said tubular retaining element; and
connecting means extending through said at least one slotted opening and interconnecting said drive coil and said carriage for unitary linear motion.

4,439,700

MAGNETIC DRIVE SYSTEM FOR GENERATING LINEAR MOVEMENTS

Klaus Menzel; Ludwig Erd, both of Berlin, and Marlene Marinescu, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Fed. Rep. of Germany

Filed Feb. 25, 1982, Ser. No. 352,325
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111222
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—13 **6 Claims**



1. In a magnetic drive system for generating linear movement having a yoke having a longitudinal bore therein, a bar-shaped armature normally centrally positioned in said bore and seated in said bore for longitudinal movement relative to said yoke, said yoke and said armature consisting primarily of low magnetic retentive material forming a magnetic circuit and at least one permanent magnet disposed in said magnetic circuit effecting a magnetic flux in the armature directed from both ends of the armature to the center thereof or vice versa, the improvement comprising:
a single coil connected to a central portion of said armature for longitudinal comovement therewith relative to said yoke,
said coil being connected to a voltage source for supplying a current flow through said coil for generating a force effective in the longitudinal direction of said armature in said magnetic circuit for moving said arma-

ture, and said coil having windings wound about said armature such that the magnetic flux generated by said coil enters and departs from said armature in said longitudinal direction of the armature; and

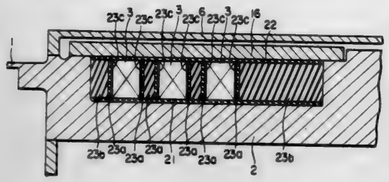
said yoke having a length in the longitudinal direction which is greater than that portion of the armature in the longitudinal direction consisting of low magnetic retentive material for generating a restorative magnetic force for re-positioning said armature to said central position in said bore after said armature is moved from said central position by said current in said coil.

4,439,701

ROTOR OF A SUPERCONDUCTIVE ROTARY ELECTRIC MACHINE

Kouichi Okamoto, Kobe; Masaki Sakuyama, Ashiya; Tadatoshi Yamada, Kobe, and Shiro Nakamura, Takarazuka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,726
Claims priority, application Japan, May 29, 1981, 56-84143
Int. Cl.³ H02K 15/12
U.S. Cl. 310—45 2 Claims



1. A rotor for a superconductive rotary electric machine comprising:

a coil carrying shaft;

a plurality of superconductive magnetic field coil means mounted on said coil carrying shaft and having coil end portions which are curved along the circumference of an end portion of the coil carrying shaft, said coil end portions being spaced in the direction of the length of said shaft to define gaps between the coil end portions;

electrically insulating filler sheets against the side surfaces of said coil end portions on opposite sides of said gap, said sheets being an elastic material impregnated with an electrically insulating resin and having the side against the coil end portion conforming to the shape of the coil end portion; electrically insulating padding plate means applied over the electrically insulating filler sheets; and

electrically insulating filler means filling the remainder of said gaps between said padding plate means.

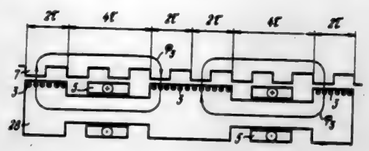
4,439,702

ELECTRIC MOTOR HAVING HELICAL STATOR

Viktor T. Belikov; Anatoly D. Ivlev, and Viktor G. Chelak, all of Odessa, U.S.S.R., assignors to Odessky Politekhnichesky Institut, Odessa, U.S.S.R.

PCT No. PCT/SU80/00165, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/01286, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 29, 1980, Ser. No. 385,388
Int. Cl.³ H02K 7/06
U.S. Cl. 310—80 6 Claims

1. An electric motor comprising a stator having a main helical magnetic core with grooves; an armature positioned within said grooves of said main helical magnetic core of said stator; a rotor disposed within a bore of said stator; main salients forming a main magnetic field and disposed along a helical line around the rotor, the length of the main salients being equal to $\alpha\delta \cdot \tau$, and the distance between main salients being $(2-\alpha\delta)\tau$, where $\alpha\delta$ is a coefficient of a rated pole arc and τ is a pole pitch of the motor; wherein the improvement comprises said main helical core including an additional groove, an excitation winding being positioned in said additional groove, and the portions of each turn of the helical core,



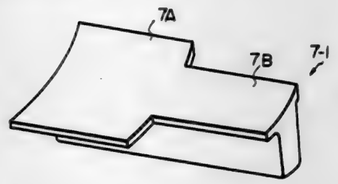
on which said armature and said excitation winding are positioned, having a length which provides axial alignment of the grooves, in which the armature is positioned, within all the turns of said main magnetic core.

4,439,703

DIRECT CURRENT MOTOR

Yoshinori Kohzai, Hino, and Shigeaki Oyama, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 95,985
Claims priority, application Japan, Jul. 31, 1978, 53-92557
Int. Cl.³ H02K 1/10
U.S. Cl. 310—186 6 Claims



1. A direct current motor, comprising:

a yoke;

an armature disposed at the center of said yoke having armature windings wound thereon;

a plurality of main magnetic poles equidistantly spaced around the inner circumference of said yoke, each of said main magnetic poles having a wide portion and a narrow portion, only said wide portion including an end part integrally formed at each end thereof, wherein the air-gap between said armature and said main magnetic poles is narrow at the center of said wide portion and at the center of said narrow portion and increases as the distance from the center portion increases and wherein the air-gap between said armature and said end parts is narrow and wherein an electromotive force is induced in each of said armature windings which is smaller than a predetermined value; and

a plurality of interpoles disposed at positions located between said adjacent narrow portions of said main magnetic poles.

4,439,704

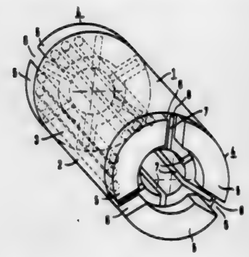
PERMANENT MAGNET EXCITED ROTOR FOR A SYNCHRONOUS MACHINE

Hans-Joachim Adelski, Salz, and Josef Pflaugner, Wülfershausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,640
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2950008
Int. Cl.³ H02K 3/06
U.S. Cl. 310—211 5 Claims

1. A permanent magnet-excited rotor for a synchronous machine which has a cast short circuit cage comprising shorting rings at both ends, and a cylindrical lamination stack secured against centrifugal stresses and comprising slots that extend generally radially relative to the axis of the stack as well as longitudinally along the stack for receiving permanent magnets, the rotor comprising:

means, rigidly connected to the lamination stack, closing the slots at the outer periphery of the rotor; and



recesses in at least one of the rings, the total number of recesses being equal to the number of the slots and each of the recesses being aligned with a corresponding one of the slots and being large enough to allow a magnet to be inserted longitudinally therethrough into the respective one of the slots.

4,439,705

OSCILLATING CRYSTAL TRANSDUCER SYSTEMS WITH SYMMETRICAL TEMPERATURE COMPENSATOR

James P. Corbett, 923 Palermo Dr., Santa Barbara, Calif. 93105

Filed Dec. 8, 1981, Ser. No. 328,520
Int. Cl.³ G01B 7/16
U.S. Cl. 310—338 21 Claims



1. A force transducer comprising;

two plate-shaped piezoelectric crystals having pairs of electrodes disposed on corresponding regions on opposite sides of each crystal, the two crystals arranged to oscillate in the thickness shear mode and being held closely together face-to-face by small spacers secured to them near their peripheries and at positions of minimum frequency versus force response of the crystals, the spacers being of sufficient thickness to prevent the electrodes from touching one another,

at least two seating members engaging the peripheral edge of one of the crystals and arranged to apply a force directed along a line extending through the plate-like crystal from one seating member to the opposite portion of the peripheral edge,

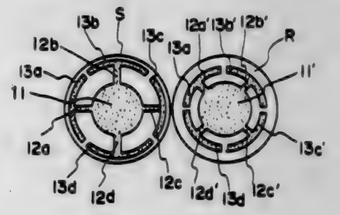
means for energizing the electrode pairs to maintain oscillation of each crystal.

4,439,706

QUARTZ CRYSTAL VIBRATOR

Youichi Matsuoka, Sayama, and Fumitaka Tajika, Iruma, both of Japan, assignors to Nihon Dempa Kogyo Company Limited, Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,403
Claims priority, application Japan, Oct. 11, 1980, 55-160410[U]
Int. Cl.³ H01L 41/22
U.S. Cl. 310—353 13 Claims



1. A quartz crystal vibrator comprising:

a quartz crystal plate having a circumference and having obverse and reverse sides, each of said obverse and reverse sides having a central portion;

a first excitation electrode provided on the obverse side of said quartz crystal plate at the central portion thereof;

a first connecting electrode led out radially from said first excitation electrode on said obverse side;

a first supporting electrode, connected to said first connecting electrode, provided fragmentarily along the entire circumference of said quartz crystal plate on the obverse side thereof;

a second excitation electrode provided on the reverse side of said quartz crystal plate at the central portion thereof at a position underlying said first excitation electrode;

a second connecting electrode led out radially from said second excitation electrode on said reverse side; and

a second supporting electrode, connected to said second connecting electrode, provided fragmentarily over substantially all of a substantially circular ring-like region located inwardly of the circumference of said quartz crystal plate on said reverse side, so as not to overlap said first supporting electrode.

4,439,707

SPARK PLUG WITH A WIDE DISCHARGE GAP

Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Anjo; Minoru Nishida, and Minoru Ohta, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 22, 1981, Ser. No. 285,333
Claims priority, application Japan, Jul. 23, 1980, 55-101776; Sep. 1, 1980, 55-121449
Int. Cl.³ H01T 13/02
U.S. Cl. 313—130 14 Claims

1. A spark plug with a wide discharge gap comprising:

a plug shell;

a cylindrical center electrode disposed along a spark plug axis;

an insulator of substantially cylindrical shape disposed so as to surround and electrically insulate said center electrode from said plug shell;

at least one ground electrode grounded through said plug shell and disposed to face and be spaced from said center electrode to form a gap therebetween; and

an outer insulating layer comprising a material having a resistance to heat and high voltage formed on one of said electrodes so as to expose a portion of said one electrode, said outer insulating layer being extended into the gap between said electrodes to define a shortest gap between a surface of said insulating layer and the other of said elec-

trodes, and further including an inner insulating layer of material having a high dielectric constant, said outer insulating layer being formed on said inner insulating layer



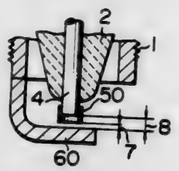
so that said inner insulating layer is substantially covered thereby to substantially prevent said inner insulating layer from being exposed to sparks.

4,439,708

SPARK PLUG HAVING DUAL GAPS

Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Anjo; Minoru Nishida, and Minoru Ohta, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 24, 1981, Ser. No. 257,134
Claims priority, application Japan, May 30, 1980, 55-73262; May 30, 1980, 55-73263
Int. Cl.³ H01T 13/20
U.S. Cl. 313—140 17 Claims



1. In a spark plug for use with internal combustion engines including a central electrode supported by an insulator and having a substantially rod-like shape, a metallic shell surrounding and secured to said insulator, and an earth electrode mounted on said metallic shell in opposed relation to said central electrode, the improvement comprising a body of a dielectric substance mounted on one of said central and earth electrodes such that a first gap for capacitive discharge is defined between said body of the dielectric substance and the other of said both electrodes, and a second gap for inductive discharge is defined between said both electrodes, said second gap for inductive discharge being dimensionally larger than said first gap for capacitive discharge, said body of the dielectric substance having polarization effects which cause capacitive discharge.

4,439,709

COLOR PICTURE TUBE HAVING IMPROVED TEMPERATURE COMPENSATING SUPPORT FOR A MASK-FRAME ASSEMBLY

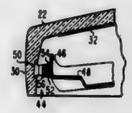
Frank M. Sohn, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1982, Ser. No. 373,050
Int. Cl.³ H01J 29/07
U.S. Cl. 313—406 2 Claims

1. In a color picture tube of the type including an evacuated envelope enclosing a cathodoluminescent screen, an electron gun and an apertured mask attached to a frame which is suspended in relation to said screen by support means, an axis passing through the center of said electron gun and the center of said screen being the longitudinal axis of said tube, the improvement comprising said support means including

a plurality of studs embedded in said envelope and said frame, and

a plurality of spring assemblies spaced around and attached to said frame, each spring assembly comprising a first spring and a second spring, said first and second springs each including a central portion, two flexible portions extending from the ends of said central portion and two end portions extending from said flexible portions, the end portions of said first spring being attached to the end portions of said second spring, the central portion of said





first spring being attached to said frame, the central portion of said second spring including an aperture in engagement with one of said studs, said flexible portions of said first and second springs being of rhomboid shape and offsetting the central portion of said second spring from the central portion of said first spring in the direction of said longitudinal axis away from said screen,

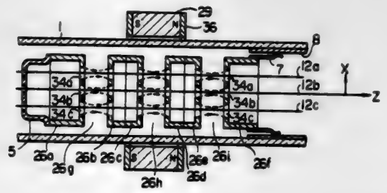
whereby, when said mask and frame expand during tube operation, said flexible portions bend to permit the central portions of the first springs to move toward the central portions of the said second springs thereby moving said mask and frame relative to said screen.

4,439,710

ELECTROMAGNETIC FOCUSING CATHODE-RAY TUBE

Kuniharu Osakabe; Isao Yoshimi, both of Mobara, and Kyohei Fukuda, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,598
Claims priority, application Japan, Jul. 2, 1980, 55-89215; Jul. 2, 1980, 55-89216
Int. Cl.³ H01J 29/64
U.S. Cl. 313—414 15 Claims



1. An electromagnetic focusing cathode-ray tube comprising an electron gun assembly and a magnetic focusing field forming means including in combination a permanent magnet member disposed on an outer circumference of the tube and a magnetic material assembly disposed on one side of said electron gun assembly within the tube, said magnetic material assembly having a plurality of electron beam permeable apertures, each aperture extending in a direction of the tube axis,

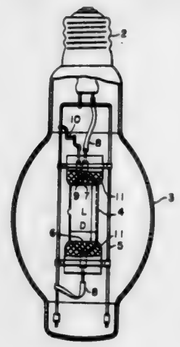
wherein said magnetic material assembly includes plural pairs of magnetic material members, the magnetic material members in each pair being disposed to oppose each other in the direction of the tube axis with a gap defined therebetween, said permanent magnet member and said plural pairs of magnetic material members being arranged so that magnetic focusing fields having their senses reverse to each other in the direction of the tube axis are formed in the respective gaps associated with adjacent ones of said magnetic material member pairs, and adjacent magnetic material members of different oes of said magnetic material member pairs being directly coupled to each other so that magnetic fluxes emanated inwardly from said permanent magnet member are absorbed by said directly coupled magnetic material members.

4,439,711

METAL VAPOR DISCHARGE LAMP

Katsuo Murakami; Isao Shoda; Hitoshi Kodama; Shoji Orikasa, and Hiroshi Ito, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP79/00327, § 371 Date Aug. 27, 1980, § 102(e) Date Aug. 27, 1980, PCT Pub. No. WO80/01436, PCT Pub. Date Jul. 10, 1980
PCT Filed Dec. 27, 1979, Ser. No. 196,484
Claims priority, application Japan, Dec. 28, 1978, 53-166080; Dec. 28, 1978, 53-166081; Dec. 28, 1978, 53-166083; Dec. 28, 1978, 53-166082
Int. Cl.³ H01J 61/20, 61/44
U.S. Cl. 313—487 9 Claims



1. A metal vapor discharge lamp having an outer jacket, the inside wall of which is covered by a fluorescent layer comprising at least one red emitting phosphor whose emission peak is in a wavelength range of 610–630 nm and whose luminescence forms a line, said lamp containing an arc tube within the confines of said outer jacket which encloses zinc and/or cadmium in addition to mercury as the main luminous contents, the total content of zinc and/or cadmium taken relative to the total amount of enclosed metal including mercury being between 0.1 and 50 weight-percent.

4,439,712

ANODE STRUCTURE FOR PHOTOMULTIPLIER TUBE

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 26, 1981, Ser. No. 296,527
Int. Cl.³ H01J 43/00
U.S. Cl. 313—533 9 Claims

1. In an electron multiplier assembly comprising,

insulative support means having a plurality of support apertures therethrough,

a plurality of communicating dynodes affixed to said support means, said dynodes including a penultimate dynode and an ultimate dynode, and

an anode disposed substantially within and spaced from said ultimate dynode, the improvement wherein said anode comprises,

a substantially flat, rigid rectangular member having a longitudinally-extending aperture formed therein, said aperture being directed substantially toward said penultimate dynode, said anode member having mounting means extending from the ends thereof for inflexibly securing said anode within said support apertures of said support means.

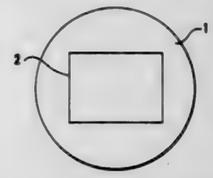


4,439,713

DEFLECTION CONTROL CIRCUIT FOR IMAGE PICK-UP TUBE

Takashi Nakamura, Hadano, and Yoshihiro Morioka, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,028
Claims priority, application Japan, Jul. 11, 1980, 55-95476
Int. Cl.³ H01J 29/56
U.S. Cl. 315—370 16 Claims



1. Apparatus for controlling the deflection of an electron beam in an image pick-up tube of the type including target means, means for generating the electron beam, and deflection means for causing the generated electron beam to scan said target means, said apparatus comprising:

means for generating a saw-tooth signal and for supplying said saw-tooth signal to said deflection means for causing said electron beam to scan a raster image area on said target means; and

means for neutralizing charges in an over-scan area on said target means outside of said raster image area scanned by said electron beam for each scan of said raster image area to prevent distortion of a reproduced picture resulting from scanning of a fringe area of said raster image area by said electron beam by modifying said saw-tooth signal supplied to said deflection means so as to cause said electron beam to scan said over-scan area on said target means outside of said raster image area for each scan of said raster image area.

4,439,714

DEFLECTION CONTROL CIRCUIT

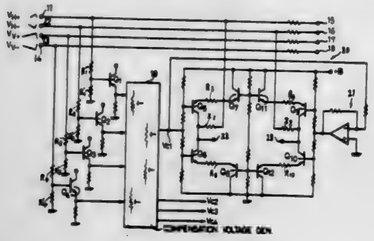
Takashi Nakamura, Hadano, and Yoshihiro Morioka, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 14, 1981, Ser. No. 283,358
Claims priority, application Japan, Jul. 14, 1980, 55-95892
Int. Cl.³ H01J 29/56
U.S. Cl. 315—371 9 Claims

1. A deflection control circuit for controlling the deflection of an electron beam in an image pickup tube of a television

camera having plural image-pickup tubes, each of said tubes having beam deflection means associated therewith, said deflection control circuit being of the type including sawtooth signal source means generating a sawtooth scanning signal to be supplied to the beam deflection means of another image pickup tube of said plural tubes and control signal generating means for producing a control signal in response to said sawtooth scanning signal to compensate for mechanical differences between said beam deflection means of said first-mentioned and other image pick-up tubes, said deflection control circuit comprising:

a pair of controllable current sources of complementary types coupled in series together to define a junction there-



between, each such current source having a control terminal, said pair of controllable current sources coupled to said control signal generating means with said control terminals thereof supplied with said control signal such that the flow of current through the respective controllable current sources is controlled to vary in a complementary relation;

an impedance coupling said sawtooth signal source means to said junction; and

output means coupled to said junction for providing a compensated sawtooth scanning signal to the beam deflection means associated with the first-mentioned image pickup tube.

4,439,715

APPARATUS FOR ACCURATELY MOVING A BODY IN ACCORDANCE WITH A PREDETERMINED MOTION

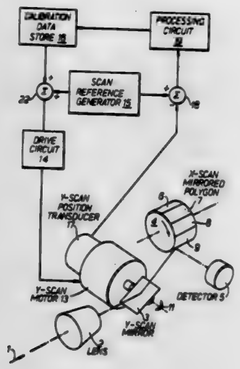
Malcolm F. Taylor, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Nov. 12, 1981, Ser. No. 320,685

Claims priority, application United Kingdom, Nov. 19, 1980, 8037069

Int. Cl.³ G05B *11/01*

U.S. Cl. 318—627 **8 Claims**



1. An apparatus for accurately moving a body in accordance with a predetermined motion including an actuator capable of being coupled to a movable body so as to move it in a controlled manner repetitively in at least approximately the required motion; means for comparing the actual position of the body with the required position at a plurality of different points during the course of a plurality of the repetitive predetermined motions, with substantially less than the total number of comparisons being performed during any one of the motions; and means which utilise the results of said comparisons to control said actuator to compensate during subsequent motions for said errors.

4,439,716

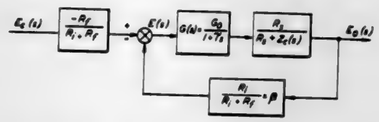
COMPENSATION APPARATUS FOR AN ELECTROHYDRAULIC SERVOVALVE

George E. Minnich, Vestal, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,059

Int. Cl.³ G05D *23/275*

U.S. Cl. 318—632 **4 Claims**



1. Compensation apparatus for a drive system associated with a torque motor of an electrohydraulic servovalve, comprising:

(a) means to define an open loop transfer function characteristic of said drive system, wherein said transfer function corresponds to a notch filter; and

(b) means to provide said characteristic with a closure rate of approximately no more than 6 db/octave with respect to a function

$$1/\beta = 1 - G_{cl}(S)$$

where $G_{cl}(s)$ corresponds to a closed loop transfer function of said drive system.

4,439,717

CONTROL DEVICE FOR A STEPPING MOTOR

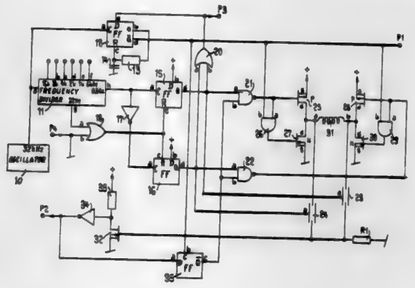
Jean-Claude Berney, Epalinges, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,951

Claims priority, application Switzerland, Feb. 4, 1981, 725/81

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **33 Claims**



1. A control device for a stepping motor provided with a coil and a rotor performing a rotary movement when a current passes through the coil, comprising means for supplying a

plurality of time base signals, means for producing pulses for controlling the motor in response to at least a part of said time base signals, means responsive to the control pulses for supplying the motor while maintaining the current in the coil at a substantially constant and given value during the control pulses, means for deriving a signal representative of the coil voltage signal, and analysis means for supplying, from the signal representative of the voltage signal, signal data concerning at least the voltage induced in the coil by the movement of the rotor.

4,439,718

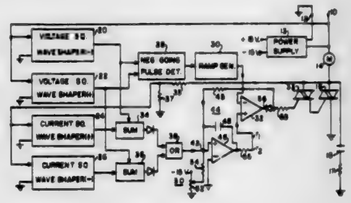
MOTOR POWER CONTROL CIRCUIT FOR A.C. INDUCTION MOTORS

Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 28, 1981, Ser. No. 297,524

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—729 **10 Claims**



1. A power control system for an alternating current input to a load of the type which produces a phase difference between the load current and voltage waveforms, said system comprising:

means associated with the load circuit of the load for producing a first output signal related to the current flow through the load;

means connected to the load circuit of the load for producing a second output signal related to the voltage applied to the load;

means responsive to said first and second signals for producing a phase difference output signal proportional to the phase difference between the load current and load voltage;

means generating a preselected power factor command signal;

thyristor switching means connected in series with the load circuit of said load for controlling the power supplied to the load; and

control circuit means, responsive to said power factor command signal and said phase difference output signal, for generating control pulses for controlling switching of said switching means, said means for producing said first output signal comprising means for sensing the voltage waveform of said switching means and producing said first output signal responsive thereto.

4,439,719

VARIABLE TIMING CIRCUIT FOR MOTIVE POWER BATTERY CHARGERS

Frederic J. Lambert, Morrisville, Pa.; Donald J. Bosack, Barrington, and David K. Johansen, Lake in the Hills, both of Ill., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Jul. 9, 1982, Ser. No. 396,675

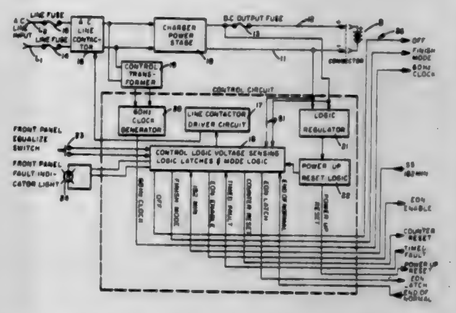
Int. Cl.³ H02J *7/04*

U.S. Cl. 320—31 **30 Claims**

1. In an apparatus for automatically charging a battery to a preselected full charge state at which the battery has a predetermined voltage/current state, said apparatus having charging means for charging the battery, and sensing means for sensing the state of the battery during charging thereof by said charging means, an improved charge control circuit comprising:

means for causing the charging means to charge the battery for an initial control time period;

means for establishing a plurality of different finish time periods;



means for determining the time at which the state of the battery reaches said predetermined voltage/current state during said initial control time period; and

means for causing the charging means to continue to charge the battery after the determination of said time for one of said different finish time periods corresponding to said time determination.

4,439,720

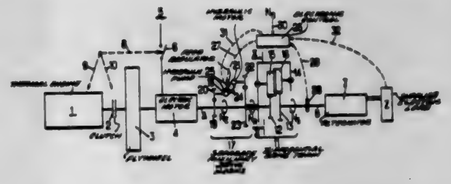
UNITS FOR GENERATING CONSTANT-FREQUENCY ALTERNATING ELECTRIC ENERGY WITH SUBSTITUTE DRIVING MEANS

Jean-Claude Georges, Boulogne, France, assignor to Societe Aman, Bezons, France

Filed Jan. 23, 1981, Ser. No. 227,782

Int. Cl.³ H02K *7/02, 7/18;* H02P *15/00*

U.S. Cl. 322—4 **12 Claims**



1. An electrical alternator system capable of automatic transfer from being driven by one rotary drive means to being driven by another rotary drive means without substantial variation in the electrical output of the alternator, said system comprising:

an alternator;

a first rotary drive means having a first rotor element adapted to be rotationally driven by a first power source;

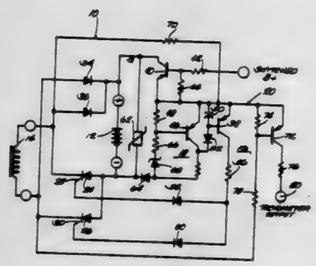
a differential drive train means having a first mechanical drive input connected to be driven by said first rotor element and a mechanical drive output connected to drive said alternator;

said differential drive train also having a second mechanical drive input through which additional mechanical energy can be combined with that coupled through the first input to said output;

auxiliary drive means connected to be driven by said first rotor element and to transfer a variable controlled amount of additional mechanical energy therefrom to said second input of the differential drive train means;

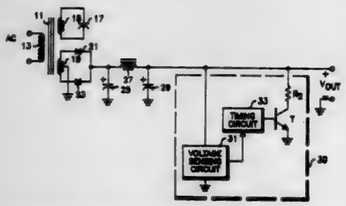
a flywheel mechanically coupled to said first rotor element;
a second rotary drive means having a second rotor element adapted to be rotationally driven by a second power source; and
coupling means for automatically coupling said second rotor element to said first rotor element in the event said first power source is interrupted.

4,439,721
MAGNETO ALTERNATOR REGULATOR WITH TACHOMETER OUTPUT
Richard J. Mura, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Feb. 12, 1982, Ser. No. 348,222
Int. Cl.³ H02P 9/00; G02P 3/56
U.S. Cl. 322—31 **12 Claims**



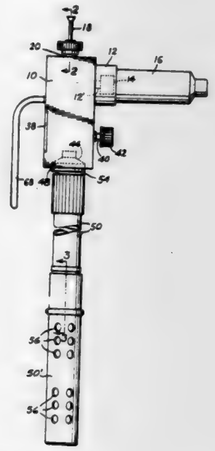
1. A magneto alternator regulator circuit for regulating charging of a battery by the output of the magneto alternator, said regulator circuit comprising first circuit means operative for connecting and disconnecting the battery in series with the alternator to allow or prevent charging of the battery, battery voltage sensing means coupled to said first circuit means for selectively rendering said first circuit means operative to disconnect the battery from being connected in series with the alternator to prevent charging of the battery, and tachometer output circuit means coupled to the magneto alternator and to said first circuit means, said tachometer output circuit means comprising a high impedance device and transistor switch means connected to the battery and to the alternator through said high impedance device for operating as an over-driven amplifier to provide a square wave output having a voltage magnitude substantially the same magnitude as the battery voltage.

4,439,722
FERRORESONANT POWER SUPPLY STABILIZER CIRCUIT FOR AVOIDING SUSTAINED OSCILLATIONS
Brian J. Budnik, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed May 3, 1982, Ser. No. 374,221
Int. Cl.³ G05F 3/06
U.S. Cl. 323—248 **4 Claims**



1. A method for stabilizing the output of a ferroresonant power supply to avoid sustained oscillations comprising the steps of:
(1) sensing the output of said power supply,
(2) switching a load across the output of said power supply when an unstable output is detected, and
(3) rapidly removing said load when a predetermined minimum period of time has elapsed after a stable output is detected.

4,439,723
ULTRASONIC AND VHF LOCATOR OF ELECTRICAL SYSTEMS DEFECTS
Marvin O. Loftness, 115 W. 20th Ave., Olympia, Wash. 98501
Filed May 11, 1981, Ser. No. 262,115
Int. Cl.³ G01R 31/02
U.S. Cl. 324—52 **12 Claims**

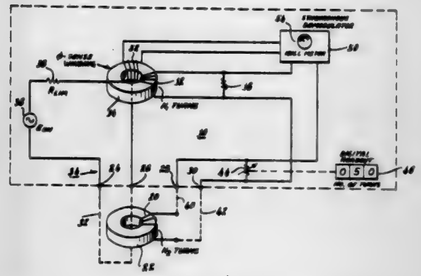


1. An electrical systems defect locator, comprising:
a. a probe housing,
b. an ultrasonic transducer on the probe housing for receiving ultrasonic emissions and converting them to electrical output signals,
c. a VHF antenna on the probe housing for receiving VHF emissions
d. converter means on the probe housing for converting said electric output signals and VHF emissions to electric audio frequency signals,
e. an audio speaker on the probe housing connected to the output of the converter means, and
f. an elongated, hollow, electrically non-conductive pole connected at one end to the probe housing and communicating with the speaker,
g. the opposite end portion of the pole being arranged for grasping by the hands of an operator and having an opening therethrough for the exit of audible sound from the speaker.

4,439,724
APPARATUS FOR DETERMINING THE NUMBER OF TURNS OF A MAGNETIC COIL
William H. Morong, III, Newton, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.
Filed Nov. 28, 1980, Ser. No. 211,235
Int. Cl.³ G01R 31/02, 31/06
U.S. Cl. 324—55 **7 Claims**

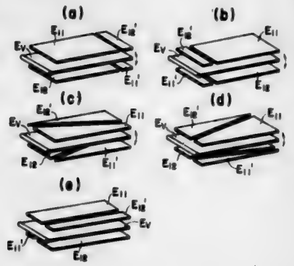
1. An instrument for determining the number of turns of a test coil wound on a magnetic core, comprising:
a reference core;
a reference coil wound on said reference core with a predetermined number of turns;
a first load coupled across said reference coil;

a second load of adjustable magnitude to be connected across the test coil;
means to couple the test coil to said instrument;
said coupling means comprising first means to connect primary winding means linking both of said cores in common;
said coupling means further including second means to connect the voltage on said test coil to said adjustable load;
means for supplying a-c current to said primary winding means;



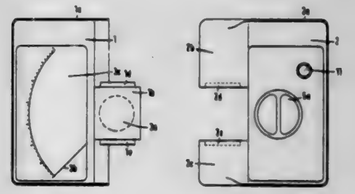
the magnitudes of said first and second loads being set at values to operate both of said coils as heavily-burdened current transformers;
comparator means for comparing the a-c signals developed by said two coils; and
means for producing a measurement output corresponding to the value of said adjustable load when it has been set to produce a null between said a-c signals of said two coils.

4,439,725
MICRODISPLACEMENT DETECTOR
Hiroomi Ogasawara, 3821-4, Yamakita, Yamakitamachi-gun, Kanagawa-ken, Japan
Continuation-in-part of Ser. No. 86,370, Oct. 18, 1979, Pat. No. 4,310,806. This application Nov. 10, 1981, Ser. No. 320,021
Int. Cl.³ G01R 27/26
U.S. Cl. 324—61 R **10 Claims**



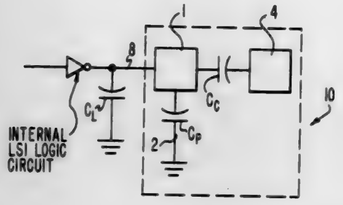
1. A microdisplacement detector for detecting movement of an object comprising:
a sensor including (a) a movable electrode; (b) a first pair of stationary electrodes, the electrodes of said first pair of electrodes spaced from each other in parallel relationship with said movable electrode therebetween and spaced therefrom to form a first pair of capacitors, the capacitance of one capacitor of said first pair of capacitors increasing and the capacitance of the other capacitor of said first pair of capacitors decreasing as said movable electrode moves; (c) a second pair of stationary electrodes, the electrodes of said second pair of electrodes spaced from each other in parallel relationship with said movable electrode therebetween and spaced therefrom to form a second pair of capacitors, the capacitance of one capacitor of said second pair of capacitors increasing and the capacitance of the other capacitor of said second pair of capacitors decreasing as said movable electrode moves; and (d) means adapted for connecting said movable electrode for movement in response to movement of the object to cause the capacitances of the first capacitor of said first pair of capacitors and of the second capacitor of said second pair of capacitors to increase in response to movement of the object and the capacitances of the second capacitor of said first pair of capacitors and of the first capacitor of said second pair of capacitors to decrease in response to movement of the object;
a first oscillator circuit having incorporated therein as frequency varying components thereof said first capacitor of said first pair of capacitors and said first capacitor of said second pair of capacitors;
a second oscillator circuit having incorporated therein as frequency varying components thereof said second capacitor of said first pair of capacitors and said second capacitor of said second pair of capacitors; and
a mixer connected to said first and second oscillator circuits for providing a frequency difference signal determined by the difference in the frequencies of said first and second oscillator circuits.

4,439,726
PORTABLE MULTIMETER HAVING TWO SUBASSEMBLIES WITH A HINGE FOR FOLDING
Karl Hochreuther; Siegfried Heinze, both of Nuremberg, Fed. Rep. of Germany, and Werner Scholpp, Gries, Austria, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany
PCT No. PCT/DE79/00086, § 371 Date Apr. 22, 1980, § 102(e) Date Apr. 22, 1980, PCT Pub. No. WO80/00495, PCT Pub. Date Mar. 20, 1980
PCT Filed Aug. 16, 1979, Ser. No. 184,253
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836679
Int. Cl.³ G01R 1/04, 15/12
U.S. Cl. 324—156 **20 Claims**



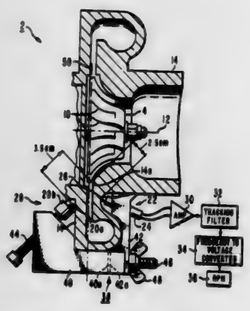
1. Portable multimeter, comprising an indicating subassembly for visualizing a measured value of a measuring variable to be examined, a processing subassembly for adapting the measuring variable to a quantity able to be visualized by said indicating subassembly, separate housings for said subassemblies being connected to each other and having edges facing away from the insides of said housings, said edges being swingable together for folding said housings together into a rest position, control and indicating parts to be protected being disposed at least partially inside of said housings in the rest position, terminals disposed on one of said housings for receiving data to be indicated, said housings containing a bead disposed in the vicinity of said edges being swingable together, said bead forming a hinge being hollow defining an interior space adequate for receiving additional control and indicating parts, said hinge including at least one interacting hinge element being integral with each housing and rotatably connecting said housings together.

4,439,727
LOW CAPACITANCE PAD FOR SEMICONDUCTOR CHIP TESTING
David H. Boyle, Manassas, Va., assignor to IBM Corporation, Armonk, N.Y.
Filed Dec. 21, 1981, Ser. No. 332,707
Int. Cl.³ G01R 1/06
U.S. Cl. 324—158 R 6 Claims



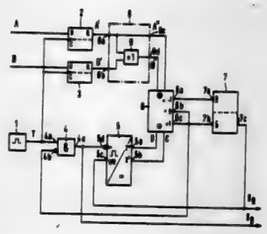
1. A capacitively coupled contact pad on a large scale integrated circuit chip, comprising:
a semiconductor substrate including a circuit network having an input/output node, said substrate having a first insulating layer deposited thereon as part of said chip;
a lower conductive plate formed on the surface of said first insulating layer as part of said chip and in conductive contact with said node;
a second insulating layer deposited on said lower plate as part of said chip;
an upper conductive plate formed on the surface of said second insulating layer as part of said chip and juxtaposed with said lower plate, said second insulating layer forming a dielectric medium through which said upper plate is capacitively coupled with said lower plate;
whereby input/output signals can be transferred between said upper and lower plates by capacitively coupling through said second insulating layer.

4,439,728
MOTION SENSOR UTILIZING EDDY CURRENTS
James D. Rickman, Jr., Boxford, Mass., assignor to RCA Corporation, New York, N.Y.
Filed Dec. 16, 1981, Ser. No. 331,272
Int. Cl.³ G01P 3/46, 3/52
U.S. Cl. 324—164 9 Claims



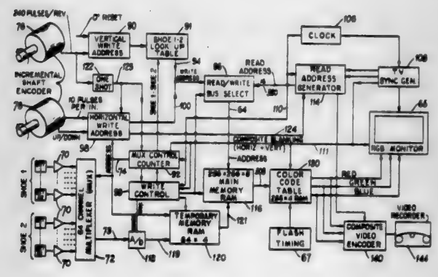
1. Apparatus for measuring passage of a non-magnetic conductor part separated from the apparatus by a non-magnetic conductor shield within which said part passes, comprising in combination:
a bias magnet adapted to be positioned adjacent said shield for establishing a DC flux in said part; and
a transducer means adapted to be positioned adjacent said shield for producing a signal in response to eddy currents created in said shield due to passage of said part.

4,439,729
EVALUATION CIRCUIT FOR A DIGITAL TACHOMETER
Ulf Claussen, Wedel, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 24, 1982, Ser. No. 361,556
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114221
Int. Cl.³ H03K 5/26; G01P 13/04
U.S. Cl. 324—165 3 Claims



1. A evaluation circuit for a digital tachometer, the digital tachometer being of the type which produces first and second pulse trains having a frequency proportional to the speed of rotation, the pulse trains being phase-shifted in response to the direction of rotation, the evaluation circuit being of the type which converts the first and second pulse trains into a speed-proportional pulse train having four times the frequency of the first and second pulse train, and into a separate sign signal, the evaluation circuit further comprising:
clock terminal means for receiving a clock signal having at least four times the maximum frequency of the first and second pulse trains;
first and second signal memory means for receiving the first and second pulse trains, respectively, said first and second signal memory means being controlled by said clock signal, and producing at respective output terminals first and second memory means output signals, said memory means output signals, in combination, forming sequential binary numbers corresponding to predetermined combinations of the first and second pulse trains;
controllable switch means having a first input terminal connected to said clock terminal means for receiving said clock signal, a second input terminal for receiving a controllable switch means enabling signal, and an output terminal for producing said clock signal in response to said controllable switch means enabling signal;
bidirectional counter means having a first input terminal connected to said output terminal of said controllable switch means, for counting the negative flanks of said clock signal;
comparator means having a plurality of input terminals connected to respective output terminals of said first and second signal memory means and said bidirectional counter means, said comparator means further having a plurality of output terminals, each output terminal producing a respective output signal indicative of a predetermined deviation from a prior sequential binary number formed from said memory means output signals, first and second ones of said plurality of output terminals corresponding to deviations of "+1" and "−1", respectively, said comparator means further having a third output terminal for producing a signal indicative of coincidence of a binary number at said output terminals of said bidirectional counter means and said sequential binary numbers formed of said memory means output signals, said third output terminal being connected to said second input terminal of said controllable switch means for producing said controllable switch means enabling signal; and
sign means having first and second input terminals connected to said first and second output terminals, respectively, of said comparator means, and an output terminal for producing a signal indicative of the direction of rotation of the tachometer.

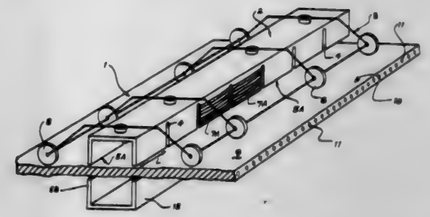
4,439,730
NONDESTRUCTIVE INSPECTION APPARATUS AND METHOD UTILIZING COMBINED INSPECTION SIGNALS OBTAINED FROM ORTHOGONAL MAGNETIC FIELDS
Glenn A. Kauffman, Pasadena, Tex., assignor to AMF Inc., White Plains, N.Y.
Filed May 8, 1981, Ser. No. 261,918
Int. Cl.³ G01N 27/72; G01R 33/12; G09F 9/30
U.S. Cl. 324—232 36 Claims



1. The method of nondestructively inspecting a member of magnetic material comprising the steps,
establishing a first steady magnetic field component in a first direction through a given incremental region of the member,
establishing through said incremental region a second steady magnetic field component in a direction substantially transverse to said first direction,
detecting the magnitude of said first magnetic field component at the surface of said incremental region and producing a first signal in response thereto,
detecting the magnitude of said second magnetic field component at the surface of said incremental region and producing a second signal in response thereto,
combining the magnitudes of said first and second signals to obtain the sum thereof,
producing in response to said combined signals a representation of the magnitude of the combined signals.

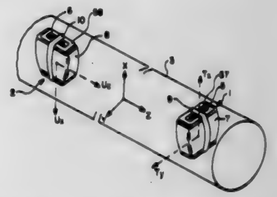
4,439,731
MONITORING OF ELONGATE MAGNETICALLY PERMEABLE MEMBERS
Alexander Harrison, Beecroft, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australia
Filed Oct. 8, 1980, Ser. No. 195,311
Int. Cl.³ G01N 27/82; G01R 33/12
U.S. Cl. 324—239 25 Claims

1. Apparatus for monitoring the integrity of an elongate magnetically permeable member having a longitudinal axis, said apparatus comprising a magnetically permeable yoke disposed in a plane substantially transverse to the longitudinal axis of said magnetically permeable member, said yoke having a substantially U-shaped transverse cross-section and a plurality of pairs of pole pieces formed by slots in said yoke, the poles of each pair of pole pieces lying in a direction substantially parallel to the longitudinal axis of said permeable member, one pole piece of each pair of said pole pieces carrying a field winding and the other pole piece of each said pair of pole pieces carrying a corresponding sensing winding; spacing means to maintain a substantially predetermined spacing between said elongate member and said pole pieces and to permit movement of said yoke relative to longitudinal axis of said



member; current generating means connected to said field windings to induce a time varying magnetic field passing through said elongate member between each said pair of pole pieces; and sensing means connected to said sensing windings to sense the voltage induced therein by said magnetic field.

4,439,732
ELECTRICALLY BALANCED FLUXGATE GRADIOMETERS
Victor W. Hesterman, Los Altos Hills, and William E. Drummond, Mountain View, both of Calif., assignors to United Scientific Corporation, Santa Clara, Calif.
Filed May 26, 1981, Ser. No. 266,826
Int. Cl.³ G01R 33/02, 33/04; G01C 17/28; G01V 3/165
U.S. Cl. 324—247 24 Claims



20. A gradiometer for sensing a magnetic field gradient comprising,
a first sense winding for sensing magnetic field strength in a first sense direction and providing a first sense signal corresponding thereto,
a first balance winding for sensing magnetic field strength in a first balance direction orthogonal to said first sense direction and providing a first balancing signal corresponding thereto,
a second sense winding for sensing magnetic field strength in a second sense direction and providing a second sense signal corresponding thereto,
a second balance winding for sensing magnetic field strength in a second balance direction orthogonal to said second sense direction and providing a second balancing signal corresponding thereto,
means for rigidly connecting said first and second sense windings in spaced apart relation along a common axis with said first and second sense windings oriented such that said first and second sense directions are parallel and for rigidly connecting said first and second balance windings relative to said sense windings such that said first and second balance directions are orthogonal, and
combining means for combining a representation of said first and second sense signals and said first and second balancing signals to provide an output signal proportional to the difference between the magnetic field strength at said first

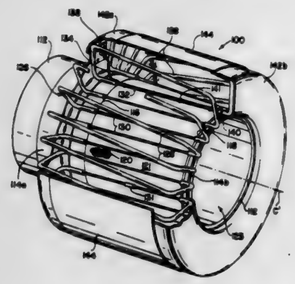
sense winding and the magnetic field strength at said second sense winding in directions parallel to said first and second sense directions, respectively, with unwanted components in said first and second balance directions cancelled.

4,439,733

DISTRIBUTED PHASE RF COIL

Waldo S. Hinshaw, Richmond Heights, and Robert C. Gauss, Aurora, both of Ohio, assignors to Technicare Corporation, Solon, Ohio

Continuation-in-part of Ser. No. 182,525, Aug. 28, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,134
Int. Cl.³ G01R 33/08
U.S. Cl. 324—322 22 Claims



1. In a system for generating and detecting magnetic resonance in materials placed in the system for examination, the system having a magnet for providing a static magnetic field directed along a line or axis, the system generating magnetic resonance in the materials through their exposure to a radio-frequency magnetic field having components transverse to the axis, improved apparatus for generating or detecting the radio-frequency magnetic field, the improvement comprising:
(a) a plurality of conductive elements positioned in spaced relation about the axis;
(b) means for causing alternating currents to flow in the conductive elements; and
(c) means for setting the relative amplitudes of the currents in each of the conductive elements, there being at least one set of current amplitudes, generally different from one another and alternating at a radio frequency, which is able to generate a composite magnetic field transverse to the axis that is substantially uniform.

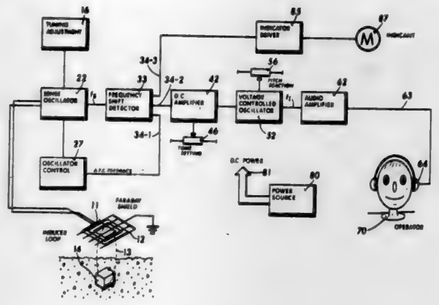
4,439,734

METAL OBJECT LOCATOR INCLUDING FREQUENCY SHIFT DETECTOR

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Jun. 23, 1980, Ser. No. 162,080
Int. Cl.³ G01V 3/11; H03L 7/00
U.S. Cl. 324—327 18 Claims

1. A metal detector apparatus, including in combination:
a. inducer means effective for producing an extensive electromagnetic field couplable with a metal object;
b. sense oscillator means having a first frequency determining means effectively coupled with said inducer means whereby a first signal is produced thereby having an instant frequency variably determined in part by the change in reactance of the inducer means wrought by the presence of the metal object;
c. frequency shift detector means coupled with said sense oscillator means, effective for receiving a said first signal produced therefrom and coupling same through a frequency responsive detector means including a tuned element means which is maintained resonant near a predetermined second frequency value; wherefrom an error signal is produced having a first level error signal when said first frequency and said second frequency are about the same, and a different second level error signal which is variously proportional to the magnitude of any variation of the said first frequency relative with the said second frequency as bounded by the difference between the resonant and off resonance responses substantially determined by the effective "Q" factor of the second frequency tuned element means;
d. frequency control means coupled with said sense oscillator means and said frequency shift detector means and



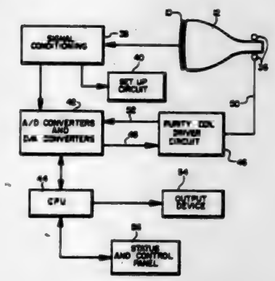
effective in combination with said error signal to continuously retune said first frequency signal determining means to decrease the magnitude of any proportional difference between the said first and second frequency signals shown by the relative increase of any effective difference between the error signal first and second levels;
e. indicant means coupled with said error signal effective to produce a telltale signal proportional to the instant error signal level; and,
f. source of d.c. power coupled at least with said several means comprising the apparatus for the operation thereof.

4,439,735

METHOD AND APPARATUS FOR TESTING LINE SCREEN CRT REGISTRATION

Armando Alvite, Chicago; Enrico D. Hines, Naperville, and Allan D. Kautz, Deerfield, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 17, 1981, Ser. No. 284,031
Int. Cl.³ G01R 31/22
U.S. Cl. 324—404 6 Claims



5. For use with a CRT having a line screen on which phosphor stripe targets are deposited and at least one electron beam for exciting the phosphor stripe targets, a system for measuring misregistration between the electron beam and its phosphor stripe targets, comprising:
a plurality of light sensing devices situated at a corresponding number of selected test areas on the CRT screen;

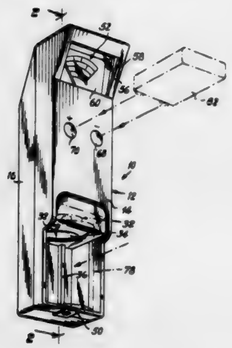
means for positioning the electron beam to one side of its phosphor stripe targets encompassed within the test areas, and for incrementally stepping the electron beam across the targets in response to a control signal; said positioning means including a purity coil disposed around the neck of the CRT; and
circuit means for developing the control signal for supplying current to said purity coil, for measuring the output of the light sensing devices when the electron beam is at one side of its phosphor stripe targets and after each incremental step of the electron beam to obtain a plurality of brightness readings at each test area, for storing the minimum and maximum brightness readings associated with each test area and data representative of the locations where each minimum and maximum reading occurred, for computing a preselected percentage of said stored maximum brightness readings, for storing the data representative of the locations where said preselected percentages of maximum brightness occurred by sensing the value of purity coil current at those locations and for determining, for each test area, the extent of misregistration based on the locations of the minimum and maximum brightness readings by converting the values of coil current to misregistration distances.

4,439,736

BATTERY TESTING SYSTEM

Frederick W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed May 13, 1981, Ser. No. 260,782
Int. Cl.³ G01N 27/46
U.S. Cl. 324—437 7 Claims



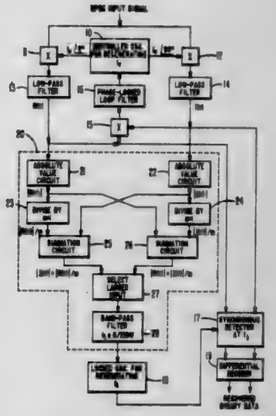
1. An apparatus for indicating the condition of a plurality of portable power sources of different dimensions and voltages, comprising, in combination:
a housing having means for support thereof on a surface, said housing having a first interior transversely extending wall and a second interior transversely extending wall spaced from said first wall, said first wall in part forming an opening, said second wall being movable relative to said first wall,
a post connected to said second wall extending through said opening in said first wall, said post including means for preventing the escape of said post through said opening,
an electrically conductive compression spring positioned around said post between said first and second walls, said spring having first and second ends at said first and second walls respectively, a first electrical contact connected to said second wall and electrically connected with said second end of said spring,
a second electrical contact positioned in said housing spaced from said second wall,
said housing forming a single chamber defined in part by said second electrical contact as said second wall and by said second electrical contact, said housing forming a chamber opening, said chamber being adapted to receive through said chamber opening a first or a second portable power source of greater dimension than said first power source, said first and second power sources having positive and negative terminals on opposite sides of said power sources, said negative terminals being in contact with said second electrical contact and said positive terminal being in contact with said first electrical contact, said first and second power sources providing electrical communication between said second and third electrical contacts,
indicating means carried by said housing for providing a user with potential testing information with respect to and in response to the condition of said first or second portable power sources,
electrically conductive means communicating with said indicating means and said first and second electrical contacts;
said second wall and said first contact being movable from a rest position to a biased first position away from said second contact in response to the presence of said first portable power source in said chamber; said second wall and said first contact being further movable in a direction away from said second contact to a biased second position in response to the presence of said second portable power source in said chamber, and
means connected to said housing for preventing said second wall from moving from said rest position toward said second electrical contact.

4,439,737

PHASE LOCKED LOOP, AS FOR MPSK SIGNAL DETECTOR

Anthony Mattei, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,580
Int. Cl.³ H03D 3/18, 3/24
U.S. Cl. 329—50 6 Claims



1. In phase lock loop apparatus for phase-locking an oscillator to the amplitude variations accompanying phase transitions in the envelope of a bandwidth-limited complex waveform derived by synchronously detecting a phase-shift-keying signal, the improvement for approximating the amplitude of said envelope comprising:
means for determining the absolute value of the real component of said complex waveform;
means for determining the absolute value of the imaginary component of said complex waveform;
means for band-pass filtering to separate at least a portion of the first harmonic spectrum of keying frequency; and

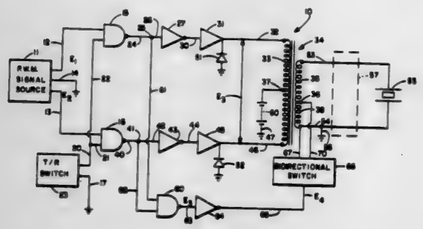
means responding linearly to at the least non-zero one of said absolute values for supplying input to said means for band-pass filtering, thereby to provide said approximation as the result of the subsequent band-pass filtering.

4,439,738

CLASS D PULSE WIDTH MODULATED AMPLIFIER

Jay W. Atherton, Seattle, Wash., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 12, 1981, Ser. No. 320,287
Int. Cl.³ H03F *3/38*
U.S. Cl. 330—10 **1 Claim**



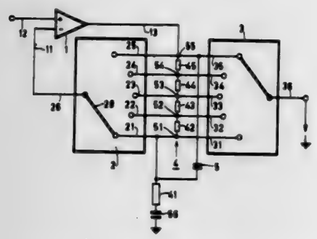
1. A ground referenced push-pull amplifier having a pair of inputs and including an output transformer, having primary and secondary windings, energizing a load;
a transducer conductively connected directly to said secondary winding;
means supplying to said inputs a pulse width modulated signal comprising a pair of trains of alternate pulses having a common repetition period, said pulses being of equal magnitude and of concurrently variable widths less than half of said repetition period;
and means connected to the first named means short-circuiting turns of said secondary winding during intervals between successive pulses of said signal, whereby to protect said amplifier against said transients fed back from said load during said intervals.

4,439,739

CIRCUIT ARRANGEMENT WITH ELECTRONICALLY CONTROLLABLE TRANSFER CHARACTERISTIC

Ernst A. Kilian; Wilhelm Graffenberger, both of Hamburg, Fed. Rep. of Germany; Else C. Dijkmans, Eindhoven, and Rudy J. van de Plassche, Waalre, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,376
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132402
Int. Cl.³ H03G *5/04*
U.S. Cl. 330—107 **8 Claims**



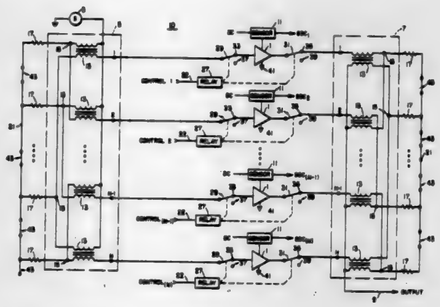
1. A bass-control circuit arrangement having an electronically controllable frequency transfer characteristic comprising, an amplifier having an inverting input and a non-inverting input and a controllable frequency-dependent negative feedback, a signal input terminal coupled to the non-inverting input of the amplifier, a signal output terminal, a frequency-dependent voltage divider including a resistor chain having a plurality of taps, means connecting said voltage divider to an output of the amplifier, a capacitor coupled between the amplifier output and a tap on the resistor chain, a first electronically controllable switch for selectively coupling said taps on the resistor chain to the inverting input of the amplifier, and a second electronically controllable switch for selectively coupling the taps on the resistor chain to the signal output terminal independently of the setting of the first switch, the resistor chain and capacitor being designed so that a signal voltage on at least some of the taps decreases as the signal frequency decreases.

4,439,740

CORPORATE AMPLIFIER APPARATUS WITH IMPROVED DEGRADATION

Timothy A. Harrington, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 1, 1982, Ser. No. 364,582
Int. Cl.³ H03F *3/68*
U.S. Cl. 330—124 R **7 Claims**



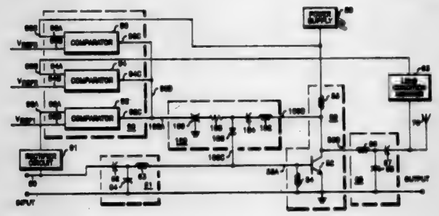
1. In an amplifying system including a power splitter means for receiving an input signal and dividing that signal to provide a plurality of power splitter outputs and normally including a plurality of balancing resistor positions, an amplifier associated with a different one of each of said plurality of outputs wherein each amplifier has an input coupled to one of said plurality of outputs and an amplifier output, and a power combiner means having a plurality of power combiner inputs with each input associated with and coupled to a different one of said amplifier outputs for combining the amplifier outputs and providing a combined output signal, wherein said combiner means normally has a plurality of balancing resistor positions, the improvement in said amplifier system comprising:
said power combiner means and power splitter means being constructed and arranged to have one of a substantially zero selected impedance at said balancing resistor positions and a substantially infinite selected impedance at said balancing resistor positions;
means coupled to each of said amplifiers for detecting faults in an amplifier and providing a fault signal representing a faulty amplifier; and
means responsive to said fault signal for selectively providing an electrical open circuit between the input of said faulty amplifier and its associated power splitter output and the output of said amplifier and its associated power combiner input when said selected impedance is substantially zero and for coupling the power combiner output associated with the input of said faulty amplifier and the power splitter input associated with the output of said faulty amplifier to a common terminal when said selected impedance is substantially infinite.

4,439,741

STABILIZED HIGH EFFICIENCY RADIO FREQUENCY AMPLIFIER

Harvey N. Turner, Jr., Tamarac, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1982, Ser. No. 392,919
Int. Cl.³ H03F *1/26*
U.S. Cl. 330—149 **7 Claims**



1. A radio frequency amplifier circuit comprising:
amplification means for amplifying radio frequency signals provided thereto, said amplification means having undesired feedback paths associated therewith;
sensing means, operatively coupled to said amplification means, for generating a sense signal which indicates when said amplification means is subjected to undesired operating conditions tending to cause oscillation of said amplification means;
stabilization circuit means, operatively coupled to said sensing means, for stabilizing said amplification means by dampening signals in said undesired feedback paths associated with said amplification means, said stabilization circuit means including at least one stabilization element, and
coupling means, coupled to said sensing means, for coupling said stabilization circuit means to said amplification means during periods of time when said sense signal indicates that said amplification means is being subjected to said undesired operating conditions and for decoupling said stabilization circuit means from said amplification means during periods of time when said sense signal indicates that said amplification means is not being subjected to said undesired operating conditions, such that said stabilization circuit means dampens signals in said undesired feedback paths and dissipates substantial RF power only during periods of time when said stabilization circuit means is coupled to said amplification means by said coupling means.

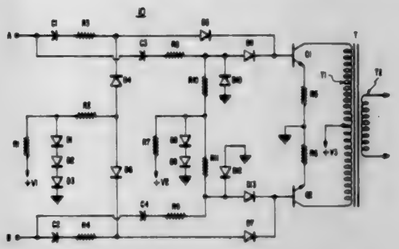
4,439,742

CIRCUIT FOR SIMULATING VACUUM TUBE COMPRESSION IN TRANSISTOR AMPLIFIERS

Jack C. Sondermeyer, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.

Filed Sep. 4, 1981, Ser. No. 299,565
Int. Cl.³ H03F *3/26, 3/68*
U.S. Cl. 330—262 **13 Claims**

1. A circuit structure for driving a transistor amplifier to respond to an input signal in accordance with a predetermined clipping and soft cross-over characteristic comprising:
(a) first circuit means for generating first signals for driving said transistor amplifier in accordance with a first, clipping characteristic;
(b) second circuit means for generating second signals for driving said transistor amplifier in accordance with a second, cross-over characteristic; and
(c) combining means for combining said first and second signals and for generating a combined signal for driving



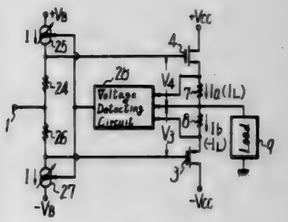
said transistor amplifier in accordance with said predetermined soft cross-over characteristic.

4,439,743

BIASING CIRCUIT FOR POWER AMPLIFIER

Manfred Schwarz, Grunbach, Fed. Rep. of Germany, and Tadashi Higuchi, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1981, Ser. No. 257,390
Claims priority, application Japan, Apr. 30, 1980, 55-58415
Int. Cl.³ H03F *3/26*
U.S. Cl. 330—267 **42 Claims**



1. A biasing circuit comprising:
signal input means for supplying an input signal;
output transistor means including first and second output transistors for amplifying said input signal, each of said transistors including an output path and an input;
output resistive means including first and second resistive elements connected in series between the output paths of said first and second output transistors;
first and second variable current source means;
input resistive means connected between said first and second variable current source means for supplying said input signal to the inputs of said first and second output transistors; and
control means for detecting the voltage at one of said output transistor means and said output resistive means and for controlling at least one of said first and second variable current source means in response to said detection.

4,439,744

VARIABLE POWER AMPLIFIER

Mahesh Kumar, South Brunswick Township, Middlesex County, and Lakshminarasimha C. Upadhyayula, East Windsor, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,258
Int. Cl.³ H03F *3/60*; H03G *3/20*
U.S. Cl. 330—285 **5 Claims**

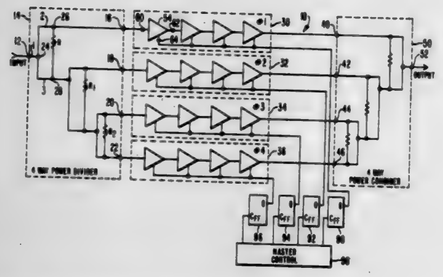
1. A variable power amplifier system comprising, in combination:

an in-phase power divider network having an input port for receiving thereat an alternating signal to be amplified in power and having N output ports;

an in-phase power combining network having N input ports and one output port;

N signal amplifier means coupled to respective ones of said N output ports to receive said alternating signal therefrom to be amplified and coupled to respective ones of said N input ports to provide amplified signals thereto;

each of said amplifiers comprising an active device having a terminal coupled to receive said alternating signal and also adapted to receive a bias potential thereat; and



logic means coupled to each said terminal for selectively supplying either a first or a second bias potential thereto, said first potential being of such value as to cause said device to amplify, said second potential being of such value as to cause said device to be cut off to thereby provide no output signal and consume no power;

whereby the power supplied to said output port of said power combining network is a function of which amplifiers are at said first bias potential and which are at said second bias potential.

4,439,745

AMPLIFIER CIRCUIT

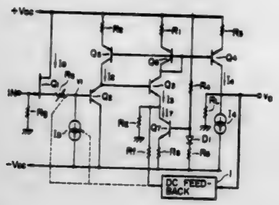
Kazuaki Nakayama, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 301,867

Claims priority, application Japan, Sep. 16, 1980, 55-128188

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—296 **6 Claims**



1. In amplifier circuit of the type including an input terminal for receiving an input signal, a first transistor having a base and providing an output, coupling means for coupling said input signal to the base of said first transistor, a second transistor of opposite conductivity type from said first transistor and having a base terminal receiving said output from said first transistor, an impedance element having one terminal coupled to a second terminal of said second transistor for determining circuit gain, and current supply means for supplying currents having a predetermined ratio to said first and second transistors, the improvement comprising:

a constant current source for producing at an output terminal a current substantially equal to a DC current flowing through said second transistor, said constant current source being connected in series with said second transistor with said current source output terminal being coupled to the connection point between said impedance element and second terminal.

4,439,746

EXTENDED INTERACTION MICROWAVE OSCILLATOR INCLUDING A SUCESSION OF VANES WITH ORIFICES

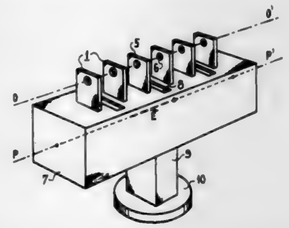
Bernard Epaztein, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 20, 1981, Ser. No. 265,375

Claims priority, application France, May 23, 1980, 80 11552

Int. Cl.³ H01J *25/36*; H03B *9/08*

U.S. Cl. 331—82 **13 Claims**



1. An extended interaction microwave oscillator comprising a periodic structure line constituted by a succession of vanes, which are traversed or lightly touched by a linear electron beam, wherein said line is placed over a linear cavity whose dimensions are determined in such a way that it behaves like a waveguide at the cut-off frequency, along the longitudinal axis of the line and on a transverse magnetic mode, TM_{mn} with m=1, 3, 5 etc. and n=1, 2, 3, 4 etc., coupling orifices are provided in the wall of the cavity between two successive vanes and at regular intervals, the anode voltage of the beam, the distances between two successive vanes and between two successive orifices being fixed as a function of the selected oscillation frequency for the oscillator, which is equal to the cut-off frequency of the cavity and finally a coupling device connected to the cavity makes it possible to tap the oscillator output energy of the cavity.

4,439,747

METHOD FOR IMPROVING SELECTIVITY IN CYLINDRICAL TE_{011} FILTERS BY TE_{211}/TE_{311} MODE CONTROL

Donald E. Kreinheder, Granada Hills, and Terrance D. Lingren, Canoga Park, both of Calif., assignors to Hughes Aircraft Co., El Segundo, Calif.

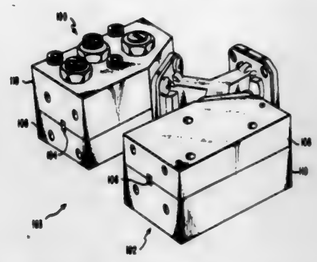
Filed Jun. 7, 1982, Ser. No. 385,947

Int. Cl.³ H01P *1/207, 1/208, 1/16*

U.S. Cl. 333—208 **6 Claims**

1. A method for placing transmission nulls of a cylindrical cavity TE_{011} mode resonator at a desired frequency comprising the step of:

placing the output port of said cavity resonator at a selected angular displacement with respect to the input port of said cavity resonator, said input and output ports lying in the same plane substantially perpendicular to the longitudinal axis of said cylindrical cavity resonator.



4,439,748

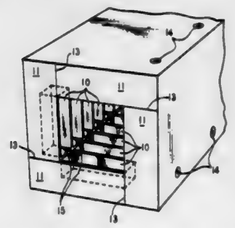
CORRUGATED WAVEGUIDE OR FEEDHORN ASSEMBLED FROM GROOVED PIECES

Corrado Dragone, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 28, 1982, Ser. No. 392,613

Int. Cl.³ H01P *3/123*

U.S. Cl. 333—239 **11 Claims**



7. A rectangular corrugated waveguide or feedhorn section comprising:

four plates comprising an electrically conductive material, each plate including a plurality of grooves of a predetermined depth and cross-section disposed in a line in a direction along a minor cross-sectional axis of the grooves in a major exposed surface of each of the four plates, the four plates being disposed relative to each other to form a hollow corrugated rectangular guie section with a predetermined sized passage therethrough such that the ends of the grooves in each of the plates both substantially meet and are essentially aligned with the ends of the grooves in a separate other plate of the four plates at each of the corners of the hollow guide section to provide a line of electrically conductive material at each of the corners of the passage through the guide section.

4,439,749

ELECTRONIC TUNING BLOCK

Hiroaki Komatsu, and Kenji Yoshioka, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

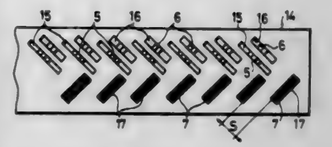
Filed Mar. 30, 1982, Ser. No. 363,471

Claims priority, application Japan, Mar. 31, 1981, 56-46204

Int. Cl.³ H03J *1/06, 1/08*

U.S. Cl. 334—7 **1 Claim**

1. In an electronic tuning device including a generally rectangular insulating substrate and a plurality of variable resistors each mounted to said substrate and having a shaft extending outwardly therefrom to a rotary knob fixed transversely to said shaft, and a cover adapted to be mounted over said resistors and having openings for receiving portions of said rotary knobs extending therethrough whereby said rotary knobs can be rotated by movement of a finger over the portions extending through said openings, the improvement wherein said shafts are arranged in parallel on said substrate in positions oblique to the side edges thereof so that none of said rotary knobs will be in the path of movement of a finger actuating another of said rotary knobs.



4,439,750

ARMATURE HOLDING STRUCTURE AND HINGE WIRE SPRING USED THEREIN

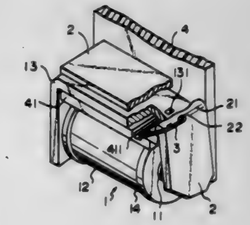
Kunihisa Fujii, Saku; Noboru Tomono, Usudamachi, and Yukio Shikano, Saku, all of Japan, assignors to Takamisawa Electric Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,038

Claims priority, application Japan, Apr. 21, 1981, 56-56634[U]

Int. Cl.³ H01F *7/08, 7/13*

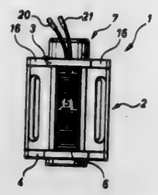
U.S. Cl. 335—274 **2 Claims**





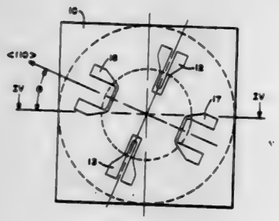
1. An armature holding structure using a hinge wire spring in an electromagnetic relay comprising a base block having a shelf formed perpendicular to said base block, an electromagnet having a core, a coil and a yoke, an armature and a hinge wire spring coupled to both said yoke and said armature, said yoke being fixed to said base block, a groove being formed in said shelf, wherein one end of said hinge wire spring is held in a hole in said yoke, the other end of said hinge wire spring is held in a hole in said armature, and the intermediate portion of said hinge wire spring passes through said groove in said shelf, along the side surfaces of said shelf, said yoke and said armature and over the outer surface of said armature, whereby the pivot support structure of said armature at the end of said yoke is maintained by said hinge wire spring.

4,439,751
DIRECT CURRENT ELECTROMAGNET
Christoph Gibas, Neunkirchen, Fed. Rep. of Germany, assignor to bso Steuerungstechnik GmbH, Sulzbach-Saar, Fed. Rep. of Germany
Filed Nov. 26, 1982, Ser. No. 444,697
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147058
Int. Cl.³ H01F 7/00
U.S. Cl. 335—278 2 Claims



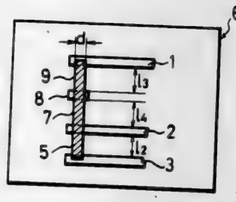
1. An actuating magnet, particularly a direct current electromagnet, of the type having a circular cylindrical coil surrounding a pole body, comprising the combination of
a magnetic shell substantially surrounding the coil and forming a part of the exciting magnetic current for the electromagnet, said shell being formed from a single generally rectangular sheet of metal bent to form a substantially square cylinder,
means defining axially elongated openings through said shell, said openings being spaced apart so that they lie at the corners of said cylinder to facilitate bending thereof, the axial length of each said opening being greater than half the axial length of said cylinder,
the sides of said cylinder being bent concave outwardly to conform to said coil;
first and second pole plates at opposite ends of said cylinder;
interengaging means on said pole plates and said shell to prevent rotation of said plates; and
means on said pole plates defining recesses adjacent the corners of said shell for permitting passage of fasteners therethrough.

4,439,752
SEMICONDUCTOR PRESSURE TRANSDUCER
James B. Starr, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 26, 1981, Ser. No. 314,650
Int. Cl.³ G01L 1/22
U.S. Cl. 338—2 15 Claims



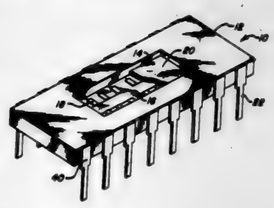
1. A semiconductor pressure transducer comprising:
a single crystal semiconductor chip having at least one rectilinear edge oriented at an angle of substantially 22.5 degrees with respect to a <110> crystal direction of said chip;
a pair of radial stress sensors having a piezoresistive characteristic disposed on one surface of said chip; and
a pair of circumferential stress sensors having a piezoresistive chracterteristic disposed on said one surface of said chip;
wherein said pairs are oriented along said <110> cryst direction.

4,439,753
THICK FILM PRINTED CIRCUIT
Yoshii Kagawa, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Aug. 7, 1980, Ser. No. 175,956
Claims priority, application Japan, Aug. 7, 1979, 54-108812[U]
Int. Cl.³ H01C 1/14
U.S. Cl. 338—325 4 Claims



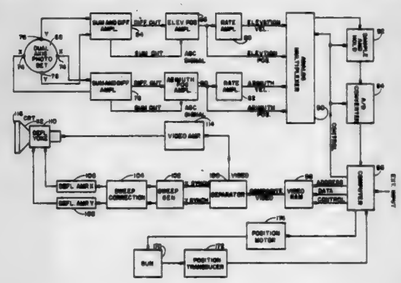
1. A thick film printed circuit including a potential dividing circuit formed from a plurality of printed resistance patterns for dividing voltage applied to the potential dividing circuit in the ratio of m:n, said potential dividing circuit comprising n+1 electrode patterns equally spaced from one another and a resistance pattern having a constant width printed transversely of each of said electrode patterns; said potential dividing circuit including means for applying a predetermined voltage between the first of said electrode patterns and the (n+1)th electrode pattern, and means including the (n+1−m)th electrode pattern in said plurality of electrode patterns for receiving a potential divided from said predetermined potential.

4,439,754
APERTURED ELECTRONIC CIRCUIT PACKAGE
Jean D. Madden, Jr., Warwick, R.I., assignor to Electro-Films, Inc., Warwick, R.I.
Filed Apr. 3, 1981, Ser. No. 250,763
Int. Cl.³ H01C 1/01
U.S. Cl. 338—320 12 Claims



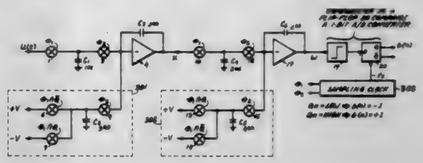
1. An apertured electronic circuit package having two elements comprising:
a first substrate having a circuit pattern thereon and terminating in electrical terminals for connection to external circuitry, the substrate having an aperture therethrough and about the periphery of which a plurality of contact pads are arranged and respectively connected to intended paths of the circuit pattern;
a smaller substrate having a trimmable network thereon connected to a plurality of contact pads disposed on the periphery of the smaller substrate wherein the dimensions of the smaller substrate are sufficient to occlude the aperture and to allow the smaller substrate contact pads to overlap the first substrate pads and said smaller substrate contact pads having a configuration in alignment with the contact pads of said first substrate when the smaller substrate is in a subjacent position relative to said first substrate;
the smaller substrate being mechanically supported by said first substrate wherein the respective contact pads of the smaller substrate also provide electrical connection to the contact pads of the first substrate;
the trimmable network of the smaller substrate being visible and accessible through the aperture in the first substrate to permit trimming of the network to achieve an intended electrical specification.

4,439,755
HEAD-UP INFINITY DISPLAY AND PILOT'S SIGHT
Joseph A. LaRussa, Yorktown Heights, N.Y., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.
Filed Jun. 4, 1981, Ser. No. 270,416
Int. Cl.³ G09G 3/00; G01C 21/00
U.S. Cl. 340—980 23 Claims



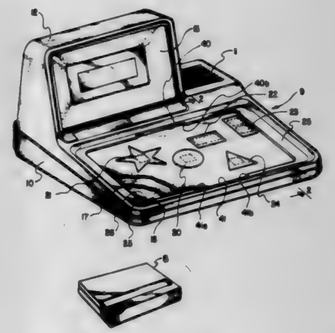
1. A system for presenting a head-up display to the pilot of an aircraft, comprising, data means for generating data, data processing means responsive to said data means for producing a video signal carrying an image of said generated data, video display means for displaying a video image of said data, a light transmitting waveguide having an optical length very much smaller than its physical length, secured, positioned, configured and dimensioned to receive at least a portion of the light rays of said video image and direct said light rays along its length to output means for reflection toward the eye of the pilot, and beamsplitter means positioned over the field-of-view of the pilot and positioned with respect to the output of said waveguide for reflecting the light rays leaving the output of said waveguide toward the pilot's eye and transmitting light from objects surrounding the pilot to the pilot's eye, light generating means for generating an optical signal indicating a line-of-sight of the pilot, detector means optically coupled to said light generating means for receiving said optical signal and detecting the line-of-sight of the pilot and producing signals carrying line-of-sight information, data processing means responsive to said detector means for generating a video signal carrying an image of the line-of-sight of the pilot, said video signal being coupled to said video display means to cause said video image to include an indication of the line-of-sight of the pilot, said optical signal being of a color different from said video image and wherein said detector means is housed within said video display means and said video display means comprises a dichroic beamsplitter which reflects said video image toward said waveguide and transmits said optical signal to said detector means, said detector means being moved by motor means to position the image of said light generating means at the center of said detector means, whereby the position of said detector means indicates the line-of-sight of the pilot.

4,439,756
DELTA-SIGMA MODULATOR WITH SWITCH CAPACITOR IMPLEMENTATION
Kishan Shenoi, Fairfield, and Bhagwati P. Agrawal, Shelton, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 20, 1982, Ser. No. 340,931
Int. Cl.³ H03K 13/20
U.S. Cl. 340—347 AD 13 Claims



1. A delta-sigma modulator for digitally encoding an analog signal, comprising:
means for generating a timing waveform having a frequency substantially higher than the highest frequency component of said analog signal;
sampling means including switching capacitance means for storing charge representative of instantaneous amplitude values of said analog signal said values being determined by the ratios of the values of a plurality of said capacitance means, and having an output;
lowpass filter means for performing an integration function on the output of said sampling means;
one-bit analog-to-digital converter means clocked by said timing waveform and providing first and second outputs in response to the instantaneous polarity of the output of said lowpass filter means, said second output being complementary of said first output;
reference means for selectively applying a charging voltage to said lowpass filter such that said capacitance means charges and discharges in non-overlapping intervals of time.

4,439,757
INTERCHANGEABLE KEYBOARD DEFINING MEANS
Raymond J. Gross, Culver City, and Fredrick W. Hogg, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 6, 1981, Ser. No. 319,001
Int. Cl.³ G06F 3/02
U.S. Cl. 340—365 VL 8 Claims



1. Interchangeable keyboard defining means comprising:
a housing formed of an insulative material and defining a keyboard support;
a keyboard including a plurality of switches each including

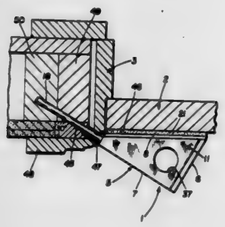
a depressible key, said keys being arrayed in a common keyboard plane;
means retaining said keyboard in said keyboard support;
a retaining lip, supported by said housing, substantially surrounding said keyboard plane and overlying the periphery of said keyboard plane and extending and inwardly along said periphery for a predetermined distance defining a pair of openings formed by reduced inward extensions of said lip, said openings being oppositely positioned with respect to said keyboard plane on a common transverse axis;
an overlay formed of a flexible sheet of resilient material having a perimeter larger than said lip having a smaller dimension than the distance along said transverse axis between the extremes of said openings, including a plurality of visual key definition indicia and having first and second opposed edges;
said overlay capable of being inserted into and removed from a position overlying said keyboard by loose folding thereof along said transverse axis and insertion or removal of said first and second opposed edges of said overlay through said openings;
said retaining lip and said keyboard plane cooperating to retain said overlay in a fixed position with respect to said keyboard in all directions and in substantially flat relationship therewith.

4,439,758

COMBINATION DOOR LOCK AND ALARM

Richard E. Cantley, 1469 Shelley St., NE., North Canton, Ohio 44721

Filed Nov. 2, 1981, Ser. No. 317,457
Int. Cl.³ G08B *13/08*
U.S. Cl. 340—546 **15 Claims**



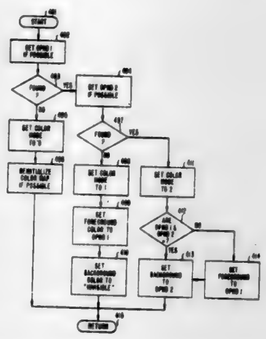
1. An improved security device adapted to be mounted on a door frame adjacent the inside of an inwardly swinging door, and in which a hole has been formed in said frame, said device including:
(a) a housing having a surface adapted to be positioned closely adjacent the inside surface of the door to limit inward movement of the door when the device is mounted on the door frame;
(b) a rigid rod mounted on the housing and projecting outwardly therefrom, said rod being adapted to be inserted into the door frame hole to mount the security device on the door frame; and
(c) an alarm mounted within the housing having an actuator projecting outwardly beyond said surface of the housing and engageable with the inside door surface when the security device is mounted on the door frame with said actuator being movable between alarm ON and OFF positions, whereupon the said housing surface will abutting engage the inside surface of the door to limit inward movement of the door and in which inward movement of the door will move the actuator to the alarm ON position to acuate said alarm.

4,439,759

TERMINAL INDEPENDENT COLOR MEMORY FOR A DIGITAL IMAGE DISPLAY SYSTEM

James R. Fleming, Indianapolis, Ind.; William A. Frezza, North Brunswick, and Gerald S. Soloway, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1981, Ser. No. 265,195
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—703 **10 Claims**



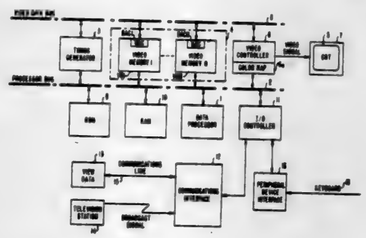
1. In a digital image display system:
a memory for storing color data values;
processing means responsive to a predetermined command and data sequence comprising at least one command, the processing means decoding the predetermined command and data sequence, the predetermined command and data sequence selecting one of a plurality of modes of access to color data values, the modes comprising
a first mode of access wherein an in-use foreground color is directly specified as a color data value;
a second mode of access wherein the in-use foreground color is specified as an index into the color memory; and
a third mode of access wherein the in-use foreground color and an in-use background color are specified as indexes into the color memory; and
display means responsive to the processing means, the display means displaying the colors associated with the color data values accessed by the selected mode.

4,439,760

METHOD AND APPARATUS FOR COMPILING THREE-DIMENSIONAL DIGITAL IMAGE INFORMATION

James R. Fleming, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1981, Ser. No. 265,247
Int. Cl.³ G09G *1/28*
U.S. Cl. 340—799 **18 Claims**



1. A digital image display system including a data processor (1), a video memory (4) for storing picture element data, and a

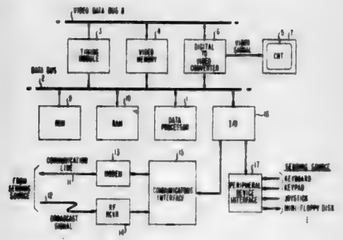
video controller (6) characterized in that the video memory comprises:
a plurality of memory modules (VM1-VMN), each memory module containing both picture element data for a video display (7) and associated priority value data indicative of a spatial depth relationship between picture element data in the memory module and picture element data in other of the plurality of memory modules; and
at least one bus arbitration circuit associated with the video memory, the bus arbitration circuit being responsive to the priority value data for controlling selection of the picture element data for displaying on the video display.

4,439,761

TERMINAL GENERATION OF DYNAMICALLY REDEFINABLE CHARACTER SETS

James R. Fleming, Indianapolis, Ind.; William A. Frezza, North Brunswick, and Gerald S. Soloway, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1981, Ser. No. 265,338
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—735 **17 Claims**



1. A communication terminal including a system for mapping characters onto a display, said system comprising
means for receiving from a sending source a generalized drawing instruction, in conjunction with a designated address, said generalized instruction specifying an image, characterized in that the system also includes
means for translating each received generalized drawing instruction into a drawing instruction uniquely associated with said terminal display, each said unique drawing instruction operative, when presented to said display, for presenting to a viewer said image, and
means for storing said translated unique drawing instruction at said designated address locations within a graphic repertory.

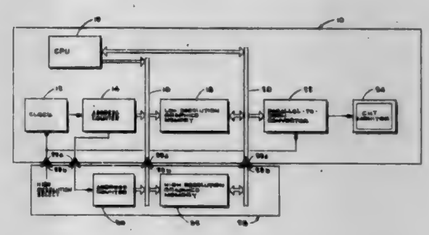
4,439,762

GRAPHICS MEMORY EXPANSION SYSTEM

James G. Van Vliet, La Habra, and Frank M. Aralis, Irvine, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 334,807
Int. Cl.³ G09G *1/02*
U.S. Cl. 340—750 **7 Claims**

1. A memory expansion system for a display apparatus wherein the display apparatus includes display means for displaying a plurality of picture elements arranged in a matrix, the system comprising:
a primary memory including
primary memory means responsive to a first block of address codes for storing data at each address of the first block of address codes, the data corresponding at least to a portion of the picture elements of the display means,
clock means for generating a clock signal having a first predetermined clock frequency, and
first counter means for counting the clock signal to generate sequential address codes within the first block of address codes;
a memory expansion accessory adapted to be connected to the primary memory including expansion memory means responsive to a second block of address codes sequentially related to the first block of address codes for storing data at each address of the second block of address codes, the data corresponding at least in part to a second portion of the picture elements of the display means;



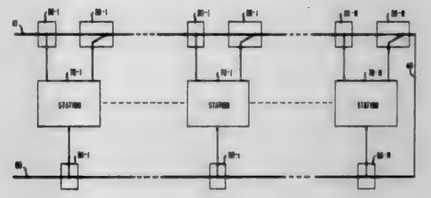
means for generating an expansion signal indicating that the memory expansion accessory is connected to the primary memory;
means responsive to the expansion signal for altering the clock signal frequency to a second predetermined frequency; and
second counter means including the first counter means and responsive to the altered clock signal for generating the first and second block of address codes.

4,439,763

COLLISION AVOIDING SYSTEM AND PROTOCOL FOR A MULTIPLE ACCESS DIGITAL COMMUNICATIONS SYSTEM

John O. Limb, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 3, 1981, Ser. No. 298,954
Int. Cl.³ H04Q *9/00*; H04J *6/02*
U.S. Cl. 340—825.5 **25 Claims**

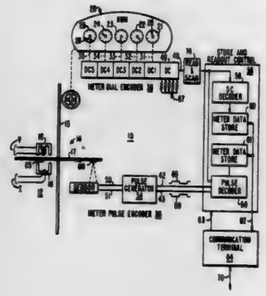


1. A method for controlling digital signals in a communications system, said system including a communications loop, a plurality of stations, at least two of said stations being respectively coupled to a first and a second signal path of said loop, said method including the steps of writing a first packet signal on said first path and reading a second packet signal from said second path and characterized in that said method further comprising the steps of
reading a third packet signal from said first path and
avoiding a collision on said communications loop in response to said third packet.

4,439,764
DUAL MODE METER READING APPARATUS

Theodore H. York, and Roger D. Moates, both of Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1981, Ser. No. 252,688
Int. Cl.³ G08C 19/00, 19/16, 19/20
U.S. Cl. 340—870.02 6 Claims

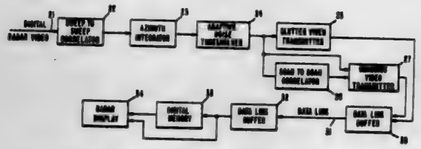


1. A dual mode meter reading apparatus, comprising:
first meter encoder means for producing first meter reading values representing totals of a first predetermined value of a progressively increasing quantity to be measured;
second meter encoder means for producing repetitive indications of a second predetermined value of said quantity to be measured, said indications being produced at a rate proportional to the rate of increase in said quantity to be measured;
first data storage means selectively responsive to said first encoder means for storing said meter reading values occurring at predetermined times; and
second data storage means receiving said first meter reading values occurring at a predetermined initial time and further being responsive to said second encoder means for incrementing said meter reading value occurring at said initial time by amounts proportional to said repetitive indications.

4,439,765
RADAR VIDEO PROCESSOR

Richard D. Wilmot, Buena Park, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Nov. 19, 1980, Ser. No. 208,356
Int. Cl.³ G01S 13/86
U.S. Cl. 343—6 A 5 Claims

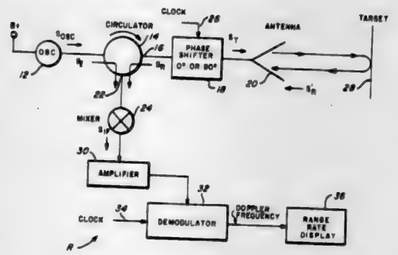


1. Apparatus for processing applied radar video signals derived from a radar receive to permit the use of a narrow frequency bandwidth data link to a radar display, said apparatus comprising:
video extraction means coupled to said radar receiver for removing random pulse interference and noise from the video signals;
first means coupled to said extraction means for transmitting radar clutter video signals, from preselected azimuth segments at selected time periods;
memory means coupled to said first means and to said radar display for storing said radar clutter video signals applied thereto and applying said stored signals to said radar display; and
second means coupled to said video extraction means and said radar display for comparing said radar video signals applied thereto to time-averaged, scan-to-scan radar video signals computed thereby, and for transmitting said radar video signals to said radar display when the difference between the radar video signals and said time-averaged radar video signals is greater than a preselected value.

4,439,766
DOPPLER RADAR HAVING PHASE MODULATION OF BOTH TRANSMITTED AND REFLECTED RETURN SIGNALS

Herbert S. Kobayashi, Webster; Paul W. Shores, and Patrick Rozas, both of Houston, all of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,687
Int. Cl.³ G01S 9/44
U.S. Cl. 343—9 R 10 Claims



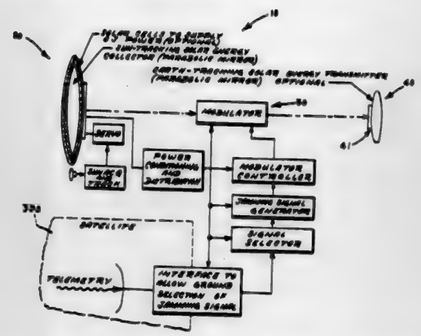
1. A doppler radar system for detecting the range rate of an object at close range comprising:
(a) Local oscillator means for generating a radar signal;
(b) a single antenna for transmitting and receiving radar signals;
(c) means for phase modulating both the transmitted and returned signals with the same modulator and wherein said modulation occurs prior to any signal mixing;
(d) means for mixing the returned signal with the local oscillator signal to form an intermediate frequency signal;
(e) means for amplifying the intermediate frequency signal; and
(f) means for demodulating the amplified intermediate frequency signal to form a doppler signal indicative of the range rate of the object.

4,439,767
LIGHTWEIGHT OPTICAL JAMMER SYSTEM

Richard M. Hefley; Douglas R. Tomren, and Jerold L. Jacoby, all of Long Beach, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 28, 1981, Ser. No. 237,357
Int. Cl.³ F41H 5/00; G03B 21/00; G01S 7/36
U.S. Cl. 343—18 E 1 Claim

1. A method of creating artificial glints from a satellite in earth orbit, comprising the steps of:
a. tracking the sun from said satellite;
b. collecting solar energy from said sun;
c. concentrating said collected solar energy;
d. imposing, on said concentrated solar energy, a modulation varying in amplitude and frequency;
e. tracking the earth from said satellite; and
f. directing the modulated solar energy to the earth;

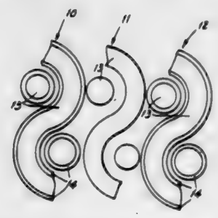


whereby sunlight reflected from said satellite, and seen by an observer on earth, is altered and disguised, thereby deceiving said observer.

4,439,768
METALLIZED SHEET FORM TEXTILE MICROWAVE SCREENING MATERIAL, AND THE METHOD OF USE

Harold Ebneth, Leverkusen, and Hans-Georg Fitzky, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 89,713, Oct. 30, 1979, abandoned. This application Jul. 7, 1981, Ser. No. 280,961
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847486
Int. Cl.³ H01Q 15/00
U.S. Cl. 343—18 B 14 Claims



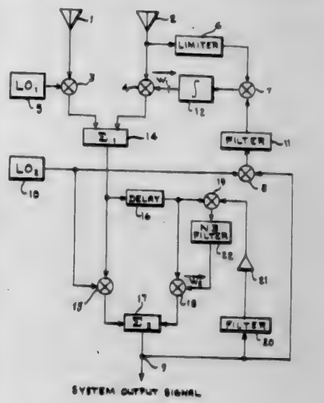
1. In a method for screening microwave and high frequency radiation in the range of from 0.01 to 1000 GHz the improvement comprising using as a screening material, at least two layers of metallised filamentary woven textiles composed of synthetic polymers and/or natural fibers with the metal applied after activation thereof with a total metal layer thickness of from 0.02 to 2.0 μm by currentless wet-chemical deposition and having a high surface conductivity and being capable of attenuating waves by 30 to 40 dB and providing insulation between the individual metallised layers.

4,439,769
COMBINED ADAPTIVE SIDELOBE CANCELLER AND FREQUENCY FILTER SYSTEM

Raymond J. Masak, E. Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 2, 1975, Ser. No. 618,291
Int. Cl.³ G01S 3/16, 3/28
U.S. Cl. 343—380 2 Claims

1. A combined adaptive sidelobe canceller and frequency filter system providing output signals free of broad band and narrow band interfering signals comprised of main antenna means, auxiliary antenna means, each receiving identical signals including interfering signals, a first mixer, a first local oscillator providing a first local oscillator signal of a first preselected frequency, said first mixer receiving said main antenna signals and said first local oscillator signal to provide a first mixer signal, second, third, and fourth mixers, a second local oscillator providing a second local oscillator signal of a second preselected frequency, said second mixer receiving said second local oscillator signal and said system output signals to provide a second mixer signal, first means to filter said second mixer signal at a first predetermined frequency for application to said third mixer, limiter means receiving signals from said auxiliary antenna means also for application to said third mixer to provide third mixer signals, means to integrate said third



mixer signals for application to said fourth mixer, said fourth mixer also receiving signals from said auxiliary antenna means to provide fourth mixer signals, a first summer receiving said first and fourth mixer signals to provide a first resultant signal, a fifth mixer receiving said first resultant signal and said second local oscillator signal and providing a fifth mixer signal, delay means receiving said first resultant signal to provide a preselected delay, a sixth mixer and seventh mixer, each receiving the delayed signal, said sixth mixer also receiving said system output signals to provide sixth mixer signals, means to narrow band filter said sixth mixer signals for application to said seventh mixer to provide seventh mixer signals, a second mixer receiving said fifth and seventh mixer signals to provide said system output signals therefrom.

4,439,770
CASCADED ADAPTIVE LOOPS

Bernard L. Lewis, Oxon Hill, and Frank F. Kretschmer, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

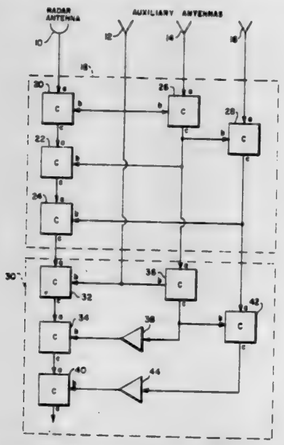
Filed Jun. 23, 1976, Ser. No. 696,620
Int. Cl.³ G01S 3/16, 3/28
U.S. Cl. 343—381 2 Claims

1. A sidelobe canceller system utilizing preprocessing to cancel multiple jamming interference signals, said system including a plurality of serially cascaded cancellation channels, said system comprising:
main-radar antenna means for receiving a radar signal;
a plurality of auxiliary antenna means for receiving signals from a jamming interference environment, one of said auxiliary antenna means constituting a first auxiliary antenna means;
a plurality of serially connected cancellation channels each said cancellation channel including:
means for receiving and preprocessing the outputs of said plurality of auxiliary antenna means to decorrelate the outputs of said plurality of auxiliary antenna means;

a plurality of serially connected main channel cancellers, the first main channel canceller of the first cancellation channel receiving the output of said first auxiliary antenna means and said main radar antenna and the first serial main channel canceller of the remaining cancellation channels receiving the outputs of said first auxiliary antenna means and the output of the last main channel canceller of the proceeding cancellation channel, the remainder of said main channel cancellers of each cancellation channel receiving decorrelated auxiliary antenna outputs from said means for receiving and processing; and

a terminal cancellation channel including:

terminal means for receiving and preprocessing the outputs of said plurality of auxiliary antenna means to



decorrelate the outputs of said plurality of auxiliary antenna means;

a plurality of serially connected, terminal main channel cancellers, the first serial terminal main channel canceller receiving the output of said first auxiliary antenna means and the output of the last main channel canceller of the last serial cancellation channel, the remainder of said terminal main channel cancellers receiving the auxiliary antenna outputs from said means for receiving and preprocessing; and

a plurality of AGC means, each of which receives one of said auxiliary antenna outputs from said terminal means for receiving and preprocessing and provides an output to one of said terminal main channel cancellers.

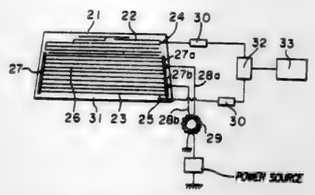
4,439,771

GLASS ANTENNA SYSTEM FOR AN AUTOMOBILE

Masaharu Kume, Tokyo; Kenichi Ishii, and Takayasu Hokusho, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,329
Claims priority, application Japan, May 15, 1981, 56-72913
Int. Cl.³ H01Q *1/32, 1/02*
U.S. Cl. 343—704 **7 Claims**

1. A glass antenna system for an automobile which comprises a main antenna disposed at an upper part of a glass plate for a rear window of the automobile, said main antenna being connected to a first antenna feeder line, a defogging electric heating element disposed below and separate from the main antenna and comprising a plurality of heating strips, a pair of bus bars for supplying electricity to the heating strips, a lead wire connected to a predetermined portion of the lowermost of said heating strips, a feeding point for connection to an antenna feeder line provided on the lead wire, and a second antenna feeder line connected to said feeding point whereby the defogging electric heating element constitutes a subsidiary antenna



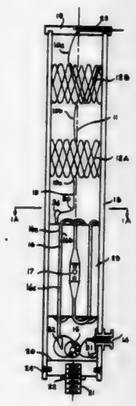
having a directivity different from the directivity of the main antenna.

4,439,772

INDUCTOR TYPE HALF WAVE ANTENNA

Gerald W. Van Kol, 10651 Santa Lucia Rd., Monta Vista, Calif. 95014

Filed May 18, 1981, Ser. No. 264,855
Int. Cl.³ H01Q *9/32*
U.S. Cl. 343—749 **12 Claims**



1. A physically shortened electrically half-wave antenna for a communication frequency F_1 comprising:

an electrical conductor extending along an axis and having first and second ends and a total length equal to a multiple of the half-wave length for the frequency F_1;

connector means connecting with the first end of said conductor; and

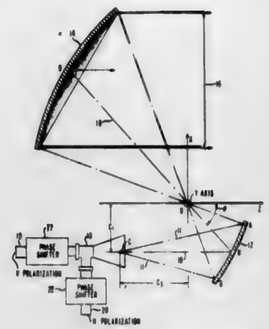
an inductor formed intermediate the ends of said conductor wherein a section of said conductor is convoluted to include a plurality of alternately repeating direction changes connected by substantially straight conductor segments and the convoluted conductor section is wrapped in a spiral configuration in a plane extending transverse to the axis such that substantially no straight segments of adjacent turns of said section lie parallel.

4,439,773

COMPACT SCANNING BEAM ANTENNA FEED ARRANGEMENT

Ta-Shing Chu, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 11, 1982, Ser. No. 338,352
Int. Cl.³ H01Q *19/12*
U.S. Cl. 343—778 **4 Claims**



1. An antenna feed arrangement comprising:

a plurality of feed elements (10) disposed to form a linear phased array and capable of launching or receiving a wavefront at an aperture of the linear phased array where each of the feed elements comprises a small feedhorn which in combination with the other feed elements is capable of forming an approximate line source for generating a cylindrical wedge-shaped beam at the aperture of the linear phased array;

phase shifting means (22) connected to the plurality of feed elements for selectively producing a predetermined linear phase taper along the aperture of the linear phased array; and

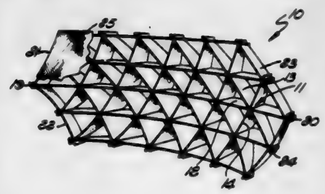
a reflector (12) comprising a predetermined shape for bidirectionally reflecting the cylindrical wedge-shaped beam from the linear phased array into a converging beam toward a focal plane of the antenna feed arrangement to form an approximate point source at said focal plane from which a spherical wavefront is generated.

4,439,774

ANTENNA REFLECTOR WITH TRIANGULATED CELLULAR BACK STRUCTURE

Robert E. Johnson, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,441
Int. Cl.³ H01Q *15/16*
U.S. Cl. 343—912 **7 Claims**



1. A structure for a radar reflector in which an accurately contoured reflection surface is provided, comprising:

a first set of elongated, parallel, spaced structural ribs each having a first edge adjacent to and shaped to said contoured reflection surface and each having a first dimension generally normal to said reflection surface, said first dimension being greater than a second dimension which is the thickness of said ribs in a direction substantially tangent to said contoured reflection surface;

second and third sets of elongated, parallel, spaced structural ribs intersecting the ribs of said first set generally diagonally and meshing therewith by means of interlocking slots in said ribs at the points of intersection, said second and third rib sets intersecting said first set ribs in diagonally opposite senses such that a plurality of generally triangular included spaces are generated;

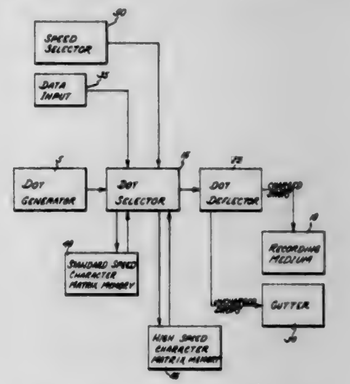
and a relatively thin conductive surface affixed at a plurality of points to said rib edges thereby forming said reflection surface, said ribs of said first, second and third sets being shaped along their first edges according to their respective positions and orientations within said structure to make said first edges congruent with said contoured reflection surface.

4,439,775

MULTIPLE SPEED PRINTER

Jerome L. Johnson, Lake Orion, Mich., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Mar. 1, 1982, Ser. No. 353,125
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **4 Claims**



1. In a dot matrix printer having a recording medium and a means for forming dots in matrix positions on said recording medium to form characters on said recording medium, said dot forming means forming said characters by producing adjacent and parallel scans of seqentially formed dots on said recording medium, each of said scans being comprised of a column of potential dot positions and each of said scans requiring a scan time T to complete, and also having a means for producing relative movement at a speed S between said dot forming means and said recording medium in a lateral direction with respect to said dot scans, a method of printing at variable speeds, comprising the steps of:

changing the speed S of said relative movement between said recording medium and said dot forming means by a factor of Z;

providing character matrix memories corresponding to each change of speed S, each of said matrix memories having preprogrammed dot matrix position information for said character with the corresponding characters in each memory containing a different number of dot locations in each corresponding scan; and

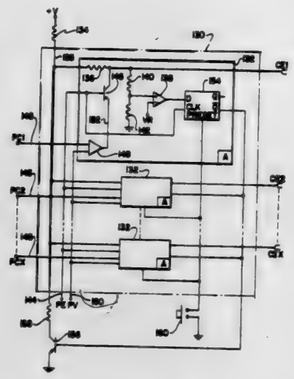
simultaneously changing the scan time T by a factor of 1/Z in response to said change in speed D said scan time reduced by changing the number of said dot locations in each scan by a factor of 1/Z.

4,439,776

INK JET CHARGE ELECTRODE PROTECTION CIRCUIT

Kenneth T. Zeiler, Richardson, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 24, 1982, Ser. No. 391,893
Int. Cl.³ G01D *18/00*
U.S. Cl. 346—75 7 Claims



1. In an ink jet printer comprising print head means for forming one or more streams of ink drops directed toward a web of material to be printed upon, one or more charge inducing means corresponding in number to said streams of ink drops and being individually associated with and positioned adjacent to respective ones of said streams of ink drops, circuit means for providing selected charging potentials to each of said charge inducing means, deflection means for providing an electric field through which said streams of drops pass to deflect charged drops into defined trajectories and permit uncharged drops to pass undeflected, and catcher means positioned for receiving drops deflected beyond a defined trajectory to prevent those drops from being deposited upon said web, the improvement comprising:

means for monitoring each of said charge inducing means;

means for sampling said monitoring means at periodic time intervals with said sampling occurring during normally stable periods of the operating cycle of said charge inducing means; and

means responsive to said sampling means for clamping said circuit means when said sampling means indicates that said charge inducing means is defective whereby the charging potential provided to each of said charge inducing means is limited to approximately ground potential.

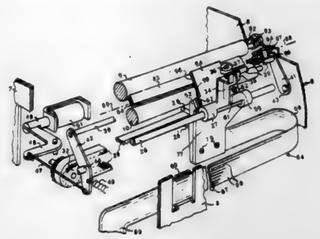
4,439,777

THERMAL SERIAL DOT PRINTER

Armando Aprato, Lugnacco, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 17, 1981, Ser. No. 332,102
Claims priority, application Italy, Dec. 23, 1980, 68970 A/80
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH 1 Claim

1. A thermal serial dot printer having a frame, a thermal printing head comprising a flat support carrying a column of thermal printing elements, an elongated flat platen for supporting the printing paper, a carriage for carrying said printing head, said carriage being slidably and rockably mounted on a shaft stationary on said frame and guided by a transverse bar, said shaft and said bar being parallel to said platen, said bar being spring urged toward said platen, means for reciprocally moving said carriage on said shaft and said bar along a printing line, a pair of rollers having the axis substantially parallel to said platen and located on opposite sides with respect to said printing line, a pair of bearings for mounting the two ends of each roller on said frame, and means for rotating said rollers at slightly different rates to keep the paper under tension on said platen, wherein the improvement includes an eccentric for



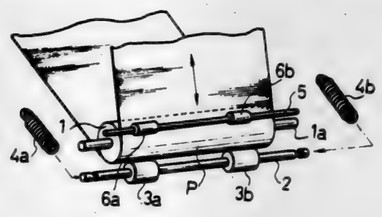
supporting at least one of the bearings of one of said rollers, and means for mounting said eccentric on said frame in an angularly adjustable position.

4,439,778

PEN TYPE PRINTING APPARATUS

Kyuichi Fujisawa, Tonan, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 341,095
Claims priority, application Japan, Jan. 21, 1981, 56-5857[U]
Int. Cl.³ G01D *15/24*
U.S. Cl. 346—136 12 Claims



1. A pen type apparatus comprising:

(a) a paper feed roller adapted to be rotatively driven by a motor;

(b) a pair of side plates rotatably holding respective end portions of said paper feed roller;

(c) upper and lower roller shafts of a small length extending inwardly from each respective side plate so as to extend in parallel with said paper feed roller, both upper roller shafts being coaxial and both lower roller shafts being coaxial;

(d) pressing rollers of small diameters being rotatably carried by respective roller shafts;

(e) spring means for biasing each of said pressing rollers into pressure contact with said paper feed roller with a substantially equal force;

(f) a printing paper clamped at both of its marginal edges between said paper feed roller and said pressing rollers; and

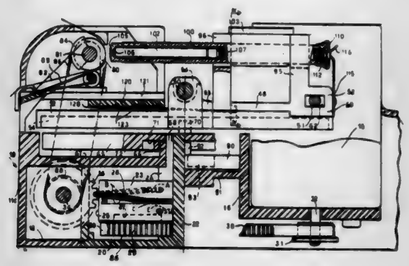
(g) a pen carried by a carriage movable transversely of said printing paper and adapted to make a printing operation by a combination of the shifting of said carriage, feed of said printing paper and projection of said pen.

4,439,779

SERIAL DOT PRINTER FOR OFFICE MACHINES

Michele Bovio, Brosso; Lino Sella, Banchette; Pierangelo Berruti, Chivasso; Walter Gillone, Ivrea, and Luciano Ceresa, Albiano, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

Division of Ser. No. 245,528, Mar. 19, 1981, abandoned. This application Dec. 7, 1981, Ser. No. 328,255
Claims priority, application Italy, Mar. 20, 1980, 67417 A/80; Feb. 2, 1981, 67134 A/81
Int. Cl.³ G01D *15/16*; B41J *3/02*
U.S. Cl. 346—140 R 13 Claims



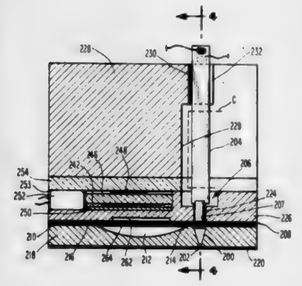
12. A serial dot printer having a conductive ink housed in an insulated container including a nozzle, a counter electrode spaced from the ink on the opposite side of said nozzle, an operating circuit including at least a capacitor, a switch connected to said capacitor and controlled by a printing signal to supply said ink with printing voltage pulses, and a high voltage transformer having a primary coil connected to said switch and a secondary coil connected to the ink and to the counter electrode, said printing signal causing said capacitor to supply said primary coil with high intensity current pulses, said transformer having a voltage ratio of about 1:200 to generate output voltage pulses of about 2000 Volts, whereby said voltage pulses cause an electric ion discharge through said nozzle to eject particles of ink on the paper in a printing position.

4,439,780

INK JET APPARATUS WITH IMPROVED TRANSDUCER SUPPORT

Thomas W. DeYoung, and Viacheslav B. Maltsev, both of Stormville, N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 4, 1982, Ser. No. 336,672
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 17 Claims



1. An ink jet comprising a chamber having an ink droplet ejection orifice, an elongated transducer coupled to said chamber for expanding and contracting along the axis of elongation in response to energization thereof so as to vary the volume of the chamber, the improvement comprising transducer support means including: p1 transducer mounting means coupled to the transducer remote from the chamber for substantially preventing longitudinal motion of the transducer along the axis of elongation at the mounting means;

transducer bearing means coupled to the extremity of the transducer adjacent the chamber for substantially preventing lateral motion of the transducer transverse to the axis of elongation at the extremity without substantially affecting longitudinal motion of the transducer along the axis of elongation at the bearing means;

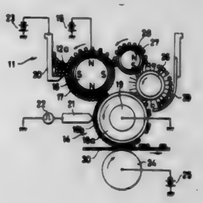
said mounting means and said bearing means being mutually spaced and said transducer being substantially unsupported along the length thereof between said mounting means and said bearing means.

4,439,781

IMAGE RECORDING METHOD AND APPARATUS

Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jul. 27, 1981, Ser. No. 286,879
Claims priority, application Japan, Jul. 28, 1980, 55-103266; Sep. 24, 1980, 55-132514
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—153.1 12 Claims



3. An image recording apparatus comprising a moving donor member, an applicator disposed close to or in contact with the surface of the donor member for forming a uniform and thin toner layer on the donor member, means for applying a voltage across the applicator and the donor member, a recording electrode disposed in contact with the surface of the donor member and adapted to have a pattern signal applied thereto for defining on the toner layer formed on the donor member a charge pattern in accordance with the pattern signal, and means including a transfer roller disposed in contact with the surface of the donor member for transferring toner having the charge pattern onto a record medium disposed between the donor member and the transfer roller, the surface of said donor member having a resistance sufficient to prevent the charge applied to said toner layer from leaking appreciably from said toner layer.

4,439,782

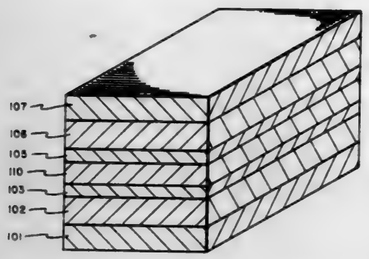
SEMICONDUCTOR DEVICE WITH HETEROJUNCTION OF $Al_xGa_{1-x}As$—AlAs—GaAs

Nick Holonyak, Jr., Urbana, Ill., assignor to University of Illinois Foundation, Champaign-Urbana, Ill.

Filed Nov. 21, 1980, Ser. No. 209,240
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 33 Claims

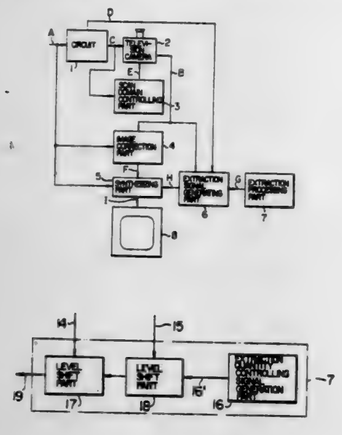
1. A semiconductor device, comprising a pair of aluminum gallium arsenide injecting/collecting layers having disposed

therebetween a layer of gallium arsenide; and a pair of barrier layers of aluminum arsenide respectively disposed at the inter-



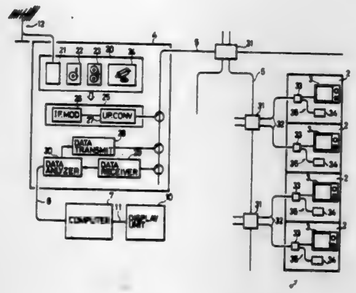
faces between the layer of gallium arsenide and the layers of aluminum gallium arsenide.

4,439,783
IMAGE SYNTHESIZING APPARATUS
Takuji Nishikawa, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 23, 1981, Ser. No. 323,979
Claims priority, application Japan, Dec. 3, 1980, 55-171217
Int. Cl.³ H04N 9/535, 5/22
U.S. Cl. 358—22 **2 Claims**



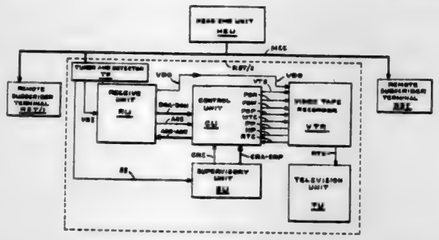
1. An image synthesizing apparatus comprising:
means for supplying a first image signal;
means for supplying a second image signal produced by a camera, said camera employing a changeable scan domain;
synthesizing means for synthesizing an image output signal by combining said first and second image signals together with controlled amplitude ratios, said amplitude ratios being controlled by an extraction signal
means for supplying a D.C. extraction quantity control voltage; and
means for producing said extraction signal by superimposing upon said extraction quantity control voltage a voltage whose amplitude changes in accordance with changes in the shape of a scan domain employed by said camera.

4,439,784
POWER CUTTING DEVICE FOR TERMINAL UNITS OF CATV SYSTEM
Hajime Furukawa, and Yoshitsugu Ohta, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 26, 1980, Ser. No. 191,206
Claims priority, application Japan, Sep. 26, 1979, 54-123549
Int. Cl.³ H04N 7/18
U.S. Cl. 358—86 **3 Claims**



1. In a CATV system in which a central facility is connected through cables to a plurality of terminal units so that various television programs are transmitted from the central facility through the cables to the terminal units, said television sets being supplied with power from a power supply, the improvement comprising a system for shutting off power to selected terminal units to insure that the selected terminal units can not be used, said system comprising:
a down-data transmitter provided in said central facility for periodically sending a down-data signal containing at least a power cutting instruction and an address number of said terminal unit, a down-data receiver provided in each of said terminal units for receiving said down-data signal and a power cutting device provided in each of said terminal units, said power cutting device being responsive to said data received by said down-data receiver to cut the power supply to said television sets when the address information contained in said down-data signal is coincident with its own address.

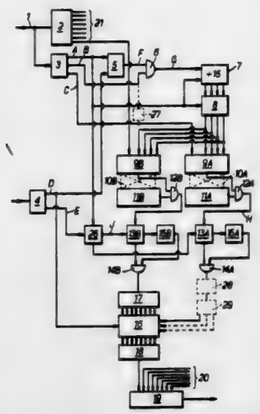
4,439,785
SUBSCRIBER TELEVISION SYSTEM
Eugene Leonard, Port Washington, N.Y., assignor to VVR Associates, Roslyn, N.Y.
Filed Nov. 17, 1980, Ser. No. 207,125
Int. Cl.³ H04N 7/16
U.S. Cl. 358—120 **10 Claims**



1. In a video recorder having a first transducer which moves with respect to a moving record medium to selectively record and play back video information, the record medium having a control region which is accessed for recording or playback by a second transducer wherein during playback signals recorded on the control region are utilized for synchronizing the relative

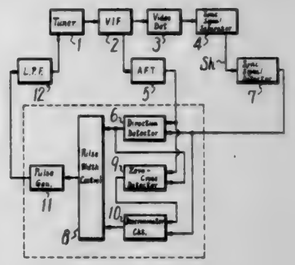
movement between the first transducer and the second transducer and the record medium, the improvement comprising storing means external of said record medium for storing first coded indicia, and generating means responsive to said storing means and connected to the second transducer for generating second coded indicia to be recorded in the control region simultaneously with the recording of video information by the first transducer, provided the second coded indicia has a predetermined relationship with the stored first coded indicia.

4,439,786
APPARATUS AND METHOD FOR PROCESSING TELEVISION PICTURE SIGNALS AND OTHER INFORMATION
Gyongyver Claydon, and Gordon D. Iles, both of Chelmsford, England, assignors to The Marconi Company Limited, Chelmsford, England
Continuation of Ser. No. 79,986, Sep. 28, 1979. This application Nov. 10, 1981, Ser. No. 320,058
Claims priority, application United Kingdom, Sep. 29, 1978, 38677/78
Int. Cl.³ H04N 5/04
U.S. Cl. 358—148 **18 Claims**



1. Information processing apparatus comprising
digital memory means;
writing means for writing information in digital form into said memory means at writing times depending on first timing signals;
reading means for reading the information out of said memory means at reading times depending on second timing signals which drift in and out of phase with respect to the first timing signals; and
delay means for delaying at least some of the writing times so that they do not coincide with the reading times, said delay means including
comparator means for producing an output signal in accordance with the phase difference between the first and second timing signals, and
a variable delay device for delaying the writing times by varying delay periods in accordance with the output signal from said comparator means.

4,439,787
AFT CIRCUIT
Takao Mogi, Tokyo; Kouji Morita, Kodaira, and Osamu Matsunaga, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 17, 1982, Ser. No. 349,651
Claims priority, application Japan, Feb. 19, 1981, 56-22534; Feb. 20, 1981, 56-24539
Int. Cl.³ H04N 5/50
U.S. Cl. 358—195.1 **17 Claims**



1. Automatic fine tuning circuit for controlling a heterodyne tuning stage of a television receiver in which a local oscillator generates a local oscillator signal at a tunable local oscillator frequency to be mixed with a broadcast-frequency video signal to which the receiver is to be tuned to produce a video IF signal constituted by a video information signal carried on a video IF carrier having a video IF frequency, comprising:
frequency discriminator means having an input receiving said video IF signal and an output providing an AFT signal representing any departure of the video IF frequency from a predetermined frequency and which is present only when said video IF frequency is within an AFT capture range defined by predetermined frequency limits;
detecting means for detecting the existence of a synchronizing signal occurring in said video information signal and providing a detecting signal indicative of the presence of such synchronizing signal; and
control means for selectively generating control signals supplied to said local oscillator in response to said AFT signal and said detecting signal; said control means generating a first control signal to control the local oscillator frequency in accordance with said AFT signal whenever said AFT signal is present, said control means generating a second control signal operative to increase the local oscillator frequency when said AFT signal is not present and said detecting signal is detected to be present and said control means generating a third control signal operative to decrease the local oscillator frequency when said AFT signal is not present and said detecting signal is not present.

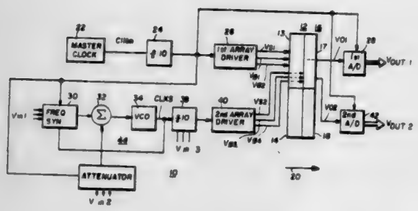
4,439,788
VIDEO IMAGING APPARATUS HAVING A PLIANT CLOCK
Wayne W. Frame, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.
Filed Jan. 27, 1982, Ser. No. 343,385
Int. Cl.³ H04N 3/14
U.S. Cl. 358—213 **22 Claims**

1. An improved multisensor video imaging apparatus of the type using plural linear arrays of elemental electrical transducers nominally fixed with respect to one another with each array's longitudinal axis functionally oriented in a "cross track" direction substantially perpendicular to a "track axis" along which the arrays are simultaneously moved relative to a scanned area so as to successively scan, in nominal synchro-

nism, corresponding common incremental portions of that area, said improvement comprising:

first and second linear arrays of elemental electrical transducers, each elemental transducer being capable of generating an electrical signal representative of its incident illumination and each array being capable of sampling and reading out a series of respectively corresponding electrical signals in response to applied clock signals;

master clock means for providing master clock signals and first arrayed driver means connected thereto and to said first array to control the sampling and reading of electrical signals output from said first array of electrical transducers; and



a controlled oscillator circuit means for providing pliant clock signals and second array driver means connected thereto and to said second array to control the sampling and reading of electrical signals output from said second array of electrical transducers;

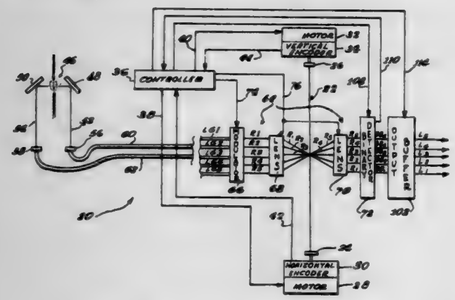
said controlled oscillator circuit means being connected to said master clock means for nominal control by said master clock signal but also having at least one supplemental control signal input for controllably varying the timing of said pliant clock signals with respect to said master clock signals so as to controllably maintain desired synchronism with respect to said cross-track axis between the sampling and reading of electrical signals output from said first and second arrays of electrical transducers.

4,439,789

BINARY SCAN SYSTEM

Lysle D. Cahill, Dayton, Ohio, assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Apr. 11, 1980, Ser. No. 139,464
Int. Cl.³ H04N *1/00, 1/028, 1/40*
U.S. Cl. 358—256 **52 Claims**



1. A method of reproducing a continuous tone original image on an electrophotographic member with an array of discharged elements of such configuration and placement to enable the member to be utilized for producing a graphic image upon a receptor by printing, the original image having a relative density and being comprised of a plurality of individual information forming structures having a size and a configuration, said structures being irregularly spaced apart in said image, the method comprising:

A. moving a sensor and the original image relative to one another in a predetermined pattern with the sensor sensing one by one the presence and absence of individual ones of the information forming structures of the original image in sequential incremental areas thereof;

B. producing from the sensor a series of binary data bits with each bit binarily representing a sensed density value of individual ones of said information forming structure in one incremental area of the original image and the series of bits being representative of the entire original image;

C. the sensor including at least one aperture through which the density values of individual ones of the structures in incremental areas of the original image are sensed and further including at least one threshold level value signal of the sensed density values such that a sensed density value above the threshold value signal produces a bit of one sense and a sensed density value below the threshold value signal produces a bit of the other sense;

D. adjusting at least one of the aperture and the threshold level value of the sensor to produce a statistically valid count of the series of binary data bits corresponding to the relative density of the original image; and

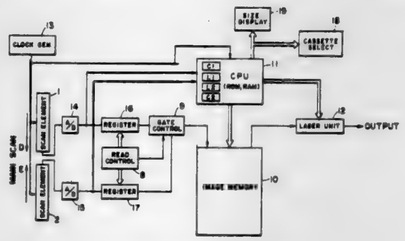
E. imaging the electrophotographic member essentially to reproduce the proper location of and the presence and absence of individual ones of the information forming structures of the continuous tone original image on the member by forming on a charged suface of the member a binary element for each binary data bit in the series of binary data bits, each element being formed in an incremental area of the member surface corresponding to the sensed incremental area from which the binary data bit producing that element was produced, and each binary element being formed by leaving charged an incremental area of the charged member in response to a bit of the one sense and discharging an incremental area of the charged member in response to a bit of the other sense.

4,439,790

IMAGE FORMING APPARATUS

Tadashi Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1982, Ser. No. 339,282
Claims priority, application Japan, Jan. 23, 1981, 56-8614; Feb. 16, 1981, 56-21236
Int. Cl.³ H04N *1/32*
U.S. Cl. 358—256 **18 Claims**



1. An image forming apparatus, comprising:

means for reading an original and providing corresponding image information;

a recording unit for recording an image on a recording sheet according to the image information provided from said reading means;

identifying means for identifying the size of the original according to the output signals from said reading means; and

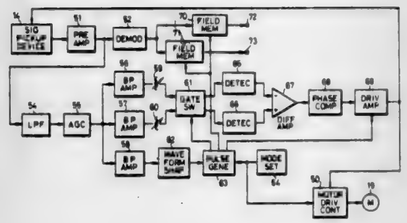
selecting means for selecting a recording sheet size in said recording unit according to the identified size of the original.

4,439,791

SLOW-MOTION REPRODUCING SYSTEM IN AN APPARATUS FOR REPRODUCING ROTARY RECORDING MEDIUM WITH MODE DEPENDENT SKIP PULSE GENERATOR AND FIELD MEMORIES

Atsumi Hirata, Fujisawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 23, 1981, Ser. No. 246,722
Claims priority, application Japan, Mar. 21, 1980, 55-35855
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—342 **6 Claims**



1. A slow-motion reproducing system in an apparatus for reproducing video signals from a rotary recording medium on which said signals of a plurality of fields each are recorded along a spiral track for every interval corresponding to one revolution of the medium, said system comprising:

a reproducing element for tracing along the track of the rotary recording medium and reproducing the signals recorded therealong;

means operating in response to skip pulses applied thereto to cause the reproducing element to shift and skip to an adjacent track turn;

means for generating skip pulses corresponding to modes in which slow-motion reproduction differing from normal reproduction is carried out every period of revolution of the rotary recording medium, said skip pulses being thus generating with timing corresponding to the vertical blanking period positions of the recorded video signals, and for supplying the skip pulses to the skip means;

means for demodulating the signal reproduced by the reproducing element;

first and second field memories respectively supplied with demodulated video signals from the demodulating means; and

operation control means for carrying out operation control of the operations of recording of the demodulated video signals respectively in the first and second field memories, reproducting of the video signal thus recorded, and erasing of the recorded video signals,

the skip pulse supplying means operating at the time of 1/m-speed (where m is a natural number greater than 2), forward-direction, slow-motion reproduction to supply skip pulses for causing the reproducing element to skip at one specific position among the plurality of vertical blanking period positions per track turn so as to cause the reproducing element to trace the same track turn every (n−1) revolutions of the rotary recording medium and thereafter ceasing to generate the skip pulses in the succeeding one revolution, and operating at the time of 1/n-speed, backward-direction, slow-motion reproduction to respectively supply skip pulses for causing the reproducing element to skip continually in the position of the vertical blanking period at said specific position and skip pulses for causing the reproducing element to skip every specific number of revolutions of the rotary recording medium at the position of the vertical blanking period at a specific position other than said specific position per track turn,

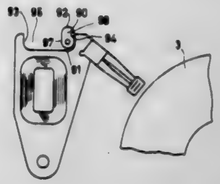
the operation controlling means operating to appropriately select any mode of operation control from among: a first mode in which one of the two field memories operates within the period of one revolution of the rotary recording medium to carry out, in sequence, erasing, recording of the reproduced video signal, and reproducing of the recorded signal of that memory, while the other field memory operates to carry out, in sequence, reproducing of the memory recorded signal, erasing, and recording of the reproduced video signal; a second mode in which there is a changeover from the reproduced output of said one of the field memories to the reproduced output of the other field memory within the period of one revolution of the rotary recording medium; a third mode in which said one of the field memories continues to reproduce the memory recorded signal thereof in the period of one revolution of the rotary recording meidum; and a fourth mode in which said other field memory continues to reproduce the memorized signal in the period of one revolution of the rotary recording medium, and operating to cause the recorded video signals corresponding to one field to be alternately and repeatedly produced as output from the first and second field memories at every field over said plurality of fields.

4,439,792

SWING ARM ARRANGEMENT FOR A MAGNETIC DISC STORAGE APPARATUS

Oelke van de Bult, The Hague, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,300
Claims priority, application Netherlands, May 22, 1981, 8102524
Int. Cl.³ G11B *5/55*
U.S. Cl. 360—106 **8 Claims**



1. A swing arm arrangement for moving and positioning a magnetic head over a surface of a rigid rotatable magnetic disc of a magnetic disc store for digital data, the arrangement comprising:

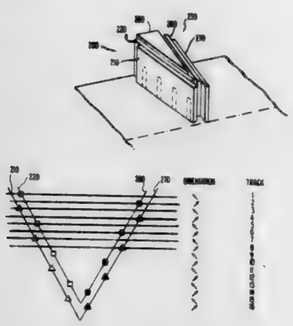
a stationary frame;

at least one swing arm pivotally mounted to the frame about an axis for movement between a first position and a second position, the arm including an end remote from the pivotal axis and also including a pair of opposed walls connected to the end, the walls having mutually facing sides forming a recess therebetween;

a magnetic head connected to the arm near the end;

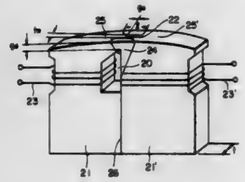
means for stopping the pivotal movement of the arm at the first and at the second positions, the stop means including a stop connected to the frame and disposed in the recess, the stop having a first pair of opposite sides disposed on a first axis lying in a plane perpendicular to the pivotal axis, the stop sides cooperating with respective wall sides so that the pivotal movement of the arm is stopped at the first and at the second positions.

4,439,793
THIN FILM HEAD ARRAY
Charles Nater, Saratoga, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 22, 1981, Ser. No. 313,841
Int. Cl.³ G11B 5/28, 5/48
U.S. Cl. 360—121 15 Claims



1. A magnetic recording and reproducing thin film head array, comprising:
a plurality of recording and reproducing thin film heads, said heads being arranged into first and second assemblies with each assembly including at least one stack with each stack including a plurality of said heads arranged in a close packed manner;
each stack of said first assembly having its heads aligned so as to be parallel to a first straight line, each stack of said second assembly having its heads aligned so as to be parallel to a second straight line, said first and second straight lines intersecting to form an angle between 3° and 15°;
each stack of said first assembly being positioned relative to each stack of said second assembly such that gaps of heads of said first assembly interleaf with respect to gaps of heads of said second assembly relative to a widthwise direction of a recording medium to form a plurality of adjacent tracks in said recording medium.

4,439,794
MAGNETIC HEAD
Yoshihiro Shiroishi, Higashimurayama; Hideo Fujiwara, Tachikawa; Takeshi Kimura, Kokubunji; Noriyuki Kumasaka, Ohme; Nobuo Kobayashi, Kokubunji; Takeo Yamashita, Hachioji; Teizo Tamura, Katsuta; Hideo Zama, Yokohama; Mitsuhiro Kudo, Tokyo, and Tsutomu Iimura, Tachikawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Metals, Ltd., both of Tokyo, Japan
Filed May 18, 1981, Ser. No. 264,706
Claims priority, application Japan, May 16, 1980, 55/63938
Int. Cl.³ G11B 5/251, 5/14
U.S. Cl. 360—127 11 Claims



1. A magnetic head characterized in that at least one of two magnetic blocks of high permeability facing each other via a gap consists of single crystal Mn-Zn ferrite containing up to 7% by weight of SnO_2 that is occluded therein without being allowed to separate thereby reducing the modulation noise of said magnetic head; the {110} plane of at least one of said single crystal Mn-Zn ferrite is made substantially parallel to the plane forming the principal magnetic circuit; an angle θ of the direction of <100> existing inside said {110} plane with respect to the gap-forming plane is 5° to 40° or 85° to 120°; and glass having a contraction rate at the time when the temperature is reduced from the glass setting temperature down to room temperature is lower than the contraction rate of said ferrite is fuse-attached to the surfaces of said magnetic blocks of high permeability at least near the gap.

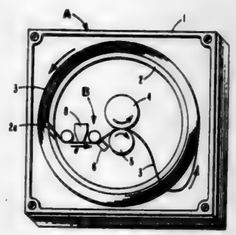
4,439,795
MAGNETIC RECORDING MEDIUM
Tatsuji Kitamoto, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 9, 1981, Ser. No. 329,098
Claims priority, application Japan, Dec. 11, 1980, 55-174983
Int. Cl.³ G11B 5/74; H01F 1/02; B05D 5/12; B32B 7/02
U.S. Cl. 360—131 3 Claims

1. A magnetic recording medium having formed on a non-magnetic base at least two magnetic layers, each comprising ferromagnetic particles dispersed in a binder, wherein the ferromagnetic particles in the outermost magnetic layer have an average length of 0.3μ or less and a length to width ratio greater than 1/1 but not greater than 3/1, and the ferromagnetic particles in an underlying magnetic layer have a length to width ratio of more than 3/1.

4,439,796
MAGNETIC RECORDING MEDIUM
Tatsuji Kitamoto, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 9, 1981, Ser. No. 329,099
Claims priority, application Japan, Dec. 11, 1980, 55-174981
Int. Cl.³ G11B 5/74; H01F 1/02; B05D 5/12; B32B 7/02
U.S. Cl. 360—131 5 Claims

1. A magnetic recording medium having formed on a non-magnetic base at least two magnetic layers, each comprising ferromagnetic particles dispersed in a binder, wherein the ferromagnetic particles in the outermost magnetic layer are substantially cubic particles having a side length of 0.3μ or less, and the ferromagnetic particles in an underlying magnetic layer are acicular particles.

4,439,797
RECORDING TAPE FOR USE IN A RECORDING AND REPRODUCING APPARATUS
Tomohisa Yoshimaru; Mitsuo Yamashita, both of Yokohamashi, and Junichi Daigo, Nagareyamashi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 17, 1980, Ser. No. 188,099
Claims priority, application Japan, Sep. 29, 1979, 54-125478
Int. Cl.³ G11B 5/78, 23/14
U.S. Cl. 360—134 3 Claims



1. In a recording and reproducing system having a recording/playback head, a recording tape having a plurality of parallel recording tracks extending lengthwise of said recording tape including a plurality of information tracks and at least one index track, said information tracks storing two-dimensional image information obtained by two-dimensional optical scanning, said index track storing index information including index codes and recording addresses which indicate the position of two-dimensional image information on said information tracks, said index information of the same content being stored a plurality of times on said index track, said index track extending lengthwise near the center of said recording tape and said recording/playback head moving transverse to the direction of movement of said recording tape to select one of said recording tracks.

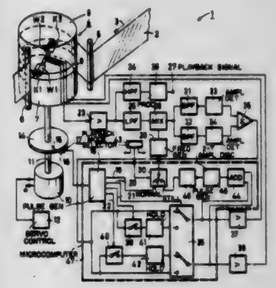
4,439,798
REFERENCING DEVICE FOR DIGITAL DATA RECORDERS
Frank Chvojcsek, Chicago, Ill., assignor to Stenograph Corporation, Skokie, Ill.
Filed Sep. 14, 1981, Ser. No. 302,117
Int. Cl.³ G11B 5/00, 27/00; B41J 3/26
U.S. Cl. 360—4 15 Claims



1. In combination with a shorthand machine for generating electrical output signals corresponding to the keys depressed, and a recorder associated with said shorthand machine for making a data record of the signals generated thereby on a recording medium; an improved referencing means for identifying for future reference a portion of a data record as it is being recorded, said improvement comprising:
manually operable means and activating means, said activating means being electrically and mechanically separate from said manually operable means, said manually operable means being capable of selectively activating said activating means to generate a reference signal separate and independent from the output signal generated by said shorthand machine and for inputting said reference signal into said data recorder for making a record of said reference signal on said recording medium,
whereby a portion of the data record may be identified for future reference by said reference signal.

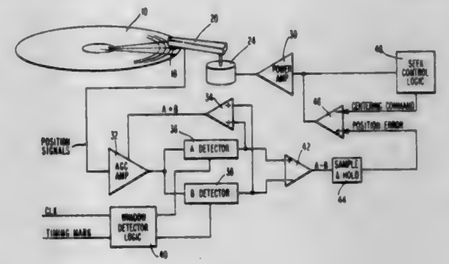
4,439,799
APPARATUS FOR REPRODUCING INFORMATION RECORDED IN A PLURALITY OF ADJACENT TRACKS
Peter Haubrich; Abraham Hoogendoorn, and Uwe Jahnke, all of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 9, 1981, Ser. No. 328,873
Claims priority, application Austria, Mar. 25, 1981, 1398/81
Int. Cl.³ G11B 5/58, 21/04
U.S. Cl. 360—77 5 Claims

1. An apparatus for reproducing information signals recorded on a record carrier in the form of a tape in inclined parallel tracks arranged adjacent each other, wherein together with said information signals tracking signals are recorded in said tracks, said tracking signals having a frequency which changes from track to track in a predetermined cyclic sequence, which apparatus comprises at least one rotatable playback head which, for following the tracks, is arranged on an electro-mechanical transducer, which head when scanning each track also reproduces tracking signals produced by cross talk from the two tracks adjacent the track being scanned, a position detector for detecting the rotary position of the head relative to the record carrier, which position detector supplies a position pulse and is connected to a pulse generator for generating control pulses associated with the position pulses, which control pulses are applied to a signal generator whose frequency is variable, which signal generator, depending on said control pulses, consecutively generators track selection signals whose frequency changes in the same cyclic sequence as the recorded tracking signals, a signal processing circuit which derives an actuating signal from said track selection signals and the reproduced crosstalk tracking signals, by means



of which actuating signal the transducer carrying the playback head is adjustable between two extreme positions substantially transversely of the tracks, characterized in that there is provided at least one amplitude discriminator, means for supplying to said amplitude discriminator a signal which is proportional to the actuating signal for the transducer, said discriminator having two threshold values corresponding to the two amplitudes of the actuating signal which deflect the transducer to its two extreme positions, which discriminator supplies a switching signal when a threshold value is exceeded, which switching signal controls a further pulse generator which, depending on said switching signal, supplies pulses to said signal generator causing an additional change-over in the track selection signal generation.

4,439,800
SERVO CONTROL OF SEEK OPERATION IN MAGNETIC DISK DRIVE
Steven H. Powell, Ogden, Utah, assignor to Iomega Corporation, Ogden, Utah
Filed Apr. 24, 1981, Ser. No. 257,484
Int. Cl.³ G11B 21/08
U.S. Cl. 360—78 15 Claims



9. Control apparatus for controlling the motion of a movable

member in response to a motion command, said control apparatus comprising means for selecting one of a plurality of operational modes in response to determination of the amount of distance to be traveled, said operational modes comprising:

a first operational mode, selected when said motion is relatively short, in which the entire series of commands required is selected from memory means and supplied to controller means;

a second operational mode, selected when said motion is of intermediate length, in which portions of stored acceleration and deceleration command sequences are selected from memory means and supplied to said controller means, in which additional steady velocity commands may be inserted to insure the correct total distance is traveled; and

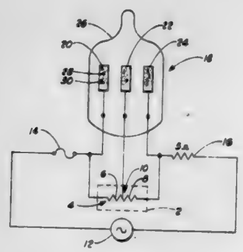
a third operational mode selected when said motion commanded is relatively long, in which entire acceleration and deceleration command sequences are selected from memory means and supplied to said controller means and additional steady velocity commands are inserted in the sequences so that the proper total distance is traveled.

4,439,801

ELECTRICAL LOAD IMBALANCE DETECTION AND PROTECTION APPARATUS

John Fajt, Wynnewood, Okla., assignor to Xenell Corporation, Wynnewood, Okla.

Filed Apr. 12, 1982, Ser. No. 367,549
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—55 **22 Claims**



1. An apparatus for providing a short-circuit in electrically parallel connection with a load, the load having a first impedance segment defined between a first end of the load and an intermediate point of the load and further having a second impedance segment defined between a second end of the load and the intermediate point, when the load is connected to an energy source and has a sufficient impedance change in either the first impedance segment or the second impedance segment, said apparatus comprising:

a first electrode having an end electrically connectible to the first end of the load;

a second electrode, spaced from said first electrode, having an end electrically connectible to the intermediate point of the load so that said first and second electrodes have a first voltage established therebetween when a current flows through the first impedance segment and said first and second electrodes are connected to the first impedance segment, said first voltage being responsive to the impedance of the first impedance segment;

a third electrode, spaced from said first and second electrodes, having an end electrically connectible to the second end of the load so that said second and third electrodes have a second voltage established therebetween when a current flows through the second impedance segment and said second and third electrodes are connected to the second impedance segment, said second voltage being responsive to the impedance of the second impedance segment;

a housing having a hollow interior in which said first, second and third electrodes are disposed; and

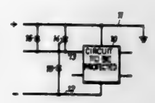
wherein a current flows between said first and third electrodes when either said first voltage or said second voltage exceeds a predetermined value.

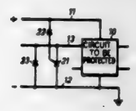
4,439,802

OVERVOLTAGE GUARD FOR ELECTRONIC CIRCUITS

Jan H. Johansson, Bålsta, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 14, 1981, Ser. No. 292,900
Claims priority, application Sweden, Sep. 26, 1980, 8006773
Int. Cl.³ H02H *7/20, 3/20*
U.S. Cl. 361—56 **6 Claims**





1. In a circuit which is supplied by a current source having positive and negative terminals wherein one of said terminals is grounded and the other of said terminals is ungrounded, and having a signal point, overvoltage prevention apparatus for preventing the signal point in response to a transient voltage from attaining a voltage having an absolute value which significantly exceeds the absolute value of the voltage of the ungrounded terminal wih respect to ground comprising a triggerable electronic current switch means for interconnecting the signal point and ground and having a trigger input, and unidirectional conducting means for connecting the trigger input of said triggerable electronic current switch means and the ungrounded terminal of said current source, said unidirectional conducting means being biased to conduct when the voltage of said signal point begins to exceed in the same polarity the voltage of the ungrounded terminal of said current source whereby said triggerable electronic current switch means is triggered to conduction thereby limiting the amount of the voltage by which said signal point exceeds the voltage of the ungrounded terminal.

4,439,803

POWER INTERRUPTION DEVICE

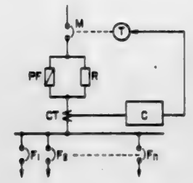
Sadaaki Baba, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,622
Claims priority, application Japan, Dec. 5, 1980, 55-174562[U]
Int. Cl.³ H02H *7/26*
U.S. Cl. 361—63 **3 Claims**

1. A power interrupting device of the type having a main interrupter connected in series between a power source and at least one branch interrupter, and a current limiting circuit connected in series between said main interrupter and at least one branch interrupter for limiting the maximum value of current flowing through said main interupter to substantially a predetermined current value, each of said main and branch interrupters having respective maximum time limits for which they will conduct a particular current before interrupting said current, the time limit of said main interrupter being greater than that of said at least one branch interrupter, and said current limiting circuit having a maximum allowable time for which it can conduct a particular current, the improvement comprising:

operating means for operating said main interrupter in response to a control signal to cause said main interrupter to interrupt current flowing therethrough; and

sensing means for sensing the current flowing through said main interrupter, said sensing means comprising a current transformer coupled in series between said current limiting circuit and said at least one branch interrupter and a



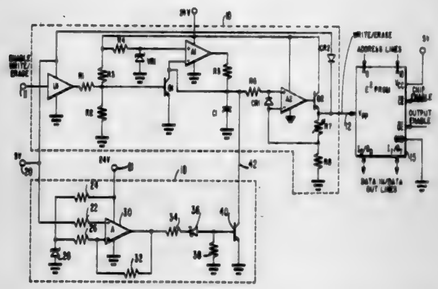
current sensing relay for sensing the current through said current transformer, and said sensing means providing said control signal after a maximum time limit of sensed current at said particular current level, the time limit of said sensing means being between that of said main interrupter and at least one branch interrupter for any current value up to said predetermined current value and less than said maximum allowable time limit of said current limiting circuit for any current up to said predetermined current value.

4,439,804

PROTECTION CIRCUIT FOR MEMORY PROGRAMMING SYSTEM

Michael H. Riddle, Cherry Hill, and John R. Orr, Pennsauken, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,810
Int. Cl.³ H02H *7/09*
U.S. Cl. 361—92 **7 Claims**



1. A protection circuit for an apparatus for generating a high level, controlled risetime, write-erase signal to an electrically erasable programmable read-only memory (E^2PROM), said signal generating apparatus including means for coupling first and second power supplies thereto, said first and second supplies providing, when operational, first and second potentials, respectively, where said second potential is substantially greater than said first potential, said signal generating apparatus responsive to one voltage level at the input thereof for generating said high level signal and responsive to a different voltage level for providing no output therefrom, said protection circuit inhibiting the generation of said high level signal whenever the potential provided from said first supply drops below the level of a third potential, less than said first potential, while said second supply is operational, said protection circuit comprising:

means coupled to said second supply for providing said third potential;

means coupled between said second supply and reference ground for comparing the voltage level of said first supply with said third potential, said comparing means generating a control signal when the voltage level of said first supply is less than said third potential; and

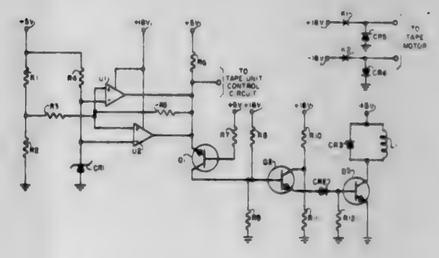
means responsive to said control signal and coupled to said signal generating apparatus for inhibiting the generation of said high level signal.

4,439,805

LOW VOLTAGE PROTECTION CIRCUIT

George K. Tarleton, Itasca, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed May 21, 1982, Ser. No. 380,484
Int. Cl.³ H02H *3/24*
U.S. Cl. 361—92 **12 Claims**



1. A low voltage protection circuit for use with a magnetic tape unit, including a control circuit, a tape motor and first and second power sources, said protection circuit comprising:

voltage monitoring means connected to said first power source, operated in response to said first power source having a voltage above a pre-determined level to provide a voltage detected signal;

said voltage monitoring means is further operated in response to said first power source having a voltage above said pre-determined level to enable said control circuit;

said voltage monitoring means further operated in response to said first power source having a voltage below said pre-determined level to provide a voltage failure signal;

an isolation transistor having base, collector and emitter leads, said base lead connected to said first power source, and said emitter lead connected to said voltage monitoring means, said isolation transistor operated in response to said voltage detected signal to provide a relay driving circuit enable signal, and further operated in response to said voltage failure signal to provide a relay driving circuit disable signal;

a relay driving circuit connected to said collector lead;

a relay connected to said relay driving circuit;

said relay driving circuit operated in response to said relay driving circuit enable signal to provide a relay enable signal;

said relay operated in response to said relay enable signal to connect said second power source to said tape motor;

said relay driving circuit further operated in response to said relay driving circuit disable signal to provide a relay disable signal;

said relay further operated in response to said relay disable signal to disconnect said second power source from said tape motor; and

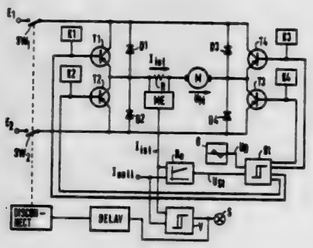
said voltage monitoring means is further operated in response to said first power source having a voltage below said pre-determined level to disable said control circuit.

4,439,806

SHORT-CIRCUIT PROTECTION DEVICE FOR A DC CONTROL ELEMENT

Antonio Brajder, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 354,929
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109482
Int. Cl.³ H02H 3/08, 7/20, 7/10
U.S. Cl. 361—98 3 Claims



1. A circuit for protecting a DC control element from short-circuits, the DC control element including at least one transistor having an input for timing pulses, comprising:

a. a controllor having as inputs a desired current and the actual load current of the DC control element and providing an output which is a control voltage proportional to the difference therebetween;

b. a comparison stage having as inputs a triangular voltage having a predetermined maximum value and said control voltage, said control voltage being permitted to assume values greater than said predetermined maximum value, said comparison stage providing timing outputs existing for a duration corresponding to the duration over which said triangular voltage exceeds said control voltage, said timing pulses being provided to the inputs of each transistor in said DC control element; and

c. an overload protection device for each transistor, each overload protection device coupled to the respective transistor and having timing pulses from said comparison stage as an input, each overload protection device responsive to an overcurrent in the transistor to block the transistor and keep it blocked until the start of a new timing pulse, whereby in the case of an overload, said control voltage will exceed said maximum value of said triangular voltage thereby assuring that no pulses are generated until the overload condition is removed thereby avoiding repeated switching on and off of said overload protection devices.

4,439,807

SECONDARY ARRESTER

Roderick Reitz, Berkshire, Mass., assignor to General Electric Company

Filed Aug. 18, 1982, Ser. No. 409,238
Int. Cl.³ H02H 3/22
U.S. Cl. 361—127 7 Claims

1. A voltage surge arrester comprising, in combination:

A. a triangular shaped, insulative housing having three integrally interconnected sidewalls defining a compartment;

B. means for establishing an edgewise varistor mounting position in said compartment along each said sidewall;

C. a metal oxide varistor disposed in at least one of said mounting positions, said varistor having a disk-shaped body with electrodes applied to opposed faces thereof;

D. an electrically conductive spring clip centrally located within said compartment, said spring clip having a body portion with three angularly spaced contact fingers outstanding therefrom, said contact fingers being resiliently biased toward said mounting positions for electrically contacting engagement with the inwardly faced electrodes of any varistors disposed therein;

E. separate contact strips located between said planar sidewalls and those of said mounting positions occupied by a



varistor for electrically contacting engagement with the outwardly faced electrodes thereof; and

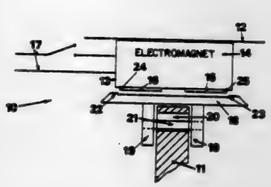
F. separate leads admitted into said housing and electrically connected to said spring clip and to each of said contact strips.

4,439,808

ELECTROMAGNETIC LOCK

Peter J. Gilham, Frittenden, England, assignor to BSG (Security) Limited, London, England

Filed Jul. 28, 1981, Ser. No. 287,657
Claims priority, application United Kingdom, Jul. 28, 1980, 8024626; Jul. 28, 1980, 8024627
Int. Cl.³ H01H 47/00
U.S. Cl. 361—144 9 Claims



1. An electromagnetic lock for locking together two relatively movable members in a predetermined relative position, comprising:

electromagnet means,

a magnetissble member,

means to energise the electromagnet means to cause an electromagnetic field,

magnetic flux cancelling means for cancelling the magnetic flux in the electromagnet means when the electromagnet means is switched off, said flux cancelling means including a circuit including charge storage means connected so that, when the electromagnet is switched off, the electromagnet discharges through itself and then charge from the charge storage means is applied to the electromagnet means to neutralise the residual magnetic flux, and

mounting means for mounting the electromagnet means and magnetisable member each to a respective one of two relatively movable members in such a position that, as the relatively movable members move to the predetermined position, the magnetisable member and the electromagnet means move towards one another generally transversely of the axis of the electromagnetic field, whereby, when the two relatively movable members are in said predetermined position, said movable magnetisable member may move towards said electromagnet means generally along the axis of the electromagnetic field under the action of the electromagnetic field to normally hold said two relatively movable members in said predetermined relative position,

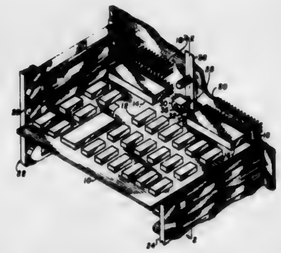
shoulder means being provided on or connected with said magnetisable member and said electromagnet means whereby when said relatively movable members are in said predetermined position and said movable magnetisable member and electromagnet means are moved relatively axially towards one another said shoulders may engage to retain the two relatively movable members in said predetermined position even if the two relatively movable members are forced in such a manner to overcome the electromagnetic attraction between said magnetisable member and said electromagnet means.

4,439,809

ELECTROSTATIC DISCHARGE PROTECTION SYSTEM

Merle E. Weight, Coon Rapids, and Theodore S. Swenson, Isanti, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,089
Int. Cl.³ H05F 3/02
U.S. Cl. 361—220 7 Claims



1. For use with an assembly for electrostatic sensitive devices having signal circuits, power circuits and ground circuits, an electrostatic discharge protection system comprising:

circuit board means for supporting electrostatic sensitive devices and for supporting conductors for making predetermined electrical interconnection of selected ones of said devices;

juncture means mounted on said circuit board means for providing an electrical common interconnection point;

circuit means for connecting all ground circuits to said juncture means;

contact means for providing a path of discharge of electrostatic charge, said contact means including electrically conductive spring means having a first portion for making electrical contact with said juncture means, a second portion, and a third portion for interconnecting said first and second portions;

centering means for centering said circuit board means and arranged for supporting said contact means and

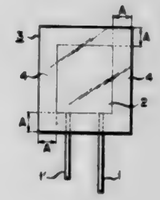
electrostatic charge dissipation means arranged for making contact with said contact means prior to any signal circuits being brought into contact for causing discharge of said electrostatic charge without causing damage to any of the signal circuits in the electrostatic sensitive devices, said electrostatic discharge dissipation means including electrically conductive guide pin means for cooperating with said centering means for making electrical contact with said second portion of said electrically conductive spring means as said guide pin means is moved into cooperative relationship to said centering means.

4,439,810

ELECTRIC CAPACITOR WITH ENCLOSURE STRUCTURE CONSISTING OF PLASTIC LAMINATED FILM

Hiroshi Shimada, and Kiyoshi Sakamoto, both of Nagai, Japan, assignors to Marcon Electronics Co., Ltd., Nagai, Japan

Filed Aug. 17, 1982, Ser. No. 408,875
Claims priority, application Japan, Sep. 10, 1981, 56-135333[U]; Sep. 10, 1981, 56-135334[U]
Int. Cl.³ H01G 1/06; B65D 73/02
U.S. Cl. 361—272 5 Claims



1. An electric capacitor comprising:

a capacitor element having a plurality of external connecting terminals; and

a laminated film which includes at least a plastic film and which covers said capacitor element to form a sealed portion around said capacitor element, said sealed portion being sealed to form an enclosure structure for sealing said capacitor element;

wherein a sealing width of said sealed portion is 1 to 20 mm.

4,439,811

CAPACITOR

Tohru Sasaki; Mutsuru Ohta; Syuuzi Terasaki, and Shozo Kakizaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 315,750, Oct. 28, 1981, abandoned. This application Nov. 26, 1982, Ser. No. 444,746
Claims priority, application Japan, Oct. 31, 1980, 55-154140
Int. Cl.³ H01G 3/17, 4/06
U.S. Cl. 361—313 8 Claims

1. A capacitor in which an at least uniaxially stretch-oriented film comprises:

(a) a dielectric layer comprising from 95 to 100% by weight of a vinylidene fluoride resin; and

(b) a coating layer comprising a mixture of a vinylidene fluoride resin and a polymer substantially incompatible with the vinylidene fluoride resin and having a critical surface tension of 30 dyn/cm or higher, the dielectric layer and the coating layer being coextruded with the coating layer being disposed at at least one side of the dielectric layer.

4,439,812

IMPREGNATED CAPACITOR FOIL

Thomas G. Chapman, Hudson Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,043
Int. Cl.³ H01G 3/04; B32B 3/28
U.S. Cl. 361—314 4 Claims

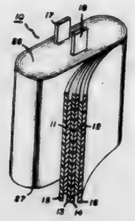
1. In an electrical capacitor including a casing with electrical terminals thereon and one or more capacitor rolls in said casing and connected to the terminals and a dielectric fluid in the casing and impregnating the roll, the combination of

(a) said roll comprising a pair of spaced line embossed metallic electrode foil strips and a dielectric therebetween consisting solely of a synthetic resin material and comprising at least one synthetic resin strip,

(b) said electrode foil strips having closely spaced parallel

flutes on the surface thereof running laterally across the strips to their edges and covering the length of the useful foil surface to provide a compressible thickness electrode,

(c) said flutes providing a foil thickness measured vertically from a plane through the work hardened crowns of the flutes to a plane through the base edges of the flutes of less



than about 3 times the original thickness of the foil between winding in said roll,

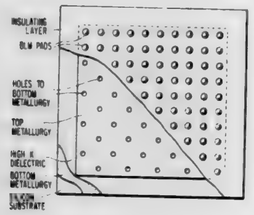
(d) said flutes being formed and spaced apart in a manner whereby there is a smooth essentially continuously curving foil surface leading from one flute to an adjacent flute so that a point on the base of one flute and a point on the base of an adjacent flute are essentially coplanar.

4,439,813

THIN FILM DISCRETE DECOUPLING CAPACITOR

William E. Dougherty; Irving Feinberg, both of Poughkeepsie; James N. Humenik, and Alan Platt, both of Lagrangeville, all of N.Y., assignors to IBM Corporation, Hopewell Junction, N.Y.

Filed Jul. 21, 1981, Ser. No. 285,650
Int. Cl.³ H01G 4/10, 1/14
U.S. Cl. 361—321 **13 Claims**



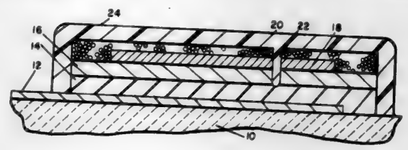
1. A chip capacitor comprising:
a bottom conductive layer having sequentially coated thereon
a dielectric layer,
a top conductive layer, and
an insulating layer; first and second via holes, wherein:
said first via holes extend through said insulating layer to expose said top conductive layer, and
said second via holes extend through said insulating, top conductive, and dielectric layers to expose said bottom conductive layer with said insulating layer extending about the side walls of said top conductor layer in said second via holes to insulate said top conductive layer; and
isolated solder mounds selectively deposited on said insulating layer over and in via holes in electric contact with an exposed conductive layer therein.

4,439,814

LASER ADJUSTABLE CAPACITOR AND FABRICATION PROCESS

Junior I. Rhodes, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Aug. 12, 1982, Ser. No. 407,544
Int. Cl.³ H01G 4/10, 10/00, 7/00
U.S. Cl. 361—321 **32 Claims**



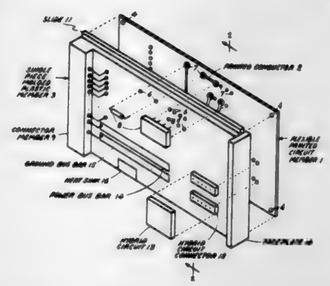
29. A capacitor, comprising:
a substrate;
a bottom conductor formed on said substrate;
a dielectric formed on said bottom conductor;
a top conductor formed on said dielectric; and
a layer of green dam glass formed over said top conductor.

4,439,815

PRINTED CIRCUIT ASSEMBLY FOR A CARD FILE PACKAGING SYSTEM

Anthony D. Close, Wilton, and Walter A. Menn, Stamford, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,426
Int. Cl.³ H05K 1/14
U.S. Cl. 361—386 **23 Claims**



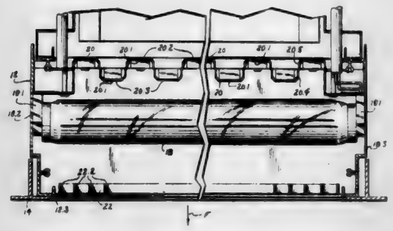
1. A printed circuit assembly for a card file packaging system comprising:
a flat flexible dielectric member having thereon printed conductors of a printed circuit; and
a single piece rigid molded dielectric member having a first relatively large flat surface against which said flexible member bears and to which said flexible member is secured for support, said molded member having molded therein at least holes to support leads of electrical components of said assembly disposed adjacent a second relatively large flat surface parallel to and spaced from said first surface, said holes enabling said leads to extend therethrough from said second surface to said first surface to enable connection of said leads to said printed conductors, said molded member having parallel slides molded therein along and extending from parallel edges thereof for tracks of said card file system and electrical connectors molded therein along a first edge thereof perpendicular to said parallel edges and adjacent said second surface, said electrical conductors extending outwardly from said first edge parallel to said second surface to connect said assembly to at least said card file system.

4,439,816

LIGHTING AND AIR FILTER STRUCTURE

Philip F. Litchfield, Edina, Minn., assignor to Sci-Med Environmental Systems, Inc., Eden Prairie, Minn.

Filed Dec. 10, 1981, Ser. No. 329,185
Int. Cl.³ F21V 33/00
U.S. Cl. 362—96 **13 Claims**



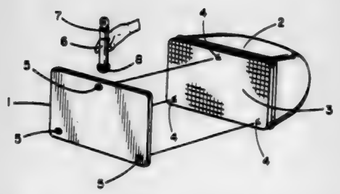
1. A lighting and air filter structure comprising a housing having air inlet and outlet ports defining upstream and downstream sides of the housing, an air filter disposed in the housing for filtering air passing therethrough, lighting means comprising a plurality of lights carried by the housing downstream of and spaced from the filter means, and reflector means comprising a plurality of parallel, elongated reflector plates carried by the housing and oriented generally normal to the direction of air flow and between the air filter and the lights, adjacent reflector plates being spaced from one another in the direction of air flow and having adjacent edges substantially aligned in the direction of air flow to permit air issuing from the filter to pass between the reflector plates without significant pressure drop, the reflector plates having reflective, downstream-facing surfaces to reflect light emitted by the lighting means away from the air filter.

4,439,817

STICK-ON FOG LIGHT LENS FOR HEADLIGHT

Ronald L. Aton, 202 Spencer Rd., New Lenox, Ill. 60451

Filed Jul. 17, 1981, Ser. No. 284,167
Int. Cl.³ F21M 3/14
U.S. Cl. 362—255 **5 Claims**



1. A combination fog lens and headlight, wherein said headlight includes a glass lens, said fog lens comprises a thin sheet of soft flexible transparent plastic material having a peripheral configuration corresponding to that of said glass lens of said headlight, said thin sheet of plastic material having a contact surface for adhering to said glass lens of said headlight throughout their mutually facing area, said contact surface being moistened throughout with water to bond said thin sheet of plastic material to said glass lens of said headlight, said glass lens including at least one projection extending outwardly therefrom, said fog lens including a corresponding aperture to receive said projection therethrough when said plastic sheet is placed on said glass lens.

4,439,818

FLEXIBLE LIGHT DISPLAY WITH EVENLY DISTRIBUTED ILLUMINATION

Joseph J. Scheib, 4453 Pali Way, Boulder, Colo. 80301

Filed Feb. 25, 1983, Ser. No. 469,705
Int. Cl.³ F21V 21/14
U.S. Cl. 362—250 **15 Claims**



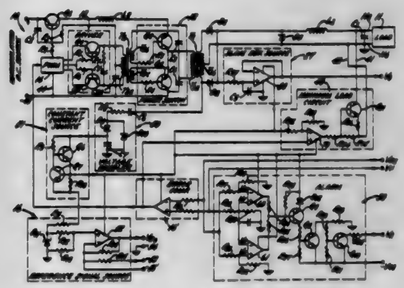
1. A lighting strip, comprising:
power means for providing a low voltage power source of less than 110 volts;
a plurality of lighting means;
a plurality of resistors each of which is connected in series with a different one of said plurality of lighting means;
electrical means connecting each of said series connected lighting means and resistance means with said power means; and
carrier means for having said plurality of lighting means mounted thereon for allowing said plurality of lighting means to be configured in a predetermined manner.

4,439,819

SWITCHING REGULATOR WITH CONTROLLED SIMULATED LOAD

John F. Regan, Lombard, Ill., assignor to Rockwell International, Downers Grove, Ill.

Division of Ser. No. 869,514, Jan. 16, 1978, Pat. No. 4,359,679.
This application Aug. 9, 1982, Ser. No. 406,139
Int. Cl.³ H02P 13/16
U.S. Cl. 363—17 **3 Claims**



1. In a switching regulator, the improvement comprising:
means for applying a simulated load across the output terminals of the regulator;
control means responsive to the output of said regulator for connecting and disconnecting said load simulating means across said output terminals in response to the level of the regulator output;
a first comparator for producing an error control signal in response to a differential between a reference signal representing a selected output and a feedback signal representing the actual output of the regulator, and said control means being responsive to said error control signal; and a second comparator, included in said control means, for receiving the output of said first comparator and producing a control signal for said load simulating means when the regulator output reaches a predetermined level.

4,439,820

PWM, SINGLE-ENDED, SEPARATELY DRIVEN D.C.-D.C. CONVERTER

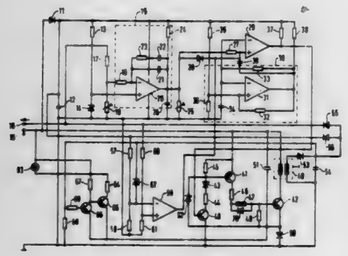
Willi Kühn, Markgröningen, and Eberhard Mausner, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 343,405

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109612

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—21 **13 Claims**



1. Regulated d.c. voltage converter comprising a voltage conversion transformer followed by a rectifier, means for supplying, from d.c. input energy, an alternatingly switched voltage wave to said transformer, and a voltage regulator, to which a reference voltage as well as the rectified voltage output of said transformer are supplied for comparison in said regulator, being connected for modifying said alternately switched voltage wave, and further comprising:

a sawtooth vave generator (30) and a first comparator (29) provided in said alternatingly switched voltage wave supplying means, said first comparator having its output connected for supplying pulses for controlling the input wave for said transformer and having its inputs respectively connected to the output of said sawtooth wave generator and to the output of said regulator (15), said regulator being constituted as a proportional-integral controller circuit and having its output connected to the tap of a voltage divider (24, 25) for output voltage limiting.

4,439,821

DC TO DC SWITCHING REGULATOR WITH TEMPERATURE COMPENSATED ISOLATED FEEDBACK CIRCUITRY

James M. Grippe, Plano, Tex., assignor to Varo, Inc., Garland, Tex.

Filed Jan. 29, 1982, Ser. No. 343,744

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—26 **26 Claims**

1. A DC to DC switching regulator for an unregulated DC signal comprising:

first means for converting the unregulated DC signal into a first variable pulse width signal,

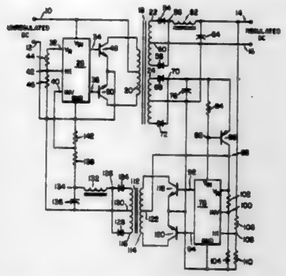
first isolation means for receiving and converting said first variable pulse width signal into an output DC signal, said output DC signal isolated from the unregulated DC signal;

second means for converting said isolated output DC signal into a second variable pulse width signal said second variable pulse signal having constant amplitude pulses with a variable width, the amplitude thereof independent of said isolated output DC signal;

second isolation means for receiving said second variable pulse width signal and generating an isolated pulse signal, said isolated pulse signal having variable width pulses corresponding to the pulse width of said variable pulse width signal and a constant amplitude; and

means for converting said isolated pulse signal into an error signal, said error signal isolated from said DC output signal;

said error signal and the level of the unregulated DC signal determining the level of said output DC signal and the



level of said output DC signal determining the level of said error signal, such that said error signal provides an isolated feedback signal that is 180 degrees out of phase to regulate said output DC signal.

4,439,822

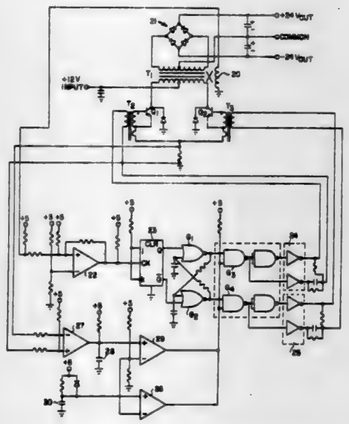
METHOD AND APPARATUS FOR DETECTING AND PREVENTING IMPENDING MAGNETIC SATURATION IN MAGNETIC MATERIALS

Alan G. Cocconi, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Mar. 26, 1982, Ser. No. 362,293

Int. Cl.³ H02H *7/122*

U.S. Cl. 363—56 **6 Claims**



1. A method of detecting an impending saturation in nonlinear magnetic material for particular operating conditions in response to a varying magnetic field in a principal direction induced by a drive current through a coil around said material, said coil having its axis aligned in said principal direction, comprising the step of monitoring the rate of change of flux density of a magnetic field orthogonal to said varying magnetic field to produce a voltage proportional thereto, and the step of comparing said voltage with a predetermined threshold voltage characteristic of impending saturation of said material in said operating conditions.

4,439,823

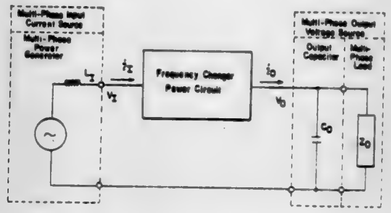
CONVERTING MULTIPHASE POWER FROM ONE FREQUENCY TO ANOTHER USING CURRENT WAVEFORMS

Laszlo Gyugyi, Penn Hills; Geoffrey M. Smith, Wilkinsburg, and Eric J. Stacey, Penn Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 11, 1982, Ser. No. 338,777

Int. Cl.³ H02M *5/257*

U.S. Cl. 363—161 **21 Claims**



1. Apparatus for generating a multiphase output waveform of a desired frequency from a multiphase input waveform of another frequency, said apparatus comprising:

a multiphase AC source for generating said multiphase input waveform, said source having an impedance which is predominatly inductive;

a plurality of output lines;

an array of bidirectional switches connected directly between each phase of the AC source and each output line;

control means for sequentially turning on and off said bidirectional switches associated with each output line in a repetitive pattern such that each phase of the AC source conducts current to only one of said output lines at a time with segments of the current from each phase of the AC source being sequentially applied to the output lines, such that each phase of the AC source conducts current through at least one of said bidirectional switches at all times, to generate thereon the output waveform having a fundamental component of said desired frequency; and

load means connected across the output lines having an impedance which is sbustantially noninductive.

4,439,824

DEVICE HAVING ONE OR MORE MANUALLY CONTROLLED FUNCTIONS

Ferdy Mayer, 18 Rue Thiers, Grenoble 38000, France, assignor to Ferdy Mayer, Grenoble, France

Continuation of Ser. No. 571,457, Apr. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 312,528, Dec. 6, 1972, abandoned. This application Nov. 21, 1980, Ser. No. 209,122

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1971, 2160453

Int. Cl.³ G06G *7/70*

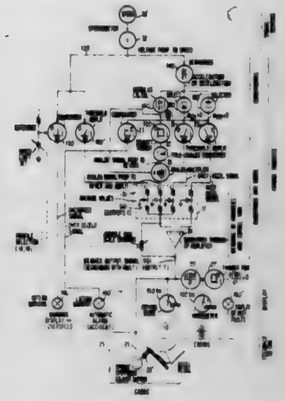
U.S. Cl. 364—150 **23 Claims**

1. In a motor vehicle having a plurality of manually controlled functions which affect variables in the operation of the motor vehicle in which a human operator forms a part of a feedback loop that controls a variable by observing the operation of said motor vehicle with respect to the actual value of said variable, by comparing said actual value with a desired value, and by controlling the corresponding manually controlled function, the improvement of an additional feedback loop comprising:

sensor means on said motor vehicle for generating a signal proportional to said variable;

computer means connected to said sensor means for processing said signal according to predetermined algorithms to define a dynamic driver image (D.D.I.), said computer means comprising,

means for modifying said D.D.I. in relation to an ideal driver's image (I.D.I.) to produce a control output based at least partially on the modified D.D.I.;



control means responsive to said control output for modifying the responsiveness of said corresponding manually controlled function to operation by said human operator.

4,439,825

POSITION REGULATION SYSTEM CONTAINING A DIGITAL INCREMENTAL MEASURING APPARATUS

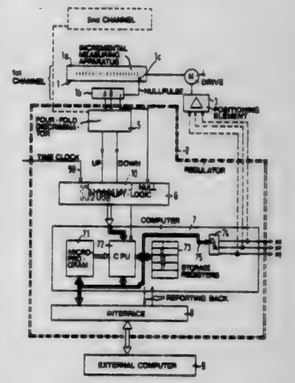
Meinrad Donner, Nuolen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Jul. 27, 1981, Ser. No. 286,777

Claims priority, application Switzerland, Aug. 17, 1980, 6201/80

Int. Cl.³ G05B *19/21*

U.S. Cl. 364—167 **4 Claims**



1. A position regulation system for two relatively movable objects, one of which is provided with a drive, comprising:

a digital incremental measuring apparatus for evaluation of measuring signals of 90°-phase shift;

said digital incremental measuring apparatus containing a direction discriminator having an output;

said discriminator delivering a number of measuring pulses for each relative direction of movement of said two objects;

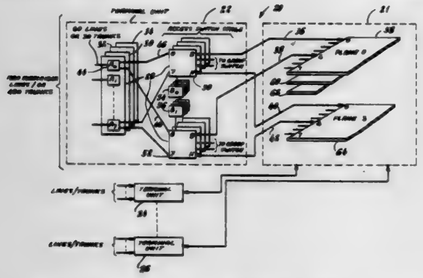
each of said measuring pulses corresponding to one edge of the measuring signals;

an interrupt logic for delivering output pulses;

the output of said discriminator being connected to said interrupt logic;

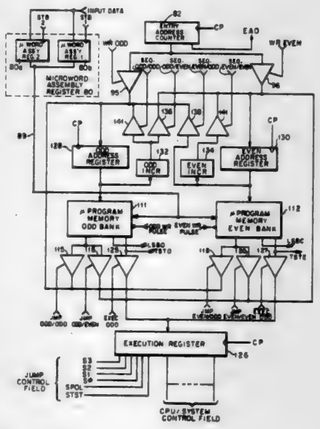
a computer having a program and memory register means;
said interrupt logic being connected to said computer;
the course of the program of said computer being interrupted by each output pulse of said interrupt logic;
said output pulses from said interrupt logic serving for updating an actual value in said memory register means;
said output pulses forming a set value/actual value difference following the interruption of the program of the computer;
said output pulses forming from said set value/actual value difference a positioning magnitude;
a positioning element;
said positioning magnitude being transmitted to said positioning element;
said positioning element controlling the drive of the one object;
the computer has an output side;
said computer contains a digital to analogue converter defining said output side of said computer;
said digital to analogue converter delivering said positioning magnitude which defines a positioning magnitude for the position of said one object;
said interrupt logic being provided with a time clock input;
said time clock input interrupting the course of the program in said computer;
the measuring pulses arriving at said interrupt logic between said interruptions being a measurement for the displacement speed of the driven object; and
a signal representative of the displacement speed of said object being transmitted to the digital to analogue converter as a second positioning magnitude.

4,439,826
DIAGNOSTIC SYSTEM FOR A DISTRIBUTED CONTROL SWITCHING NETWORK
Alan J. Lawrence, Shelton, and Daniel C. Upp, Easton, both of Conn., assignors to International Telephone & Telegraph Corporation, New York, N.Y.
Filed Jul. 20, 1981, Ser. No. 284,866
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **18 Claims**



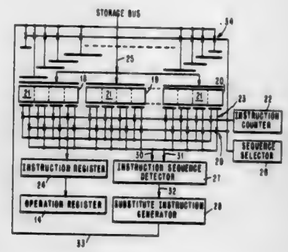
1. A diagnostic system for a distributed control switching network interconnected to a plurality of data processors, each of the data processors having a unique address and having diagnostic data stored therein for use in performing diagnostics in a designated portion of the switching network, comprising:
a plurality of digital switching elements within said designated portion of the switching network, each of said digital switching elements including a plurality of bidirectional ports for receiving and transmitting digital signals, and each of said bidirectional ports having a unique address in the network algorithmically related to the unique addresses of designated data processors;
means for providing bidirectional communication paths from each of said data processors to said algorthimically related addressed digital switching elements within the designated portions of the switching network addressable by said designated data processors;
means associated with said processors for providing diagnostic paths over said bidirectional communication paths between said digital switching elements and said data processors so that each of said data processors is interconnected to another data processor by connection paths equal in number to the number of bidirectional communication path originating from said data processor so that the addresses of said data processors are algorithmically related to the addresses of said bidirectional ports connected thereto by said diagnostic paths, such that the interconnected data processors perform diagnostics over the portion of the switching network that includes the ports having addresses algorithmically related to said interconnected processors.

4,439,827
DUAL FETCH MICROSEQUENCER
Dean M. Wilkes, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 28, 1981, Ser. No. 335,026
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—200 **11 Claims**



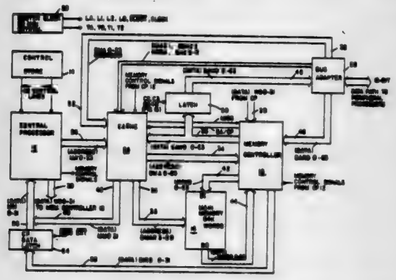
10. A dual fetch instruction sequencer having transparent overlay capability, comprising:
a first address register coupled to a first memory for addressing instructions therein; a second address register coupled to a second memory for addressing instructions therein; said
first and second memories for storing instructions from a homogeneous microprogram having conditional branch instructions wherein the next possible instructions of each conditional branch instruction are stored in opposite ones of said first and second memories wherein both of the next possible instructions can be simultaneously fetched, one from each memory via said first and second address registers respectively;
an execution register coupled to the outputs of said first and second memories for receiving instruction fields from either one of said first or second memories for homogeneously executing said microprogram;
means for determining a microcycle corresponding to when an instruction is being fetched from only said first memory leaving said second memory available for rewriting; and
means responsive to said determining means for writing a new instruction into said second memory during said microcycle.

4,439,828
INSTRUCTION SUBSTITUTION MECHANISM IN AN INSTRUCTION HANDLING UNIT OF A DATA PROCESSING SYSTEM
Daniel B. Martin, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Jul. 27, 1981, Ser. No. 287,342
Int. Cl.³ G06F *9/16*
U.S. Cl. 364—200 **6 Claims**



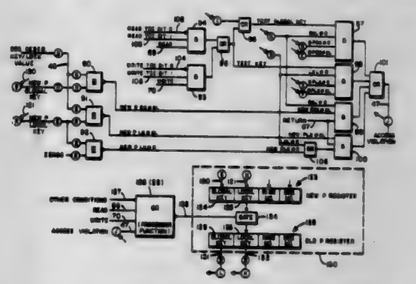
1. An instruction handling unit in a data processing system including a central processor instruction buffer for storing a plurality of program instructions, an execution unit for receiving instructions in sequence from the instruction handling unit for execution by the execution unit, and an addressable main storage system for storing data and instructions, the improvement comprising:
instruction sequence detector means, connected to the instruction buffer, including examining means for fields of each of n sequential instructions in the instruction buffer;
signalling means, connected and responsive to said examining means, for providing an output signal indicating a sequence of predetermined instructions in said n sequential instructions; and
substitute instruction generator means, connected and responsive to said output signal of said signalling means for effecting transfer of a substitute instruction to the execution unit in place of said sequence of n predetermined instructions.

4,439,829
DATA PROCESSING MACHINE WITH IMPROVED CACHE MEMORY MANAGEMENT
Horace H. Tsiang, North Andover, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.
Continuation of Ser. No. 223,154, Jan. 7, 1981, abandoned. This application Oct. 17, 1983, Ser. No. 542,556
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **6 Claims**



1. In a data processing machine including main memory means for storing data, including instructions for directing operations of the machine, and processor means for processing data, cache memory means, comprising:
cache means, including
means for storing a copy of a portion of the data stored in the main memory means,
cache control means for receiving read and write requests from the processor means and for providing addresses corresponding to certain requests to a memory controller means,
cache tansfer means responsive to operation of the cache control means for conducting data from the memory controller means to the cache storing means and for conducting data from the cache storing means to the processor means, and
the memory contoller means, including
controller control means responsive to the addresses for providing outputs for controlling operation of the controller means and the cache and main memory means, and
controller transfer means for conducting read data from the main memory means to the cache storing means and for conducting write data directly from the processor means to the main memory means,
the controller control means including timing means defining a cache memory means operating cycle comprising a first subcycle and a second subcycle, and
the cache and controller control means responsive to the timing means for accepting only processor read requests during first subcycles and for accepting and resolving conflicts between all other cache and memory operation requests during second subcycles.

4,439,830
COMPUTER SYSTEM KEY AND LOCK PROTECTION MECHANISM
Richard J. Chueh, Saratoga, Calif., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Nov. 9, 1981, Ser. No. 319,338
Int. Cl.³ G06F *7/02*
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system of the type including: (a) a memory comprising a plurality of addressable cells and a data port, said cells grouped into a plurality of segments, each segment having a unique number forming a portion of the addresses of the cells in the segment, said memory accessed by externally supplied address signals each encoding the address of the cell to be referenced and specifying the memory function, said memory accepting data for storage at and supplying stored data at the data port responsive to, respectively write address signals and read address signals, said memory further having when in use, an instruction sequence stored in at least one first segment and including memory references to at least one second segment; and (b) an instruction processor supplying read address signals encoding the addresses of the instruction sequences to the memory and responsive thereto receiving the addressed instructions from the memory at its data port and executing them, and responsive to execution of certain ones of the instructions, generating address signals encoding addresses of cells located in at least one second segment, an improvement

comprising means for storing in the memory for at least each referenced second segment, an externally supplied numeric key/lock value in a cell having a preselected location associated with the second segment involved, and wherein the instruction processor further includes the improvement of:

(a) means for extracting from the memory at least one numeric key value to be associated with each first segment, and for storing each said key value; and

(b) key retrieval and comparison means for receiving the address signals encoding the addresses of cells grouped in at least one second segment, and responsive thereto supplying to the memory a read address signal encoding the address of the cell containing the numeric key/lock value for the specified second segment, and receiving that key/-lock value at the data port of the memory, and for receiving the key value stored by the key selecting and storing means and comparing said key value with the key/lock value, and if not valid generating an access violation signal, but if valid transmitting the address signal to the memory.

4,439,831

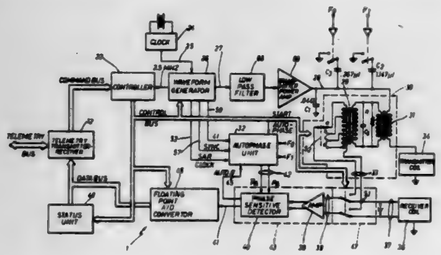
DIGITAL INDUCTION LOGGING SYSTEM INCLUDING AUTOCALIBRATION

Paul L. Sinclair, Houston, Tex., assignor to Schlumberger Technical Corporation, Houston, Tex.

Filed Jun. 8, 1981, Ser. No. 271,277

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—422 **15 Claims**



1. In an induction logging tool for measuring a formation signal indicative of a characteristic of sub-surface formations traversed by a borehole, the tool including a transmitter coil responsive to a transmitter signal for inducing formation currents to flow, and a receiver coil system for generating formation signals as a result of the formation currents, a method of automatically linearizing the overall transfer function for the tool during normal logging operations comprising the steps of:

(a) generating from the transmitter signal a plurality of test calibration signals of differing amplitudes which vary over the range of expected formation response signals, the calibration signals having predetermined precise ratios therebetween;

(b) periodically measuring the tool output response to selected ones of the test calibration signals in place of the normal formation signals;

(c) calculating the values of the numerical coefficients of a predetermined linearization correction function by fitting this function to the calibration measurements from step (b), so as to produce a linear overall transfer function for the calibration measurements from step (b) once corrected by said correction function;

(d) applying the linearization correction function to subsequently obtained tool responses to formation signals as the transfer function for the tool for those measurements; and

(e) periodically repeating steps (b) to (f) thereby to obtain, a linear overall transfer function for the tool for all formation signal measurements during normal logging operations.

4,439,832

METHOD AND APPARATUS FOR CONTROLLING AN ANTI-SKID BRAKE SYSTEM

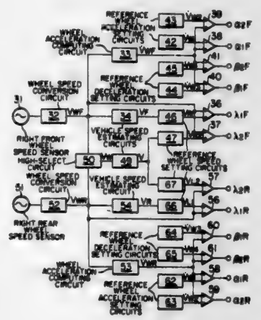
Makoto Sato, Fukuoka; Yoshikazu Tsuchiya, Fujimi, and Taiji Ohmori, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1981, Ser. No. 295,009

Claims priority, application Japan, Aug. 25, 1980, 55-116739; Sep. 2, 1980, 55-121592

Int. Cl.³ B60T *8/02*

U.S. Cl. 364—426 **14 Claims**



1. A method of controlling an anti-skid brake system in a vehicle, which comprises comparing a front wheel speed signal VwF indicating the peripheral speed of the front wheel and a rear wheel speed signal VwR indicating the peripheral speed of a rear wheel at the time of braking the vehicle, with a first reference wheel speed signal VR1, the value of which is lower than the vehicle speed, and a second reference wheel speed signal VR2, said signal VR2 being obtained by relating a vehicle speed signal V corresponding to the larger of signals VwF and VwR and a pre-determined value of wheel slip rate, the value of said second referene wheel speed signal VR2 being lower than the value of said first reference wheel speed signal VR1, comparing a front wheel acceleration signal VwF indicating the peripheral acceleration of the front wheel and a rear wheel acceleration signal VwR indicating the peripheral acceleration of the rear wheel, with a first reference wheel acceleration signal Vw1 representing a certain positive wheel acceleration, a second reference wheel acceleration signal Vw2, the value of which is higher than the value of the first reference wheel acceleration signal and a reference wheel deceleration signal −Vw3 indicating a certain negative wheel acceleration, and reducing the braking torque applied to the front wheel or rear wheel when (1) the value of the front wheel speed signal VwF or the rear wheel speed signal VwR is lower than the value of the first reference wheel speed signal VR1 and is higher than the value of the second reference wheel speed signal VR2 and the value of the front wheel acceleration signal VwF or rear wheel acceleration signal VwR is lower than the value of the reference wheel deceleration signal −Vw3, and (2) when the value of the front wheel speed signal VwF or the rear wheel spedd signal VwR is lower than the value of the second reference wheel speed signal VR2, until the value of the front wheel acceleration signal VwF or rear wheel acceleration signal VwR becomes higher than the value of the first reference wheel acceleration signal Vw1.

4,439,833

METHOD AND APPARATUS FOR DETECTING THE GEAR POSITION OF TRANSMISSION

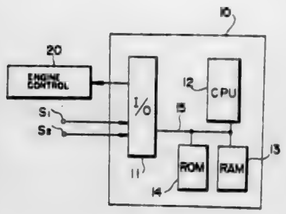
Hiroshi Yamaguchi, and Kenji Ikeura, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 14, 1981, Ser. No. 302,296

Claims priority, application Japan, Sep. 29, 1980, 55-134272

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—431.09 **16 Claims**



1. An apparatus for detecting the gear position of a transmission system having a manually operable gear selection mechanism in a vehicle having an engine controlled by an accelerator pedal, comprising:

(a) means for sensing the engine speed N;

(b) means for sensing the vehicle speed V;

said vehicle having a first characteristic N/V ratio corresponding to a first gear position of said transmission system and second characteristic N/V ratio corresponding to second gear position of said transmission system;

(c) reference level establishing means for establishing a first reference level defined by a first predetermined ratio of engine speed to vehicle speed;

(d) means, independent of said manually operable gear selection mechanism and accelerator pedal, for determining which of said first and second gear positions said transmission is in utilizing a mathematic operation involving the sensed engine speed N, the sensed vehicle speed V, and the first reference level; and

(e) means, responsive to a determination of said first gear position by said determining means, for shifting the first reference level to a second reference level defined by a second predetermined ratio of engine speed to vehicle speed,

said determining means being responsive to said shifting means for determining which of said first or second gear positions said transmission is in utilizing a mathematical operation involving the sensed engine speed N, the sensed vehicle speed V, and the second reference level.

4,439,834

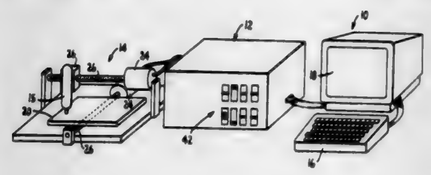
TOOL MANIPULATING METHOD AND APPARATUS

William V. Dahlgren, Jr., 240 Dolores, Apt. 138, San Francisco, Calif. 94103, and Lewis S. Silverstein, 695 Connecticut Ave., #4, San Francisco, Calif. 94107

Filed Apr. 27, 1981, Ser. No. 257,581

Int. Cl.³ G06F *15/46*; G06G *7/66*; B43L *13/00*; G05B *19/42*

U.S. Cl. 364—474 **21 Claims**



1. A method of manipulating a tool of the type in which a tool is positionally manipulated with respect to a workpiece to transfer user-supplied copy information to the workpiece in accordance with dimensional information supplied by a user, including the steps of

generating a plurality of position and control parameters which are based upon the user-supplied dimensional information;

generating a plurality of copy parameters which are based upon the dimensional information and the user-supplied copy information;

transferring control, position and copy parameters and user-supplied copy information to a control means;

transforming the position and control parameters into drive signals;

obtaining master font instructions in the font style in which the user-supplied copy information is to be transferred by the tool to the workpiece from a master font memory within the control means;

modifying the master font instructions corresponding to the user-supplied copy information according to the copy parameters;

converting the modified master font instructions into drive signals;

transferring all drive signals to a tool manipulating means;

positioning the tool according to the position drive signals; and

manipulating the tool in accordance with the control and modified master font instruction drive signals.

4,439,835

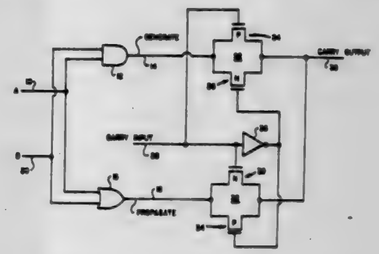
APPARATUS FOR AND METHOD OF GENERATION OF RIPPLE CARRY SIGNALS IN CONJUNCTION WITH LOGICAL ADDING CIRCUITRY

David W. Best, Marion, and Jeffrey D. Russell, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 14, 1981, Ser. No. 283,266

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—786 **3 Claims**



1. Ripple carry signal generating apparatus comprising, in combination:

first and second logic signal input means for providing first and second logic signals;

first logical signal combining circuit means connected to said first and second input means for receiving said first and second logic signals therefrom and outputting a logical AND combination signal as a "generate" signal;

second logical signal combining circuit means connected to said first and second input means for receiving said first and second logic signals therefrom and outputting a logical OR combination signal as a "propagate" signal;

carry input signal means for supplying carry logic input control signals;

carry output signal means for providing output signals indicative in logic level of the need to pass carry outputs to further stages of signal combination logic; and

signal transmission means connected between said first and second logical signal combining circuit means and said

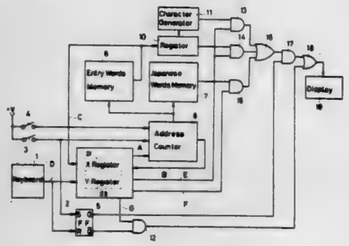
carry output means and connected to said carry input signal means for selectively passing propagate and generate signals to said output means in response to control signals from said carry input signal means.

4,439,836

ELECTRONIC TRANSLATOR

Kunio Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 22, 1980, Ser. No. 199,526
Claims priority, application Japan, Oct. 24, 1979, 54-137921
Int. Cl.³ G06F *15/38*
U.S. Cl. 364—900 **8 Claims**



1. An electronic translator device for obtaining a second word represented in a second language equivalent to an input word in a first language, comprising:

input means for entering the input word;

first memory means for memorizing a plurality of first words in the first language, each of said first words comprising one or more first letters which remain unchanged regardless of inflection and one or more second letters which change according to inflection;

address means operatively connected to said input means and responsive to entry of the input word for addressing said first memory means to develop one of the plurality of first words;

detection means operatively connected to said first memory means and responsive to said address means for detecting eqivalency between the input word and said first letters of respective first words;

second memory means for memorizing a plurality of second words in the second language corresponding to first words stored in said first memory means;

first means operatively connected to said detecting means for activating said second memory means whereby said second memory means develops a second word corresponding to the input word when the input word is equivalent to one of said first words; and

second means operatively connected to said detecting means for indicating that one of said first words in said first memory means comprises a noninflected form of the input word.

4,439,837

NON-VOLATILE MEMORY SYSTEM FOR INTELLIGENT TERMINALS

Peter P. Alesa, Kettering, and Eduard Schulz, Centerville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 16, 1981, Ser. No. 274,125
Int. Cl.³ G06F *15/06*
U.S. Cl. 364—900 **10 Claims**

1. A terminal comprising:

a first memory system for storing data including a plurality of function programs;

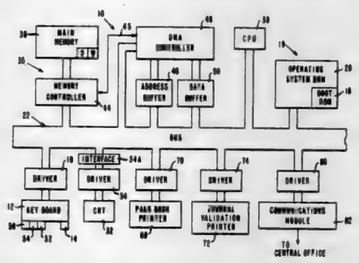
a second memory system;

a processor means operatively coupled to said second memory system to execute instructions therefrom;

entry means for selecting a function program to be executed;

means for transferring data, including a function program which is selected by said entry means, from said first memory system to said second memory system to enable said processor means to execute said selected function program;

means for determining the end of a said selected function program executed by said processor means; and



bus means for operatively connecting said first and second memory systems, said processor means, said entry means, said transferring means, and said determining means;

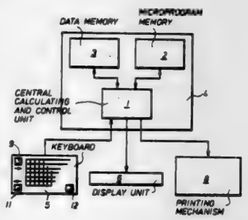
said second memory system being smaller in storage capacity but faster in operating speed than said first memory system to enable said selected function program to be executed by said processor means at the operating speed of said processor means.

4,439,838

ONE LINE TEXT DISPLAY WITH TWO INPUT LOCATIONS

Wolfgang Klingenberg, Lahstedt, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,586
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028439
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—900 **7 Claims**



1. In a word processor having a keyboard and a display unit for the one-line display of a succession of characters constituting a section of text, the display unit presenting a row of display locations each arranged to display one character, with the display location at the right end of the row constituting a first character input location, each character keyed in by actuation of the keyboard being normally first displayed at the first input location and then being displayed at successive locations extending along the row to the left of the first input location upon the keying in of subsequent characters by actuation of the keyboard, the word processor further including a data memory connected for storing the characters keyed in via the keyboard, and control means connected to the keyboard, the data memory and the display unit for controlling the display of stored text on the display unit, the improvement wherein a display

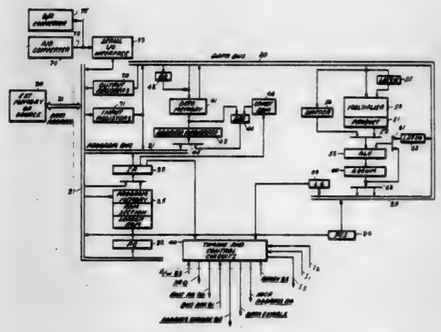
location of said display unit to the left of said first input location constitutes a second character input location, and said processor includes means operatively associated with said control means for selectively causing said second location to become that input location at which characters keyed by actuation of said keyboard are first displayed when the characters being displayed on said unit are derived from said data memory.

4,439,839

DYNAMICALLY PROGRAMMABLE PROCESSING ELEMENT

Kristine N. Kneib, La Jolla, and George Vensko, Ramona, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,432
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—900 **15 Claims**



1. A dynamically programmable processing element (DPPE) particularly adapted for use in processing digital signals and having the ability to receive data and program instructions from an external source comprising:

a program bus connected to said external source for transmitting and receiving program data from said external source,

a data bus for transmitting and receiving digital data,

input and output registers coupled between said data bus and said program bus for storing transmitted or received data present on either bus,

a program memory having an input coupled to said program bus and means coupling the output of said program memory to said program bus,

a data memory having addressable input means coupled to said program bus and an output coupled to said data bus, whereby said program memory can receive program information from an external source and data from said data memory can be transferred to said external source.

4,439,840

REAL-TIME ORDINAL-VALUE FILTERS UTILIZING PARTIAL INTRA-DATA COMPARISONS

Guy B. Coleman, Northridge; James W. Henderson, Woodland Hills, and Jacob M. Sacks, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 28, 1981, Ser. No. 306,253
Int. Cl.³ G06F *7/06, 9/64*
U.S. Cl. 364—900 **5 Claims**

1. An apparatus for ordering, as a function of magnitude, a set of R applied data signals, where R is an odd number and where the ordering is accomplished in a plurality of iterative operating cycles, this apparatus comprising:

(A) a plurality of pair-ordering means, each of said means having a first and second input and a first and second output, each of said means being:

(1) for comparing the magnitude of a signal presented at the first input with the magnitude of a signal presented at the second input,

(2) for transmitting to a predetermined one of said first and second outputs that input signal having the smaller relative magnitude, and

(3) for transmitting to the predetermined other one of said first and second outputs that input signal having the greater relative magnitude;

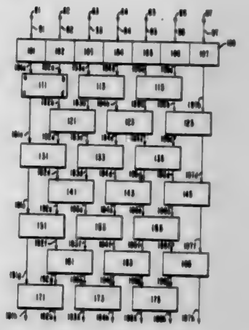
(B) said plurality of pair-ordering means being arranged into a first group and a second group, each group having $((R-1)/2)$ ordering means, with the individual ordering means of each group being identified as a first through $((R-1)/2)$nd pair-ordering means;

(C) data bus means for transmitting data signals back and forth between said first and second pair-ordering groups during said plurality of iterative operating cycles as the ordering is performed;

(D) said data signals, when on said bus means, forming an intermediate signal set of a first through Rth intermediate signal;

(E) multiplexer means, responsive to said R, originally-unordered, applied data signals, and receiving over said bus means from said second group said intermediate signal set, said multiplexer means being: for outputting, upon external selective command, either,

(1) at the start of the ordering process, said applied original data signals as an initial-set first through Rth intermediate signal, or



(2) after the start of the ordering process, said received intermediate signals;

(F) said first group receiving, over said bus means, said first through $(R-1)$st intermediate signals from said multiplexer means, said first through $((R-1/2)$nd individual pair-ordering means of said first group respectively receiving and ordering the $((R-1)/2)$ successive, non-overlapping signal pairs formed by pair-wise combining said first through $(R-1)$st intermediate signals, with the Rth intermediate signal left unpaired and unordered, where for any J from 1 through $((R-1)/2)$, the first and second inputs of the Jth ordering means respectively receive the $((2\times J)-1)$st and $(2\times J)$th intermediate signals, and where the signals transmitted to the first and second outputs of this Jth pair-ordering means respectively form the $((2\times J)-1)$st and $(2\times J)$th elements of a new R-member intermediate signal set whose Rth element is said previous Rth intermediate signal which has been left unpaired and unordered by this first group;

(G) said second group receiving, over said bus means from said first group, the second through Rth elements of said new intermediate signal set, said first through $((R-1)/2)$nd individual pair-ordering means of said second group respectively receiving and ordering the $((R-1)/2)$ successive, nonoverlapping signal pairs formed by pair-wise combining said second through Rth interme-

diate signals, with the first intermediate signal left unpaired and unordered, where for any J from 1 through ((R−1)/2), the first and second inputs of the Jth ordering means respectively receive the (2×J)th and ((2×J)+1)st intermediate signals, and where the signals transmitted to the first and second outputs of this Jth pair-ordering means respectively form the (2×J)th and ((2×J)+1)st elements of a new R-member intermediate signal set whose first element is said previous first intermediate signal which has been left unpaired and unordered by this second group;

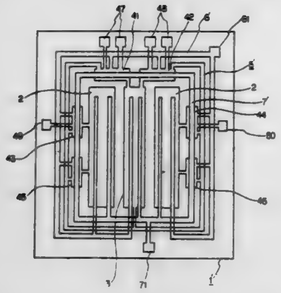
(H) the output new intermediate signal set from said first group forming the desired ordered magnitude sequence after the ((R+1)/2)nd cycle of data signals through said first group.

4,439,841

SEMICONDUCTOR MEMORY DEVICES

Hideo Itoh, and Takahiko Yamauchi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 10, 1981, Ser. No. 272,367
Claims priority, application Japan, Jun. 10, 1980, 55/78188
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—51 **11 Claims**



1. A semiconductor integrated circuit including a plurality of internal circuits arranged at the center thereof, a plurality of control circuits arranged in the area surrounding said internal circuits, a plurality of wirings connecting said control circuits and said internal circuits, a plurality of signal lines connecting said control circuits with each other, and at least one electric power supply line supplying a predetermined amount of voltage to said internal circuits and said control circuits, wherein the improvement comprises: said plurality of signal lines and said at least one electric power supply line being arranged in the area outside said plurality of wirings connecting said control circuits and said internal circuits.

4,439,842

BIPOLAR TRANSISTOR READ ONLY OR READ-WRITE STORE WITH LOW IMPEDANCE SENSE AMPLIFIER

Sashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

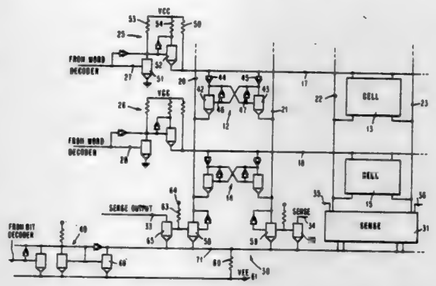
Continuation of Ser. No. 107,812, Dec. 28, 1979. This application Aug. 6, 1981, Ser. No. 290,547
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—104 **3 Claims**

1. A data store of the type having bit lines and word lines and a semiconductor device located at cross over points of a word line and a bit line,

wherein the semiconductor device comprises a single emitter bipolar transistor and means connecting the emitter terminal of the transistor to the associated bit line,

and a plurality of current sensing circuits connected to conduct between the bit lines and a common point, said current sensing circuits having a low impedance in the circuit between said emitter terminals, wherein the improvement comprises,

a first transistor and a second transistor in the current sensing circuit for each bit line each having an emitter terminal connected to a common current source, the current source providing a sufficiently high base current during a read operation to maintain said low impedance in the



collector-emitter circuit of the first transistor, whereby the first and second transistors tend to have corresponding collector currents, means connecting the collector terminal of said first transistor to a bit line, and means connecting the collector terminal of said second transistor to signify the data storage state of a cell during a read operation.

4,439,843

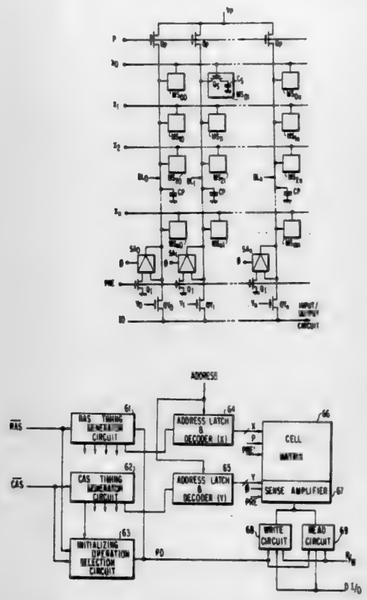
MEMORY DEVICE

Ryoichi Takamatsu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,131
Claims priority, application Japan, Nov. 17, 1980, 55-161519
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—218 **14 Claims**

1. A memory device comprising a plurality of address lines, a plurality of data lines intersecting with said address lines, a plurality of memory cells disposed at the intersections of said address lines and said data lines, a plurality of sense amplifiers each having an output terminal, a plurality of connection means each for connecting the output terminal of one of said sense amplifier to the associated data line, means for receiving a row strobe signal, means for receiving a column strobe signal, means for receiving row address information in response to an active level of said row strobe signal, means for receiving column address information in response to an active level of said column strobe signal, row selection means for selecting said address lines by said row address information, column selection means for selecting said data lines by said column address information, first control means for enabling said row selection means and said column selection means so as to perform normal memory operation when said column strobe signal is made at the active level after said row strobe signal has been made at the active level, a plurality of set means each coupled to the associated sense amplifier for operatively setting the output terminal of said associated sense amplifier at a predetermined potential, said predetermined potential corresponding to one of logic levels to be stored, detection means generating a detection signal when said row strobe signal is made at the active level after said column strobe signal has

been set at the active level, and second control means for simultaneously enabling said plurality of set means thereby to



make potentials of said data lines at said predetermined potential in response to said detection signal.

4,439,844

SALMON COUNTER WITH SEPARATE KING SALMON TABULATOR

Albert S. Menin, Sylmar, Calif., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 5, 1981, Ser. No. 308,757
Int. Cl.³ G01S *15/96*
U.S. Cl. 367—87 **6 Claims**

1. In a system for counting migrating fish swimming in a stream including a mechanical support structure adapted to be positioned on the bottom of said stream near the shore thereof and extending a substantial distance into said stream essentially perpendicularly with respect to the direction of stream flow including means forcing the fish to swim over said structure,

an acoustic transducer having a narrow beam width positioned near the shore end of said structure and directed to insonify a volume of water in said stream immediately above said structure, and to receive echo return signals therefrom,

electrical means connected to said transducer including a source of electrical power,

a master clock connected to said source for emitting clock pulses at regular intervals,

a transmitter responsive to said clock pulses for providing echo ranging pulse signals to said transducer,

a delay circuit responsive to said transmitted pulses,

a receiver connected to said transducer and threshold detector means connected to said receiver,

a multistage ring counter providing a plurality of successive output pulses,

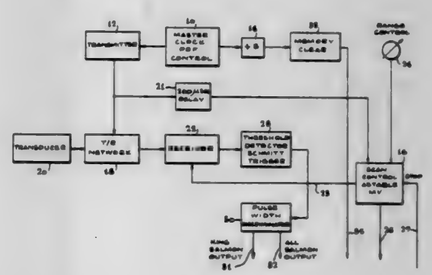
a scan control multivibrator responsive to said delay circuit for enabling said receiver and for enabling said ring counter,

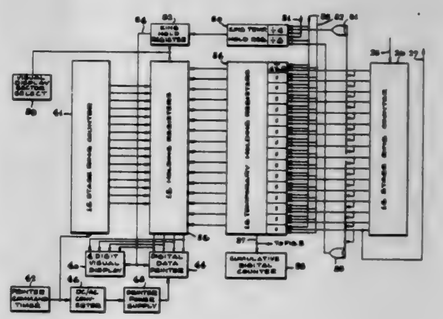
a first holding register having a plurality of stages corresponding to the number of stages of said ring counter including a divider circuit at the input to each stage and connections from each stage of said ring counter to a corresponding one of said divider circuits to thereby provide pulse signals to each stage of said holding register representing one sector along the length of said mechanical support structure;

means connecting said multivibrator means to each of said divider circuits;

divider means connected to said master clock, and means responsive to said divider means output for providing a reset signal to each of said divider circuits;

a second holding register having a number of stages corresponding to the number of stages of said ring counter and said first named holding register and means interconnecting corresponding stages of said holding registers;





and display means connected to said second holding register including timer means;

means providing a separate count of king salmon including a pulse width discriminator connected to said receiver and threshold detector means for separating from the received pulses a group of pulses of longer duration representing king salmon,

separate holding register means including divider circuit means connected to receive the pulses representing king salmon and means connecting said ring counter and said divider circuit means to said separate holding register means,

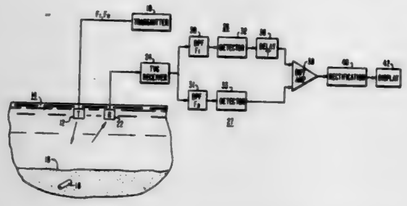
said display means including means connected to said separate holding register means for separately displaying the counts of king salmon.

4,439,845

SONAR SYSTEM

Kenneth P. Geohegan, Jr., Catonsville, and Henry M. Gruen, Arnold, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 3, 1981, Ser. No. 327,151
Int. Cl.³ G01S 15/04
U.S. Cl. 367—87 3 Claims



1. A sonar system for the detection and classification of targets within a target area under surveillance comprising:

(A) means for transmitting, toward said target area, a first discrete pulse of frequency F_1 and a second discrete pulse of frequency F_2;

(B) said frequencies F_1 and F_2 being slightly different from one another and within the resonant frequency range of expected targets;

(C) receiver means responsive to acoustic returns due to said transmitted pulses for providing a composite output signal;

(D) means for separating said output signal into respective frequency component signals corresponding to the transmitted frequencies F_1 and F_2;

(E) means for detecting respective ones of said frequency component signals to obtain the envelopes thereof;

(F) means for subtracting respective detected signals; and

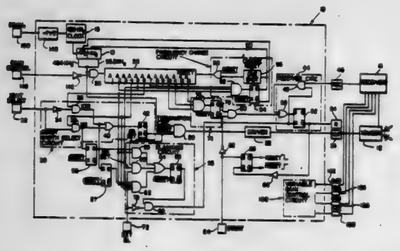
(G) rectifying means coupled to the output of said means for subtracting for providing a unidirectional signal in response thereto.

4,439,846

SONAR RANGEFINDER SYSTEM

Marie T. Rodriguez, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 18, 1981, Ser. No. 322,469
Int. Cl.³ G01S 15/08
U.S. Cl. 367—99 10 Claims



1. A sonic rangefinder system for use with a transmitter for transmitting a burst of sonic energy toward a subject and a receiver for generating an electronic signal responsive to receipt of an echo from the subject comprising:

means for generating an electronic signal burst for transmission to the transmitter to provide the burst of sonic energy;

means for receiving the electronic signal from the receiver so as to provide an output range signal representative of the subject distance in accordance with the elapsed time between transmission and reception of the echo signal; and

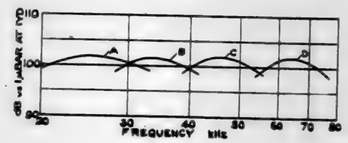
selectively controllable blanking means responsive to an input control blanking signal generated externally thereof for providing at least one blanking signal for inhibiting said receiver means from providing said output range signal for a selected interval subsequent to the transmission of said burst of sonic energy, said blanking means also operating to automatically provide said blanking signal to inhibit said receiver means from providing said output range signal for the duration of the burst of sonic energy and for a determinate interval immediately subsequent to the transmission of the burst of sonic energy in the absence of the blanking control signal wherein said blanking means responds to the termination of the blanking control signal prior to the termination of said determinate interval by removing said blanking signal to prevent the inhibiting of said receiver means.

4,439,847

HIGH EFFICIENCY BROADBAND DIRECTIONAL SONAR TRANSDUCER

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, trustees

Filed Dec. 21, 1981, Ser. No. 332,457
Int. Cl.³ H04R 17/00
U.S. Cl. 367—151 16 Claims



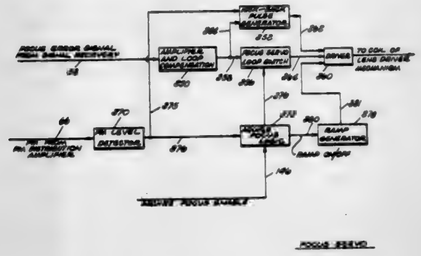
1. In combination in an electroacoustic transducer adapted for high efficiency broadband underwater sound generation in the frequency region above 5 kHz, a support structure including a base portion, a plurality of thin-walled vibratile cylindrical transducer elements of different diameters, a plurality of mounting means associated with said support structure for holding said plurality of cylindrical transducer vibratile elements in axial alignment with relation to said base portion of said support structure, a plurality of conically-shaped sound reflecting surfaces of different diameters, means for locating said plurality of sound reflecting conical surfaces to concentrically surround the vibratile wall surfaces of said plurality of cylindrical transducer elements, a sound conducting waterproof housing structure surrounding and enclosing said plurality of cylindrical transducer elements and said plurality of conical sound reflecting surfaces, and sound conducting means contained within said housing structure for establishing efficient sound transmission between the vibratile surfaces of said cylindrical transducer elements and said conical reflecting surfaces and also between said conical reflecting surfaces and said housing structure.

4,439,848

FOCUSING SYSTEM FOR VIDEO DISC PLAYER

Ludwig Ceshkovsky, Fountain Valley, and Wayne R. Dakin, Redondo Beach, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Continuation of Ser. No. 131,513, Mar. 18, 1980, abandoned, which is a continuation of Ser. No. 890,670, Mar. 27, 1978, abandoned. This application Sep. 1, 1981, Ser. No. 298,405
Int. Cl.³ G11B 7/12
U.S. Cl. 369—45 22 Claims



1. A focus servo system for use in a player apparatus for deriving information from an information bearing surface, said player apparatus including optical means for directing a source beam of radiation along a prescribed optical path to said surface, said focus servo system comprising:

objective lens means for focussing the source beam on the information bearing surface;

focus error detection means for detecting the position of said objective lens means relative to the information bearing surface;

lens drive means, selectively responsive to said focus error detection means, for moving said objective lens means relative to the information bearing surface along the path of the source beam;

focus acquisition signal means, selectively generating an output signal to said lens driver means in a focus acquisition mode, each cycle of said signal driving said objective lens means in a first direction at a first rate through a predetermined range of travel that includes an optimum focussing position; and

kick-back signal means, responsive to said focus error detection means, for selectively providing a relatively brief pulse as an additional output to said lens driver means to intermittently drive said objective lens means in a direction opposite to said first direction,

said kick-back pulse causing said objective lens means to move in said opposite direction at a second rate greater than said first rate and to subsequently move in said first direction at said second rate, whereby said objective lens means scans back and forth past said optimum focussing position a plurality of times in a single cycle of said focus acquisition output signal.

4,439,849

ROTATIONAL SPEED CONTROLLING APPARATUS FOR RECORDING DISC

Daiki Nabeshima, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 2, 1981, Ser. No. 298,914
Claims priority, application Japan, Sep. 30, 1980, 55-136559
Int. Cl.³ G11B 19/24
U.S. Cl. 369—50 13 Claims

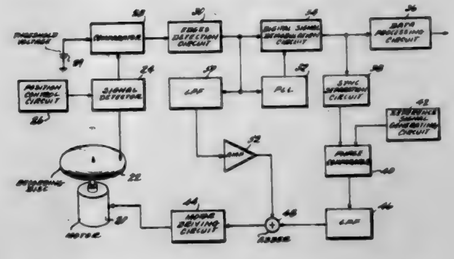
1. An apparatus for controlling a rotational speed of a recording disc in reproducing an information signal pre-recorded on said disc as a train of pulses, said information signal being a digital signal including a synchronizing signal and pre-recorded while said disc is rotating with a constant linear velocity, comprising:

a motor for rotating said recording disc;

means for reproducing said information signal pre-recorded on said disc;

means for extracting said synchronizing signal from said information signal reproduced by said reproducing means;

phase comparing means for comparing the phases between said synchronizing signal and a reference signal and generating a phase difference signal in response to the difference of phases between said synchronizing signal and said reference signal, said reference signal having a predetermined phase relationship to said synchronizing signal while said disc is rotated with a constant linear velocity;



detecting means for detecting the leading and trailing edges of the pulses of said information signal reproduced by said reproducing means and generating a pulse train signal having pulses of constant amplitude and width;

smoothing circuit means for smoothing said pulse train signal from said detecting means to produce a dc signal; and

means for adding the signals from said smoothing circuit means and from said phase comparing means; and

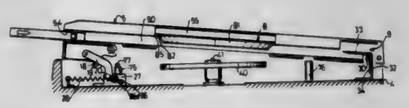
motor driving means for controlling the rotation speed of said motor in response to the signal from said adding means.

4,439,850

RECORD PLAYER

Ichiro Takahara, and Tadahiko Yabu, both of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

PCT No. PCT/JP80/00048, § 371 Date Nov. 16, 1981, § 102(e) Date Nov. 16, 1981, PCT Pub. No. WO81/02805, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 24, 1980, Ser. No. 324,394
Int. Cl.³ G11B 3/36, 19/00, 17/00
U.S. Cl. 369—77.2 4 Claims



1. In a record player for use with a record jacket having a record disk therein, said record player having a liftable cover body pivoted at one end and free at the opposite end, and having a side face at said free end with an inlet formed in said side face, and said record jacket comprising a holder surrounding the outer circumference of said record disk, an outer case in which the said holder is removably inserted, and locking means for locking said holder into said outer case, said record jacket being inserted into the inlet provided at the side face of the free end of said liftable cover body wherein after insertion said outer case may be withdrawn from said record player leaving said record disk and said holder within said cover body, the improvement comprising:

a turntable within said record player, said turntable having a diameter smaller than that of the signal-recorded portion

of said record disk, said turntable supporting said record disk when said record disk is inserted into said record player;

a cover body lifting means for biasing said cover body to an open position for the insertion and withdrawal of said record jacket, said lifting means including holding means for holding the cover body in a closed position when said record disk is being played;

an unlocking means for unlocking said locking means when said record jacket is inserted into said cover body;

said cover body including means for supporting said holder therein after said record jacket has been withdrawn such that said record disk is automatically positioned on said turntable when said cover body is in a closed position;

a record disk clamping means disposed in said cover body and movable towards and away from engagement with said record disk, said record disk clamping means facing the central portion of said record disk supported on said turntable when the cover body is closed for pressing the central portion of said record disk onto the turntable surface;

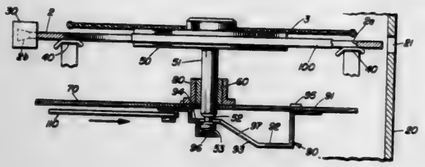
a pick-up means positioned at a level below the turntable surface for detecting a recorded signal on said record disk from a position below the signal-recorded portion of said record disk, said signal-recorded portion extending radially outward from the turntable surface.

4,439,851

TURNTABLE LIFTING APPARATUS OF A VIDEO DISC PLAYER

Majime Kiguchi, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 6, 1981, Ser. No. 280,479
Claims priority, application Japan, Jul. 11, 1980, 55-97840[U]
Int. Cl.³ G11B *17/04*
U.S. Cl. 369—77.2 **5 Claims**



1. A turntable lifting apparatus of a video disc player comprising:

a turntable for supporting a video disc;

a chassis attached to said player under said turntable;

a bearing attached to said chassis for rotatably supporting a shaft of said turntable;

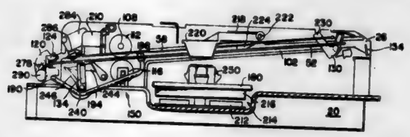
a turntable lifter slidably attached to said chassis, said lifter having an inclined slotted plate which engages with a portion of said turntable shaft for lifting said turntable, said shaft has a groove adjacent an end portion of said shaft, said groove engaging with said inclined slotted plate, said turntable lifter further comprising: a bottom horizontal portion for defining the lowest position of said turntable: an upper horizontal portion for defining the uppermost position of said turntable; said slot being formed in the longitudinal direction of said inclined slotted plate, which contacts with said groove; a tongue formed at said upper horizontal portion and having a horizontal surface for receiving and supporting the end portion of said turntable shaft after said turntable is lifted; and a rectangular hole formed in said upper horizontal portion at a position which is opposite the horizontal surface of said tongue, said hole being linked with said slot.

4,439,852

DISC PLAYER HAVING RECORD HANDLING APPARATUS

Larry M. Hughes, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,377
Int. Cl.³ G11B *17/04*
U.S. Cl. 369—77.2 **10 Claims**



1. In a record player for recovering prerecorded signals from a disc record supported on a turntable; a record handling apparatus comprising:

(A) a stop mounted above a turntable-supported record;

(B) a record lifting member having a record engaging portion;

(C) means for mounting said record lifting member for movement between a first position where said record engaging portion is disposed below said turntable, and a second position where said record engaging portion extends above said turntable;

(D) means for selectively raising and lowering said record engaging portion; the record engaging portion, when raised, engaging the underside of a turntable-supported record to lift said record to a raised position against said stop;

(E) a record receiving pad;

(F) means for mounting said record receiving pad above said turntable for movement between an advanced position and a retracted position in said advanced position, said record receiving pad being in the path of a record between said turntable-supported position and said raised position; in said retracted position, said record receiving pad being maintained out of said path; and

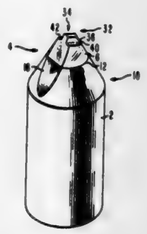
(G) means for selectively advancing and retracting said record receiving pad; wherein to transfer a record from said turntable to said receiving pad, said pad is retracted out of the way of said record, said record lifting member is raised to lift said record above said pad, said pad is advanced, and said record lifting member is lowered to deposit said record on said pad.

4,439,853

CAPACITIVE PLAYBACK STYLUS

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,057
Int. Cl.³ G11B *9/06*
U.S. Cl. 369—126 **4 Claims**



1. A capacitive information disc playback stylus for use with a capacitive information disc which has an information track recorded as geometric surface variations, said stylus comprising a dielectric support element having in one portion a conical body terminating at a constricted tip wherein the stylus comprises:

a conical prow surface;

a flat electrode surface remote from the prow;

shoulders joining the constricted tip to the conical body;

side surfaces which join the prow and the flat electrode surface; and

a shank bonded to said conical body remote from said tip;

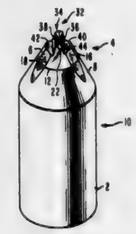
wherein the side surfaces, the flat electrode surface, and the prow surface define the edges of a surface for engaging said disc.

4,439,854

VIDEO DISC STYLUS

Michael E. Miller, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,058
Int. Cl.³ G11B *9/06*
U.S. Cl. 369—126 **1 Claim**



1. A playback stylus for use with a capacitive information disc which has an information track recorded as geometric surface variations, wherein the stylus comprises:

a dielectric support element having a conical end;

two flats in the conical end;

a constricted terminal portion defined by two side surfaces, shoulders interconnecting the two side surfaces and the two flats, a prow defined by a first conical region of said conical end between the flats, a second conical region of said conical end remote from the prow, and a surface defined by the prow, the two side surfaces, and the second region for engaging said disc; and

a shank bonded to said dielectric support element remote from said constricted terminal portion;

wherein the two flats are convergent, and intersect in said first region; and wherein the conical portion of said second conical region between said two side surfaces is an electrode surface.

4,439,855

CAPACITIVE PLAYBACK STYLUS

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,285
Int. Cl.³ G11B *9/06*
U.S. Cl. 369—126 **7 Claims**

1. A capacitive information disc playback stylus comprising:

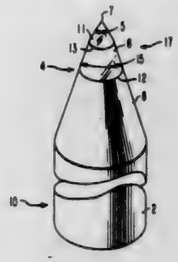
a shank;

a dielectric support element at one end of the shank;

a first conical region of a first angle within the range of 40 to 60 degrees in a portion of the dielectric support element, said first conical region terminating at a constricted tip;

a second conical region adjacent to the first conical region and to the shank of a second angle less than the first angle, said second angle being about 30 degrees; and

an information recovery terminal region in the first conical region for recovering information recorded in an informa-



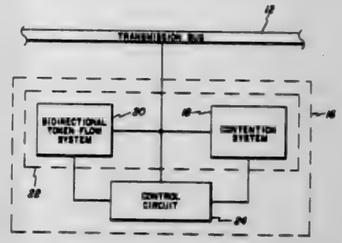
tion track of a capacitive information disc wherein said region is a keel tip.

4,439,856

BIMODAL BUS ACCESSING SYSTEM

Mehmet E. Ulug, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 24, 1982, Ser. No. 351,820
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—85 **15 Claims**



1. A bus communication system comprising a plurality of bus interface units (BIUs), each connected to a transmission bus having a straight-line topology at respective spaced locations along said bus, each respective BIU including:

(A) transmission means for transmitting information packets on said bus, said transmission means being operable in:

(1) a contention mode wherein said transmission means completes the transmission of an information packet only after that respective BIU senses said bus and determines that no additional information packets are also being simultaneously transmitted on said bus; and

(2) a token passing mode wherein said transmission means transmits and information packet only after the expiration of a time interval unique to that respective BIU and determined by the relative location of that respective BIU and the last BIU to transmit one of an information and a start-up packet on said bus; and

(b) control means for causing said transmission means to switch between said contention and token passing modes of operation as a function of the transmission activity on said bus.

4,439,857
DIGITAL DATA TRANSMISSION SYSTEM

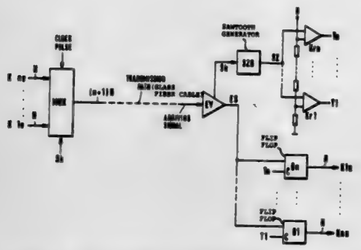
Erich Rauth, Auenwald, and Hans-Jürgen Schmack, Allmersbach, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,658

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044620

Int. Cl.³ H04J 3/06

U.S. Cl. 370—100 **3 Claims**



1. In a digital time multiplex communications system including a transmitter and receiver connected together via a transmission path for transmission of a time multiplex signal containing the signal elements of a synchronization channel and of a plurality of communications channels, the signal elements having the same repetition rate in each channel, the signal transmitted by the transmitter being constituted by a succession of time frames and each frame being composed of a succession of equal element intervals each of which contains a signal element of a respective channel, which system includes, in the receiver:

means connected to the transmission path for separating the synchronization channel signal element from the communications channel signal elements of each from and having a synchronization channel output at which appears each separated synchronization channel signal element and a communications channel output at which appear the communications channel signal elements;

externally triggerable sawtooth voltage generator means connected to said separating means to generate a sawtooth voltage sweep in response to each synchronization channel signal element appearing at said synchronization channel signal output; and

voltage amplitude comparison means composed of a plurality of comparison stages each associated with a respective communications channel and connected to receive the sawtooth voltage generated by said generator means, each said comparison stage being arranged to produce an output signal when the sawtooth voltage reaches a respective value which differs by a fixed amount from one stage to the next such that the output signal from each said stage is produced at a time corresponding to the appearance at said communications channel output of said separating means of a signal element of its associated communications channel, the improvement wherein:

the signal elements of each communications channel are binary coded signal elements;

each synchronization channel signal element is a synchronization pulse with a higher amplitude than each communications channel signal element;

said separating means comprise amplitude threshold switch means connected for separating the synchronization channel signal element from the communications channel signal element of each frame; and

said system further comprises, in the receiver, a plurality of data flipflops each associated with a respective communications channel and each having a data input connected to said communications channel output of said separating means, a clock pulse input connected to receive the output signal produced by the respective comparison stage associated with the same communications channel for causing said flipflop to store a representation of the signal element then present at its said data input, and an output providing a signal corresponding to its stored representation, such that said output of each said flipflop provides a signal sequence corresponding to the signal elements of a respective communications channel of the transmitted time multiplex signal.

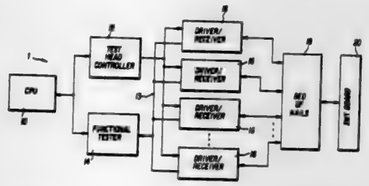
4,439,858
DIGITAL IN-CIRCUIT TESTER

Gerald W. Petersen, Walnut Creek, Calif., assignor to Zehntel, Inc., Walnut Creek, Calif.

Filed May 28, 1981, Ser. No. 267,734

Int. Cl.³ G01R 31/28; G06F 11/00

U.S. Cl. 371—20 **7 Claims**



1. A digital in-circuit tester adapted for use with a computer for testing the electrical properties of components interconnected at electrical nodes in a circuit under test, and where the components operate from at least one reference power supply voltage, the tester having at least one response line connectable to one of the electrical nodes of the circuit under test, comprising:

(a) a bed-of-nails test fixture having a plurality of test pins for contacting the electrical nodes of the circuit under test;

(b) a controller responsive to the computer for controlling the generation of the test sequence in which a sequence of digital test signals are generated and applied to test pins connected to the circuit under test and a response signal obtained therefrom on a connected response signal line;

(c) a functional tester operatively coupled to said computer and responsive to the response signal on said connected response signal line for performing tests on said response signal to determine electrical properties of the circuit under test; and

(d) a plurality of digital driver/receiver circuits responsive to said controller for supplying the digital test signals to the test pins and for receiving a response signal from the circuit, each driver/receiver circuit programmable to supply one of said digital test signals to the circuit under test, said driver/receiver circuits having

(i) a distributed plurality of selectable, programmable reference power supplies, each said power supply associated with at least one of said driver/receiver circuits, for generating the reference power supply operating voltages for components of the circuit under test to receive test signals from the associated driver/receiver circuits,

(ii) a plurality of selectable switch means responsive to said computer for selectively connecting said driver/-receiver circuits and said programmable power supplies to test pins in said bed-of-nails test fixture, said plurality of selectable switch means selectively connecting a node of the circuit under test to a response signal line,

(iii) each said programmable power supply in said plurality of power supplies, when connected by said plurality of switch means to the circuit under test, defining a power supply current loop therebetween for conducting power supply current to and from the circuit under test, and

(iv) each said driver/receiver circuit, when conected by said plurality of switch means to a node of the circuit under test, defining driving digital test signal current loops, each test signal current loop including a portion of said power supply current loop,

(e) said driver/receiver circuits selectively connecting their associated said referenced programmable power supplies to said bed-of-nails fixture so that the currents in said referenced power supply current loops and said digital test signal current loops for testing a component are isolated from the currents in any other said power supply and digital signal test signal current loops, and thus localized to the driver/receiver circuits involved in testing the component.

4,439,859
METHOD AND SYSTEM FOR RETRANSMITTING INCORRECTLY RECEIVED NUMBERED FRAMES IN A DATA TRANSMISSION SYSTEM

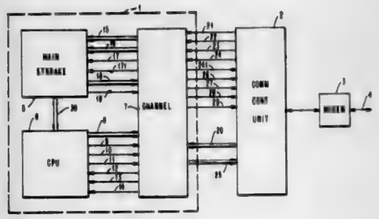
Robert A. Donnan, Chapel Hill, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,672

Claims priority, application European Pat. Off., Aug. 26, 1980, 80430015.0

Int. Cl.³ G08C 25/00

U.S. Cl. 371—32 **8 Claims**



1. In a data transmission system in which a transmitting station sends sequentially numbered information frames to a receiving station, each of said frames including a send sequence number (N(S)) and an information field, a system for retransmitting incorrect frames, characterized in that:

the receiving station includes:

means (69) for receiving said information frames,

means (70) for checking received frames for errors,

means (FIG. 12) for determining the send sequence number (N(S)) of received frames found to be in error,

means (1, FIG. 12) for sending to the transmitting station a Checkpoint message containing a receive sequence number (N(R)) which indicates the send sequence number (N(S)) of the most recently received, error-free, non-retransmitted information frame, and, if at least one incorrect frame was received, at least one identifier (N(X)) which indicates the send sequence number (N(S)) of said at least one incorrect frame whose retransmission is requested, said Checkpoint message being sent after the receiving station has received a predetermined number of information frames greater than one, and in that:

the transmitting station includes:

means (69) for receiving said Checkpoint message,

retransmission means (52, 57, 59, 60, 75) for retransmitting those frames whose send sequence number (N(S)) is equal to one of the identifiers (N(X)) in the Checkpoint message and which have not previously been retransmitted; for associating with each retransmitted frame a variable (V(T)) whose value indicates the order in which the frame is retransmitted relative to the sequence of frames transmitted for the first time; and for retransmitting those frames whose send sequence number (N(S)) is equal to one of the identifiers (N(X)) and which have previously been retransmitted, solely if the value of the variable V(T) associated with such frames is less than that of the receive sequence number (N(R)) in the Checkpoint message, and

means (52, 79) for updating the value of the send state variable (V(T)) associated with each retransmitted frame.

4,439,860
OPTICAL PUMPING IN A WHISPERING MODE OPTICAL WAVEGUIDE

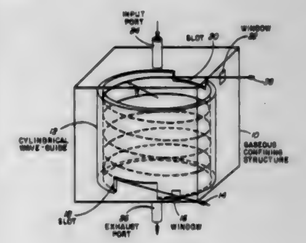
Norman A. Kurnit, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 11, 1981, Ser. No. 291,885

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.³ H01S 3/091

U.S. Cl. 372—70 **9 Claims**



1. An optical pumping apparatus which comprises in combination:

a. an active laser medium capable of laser action at a first wavelength;

b. means for producing a beam of laser radiation having a second wavelength, said second wavelength radiation being capable of interacting with said active laser medium to produce a population inversion therein suitable for generating said laser action at said first wavelength;

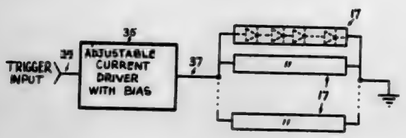
c. waveguide means having a substantially cylindrical surface with a radius R for propagating said second wavelength radiation in a helical direction along said cylindrical surface, said cylindrical surface having an additional curvature formed therein with a radius ρ which confines said second wavelength radiation to a small mode volume and a high intensity as said second wavelength radiation propagates along said waveguide means;

d. means for introducing said second wavelength radiation into said waveguide means;

e. means for confining said laser medium in the propagation path of said second wavelength radiation as said second wavelength radiation propagates along said waveguide means whereby a substantial interaction length of said high intensity of said second wavelength radiation and said laser medium is formed, thereby producing said population inversion in said laser medium and said laser action at said first wavelength therefrom; and

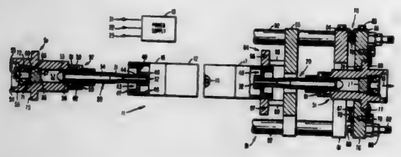
f. means for extracting said first wavelength of laser radiation from said waveguide means.

4,439,861
SOLID STATE LASER WITH CONTROLLED OPTICAL PUMPING
James N. Bradford, Fairfax County, Va., assignor to MRJ, Inc., Fairfax, Va.
Filed Aug. 7, 1981, Ser. No. 291,191
Int. Cl.³ H01S 3/10
U.S. Cl. 372—25 11 Claims



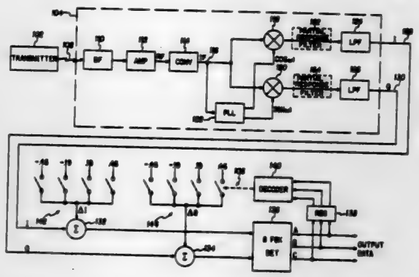
1. A laser comprising
a solid state lasing element;
means for extracting energy from said lasing element;
pumping means optically coupled to said solid state lasing element;
means for causing said pumping means to apply pump power to said solid state lasing element at a predetermined power level for a time sufficient to cause the population inversion to grow to an excess over threshold;
means for diminishing said pump power to a lower level after a predetermined time interval t_a; and
means for increasing said pump power at a time t_b when the declining population inversion reaches threshold.

4,439,862
RIGID LASER MIRROR MOUNT AND PROTECTION ASSEMBLY
Galen E. Mohler, Los Altos, Calif., assignor to Cooper LaserSonics, Santa Clara, Calif.
Filed Feb. 25, 1981, Ser. No. 237,928
Int. Cl.³ H01S 3/08
U.S. Cl. 372—107 16 Claims



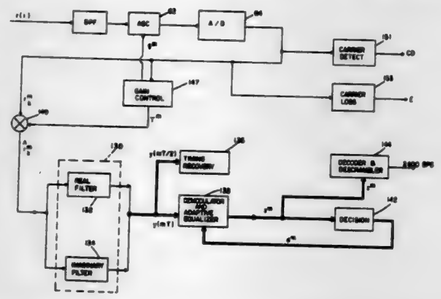
1. An improved laser apparatus of the type which includes an enclosure for containing a lasable gas medium extending along a laser beam path, the enclosure including a window at one end thereof positioned to intercept said laser beam path for passage of laser radiation from said enclosure, a mirror outside said enclosure positioned to intercept said laser beam path, and
a mounting structure for supporting said enclosure and said mirror, the improvement comprising a mirror housing assembly which includes a rigid tube having a generally cylindrically shape extending along said laser beam path, one end of said rigid tube including means for receiving and supporting said mirror and the opposite end of said tube extending around said one end of said enclosure having said window to provide support to said one end of said enclosure, mirror tuning means on said mounting structure for supporting said mirror housing assembly for movement to permit positioning of said mirror relative to said enclosure, said opposite end of said rigid tube including a flexible seal between the interior of said rigid tube and the exterior of said enclosure to inhibit contaminants from entering said rigid tube, said flexible seal being dimensioned to permit limited relative movement between said rigid tube of said mirror housing assembly and said enclosure to maintain a seal therebetween when said mirror is repositioned.

4,439,863
PARTIAL RESPONSE SYSTEM WITH SIMPLIFIED DETECTION
John C. Bellamy, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 28, 1980, Ser. No. 210,951
Int. Cl.³ H03K 13/11
U.S. Cl. 375—18 15 Claims



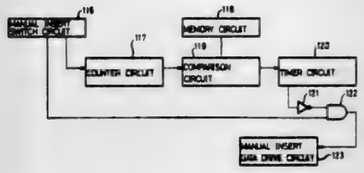
1. A method of processing output signals which result from quadrature channel partial response filtering of input signals, there being a complete set of possible output signals corresponding to a particular set of input signals, all of said signals having a pulse interval associated therewith, the method comprising:
detecing modified output signals in a detection set comparable to said input signal set and generating estimates of input signals based on the modified output signals detected, and
modifying said system output signals so that the set of modified system output signals which are possible in the next interval is a translated subset of said complete set and conforms to said detection set,
thereby deriving estimates of said input signals from said system output signals.

4,439,864
MODEM CIRCUITRY
Shahid U. H. Qureshi, Natick, Mass., assignor to Codex Corporation, Mansfield, Mass.
Filed Apr. 3, 1980, Ser. No. 136,503
Int. Cl.³ H03G 3/20
U.S. Cl. 375—98 10 Claims



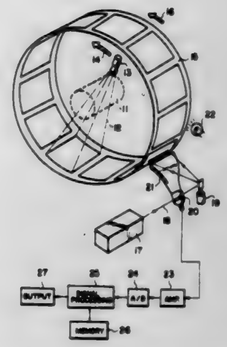
1. Modem receiver apparatus having means for receiving, demodulating, and decoding a modulated carrier signal encoded to represent digital bits, wherein said apparatus includes programmable digital microprocessor circuitry for arithmetic manipulation of digital values to generate a sequence of received signal values for demodulation in said receiver apparatus, based upon the received modulated carrier signal, wherein said apparatus comprises
a digitally controlled gain element for imposing on said received modulated carrier signal a gain corresponding to gain control signals g, said element being connected to said microprocessor circuitry to receive therefrom said gain control signals g,
an analog-to-digital converter, responsive to said digitally controlled gain element to receive a gain-affected modulated carrier signal therefrom, said converter being connected to said microprocessor circuitry to provide thereto digital samples of said gain-affected received modulated carrier signal for generating said sequence of received signal values for demodulation in said receiver apparatus, and
gain control means in said microprocessor circuitry for storing and executing program instructions to estimate a gain control average level of said samples based upon said gain-affected modulated carrier signal, comparing said average level with a desired level to compute a value representative of the relationship between said average and desired levels, and generating said control signals g based upon said relationship and
wherein said, microprocessor circuitry further comprises carrier detect means for storing a gain value corresponding to the current gain provided by said element, computing a carrier detect average level of said samples, and using said stored gain and said carrier detect average to raise a carrier detect signal when said carrier detect average exceeds a carrier detect threshold.

4,439,865
COPIER SORTER WITH MEMORY AND COUNTER CONTROLLED INLET GATE FOR MANUALLY INSERTED COVERS OR PARTITION SHEETS
Hideo Kikuchi, Yokohama; Tamaki Kaneko, Fujisawa; Kunio Hibi, Yokohama; Sunao Ikeda, Yokohama, and Yohtaro Kakitani, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Jan. 7, 1981, Ser. No. 223,168
Claims priority, application Japan, Sep. 30, 1980, 55-136472
Int. Cl.³ G06F 7/02; B65H 43/00, 31/24; G06M 3/02
U.S. Cl. 377—8 1 Claim



1. A sorter for a copy machine to sort or collate a series of copied sheets delivered in series from said copy machine, said sorter having a row of sheet storing bins and a deflector means adapted to move by steps along said row of bins and return to the position of the first bin when it has reached the position of the bin for the sheet corresponding to the number of sheets to be stored or of the last bin, said sorter including;
a detector (21,116) for sheet reception provided at the inlet of said sorter;
a manual insert means (B) having a manual insert opening for sheets serving as covers or partitions for the copied sheets, said means including a channel extending from said insert opening to said sorter for passage of a sheet, a manual insert gate (40) adapted to close said channel, a transfer roller (42) adapted to transfer the sheets fed into said channel through said manual insert gate to said inlet of the sorter and a driving means adapted to open or close said manual insert gate;
means including a counting device (S1 counter, steps 5,32; 117) serving to provide a count at the end of the copying cycle of the actual number of manually inserted sheets detected at said detector (21, 116) for sheet reception;
means including a memory (DATA register; 118) retaining signals corresponding to the number of sheets to be collated;
a comparsion means (steps 5,40; 119) for providing an identity signal when the number of sheets counted in said counter reaches the figure corresponding to the signals retained by said memory; and
means including timers (steps 5, 48; 7.1-7-4; 120) set at the timer when the identity signal has been produced by said comparison means and reset after the lapse of a predetermined time period;
said timers while they are being set closing said manual insert gate by means of said driving means for said manual insert gate.

4,439,866
ARBITRARY LAYER TOMOGRAPHIC METHOD AND APPARATUS
Hisatoyo Kato, and Masamitsu Ishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 5, 1983, Ser. No. 511,074
Claims priority, application Japan, Jul. 19, 1982, 57-125475
Int. Cl.³ G03B 41/16
U.S. Cl. 378—19 10 Claims



1. An arbitrary layer tomographic method which comprises once storing a plurality of two-dimensional X-ray projection distribution images, which are obtained by exposing an object to X-rays in a plurality of different directions, in positions different from one another in a single stimulable phosphor sheet or respectively in a plurality of stimulable phosphor sheets, scanning said stimulable phosphor sheet or sheets with stimulating rays, photoelectrically reading out the light emitted thereby from said stimulable phosphor sheet or sheets and obtaining electric signals representing the image information of a plurality of said X-ray projection distribution images, processing said electric signals and obtaining the image information representing a tomographic image of an arbitrary tomographic layer of said object.

4,439,867

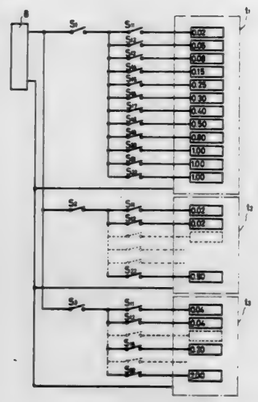
X-RAY PHOTOGRAPH UNIT

Minoru Yoshida, Tokorzawa-Kooporasu-G 308, No. 876-3, Kitaakitsu, Tokorozawa-shi, Saitama, Japan

Continuation of Ser. No. 156,394, Jun. 4, 1980. This application Aug. 23, 1982, Ser. No. 410,426

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—96 **6 Claims**



1. An X-ray photograph unit of the type which controls the X-ray projection on the basis of tube voltage, tube current and exposure time which comprises:

an X-ray tube,

a plurality of photography portion switches structured so as to automatically set said tube voltage and tube current to predetermined values corresponding to selected portions of the human body to be photographed,

a plurality of thickness switches structured so as to set automatically the exposure time to correspond to the thickness of human body portions to be photographed in combination with said photograph portion switches,

each of said photograph portion switches being connected in series with a plurality of said thickness switches and each thickness switch in turn being connected in series to first and second timers,

said first timers providing an exposure time pre-determined in accordance with the human body portion to be photographed and with the thickness thereof,

said second timers being protective timers to provide the upper limit of exposure time for each body portion to be photographed equivalent to an exposure time determined in accordance with the maximal thickness for each body portion to be photographed under control of said photograph portion switch,

said photograph portion switches and said thickness switches being electrically connected to said X-ray tube so the selection of one of each said switches alone makes it possible to carry out an X-ray photography projection.

4,439,868

MEDICAL X-RAY RADIATION POWER SUPPLY APPARATUS

Takao Makino, Hikone, and Toshiaki Ikeda, Yahata, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Mar. 17, 1983, Ser. No. 476,277

Claims priority, application Japan, Mar. 18, 1982, 57-38966[U]

Int. Cl.³ H05G *1/34*

U.S. Cl. 378—112 **4 Claims**

1. A medical X-ray radiation power supply apparatus comprising:

a high voltage generation network comprising:

a smoothing power supply circuit for rectifying commercially available power;

a first switching power supply circuit coupled to an output of said smoothing power supply circuit, said switching power supply circuit further having a switching input;

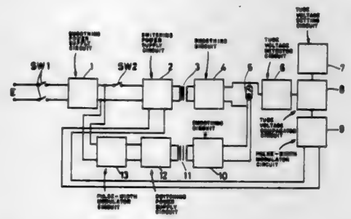
a high voltage transformer with primary and secondary windings, said primary winding be coupled to an output of said first switching power supply circuit;

a first smoothing circuit coupled to said secondary winding and having its output coupled to an X-ray tube;

an X-ray tube voltage detector coupled to said secondary windings for detecting the magnitude of the X-ray tube voltage;

an X-ray tube setting circuit for setting an X-ray tube reference voltage;

a comparator circuit for comparing said detected X-ray tube



voltage with said reference voltage and for generating an output indicative of the comparison; and

a first pulse-width modulator circuit which generates a pulse-width modulated pulse in response to the output of said comparator circuit, said pulse-width modulated pulse being supplied to said switching input of said first switch power supply circuit to control said tube voltage of said X-ray tube;

a filament power supply network comprising;

a second pulse-width modulator circuit coupled to said output of said smoothing power supply circuit;

a second switching power supply circuit coupled to an output of said second pulse-width modulator circuit;

a filament transformer having a primary and secondary windings, said primary winding being coupled to said second switching power supply circuit; and

a second smoothing circuit coupled to said secondary winding of said filament transformer and having its output coupled to a filament of said X-ray tube.

4,439,869

X-RAY GENERATOR FOR AN X-RAY TUBE COMPRISING A GROUNDED GRID

Bernd Hermeyer, Schenefeld; Heinz Mester, Hamburg, and Hans Negle, Nahe, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

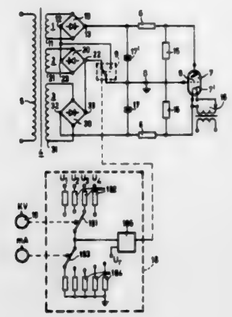
Filed Sep. 1, 1982, Ser. No. 413,930

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135061

Int. Cl.³ H05G *1/12, 1/32*

U.S. Cl. 378—113 **5 Claims**

1. An X-ray generator for an X-ray tube comprising a grounded grid which is situated between the anode and the cathode thereof, said X-ray generator comprising a series connection of high voltage generators which are to be connected to the anode and the cathode of the X-ray tube in order to generate a direct voltage on the X-ray tube, and also comprising means for changing the ratio of the anode voltage and the cathode voltage, characterized in that the series connection consists of at least three high voltage generators (1, 2, 3), there being provided a high voltage switching device (9) whereby an output junction of two interconnected high voltage generators can be connected to ground, the high voltage switching device (9) being switchable in dependence of the adjusted value of the tube voltage and/or the tube current on order to ensure that



the ratio of the anode voltage and the cathode voltage is smaller in the case of low values of the tube voltage than in the case of high values of the tube voltage and that a given value of the cathode voltage is not exceeded.

4,439,870

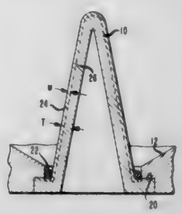
X-RAY SOURCE AND METHOD OF MAKING SAME

Martin E. Poulsen, New Providence; Frederick Vratny, Berkeley Heights, and Alfred Zacharias, Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1981, Ser. No. 334,479

Int. Cl.³ H01J *35/08*

U.S. Cl. 378—143 **9 Claims**



1. In combination in an X-ray system,

a target comprising an X-ray-emissive material for producing X-rays in response to electron bombardment of surface portions of said target,

and means for directing cooling water along other surface portions of said target,

wherein the improvement comprises a limited-depth hydrogen-barrier layer, comprising said X-ray-emissive material as a constituent, formed within said target extending from said other surface portions.

DESIGN PATENTS

GRANTED MAR. 27, 1984

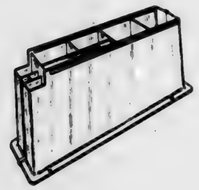
ERRATA

For CLASS	See PATENT NO.
D15–007	273,178

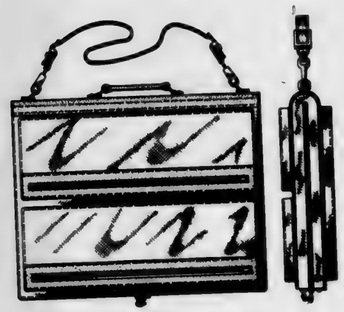
273,149
CARRYING CASE
Bruce Fifield, Bank Village St., New Ipswich, N.H. 03071
Filed Feb. 22, 1982, Ser. No. 350,728
U.S. Cl. D3—30.1



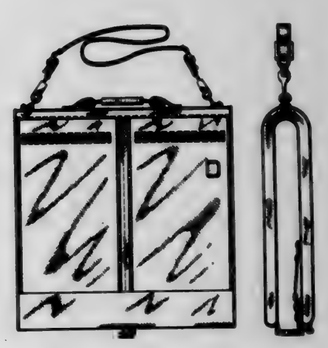
273,150
AIRCRAFT CONSOLE
David L. Benson, 7474 Carmel La., Grand Ledge, Mich. 48837
Filed Jun. 19, 1981, Ser. No. 275,591
U.S. Cl. D3—40



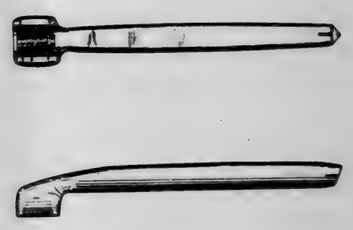
273,151
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Feb. 12, 1982, Ser. No. 348,490
U.S. Cl. D3—71



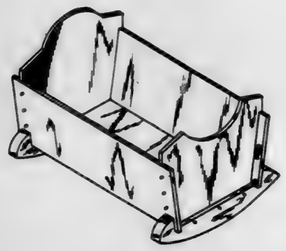
273,152
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Feb. 12, 1982, Ser. No. 348,529
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
U.S. Cl. D3—71



273,153
TOOTHBRUSH
Eugene C. Wagner, 3424 Kingsbridge Ave., Bronx, N.Y. 10463
Filed Jun. 7, 1982, Ser. No. 385,926
U.S. Cl. D4—28



273,154
CRADLE
José C. Almela, 62 St. Charles Rd., Greenfield Park, Quebec, Canada
Filed Dec. 31, 1981, Ser. No. 336,424
Claims priority, application Canada, Oct. 20, 1981, 23-10-81-13
U.S. Cl. D6—15



273,155
ARM CHAIR
Donald C. Petitt, 207 W. 86th St., New York, N.Y. 10024
Filed Nov. 10, 1981, Ser. No. 320,038
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
U.S. Cl. D6—31



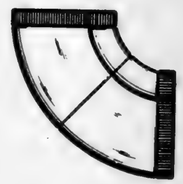
273,156
ARMLESS SOFA
Barbara Dubbin, and Jackie Caputo, both of Miami, Fla., assignors to Casa Bella Imports, Inc., Miami, Fla.
Filed Jan. 8, 1982, Ser. No. 338,128
U.S. Cl. D6—47



273,157
AIRCRAFT SEAT
Lucien Staub, Paray-Vieille Poste, France, assignor to La Compagnie Nationale Air France, Paris, France
Filed Sep. 14, 1981, Ser. No. 302,259
Claims priority, application France, Mar. 16, 1981, 81 0966
U.S. Cl. D6—48



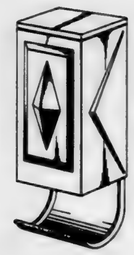
273,158
OPEN CURVED SOFA
Barbara Dubbin, and Jackie Caputo, both of Miami, Fla., assignors to Casa Bella Imports, Inc., Miami, Fla.
Filed Jan. 8, 1982, Ser. No. 338,126
U.S. Cl. D6—61



273,159
GROCERY BAG HOLDING RACK
Gerhard Adamson, 60 Blue Ridge Dr., Vernon, Conn. 06066, and Earl W. Voorhees, Jr., 903 Manor Dr., Box 363, Dublin, Pa. 18917
Filed Dec. 10, 1981, Ser. No. 329,607
U.S. Cl. D6—85



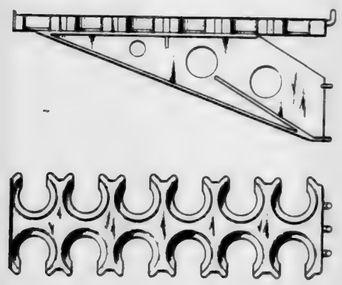
273,160
COMBINED HOLDER AND DISPENSER FOR TISSUE PAPER ROLLS
Ralph E. Moreland, 1401 NE. Englewood Rd., Kansas City, Mich. 64118
Filed Sep. 15, 1981, Ser. No. 302,637
U.S. Cl. D6—97



273,161
TOWEL RACK
Lee E. Weber, 1670 Molino Ave., Long Beach, Calif. 90804
Filed Dec. 10, 1982, Ser. No. 448,844
U.S. Cl. D6—100



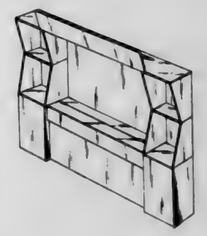
273,162
RACK OR SIMILAR ARTICLE
Lance K. Halverson, 7301 - 27th Ave. NW., Seattle, Wash. 98117
Continuation-in-part of Ser. No. 65,905, Aug. 13, 1979, abandoned. This application Feb. 7, 1980, Ser. No. 119,604
U.S. Cl. D6—125



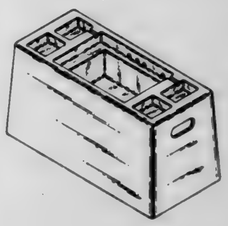
273,163
PUPIL'DESK
Matti Halme, Harjuvilta 18 A 11, SF-02110 Espoo 10, Finland
Filed Mar. 23, 1981, Ser. No. 246,737
Claims priority, application Finland, Oct. 1, 1980, 712/80
U.S. Cl. D6—181



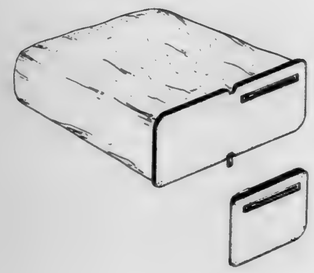
273,164
FOLDABLE DISPLAY STAND OR THE LIKE
Mark A. Matthews, 1706 Park, Balboa Island, Calif. 92662
Filed Nov. 9, 1981, Ser. No. 319,318
U.S. Cl. D6—186



273,165
ELECTRONIC GAME STAND
Steven Sternberg, 24 Kristi La., Lake Grove, N.Y. 11755
Filed Aug. 28, 1981, Ser. No. 297,136
U.S. Cl. D6—188



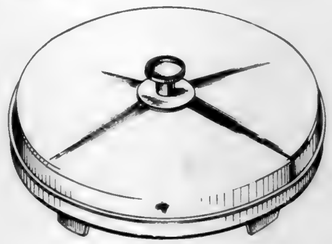
273,166
INFLATABLE FOLDABLE CUSHION
Thomas Koves, 645 N. Cherokee Ave., Los Angeles, Calif. 90004
Filed Nov. 5, 1981, Ser. No. 318,639
U.S. Cl. D6—201



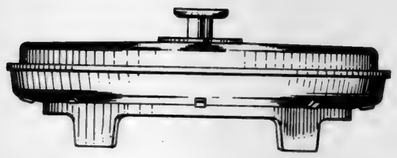
273,167
CANISTER
Arthur R. Carlson, East Malvern, Australia, assignor to Brian Davis & Company Proprietary Limited, Victoria, Australia
Filed Nov. 12, 1981, Ser. No. 320,296
Claims priority, application Australia, Oct. 15, 1981, 85,496
U.S. Cl. D7—79



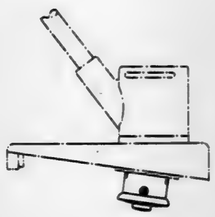
273,168
MICROWAVE PIZZA MAKER UTENSIL
Robert F. Bowen, Burlington; Thomas J. Martel, North Reading, and Wayne I. Pollack, Arlington, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Nov. 16, 1981, Ser. No. 321,944
U.S. Cl. D7—354



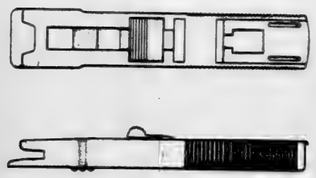




273,169
CUTTING HEAD OF A WEED CUTTER OF THE TYPE USING A ROTATING CUTTING STRING
Jon A. Rabe, Mission Viejo, and John Motruk, Whittier, both of Calif., assignors to Hawaiian Motor Company, Long Beach, Calif.
Filed Dec. 11, 1981, Ser. No. 329,895
U.S. Cl. D8—8



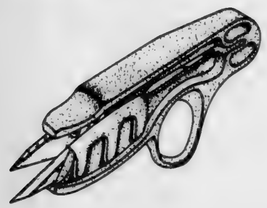
273,170
PAPER CLIP DRIVER AND APPLICATOR
Hisao Sato, Dai-ni Hikari-so, 10 Toyotama Minami 3-chome, Nerima-ku, Tokyo, Japan
Filed Oct. 6, 1981, Ser. No. 309,087
U.S. Cl. D8—49



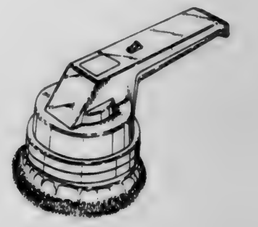
273,171
DISPENSING DEVICE FOR FASTENERS
Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Oct. 28, 1981, Ser. No. 315,830
U.S. Cl. D8—49



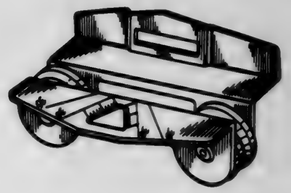
273,172
THREAD NIPPER OR THE LIKE
Masami Yamagishi, Tokyo, Japan, assignor to Sanwa Cutlery Ltd., Tokyo, Japan
Filed Sep. 2, 1981, Ser. No. 298,731
U.S. Cl. D8—57



273,173
CAR POLISHER
Tit-Wing Poon, 12F Lam Uk Village, Chaiwan, Hong Kong
Filed Jun. 22, 1981, Ser. No. 276,313
Claims priority, application United Kingdom, Mar. 9, 1981, 999316
U.S. Cl. D8—62



273,174
SAW SHARPENING GUIDE
Cornelis J. M. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia
Filed Mar. 4, 1981, Ser. No. 240,464
Claims priority, application Australia, Oct. 10, 1980, 82277
U.S. Cl. D8—71



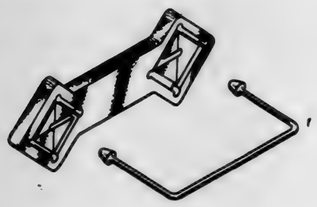
273,175
WALL AND CEILING HOOK TOOL HEAD, FOR USE IN FIGHTING FIRES
Theodore Ziaylek, Jr., P.O. Box 337, Yardley, Pa. 19067
Filed Feb. 26, 1982, Ser. No. 352,617
U.S. Cl. D8—81



273,176
TIE DOWN DEVICE
Thomas R. Abbott, 1266 Richard St., Orange, Calif. 92669
Filed May 26, 1981, Ser. No. 267,226
U.S. Cl. D8—356

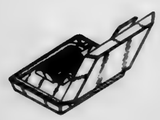


273,177
TAMPER-PROOF FASTENING DEVICE FOR TAGS AND THE LIKE
John K. Tcherneshoff, Fort Payne, Ala., assignor to Tchernesh-off Associates, Inc., Fort Payne, Ala.
Division of Ser. No. 214,328, Dec. 8, 1980. This application Jun. 27, 1983, Ser. No. 508,479
U.S. Cl. D8—382

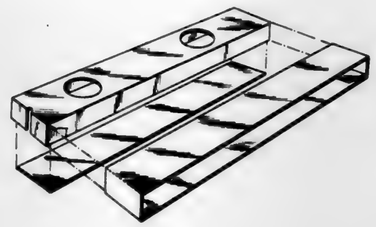


273,178
PACKAGED AIR INFLATOR SET
Jerald V. Dunlap, Pacific Palisades, Calif., assignor to M-D & Co., Mammoth Lakes, Calif.
Filed Feb. 23, 1981, Ser. No. 237,515
U.S. Cl. D15—7

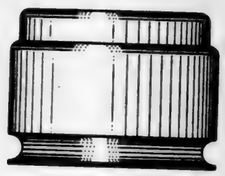




273,179
PACKAGING CONTAINER FOR A RIBBON CARTRIDGE
Sydney Shore, 38-40 48th St., Long Island City, N.Y. 11004
Filed Feb. 10, 1982, Ser. No. 347,601
U.S. Cl. D9—346



273,180
COSMETIC JAR
John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417
Filed Jul. 13, 1979, Ser. No. 57,293
U.S. Cl. D9—352



273,181
FOOD PACKAGING TRAY
George B. Braddon, 26 Maple Ave., Holcomb, N.Y. 14469
Filed Jul. 30, 1981, Ser. No. 288,666
U.S. Cl. D9—425



273,182
TEA POT SIMULATING THIMBLE
William B. Shane, and Claudia A. Shane, both of 2845 N. Albany, Chicago, Ill. 60618
Filed Feb. 2, 1982, Ser. No. 339,821
U.S. Cl. D11—157



273,183
COFFEE POT SIMULATING THIMBLE
William B. Shane, and Claudia A. Shane, both of 2845 N. Albany, Chicago, Ill. 60618
Filed Jan. 25, 1982, Ser. No. 342,212
U.S. Cl. D11—157



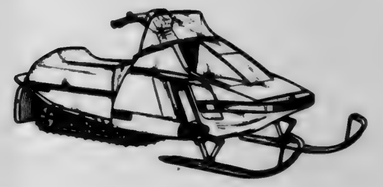




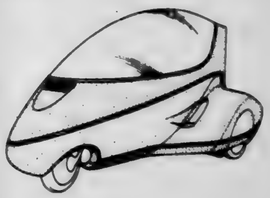
273,184
FLAG OR SIMILAR ARTICLE
Paul E. Wabeke, P.O. Box #132, Holland, Mich. 49423
Filed May 27, 1981, Ser. No. 265,051
U.S. Cl. D11—173



273,185
SNOWMOBILE
Atsushi Ishiyama, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Oct. 8, 1980, Ser. No. 194,958
Claims priority, application Japan, Apr. 12, 1980, 55-14363
U.S. Cl. D12—7



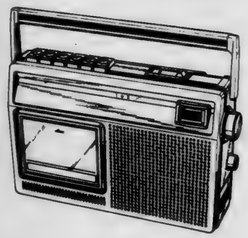
273,186
VEHICLE
Richard P. Bruning, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 21, 1981, Ser. No. 332,478
U.S. Cl. D12—85



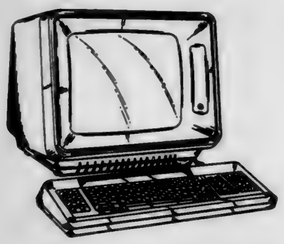
273,187
LOCKABLE QUICK FOOT FOR VEHICLE RACKS
Jan-Erik Brorsson, Toarpsdal, S-516 00 Dalsjofors, Sweden
Filed May 22, 1981, Ser. No. 266,606
U.S. Cl. D12—157



273,188
COMBINED RADIO AND CASSETTE TAPE RECORDER
Katsutoshi Kido, Kyoto, and Satoru Usami, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Oct. 14, 1981, Ser. No. 311,472
Claims priority, application Japan, Apr. 20, 1981, 56-17011
U.S. Cl. D14—5



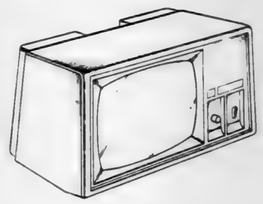
273,189
DISPLAY TERMINAL
James L. Korzik, Palm Harbor; Thomas Wissman; Richard Anderson, both of Largo, and Jorge Suarez, Seminole, all of Fla., assignors to Paradyne Corporation, Largo, Fla.
Filed Aug. 12, 1981, Ser. No. 292,148
U.S. Cl. D14—106



273,190
COMPUTER
Yoshihisa Ohie, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 20, 1981, Ser. No. 294,424
Claims priority, application Japan, Feb. 24, 1981, 56-7575
U.S. Cl. D14—106



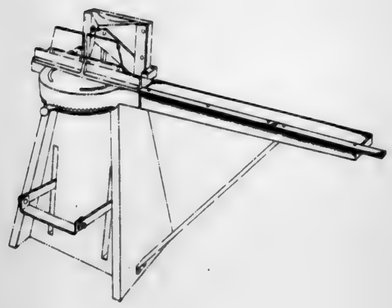
273,191
COMPUTER DATA DISPLAY MONITOR
Terrell A. Oyama, San Jose, and Loren D. Stirling, Pleasanton, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Nov. 13, 1981, Ser. No. 321,235
U.S. Cl. D14—113



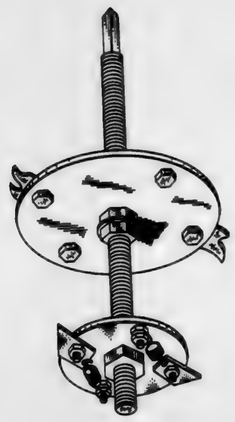
273,192
CARTRIDGE FOR MAGNETIC DISC
Shigeru Yoshida, Chichibu, Japan, assignor to Canon Kabushiki Kaisha and Canon Denshi Kabushiki Kaisha, both of Tokyo, Japan
Filed Jan. 30, 1981, Ser. No. 230,351
Claims priority, application Japan, Aug. 22, 1980, 55-34316
U.S. Cl. D14—114



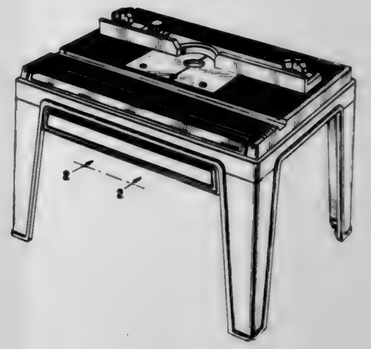
273,193
GAGE BAR FOR MITER CUTTING MACHINE
John K. Stowe, Manchester, Conn., assignor to Perimet, Inc., Chester, Conn.
Filed Mar. 2, 1981, Ser. No. 239,615
U.S. Cl. D15—133



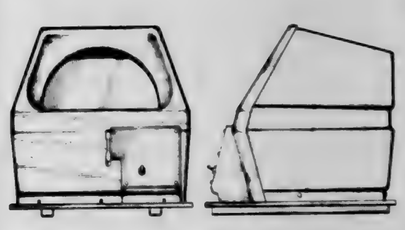
273,194
TOOL FOR CUTTING THE INSIDE OF PLASTIC PIPES
Harold House, 2709 Cambridge Cir., Rosenberg, Tex. 77471
Filed Dec. 4, 1981, Ser. No. 327,715
U.S. Cl. D15—139



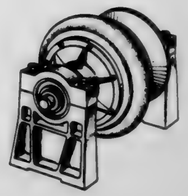
273,195
POWER TOOL TABLE
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Baisch, Palatine, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Aug. 14, 1981, Ser. No. 293,006
U.S. Cl. D15—141



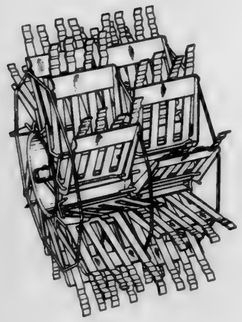
273,196
FEEDER HOUSING
Lee F. Radtke, Lake Zurich, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.
Filed Oct. 8, 1981, Ser. No. 309,706
U.S. Cl. D15—147



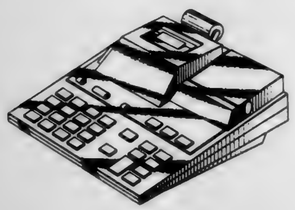
273,197
VARIABLE SPEED BELT DRIVE
Robert O. Huff; Edward F. Krome, Jr., and Gebus Barnsfather, all of Columbus, Ind., assignors to Reliance Electric Company, Columbus, Ind.
Filed Mar. 16, 1981, Ser. No. 244,210
U.S. Cl. D15—148



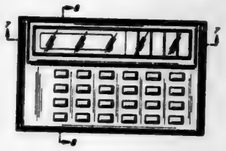
273,198
ROTARY ELEMENT OF PLASTERING MACHINE
Anne Marie Y. Croizyvreuve Daignas, Villa La Perle, 11 Boulevard Edouard 1, II Nice, France
Filed Aug. 13, 1980, Ser. No. 177,616
U.S. Cl. D15—199



273,199
CALCULATOR WITH PRINTER
Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Mar. 24, 1982, Ser. No. 361,496
Claims priority, application Japan, Sep. 30, 1981, 56-43796
U.S. Cl. D18—7

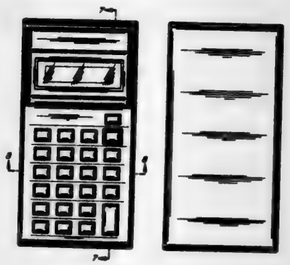


273,200
ELECTRONIC CALCULATOR WITH SOLAR BATTERIES
Keiji Sakata, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1981, Ser. No. 410,468
Claims priority, application Japan, Jul. 3, 1981, 56-29784
U.S. Cl. D18—7

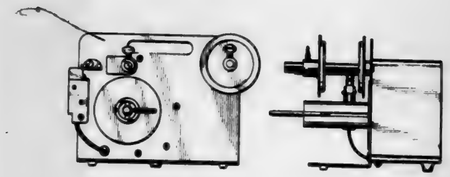




273,201
ELECTRONIC CALCULATOR
Keiji Sakata, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1981, Ser. No. 410,469
Claims priority, application Japan, Jul. 3, 1981, 56-29783
U.S. Cl. D18—7

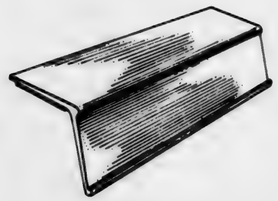


273,202
LABEL DISPENSER
Allen H. Oglander, St. Louis County, and Richard E. Shannon, Rocky Mount, both of Mo., assignors to Commercial Mailing Accessories, Inc., St. Louis, Mo.
Filed Sep. 13, 1982, Ser. No. 417,413
U.S. Cl. D18—19

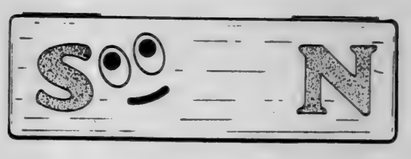


273,203
NEWSPAPER VENDING RACK OR SIMILAR ARTICLE
Fred M. Gore, Dallas, Tex., assignor to Gannett Co., Inc., Rochester, N.Y.
Filed May 12, 1982, Ser. No. 377,440
U.S. Cl. D20—6

273,204
DISPLAY SIGN STRIP
Robert L. Baker, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Sep. 18, 1981, Ser. No. 303,351
U.S. Cl. D20—44



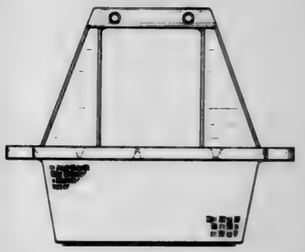
273,205
TOY BAR MAGNET
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 17, 1981, Ser. No. 331,651
U.S. Cl. D21—59



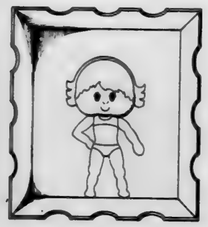
273,206
TOY HORSESHOE MAGNET
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 17, 1981, Ser. No. 331,653
U.S. Cl. D21—59



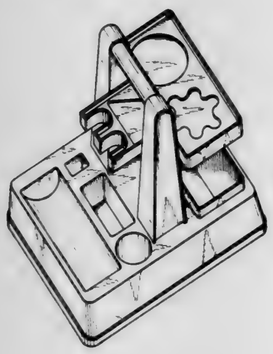
273,207
TOY CARRIER
W. Porter Clanton, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 21, 1981, Ser. No. 332,450
U.S. Cl. D21—59



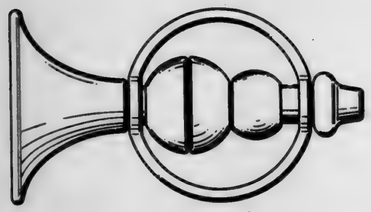
273,208
TOY PICTURE FRAME OR SIMILAR ARTICLE
A. Edward Fogarty, and Bonnie R. Fogarty, both of 3513 School Ave., Sarasota, Fla. 33579
Filed Jan. 15, 1982, Ser. No. 339,710
U.S. Cl. D21—59



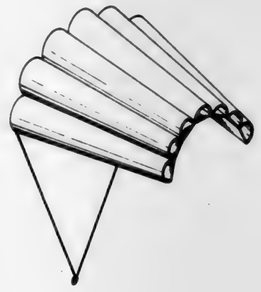
273,209
TOY CARRIER
David J. Ciganko, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,164
U.S. Cl. D21—59



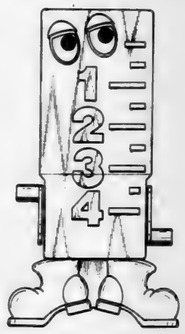
273,210
TOY TRUMPET
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Kuniko Sugita, both of Tokyo, all of Japan, assignors to Combi, Co., Ltd., Tokyo, Japan
Filed May 18, 1981, Ser. No. 265,111
Claims priority, application Japan, Jan. 29, 1981, 56-3071
U.S. Cl. D21—64



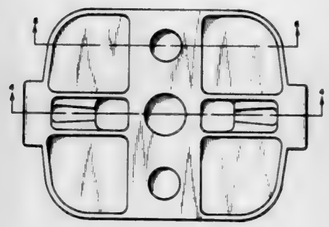
273,211
KITE
Paolo Ferrari, Stanmore, England, assignor to Zether Limited, London, England
Filed Oct. 26, 1981, Ser. No. 315,011
Claims priority, application United Kingdom, Apr. 24, 1981, 1000167
U.S. Cl. D21—88



273,212
TOY TAPE MEASURE
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,741
U.S. Cl. D21—120



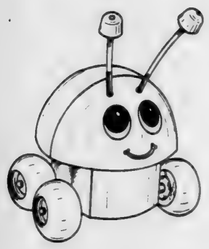
273,213
TOY TRAY
Carl J. Simmons, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 28, 1982, Ser. No. 343,409
U.S. Cl. D21—121



273,214
TOY DISH DRAINER
Augusto Argandona, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,107
U.S. Cl. D21—121



273,215
ACTION PULL TOY
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,626
U.S. Cl. D21—150



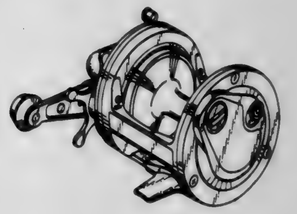
273,216
MULTI-PURPOSE DEFENSE BATON
Harold S. Sinrod, 10110 New London Dr., Potomac, Md. 20854
Filed Jun. 2, 1982, Ser. No. 384,207
U.S. Cl. D22—1



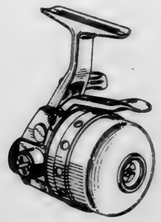
273,217
GUN SIGHT
Armand Swenson, P.O. Box 606, Fallbrook, Calif. 92028
Filed Apr. 5, 1982, Ser. No. 365,181
U.S. Cl. D22—9



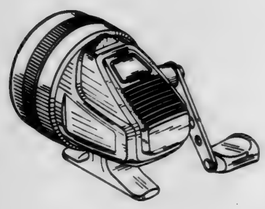
273,218
REEL FOR FISHING
Takashi Atobe, Higashikurume, and Kanji Iinuma, Musashino, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jun. 15, 1982, Ser. No. 388,708
Claims priority, application Japan, Dec. 29, 1981, 56-58708
U.S. Cl. D22—25



273,219
REEL FOR FISHING
Kanji Iinuma, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 19, 1982, Ser. No. 399,352
Claims priority, application Japan, Jan. 30, 1982, 57-3602
U.S. Cl. D22—25



273,220
REEL FOR FISHING
Kanji Iinuma, Tokyo, and Hideo Nakamura, Sakura, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 19, 1982, Ser. No. 399,762
Claims priority, application Japan, Jan. 30, 1982, 57-3600
U.S. Cl. D22—25



273,221
REEL FOR FISHING
Kanji Iinuma, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 19, 1982, Ser. No. 399,763
Claims priority, application Japan, Jan. 30, 1982, 57-3601
U.S. Cl. D22—25



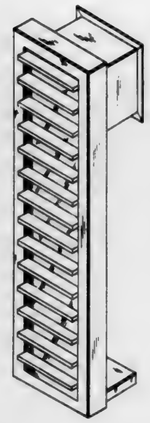
273,222
FISH HANDLING DEVICE
Jeffrey Niemann, 316 Lexington Ave., Fort Smith, Ark. 72901
Continuation-in-part of Ser. No. 36,876, May 7, 1979, Pat. No. Des. 258,980. This application Dec. 15, 1980, Ser. No. 216,188
U.S. Cl. D22—31



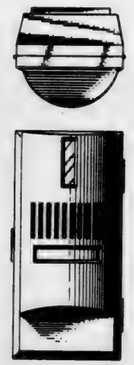
273,223
FILTER
Tibor Horvath, Brooklyn, N.Y., assignor to Lazere Financial Corporation, New York, N.Y.
Filed Oct. 5, 1981, Ser. No. 308,934
U.S. Cl. D23—4



273,224
SOLAR PANEL
Harold King, 3925 Tiverton Rd., Randallstown, Md. 21133
Continuation-in-part of Ser. No. 154,430, May 29, 1980, Pat. No. Des. 261,030. This application Jul. 9, 1981, Ser. No. 281,662
U.S. Cl. D23—72



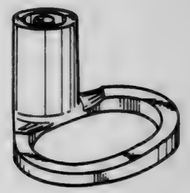
273,225
AIR FRESHENER HOUSING
Richard C. J. Palson, Medfield, Mass., assignor to Woodlets, Inc., Buffalo, N.Y.
Filed Aug. 24, 1981, Ser. No. 295,866
U.S. Cl. D23—150



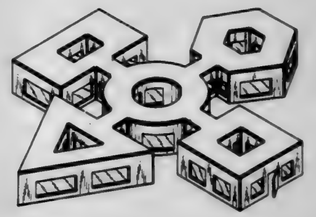
273,226
SINGLE USE CATHETER DEVICE
Edwin H. Riedell, 412 W. Hermosa Dr., Fullerton, Calif. 92635
Filed Jan. 28, 1982, Ser. No. 343,498
U.S. Cl. D24—54



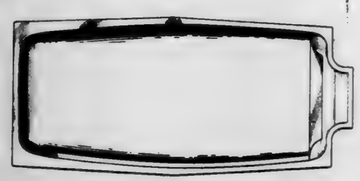
273,227
PULL RING PORT CAP FOR A MEDICAL FLUID CONTAINER
Kenneth E. Wilkinson, Round Lake, and Thomas W. Balistreri, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Aug. 24, 1981, Ser. No. 295,402
U.S. Cl. D24—48



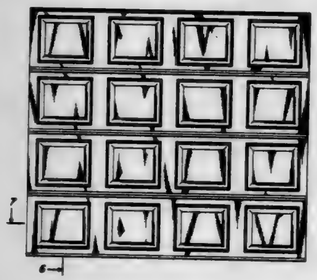
273,228
BUILDING STRUCTURE
Sammy Cotton, 1314 W. 69th St., Los Angeles, Calif. 90044
Filed Jan. 8, 1982, Ser. No. 337,974
U.S. Cl. D25—1



273,229
SWIMMING POOL
Michel Lippe, 173 St-Exupery, Mont St-Hilaire, Quebec; Claude Lippe, 1455 De Castelno, St-Hyacinthe, Quebec, and Jacques Lippe, 1805 Becancour, Laval, Quebec, all of Canada
Filed Dec. 9, 1981, Ser. No. 328,856
U.S. Cl. D25—2



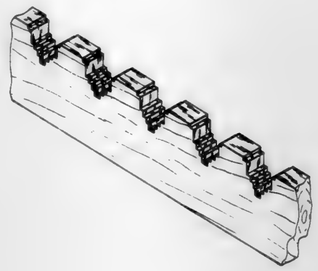
273,230
GARAGE DOOR
Robert A. Martinez, 4127 S. Wolff St., Denver, Colo. 80236, and Robert D. Bohnas, Denver, Colo., assignors to Robert A. Martinez, Denver, Colo.
Filed Dec. 18, 1980, Ser. No. 217,672
U.S. Cl. D25—49



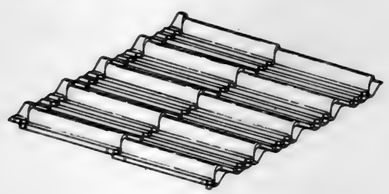
273,231
SPIRAL STAIRWAY
Abraham Suckno, 289 Friar La., Mountainside, N.J. 07092
Filed Sep. 8, 1981, Ser. No. 300,245
U.S. Cl. D25—62



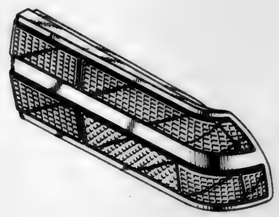
273,232
DECORATIVE MOLDING STRIP
James A. Roberts, 26 Renpass Ave., Harahan, La. 70123
Filed Aug. 10, 1981, Ser. No. 291,638
U.S. Cl. D25—79



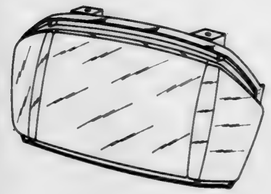
273,233
ROOFING TILE
Robert B. Norgate, Hamilton, New Zealand, assignor to Hunter Douglas Industries, B.V., Rotterdam, Netherlands
Filed Aug. 21, 1981, Ser. No. 295,016
U.S. Cl. D25—92



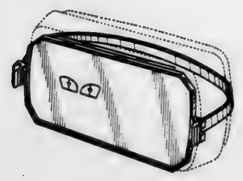
273,234
TAIL LIGHT FOR AUTOMOBILE
Claus Luthe, Munich; Manfred Rennen, Ingolstadt, and Hans Braun, Lohhof, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany
Filed Mar. 27, 1981, Ser. No. 248,363
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, M4 12 271
U.S. Cl. D26—35



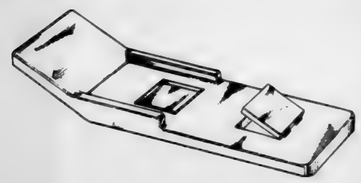
273,235
MOTORCYCLE HEADLIGHT
Tetsuo Ogishima, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 16, 1981, Ser. No. 321,397
Claims priority, application Japan, May 18, 1981, 56-21178
U.S. Cl. D26—35



273,236
HEADLIGHT COVER
Francois Bailly, Neuilly sur Seine, France, assignor to Equipements Automobiles Marchal, Issy-les-Moulineaux, France
Filed Jun. 17, 1980, Ser. No. 160,299
Claims priority, application France, Oct. 1, 1979, 77915
U.S. Cl. D26—139



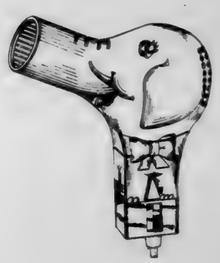
273,237
DEVICE FOR SORTING TOBACCO LEAVES AND THE LIKE
Pete A. Tippett, 1209 Mt. Hermon Rd., Salisbury, Md. 21801
Filed Nov. 30, 1981, Ser. No. 326,122
U.S. Cl. D27—51



273,238
EYE MAKEUP APPLICATOR
Albert K. Taylor, South Haven, Miss., and Robert L. Baumgartner, Memphis, Tenn., assignors to Plough, Inc., Memphis, Tenn.
Filed Aug. 27, 1982, Ser. No. 412,352
U.S. Cl. D28—7



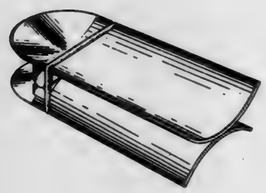
273,239
BLOW DRYER
Frank Antonacci, 276 Indian Trail, Mountainside, N.J. 07092, and Ronald Carluccio, 242 Washington St., Berkeley Heights, N.J. 07922
Filed Oct. 5, 1981, Ser. No. 308,528
U.S. Cl. D28—13



273,240
BLOW DRYER
Frank Antonacci, 276 Indian Trail, Mountainside, N.J. 07092, and Ronald Carluccio, 242 Washington St., Berkeley Heights, N.J. 07922
Filed Oct. 5, 1981, Ser. No. 308,834
U.S. Cl. D28—13



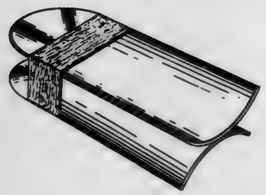
273,241
HAIR PIN
Nicole Bisson, Laval, Canada, assignor to Salon Nicole Bisson Inc., Belanger, Canada
Filed Mar. 3, 1982, Ser. No. 354,224
Claims priority, application Canada, Jan. 27, 1982, 27-01-82-1
U.S. Cl. D28—40

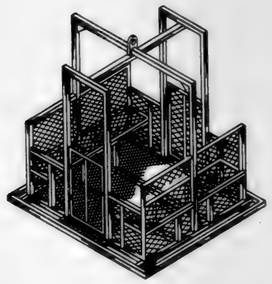


273,242
MOBILE MAINTENANCE CART
Dale T. Maza, Frederick County; Harold Ruckman, and Glen E. Tomblin, both of Winchester, all of Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Nov. 9, 1981, Ser. No. 319,667
U.S. Cl. D34—21



273,243
AIR RESCUE CARRIER
Ysauro B. Lujan, Jr., 5645 Holiday Dr., Stockton, Calif. 95207
Filed Jan. 18, 1982, Ser. No. 340,425
U.S. Cl. D34—28





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF MARCH, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Gerrard & Co.: *See—*
Simich, Emil, 4,438,689, Cl. 100-25.000.
A. O. Smith Harvestore Products, Inc.: *See—*
Nelson, Delmer R., 4,438,607, Cl. 52-126.100.
A. W. Chesterton Company: *See—*
Rockwood, Robert E.; and Antkowiak, Richard P., 4,439,096, Cl. 415-131.000.
AB Dentatus: *See—*
Edwardson, Svante R., 4,439,150, Cl. 433-56.000.
Abbott Laboratories: *See—*
Larkin, Mark E., 4,439,193, Cl. 604-411.000.
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, to Bridgestone Tire Company Limited. Pneumatic tire for off-road vehicles. 4,438,796, Cl. 152-353.00R.
Abeta, Sadaharu: *See—*
Harada, Naoki; and Abeta, Sadaharu, 4,439,205, Cl. 8-527.000.
Abraham, Nedumparambil A.: *See—*
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, 4,439,617, Cl. 560-39.000.
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I. Process for injection molding of thermoplastics and split mold for effecting same. 4,439,390, Cl. 264-297.200.
Acharya, Shankar C.; Prizzia, Thomas C.; and Rutigliano, Olha, to International Business Machines Corporation. Solder/braze-stop composition. 4,439,250, Cl. 148-23.000.
Ackerson, Arthur T.: *See—*
Jones, Johnnie; Einig, Joseph A.; and Ackerson, Arthur T., 4,438,596, Cl. 49-463.000.
Acme Resin Corporation: *See—*
Johnson, Calvin K.; and Armbruster, David R., 4,439,489, Cl. 428-404.000.
Acton Research Corporation: *See—*
Flint, Bruce K., 4,439,259, Cl. 156-245.000.
Adamson, Robert S.: *See—*
Orlowski, Gerald J.; and Adamson, Robert S., 4,439,101, Cl. 414-126.000.
Adelski, Hans-Joachim; and Pflaugner, Josef, to Siemens Aktiengesellschaft. Permanent magnet excited rotor for a synchronous machine. 4,439,704, Cl. 310-211.000.
Advanced Cardiovascular Systems, Inc.: *See—*
Lundquist, Ingemar H., 4,439,185, Cl. 604-97.000.
Aeroquip Corporation: *See—*
Allread, Alan R., 4,438,779, Cl. 137-614.060.
AG fur Turautomaten: *See—*
Bunzl, Helmut H., 4,438,594, Cl. 49-177.000.
Agrawal, Bhagwati P.: *See—*
Shenoi, Kishan; and Agrawal, Bhagwati P., 4,439,756, Cl. 340-347.0AD.
Agrico Chemical Company: *See—*
Parks, Kenneth L., 4,439,407, Cl. 423-317.000.
Ahuja, Meena S.: *See—*
Kelso, Robert G.; Ahuja, Meena S.; and Schmitt, Peter D., 4,439,593, Cl. 528-45.000.
Aiena, Peter P.; and Schulz, Eduard, to NCR Corporation. Non-volatile memory system for intelligent terminals. 4,439,837, Cl. 364-900.000.
Aiga, Toshiro; and Maeda, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Water soluble cores and method for manufacturing cast rotor provided with ventilation ducts utilizing the core. 4,438,804, Cl. 164-522.000.
Air Products and Chemicals, Inc.: *See—*
Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, 4,439,126, Cl. 425-135.000.
Timberlake, George A., Jr., 4,438,792, Cl. 141-95.000.
Airwick Industries, Inc.: *See—*
Hennart, Claude; and Courdent, Jacques, 4,439,415, Cl. 424-16.000.
Aisin Seiki Kabushiki Kaisha: *See—*
Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,438,739, Cl. 123-90.550.
Iwasaki, Shinichiro, 4,438,751, Cl. 123-606.000.
Kagata, Tooru, 4,438,836, Cl. 192-36.000.
Ajisaka, Yasuo, to Kabushiki Kaisha Orii Jidoki Seisakusho. Apparatus for unloading workpiece from press. 4,439,092, Cl. 414-752.000.
Akado, Hajime: *See—*
Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, 4,439,321, Cl. 210-493.100.
Akamatsu, Yoshiyuki; and Shimogawara, Jun, to Nippon Electric Co., Ltd. Sheet feeding device. 4,438,915, Cl. 271-9.000.
Akasaka, Shozo: *See—*
Kikuzawa, Kenji; and Akasaka, Shozo, 4,439,059, Cl. 405-25.000.
Akashi, Goro: *See—*
Kitamoto, Tatsuji; and Akashi, Goro, 4,439,795, Cl. 360-131.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,439,796, Cl. 360-131.000.
Akerberg, Denis W., to Quaker Oats Company, The. Catalyst system for furan resins. 4,439,348, Cl. 252-426.000.
Akiyama, Katsuyuki: *See—*
Yamabe, Masaaki; and Akiyama, Katsuyuki, 4,439,217, Cl. 55-158.000.
Aktiengesellschaft Adolph Saurer AG: *See—*
Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, 4,438,791, Cl. 139-453.000.
Akutsu, Masao: *See—*
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, 4,439,393, Cl. 264-532.000.
Akzona Incorporated: *See—*
Zengel, Hans; and Bergfeld, Manfred, 4,439,370, Cl. 260-453.00P.
Albanese, James J., to United Industries Corporation. Aerosol preparation. 4,439,342, Cl. 252-305.000.
Albanese, James J., to United Industries Corporation. Aerosol preparation. 4,439,343, Cl. 252-305.000.
Albanese, James J., to United Industries Corporation. Water dispersions. 4,439,344, Cl. 252-312.000.
Albany International Corp.: *See—*
Curry, Thomas H., 4,439,273, Cl. 162-358.000.
Johnson, Cary P.; and Sokaris, Jerry G., 4,439,481, Cl. 428-235.000.
Albert-Frankenthal AG: *See—*
Maier, Peter; and Niedermaier, Arnold, 4,438,695, Cl. 101-153.000.
Alberts, Heinrich; Schubart, Rudiger; and Pischtschan, Alfred, to Bayer Aktiengesellschaft. Process for the preparation of copolymers of styrene and/or its derivatives. 4,439,589, Cl. 526-209.000.
Albizzati, Enrico: *See—*
Cecchin, Giuliano; and Albizzati, Enrico, 4,439,540, Cl. 502-125.000.
Alcolite Products Corp.: *See—*
Carroll, Glenn G.; and Frank, Joseph C., 4,438,960, Cl. 285-367.000.
Aldikacti, Hulki: *See—*
Zaydel, Wieslaw S.; Aldikacti, Hulki; and Bouck, James G., 4,438,971, Cl. 296-191.000.
Alfa-Laval Agrar GmbH: *See—*
Kaehler, Dieter, 4,438,806, Cl. 165-108.000.
Alfachimici S.p.A.: *See—*
Tomaiuolo, Francesco; and Capano, Michele, 4,439,338, Cl. 252-79.100.
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, to Bell Telephone Laboratories, Incorporated. Fabrication method for $LiNbO_3$ and $LiTaO_3$ integrated optics devices. 4,439,265, Cl. 156-606.000.
Alkem GmbH: *See—*
Herrmann, Fritz; and Ost, Christian, 4,439,279, Cl. 204-1.500.
Alldredge, Robert L.; and Deltour, Robert J. Slide conveyor with side stabilizers. 4,438,842, Cl. 198-838.000.
Allen, Craig E.: *See—*
Canterino, Peter J.; and Allen, Craig E., 4,439,260, Cl. 156-259.000.
Allen, Ralph E., to Raymond Corporation, The. Material handling apparatus. 4,439,102, Cl. 414-633.000.
Allevato, Tony E., to Texas Instruments Incorporated. Apparatus and method of material removal having a fluid filled slot. 4,439,244, Cl. 134-33.000.
Allied Corporation: *See—*
Curley, James H.; and Lang, Roger J., 4,439,001, Cl. 339-176.0MP.
Lang, Donald D., 4,438,999, Cl. 339-176.0MF.
Patel, Gordhanbhai N.; and Ivory, Dawn M., 4,439,346, Cl. 252-408.100.
Ramanan, V. R. V., 4,439,253, Cl. 148-403.000.
Ray, Ranjan, 4,439,236, Cl. 75-123.00B.
Allread, Alan R., to Aeroquip Corporation. Ball valve coupling. 4,438,779, Cl. 137-614.060.
Almagor, Daniel, to Peelle Company, The. Automatic ejector system. 4,439,103, Cl. 414-661.000.
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., to Western Electric Co., Inc.; and Bell Telephone Laboratories, Inc. Bonded sheath cable. 4,439,632, Cl. 174-106.00D.
Alps Electric Co., Ltd.: *See—*
Fujisawa, Kyuichi, 4,439,778, Cl. 346-136.000.
Kagawa, Yoshii, 4,439,753, Cl. 338-325.000.
Komatsu, Hiroski; and Yoshioka, Kenji, 4,439,749, Cl. 334-7.000.
Alsthom-Atlantique: *See—*
Thuries, Edmond; Nicoloso, Dante; and Pham Van, Doan, 4,439,651, Cl. 200-144.0AP.

Altemark, Detlef; Sommers, Hans; and Weid, Manfred, to Ruhrgas Aktiengesellschaft. Process for the operation of premixture burners and burner for carrying out the process. 4,439,135, Cl. 431-2.000.

Altermatt, Ruedi; and Jakob, Hans, to Sandoz Ltd. Stable disperse dye compositions comprising at least two monoazo dyes. 4,439,207, Cl. 8-639.000.

Altherr, Russell G., to Amsted Industries Incorporated. Railway coupler shelf chamfer. 4,438,855, Cl. 213-153.000.

Alvite, Armando; Hines, Enrico D.; and Kautz, Allan D., to Zenith Radio Corporation. Method and apparatus for testing line screen CRT registration. 4,439,735, Cl. 324-404.000.

Alza Corporation: *See—*
Amkraut, Alfred A.; and Martins, Agusto B., 4,439,199, Cl. 604-894.000.
Swanson, David; and Edgren, David, 4,439,195, Cl. 604-890.000.
Theeuwes, Felix, 4,439,183, Cl. 604-85.000.

Amberny, Philippe; and de Mendez, Michel O., to Souriau et Cie; and Societe d'Etudes et Applications Techniques S E A T. Prehension unit and manipulator apparatus including optical sensors. 4,439,674, Cl. 250-227.000.

American Colloid Co.: *See—*
Kingsbury, Robert P., 4,439,062, Cl. 405-24.000.

American Cyanamid Company: *See—*
Drabb, Thomas W., 4,439,607, Cl. 546-89.000.
Du, Mila T.; and Shepherd, Robert G., 4,439,606, Cl. 544-356.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.
Frank, Simon; Coscia, Anthony T.; and Schmitt, Joseph M., 4,439,332, Cl. 252-8.55D.
Raghu, Sivaraman; Proverb, Robert J.; and Peake, Steven L., 4,439,611, Cl. 548-533.000.
Singh, Balwant; Chang, Laurence W.; and Forgione, Peter S., 4,439,616, Cl. 560-25.000.

American Dental Association Health Foundation: *See—*
Argentar, Harold, 4,439,554, Cl. 523-115.000.

American Standard Inc.: *See—*
LeFevere, Robert E., 4,439,080, Cl. 412-9.000.

AMF Inc.: *See—*
Kauffman, Glenn A., 4,439,730, Cl. 324-232.000.

Amkraut, Alfred A.; and Martins, Agusto B., to Alza Corporation. Method for administering immunopotentiator. 4,439,199, Cl. 604-894.000.

AMP Incorporated: *See—*
Evans, William R., 4,438,997, Cl. 339-97.00R.
Kaufman, John W.; Stape, William J.; and Yeager, Patrick F., 4,439,000, Cl. 339-176.0MP.
Myers, Ronald W., 4,438,998, Cl. 339-154.00A.

Amsted Industries Incorporated: *See—*
Altherr, Russell G., 4,438,855, Cl. 213-153.000.

Amway Corporation: *See—*
Senour, Walter H., 4,438,540, Cl. 15-119.00A.

Anagnostidis, Marc: *See—*
Develay, Roger; and Anagnostidis, Marc, 4,439,246, Cl. 148-2.000.

Analog Devices, Incorporated: *See—*
Morong, William H., III, 4,439,724, Cl. 324-55.000.

Anderson, Donald E.; Hall, Glenn E.; and Foley, Kevin M., to Andersons, The. Suppression of food dusts and the like. 4,439,211, Cl. 55-1.000.

Anderson, John C.: *See—*
Sun, Lilla S.; and Anderson, John C., 4,439,347, Cl. 252-408.100.

Anderson, Lyle C. Device for reopening an ice-bound water source. 4,438,757, Cl. 126-360.00R.

Anderson, Paul H.: *See—*
Sackis, John J.; and Anderson, Paul H., 4,439,563, Cl. 524-96.000.

Anderson, Rodney H.; and Cameron, Thomas M., to Dresser Industries, Inc. Boom arm with rock deflection feature. 4,439,089, Cl. 414-722.000.

Andersons, The: *See—*
Anderson, Donald E.; Hall, Glenn E.; and Foley, Kevin M., 4,439,211, Cl. 55-1.000.

Ando, Takao: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.

Andreev, Alexandr M.: *See—*
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.

Anic S.p.A.: *See—*
Verdini, Antonio S.; and Viscomi, Giuseppe C., 4,439,360, Cl. 260-112.50R.

Antczak, Thaddeus. Vacuum injection molding process. 4,439,386, Cl. 264-102.000.

Antkowiak, Richard P.: *See—*
Rockwood, Robert E.; and Antkowiak, Richard P., 4,439,096, Cl. 415-131.000.

Antonellis, Stephen M., to United Technologies Corporation. Rotor blade cooling air chamber. 4,439,107, Cl. 416-95.000.

Aoyagi, Kenichi: *See—*
Namba, Yuzuru; and Aoyagi, Kenichi, 4,438,742, Cl. 123-308.000.
Namba, Yuzuru; and Aoyagi, Kenichi, 4,438,743, Cl. 123-308.000.

Appleton Papers, Inc.: *See—*
Noffke, Roy O.; and Engel, Thomas G., 4,438,673, Cl. 83-502.000.

Appleyard, John A., to Owens-Illinois, Inc. Heat setting method. 4,439,394, Cl. 264-535.000.

Aprato, Armando, to Ing. C. Olivetti & C., S.p.A. Thermal serial dot printer. 4,439,777, Cl. 346-76.0PH.

Aqua-Chem, Inc.: *See—*
Craig, Glenn D.; Wilhelm, Ronald K.; and Rulseh, Roy M., 4,439,138, Cl. 431-12.000.

Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, to Aisin Seiki Kabushiki Kaisha. Hydraulic lash adjuster. 4,438,739, Cl. 123-90.550.

Aralis, Frank M.: *See—*
Van Vliet, James G.; and Aralis, Frank M., 4,439,762, Cl. 340-750.000.

Araujo, Roger J., to Corning Glass Works. Spontaneous opal glass compositions. 4,439,528, Cl. 501-32.000.

Arbed S.A.: *See—*
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, 4,439,234, Cl. 75-52.000.

Archer, Michael C.; and Jain, Kanti, to Ontario Cancer Institute. Method for producing self-reproducing mammalian pancreatic islet-like structures. 4,439,521, Cl. 435-1.000.

Arco Industries Ltd.: *See—*
Marino, Joseph A., 4,438,587, Cl. 46-44.000.

Argentar, Harold, to American Dental Association Health Foundation. Dioxo-piperidine substituted tertiary aromatic amine accelerators in acrylic resin. 4,439,554, Cl. 523-115.000.

Arild, Tor. Tilt back mechanism for a chair. 4,438,978, Cl. 297-304.000.

Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, to Sumitomo Metal Mining Company Limited; Nippon Telegraph and Telephone Public Corporation; and Nippon Telecommunication Engineering Company Limited. Method for manufacture of high-strength high-electroconductivity copper alloy. 4,439,247, Cl. 148-2.000.

Armbruster, David R.: *See—*
Johnson, Calvin K.; and Armbruster, David R., 4,439,489, Cl. 428-404.000.

Armco Inc.: *See—*
Pokladnik, Roger L.; and Valka, William A., 4,438,817, Cl. 166-341.000.
Pokladnik, Roger L., 4,439,068, Cl. 405-169.000.

Armell, Richard A., to Boc-Nowsco Limited; and Drexel Equipment Limited. Seal for incorporation in high pressure leak testing tool. 4,438,938, Cl. 277-230.000.

Armour Food Company: *See—*
Orlowski, Gerald J.; and Adamson, Robert S., 4,439,101, Cl. 414-126.000.

Arnold, Dan M.: *See—*
Smith, Harry D., Jr.; and Arnold, Dan M., 4,439,676, Cl. 250-256.000.

Arter, William L., to Jetline Engineering, Inc. Arc welding apparatus having pivotably mounted electrode carriage. 4,439,665, Cl. 219-124.020.

Asada, Eiichi; Inokuma, Toshio; and Saito, Hiroyuku, to Shoei Chemical Inc. Resistor compositions and resistors produced therefrom. 4,439,352, Cl. 252-518.000.

Asahi-Dow Limited: *See—*
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

Asahi Glass Company, Ltd.: *See—*
Kume, Masaharu; Ishii, Kenichi; and Hokusho, Takayasu, 4,439,771, Cl. 343-704.000.
Yamabe, Masaaki; and Akiyama, Katsuyuki, 4,439,217, Cl. 55-158.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kikuzawa, Kenji; and Akasaka, Shozo, 4,439,059, Cl. 405-25.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Okura, Zenichi; and Kohmoto, Shinsuke, 4,439,029, Cl. 354-479.000.

Asai, Koichi; Oe, Kunio; and Tuda, Mamoru, to Fuji Machine Mfg. Co. Ltd. Apparatus for automatically mounting non-lead electronic components on printed-circuit. 4,438,559, Cl. 29-740.000.

Asaoka, Sachio; Ono, Takeo; and Shiroto, Yoshimi. Catalyst for hydrotreating heavy hydrocarbon oils, method of preparing same and process for hydrotreating heavy hydrocarbon oils. 4,439,312, Cl. 208-216.0PP.

Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, to Kabushiki Kaisha Kobe Seiko Sho. Apparatus for stacking elongated materials. 4,439,099, Cl. 414-45.000.

Ashland Oil, Inc.: *See—*
Daniel, Chelliah, 4,439,621, Cl. 562-599.000.

Ashton, Harold P., to Dart Industries Inc. Egg scoop or spoon. 4,438,564, Cl. 30-324.000.

Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, to Societe d "Expansion Scientifique "Expansia". Acrylic copolymers of N-acryloylpolymethyleneimines or N-acryloyldialkylamides, N,N'-acryloyldiaminoalcanes and N-acryloylaminoacids (or esters) their preparation and use as cation exchangers. 4,439,545, Cl. 521-32.000.

Atherton, Jay W., to Honeywell Inc. Class D pulse width modulated amplifier. 4,439,738, Cl. 330-10.000.

Atkinson, Lyle H. Cooling container for canned beverages and sandwiches. 4,438,637, Cl. 62-457.000.

Atlantic Richfield Company: *See—*
Chu, Alan K. P., 4,439,466, Cl. 427-123.000.
DiGiulio, Adolph V., 4,439,547, Cl. 521-56.000.
Martin, F. Glenn, 4,439,677, Cl. 250-260.000.
Martin, F. Glenn, 4,439,678, Cl. 250-260.000.

Miller, Stephen C., 4,439,463, Cl. 427-39.000.

Atlas Powder Company: *See—*
Mullay, John J., 4,439,254, Cl. 149-2.000.

Aton, Ronald L. Stick-on fog light lens for headlight. 4,439,817, Cl. 362-255.000.

Audeh, Costandi A.; and Scott, Eric J. Y., to Mobil Oil Corporation. Petroleum processing with low acidity catalyst. 4,439,310, Cl. 208-111.000.

Audette, Gabriel: *See—*
McGourty, Lawrence E., Jr.; Audette, Gabriel; and Audette, Jean M., 4,438,604, Cl. 52-28.000.

Audette, Jean M.: *See—*
McGourty, Lawrence E., Jr.; Audette, Gabriel; and Audette, Jean M., 4,438,604, Cl. 52-28.000.

Ault, Earle A.; and Bevan, Charles E., to United Technologies Corporation. Cleaning process for internal passages of superalloy airfoils. 4,439,241, Cl. 134-22.170.

Ayerst, McKenna & Harrison Inc.: *See—*
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, 4,439,617, Cl. 560-39.000.

B. F. Goodrich Co., The: *See—*
Chasar, Dwight W., 4,439,564, Cl. 524-101.000.

Baba, Keikichi: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,539, Cl. 502-112.000.
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,541, Cl. 502-125.000.

Baba, Sadaaki, to Mitsubishi Denki Kabushiki Kaisha. Power interruption device. 4,439,803, Cl. 361-63.000.

Babcock & Wilcox Company, The: *See—*
Berbakov, Paul J., 4,438,600, Cl. 51-241.00S.

Babic, Gary T., to Texaco Inc. Preparation for use as lube oil additives of thioureas containing N-polyalkyleneamino hydrocarbyl succinimido groups. 4,439,612, Cl. 548-546.000.

Baby Relax: *See—*
Guillaume, Raymond, 4,438,941, Cl. 280-47.400.

Badger Die Casting Corp.: *See—*
Strassman, Richard J., 4,439,145, Cl. 432-164.000.

Bagby, Robert R.: *See—*
Carpenter, Aaron R.; and Bagby, Robert R., 4,438,794, Cl. 144-208.00E.

Bailey, Denis M.: *See—*
Wentland, Mark P.; and Bailey, Denis M., 4,439,436, Cl. 424-258.000.

Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., to UNC Recovery Corporation. Method for varying the mixing time and proportions in the contacting of substantially immiscible liquids. 4,439,405, Cl. 423-10.000.

Baker, Benjamin H.: *See—*
Baker, Stanley Z.; and Baker, Benjamin H., 4,438,584, Cl. 43-58.000.

Baker, Stanley Z.; and Baker, Benjamin H., to J. T. Eaton & Company, Inc. Trap for rats, mice, and other vermin. 4,438,584, Cl. 43-58.000.

Bakk, Henry: *See—*
Bakk, Thorleif; and Bakk, Henry, 4,439,067, Cl. 405-154.000.

Bakk, Thorleif; and Bakk, Henry, to deha Baubedarf GmbH & Co. KG. Method of laying and joining pipes and a lifting device for performing the method. 4,439,067, Cl. 405-154.000.

Balagot, Reuben C.: *See—*
Ehrenpreis, Seymour; Comaty, Joseph E.; and Balagot, Reuben C., 4,439,452, Cl. 424-319.000.

Ball Corporation: *See—*
Frame, Wayne W., 4,439,788, Cl. 358-213.000.

Ball, Harold L., to Orenco Systems, Inc. Method of discharging septic tank filtered effluent. 4,439,323, Cl. 210-608.000.

Ballany, John M.; and Henderson, David, to Janssen Pharmaceutica N.V. Non-irritating tetramisole- or levamisole pour-on conpositions. 4,439,439, Cl. 424-270.000.

Ballard, Richard E.: *See—*
Louik, Leonard; and Ballard, Richard E., 4,439,128, Cl. 425-290.000.

Bandi, Jean-Pierre: *See—*
Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, 4,438,681, Cl. 99-323.200.

Baniel, Avraham M.; and Eyal, Aharon M., to Yissum Research Development Company of the Hebrew University of Jerusalem. Process and extractant for removing fluorine compounds from aqueous phosphoric acid. 4,439,408, Cl. 423-321.00S.

Bannon, J. David: *See—*
Campanella, Alexander F.; and Bannon, J. David, 4,438,532, Cl. 2-16.000.

Bar, Helmut: *See—*
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.

Barber, Alan G., to Union Carbide Corporation. Sealant composition and method. 4,439,561, Cl. 524-13.000.

Barnett, Allan E.: *See—*
Carter, James L.; and Barnett, Allan E., 4,439,544, Cl. 502-234.000.

Barrickman, Robert W. Emergency cricothyroidotomy instrument. 4,438,768, Cl. 128-305.300.

Bartfield, William, to Prize Frize, Inc. Apparatus for dispensing individual orders of a hot food product and components usable therewith. 4,438,683, Cl. 99-330.000.

Bartlett, Allen J.: *See—*
Lessard, Philip A.; and Bartlett, Allen J., 4,438,632, Cl. 62-55.500.

Bartnik, Friedhelm: *See—*
Moller, Hinrich; Wallat, Siegfried; and Bartnik, Friedhelm, 4,439,418, Cl. 424-70.000.

Bartoli, Thomas J.; and Rotblum, Yehuda, to Bell Telephone Laboratories, Incorporated. Non-inverting shift register stage in MOS technology. 4,439,691, Cl. 307-279.000.

Baschang, Gerhard: *See—*
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.

BASF Aktiengesellschaft: *See—*
Fitterer, Horst; Koob, Hubert; and Nestler, Bert, 4,438,892, Cl. 242-199.000.
Koenig, Karl-Heinz; and Schwendemann, Volker, 4,439,369, Cl. 260-453.00P.
Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, 4,439,579, Cl. 524-602.000.
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.

BASF Farben + Fasern AG: *See—*
Schwarz, Gunther, 4,439,575, Cl. 524-489.000.

Basic, John N., Sr. Incinerator with two reburn stages, and, optionally, heat recovery. 4,438,705, Cl. 110-235.000.

Basinger, Richard A.: *See—*
Hemmerle, Clayton J.; and Basinger, Richard A., 4,438,800, Cl. 160-371.000.

Basset, Jean-Claude; and Belenfant, Guy, to Electronique Marcel Dassault. Method and device for the checking of the number of access attempts to an electronic store, notably that of an integrated circuit of an object such as a credit card or a buyer's card. 4,439,670, Cl. 235-382.000.

Bastrikov, Valery L.: *See—*
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.

Bates Printing Specialties, Inc.: *See—*
Brown, Lyman J., 4,439,002, Cl. 350-4.100.

Bauer, Robert L.: *See—*
Rienks, Bert J., 4,439,098, Cl. 414-43.000.

Baughman, David R.; and Bergeson, Jerry R., to Occidental Research Corporation. Method of repair of short circuits for in situ leaching. 4,438,976, Cl. 299-4.000.

Baughman, Donald L.; and Elliott, William O., to McConway & Torley Corporation. Railway coupler. 4,438,854, Cl. 213-127.000.

Baxter Travenol Laboratories, Inc.: *See—*
Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,439,188, Cl. 604-283.000.
Hooper, John A.; Mankarious, Samia; and Liu-Rash, Catherine R., 4,439,421, Cl. 424-85.000.
Lueders, Arthur; and Bellotti, Marc, 4,439,179, Cl. 604-34.000.

Bayer Aktiengesellschaft: *See—*
Alberts, Heinrich; Schubart, Rudiger; and Pischtschan, Alfred, 4,439,589, Cl. 526-209.000.
Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, 4,439,591, Cl. 528-73.000.
Ebneth, Harold; and Fitzky, Hans-Georg, 4,439,768, Cl. 343-18.00B.
Hildebrand, Dietrich; and Hendricks, Udo W., 4,439,206, Cl. 8-543.000.
Hugl, Herbert; Wolfrum, Gerhard; and Lehment, Klaus-Friedrich, 4,439,372, Cl. 260-465.00E.
Klauke, Erich; and Grohe, Klaus, 4,439,620, Cl. 562-493.000.
Klotz, Helmut; and Fitzky, Hans G., 4,439,292, Cl. 204-165.000.
Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, 4,439,592, Cl. 528-14.000.
Puppe, Lothar; and Weisser, Jurgen, 4,439,409, Cl. 423-328.000.
Schutt, Hermann, 4,439,524, Cl. 435-280.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Hagn, Bruno; Neuhauser, Werner; and Wimmer, Robert, 4,439,013, Cl. 350-307.000.

Beardsley, Paul F. Method and means of servicing an overhead limb of a growing plant. 4,438,620, Cl. 56-332.000.

Beckman Instruments, Inc.: *See—*
Conway, George E., 4,439,177, Cl. 494-20.000.
Sun, Lilla S.; and Anderson, John C., 4,439,347, Cl. 252-408.100.
Van Vliet, James G.; and Aralis, Frank M., 4,439,762, Cl. 340-750.000.

Beekmans, Jan J. P. M.; and Hughes, John B., to Signetics Corporation. Feedback-controlled substrate bias generator. 4,439,692, Cl. 307-297.000.

Beentjes, Nicolaas H., to Estel Hoogovens B.V. Sublance for measuring and/or sampling in a metallurgical furnace. 4,438,653, Cl. 73-863.110.

Beer, Wolfgang: *See—*
Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, 4,439,591, Cl. 528-73.000.

Behie, Leo A.; Berk, Dimitrios; Bishnoi, P. Raj; and Svrcek, William Y. Process for producing hydrogen from hydrogen sulphide in a gas fluidized bed reactor. 4,439,412, Cl. 423-573.00G.

Behringer, Hartmut: *See—*
Karrenbauer, Kurt; Behringer, Hartmut; and Rehberg, Heinrich, 4,439,361, Cl. 260-141.000.

Beier, Helmut, to Siemens AG. Contact system for gas blast circuit breakers. 4,439,652, Cl. 200-148.00A.

Belenfant, Guy: *See—*
Basset, Jean-Claude; and Belenfant, Guy, 4,439,670, Cl. 235-382.000.

Belikov, Viktor T.; Ivlev, Anatoly D.; and Chelak, Viktor G., to Odessky Politekhnichesky Institut. Electric motor having helical stator. 4,439,702, Cl. 310-80.000.

Bell, James L., Jr.: *See*—
Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., 4,439,055, Cl. 403-330.000.

Bell, Raymond W. H., to Dunlop Limited. Upholstery components. 4,439,472, Cl. 428-71.000.

Bell Telephone Laboratories, Incorporated: *See*—
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.
Bartoli, Thomas J.; and Rotblum, Yehuda, 4,439,691, Cl. 307-279.000.
Chu, Ta-Shing, 4,439,773, Cl. 343-778.000.
Coldren, Larry A.; and Stulz, Lawrence W., 4,439,268, Cl. 156-626.000.
Dragone, Corrado, 4,439,748, Cl. 333-239.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,759, Cl. 340-703.000.
Fleming, James R., 4,439,760, Cl. 340-799.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,761, Cl. 340-735.000.
Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,439,007, Cl. 350-96.300.
Limb, John O., 4,439,763, Cl. 340-825.500.
Poulsen, Martin E.; Vratny, Frederick; and Zacharias, Alfred, 4,439,870, Cl. 378-143.000.

Bellamy, John C., to Rockwell International Corporation. Partial response system with simplified detection. 4,439,863, Cl. 375-18.000.

Bellini, Francesco: *See*—
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, 4,439,617, Cl. 560-39.000.

Bellotti, Marc: *See*—
Lueders, Arthur; and Bellotti, Marc, 4,439,179, Cl. 604-34.000.

Benczur-Urmossy, Gabor: *See*—
Schneider, Claus; and Benczur-Urmossy, Gabor, 4,439,281, Cl. 204-2.100.

Bendix Corporation, The: *See*—
Bunger, Dennen J., 4,439,117, Cl. 418-22.000.
Menin, Albert S., 4,439,844, Cl. 367-87.000.

Bendix Limited: *See*—
Lippiatt, Sidney A., 4,438,980, Cl. 303-6.00C.

Bentley Laboratories, Inc.: *See*—
Sargeant, John E.; and Hoffa, Jack L., 4,439,189, Cl. 604-317.000.

Berbakov, Paul J., to Babcock & Wilcox Company, The. Grinding, welding and cutting apparatus. 4,438,600, Cl. 51-241.00S.

Berestecki, Stephen B., to General Electric Company. Apparatus for attaching a ceramic member to a metal structure. 4,438,626, Cl. 60-39.320.

Bergendahl, Hans G., to Maschinenfabrick Koppern GmbH & Co. KG. Method for manufacturing graules from potassium chloride fines. 4,439,384, Cl. 264-37.000.

Bergeson, Jerry R.: *See*—
Baughman, David R.; and Bergeson, Jerry R., 4,438,976, Cl. 299-4.000.

Bergfeld, Manfred: *See*—
Zengel, Hans; and Bergfeld, Manfred, 4,439,370, Cl. 260-453.00P.

Berggren, Per-Olov, to Skega AB. Meshing cog-wheel injection unit with lateral sealing and scropers. 4,439,120, Cl. 418-77.000.

Bergles, Eduard, to Fichtel & Sachs AG. Derailleur mechanism. 4,439,171, Cl. 474-80.000.

Bergwerksverband GmbH: *See*—
Galow, Manfred, 4,439,276, Cl. 202-239.000.

Berk, Dimitrios: *See*—
Behie, Leo A.; Berk, Dimitrios; Bishnoi, P. Raj; and Svrcek, William Y., 4,439,412, Cl. 423-573.00G.

Bernady, Karel F.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.

Bernard, Alain; and Chedeville, Robert, to Couturier S.A. System for the mutual anchoring of two walls. 4,438,612, Cl. 52-427.000.

Berney, Jean-Claude, to U.S. Philips Corporation. Control device for a stepping motor. 4,439,717, Cl. 318-696.000.

Bernstein, Joel E., to Soft Sheen Products, Inc. Method and composition for treating pediculosis. 4,439,427, Cl. 424-199.000.

Berruti, Pierangelo: *See*—
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.

Bertoglio, Guido, to Water-Line S.A. Apparatus to continuously mix and homogenize powdered substances with liquid substances. 4,439,042, Cl. 366-154.000.

Bertus, Brent J.; and McKay, Dwight L., to Phillips Petroleum Company. Hydrocarbon cracking catalyst. 4,439,536, Cl. 502-64.000.

Besse, Maurice; and Grisoni, Jacques, to Fresse S.A. Device for fabricating panels of expanded synthetic materials. 4,439,122, Cl. 425-4.00R.

Best, David W.; and Russell, Jeffrey D., to Rockwell International Corporation. Apparatus for and method of generation of ripple carry signals in conjunction with logical adding circuitry. 4,439,835, Cl. 364-786.000.

Beton- es Vasbetonipari Muvek: *See*—
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.

Betts, Max W., to Courtaulds Limited. Presser foot for a knitting machine. 4,438,639, Cl. 66-64.000.

Beukema, Duane M.: *See*—
Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,438,898, Cl. 248-561.000.

Bevan, Charles E.: *See*—
Ault, Earle A.; and Bevan, Charles E., 4,439,241, Cl. 134-22.170.

Bewers, Ronald, to Ford Motor Company. Tilt cab support stay. 4,438,826, Cl. 180-89.140.

Bey, Philippe; Gerhart, Fritz; and Jung, Michel, to Merrell Toraude et Compagnie. Fluorinated pentene diamine derivatives. 4,439,619, Cl. 560-169.000.

Bianchetti, Alberto: *See*—
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.

Biard, Francoise M. H.: *See*—
Lacoste, Francois R.; and Biard, Francoise M. H., 4,439,471, Cl. 428-35.000.

Bickle, Damon R. Liquid directional flow apparatus. 4,438,537, Cl. 4-492.000.

Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, to Hoechst Aktiengesellschaft. Textile softener. 4,439,331, Cl. 252-8.800.

Biotest-Serum-Institut GmbH: *See*—
Bonhard, Klaus; Eichentopf, Bertram; and Kothe, Norbert, 4,439,357, Cl. 260-112.00B.

Biphase Energy Systems: *See*—
Hays, Lance G.; Studhalter, Walter R.; and Ritzi, Emil W., 4,438,638, Cl. 62-500.000.

Birkenmaier, Wilhelm: *See*—
Negele, Richard; and Birkenmaier, Wilhelm, 4,438,989, Cl. 308-184.00R.

Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, to Siemens Aktiengesellschaft. Method for anodizing aluminum materials and alumi-nized parts. 4,439,287, Cl. 204-58.000.

Bishnoi, P. Raj: *See*—
Behie, Leo A.; Berk, Dimitrios; Bishnoi, P. Raj; and Svrcek, William Y., 4,439,412, Cl. 423-573.00G.

Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., to Bowen Tools, Inc. Shock absorber assembly. 4,439,167, Cl. 464-20.000.

Bittihn, Rainer; and Yalcin, Eren, to Varta Batterie Aktiengesellschaft. Galvanic element having a porous solid-electrolyte sinter framework containing the cathode material. 4,439,502, Cl. 429-104.000.

Blackburn, Tom L., to GTE Automatic Electric Incorporated. Carrier subscriber telephone off-hook detector. 4,439,634, Cl. 179-2.510.

Blackshear, Perry J.; Palmer, John L.; and Rohde, Thomas D., to University of Minnesota, Regents of the. Polyol-hormone mixture for use in chronic parenteral hormone administration. 4,439,181, Cl. 604-56.000.

Blaine, George. Training manikin for medical instruction. 4,439,162, Cl. 434-268.000.

Blais, Norman J., to CPC Engineering Corporation. Pressurized filtration system. 4,439,325, Cl. 210-740.000.

Blasioli, Carlo: *See*—
Chick, Jacques A.; Heymes, Alain; and Blasioli, Carlo, 4,439,442, Cl. 424-285.000.

Bligh, Stephen G.: *See*—
Everett, Douglas H.; Bligh, Stephen G.; and Rojas, Fernando, 4,439,349, Cl. 502-180.000.

Block, Gene D.: *See*—
Friesen, W. Otto; and Block, Gene D., 4,438,771, Cl. 128-671.000.

Blok, Arie. Solids concentrator. 4,439,320, Cl. 210-394.000.

Blue Grass Industries, Inc.: *See*—
Smith, Samuel W.; and McVey, Harold C., 4,438,714, Cl. 112-130.000.

Boberski, William G.: *See*—
Greigger, Paul P.; Boberski, William G.; and Seiner, Jerome A., 4,439,239, Cl. 106-287.160.

Bobichon, Jacques; and Leroy, Pierre-Loup, to Stein Industrie. Stopper for a source for an X-ray inspection hole in a pipe or other apparatus. 4,438,784, Cl. 138-92.000.

Boc-Nowsco Limited: *See*—
Armell, Richard A., 4,438,938, Cl. 277-230.000.

Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, to Villamosipari Kutato Intezet. Procedure and equipment for destroying waste by plasma technique. 4,438,706, Cl. 110-238.000.

Boehringer Mannheim GmbH: *See*—
Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, 4,439,527, Cl. 436-135.000.

Bogner, Ben R., to Quaker Oats Company, The. Fabrication of composite articles. 4,439,568, Cl. 524-111.000.

Bohler, Hans, to Sandoz Ltd. Polymeric material mass-dyed with certain metalized bis-azomethine dyestuffs. 4,439,562, Cl. 524-90.000.

Boitano, Robert A.: *See*—
Engle, Charles J.; and Boitano, Robert A., 4,438,923, Cl. 273-1.50R.

Boles, Jeffrey L.; and Jones, Thomas M., to Tennessee Valley Authority. Production of urea-ammonium nitrate suspension fertilizer. 4,439,223, Cl. 71-30.000.

Bolgiano, Duane R.: *See*—
Seligsohn, Scott; Bolgiano, Duane R.; and Seligsohn, Sherwin I., 4,439,638, Cl. 179-84.00C.

Bona, Eligio, to Fiat Auto S.p.A. Device for preventing the unauthorized removal of fuel from the tank of a motor vehicle. 4,438,862, Cl. 220-86.0AT.

Bond, Gary M.: *See*—
Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., 4,439,156, Cl. 434-12.000.

Bondi, Joseph V.: *See*—
Harwood, Richard J.; and Bondi, Joseph V., 4,439,194, Cl. 604-890.000.

Bonhard, Klaus; Eichentopf, Bertram; and Kothe, Norbert, to Biotest-Serum-Institut GmbH. Process for obtaining hepatitis-safe, sterile hemoglobin solutions free of pyrogens and stroma. 4,439,357, Cl. 260-112.00B.

Bonin, John H.: *See*—
Meyer, John W.; Bonin, John H.; and Daniel, Arnold D., 4,439,200, Cl. 406-99.000.

Bonny, Alan, to Standard Oil Company, The. Novel boride catalysts and process for the preparation and use thereof. 4,439,542, Cl. 502-207.000.

Bookbinder, Dana C.: *See*—
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Booms, Robert E.: *See*—
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.

Borchardt, John K., to Halliburton Company. Enhanced oil recovery methods and systems. 4,439,334, Cl. 252-8.55D.

Borel, Denis, to SRO Kugellagerwerke J. Schmid-Roost AG. Ball bushing of simplified construction. 4,438,985, Cl. 308-6.00C.

Borio, Richard W.; Nelson, Hugh W.; and Mehta, Arun K., to Combustion Engineering, Inc. System and method for firing coal having a significant mineral content. 4,438,709, Cl. 110-347.000.

Born, Raymond W. Stairway with fail safe power lift for lading, the infirm, wheelchair patients, and the like. 4,438,830, Cl. 187-12.000.

Borowski, Edward: *See*—
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Borter, Ephraim, to Inventio AG. Push button for electrical switch. 4,439,655, Cl. 200-340.000.

Bosack, Donald J.: *See*—
Lambert, Frederic J.; Bosack, Donald J.; and Johansen, David K., 4,439,719, Cl. 320-31.000.

Bosch & Pierburg System oHG: *See*—
Hartel, Gunter; and Schurfeld, Armin, 4,439,376, Cl. 261-50.00A.

Boucher, Graeme B., to Paccar Inc. Vehicle cab suspension. 4,438,970, Cl. 296-190.000.

Bouck, James G.: *See*—
Zaydel, Wieslaw S.; Aldikacti, Hulki; and Bouck, James G., 4,438,971, Cl. 296-191.000.

Bousaid, Issam S., to Texaco Inc. Oil recovery method employing alternate slugs of surfactant and fresh water. 4,438,814, Cl. 166-273.000.

Bouvrande, Andre M., to Societe de Telecommunications Electronique Aeronautique et Maritime T.E.A.M. Keyboard switch assembly. 4,439,646, Cl. 200-5.00A.

Boveri, Sergio: *See*—
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.

Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, to Ing. C. Olivetti & C., S.p.A. Serial dot printer for office machines. 4,439,779, Cl. 346-140.0PD.

Bowen Tools, Inc.: *See*—
Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., 4,439,167, Cl. 464-20.000.

Bowers, John L.: *See*—
Gentile, Anthony L.; Bowers, John L.; and Stafsudd, Oscar M., 4,439,266, Cl. 156-614.000.

Bowers, William J., to C. R. Bard, Inc. Electrosurgical generator. 4,438,766, Cl. 128-303.140.

Box, Nigel J.: *See*—
Stoppani, Brian R.; Box, Nigel J.; and Phillips, David D., 4,438,837, Cl. 198-735.000.

Boyer, Daniel R.: *See*—
Kresky, Fred C.; and Boyer, Daniel R., 4,438,974, Cl. 297-379.000.

Boyle, David H., to International Business Machines Corporation. Low capacitance pad for semiconductor chip testing. 4,439,727, Cl. 324-158.00R.

Bradford, James N., to MRJ, Inc. Solid state laser with controlled optical pumping. 4,439,861, Cl. 372-25.000.

Bradley, Joe C.: *See*—
Ogland, Jon W.; Bradley, Joe C.; and Mergerian, Dickron, 4,439,016, Cl. 350-356.000.

Brajder, Antonio, to Siemens Aktiengesellschaft. Short-circuit protection device for a DC control element. 4,439,806, Cl. 361-98.000.

Branco, Antonio: *See*—
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,439,298, Cl. 204-258.000.

Brandle, Karl: *See*—
Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, 4,439,592, Cl. 528-14.000.

Bras, Johan C.: *See*—
Schalk, Bartje; Operti, Claudio; and Bras, Johan C., 4,438,990, Cl. 308-187.100.

Breglia, Denis R.; Lobb, Daniel R.; and Spooner, Archer M., to United States of America, Navy. Helmet mounted display projector. 4,439,157, Cl. 434-40.000.

Brekke, Carroll E. Solar heating unit and heat transfer apparatus. 4,438,758, Cl. 126-419.000.

Brende, Arthur P.; and Luoma, Richard W., to International Business Machines Corporation. Linear moving coil actuator. 4,439,699, Cl. 310-13.000.

Brenholt, David L., to Donaldson Company, Inc. Spirally wound flow control valve. 4,438,781, Cl. 137-625.280.

Brennan, Michael E.; and Rice, Doris M., to Texaco Inc. Scrap rim polyurethane modified extender polyols. 4,439,546, Cl. 521-48.000.

Brennan, Michael E., to Texaco Inc. Novel aromatic polyester polyol mixtures made from polyethylene terephthalate residues and alkylene oxides. 4,439,549, Cl. 521-131.000.

Brennan, Michael E., to Texaco Inc. Aromatic polyols made from recycled polyethylene terephthalate waste streams, alkylene glycol and dibasic acid waste streams. 4,439,550, Cl. 521-131.000.

Brennan, Michael E.: *See*—
Yeakey, Ernest L.; Cuscurida, Michael; and Brennan, Michael E., 4,439,551, Cl. 521-131.000.

Bresin, Mark S.; and Gilmore, Peter B., to Motorola, Inc. Waterproof control knob assembly with integral switch. 4,439,654, Cl. 200-302.100.

Breslow, Jeffrey D.: *See*—
Wildman, John R.; and Breslow, Jeffrey D., 4,438,586, Cl. 46-1.00R.

Bresson, Clarence R.: *See*—
Parlman, Robert M.; and Bresson, Clarence R., 4,439,314, Cl. 209-166.000.

Breuillard, Robert: *See*—
Pelletier, Joel A.; and Breuillard, Robert, 4,439,695, Cl. 307-477.000.

Brico Engineering Limited: *See*—
Slee, Roger H., 4,438,740, Cl. 123-188.00S.

Bridgestone Tire Company Limited: *See*—
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, 4,438,796, Cl. 152-353.00R.

Brightman, Alan H., II; and Theodorakis, Michael C., to University of Illinois Foundation. Biodegradable ocular insert for controlled delivery of ophthalmic medication. 4,439,198, Cl. 604-894.000.

Bril, Thijs W.; and van den Hoek, Willibrordus G. M., to U.S. Philips Corporation. Reactive ion etching of soft-magnetic substrates. 4,439,294, Cl. 204-192.00E.

Broadhurst, John H., to University of Minnesota, Regents of the. Color-coded mapping system and method for identifying elements in a specimen. 4,439,680, Cl. 250-310.000.

Brockway, George S., II: *See*—
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.

Brockway, William J.: *See*—
Coan, Michael H.; and Brockway, William J., 4,439,358, Cl. 260-112.00B.

Broderie de Mesnil St Pere S.A.R.L.: *See*—
Ducellier, Hugues, J. M., 4,438,712, Cl. 112-100.000.

Bromps, Robert T.: *See*—
Dooley, Dan W.; and Bromps, Robert T., 4,438,872, Cl. 222-217.000.

Brooks, Ulysses A.: *See*—
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Brown, Albert W., to International Telephone & Telegraph Corp. Aerial refueling boom nozzle. 4,438,793, Cl. 141-382.000.

Brown, Boveri & Cie AG: *See*—
Hochreuther, Karl; Heinze, Siegfried; and Scholpp, Werner, 4,439,726, Cl. 324-156.000.

Brown, Lyman J., to Bates Printing Specialties, Inc. One-piece foldable kaleidoscope kit. 4,439,002, Cl. 350-4.100.

Brown, Paul: *See*—
Rees, Herbert; Brown, Paul; and Grund, Miroslaw, 4,439,133, Cl. 425-556.000.

Brown, Robert J.: *See*—
Meijer, Roelf J.; Brown, Robert J.; and Ziph, Benjamin, 4,439,169, Cl. 464-170.000.

Brown, William L., to Leighton, John D. Switch assembly for automotive pedal construction. 4,439,650, Cl. 200-61.890.

Brown & Williamson Tobacco Corporation: *See*—
Lamb, Charles G.; and Sanford, Robert A., 4,438,776, Cl. 131-336.000.

Bruce, James A.: *See*—
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Bruney, Paul F., III, to Jaskiewicz, Edmund M., a part interest. Loud speaker enclosure. 4,439,644, Cl. 179-146.00E.

Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus. Apparatus for conditioning bioinjurious waste. 4,439,403, Cl. 422-159.000.

Brunswick Corporation: *See*—
Grover, Richard L., 4,438,858, Cl. 220-3.000.

Brunton Company, The: *See*—
Kramer, Melvin G.; and Iden, Marlin, 4,438,568, Cl. 33-348.000.

Bryant, George E., to W. R. Grace & Co. Stud fasteners and wall structures employing same. 4,438,611, Cl. 52-309.200.

Brzezinski, Denis R.: *See—*
Loomis, Russell M.; Gaikowski, Michael D.; and Brzezinski, Denis R., 4,439,076, Cl. 410-153.000.

BSG (Security) Limited: *See—*
Gillham, Peter J., 4,439,808, Cl. 361-144.000.

bso Steuerungstechnik GmbH: *See—*
Gibas, Christoph, 4,439,751, Cl. 335-278.000.

Buchberger, Gregory: *See—*
Theis, Peter F.; and Buchberger, Gregory, 4,439,635, Cl. 179-6.200.

Bucking, Hans-Walter: *See—*
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,439,331, Cl. 252-8.800.

Budd Company, The: *See—*
Eggert, Walter S., Jr., 4,438,703, Cl. 105-224.100.

Budnik, Brian J., to Motorola, Inc. Ferroresonant power supply stabilizer circuit for avoiding sustained oscillations. 4,439,722, Cl. 323-248.000.

Buhl, Lawrence L.: *See—*
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.

Buhler, Eugen. Process and apparatus for the transport of a train of flaskless casting molds. 4,438,801, Cl. 164-130.000.

Bullock, Joseph J., III, to Three Sisters Ranch Enterprises. Cap and neck structure for a wide-mouth jar. 4,438,857, Cl. 215-256.000.

Bunger, Dennen J., to Bendix Corporation, The. Variable displacement vane pump. 4,439,117, Cl. 418-22.000.

Bunzl, Helmut H., to AG fur Turautomaten. Balanced sliding door structure. 4,438,594, Cl. 49-177.000.

Burandt, Corliss O., to Investment Rarities, Incorporated. Apparatus and timing mechanism for controlling the valve operation of an internal combustion engine. 4,438,735, Cl. 123-90.160.

Burandt, Corliss O., to Investment Rarities, Incorporated. Apparatus and method for controlling the valve operation of an internal combustion engine. 4,438,737, Cl. 123-90.170.

Burg, Richard E.: *See—*
Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, 4,439,125, Cl. 425-140.000.

Burgstaller, Gottfried: *See—*
Kuhls, Jurgen; Weiss, Eduard; and Burgstaller, Gottfried, 4,439,385, Cl. 264-37.000.

Burmeister, Dennis N.; Busse, Thomas A.; and Jones, Wesley C., to Outboard Marine Corporation. Outboard motor with interlock mechanism for transmission and for starting mechanism. 4,439,163, Cl. 440-86.000.

Burns, Michael E., to Procter & Gamble Company, The. Concentrated fabric softening compositions. 4,439,335, Cl. 252-8.750.

Burroughs Corporation: *See—*
Sullivan, John L., Jr.; Pearson, Robert D.; and Youngblood, Donald A., 4,438,698, Cl. 101-287.000.

Burton, Lester P. J.; and Shubkin, Ronald L., to Ethyl Corporation. Process for sulfonating impure ortho alkylphenol. 4,439,374, Cl. 260-512.00R.

Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, to Bayer Aktiengesellschaft. Process for the production of blocked compounds optionally containing free hydroxyl groups and their use for the production of polyurethanes. 4,439,591, Cl. 528-73.000.

Busko-Oszczopowicz, Irena M.: *See—*
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Busse, Thomas A.: *See—*
Burmeister, Dennis N.; Busse, Thomas A.; and Jones, Wesley C., 4,439,163, Cl. 440-86.000.

Butler Manufacturing Company: *See—*
Nesseth, Clinton A.; and Nesseth, Clifford B., 4,439,115, Cl. 417-460.000.

Butterfield Group: *See—*
Butterfield, Ida M., 4,439,187, Cl. 604-111.000.

Butterfield, Ida M., to Butterfield Group. Hypodermic syringe. 4,439,187, Cl. 604-111.000.

Butterwick, Gilbert N., to RCA Corporation. Anode structure for photomultiplier tube. 4,439,712, Cl. 313-533.000.

Buttiker, Urs, to Rolf Baumgartner AG. Screw mixer. 4,439,044, Cl. 366-292.000.

Byrd, Norman R., to McDonnell Douglas Corporation. Treatment of metals to enhance adhesive bonding. 4,439,282, Cl. 204-38.00R.

Byvik, Charles E.: *See—*
Reichman, Benjamin; and Byvik, Charles E., 4,439,301, Cl. 204-278.000.

C. K. Locks Limited: *See—*
Stearns, Chris, 4,438,965, Cl. 292-256.750.

C. M. Kemp Manufacturing Co., The: *See—*
Frey, Bill; Haynie, Mark; and Psaras, John, 4,439,213, Cl. 55-31.000.

C. R. Bard, Inc.: *See—*
Bowers, William J., 4,438,766, Cl. 128-303.140.

Cable Electric Products, Inc.: *See—*
Schwartz, Frederick W., 4,439,736, Cl. 324-437.000.

Cabot Corporation: *See—*
Herchenroeder, Robert B.; and Lai, George Y., 4,439,248, Cl. 148-6.200.

Cahill, Lysle D., to Coulter Systems Corporation. Binary scan system. 4,439,789, Cl. 358-256.000.

Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John. Touchpad keyboard. 4,439,647, Cl. 200-5.00A.

Calas, Bernard: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.

Caldecourt, Victor J.: *See—*
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,439,048, Cl. 374-34.000.

Calgon Corporation: *See—*
Schaper, Raymond J., 4,439,580, Cl. 524-801.000.
Sinha, Rabindra K., 4,439,351, Cl. 252-500.000.

California Institute of Technology: *See—*
Cocconi, Alan G., 4,439,822, Cl. 363-56.000.

Cameron, Thomas M.: *See—*
Anderson, Rodney H.; and Cameron, Thomas M., 4,439,089, Cl. 414-722.000.

Campanella, Alexander F.; and Bannon, J. David. Protective glove. 4,438,532, Cl. 2-16.000.

Campbell, Patrick J. Moisture and density gauge. 4,439,675, Cl. 250-253.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Meek, Larry F., 4,438,650, Cl. 73-432.0SD.
Smyth, Lawrence C.; and Lightstone, Alexander W., 4,439,221, Cl. 65-4.210.

Cannella, Vincent D.; Izu, Masatsugu; and Hudgens, Stephen J., to Energy Conversion Devices, Inc. Multiple chamber deposition and isolation system and method. 4,438,723, Cl. 118-718.000.

Canon Kabushiki Kaisha: *See—*
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,439,504, Cl. 430-42.000.
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, 4,438,918, Cl. 271-251.000.
Ito, Yuji, 4,439,024, Cl. 351-207.000.
Okajima, Hidekazu; and Tsuji, Sadahiko, 4,439,018, Cl. 350-430.000.
Toma, Hitoshi; Kimura, Tomohiro; and Kondo, Hideyo, 4,439,258, Cl. 156-86.000.
Yamaguchi, Shin, 4,439,017, Cl. 350-427.000.
Yoshida, Tadashi, 4,439,790, Cl. 358-256.000.

Canterino, Peter J.; and Allen, Craig E., to Mobil Oil Corporation. Method and apparatus for forming cross-laminated thermoplastic film. 4,439,260, Cl. 156-259.000.

Cantley, Richard E. Combination door lock and alarm. 4,439,758, Cl. 340-546.000.

Capano, Michele: *See—*
Tomaiuolo, Francesco; and Capano, Michele, 4,439,338, Cl. 252-79.100.

Cappelletti, Leonardo M.: *See—*
Toscano, Luciano; and Cappelletti, Leonardo M., 4,439,426, Cl. 424-181.000.

Capro, Inc.: *See—*
Carlson, John A., 4,438,658, Cl. 74-501.00R.

Carey, Roberta B.: *See—*
Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., 4,439,422, Cl. 424-92.000.

Carignan, Roger G.: *See—*
Pratt, Clyde R.; and Carignan, Roger G., 4,438,769, Cl. 128-334.00R.

Carlson, John A., to Capro, Inc. Engine throttle control. 4,438,658, Cl. 74-501.00R.

Carminati, Paolo: *See—*
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.

Carpenter, Aaron R.; and Bagby, Robert R. Bark tool and connection. 4,438,794, Cl. 144-208.00E.

Carpenter, Richard H.: *See—*
Jarrell, Donald, 4,439,317, Cl. 210-151.000.

Carr, Ian. Game ball. 4,438,924, Cl. 273-58.00B.

Carrier Corporation: *See—*
Mathur, Achint P.; Torniainen, Matti J.; and Shawcross, James P., 4,438,807, Cl. 165-133.000.

Carroll, Glenn G.; and Frank, Joseph C., to Alcolite Products Corp. Clamping & sealing system for flanged ducts. 4,438,960, Cl. 285-367.000.

Carstensen, Carsten A.: *See—*
Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, 4,439,527, Cl. 436-135.000.

Carter, James L.; and Barnett, Allan E., to Exxon Research and Engineering Co. Support cobalt-silica coprecipitated hydrogenation catalyst. 4,439,544, Cl. 502-234.000.

Caterpillar Tractor Co.: *See—*
Saban, C. John, 4,438,646, Cl. 73-105.000.
Suckow, David S., 4,438,797, Cl. 152-410.000.

Cato, Craig J.: *See—*
Wiggins, Richard H.; Doddington, George; and Cato, Craig J., 4,439,161, Cl. 434-201.000.

Cecchi, Marino, to Suncom, Incorporated. Joy stick switch. 4,439,649, Cl. 200-6.00A.

Cecchin, Giuliano; and Albizzati, Enrico, to Montedison S.p.A. Catalysts and components of catalysts for polymerizing olefins. 4,439,540, Cl. 502-125.000.

Cech, Jay M.: *See—*
Gibbard, Henry F.; Murray, Richard C.; and Cech, Jay M., 4,439,500, Cl. 429-27.000.

Ceintrey, Claude, to La Cellophane. Chromogenic compositions containing stabilized phenolic coupler compounds, recording materials and processes utilizing same. 4,439,512, Cl. 430-180.000.

Celanese Corporation: *See—*
Hall, Henry K., Jr.; and Padias, Anne B., 4,439,597, Cl. 528-272.000.
Hanson, Harry T., 4,439,590, Cl. 526-285.000.
Kim, Sang N.; and Kastelic, John R., 4,439,578, Cl. 524-538.000.
McNew, George L.; and Thomas, Norman W., 4,438,593, Cl. 47-57.600.

Central Glass Company Limited: *See—*
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,439,222, Cl. 65-99.200.

Centronics Data Computer Corp.: *See—*
Johnson, Jerome L., 4,439,775, Cl. 346-75.000.

Ceresa, Luciano: *See—*
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.

Cernigliaro, George J.; and Shipley, Charles R., to Shipley Company Inc. High temperature positive diazo photoresist processing using polyvinyl phenol. 4,439,516, Cl. 430-323.000.

Ceshkovsky, Ludwig; and Dakin, Wayne R., to Discovision Associates. Focusing system for video disc player. 4,439,848, Cl. 369-45.000.

Ceskoslovenska akademie ved.: *See—*
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,439,588, Cl. 525-366.000.

Chamberlain, Joseph G.; and Tiegs, Paul E., to Chamberlain, Joseph G. Apparatus and method for accomplishing efficient burning of biomass fuel materials. 4,438,756, Cl. 126-131.000.

Chan, Rebecca: *See—*
Dawson, Marcia I.; Chan, Rebecca; and Hobbs, Peter D., 4,439,614, Cl. 560-8.000.

Chancey, Roger D.: *See—*
Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., 4,439,167, Cl. 464-20.000.

Chang, Laurence W.: *See—*
Singh, Balwant; Chang, Laurence W.; and Forgione, Peter S., 4,439,616, Cl. 560-25.000.

Chang, Long F., to Owens-Illinois, Inc. Combination base cup and bottle. 4,438,856, Cl. 215-12.00R.

Chapel, Nimrod T. Apparatus for removing material. 4,438,977, Cl. 299-64.000.

Chapman, Thomas G., to General Electric Company. Impregnated capacitor foil. 4,439,812, Cl. 361-314.000.

Chardon, Andre-Marie; and Guibert, Philippe. Shelter for protecting large-size objects. 4,438,606, Cl. 52-79.100.

Chasar, Dwight W., to B. F. Goodrich Co., The. 5-Membered cyclic phosphonates and compositions thereof. 4,439,564, Cl. 524-101.000.

Chatterjea, Probir K., to Dresser Industries, Inc. Clutch-clutch-brake steering mechanism for tractors. 4,438,780, Cl. 137-625.600.

Chazenfus, Henri. Circuit for the control of the cyclic ratio of a periodic pulse signal and device multiplying by 2^n of a pulse signal frequency incorporating said control circuit. 4,439,689, Cl. 307-265.000.

Chedeville, Robert: *See—*
Bernard, Alain; and Chedeville, Robert, 4,438,612, Cl. 52-427.000.

Cheever, Richard N., to Tetra Pak Developpement Ltd. Electron beam-irradiating apparatus with conical bushing seal-support. 4,439,686, Cl. 250-492.300.

Chelak, Viktor G.: *See—*
Belikov, Viktor T.; Ivlev, Anatoly D.; and Chelak, Viktor G., 4,439,702, Cl. 310-80.000.

Chem Systems Inc.: *See—*
Greene, Marvin I.; and Gelbein, Abraham P., 4,439,309, Cl. 208-51.000.

Chemical Research & Licensing Company: *See—*
Jones, Edward M., Jr., 4,439,350, Cl. 502-527.000.

Chen, Albert C.: *See—*
Martinez, Carlos J.; and Chen, Albert C., 4,439,587, Cl. 525-292.000.

Chen, Der-Jong. Linear sliding motor device. 4,439,698, Cl. 310-12.000.

Cheney, Robert J., Jr., to Eldec Corporation. Differential mass flowmeter. 4,438,648, Cl. 73-195.000.

Cheng, Hsiao L.: *See—*
Liang, Anthony; and Cheng, Hsiao L., 4,439,468, Cl. 427-216.000.

Cheng, Paul J.; and Mills, King L., to Phillips Petroleum Company. Apparatus for producing carbon black. 4,439,400, Cl. 422-111.000.

Chesebrough-Pond's Inc.: *See—*
Protzmann, Donald E.; Roveda, Ronald P.; and Uhoch, John, 4,439,190, Cl. 604-319.000.

Cheung, William S. H. Vehicle ignition system. 4,438,752, Cl. 123-630.000.

Chevron Research Company: *See—*
Elson, Thomas D.; and Millhone, Ralph S., 4,438,815, Cl. 166-278.000.

Chiang, Chih S., to Du Pont de Nemours, E. I., and Company. Chlorination of hydroquinone. 4,439,595, Cl. 528-191.000.

Chick, Jacques A.; Heymes, Alain; and Blasioli, Carlo, to SANOFI. Naftidrofuryl citrate and therapeutic applications. 4,439,442, Cl. 424-285.000.

Chisso Corporation: *See—*
Kojima, Tetsuhiko; Tsuji, Masakazu; and Sugimori, Shigeru, 4,439,340, Cl. 252-299.630.

Chiusoli, Gian P.: *See—*
Cometti, Giuseppe; and Chiusoli, Gian P., 4,439,618, Cl. 560-56.000.

Christ, Bernhard: *See—*
Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus, 4,439,403, Cl. 422-159.000.

Christy, Marcia E.: *See—*
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.

Christy, Orrin D., to United States of America, Army. Dual-secondary mirror cassegrain optical system. 4,439,012, Cl. 350-294.000.

Chu, Alan K. P., to Atlantic Richfield Company. Raney nickel electrode for Ni-H_2 cell. 4,439,466, Cl. 427-123.000.

Chu, Ta-Shing, to Bell Telephone Laboratories, Incorporated. Compact scanning beam antenna feed arrangement. 4,439,773, Cl. 343-778.000.

Chueh, Richard J., to Control Data Corporation. Computer system key and lock protection mechanism. 4,439,830, Cl. 364-200.000.

Chvojcsek, Frank, to Stenograph Corporation. Referencing device for digital data recorders. 4,439,798, Cl. 360-4.000.

Ciba-Geigy AG: *See—*
Freeman, Barrie A., 4,439,033, Cl. 354-316.000.

Ciba-Geigy A.G.: *See—*
Postle, Stephen R., 4,439,518, Cl. 430-402.000.

Ciba-Geigy Corporation: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,228, Cl. 71-95.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,230, Cl. 71-96.000.
Hubele, Adolf, 4,439,447, Cl. 424-309.000.
Irving, Edward; and Green, George E., 4,439,291, Cl. 204-159.230.
Irving, Edward, 4,439,517, Cl. 430-328.000.
Kleiner, Eduard K.; and Falk, Robert A., 4,439,329, Cl. 252-8.050.
Lauton, Alain; and Wurmli, Albert, 4,439,201, Cl. 8-436.000.
Marfurt, Hans-Rudolf; and Zurer, August, 4,439,290, Cl. 204-149.000.
Rosenberger, Siegfried; Evans, Samuel; and Gilg, Bernard, 4,439,615, Cl. 560-15.000.
Stingelin, Willy; and Loew, Peter, 4,439,204, Cl. 8-497.000.
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.
Winter, Roland A. E.; Malherbe, Roger F.; and Tieh-Yin Fu, Frank, 4,439,565, Cl. 524-103.000.

Cieslak, Jerzy J.: *See—*
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Cimochowski, Anthony E.; and Heffelmire, Brad A., to Manville Service Corporation. Apparatus for forming thermal insulation blocks. 4,439,175, Cl. 493-413.000.

Cincinnati Milacron Inc.: *See—*
Kamman, Joseph T.; and Kohring, Mark D., 4,438,599, Cl. 51-238.00S.

Claflin, Warren E.: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Clark, Alan C.: *See—*
Higgins, William A.; and Clark, Alan C., 4,439,594, Cl. 528-89.000.

Claussen, Ulf, to Siemens Aktiengesellschaft. Evaluation circuit for a digital tachometer. 4,439,729, Cl. 324-165.000.

Claydon, Gyongyver; and Iles, Gordon D., to Marconi Company Limited, The. Apparatus and method for processing television picture signals and other information. 4,439,786, Cl. 358-148.000.

Clean-Tex: *See—*
Lang, Aage, 4,439,475, Cl. 428-92.000.

Clonce, Ambrose J.: *See—*
Douglas, Ted L.; Clonce, Ambrose J.; and Jones, Glenn C., 4,439,278, Cl. 203-9.000.

Close, Anthony D.; and Menn, Walter A., to International Telephone and Telegraph Corporation. Printed circuit assembly for a card file packaging system. 4,439,815, Cl. 361-386.000.

Coan, Michael H.; and Brockway, William J., to Miles Laboratories, Inc. Method of preparing alpha-1-proteinase inhibitor. 4,439,358, Cl. 260-112.00B.

Coca-Cola Company, The: *See—*
Puri, Ajai, 4,439,458, Cl. 426-330.500.

Cocchi, Maurice. Crystallographically-oriented spatially-dispersed conductive fiber electrode. 4,439,303, Cl. 204-434.000.

Cocconi, Alan G., to California Institute of Technology. Method and apparatus for detecting and preventing impending magnetic saturation in magnetic materials. 4,439,822, Cl. 363-56.000.

Codd, Edwin T. Space frames. 4,438,616, Cl. 52-650.000.

Codex Corporation: *See—*
Qureshi, Shahid U. H., 4,439,864, Cl. 375-98.000.

Coldren, Larry A.; and Stulz, Lawrence W., to Bell Telephone Laboratories, Incorporated. Orientation of INP substrate wafers. 4,439,268, Cl. 156-626.000.

Coleco Industries, Inc.: *See—*
Reiner, Norbert L.; and Sledesky, Stephen M., 4,439,648, Cl. 200-6.00A.

Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., to Hughes Aircraft Company. Real-time ordinal-value filters utilizing partial intra-data comparisons. 4,439,840, Cl. 364-900.000.

Coleman, James H., to Upjohn Manufacturing Company M. The. Treatment of the blood-brain barrier with ibuprofen. 4,439,450, Cl. 424-317.000.

Coleman, James H., to Upjohn Company, The. Treatment of the blood-brain barrier with flurbiprofen. 4,439,451, Cl. 424-317.000.

Colgate-Palmolive Company: *See—*
Cordon, Martin; and Dillarstone, Alan, 4,439,416, Cl. 424-47.000.
Kenkare, Divaker B., 4,439,355, Cl. 252-541.000.

Collins, Billy J. Method of constructing shell-formed structures. 4,439,383, Cl. 264-32.000.

Columbus, Richard L., to Eastman Kodak Company. Clustered ingress apertures for capillary transport devices and method of use. 4,439,526, Cl. 436-180.000.

Colvin, Warren: *See—*
Khanna, Pyare; and Colvin, Warren, 4,439,356, Cl. 260-112.00R.

Comaty, Joseph E.: *See—*
Ehrenpreis, Seymour; Comaty, Joseph E.; and Balagot, Reuben C., 4,439,452, Cl. 424-319.000.

Combustion Engineering, Inc.: *See—*
Borio, Richard W.; Nelson, Hugh W.; and Mehta, Arun K., 4,438,709, Cl. 110-347.000.
Perryman, John W., 4,439,216, Cl. 55-104.000.
Rowe, George H., 4,438,630, Cl. 60-676.000.

Comeau, Paul E., to Kenney Manufacturing Company. Tear starting mechanism for tear shades. 4,438,799, Cl. 160-263.000.

Cometti, Giuseppe; and Chiusoli, Gian P., to Montedison S.p.A. Process for the preparation of methyl esters of arylpropionic acids optically active. 4,439,618, Cl. 560-56.000.

Commander Electrical Materials, Inc.: *See—*
Solek, Leszek, 4,438,859, Cl. 220-3.200.

Commonwealth Scientific and Industrial Research Organization: *See—*
Harrison, Alexander, 4,439,731, Cl. 324-239.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Michel, Helle, 4,439,671, Cl. 235-449.000.

Concord Laboratories, Inc.: *See—*
Wheeler, Robert P., 4,439,184, Cl. 604-90.000.

Congdon, Jon M., to PEDCO. Portable camera support. 4,439,032, Cl. 354-293.000.

Conn, Worth R., to Detectors, Inc. Tilt detector. 4,438,720, Cl. 116-215.000.

Conoco Inc.: *See—*
Lancet, Michael S., 4,439,210, Cl. 48-202.000.
Sudbury, John D.; and Zielke, Clyde W., 4,439,304, Cl. 208-8.0LE.

Constapel, Artur. Continuous gallery construction, in particular for underground mine tunnels. 4,439,065, Cl. 405-151.000.

Container Corporation of America: *See—*
Helms, Charles R., 4,438,864, Cl. 220-265.000.
Montealegre, James; and Rader, James L., 4,438,848, Cl. 206-588.000.

Continental Group, Inc., The: *See—*
Holk, Albert J.; and Pulciani, Sam C., 4,439,081, Cl. 413-1.000.

Control Data Corporation: *See—*
Chueh, Richard J., 4,439,830, Cl. 364-200.000.

Conway, George E., to Beckman Instruments, Inc. Rotor bucket liner. 4,439,177, Cl. 494-20.000.

Cook, P. Dan, to Warner-Lambert Company. 7-β-D-Arabinofuranosyl-7H-pyrrolo[2,3-d]pyrimidine compounds and methods for their production. 4,439,604, Cl. 536-24.000.

Cooper, David G.; and Sach, George S., to Smith Kline & French Laboratories Limited. Pyridines. 4,439,609, Cl. 546-334.000.

Cooper, Edwin: *See—*
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.

Cooper Industries, Inc.: *See—*
Ford, James A.; and Haarer, Steven R., 4,438,798, Cl. 160-126.000.

Cooper LaserSonics: *See—*
Mohler, Galen E., 4,439,862, Cl. 372-107.000.

Cooper, Roderick A. Toe binding for skis. 4,438,947, Cl. 280-615.000.

Copeland, Claude T.: *See—*
Nimerick, Kenneth H.; and Copeland, Claude T., 4,439,337, Cl. 252-70.000.

Corbett, James P. Oscillating crystal transducer systems with symmetrical temperature compensator. 4,439,705, Cl. 310-338.000.

Corbett, Scott S., Jr.: *See—*
Riley, Joseph L., 4,439,094, Cl. 414-786.000.

Cordon, Martin; and Dillarstone, Alan, to Colgate-Palmolive Company. Self-heating shaving composition. 4,439,416, Cl. 424-47.000.

Corning Glass Works: *See—*
Araujo, Roger J., 4,439,528, Cl. 501-32.000.

Coscia, Anthony T.: *See—*
Frank, Simon; Coscia, Anthony T.; and Schmitt, Joseph M., 4,439,332, Cl. 252-8.55D.

Cosden Technology, Inc.: *See—*
McCurdy, J. L.; and Jarvis, Marvin A., 4,439,601, Cl. 528-481.000.
Schwarz, Richard A., 4,439,490, Cl. 428-407.000.

Coulter Systems Corporation: *See—*
Cahill, Lysle D., 4,439,789, Cl. 358-256.000.

Courdent, Jacques: *See—*
Hennart, Claude; and Courdent, Jacques, 4,439,415, Cl. 424-16.000.

Courtaulds Limited: *See—*
Betts, Max W., 4,438,639, Cl. 66-64.000.

Courty, Aurele. Manual pipe cutter. 4,438,562, Cl. 30-99.000.

Couture, William F., to Iowa Beef Processors, Inc. Head holding method and apparatus for a hide puller. 4,438,546, Cl. 17-50.000.

Couturier S.A.: *See—*
Bernard, Alain; and Chedeville, Robert, 4,438,612, Cl. 52-427.000.

Cox, John M., to Imperial Chemical Industries PLC. Herbicide. 4,439,428, Cl. 424-200.000.

CPC Engineering Corporation: *See—*
Blais, Norman J., 4,439,325, Cl. 210-740.000.

Craig, Glenn D.; Wilhelm, Ronald K.; and Rulseh, Roy M., to Aqua-Chem, Inc. Combustion control apparatus. 4,439,138, Cl. 431-12.000.

Creamer, Reginald D. Pump jack drive apparatus. 4,438,628, Cl. 60-374.000.

Cremer, Gottfried. Cooling zone for a firing kiln with transport rollers. 4,439,142, Cl. 432-18.000.

Cristell, Frank A.: *See—*
Fisher, Richard W.; and Cristell, Frank A., 4,438,995, Cl. 339-39.000.

Crosfield Electronics Limited: *See—*
Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., 4,438,694, Cl. 101-152.000.

Crothers, James L.: *See—*
Weirich, Stephen; and Crothers, James L., 4,438,671, Cl. 83-212.000.

Crotti, Alfred F. Removal of oil from water. 4,439,324, Cl. 210-691.000.

Cukauskas, Edward J., to United States of America, Navy. Method for making Josephson junctions with contamination-free interfaces utilizing a ZnO contact insulator. 4,439,269, Cl. 156-643.000.

Cullen, Frederick T. Hand protector. 4,438,661, Cl. 74-551.900.

Cullom Machine Tool & Die, Inc.: *See—*
Dickhut, Heinrich; and Lilienthal, Alfred, 4,439,130, Cl. 425-388.000.

Cummins Engine Company, Inc.: *See—*
Wohlmuth, Clinton J., 4,438,598, Cl. 51-165.730.

Curley, James H.; and Lang, Roger J., to Allied Corporation. IDC Socket connector. 4,439,001, Cl. 339-176.0MP.

Curry, Thomas H., to Albany International Corp. Wet press felt for papermaking machine. 4,439,273, Cl. 162-358.000.

Curtis, David S.: *See—*
Jones, Thomas J.; and Curtis, David S., 4,438,956, Cl. 285-223.000.

Curtis, Stanley F., to Pollution Controls Industries, Inc. Assembly for mounting a work object on a vehicle or the like. 4,438,945, Cl. 280-501.000.

Cuscurida, Michael: *See—*
Yeakey, Ernest L.; Cuscurida, Michael; and Brennan, Michael E., 4,439,551, Cl. 521-131.000.

CVI Incorporated: *See—*
Sarcia, Domenico S., 4,438,631, Cl. 62-6.000.

Czyzewski, Ted S.; and Greenwell, Bartley A., to Groen Division - Dover Corporation. Process for chilling and plasticizing fatty materials. 4,439,461, Cl. 426-601.000.

D. W. Zimmerman Mfg., Inc.: *See—*
Owen, Douglas B., 4,439,113, Cl. 417-394.000.

Dahlgren, William V., Jr.; and Silverstein, Lewis S. Tool manipulating method and apparatus. 4,439,834, Cl. 364-474.000.

Daicel Chemical Industries, Ltd.: *See—*
Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, 4,439,599, Cl. 528-80.000.
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke, and Uchida, Manabu, 4,439,605, Cl. 536-71.000.

Daido Metal Company Ltd.: *See—*
Mori, Sanae, 4,439,484, Cl. 428-318.400.

Daido Oxygen Company Ltd.: *See—*
Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, 4,439,126, Cl. 425-135.000.

Daieigiken, Inc.: *See—*
Watanabe, Hidefumi, 4,439,124, Cl. 425-112.000.

Daigo, Junichi: *See—*
Yoshimaru, Tomohisa; Yamashita, Mitsuo; and Daigo, Junichi, 4,439,797, Cl. 360-134.000.

Daimler-Benz Aktiengesellschaft: *See—*
Lutz, Horst, 4,438,645, Cl. 72-482.000.
Renz, Dieter; and Loper, Bernd, 4,438,979, Cl. 301-37.0PB.
Seifert, Peter R., 4,438,732, Cl. 123-41.050.

Dakin, Wayne R.: *See—*
Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,439,848, Cl. 369-45.000.

Daloz, Joanny, to SEB S.A. Appliance for preparing mayonnaise or similar emulsions. 4,439,043, Cl. 366-164.000.

Damen, Franciscus A., to Flessluittechniek B. V. Handelend Onder De Naam Calumatic. Apparatus for selecting closures. 4,438,840, Cl. 198-398.000.

Danfoss A/S: *See—*
Petersen, Hans C.; and Sorensen, Soren N., 4,439,119, Cl. 418-61.00B.

Daniel, Arnold D.: *See—*
Meyer, John W.; Bonin, John H.; and Daniel, Arnold D., 4,439,200, Cl. 406-99.000.

Daniel, Chelliah, to Ashland Oil, Inc. Oxydehydrogenation process. 4,439,621, Cl. 562-599.000.

Daniel, Jean-Claude: *See—*
Schuppiser, Jean-Luc; and Daniel, Jean-Claude, 4,439,574, Cl. 524-458.000.

Daniels, Raymond A., to International Business Machines Corporation. Method and apparatus for purging a copier developer. 4,439,034, Cl. 355-3.0DD.

Dart Industries Inc.: *See—*
Ashton, Harold P., 4,438,564, Cl. 30-324.000.

Darton, Richard C.: *See—*
Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, 4,439,306, Cl. 208-11.00R.

Date, Naoki: *See—*
Norioka, Setsuo; and Date, Naoki, 4,439,681, Cl. 250-310.000.

Daugherty, Don D. Paddle wheel kit for pontoon boat. 4,439,164, Cl. 440-91.000.

Daunis, Jacques: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.

Davenport, Joseph A.: *See—*
Raith, Richard L.; and Davenport, Joseph A., 4,438,614, Cl. 52-580.000.

Davis, Harry H., to L. B. (Plastics) Limited. Drawers and drawer runners. 4,438,994, Cl. 312-330.00R.

Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., to Mead Corporation, The. Large document access for a scanning system of a copying machine. 4,439,036, Cl. 355-75.000.

Davis, Roland O., to Santa Barbara Research Center. Low friction pivot. 4,438,983, Cl. 308-2.00A.

Davydenko, Vladimir G.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Dawson, Marcia I.; Chan, Rebecca; and Hobbs, Peter D., to SRI International. 5,6-Methano-5,6-dihydroretinoids. 4,439,614, Cl. 560-8.000.

DBI Industries, Inc.: *See—*
Hussels, Bernard H.; and Goetz, Charles T., 4,438,823, Cl. 177-210.0EM.

DCI Marketing: *See—*
Rabas, Kenneth J., 4,438,993, Cl. 312-140.000.

De La Rue Systems Limited: *See—*
Jenkins, Stuart M.; and Hosking, Steven M., 4,439,083, Cl. 414-46.000.

Dean, Robert A.: *See—*
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,439,298, Cl. 204-258.000.

De Cenzo, Herbert A. Clam-shell coupling for joining beaded tubes. 4,438,958, Cl. 285-234.000.

Deckebach, George J. Recuperative double chamber rotary furnace. 4,439,141, Cl. 432-14.000.

Decoustics Limited: *See—*
Hintsa, Roy A.; and Orav, Tonu, 4,438,613, Cl. 52-484.000.

Dedolph, Richard R., to Gravi-Mechanics Co. Method of preparing a urethane prepolymer and polymer. 4,439,552, Cl. 521-159.000.

Deepsea Ventures, Inc.: *See—*
Latimer, John P., 4,438,902, Cl. 254-106.000.

Deere & Company: *See—*
Kittle, Carl E., 4,438,660, Cl. 74-531.000.
Nobis, Dieter, 4,438,657, Cl. 74-477.000.
Treichel, Richard; and Moon, Seaton, 4,438,818, Cl. 172-9.000.

deha Baubedarf GmbH & Co. KG: *See—*
Bakk, Thorleif; and Bakk, Henry, 4,439,067, Cl. 405-154.000.

De Jong, Hendrik J., to N.V. Nederlandsche Apparatenfabriek Nedap. Attachment device. 4,438,642, Cl. 70-232.000.

Delaplace, Lucien; and Robert, Jacques, to Stein Industrie. Apparatus for directly igniting low-grade solid fuel powders in cold combustion chambers. 4,438,707, Cl. 110-264.000.

Delgado, Daniel R.: *See—*
Lannom, Charles S.; and Delgado, Daniel R., 4,438,602, Cl. 51-277.000.

Della-Moretta, Leonard B. Towing and carrying systems. 4,438,944, Cl. 280-460.00R.

Delta Central Refining, Inc.: *See—*
O'Blasny, Richard H., 4,439,311, Cl. 208-179.000.

Deltour, Robert J.: *See—*
Alldredge, Robert L.; and Deltour, Robert J., 4,438,842, Cl. 198-838.000.

DeLucia, Paul V. Continuous, moveable thermal barrier system. 4,438,605, Cl. 52-71.000.

de Mendez, Michel O.: *See—*
Amberny, Philippe; and de Mendez, Michel O., 4,439,674, Cl. 250-227.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, 4,439,555, Cl. 523-122.000.

Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., to Baxter Travenol Laboratories, Inc. Tube connector. 4,439,188, Cl. 604-283.000.

Dentsply Research & Development Corp.: *See—*
Williams, Ralph J., 4,438,975, Cl. 297-412.000.

Derderian, Edward J. Box-erecting machine. 4,439,174, Cl. 493-125.000.

Desplats, Andre, to Tractel S.A. Release mechanism for a traction apparatus acting on a cable which passes therethrough. 4,438,659, Cl. 74-529.000.

Dessouroux, Alexis A. J. F., to Shur-Lok International SA. Assembly sleeve for fixing a screw in an object, particularly of a soft material. 4,439,078, Cl. 411-178.000.

Detectors, Inc.: *See—*
Conn, Worth R., 4,438,720, Cl. 116-215.000.

Deutsche Automobilgesellschaft: *See—*
Schneider, Claus; and Benczur-Urmossy, Gabor, 4,439,281, Cl. 204-2.100.

Develay, Roger; and Anagnostidis, Marc, to Societe Metallurgique de Gerzat. Method of making hollow bodies under pressure from aluminum alloys. 4,439,246, Cl. 148-2.000.

Devincenzo, John. Vertically-indexed posterior bite plates. 4,439,149, Cl. 433-6.000.

De Vries, Hans: *See—*
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,439,287, Cl. 204-58.000.

DeYoung, Thomas W.; and Maltsev, Viacheslav B., to Exxon Research and Engineering Co. Ink jet apparatus with improved transducer support. 4,439,780, Cl. 346-140.00R.

Dholakia, Anil R., to RCA Corporation. Capacitive playback stylus. 4,439,853, Cl. 369-126.000.

Dholakia, Anil R., to RCA Corporation. Capacitive playback stylus. 4,439,855, Cl. 369-126.000.

Dickhut, Heinrich; and Lilienthal, Alfred, to Cullom Machine Tool & Die, Inc. Plastic tile corrugator. 4,439,130, Cl. 425-388.000.

Didier Engineering GmbH: *See—*
Galow, Manfred, 4,439,276, Cl. 202-239.000.

Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, to Firestone Tire & Rubber Company, The. Adjustable die mechanism. 4,439,125, Cl. 425-140.000.

Diesel Kiki Co., Ltd.: *See—*
Ohie, Tomonori, 4,439,116, Cl. 417-499.000.

Dietrich, Herbert, to Pfaff Industriemaschinen GmbH. Fur sewing machine. 4,438,711, Cl. 112-16.000.

DiFoggio, Rocco, to Shell Oil Company. Ultrasonic sound absorber. 4,439,497, Cl. 428-539.500.

DiGiulio, Adolph V., to Atlantic Richfield Company. Anti-lumping and fast-cool vinyl aromatic expandable polymer particles. 4,439,547, Cl. 521-56.000.

Dijkmans, Eise C.: *See—*
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,439,739, Cl. 330-107.000.

Dillarstone, Alan: *See—*
Cordon, Martin; and Dillarstone, Alan, 4,439,416, Cl. 424-47.000.

Dimmick, Floyd E. Method for restoring an underwater piling and an underwater jacket used therewith. 4,439,070, Cl. 405-216.000.

Dimodana, Robert: *See—*
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.

Discovision Associates: *See—*
Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,439,848, Cl. 369-45.000.
Morrison, Rocky V., 4,439,132, Cl. 425-548.000.

Diving Unlimited International, Inc.: *See—*
Long, Richard W.; and Stinton, Robert T., 4,438,531, Cl. 2-2.10R.

Dix, Kurt E. Coke-oven door with Z-profile sealing frame. 4,439,277, Cl. 202-248.000.

Dobrzanski, John J., to General Signal Corporation. Ionization smoke detector. 4,439,683, Cl. 250-381.000.

Dr. Madaus & Co.: *See—*
Hotzel, Dieter, 4,439,449, Cl. 424-317.000.

Dr. Muller AG: *See—*
Muller, Hans, 4,439,327, Cl. 210-772.000.

Doddapaneni, Narayan, to Honeywell Inc. Metal-organic liquid depolarizer electrochemical cell. 4,439,503, Cl. 429-108.000.

Doddi, Namassivaya: *See—*
Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, 4,439,420, Cl. 424-78.000.

Doddington, George: *See—*
Wiggins, Richard H.; Doddington, George; and Cato, Craig J., 4,439,161, Cl. 434-201.000.

Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., to Energy Conversion Devices, Inc. Grooved gas gate. 4,438,724, Cl. 118-719.000.

Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, to Nippon Oil and Fats Co., Ltd.; and Denki Kagaku Kogyo Kabushiki Kaisha. Antifouling composition. 4,439,555, Cl. 523-122.000.

Doi, Hiroyuki: *See—*
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.

Dokoupil, Jiri. System for drying and expanding of flat materials such as leather. 4,438,570, Cl. 34-1.000.

Doliner, Herbert, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Rotary sheet printing machine. 4,438,697, Cl. 101-183.000.

Dominey, Raymond N.: *See—*
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Don Brothers, Buist P.L.C.: *See—*
Guild, George A., 4,439,476, Cl. 428-96.000.

Don Evans, Inc.: *See—*
Evans, Donald L., 4,438,852, Cl. 211-11.000.

Donaldson Company, Inc.: *See—*
Brenholt, David L., 4,438,781, Cl. 137-625.280.

Donnan, Robert A., to International Business Machines Corp. Method and system for retransmitting incorrectly received numbered frames in a data transmission system. 4,439,859, Cl. 371-32.000.

Donner, Meinrad, to Maag Gear-Wheel & Machine Company Limited. Position regulation system containing a digital incremental measuring apparatus. 4,439,825, Cl. 364-167.000.

Dooley, Dan W.; and Bromps, Robert T. Dispensing apparatus. 4,438,872, Cl. 222-217.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, 4,439,402, Cl. 422-159.000.
Doty, James L., to Spectron Development Laboratories, Inc. Apparatus for combining optical images. 4,439,010, Cl. 350-174.000.
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, to International Business Machines Corporation. Thin film discrete decoupling capacitor. 4,439,813, Cl. 361-321.000.
Douglas, Ted L.; Clonce, Ambrose J.; and Jones, Glenn C., to Eastman Kodak Company. Process inhibitor for readily polymerizable ethylenically unsaturated aromatic compounds. 4,439,278, Cl. 203-9.000.
Doumit, Carl J. Descaler composition and method. 4,439,339, Cl. 252-80.000.
Dow Chemical Company, The: *See—*
Henton, David E., 4,439,582, Cl. 525-67.000.
Nimerick, Kenneth H.; and Copeland, Claude T., 4,439,337, Cl. 252-70.000.
Reifschneider, Walter, 4,439,430, Cl. 424-216.000.
Reifschneider, Walter, 4,439,431, Cl. 424-216.000.
Strother, Greene W., Jr., 4,439,532, Cl. 501-117.000.
Thomas, Lowell S., 4,439,566, Cl. 524-108.000.
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,439,048, Cl. 374-34.000.
Dow Corning Corporation: *See—*
Groenhof, Eugene D., 4,439,630, Cl. 174-21.00R.
Dowden, William, deceased; and by Muckelroy, Naomi, executrix. Hand operated controls for motor vehicle. 4,438,835, Cl. 192-3.00M.
Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., to KSM Fastening Systems Inc. Apparatus and method for double end stud welding. 4,439,661, Cl. 219-99.000.
Drabb, Thomas W., to American Cyanamid Company. Method for the preparation of certain pyridine and quinoline 2,3-dicarboxylic anhydrides. 4,439,607, Cl. 546-89.000.
Drackett Company, The: *See—*
Keyes, George B.; and Richards, Randall G., 4,438,534, Cl. 4-227.000.
Dragerwerk Aktiengesellschaft: *See—*
Eckstein, William; and Pantaleon-Stemberg, Gerd, 4,438,966, Cl. 292-259.00R.
Dragone, Corrado, to Bell Telephone Laboratories, Incorporated. Corrugated waveguide or feedhorn assembled from grooved pieces. 4,439,748, Cl. 333-239.000.
Dravo Corporation: *See—*
Jaquay, Louis H.; and Mengon, Albert C., deceased, 4,439,307, Cl. 208-11.00R.
Dresser Industries, Inc.: *See—*
Anderson, Rodney H.; and Cameron, Thomas M., 4,439,089, Cl. 414-722.000.
Chatterjea, Probir K., 4,438,780, Cl. 137-625.600.
Wilkinson, Gregory J., 4,438,810, Cl. 166-65.00M.
Dreulle, Noel. Process for adjusting the composition of a zinc alloy used in the galvanization of steel. 4,439,397, Cl. 420-519.000.
Drexel Equipment Limited: *See—*
Armell, Richard A., 4,438,938, Cl. 277-230.000.
Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, to Dreyfuss, Wilfried; and Remp, Thomas E. Protective device for pipes. 4,438,783, Cl. 138-89.000.
Drosen, Erich: *See—*
Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, 4,438,677, Cl. 89-36.00K.
Drummond, William E.: *See—*
Hesterman, Victor W.; and Drummond, William E., 4,439,732, Cl. 324-247.000.
Du, Mila T.; and Shepherd, Robert G., to American Cyanamid Company. Antiatherosclerotic 1-piperazinecarbonyl compounds. 4,439,606, Cl. 544-356.000.
Ducellier, Hugues, J. M., to Broderie de Mesnil St Pere S.A.R.L. Stitching head having two independent presser feet. 4,438,712, Cl. 112-100.000.
Duff, Russell E., to S-Cubed. Complete incineration of waste material. 4,438,708, Cl. 110-346.000.
Dufour, Daniel L.; Harris, Alva F.; and Ott, John B., to Monsanto Company. Thermally stabilized polymers. 4,439,571, Cl. 524-183.000.
Duke, Roy B., to Marathon Oil Company. Demulsification of a crude oil middle phase emulsion. 4,439,345, Cl. 252-330.000.
Dunham-Bush, Inc.: *See—*
Shaw, David N., 4,439,121, Cl. 418-98.000.
Dunlop Limited: *See—*
Bell, Raymond W. H., 4,439,472, Cl. 428-71.000.
Dunn, William H.; Edwards, William J.; and Minalga, Philip F., to Singer Company, The. Buttonhole sewing repair. 4,438,715, Cl. 112-158.00B.
Duphar International Research B.V.: *See—*
van Hes, Roelof; and Grosscurt, Arnoldus C., 4,439,440, Cl. 424-273.00P.
Du Pont de Nemours, E. I., and Company: *See—*
Chiang, Chih S., 4,439,595, Cl. 528-191.000.
Ganci, James B., 4,439,240, Cl. 106-288.00Q.
Irwin, Robert S., 4,439,596, Cl. 528-191.000.
Jennings, Uel D., 4,439,487, Cl. 428-397.000.
Johnson, Alexander L., 4,439,364, Cl. 260-239.30R.
Rao, Velliyur Nott M., 4,439,625, Cl. 568-473.000.
Durable Packaging Corporation: *See—*
Ulrich, Lawrence W.; and Walker, Connie W., 4,438,617, Cl. 53-137.000.
Durkan, Martin J., Jr. Stadium seating. 4,438,603, Cl. 52-8.000.
Dyckerhoff & Widmann Aktiengesellschaft: *See—*
Finsterwalder, Ulrich, 4,438,719, Cl. 114-74.00A.
Dyett, Derek H.; and Harvey, Rex, to Molins Limited. Cigarette conveying drums. 4,438,774, Cl. 131-282.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Fischer, Klaus H.; and Kroschel, Heinz, 4,438,675, Cl. 89-1.811.
Dynascan Corporation: *See—*
Schornack, Louis W., 4,439,688, Cl. 307-115.000.
Eastman Kodak Company: *See—*
Columbus, Richard L., 4,439,526, Cl. 436-180.000.
Douglas, Ted L.; Clonce, Ambrose J.; and Jones, Glenn C., 4,439,278, Cl. 203-9.000.
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.
Perlstein, Jerome H.; and Haley, Neil F., 4,439,505, Cl. 430-58.000.
Sublett, Bobby J.; and Hilbert, Samuel D., 4,439,598, Cl. 528-295.300.
Eaton Corporation: *See—*
Lane, E. James, 4,438,666, Cl. 74-868.000.
Ebata, Yoshikazu: *See—*
Koide, Akio; and Ebata, Yoshikazu, 4,438,716, Cl. 112-168.000.
Ebneth, Harold; and Fitzky, Hans-Georg, to Bayer Aktiengesellschaft. Metallized sheet form textile microwave screening material, and the method of use. 4,439,768, Cl. 343-18.00B.
Ecanow, Bernard: *See—*
Ecanow, Charles S.; and Ecanow, Bernard, 4,439,424, Cl. 424-153.000.
Ecanow, Charles S.; and Ecanow, Bernard, to Neomed Inc. Synthetic whole blood. 4,439,424, Cl. 424-153.000.
Eckert, Josef, to Wischerath and Schreiner KG. Dispenser. 4,438,871, Cl. 222-137.000.
Eckstein, William; and Pantaleon-Stemberg, Gerd, to Dragerwerk Aktiengesellschaft. Lock for carrying cases of respirators. 4,438,966, Cl. 292-259.00R.
Edelbrock, Gregory J.: *See—*
Kelly, John, Jr.; and Edelbrock, Gregory J., 4,439,069, Cl. 405-195.000.
Edgren, David: *See—*
Swanson, David; and Edgren, David, 4,439,195, Cl. 604-890.000.
Edinen Centar Po Chimia: *See—*
Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., 4,439,286, Cl. 204-54.00R.
Edmonds, David H., to Garrett Corporation, The. Compressor inlet guide vane and vortex-disturbing member assembly. 4,439,104, Cl. 415-161.000.
Edstrom, John O.: *See—*
Santen, Sven; and Edstrom, John O., 4,439,410, Cl. 423-350.000.
Edwards, Raymond M. Envelope vending machine. 4,438,868, Cl. 221-240.000.
Edwards, William J.: *See—*
Dunn, William H.; Edwards, William J.; and Minalga, Philip F., 4,438,715, Cl. 112-158.00B.
Edwardson, Svante R., to AB Dentatus. Articulator for use in making dentures or parts thereof. 4,439,150, Cl. 433-56.000.
Eflab Oy: *See—*
Suovaniemi, Osmo A., 4,439,039, Cl. 356-416.000.
Eggert, Walter S., Jr., to Budd Company, The. Primary suspension system for a railway car. 4,438,703, Cl. 105-224.100.
Ehrenpreis, Seymour; Comaty, Joseph E.; and Balagot, Reuben C., to Enrenpreis, Seymour. Class of analgesics and/or anti-inflammatory agents consisting of inhibitors of breakdown of endogenous enkephalin and/or endorphin, and combinations of said analgesics with anti-pyretic, anti-inflammatory (aspirin-type) drugs. 4,439,452, Cl. 424-319.000.
Eichenberger, Peter; and Lodge, John H., to Ford Motor Company. Planetary transmission gearing and output shaft retention means. 4,438,663, Cl. 74-760.000.
Eichentopf, Bertram: *See—*
Bonhard, Klaus; Eichentopf, Bertram; and Kothe, Norbert, 4,439,357, Cl. 260-112.00B.
Einig, Joseph A.: *See—*
Jones, Johnnie; Einig, Joseph A.; and Ackerson, Arthur T., 4,438,596, Cl. 49-463.000.
Eisenstein, Toby K.: *See—*
Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., 4,439,422, Cl. 424-92.000.
Ejnar Jensen & Son A/S: *See—*
Jensen, Jorn M., 4,439,176, Cl. 493-419.000.
Eldec Corporation: *See—*
Cheney, Robert J., Jr., 4,438,648, Cl. 73-195.000.
Electric Power Research Institute, Inc.: *See—*
Gilman, Harris H., 4,438,649, Cl. 73-432.00R.
Electro-Films, Inc.: *See—*
Madden, Jean D., Jr., 4,439,754, Cl. 338-320.000.
Electronic Equipment Development Ltd.: *See—*
Johnson, Martin D., 4,438,670, Cl. 83-154.000.
Electronique Marcel Dassault: *See—*
Basset, Jean-Claude; and Belenfant, Guy, 4,439,670, Cl. 235-382.000.

Elektroschmelzwerk Kempten GmbH: *See—*
Wiebke, Gunther, deceased; Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.
Eljo Products, Inc.: *See—*
Maggart, Michael J., 4,438,597, Cl. 49-501.000.
Elliott, William O.: *See—*
Baughman, Donald L.; and Elliott, William O., 4,438,854, Cl. 213-127.000.
Ellis, Earle R., to Monsanto Company. Spray-suppression device. 4,439,483, Cl. 428-287.000.
Elson, Thomas D.; and Millhone, Ralph S., to Chevron Research Company. Foam gravel packing. 4,438,815, Cl. 166-278.000.
Eltac Co. Ltd.: *See—*
Kato, Takashi, 4,438,713, Cl. 112-100.000.
Emhart Industries, Inc.: *See—*
Soloviff, Paul G.; and Lichtenfels, William C., 4,438,962, Cl. 292-144.000.
Emura, Akira: *See—*
Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, 4,439,237, Cl. 75-243.000.
Endo, Shuzo: *See—*
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, 4,439,393, Cl. 264-532.000.
Energy Conversion Devices, Inc.: *See—*
Cannella, Vincent D.; Izu, Masatsugu; and Hudgens, Stephen J., 4,438,723, Cl. 118-718.000.
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,438,724, Cl. 118-719.000.
Engel, Robert W. Three-dimensional picture with interchangeable scenes. 4,438,579, Cl. 40-160.000.
Engel, Thomas G.: *See—*
Noffke, Roy O.; and Engel, Thomas G., 4,438,673, Cl. 83-502.000.
Engel, Walter: *See—*
Hansen, Rolf; Engel, Walter; and Schubert, Hiltmar, 4,439,622, Cl. 564-406.000.
Engle, Charles J.; and Boitano, Robert A., to Gared Corporation. Shock-absorbing basketball goal unit. 4,438,923, Cl. 273-1.50R.
English, Gary F., to Foseco International Limited. Formers for lining metallurgical vessels. 4,438,906, Cl. 266-44.000.
Enomoto, Hiroshi: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.
Enrenpreis, Seymour: *See—*
Ehrenpreis, Seymour; Comaty, Joseph E.; and Balagot, Reuben C., 4,439,452, Cl. 424-319.000.
Eppolito, Salvatore. Oxygen caddy. 4,438,764, Cl. 128-205.220.
Epsztein, Bernard, to Thomson-CSF. Extended interaction microwave oscillator including a sucession of vanes with orifices. 4,439,746, Cl. 331-82.000.
Erd, Ludwig: *See—*
Menzel, Klaus; Erd, Ludwig; and Marinescu, Marlene, 4,439,700, Cl. 310-13.000.
Ernst Leitz Wetzlar GmbH: *See—*
Machmerth, Herbert, 4,439,011, Cl. 350-255.000.
ESAB North America, Inc.: *See—*
Singh, Gurvinder P.; and Jolly, William D., 4,439,249, Cl. 148-9.00R.
Esakov, Michael D.: *See—*
Ferguson, Daniel F.; Stringer, Frederick D.; and Esakov, Michael D., 4,439,478, Cl. 428-137.000.
ESGE-Marby GmbH & Co., KG: *See—*
Niemann, Heinz, 4,439,009, Cl. 350-99.000.
Esposito, Christopher, to Four Seasons Solar Products Corporation. Greenhouse construction provided with special ridge for ventilation. 4,438,680, Cl. 98-43.00C.
Estel Hoogovens B.V.: *See—*
Beentjes, Nicolaas H., 4,438,653, Cl. 73-863.110.
Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., 4,439,049, Cl. 374-124.000.
Estes, John H.: *See—*
Smolin, William; and Estes, John H., 4,439,535, Cl. 502-62.000.
Etablissement Dentaire Ivoclar: *See—*
Michl, Rudy; and Willi, Hanspeter, 4,439,380, Cl. 264-16.000.
Ethicon, Inc.: *See—*
Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, 4,439,420, Cl. 424-78.000.
Ethyl Corporation: *See—*
Burton, Lester P. J.; and Shubkin, Ronald L., 4,439,374, Cl. 260-512.00R.
Zaweski, Edward F., 4,439,336, Cl. 252-32.70E.
Ethyl Products Company: *See—*
King, Roderick V., 4,439,082, Cl. 413-56.000.
Euteco Impianti S.p.A.: *See—*
Messina, Giuseppe; Lorenzoni, Loreno; and Fadda, Antonio L., 4,439,570, Cl. 524-154.000.
Evans, Donald L., to Don Evans, Inc. Modular desk organizer and adapter therefor. 4,438,852, Cl. 211-11.000.
Evans, Francis J.: *See—*
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.
Evans, Samuel: *See—*
Rosenberger, Siegfried; Evans, Samuel; and Gilg, Bernard, 4,439,615, Cl. 560-15.000.
Evans, William R., to AMP Incorporated. Pivoting electrical contact. 4,438,997, Cl. 339-97.00R.
Everett, Douglas H.; Bligh, Stephen G.; and Rojas, Fernando. Mesoporous carbons. 4,439,349, Cl. 502-180.000.
EVG Entwicklungs-und Verwertungs Gesellschaft m.b.H.: *See—*
Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, 4,439,658, Cl. 219-56.000.
Ex-Cell-O Corporation: *See—*
Kalokhe, Shivdas A., 4,439,074, Cl. 408-178.000.
Express Card & Label Co.: *See—*
George, John W.; and Rudolph, Eugene D., 4,438,696, Cl. 101-180.000.
Exxon Research and Engineering Co.: *See—*
Carter, James L.; and Barnett, Allan E., 4,439,544, Cl. 502-234.000.
DeYoung, Thomas W.; and Maltsev, Viacheslav B., 4,439,780, Cl. 346-140.00R.
Gudelis, David A.; and Reid, Lloyd E., 4,439,308, Cl. 208-33.000.
Hoffmann, James E., 4,439,288, Cl. 204-114.000.
Rhodes, Richard P., 4,439,305, Cl. 208-10.000.
Eyal, Aharon M.: *See—*
Baniel, Avraham M.; and Eyal, Aharon M., 4,439,408, Cl. 423-321.00S.
Faccone, Dominic M., to Midrex Corporation. Direct reduction of iron. 4,439,233, Cl. 75-35.000.
Fadda, Antonio L.: *See—*
Messina, Giuseppe; Lorenzoni, Loreno; and Fadda, Antonio L., 4,439,570, Cl. 524-154.000.
Fajt, John, to Xenell Corporation. Electrical load imbalance detection and protection apparatus. 4,439,801, Cl. 361-55.000.
Falk, Robert A.: *See—*
Kleiner, Eduard K.; and Falk, Robert A., 4,439,329, Cl. 252-8.050.
Farrand Optical Co., Inc.: *See—*
LaRussa, Joseph A., 4,439,755, Cl. 340-980.000.
Farzullaev, Tofik S. O.: *See—*
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.
Feinberg, Irving: *See—*
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, 4,439,813, Cl. 361-321.000.
Ferag AG: *See—*
Honegger, Werner, 4,438,618, Cl. 53-430.000.
Ferguson, Daniel F.; Stringer, Frederick D.; and Esakov, Michael D., to W. R. Grace & Co., Cryovac Division. Heat sealable, multi-ply polypropylene film. 4,439,478, Cl. 428-137.000.
Ferris, Donald L.; Olster, Elliot F.; and Marchitto, Michael J., to United Technologies Corporation. Rotor blade shaft integrity monitoring system. 4,439,106, Cl. 416-61.000.
Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. System for operating the drive of a vehicle. 4,438,664, Cl. 74-866.000.
Fiat Auto S.p.A.: *See—*
Bona, Eligio, 4,438,862, Cl. 220-86.0AT.
Fichtel & Sachs AG: *See—*
Bergles, Eduard, 4,439,171, Cl. 474-80.000.
Handke, Gunther; and Kopic, Johachim, 4,438,834, Cl. 188-322.160.
Fichtner, Karl-Heinz; Kramer, Willi; and Muskulus, Willi. Device for separating and taking off of sheets from a stack. 4,439,100, Cl. 414-115.000.
Fifer, James T. Clamped access floor panel assembly. 4,438,610, Cl. 52-263.000.
Filicicchia, Daniel J.: *See—*
O'Brien, Edward J.; Paulsen, Gary A.; and Filicicchia, Daniel J., 4,438,884, Cl. 239-600.000.
Findeisen, Kurt: *See—*
Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, 4,439,591, Cl. 528-73.000.
Finkel, Herbert. Apparatus for electronic word game. 4,438,932, Cl. 273-237.000.
Finsterbusch, Joachim: *See—*
Schmolke, Karl H.; Finsterbusch, Joachim; and Loffler, Walter, 4,438,547, Cl. 19-98.000.
Finsterwalder, Ulrich, to Dyckerhoff & Widmann Aktiengesellschaft. Container for transporting compressed gas, such as natural gas, and method of constructing the container. 4,438,719, Cl. 114-74.00A.
Firestone Tire & Rubber Company, The: *See—*
Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, 4,439,125, Cl. 425-140.000.
Fischer, Klaus H.; and Kroschel, Heinz, to Dynamit Nobel Aktiengesellschaft. Cabling for secondary ammunition. 4,438,675, Cl. 89-1.811.
Fisher, Richard W.; and Cristell, Frank A., to Cristell, Frank A. Housing with frangible locking elements. 4,438,995, Cl. 339-39.000.
Fitterer, Horst; Koob, Hubert; and Nestler, Bert, to BASF Aktiengesellschaft. Tape cassette, especially a magnetic tape cassette. 4,438,892, Cl. 242-199.000.
Fitzky, Hans G.: *See—*
Klotz, Helmut; and Fitzky, Hans G., 4,439,292, Cl. 204-165.000.
Fitzky, Hans-Georg: *See—*
Ebneth, Harold; and Fitzky, Hans-Georg, 4,439,768, Cl. 343-18.00B.
Flanagan, Hugh L. Charge-retention storage battery. 4,439,501, Cl. 429-70.000.

Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., to Bell Telephone Laboratories, Incorporated. Terminal independent color memory for a digital image display system. 4,439,759, Cl. 340-703.000.

Fleming, James R., to Bell Telephone Laboratories, Incorporated. Method and apparatus for compiling three-dimensional digital image information. 4,439,760, Cl. 340-799.000.

Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., to Bell Telephone Laboratories, Incorporated. Terminal generation of dynamically redefinable character sets. 4,439,761, Cl. 340-735.000.

Flessluittechniek B. V. Handelend Onder De Naam Calumatic: *See*— Damen, Franciscus A., 4,438,840, Cl. 198-398.000.

Flint, Bruce K., to Acton Research Corporation. Method of making laser fusion debris shield. 4,439,259, Cl. 156-245.000.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., to American Cyanamid Company. Novel hydroxy substituted prostanoic acids, esters, congeners, intermediates and process. 4,439,365, Cl. 260-395.000.

FMC Corporation: *See*—
Manganaro, James L., 4,439,411, Cl. 423-560.000.
Williams, Michael R.; and Tucker, Albert R., 4,438,957, Cl. 285-223.000.

Fokos, Peter. Replaceable lagging for drum-type pulleys. 4,439,173, Cl. 474-191.000.

Foley, Kevin M.: *See*—
Anderson, Donald E.; Hall, Glenn E.; and Foley, Kevin M., 4,439,211, Cl. 55-1.000.

Follet, Michel: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.

Ford, James A.; and Haarer, Steven R., to Cooper Industries, Inc. Master carrier for a traverse rod. 4,438,798, Cl. 160-126.000.

Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, to Olin Corporation. Composite fiber reinforced plastic frame. 4,439,298, Cl. 204-258.000.

Ford Motor Company: *See*—
Bewers, Ronald, 4,438,826, Cl. 180-89.140.
Eichenberger, Peter; and Lodge, John H., 4,438,663, Cl. 74-760.000.
Watanabe, Shunso F., 4,438,745, Cl. 123-339.000.

Forgione, Peter S.: *See*—
Singh, Balwant; Chang, Laurence W.; and Forgione, Peter S., 4,439,616, Cl. 560-25.000.

Forlani, Riccardo, to Ing. C. Olivetti & C., S.p.A. Development unit for electrophotocopiers. 4,438,722, Cl. 118-657.000.

Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,439,228, Cl. 71-95.000.

Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,439,230, Cl. 71-96.000.

Foseco International Limited: *See*—
English, Gary F., 4,438,906, Cl. 266-44.000.

Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., to Majik-Ironers, Inc. Ironing apparatus support. 4,438,577, Cl. 38-107.000.

Foster, Thomas E.: *See*—
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 4,438,577, Cl. 38-107.000.

Foster Wheeler Energy Corporation: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,439,406, Cl. 423-244.000.

Foster, Wilbur A.: *See*—
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 4,438,577, Cl. 38-107.000.

Foulletier, Louis, to PCUK Produits Chimiques Ugine Kuhlmann. Catalyst of chromium oxide microspheres and process for its preparation. 4,439,534, Cl. 502-8.000.

Four Seasons Solar Products Corporation: *See*—
Esposito, Christopher, 4,438,680, Cl. 98-43.00C.

Fox, Donald L. Bag handle. 4,438,967, Cl. 294-164.000.

Fox, Jeffrey R., to GTE Laboratories Incorporated. Comparator circuit. 4,439,694, Cl. 307-362.000.

Fracaro, Eugene E. Multi-stage hot water heating apparatus. 4,438,728, Cl. 122-14.000.

Framatome: *See*—
Gillot, Georges, 4,438,912, Cl. 269-55.000.

Frame, Wayne W., to Ball Corporation. Video imaging apparatus having a pliant clock. 4,439,788, Cl. 358-213.000.

Frank, Joseph C.: *See*—
Carroll, Glenn G.; and Frank, Joseph C., 4,438,960, Cl. 285-367.000.

Frank, Simon; Coscia, Anthony T.; and Schmitt, Joseph M., to American Cyanamid Company. Stable emulsion copolymers of acrylamide and ammonium acrylate for use in enhanced oil recovery. 4,439,332, Cl. 252-8.55D.

Frankle, Helmut: *See*—
Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, 4,439,684, Cl. 250-396.00R.

Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung e. V.: *See*—
Hansen, Rolf; Engel, Walter; and Schubert, Hiltmar, 4,439,622, Cl. 564-406.000.

Freeman, Barrie A., to Ciba-Geigy AG. Drum-containing apparatus for ready processing and handling of photographic material. 4,439,033, Cl. 354-316.000.

Frehner, Herbert, to Satronic AG. Nozzle, particularly for burners. 4,438,882, Cl. 239-462.000.

Fresse S.A.: *See*—
Besse, Maurice; and Grisoni, Jacques, 4,439,122, Cl. 425-4.00R.

Frey, Bill; Haynie, Mark; and Psaras, John, to C. M. Kemp Manufacturing Co., The. Nitrogen generation system. 4,439,213, Cl. 55-31.000.

Frezza, William A.: *See*—
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,759, Cl. 340-703.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,761, Cl. 340-735.000.

Frias, Robert, to Ingram Corporation. Pipe feeding system. 4,439,091, Cl. 414-745.000.

Friedrich, Peter. Door latch mechanism with generally linearly movable operating member. 4,438,963, Cl. 292-168.000.

Friesen, W. Otto; and Block, Gene D., to University of Virginia Alumni Patents Foundation. Passive contactless monitor for detecting cessation of cardiopulmonary. 4,438,771, Cl. 128-671.000.

Fritsch, William E. Wheelchair carrier. 4,438,875, Cl. 224-42.03R.

Fritz, Otmar, to Siemens Aktiengesellschaft. Film carrier for an electrical conductive pattern. 4,438,847, Cl. 206-330.000.

Frohn, Walter. Machine for producing blown hollow synthetic resin workpieces. 4,439,127, Cl. 425-155.000.

Fuchizawa, Tetsuro: *See*—
Tamagawa, Shigehisa; Fuchizawa, Tetsuro; and Ono, Minoru, 4,439,496, Cl. 428-513.000.

Fuji Machine Mfg. Co. Ltd.: *See*—
Asai, Koichi; Oe, Kunio; and Tuda, Mamoru, 4,438,559, Cl. 29-740.000.

Fuji Photo Film Co., Ltd.: *See*—
Kato, Hisatoyo; and Ishida, Masamitsu, 4,439,866, Cl. 378-19.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,439,795, Cl. 360-131.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,439,796, Cl. 360-131.000.
Matsumoto, Seiji; Teraoka, Masanori; and Komaki, Takao, 4,439,682, Cl. 250-327.200.
Nater, Charles, 4,439,793, Cl. 360-121.000.
Ohki, Nobutaka; Kawata, Ken; and Itoh, Isamu, 4,439,519, Cl. 430-405.000.
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, 4,439,513, Cl. 430-203.000.
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.
Tamagawa, Shigehisa; Fuchizawa, Tetsuro; and Ono, Minoru, 4,439,496, Cl. 428-513.000.
Yamada, Yasuyuki; Fujiyama, Masaaki; and Tsuji, Nobuo, 4,439,486, Cl. 428-332.000.

Fujii, Etsuo: *See*—
Sato, Makoto; and Fujii, Etsuo, 4,438,629, Cl. 60-579.000.

Fujii, Kunihisa; Tomono, Noboru; and Shikano, Yukio, to Takamisawa Electric Co., Ltd. Armature holding structure and hinge wire spring used therein. 4,439,750, Cl. 335-274.000.

Fujii, Masahiko: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.

Fujimura, Akira: *See*—
Gotoh, Osamu; and Fujimura, Akira, 4,438,627, Cl. 60-278.000.

Fujioka, Futoshi: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,439,354, Cl. 252-522.00R.

Fujisawa, Kyuichi, to Alps Electric Co., Ltd. Pen type printing apparatus. 4,439,778, Cl. 346-136.000.

Fujita, Shinsaku: *See*—
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, 4,439,513, Cl. 430-203.000.

Fujita, Shozo: *See*—
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,438,580, Cl. 40-590.000.

Fujitsu Fanuc Limited: *See*—
Kohzai, Yoshinori; and Oyama, Shigeaki, 4,439,703, Cl. 310-186.000.

Fujitsu Limited: *See*—
Itoh, Hideo; and Yamauchi, Takahiko, 4,439,841, Cl. 365-51.000.

Fujiwara, Hideo: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Fujiwara, Ryoji: *See*—
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, 4,438,972, Cl. 296-223.000.

Fujiyama, Masaaki: *See*—
Yamada, Yasuyuki; Fujiyama, Masaaki; and Tsuji, Nobuo, 4,439,486, Cl. 428-332.000.

Fukami, Akira: *See*—
Noguchi, Hiroki; Fukami, Akira; and Miyazaki, Naomi, 4,438,543, Cl. 15-250.420.

Fukuda, Kyohei: *See*—
Osakabe, Kuniharu; Yoshimi, Isao; and Fukuda, Kyohei, 4,439,710, Cl. 313-414.000.

Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, to UBE Industries; and Toyota Jidosha Kabushiki Kaisha. Propylene polymer composition. 4,439,573, Cl. 524-451.000.

Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, to Air Products and Chemicals, Inc.; and Daido Oxygen Company Ltd. Apparatus for the production of blow molded articles accompanied with the recovery of a blowing gas. 4,439,126, Cl. 425-135.000.

Fukuta, Toshiaki: *See*—
Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, 4,439,321, Cl. 210-493.100.

Furukawa, Hajime; and Ohta, Yoshitsugu, to Pioneer Electronic Corporation. Power cutting device for terminal units of CATV system. 4,439,784, Cl. 358-86.000.

Furusho, Takao: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.

Futatsuishi, Shunichi: *See*—
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,438,580, Cl. 40-590.000.

G. D. Searle & Co.: *See*—
Tsau, Josef H.; and Young, James G., 4,439,460, Cl. 426-548.000.

GA Technologies Inc.: *See*—
Porter, John T., II, 4,439,404, Cl. 423-3.000.

Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., to I M L Corporation. Methods of preparing polyimides and artifacts composed thereof. 4,439,381, Cl. 264-26.000.

Gagnon, Pierre; and Laforest, Pierre. Obstacle detector for a descending or ascending load. 4,438,903, Cl. 254-269.000.

Gaikowski, Michael D.: *See*—
Loomis, Russell M.; Gaikowski, Michael D.; and Brzezinski, Denis R., 4,439,076, Cl. 410-153.000.

Galow, Manfred, to Bergwerksverband GmbH; and Didier Engineering GmbH. Filling arrangement for coke oven chambers. 4,439,276, Cl. 202-239.000.

Galtz, Rudiger; and Reinhardt, Rudolf, to Webasto-Werk W. Baier GmbH & Co. Combustion air fan. 4,439,095, Cl. 415-52.000.

Gamble, Robert L.: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,439,406, Cl. 423-244.000.

Gamzo, Israel. Mechanical bouncing, rolling and skating apparatus. 4,438,919, Cl. 272-1.00B.

Ganci, James B., to Du Pont de Nemours, E. I., and Company. Aqueous milling of quinacridone pigment. 4,439,240, Cl. 106-288.00Q.

Ganellin, Charon R.; Ife, Robert J.; and Owen, David A. A., to Smith Kline & French Laboratories Ltd. Isoureas and isothioureas. 4,439,435, Cl. 424-251.000.

Gared Corporation: *See*—
Engle, Charles J.; and Boitano, Robert A., 4,438,923, Cl. 273-1.50R.

Garito, Anthony F., to University Patents, Inc. Photoresistive compositions. 4,439,514, Cl. 430-272.000.

Garner, Claude R.; and Neilson, William J., to Smith International, Inc. Seal for rotary cone rock bit. 4,438,934, Cl. 277-92.000.

Garner, Lloyd L., to Globe Oil Tools, Inc. Rotary bit bearing system. 4,439,050, Cl. 384-100.000.

Garrett Corporation, The: *See*—
Edmonds, David H., 4,439,104, Cl. 415-161.000.

Gattuso, David A.: *See*—
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,438,724, Cl. 118-719.000.

Gauss, Robert C.: *See*—
Hinshaw, Waldo S.; and Gauss, Robert C., 4,439,733, Cl. 324-322.000.

Gdulewicz-Gruszecka, Maria: *See*—
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Gebhardt, Axel; Jurgensen, Heinrich; and Roes, Christian, to Ing. Rudolf Hell GmbH. Arrangement for the point- and line-wise recording of image information. 4,439,022, Cl. 350-572.000.

Gegaregian, Albert A.; Kuruma, Dennis K.; and Lengel, Kenneth W., to Westinghouse Electric Corp. Prestressed dome closure flange. 4,438,866, Cl. 220-319.000.

Geiler, Volkmar: *See*—
Mennemann, Karl; and Geiler, Volkmar, 4,439,531, Cl. 501-75.000.

Geissmann, Robert. Kinetic fireplace and spit roaster. 4,438,684, Cl. 99-341.000.

Gelbein, Abraham P.: *See*—
Greene, Marvin I.; and Gelbein, Abraham P., 4,439,309, Cl. 208-51.000.

Gendler, Paul L.; and Twieg, Robert J., to International Business Machines Corporation. Phenothiazine leucodyes for electrochromic recording. 4,439,280, Cl. 204-2.000.

General Dental, Inc.: *See*—
Houseman, Kenneth R., 4,439,299, Cl. 204-271.000.
Houseman, Kenneth R., 4,439,300, Cl. 204-272.000.

General Electric Company: *See*—
Berestecki, Stephen B., 4,438,626, Cl. 60-39.320.
Chapman, Thomas G., 4,439,812, Cl. 361-314.000.
Olson, Daniel R., 4,439,494, Cl. 428-412.000.
Reitz, Roderick, 4,439,807, Cl. 361-127.000.
Rhodes, Junior I., 4,439,814, Cl. 361-321.000.
Spencer, William R., 4,438,778, Cl. 137-112.000.
Tomson, James M., 4,438,839, Cl. 198-345.000.
Ulug, Mehmet E., 4,439,856, Cl. 370-85.000.

General Mills, Inc.: *See*—
Merle, Rene; Uecker, Myron; and Kozlik, Robert, 4,438,634, Cl. 62-123.000.

General Motors Corporation: *See*—
Rees, Richard W. A., 4,438,895, Cl. 248-396.000.
Zaydel, Wieslaw S.; Aldikacti, Hulki; and Bouck, James G., 4,438,971, Cl. 296-191.000.

General Signal Corporation: *See*—
Dobrzanski, John J., 4,439,683, Cl. 250-381.000.

Gentex Corporation: *See*—
Scalzo, John P., 4,439,645, Cl. 179-156.00R.

Gentile, Anthony L.; Bowers, John L.; and Stafsudd, Oscar M., to Hughes Aircraft Company. Vapor transport process for growing selected compound semiconductors of high purity. 4,439,266, Cl. 156-614.000.

Geohegan, Kenneth P., Jr.; and Gruen, Henry M., to Westinghouse Electric Corp. Sonar system. 4,439,845, Cl. 367-87.000.

George, John W.; and Rudolph, Eugene D., to Express Card & Label Co. Multi-purpose flexographic press module. 4,438,696, Cl. 101-180.000.

Georges, Jean-Claude, to Societe Aman. Units for generating constant-frequency alternating electric energy with substitute driving means. 4,439,720, Cl. 322-4.000.

Gerasimov, Vasily I.: *See*—
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.

Gerhart, Fritz: *See*—
Bey, Philippe; Gerhart, Fritz; and Jung, Michel, 4,439,619, Cl. 560-169.000.

Gertsch, Ulrich, to TMC Corporation. Sole-support plate. 4,438,948, Cl. 280-618.000.

Getty Synthetic Fuels, Inc.: *See*—
Zison, Stanley W.; and Turer, Robert N., 4,438,883, Cl. 239-553.300.

Gewerkschaft Eisenhutte Westfalia: *See*—
Heitkamp, Herbert, 4,439,063, Cl. 405-145.000.

Ghandehari, Mohammad H., to Union Oil Company of California. Samarium metal production. 4,439,232, Cl. 75-10.00R.

Gibas, Christoph, to bso Steuerungstechnik GmbH. Direct current electromagnet. 4,439,751, Cl. 335-278.000.

Gibbard, Henry F.; Murray, Richard C.; and Cech, Jay M., to Gould Inc. Gas switch. 4,439,500, Cl. 429-27.000.

Gibson, Paul N. Grade monitoring and steering apparatus. 4,438,820, Cl. 175-45.000.

Gildemeister AG: *See*—
Schaefer, Wolfgang. 4,439,090, Cl. 414-736.000.

Gilg, Bernard: *See*—
Rosenberger, Siegfried; Evans, Samuel; and Gilg, Bernard, 4,439,615, Cl. 560-15.000.

Gillespie, Robert J.: *See*—
Weglin, Walter, 4,438,569, Cl. 33-438.000.

Gillham, Peter J., to BSG (Security) Limited. Electromagnetic lock. 4,439,808, Cl. 361-144.000.

Gillone, Walter: *See*—
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.

Gillot, Georges, to Framatome. Swivelling device for supporting a large-size part in the form of a spherical dome. 4,438,912, Cl. 269-55.000.

Gilman, Harris H., to Electric Power Research Institute, Inc. Apparatus for remotely positioning sensing devices in a reactor during operation thereof. 4,438,649, Cl. 73-432.00R.

Gilmore, Peter B.: *See*—
Bresin, Mark S.; and Gilmore, Peter B., 4,439,654, Cl. 200-302.100.

Girgis, Mikhail M., to PPG Industries, Inc. Aqueous, adhesive coating composition with a non-selfcrosslinkable elastomer for use with filamentary materials. 4,439,556, Cl. 523-206.000.

Giroux, Eugene L., to Richardson-Merrell Inc. Snake bite therapy. 4,439,443, Cl. 424-285.000.

Gislaved Aktiebolag: *See*—
Pettersson, Helge, 4,438,982, Cl. 305-35.0EB.

Givaudan Corporation: *See*—
Schenk, Hanspeter, 4,439,353, Cl. 252-522.00R.

Globe Linings, Inc.: *See*—
Wilson, John V.; and Kays, William B., 4,438,863, Cl. 220-227.000.

Globe Oil Tools, Inc.: *See*—
Garner, Lloyd L., 4,439,050, Cl. 384-100.000.

GNB Batteries Inc.: *See*—
Lambert, Frederic J.; Bosack, Donald J.; and Johansen, David K., 4,439,719, Cl. 320-31.000.

Godsted, Kent B. Concrete screw anchor. 4,439,077, Cl. 411-411.000.

Goedert, Ferdinand: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, 4,439,234, Cl. 75-52.000.

Goedken, James H., to Hoover Universal, Inc. Fluidized bed discharge bin with aerating blower. 4,439,072, Cl. 406-91.000.

Goetz, Charles T.: *See*—
Hussels, Bernard H.; and Goetz, Charles T., 4,438,823, Cl. 177-210.0EM.

Golton, Howard J.: *See*—
Pask, George; and Golton, Howard J., 4,438,939, Cl. 277-236.000.

Gontowski, Walter S., Jr., to Sprague Electric Company. Two terminal integrated circuit light-sensor. 4,439,673, Cl. 250-214.00A.

Goossens, Walter; and Schrank, Wolfgang, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Method and chimney for reducing the emission of solid particles. 4,439,274, Cl. 201-41.000.

Gordon, Allin K.: *See*—
Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, 4,439,420, Cl. 424-78.000.

Goto, Tomomichi: *See—*
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.

Gotoh, Osamu; and Fujimura, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas purification apparatus in internal combustion engine. 4,438,627, Cl. 60-278.000.

Gotou, Takaharu: *See—*
Hara, Seinosuke; Ofuji, Hiromichi; and Gotou, Takaharu, 4,438,736, Cl. 123-90.160.

Gott, Hans: *See—*
Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, 4,439,658, Cl. 219-56.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Polyurethane diacrylate compositions useful in forming canulae. 4,439,583, Cl. 525-127.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Gas and ion permeable membranes formed of polyurethane diacrylate compositions. 4,439,584, Cl. 525-127.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Polyurethane diacrylate compositions as carrier for pharmacological agents. 4,439,585, Cl. 525-127.000.

Gould Inc.: *See—*
Gibbard, Henry F.; Murray, Richard C.; and Cech, Jay M., 4,439,500, Cl. 429-27.000.

Gove, Don: *See—*
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.

Graffenberger, Wilhelm: *See—*
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,439,739, Cl. 330-107.000.

Graham, Charles H., to Intermountain Thermafloor. Electrical heating system. 4,439,666, Cl. 219-213.000.

Graser, Earl J., to Manville Service Corp. Wrap-around style beverage bottle carrier with fully integrated product separation means. 4,438,843, Cl. 206-148.000.

Gravi-Mechanics Co.: *See—*
Dedolph, Richard R., 4,439,552, Cl. 521-159.000.

Gray, Joseph E., to Norwich Eaton Pharmaceuticals, Inc. Method of alleviating systemic mycotic infections. 4,439,429, Cl. 424-285.000.

Great Lakes Carbon Corporation: *See—*
Joo', Louis A.; Tucker, Kenneth W.; and McCown, Frank E., Jr., 4,439,382, Cl. 264-29.500.
Wilson, William F., 4,439,491, Cl. 428-408.000.

Green, George E.: *See—*
Irving, Edward; and Green, George E., 4,439,291, Cl. 204-159.230.

Green, Laddie L., to Stauffer Chemical Company. Diallyl dichloroacetmide herbicide antidote. 4,439,227, Cl. 71-95.000.

Greene, Marvin I.; and Gelbein, Abraham P., to Chem Systems Inc. Two-stage hydrogen donor solvent cracking process. 4,439,309, Cl. 208-51.000.

Greenwell, Bartley A.: *See—*
Czyzewski, Ted S.; and Greenwell, Bartley A., 4,439,461, Cl. 426-601.000.

Greff, Richard J.: *See—*
Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,439,188, Cl. 604-283.000.

Greigger, Paul P.; Boberski, William G.; and Seiner, Jerome A., to PPG Industries, Inc. Pigmented coating composition containing a mixture of alkoxysilanes. 4,439,239, Cl. 106-287.160.

Greiner, Max, to Robert Bosch GmbH. Rpm governor for a fuel injection pump. 4,438,746, Cl. 123-373.000.

Grippe, James M., to Varo, Inc. DC to DC switching regulator with temperature compensated isolated feedback circuitry. 4,439,821, Cl. 363-26.000.

Gripper, Inc.: *See—*
Reneau, Bobby J.; and Morris, Bruce E., 4,438,901, Cl. 254-29.00A.

Grisham, C. Lynwood; and Grisham, Freddie A., to Grisham Corporation. Door latch means. 4,438,961, Cl. 292-67.000.

Grisham Corporation: *See—*
Grisham, C. Lynwood; and Grisham, Freddie A., 4,438,961, Cl. 292-67.000.

Grisham, Freddie A.: *See—*
Grisham, C. Lynwood; and Grisham, Freddie A., 4,438,961, Cl. 292-67.000.

Grisoni, Jacques: *See—*
Besse, Maurice; and Grisoni, Jacques, 4,439,122, Cl. 425-4.00R.

Groen Division - Dover Corporation: *See—*
Czyzewski, Ted S.; and Greenwell, Bartley A., 4,439,461, Cl. 426-601.000.

Groenhof, Eugene D., to Dow Corning Corporation. Silicone compositions for buried electrical splice closures. 4,439,630, Cl. 174-21.00R.

Groepper, Jurgen, to Pennwalt Corporation. Process for crosslinking of polymers and copolymers using free radical forming agents. 4,439,388, Cl. 264-130.000.

Grohe, Klaus: *See—*
Klauke, Erich; and Grohe, Klaus, 4,439,620, Cl. 562-493.000.

Grooten, Albertus T. M., to N.K.F. Groep B.V. Corrosion resistant armored cable and method of manufacturing said cable. 4,439,633, Cl. 174-106.00R.

Gross, Jerome A.: *See—*
Hohenemser, Kurt H., 4,439,105, Cl. 416-13.000.

Gross, Leo. Motor vehicle rear viewing system. 4,439,021, Cl. 350-452.000.

Gross, Raymond J.; and Hogg, Fredrick W., to Mattel, Inc. Interchangeable keyboard defining means. 4,439,757, Cl. 340-365.0VL.

Grosscurt, Arnoldus C.: *See—*
van Hes, Roelof; and Grosscurt, Arnoldus C., 4,439,440, Cl. 424-273.00P.

Grover, Richard L., to Brunswick Corporation. Filament wound vessel with improved polar fitting. 4,438,858, Cl. 220-3.000.

Growers Vacuum Cool Company: *See—*
Victorino, Robert W., 4,439,093, Cl. 414-786.000.

Gruen, Henry M.: *See—*
Geohegan, Kenneth P., Jr.; and Gruen, Henry M., 4,439,845, Cl. 367-87.000.

Grund, Miroslaw: *See—*
Rees, Herbert; Brown, Paul; and Grund, Miroslaw, 4,439,133, Cl. 425-556.000.

Grunder, Werner, to Zellweger Uster Ltd. Method and apparatus for controlling fluctuations in sliver weight on cards, carding machines and the like. 4,438,548, Cl. 19-105.000.

Grupp, Rolf: *See—*
Stengle, Rolf; and Grupp, Rolf, 4,438,914, Cl. 270-31.000.

Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, to Politechnika Gdanska; and Instytut Przemyslu Farmaceutyoznego Majakowskiego. Acetylmethyl ester of hetacyllin and/or salts of this ester. 4,439,363, Cl. 260-239.100.

GTE Automatic Electric Incorporated: *See—*
Blackburn, Tom L., 4,439,634, Cl. 179-2.510.

GTE Automatic Electric Labs Inc.: *See—*
Tarleton, George K., 4,439,805, Cl. 361-92.000.

GTE Laboratories Incorporated: *See—*
Fox, Jeffrey R., 4,439,694, Cl. 307-362.000.

GTE Products Corporation: *See—*
Liang, Anthony; and Cheng, Hsiao L., 4,439,468, Cl. 427-216.000.

Gudelis, David A.; and Reid, Lloyd E., to Exxon Research and Engineering Co. Solvent dewaxing waxy bright stock using a combination polydialkylfumarate-vinyl acetate copolymer and wax-naphthalene condensate dewaxing aid. 4,439,308, Cl. 208-33.000.

Gugel, Georg, to Kraftwerk Union Aktiengesellschaft. Manipulator for remote-controlled inspection and, if necessary or desirable, repair of heat exchanger tubes. 4,438,805, Cl. 165-76.000.

Guibert, Philippe: *See—*
Chardon, Andre-Marie; and Guibert, Philippe, 4,438,606, Cl. 52-79.100.

Guild, George A., to Don Brothers, Buist P.L.C. Tufted fabrics and method of making. 4,439,476, Cl. 428-96.000.

Guillaume, Raymond, to Baby Relax. Support for child. 4,438,941, Cl. 280-47.400.

Gumiezna, Teresa: *See—*
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Gusein-Zade, Sekher G. K.: *See—*
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Guthrie, James L.; and Kehr, Clifton L., to W. R. Grace & Co. High molecular weight aromatic amine scavengers and method of use. 4,439,553, Cl. 521-159.000.

Gyugyi, Laszlo; Smith, Geoffrey M.; and Stacey, Eric J., to Westinghouse Electric Corp. Converting multiphase power from one frequency to another using current waveforms. 4,439,823, Cl. 363-161.000.

Haarer, Steven R.: *See—*
Ford, James A.; and Haarer, Steven R., 4,438,798, Cl. 160-126.000.

Haas, Andrew J. Orthodontic appliances and method of treatment. 4,439,148, Cl. 433-5.000.

Haas, Franz, Jr.: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,438,685, Cl. 99-342.000.

Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann. Wafer baking oven. 4,438,685, Cl. 99-342.000.

Haas, Johann: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,438,685, Cl. 99-342.000.

Hadden, James P., to Hobart Corporation. Low hot water volume warewasher. 4,439,242, Cl. 134-25.200.

Hadley, John S.: *See—*
Verberne, Wim J. C.; and Hadley, John S., 4,439,283, Cl. 204-38.00R.

Haefner, John A.: *See—*
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.

Hagn, Bruno; Neuhauser, Werner; and Wimmer, Robert, to Bayerische Motoren Werke Aktiengesellschaft. Motor vehicle provided with an additional mirror embracing the dead angle. 4,439,013, Cl. 350-307.000.

Haisma, Jan: *See—*
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,439,529, Cl. 501-45.000.

Haley, Neil F.: *See—*
Perlstein, Jerome H.; and Haley, Neil F., 4,439,505, Cl. 430-58.000.

Hall, George W. Segmented collar tripod for holding surveyor's stake. 4,438,896, Cl. 248-523.000.

Hall, Glenn E.: *See—*
Anderson, Donald E.; Hall, Glenn E.; and Foley, Kevin M., 4,439,211, Cl. 55-1.000.

Hall, Henry K., Jr.; and Padias, Anne B., to Celanese Corporation. Process for the preparation of polybutylene terephthalate. 4,439,597, Cl. 528-272.000.

Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., to SYNTEX (U.S.A.) Inc. Contraceptive compositions and methods employing 1-substituted imidazole derivatives. 4,439,441, Cl. 424-273.00R.

Halliburton Company: *See—*
Borchardt, John K., 4,439,334, Cl. 252-8.55D.
Loesch, Stanley B.; St. John, James C.; and Mints, Danny K., 4,438,729, Cl. 122-26.000.
Zimmerman, John C., 4,438,933, Cl. 277-9.500.

Hamada, Shoichi, to Todo Seisakusho Ltd. Full automatic leasing machine for a warp beam containing warps of different colors. 4,438,553, Cl. 28-184.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Composite label web, price tag and re-price label combination, and method of price and re-price marking. 4,438,950, Cl. 283-70.000.

Hamm, Wilfried. Stairtread for spiral staircase. 4,438,608, Cl. 52-187.000.

Hammon, Donald P. Brush tool for wells. 4,438,812, Cl. 166-173.000.

Hammyo, Masayuki: *See—*
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Hanamoto, Hiroyuki; and Horie, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Heat roller fixing device. 4,439,143, Cl. 432-36.000.

Handa, Tadahiko: *See—*
Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, 4,439,126, Cl. 425-135.000.

Handke, Gunther; and Kopic, Johachim, to Fichtel & Sachs AG. Hydro-pneumatic damping unit. 4,438,834, Cl. 188-322.160.

Hannah, Voris E. Sharpening device for a chain saw. 4,438,667, Cl. 76-36.000.

Hansch, Ferdinand: *See—*
Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, 4,439,579, Cl. 524-602.000.

Hansen, Rolf; Engel, Walter; and Schubert, Hiltmar, to Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung e. V. Process of forming large crystalled 1,3,5-triaminotrinitrobenzene. 4,439,622, Cl. 564-406.000.

Hanson, Harry T., to Celanese Corporation. Acetylene-terminated aromatic enyne resins and method of production thereof. 4,439,590, Cl. 526-285.000.

Hanyu, Susumu, to Janome Sewing Machine Industry Co., Ltd. Phase indication device of sewing machine. 4,438,718, Cl. 112-274.000.

Hara, Hiroshi: *See—*
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, 4,439,513, Cl. 430-203.000.

Hara, Seinosuke; Ofuji, Hiromichi; and Gotou, Takaharu, to Nissan Motor Co., Ltd. Variable valve timing arrangement with automatic valve clearance adjustment. 4,438,736, Cl. 123-90.160.

Harada, Naoki; and Abeta, Sadaharu, to Sumitomo Chemical Company, Limited. Aqueous liquid dye composition: storage stable reactive dye with reduction inhibitor. 4,439,205, Cl. 8-527.000.

Hardigg Industries, Inc.: *See—*
Hardigg, James S.; Turner, E. Wayne; and Strzegowski, Joseph C., Jr., 4,439,263, Cl. 156-497.000.

Hardigg, James S.; Turner, E. Wayne; and Strzegowski, Joseph C., Jr., to Hardigg Industries, Inc. Method and apparatus for bonding plastic materials. 4,439,263, Cl. 156-497.000.

Harms, Hans-Wilhelm, to Intertractor Viehmann GmbH & Co. Hinge joint for a track chain. 4,438,981, Cl. 305-14.000.

Harrington, Timothy A., to Rockwell International Corporation. Corporate amplifier apparatus with improved degradation. 4,439,740, Cl. 330-124.00R.

Harris, Alva F.: *See—*
Dufour, Daniel L.; Harris, Alva F.; and Ott, John B., 4,439,571, Cl. 524-183.000.

Harris, Gary W.: *See—*
Walton, Eric K.; and Harris, Gary W., 4,438,662, Cl. 74-625.000.

Harris Graphics Corporation: *See—*
Mebus, Henry R., 4,439,097, Cl. 414-42.000.
Werkheiser, James S., 4,439,084, Cl. 414-62.000.

Harrison, Alexander, to Commonwealth Scientific and Industrial Research Organization. Monitoring of elongate magnetically permeable members. 4,439,731, Cl. 324-239.000.

Harrison, Charles H.: *See—*
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., 4,439,297, Cl. 204-257.000.

Hart, Robert J. Method for the continuous manufacture of finely divided metals, particularly magnesium. 4,439,379, Cl. 264-12.000.

Hartel, Gunter; and Schurfeld, Armin, to Bosch & Pierburg System oHG. Flow proportioning device. 4,439,376, Cl. 261-50.00A.

Hartmann, Albert: *See—*
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.

Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See—*
Goossens, Walter; and Schrank, Wolfgang, 4,439,274, Cl. 201-41.000.

Harvey, Rex: *See—*
Dyett, Derek H.; and Harvey, Rex, 4,438,774, Cl. 131-282.000.

Harwood, Richard J.; and Bondi, Joseph V., to Merck & Co., Inc. Water and drug delivery system for suppository use. 4,439,194, Cl. 604-890.000.

Harwood, William J., to Scapa Inc. Papermakers belt formed from warp yarns of non-circular cross section. 4,438,788, Cl. 139-383.00A.

Hasegawa, Shumpei, to Honda Motor Co., Ltd. Idling rpm feedback control method for internal combustion engines. 4,438,744, Cl. 123-327.000.

Hasegawa, Teruyuki: *See—*
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Hasenauer, Randal J., to Mobil Oil Corporation. Method for shape-forming acrylonitrile polymer aquagel film. 4,439,389, Cl. 264-216.000.

Hastings, Charles E.; and Hastings, June, heir. Adjustable ratchet pliers. 4,438,669, Cl. 81-410.00R.

Hastings, June, heir: *See—*
Hastings, Charles E.; and Hastings, June, heir, 4,438,669, Cl. 81-410.00R.

Hattori, Tadashi, to Isuzu Kogyo Kabushiki Kaisha. Pipe coupling. 4,438,954, Cl. 285-104.000.

Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, to Nippon Soken, Inc. Spark plug with a wide discharge gap. 4,439,707, Cl. 313-130.000.

Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, to Nippon Soken, Inc. Spark plug having dual gaps. 4,439,708, Cl. 313-140.000.

Hattori, Tadashi: *See—*
Ozaki, Tadashi; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,438,647, Cl. 73-117.300.

Haubrich, Peter; Hoogendoorn, Abraham; and Jahnke, Uwe, to U.S. Philips Corporation. Apparatus for reproducing information recorded in a plurality of adjacent tracks. 4,439,799, Cl. 360-77.000.

Hauser, Daniel: *See—*
Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., 4,439,661, Cl. 219-99.000.

Hauserman, Inc.: *See—*
Raith, Richard L.; and Davenport, Joseph A., 4,438,614, Cl. 52-580.000.

Hawley, Ronald C., to Polymer Composites, Inc. Method of manufacturing a composite reinforcing structure. 4,439,387, Cl. 264-108.000.

Hawrylo, Frank Z., to United States of America, Air Force. Quaternary alloy. 4,439,399, Cl. 420-580.000.

Hayakawa, Izumi: *See—*
Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, 4,439,237, Cl. 75-243.000.

Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, to Kobe Steel, Ltd. System for treating radioactive waste. 4,439,318, Cl. 210-208.000.

Hayashi, Miki; Takahashi, Keietsu; and Hazue, Masaaki, to Nihon Medi-Physics Company, Ltd. Radioactive diagnostic agent for bone scanning and non-radioactive carrier therefor. 4,439,413, Cl. 424-1.100.

Hayashi, Yoshihiro: *See—*
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Overhead camshaft engine. 4,438,734, Cl. 123-90.270.

Hayer, David R. Power transfer device. 4,438,656, Cl. 74-63.000.

Hayes, Michael D.: *See—*
Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., 4,439,661, Cl. 219-99.000.

Haynie, Mark: *See—*
Frey, Bill; Haynie, Mark; and Psaras, John, 4,439,213, Cl. 55-31.000.

Hays, Lance G.; Studhalter, Walter R.; and Ritzi, Emil W., to Biphase Energy Systems. Refrigeration process using two-phase turbine. 4,438,638, Cl. 62-500.000.

Hazue, Masaaki: *See—*
Hayashi, Miki; Takahashi, Keietsu; and Hazue, Masaaki, 4,439,413, Cl. 424-1.100.

Hebert, Alfred M. Fifth wheel safety device for tractor trailers. 4,438,943, Cl. 280-432.000.

Hedlund Manufacturing Co., Inc.: *See—*
Martin, Mervin G., 4,438,885, Cl. 241-101.00B.

Hefele, Josef, to Kufner Textilwerke KG. Interlining for garments and method for the manufacture thereof. 4,438,533, Cl. 2-97.000.

Heffelmire, Brad A.: *See—*
Cimochowski, Anthony E.; and Heffelmire, Brad A., 4,439,175, Cl. 493-413.000.

Hefler, Rudolph R. Baseball game. 4,438,927, Cl. 273-90.000.

Hefley, Richard M.; Tomren, Douglas R.; and Jacoby, Jerold L., to United States of America, Air Force. Lightweight optical jammer system. 4,439,767, Cl. 343-18.00E.

Heilgeist, Michael, to Kernforschungszentrum Karlsruhe GmbH. Process for removing ammonium nitrate from aqueous solutions. 4,439,326, Cl. 210-757.000.

Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A. Corn harvester combine with means for picking up loose ears. 4,438,619, Cl. 56-119.000.

Hein, Carl C.; Wagner, John R., Jr.; and Powell, Mark S., to Mobil Oil Corporation. Multilayer heat sealable oriented packaging film and method of forming same. 4,439,493, Cl. 428-414.000.

Heinze, Siegfried: *See—*
Hochreuther, Karl; Heinze, Siegfried; and Scholpp, Werner, 4,439,726, Cl. 324-156.000.

Heitkamp, Herbert, to Gewerkschaft Eisenhutte Westfalia. Hydraulic control means. 4,439,063, Cl. 405-145.000.

Helix Technology Corporation: *See—*
Lessard, Philip A.; and Bartlett, Allen J., 4,438,632, Cl. 62-55.500.

Helms, Charles R., to Container Corporation of America. Tamperproof closure. 4,438,864, Cl. 220-265.000.

Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung; and Messerschmitt Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Accelerating grid. 4,439,684, Cl. 250-396.00R.

Hemmerle, Clayton J.; and Basinger, Richard A. Surface defining slats and articles utilizing same. 4,438,800, Cl. 160-371.000.

Hemphill, Dean P.: *See—*
Nanny, Walter C.; Stewart, Thomas L.; and Hemphill, Dean P., 4,438,754, Cl. 125-14.000.

Henderson, David: *See—*
Ballany, John M.; and Henderson, David, 4,439,439, Cl. 424-270.000.

Henderson, James W.: *See—*
Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., 4,439,840, Cl. 364-900.000.

Hendricks, Udo W.: *See—*
Hildebrand, Dietrich; and Hendricks, Udo W., 4,439,206, Cl. 8-543.000.

Henkel KGaA: *See—*
Moller, Hinrich; Wallat, Siegfried; and Bartnik, Friedhelm, 4,439,418, Cl. 424-70.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Vierkotter, Peter; and Weltgen, Paul-Otto, 4,438,869, Cl. 222-1.000.

Hennart, Claude; and Courdent, Jacques, to Airwick Industries, Inc. Device intended for dispensing insecticide vapors. 4,439,415, Cl. 424-16.000.

Hennessey, Stephen B.: *See—*
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.

Henrion, Romain: *See—*
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, 4,439,234, Cl. 75-52.000.

Henss, Wilhelm: *See—*
Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus, 4,439,403, Cl. 422-159.000.

Henton, David E., to Dow Chemical Company, The. Blends of aromatic polycarbonate with random copolymers of a monovinylidene aromatic and an unsaturated carboxylic acid. 4,439,582, Cl. 525-67.000.

Herchenroeder, Robert B.; and Lai, George Y., to Cabot Corporation. Method of heat treating NICRALY alloys for use as ceramic kiln and furnace hardware. 4,439,248, Cl. 148-6.200.

Hermeyer, Bernd; Mester, Heinz; and Negle, Hans, to U.S. Philips Corporation. X-Ray generator for an X-ray tube comprising a grounded grid. 4,439,869, Cl. 378-113.000.

Herpay, Andras: *See—*
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Herrmann, Fritz; and Ost, Christian, to Alkem GmbH. Method for electrochemical oxidizing to the Pu (VI). 4,439,279, Cl. 204-1.500.

Heslop, Terence M. Ski rack and carrier. 4,438,878, Cl. 224-319.000.

Hesterman, Victor W.; and Drummond, William E., to Unied Scientific Corporation. Electrically balanced fluxgate gradiometers. 4,439,732, Cl. 324-247.000.

Heymes, Alain: *See—*
Chick, Jacques A.; Heymes, Alain; and Blasioli, Carlo, 4,439,442, Cl. 424-285.000.

Heymes, Rene; and Vignau, Michel, to Roussel Uclaf. Oximes. 4,439,433, Cl. 424-246.000.

Hibi, Kunio: *See—*
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.

Hidaka, Ryoichi: *See—*
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.

Higgins, William A.; and Clark, Alan C., to Lubrizol Corporation, The. Curable epoxy resin compositions. 4,439,594, Cl. 528-89.000.

Higuchi, Tadashi: *See—*
Schwarz, Manfred; and Higuchi, Tadashi, 4,439,743, Cl. 330-267.000.

Higuchi, Takeru, to Merck & Co., Inc. Osmotic drug delivery system. 4,439,196, Cl. 604-890.000.

Hilbert, Samuel D.: *See—*
Sublett, Bobby J.; and Hilbert, Samuel D., 4,439,598, Cl. 528-295.300.

Hildebrand, Dietrich; and Hendricks, Udo W., to Bayer Aktiengesellschaft. Dyeing process with reactive dyes and glycidyl compound. 4,439,206, Cl. 8-543.000.

Hilfman, Lee: *See—*
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,438,816, Cl. 166-303.000.

Hines, Enrico D.: *See—*
Alvite, Armando; Hines, Enrico D.; and Kautz, Allan D., 4,439,735, Cl. 324-404.000.

Hinshaw, Waldo S.; and Gauss, Robert C., to Technicare Corporation. Distributed phase RF coil. 4,439,733, Cl. 324-322.000.

Hintsa, Roy A.; and Orav, Tonu, to Decoustics Limited. Suspended ceiling panel system. 4,438,613, Cl. 52-484.000.

Hiraga, Noriyuki: *See—*
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Hirakawa, Kazumi: *See—*
Takemura, Shuji; Kawano, Yoshihiko; and Hirakawa, Kazumi, 4,439,485, Cl. 428-323.000.

Hirata, Atsumi, to Victor Company of Japan, Ltd. Slow-motion reproducing system in an apparatus for reproducing rotary recording medium with mode dependent skip pulse generator and field memories. 4,439,791, Cl. 358-342.000.

Hiser, Leland L. Method and apparatus for using low grade thermal energy to improve efficiency of air conditioning and refrigeration systems. 4,438,633, Cl. 62-116.000.

Hitachi Koki Co., Ltd.: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.

Hitachi, Ltd.: *See—*
Osakabe, Kuniharu; Yoshimi, Isao; and Fukuda, Kyohei, 4,439,710, Cl. 313-414.000.
Saito, Kouji, 4,438,652, Cl. 73-861.250.
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.

Hitachi Metals, Ltd.: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Hitosugi, Yoshikazu: *See—*
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.

Hitzman, Donald O.: *See—*
Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., 4,439,523, Cl. 435-243.000.

HK-Engineering AB: *See—*
Kitsnik, Henrik M., 4,439,112, Cl. 417-383.000.

Hobart Corporation: *See—*
Hadden, James P., 4,439,242, Cl. 134-25.200.

Hobbs, Charles F., to Monsanto Company. Catalyst and reverse disproportionation process. 4,439,626, Cl. 585-435.000.

Hobbs, Charles F., to Monsanto Company. Catalyst and reverse disproportionation process. 4,439,627, Cl. 585-435.000.

Hobbs, Charles F., to Monsanto Company. Catalyst and reverse disproportionation process. 4,439,628, Cl. 585-435.000.

Hobbs, Peter D.: *See—*
Dawson, Marcia I.; Chan, Rebecca; and Hobbs, Peter D., 4,439,614, Cl. 560-8.000.

Hochreuther, Karl; Heinze, Siegfried; and Scholpp, Werner, to Brown, Boveri & Cie AG. Portable multimeter having two subassemblies with a hinge for folding. 4,439,726, Cl. 324-156.000.

Hodlewsky, Wasyly G.; and Schroeder, Roger H., to Rexnord Inc. Conveyor chain for use with fingered transfer plate. 4,438,838, Cl. 198-853.000.

Hoechst Aktiengesellschaft: *See—*
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,439,331, Cl. 252-8.800.
Karrenbauer, Kurt; Behringer, Hartmut; and Rehberg, Heinrich, 4,439,361, Cl. 260-141.000.
Kuhls, Jurgen; Weiss, Eduard; and Burgstaller, Gottfried, 4,439,385, Cl. 264-37.000.
Stahlhofen, Paul, 4,439,511, Cl. 430-165.000.

Hoffa, Jack L.: *See—*
Sargeant, John E.; and Hoffa, Jack L., 4,439,189, Cl. 604-317.000.

Hoffarth, Dieter: *See—*
Schaeffer, Gerard; and Hoffarth, Dieter, 4,439,041, Cl. 366-144.000.

Hoffman, Kevin R.: *See—*
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,438,724, Cl. 118-719.000.

Hoffmann, James E., to Exxon Research & Engineering Company. Process for reducing Zn consumption in zinc electrolyte purification. 4,439,288, Cl. 204-114.000.

Hoffmann-La Roche Inc.: *See—*
Rich, Roland; Villiger, Alois; and Widmer, Erich, 4,439,015, Cl. 350-350.00R.
Ruegg, Rudolf, 4,439,629, Cl. 585-803.000.

Hogan, Elizabeth R. Ostomy bag cover. 4,439,191, Cl. 604-332.000.

Hogg, Fredrick W.: *See—*
Gross, Raymond J.; and Hogg, Fredrick W., 4,439,757, Cl. 340-365.0VL.

Hohenemser, Kurt H., to Gross, Jerome A. Offset-axis windmill having inclined power shaft. 4,439,105, Cl. 416-13.000.

Hokusho, Takayasu: *See—*
Kume, Masaharu; Ishii, Kenichi; and Hokusho, Takayasu, 4,439,771, Cl. 343-704.000.

Holata, Jan: *See—*
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,439,588, Cl. 525-366.000.

Holk, Albert J.; and Pulciani, Sam C., to Continental Group, Inc., The. Container produced by triple drawn method using tin coated steel. 4,439,081, Cl. 413-1.000.

Hollingsworth GmbH: *See—*
Schmolke, Karl H.; Finsterbusch, Joachim; and Loffler, Walter, 4,438,547, Cl. 19-98.000.

Holly, Evelyn H., executrix: *See—*
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.

Holly, Frederick W., deceased (by Holly, Evelyn H., executrix); Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., to Merck & Co., Inc. Cyclic octapeptide analogs of neurotensin. 4,439,359, Cl. 260-112.50R.

Holonyak, Nick, Jr., to University of Illinois Foundation. Semiconductor device with heterojunction of $Al_xGa_{1-x}As$—AlAs—GaAs. 4,439,782, Cl. 357-17.000.

Hon Corporation: *See—*
Hon, David T., 4,438,942, Cl. 280-278.000.

Hon, David T., to Hon Corporation. Foldable and portable vehicle. 4,438,942, Cl. 280-278.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Gotoh, Osamu; and Fujimura, Akira, 4,438,627, Cl. 60-278.000.
Nakagawa, Mitsuo, 4,438,828, Cl. 180-219.000.
Sato, Makoto; and Fujii, Etsuo, 4,438,629, Cl. 60-579.000.
Sato, Makoto; Tsuchiya, Yoshikazu; and Ohmori, Taiji, 4,439,832, Cl. 364-426.000.

Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, to Olympus Optical Co., Ltd. Medical capsule device. 4,439,197, Cl. 604-891.000.

Honda Motor Co., Ltd.: *See—*
Hasegawa, Shumpei, 4,438,744, Cl. 123-327.000.

Honegger, Werner, to Ferag AG. Apparatus for stacking printed products, such as newspapers, periodicals and the like, arriving in an imbricated product stream. 4,438,618, Cl. 53-430.000.

Honeywell Inc.: *See—*
Atherton, Jay W., 4,439,738, Cl. 330-10.000.
Doddapaneni, Narayan, 4,439,503, Cl. 429-108.000.
Nelson, Lorne W.; and Torborg, Ralph H., 4,439,139, Cl. 431-20.000.
Roth, Ronald B., 4,439,003, Cl. 350-6.600.
Starr, James B., 4,439,752, Cl. 338-2.000.
Stout, Mark E., 4,439,140, Cl. 431-31.000.

Honshu Seishi Kabushiki Kaisha: *See—*
Takemura, Shuji; Kawano, Yoshihiko; and Hirakawa, Kazumi, 4,439,485, Cl. 428-323.000.

Hoogendoorn, Abraham: *See—*
Haubrich, Peter; Hoogendoorn, Abraham; and Jahnke, Uwe, 4,439,799, Cl. 360-77.000.

Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., to Estel Hoogovens B.V. Temperature scanner. 4,439,049, Cl. 374-124.000.

Hooper, John A.; Mankarious, Samia; and Liu-Rash, Catherine R., to Baxter Travenol Laboratories, Inc. Stabilized gamma globulin concentrate. 4,439,421, Cl. 424-85.000.

Hoover, Lonnie D.: *See—*
House, Roy F.; and Hoover, Lonnie D., 4,439,333, Cl. 252-8.55R.

Hoover Universal, Inc.: *See—*
Goedken, James H., 4,439,072, Cl. 406-91.000.

Hope, Robert B.: *See—*
Nielson, Erik I.; and Hope, Robert B., 4,438,609, Cl. 52-208.000.

Hoppe, David R., to Motorola Inc. Time interpolator. 4,439,046, Cl. 368-120.000.

Horie, Yoshihiro: *See—*
Hanamoto, Hiroyuki; and Horie, Yoshihiro, 4,439,143, Cl. 432-36.000.

Horiuchi, Hiroshi: *See—*
Shioda, Takizo; Ito, Norio; and Horiuchi, Hiroshi, 4,439,027, Cl. 353-77.000.

Hosking, Steven M.: *See—*
Jenkins, Stuart M.; and Hosking, Steven M., 4,439,083, Cl. 414-46.000.

Hosoda, Yuji: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.

Hosoya, Kensei: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.

Hotta, Shu; Kishimoto, Yoshio; and Shimotsuma, Wataru, to Matsushita Electric Industrial Co., Ltd. Polymeric thermo-sensitive material. 4,439,569, Cl. 524-128.000.

Hotzel, Dieter, to Dr. Madaus & Co. Medicament for diminution of oxalate development and excretion in urine. 4,439,449, Cl. 424-317.000.

Hough Industries Limited: *See—*
Hough, John A., 4,438,565, Cl. 30-341.000.

Hough, John A., to Hough Industries Limited. Handle for a hand tool. 4,438,565, Cl. 30-341.000.

House, Roy F.; and Hoover, Lonnie D., to NL Industries, Inc. Heavy brine viscosifiers. 4,439,333, Cl. 252-8.55R.

Houseman, Kenneth R., to General Dental, Inc. Electrolytic metal reclamation device. 4,439,299, Cl. 204-271.000.

Houseman, Kenneth R., to General Dental, Inc. Vortex type metal collector. 4,439,300, Cl. 204-272.000.

Hoveler, Egon: *See—*
Zodrow, Rudolf; Hoveler, Egon; and Rosenberg, Heinz-Jurgen, 4,439,262, Cl. 156-364.000.

Howard Machinery Limited: *See—*
von Allworden, Wilhelm, 4,438,690, Cl. 100-116.000.

Hoya Corporation: *See—*
Tajima, Hidemi, 4,439,530, Cl. 501-45.000.

Hozeski, Kenneth W.: *See—*
Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,438,898, Cl. 248-561.000.

Huang, Shing S. J. Valvular infusion device. 4,439,182, Cl. 604-85.000.

Hubele, Adolf, to Ciba-Geigy Corporation. Fungicidal acyl anilides. 4,439,447, Cl. 424-309.000.

Hudgens, Stephen J.: *See—*
Cannella, Vincent D.; Izu, Masatsugu; and Hudgens, Stephen J., 4,438,723, Cl. 118-718.000.

Hughes Aircraft Company: *See—*
Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., 4,439,840, Cl. 364-900.000.
Gentile, Anthony L.; Bowers, John L.; and Stafsudd, Oscar M., 4,439,266, Cl. 156-614.000.
Hunsperger, Robert G.; and Shifrin, Gordon A., 4,439,004, Cl. 350-96.120.
Kreinheder, Donald E.; and Lingren, Terrance D., 4,439,747, Cl. 333-208.000.
Lucas, Charles H.; and Lewyn, Lanny L., 4,439,693, Cl. 307-353.000.
Wilmot, Richard D., 4,439,765, Cl. 343-6.00A.

Hughes, John B.: *See—*
Beekmans, Jan J. P. M.; and Hughes, John B., 4,439,692, Cl. 307-297.000.

Hughes, Larry M., to RCA Corporation. Disc player having record handling apparatus. 4,439,852, Cl. 369-77.200.

Hughes Tool Company: *See—*
McFadden, Edward J., 4,438,910, Cl. 267-126.000.
Timme, Albert C., Jr., 4,438,953, Cl. 285-93.000.

Hugl, Herbert; Wolfrum, Gerhard; and Lehment, Klaus-Friedrich, to Bayer Aktiengesellschaft. Process for the preparation of styryl dyestuffs. 4,439,372, Cl. 260-465.00E.

Humenik, James N.: *See—*
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, 4,439,813, Cl. 361-321.000.

Hung, John H., to International Paper Company. Polymeric sheets. 4,439,391, Cl. 264-317.000.

Hunsperger, Robert G.; and Shifrin, Gordon A., to Hughes Aircraft Company. Optical waveguide and modulator and process for fabricating same. 4,439,004, Cl. 350-96.120.

Hunt, Frederick J. Portable ice fishing enclosure. 4,438,940, Cl. 280-12.00S.

Hunter Douglas International N.V.: *See—*
Vecchiarelli, Francis, 4,438,897, Cl. 248-544.000.

Hunter, James B. Sketching aid. 4,439,159, Cl. 434-85.000.

Husky Injection Molding Systems Ltd.: *See—*
Rees, Herbert; Brown, Paul; and Grund, Miroslaw, 4,439,133, Cl. 425-556.000.

Hussels, Bernard H.; and Goetz, Charles T., to DBI Industries, Inc. Load cell. 4,438,823, Cl. 177-210.0EM.

Hutcheon, Alfred J., to NCR Corporation. Cassette for currency notes or other valuable articles. 4,438,704, Cl. 109-44.000.

Hutter, Wilhelm: *See—*
Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, 4,438,791, Cl. 139-453.000.

Hylla, Gary F. Pistol maintenance device. 4,438,913, Cl. 269-60.000.

I.C.I. Francolor S.A.: *See—*
Pigasse, Daniel, 4,439,238, Cl. 106-20.000.

I M L Corporation: *See—*
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,439,381, Cl. 264-26.000.

Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, to Olympus Optical Co., Ltd. Optical system for ophthalmological instruments. 4,439,023, Cl. 351-206.000.

ICI Australia Limited: *See—*
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., 4,438,725, Cl. 119-4.000.

Ideal Security Hardware Corporation: *See—*
Waldo, Russell W.; and Miller, Cardel E., 4,438,544, Cl. 16-85.000.

Iden, Marlin: *See—*
Kramer, Melvin G.; and Iden, Marlin, 4,438,568, Cl. 33-348.000.

Ife, Robert J.: *See—*
Ganellin, Charon R.; Ife, Robert J.; and Owen, David A. A., 4,439,435, Cl. 424-251.000.

Igarashi, Kenichi: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.

Iida, Yoshiaki: *See—*
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.

Iimori, Takayuki, to Sanden Corporation. Orbiting fluid displacement apparatus with counterweight attachment. 4,439,118, Cl. 418-55.000.

Iimura, Tsutomu: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Ikeda, Sunao: *See—*
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.
Ikeda, Takeshi: *See—*
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, 4,438,918, Cl. 271-251.000.
Ikeda, Tomoaki: *See—*
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.
Ikeda, Toshiaki: *See—*
Makino, Takao; and Ikeda, Toshiaki, 4,439,868, Cl. 378-112.000.
Ikehara, Yasunobu: *See—*
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.
Ikemoto, Yoshiyuki: *See—*
Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, 4,439,599, Cl. 528-80.000.
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, 4,439,605, Cl. 536-71.000.
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, to Nissan Motor Co., Ltd. Method of supplying fuel to an internal combustion engine during start-up. 4,438,748, Cl. 123-491.000.
Ikeura, Kenji: *See—*
Yamaguchi, Hiroshi; and Ikeura, Kenji, 4,439,833, Cl. 364-431.090.
Iles, Gordon D.: *See—*
Claydon, Gyongyver; and Iles, Gordon D., 4,439,786, Cl. 358-148.000.
Ilyasova, Nazaket M. K.: *See—*
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.
Imai, Hironobu, to NSK-Warner K.K. Locking device for vehicle seat belt webbing. 4,438,551, Cl. 24-68.0SB.
Imai, Takeshi; and Kako, Naohiro, to Nippondenso Co., Ltd. Process for production of heat resistant insulated electric wire and cable. 4,439,255, Cl. 156-49.000.
Im Han, Kyoung R., to Stauffer Chemical Company. Supported catalyst for polymerizing olefins. 4,439,538, Cl. 502-105.000.
Imperial Chemical Industries PLC: *See—*
Cox, John M., 4,439,428, Cl. 424-200.000.
Industrial Design & Development Corp.: *See—*
Mayne, David L.; and Jahsman, David, 4,438,867, Cl. 221-197.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Aprato, Armando, 4,439,777, Cl. 346-76.0PH.
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.
Forlani, Riccardo, 4,438,722, Cl. 118-657.000.
Ing. Rudolf Hell GmbH: *See—*
Gebhardt, Axel; Jurgensen, Heinrich; and Roes, Christian, 4,439,022, Cl. 350-572.000.
Ingram Corporation: *See—*
Frias, Robert, 4,439,091, Cl. 414-745.000.
Innovatec, Inc.: *See—*
Perez, Simon A., 4,438,686, Cl. 99-353.000.
Inokuma, Toshio: *See—*
Asada, Eiichi; Inokuma, Toshio; and Saito, Hiroyuku, 4,439,352, Cl. 252-518.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,439,660, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electroerosive contour-machining method and apparatus with a rotary tool electrode. 4,439,660, Cl. 219-69.00M.
Inoue, Masuo: *See—*
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, to Mitsui Toatsu Chemicals, Inc. Process for injection molding polyolefin resin compositions. 4,439,567, Cl. 524-108.000.
Inoue, Tokuta: *See—*
Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,438,741, Cl. 123-188.00M.
Insituform International N.V.: *See—*
Wood, Eric, 4,439,469, Cl. 427-230.000.
Institut Fiziki Akademii Nauk Belorusskoi SSR: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
Instytut Obrobki Plastycznej: *See—*
Rut, Tadeusz, 4,438,644, Cl. 72-356.000.
Instytut Przemyslu Farmaceutyoznego Majakowskiego: *See—*
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.
Intech Systems Corp.: *See—*
Slavin, Martin J., 4,438,772, Cl. 128-715.000.
Intermountain Thermafloor: *See—*
Graham, Charles H., 4,439,666, Cl. 219-213.000.
International Business Machines Corporation: *See—*
Acharya, Shankar C.; Prizzia, Thomas C.; and Rutigliano, Olha, 4,439,250, Cl. 148-23.000.
Boyle, David H., 4,439,727, Cl. 324-158.00R.
Brende, Arthur P.; and Luoma, Richard W., 4,439,699, Cl. 310-13.000.
Daniels, Raymond A., 4,439,034, Cl. 355-3.0DD.
Donnan, Robert A., 4,439,859, Cl. 371-32.000.
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, 4,439,813, Cl. 361-321.000.
Gendler, Paul L.; and Twieg, Robert J., 4,439,280, Cl. 204-2.000.
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., 4,438,917, Cl. 271-227.000.
Malaviya, Sashi D., 4,439,842, Cl. 365-104.000.
Maley, Gerald A.; Warren, Raymond H.; and Westcott, Douglas W., 4,439,690, Cl. 307-272.00R.
Martin, Daniel B., 4,439,828, Cl. 364-200.000.
Mulzet, Alfred P., 4,439,178, Cl. 494-85.000.
Pavone, Peter J.; and Van Demark, Richard D., 4,439,261, Cl. 156-345.000.
Powell, Jimmie L.; Standley, Charles L.; and Suierveld, John, 4,439,270, Cl. 156-644.000.
Seelinger, Hugh D., 4,438,888, Cl. 242-56.900.
International Flavors & Fragrances Inc.: *See—*
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,439,354, Cl. 252-522.00R.
International Mobile Machines Corp.: *See—*
Seligsohn, Scott; Bolgiano, Duane R.; and Seligsohn, Sherwin I., 4,439,638, Cl. 179-84.00C.
International Nickel Company, Inc., The: *See—*
Sadowski, Edward P., 4,439,498, Cl. 428-558.000.
International Paper Company: *See—*
Hung, John H., 4,439,391, Cl. 264-317.000.
International Telephone & Telegraph Corp.: *See—*
Brown, Albert W., 4,438,793, Cl. 141-382.000.
Close, Anthony D.; and Menn, Walter A., 4,439,815, Cl. 361-386.000.
Johnson, Robert E., 4,439,774, Cl. 343-912.000.
Kneib, Kristine N.; and Vensko, George, 4,439,839, Cl. 364-900.000.
Lawrence, Alan J.; and Upp, Daniel C., 4,439,826, Cl. 364-200.000.
Shenoi, Kishan; and Agrawal, Bhagwati P., 4,439,756, Cl. 340-347.0AD.
Intertractor Viehmann GmbH & Co.: *See—*
Harms, Hans-Wilhelm, 4,438,981, Cl. 305-14.000.
Inventio AG: *See—*
Borter, Ephraim, 4,439,655, Cl. 200-340.000.
Investment Rarities, Incorporated: *See—*
Burandt, Corliss O., 4,438,735, Cl. 123-90.160.
Burandt, Corliss O., 4,438,737, Cl. 123-90.170.
Iomega Corporation: *See—*
Powell, Steven H., 4,439,800, Cl. 360-78.000.
Iowa Beef Processors, Inc.: *See—*
Couture, William F., 4,438,546, Cl. 17-50.000.
Irii, Shinsuke; and Shiozaki, Tomoharu, to Kanzaki Paper Manufacturing Co., Ltd. Method for the production of microcapsules. 4,439,581, Cl. 524-839.000.
Irving, Edward; and Green, George E., to Ciba-Geigy Corporation. Acrylate-containing compositions and their polymerization. 4,439,291, Cl. 204-159.230.
Irving, Edward, to Ciba-Geigy Corporation. Process for the formation of images with epoxide resin. 4,439,517, Cl. 430-328.000.
Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Chlorination of hydroquinone. 4,439,596, Cl. 528-191.000.
Ishida, Masamitsu: *See—*
Kato, Hisatoyo; and Ishida, Masamitsu, 4,439,866, Cl. 378-19.000.
Ishida, Mitsushi: *See—*
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member and color electrophotographic process. 4,439,504, Cl. 430-42.000.
Ishii, Kenichi: *See—*
Kume, Masaharu; Ishii, Kenichi; and Hokusho, Takayasu, 4,439,771, Cl. 343-704.000.
Ishikura, Tomoyuki: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.
Ishizaki, Nobuhiro: *See—*
Kawahara, Haruyuki; Ishizaki, Nobuhiro; and Wada, Hiroki, 4,439,153, Cl. 433-200.000.
Isuzu Kogyo Kabushiki Kaisha: *See—*
Hattori, Tadashi, 4,438,954, Cl. 285-104.000.
Ito, Hiroshi: *See—*
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.
Ito, Norio: *See—*
Shioda, Takizo; Ito, Norio; and Horiuchi, Hiroshi, 4,439,027, Cl. 353-77.000.
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, to Canon Kabushiki Kaisha. Original aligning device. 4,438,918, Cl. 271-251.000.
Ito, Yuji, to Canon Kabushiki Kaisha. Eye examining instrument with variable intensity of illumination light. 4,439,024, Cl. 351-207.000.
Itoh, Hideo; and Yamauchi, Takahiko, to Fujitsu Limited. Semiconductor memory devices. 4,439,841, Cl. 365-51.000.

Itoh, Isamu: *See—*
Ohki, Nobutaka; Kawata, Ken; and Itoh, Isamu, 4,439,519, Cl. 430-405.000.
Ivlev, Anatoly D.: *See—*
Belikov, Viktor T.; Ivlev, Anatoly D.; and Chelak, Viktor G., 4,439,702, Cl. 310-80.000.
Ivory, Dawn M.: *See—*
Patel, Gordhanbhai N.; and Ivory, Dawn M., 4,439,346, Cl. 252-408.100.
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, to Kawasaki Steel Corporation. Method of producing grain-oriented silicon steel sheets having excellent magnetic properties. 4,439,252, Cl. 148-111.000.
Iwamoto, Yoshinori: *See—*
Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, 4,439,560, Cl. 523-437.000.
Iwamura, Kazuyuki: *See—*
Kitajima, Soichi; Iwamura, Kazuyuki; and Takeda, Yasuhiko, 4,438,759, Cl. 126-433.000.
Iwasaki, Hiroshi: *See—*
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.
Iwasaki, Shinichiro, to Aisin Seiki Kabushiki Kaisha. High voltage generating circuit for an automotive ignition system. 4,438,751, Cl. 123-606.000.
Izu, Masatsugu: *See—*
Cannella, Vincent D.; Izu, Masatsugu; and Hudgens, Stephen J., 4,438,723, Cl. 118-718.000.
Izumimori, Hajime: *See—*
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.
J. C. Ludowici & Son Ltd.: *See—*
Lees, Geoffrey C., 4,438,935, Cl. 277-205.000.
J. T. Eaton & Company, Inc.: *See—*
Baker, Stanley Z.; and Baker, Benjamin H., 4,438,584, Cl. 43-58.000.
Jackel, Janet L.: *See—*
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.
Jackson, David A., Jr., to United States of America, Army. Vapor-phase method for growing mercury cadmium telluride. 4,439,267, Cl. 156-614.000.
Jackson, William S. Helmet restraining device. 4,438,877, Cl. 224-275.000.
Jacob, Joseph; and Love, Charles J. Toothbrush with heat shrunk synthetic filaments. 4,438,541, Cl. 15-167.00R.
Jacoby, Jerold L.: *See—*
Hefley, Richard M.; Tomren, Douglas R.; and Jacoby, Jerold L., 4,439,767, Cl. 343-18.00E.
Jacquier, Robert: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.
Jaeger, Rudolf: *See—*
Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, 4,438,791, Cl. 139-453.000.
Jagenberg AG: *See—*
Zodrow, Rudolf; Hoveler, Egon; and Rosenberg, Heinz-Jürgen, 4,439,262, Cl. 156-364.000.
Jagenberg Werke AG: *See—*
Schonmeier, Herbert, 4,438,889, Cl. 242-67.10R.
Jahnke, Uwe: *See—*
Haubrich, Peter; Hoogendoorn, Abraham; and Jahnke, Uwe, 4,439,799, Cl. 360-77.000.
Jahsman, David: *See—*
Mayne, David L.; and Jahsman, David, 4,438,867, Cl. 221-197.000.
Jain, Kanti: *See—*
Archer, Michael C.; and Jain, Kanti, 4,439,521, Cl. 435-1.000.
Jakob, Hans: *See—*
Altermatt, Ruedi; and Jakob, Hans, 4,439,207, Cl. 8-639.000.
Jakobi, Wilhelm, to Krupp-Koppers GmbH. Arrangement for dry cooling of coke. 4,438,571, Cl. 34-65.000.
Jakusch, Helmut: *See—*
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.
Jankovics, Endre: *See—*
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.
Janome Sewing Machine Co., Ltd.: *See—*
Koide, Akio; and Ebata, Yoshikazu, 4,438,716, Cl. 112-168.000.
Janome Sewing Machine Industry Co., Ltd.: *See—*
Hanyu, Susumu, 4,438,718, Cl. 112-274.000.
Janssen, Curtis R.: *See—*
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., to International Business Machines Corporation. Dual motor aligner. 4,438,917, Cl. 271-227.000.
Janssen Pharmaceutica N.V.: *See—*
Ballany, John M.; and Henderson, David, 4,439,439, Cl. 424-270.000.
Japax Incorporated: *See—*
Shimizu, Akihiko, 4,439,659, Cl. 219-69.00V.
Jaquay, Louis H.; and Mengon, Albert C., deceased (by Mengon, Mary A., administratrix), to Dravo Corporation. Heating process gas for indirect shale oil retorting through the combustion of residual carbon in oil depleted shale. 4,439,307, Cl. 208-11.00R.
Jarrell, Donald, to Jarrell, Donald; Logan, John G., III; and Carpenter, Richard H., a part interest. Sewage treatment system. 4,439,317, Cl. 210-151.000.
Jarvis, Marvin A.: *See—*
McCurdy, J. L.; and Jarvis, Marvin A., 4,439,601, Cl. 528-481.000.
Jaskiewicz, Edmund M.: *See—*
Bruney, Paul F., III, 4,439,644, Cl. 179-146.00E.
Jechel, Kurt E.: *See—*
Schutzler, Jerome C.; and Jechel, Kurt E., 4,439,392, Cl. 264-511.000.
Jenkins, Stuart M.; and Hosking, Steven M., to De La Rue Systems Limited. Automatic sheet dispensing apparatus. 4,439,083, Cl. 414-46.000.
Jennings, Roger L.: *See—*
Serrianne, Russell A.; and Jennings, Roger L., 4,438,693, Cl. 101-129.000.
Jennings, Uel D., to Du Pont de Nemours, E. I., and Company. Polyester/nylon bicomponent filament. 4,439,487, Cl. 428-397.000.
Jensen, Jorn M., to Ejnar Jensen & Son A/S. Apparatus for folding sheet material, preferably laundry. 4,439,176, Cl. 493-419.000.
Jeol Ltd.: *See—*
Norioka, Setsuo; and Date, Naoki, 4,439,681, Cl. 250-310.000.
Jetline Engineering, Inc.: *See—*
Arter, William L., 4,439,665, Cl. 219-124.020.
Toohey, William J., 4,439,664, Cl. 219-124.020.
Johansen, David K.: *See—*
Lambert, Frederic J.; Bosack, Donald J.; and Johansen, David K., 4,439,719, Cl. 320-31.000.
Johansson, Jan H., to Telefonaktiebolaget L M Ericsson. Overvoltage guard for electronic circuits. 4,439,802, Cl. 361-56.000.
Johnan Seisakusho Company, Limited: *See—*
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, 4,438,972, Cl. 296-223.000.
Johnson, Alexander L., to Du Pont de Nemours, E. I., and Company. Process for preparing antihypertensive 1-substituted cyclic lactam-2-carboxylic acids and their derivatives. 4,439,364, Cl. 260-239.30R.
Johnson, Calvin K.; and Armbruster, David R., to Acme Resin Corporation. Particles covered with a cured infusible thermoset film and process for their production. 4,439,489, Cl. 428-404.000.
Johnson, Cary P.; and Sokaris, Jerry G., to Albany International Corp. Resole treated papermakers felt and method of fabrication. 4,439,481, Cl. 428-235.000.
Johnson, Gregory. Obstruction clearing apparatus for mining conveyors. 4,438,841, Cl. 198-524.000.
Johnson, Jeffrey O., to Nike, Inc. Athletic shoe with two-piece upper forepart section. 4,438,574, Cl. 36-45.000.
Johnson, Jerome L., to Centronics Data Computer Corp. Multiple speed printer. 4,439,775, Cl. 346-75.000.
Johnson, Martin D., to Electronic Equipment Development Ltd. High speed welder with magnetic alignment of welding slug after cutting. 4,438,670, Cl. 83-154.000.
Johnson, Paul E. Nutcracker. 4,438,688, Cl. 99-574.000.
Johnson, R. Shannon: *See—*
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.
Johnson, Robert E., to International Telephone and Telegraph Corporation. Antenna reflector with triangulated cellular back structure. 4,439,774, Cl. 343-912.000.
Johnson, Russell W.: *See—*
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,438,816, Cl. 166-303.000.
Johnston, Christian W.: *See—*
Gould, Francis E.; and Johnston, Christian W., 4,439,583, Cl. 525-127.000.
Gould, Francis E.; and Johnston, Christian W., 4,439,584, Cl. 525-127.000.
Gould, Francis E.; and Johnston, Christian W., 4,439,585, Cl. 525-127.000.
Jolly, Henry. Mining machinery. 4,438,821, Cl. 175-74.000.
Jolly, William D.: *See—*
Singh, Gurvinder P.; and Jolly, William D., 4,439,249, Cl. 148-9.00R.
Jones, Cynthia G.: *See—*
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.
Jones, Darrell L.: *See—*
Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., 4,439,055, Cl. 403-330.000.
Jones, Edward M., Jr., to Chemical Research & Licensing Company. Contact structure for use in catalytic distillation. 4,439,350, Cl. 502-527.000.
Jones, Glenn C.: *See—*
Douglas, Ted L.; Clonce, Ambrose J.; and Jones, Glenn C., 4,439,278, Cl. 203-9.000.
Jones, Johnnie; Einig, Joseph A.; and Ackerson, Arthur T. Removable barrier assembly. 4,438,596, Cl. 49-463.000.
Jones, Martin; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 2-[-Thiazolyl or 2-guanidino-4-thiazolyl methylthioethyl(or butyl)amino]-3-(hydroxy or carboxy)pyridines, compositions containing same and method of use. 4,439,437, Cl. 424-263.000.

Jones, Richard E.: *See—*
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,439,441, Cl. 424-273.00R.
Jones, Thomas J.; and Curtis, David S., to Rolls Royce Limited. Joining of components. 4,438,956, Cl. 285-223.000.
Jones, Thomas M.: *See—*
Boles, Jeffrey L.; and Jones, Thomas M., 4,439,223, Cl. 71-30.000.
Jones, Thomas R.: *See—*
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,439,586, Cl. 525-169.000.
Jones, Wesley C.: *See—*
Burmeister, Dennis N.; Busse, Thomas A.; and Jones, Wesley C., 4,439,163, Cl. 440-86.000.
Joo' , Louis A.; Tucker, Kenneth W.; and McCown, Frank E., Jr., to Great Lakes Carbon Corporation. Titanium diboride-graphite composites. 4,439,382, Cl. 264-29.500.
Joormann, Hendrik J. M.; and Spierings, Gijsbertus A. C. M., to U.S. Philips Corporation. Optical fiber of the graded index type and method of producing same. 4,439,008, Cl. 350-96.310.
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, to U.S. Philips Corporation. Glass and glass objects. 4,439,529, Cl. 501-45.000.
Jorksten Research Laboratories, Inc.: *See—*
Schenk, Roy U., 4,439,522, Cl. 435-188.000.
Jung, Michel: *See—*
Bey, Philippe; Gerhart, Fritz; and Jung, Michel, 4,439,619, Cl. 560-169.000.
Jung, Siegfried: *See—*
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.
Jurgensen, Heinrich: *See—*
Gebhardt, Axel; Jurgensen, Heinrich; and Roes, Christian, 4,439,022, Cl. 350-572.000.
Justice, David D.: *See—*
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., 4,439,297, Cl. 204-257.000.
JWI Ltd.: *See—*
MacBean, Donald G., 4,438,789, Cl. 139-383.00A.
Kabushiki Kaisha Endo Seisakusho: *See—*
Motomiya, Tetsuo, 4,438,931, Cl. 273-167.00H.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.
Sano, Tsutomu; Takeuchi, Naoki; and Kurumaji, Masanobu, 4,439,123, Cl. 425-112.000.
Kabushiki Kaisha Matsushiro: *See—*
Matsushiro, Yukimitsu, 4,438,589, Cl. 46-251.000.
Kabushiki Kaisha Mino Seisakusho: *See—*
Mino, Masao; and Ohno, Takeshi, 4,438,887, Cl. 242-43.200.
Kabushiki Kaisha Morita Seisakusho: *See—*
Makino, Takao; and Ikeda, Toshiaki, 4,439,868, Cl. 378-112.000.
Kabushiki Kaisha Orii Jidoki Seisakusho: *See—*
Ajisaka, Yasuo, 4,439,092, Cl. 414-752.000.
Kabushiki Kaisha Sato: *See—*
Sato, Yo; Kashiwaba, Tadao; and Matsuda, Yasuhiko, 4,439,257, Cl. 156-64.000.
Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.
Kadota, Osamu: *See—*
Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, 4,439,555, Cl. 523-122.000.
Kaehler, Dieter, to Alfa-Laval Agrar GmbH. Heat exchanger for transferring heat to a liquid. 4,438,806, Cl. 165-108.000.
Kaercher, William C., Jr., to Turfco Manufacturing, Inc. Ground driven top dresser utilizing special clutch mechanism. 4,438,873, Cl. 222-616.000.
Kagata, Tooru, to Aisin Seiki Kabushiki Kaisha. Freewheel hub assembly. 4,438,836, Cl. 192-36.000.
Kagawa, Yoshii, to Alps Electric Co., Ltd. Thick film printed circuit. 4,439,753, Cl. 338-325.000.
Kahn, Merle S., to Reynolds Metals Company. Membrane closure structure. 4,438,850, Cl. 206-634.000.
Kaiyo Koggyo Co. Ltd.: *See—*
Kozima, Sadao; and Makino, Hisao, 4,439,316, Cl. 210-150.000.
Kakitani, Yohtaro: *See—*
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.
Kakizaki, Shozo: *See—*
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, 4,439,811, Cl. 361-313.000.
Kako, Naohiro: *See—*
Imai, Takeshi; and Kako, Naohiro, 4,439,255, Cl. 156-49.000.
Kalokhe, Shivdas A., to Ex-Cell-O Corporation. Boring tool with coarse and fine adjustment. 4,439,074, Cl. 408-178.000.
Kambara, Koji: *See—*
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.
Kamber, Bruno: *See—*
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.
Kamijo, Ken; and Maeda, Kouzo, to Nissan Motor Co., Ltd. Collision resistant construction for a door of a vehicle. 4,438,969, Cl. 296-146.000.
Kaminski, Daniel S., to Lincoln Manufacturing Co., Inc. Heat duct support assembly for a food preparation oven and method. 4,438,572, Cl. 34-218.000.
Kamman, Joseph T.; and Kohring, Mark D., to Cincinnati Milacron Inc. Vibration damper for machine-carried workpiece. 4,438,599, Cl. 51-238.00S.
Kammuri, Youichi; Yamauchi, Takafumi; and Takahashi, Toshikatsu, to Nippon Suisan Kabushiki Kaisha. Process for producing fibrous food products. 4,439,456, Cl. 426-276.000.
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, to Teijin Limited. Slippery biaxially stretched polyester films. 4,439,479, Cl. 428-148.000.
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, to Central Glass Company Limited. Method of producing thin sheet glass of high quality by float process. 4,439,222, Cl. 65-99.200.
Kaneko, Tamaki: *See—*
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.
Kanzaki Paper Manufacturing Co., Ltd.: *See—*
Irii, Shinsuke; and Shiozaki, Tomoharu, 4,439,581, Cl. 524-839.000.
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.
Kao Soap Co., Ltd.: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,439,417, Cl. 424-70.000.
Kapaan, Hendrikus J., to SKF Industrial Trading & Development Company B.V. Magnetic bearing system. 4,438,987, Cl. 308-10.000.
Karrenbauer, Kurt; Behringer, Hartmut; and Rehberg, Heinrich, to Hoechst Aktiengesellschaft. Process for controlling diazotization reactions involving nitrous reactant by testing the air above the reaction batch for its content of nitrous gases and feeding nitrous reactant in accordance with said content. 4,439,361, Cl. 260-141.000.
Kashiwaba, Tadao: *See—*
Sato, Yo; Kashiwaba, Tadao; and Matsuda, Yasuhiko, 4,439,257, Cl. 156-64.000.
Kassahun, Bahiru; and Viriyayuthakorn, Montri, to Western Electric Company, Inc. Methods of coating lightguide fiber and product produced thereby. 4,439,467, Cl. 427-163.000.
Kastelic, John R.: *See—*
Kim, Sang N.; and Kastelic, John R., 4,439,578, Cl. 524-538.000.
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, to Nissan Motor Company, Limited; and Johnan Seisakusho Company, Limited. Operating mechanism for operating a sliding and tilting roof-panel. 4,438,972, Cl. 296-223.000.
Kato Hatsujyo Kaisha Ltd.: *See—*
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, 4,438,894, Cl. 248-73.000.
Kato, Hisatoyo; and Ishida, Masamitsu, to Fuji Photo Film Co., Ltd. Arbitrary layer tomographic method and apparatus. 4,439,866, Cl. 378-19.000.
Kato, Takashi, to Eltac Co. Ltd.; and Tokai Industrial Sewing Machine Co. Ltd., part interest to each. Embroidery stitch formation device for sewing machine. 4,438,713, Cl. 112-100.000.
Kato, Younosuke: *See—*
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, 4,439,605, Cl. 536-71.000.
Katsuno, Mitsuaki: *See—*
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.
Kauffman, Glenn A., to AMF Inc. Nondestructive inspection apparatus and method utilizing combined inspection signals obtained from orthogonal magnetic fields. 4,439,730, Cl. 324-232.000.
Kaufman, John W.; Stape, William J.; and Yeager, Patrick F., to AMP Incorporated. Surface mount/daughter board connector. 4,439,000, Cl. 339-176.0MP.
Kaustrater, Gert, to Kuka Webrtechnik GmbH. Ammunition container. 4,438,676, Cl. 89-34.000.
Kautz, Allan D.: *See—*
Alvite, Armando; Hines, Enrico D.; and Kautz, Allan D., 4,439,735, Cl. 324-404.000.
Kawaguchi, Shoichi, to Komori Printing Machinery Co., Ltd. Paper feeder. 4,438,916, Cl. 271-93.000.
Kawahara, Haruyuki; Ishizaki, Nobuhiro; and Wada, Hiroki, to Wada Seimitsu Shiken Kabushiki Kaisha. Bio-functional denture. 4,439,153, Cl. 433-200.000.
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., to Union Carbide Corporation. Process for preparing polyarylates. 4,439,586, Cl. 525-169.000.
Kawamata, Kiyoshi, to Nihon Seikan Kabushiki Kaisha. Sealant applying apparatus for can body blanks. 4,438,721, Cl. 118-249.000.
Kawamura, Hiroshi; and Mibae, Giro, to Toray Industries, Incorporated. Coating compositions. 4,439,557, Cl. 523-216.000.
Kawano, Yoshihiko: *See—*
Takemura, Shuji; Kawano, Yoshihiko; and Hirakawa, Kazumi, 4,439,485, Cl. 428-323.000.
Kawasaki Steel Corporation: *See—*
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.
Kawata, Ken: *See—*
Ohki, Nobutaka; Kawata, Ken; and Itoh, Isamu, 4,439,519, Cl. 430-405.000.
Kays, William B.: *See—*
Wilson, John V.; and Kays, William B., 4,438,863, Cl. 220-227.000.
Kehr, Clifton L.: *See—*
Guthrie, James L.; and Kehr, Clifton L., 4,439,553, Cl. 521-159.000.

Keiper Automobiltechnik GmbH & Co. KG: *See—*
Pelz, Herbert, 4,439,053, Cl. 403-101.000.
Keiper U.S.A., Inc.: *See—*
Kresky, Fred C.; and Boyer, Daniel R., 4,438,974, Cl. 297-379.000.
Kelly, John, Jr.; and Edelbrock, Gregory J., to Mobil Oil Corporation. Method and apparatus for disposing of drill cuttings at an offshore location. 4,439,069, Cl. 405-195.000.
Kelly, Joseph E., to United States of America, Navy. Isolation steam valve with atmospheric vent and relief capability. 4,438,782, Cl. 137-628.000.
Kelso, Robert G.; Ahuja, Meena S.; and Schmitt, Peter D., to Mobay Chemical Corporation. Polyurethane compositions with improved storage stability. 4,439,593, Cl. 528-45.000.
Kenkare, Divaker B., to Colgate-Palmolive Company. Elastic detergent product of improved foaming power after use. 4,439,355, Cl. 252-541.000.
Kenney Manufacturing Company: *See—*
Comeau, Paul E., 4,438,799, Cl. 160-263.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, 4,439,684, Cl. 250-396.00R.
Kernforschungszentrum Karlsruhe GmbH: *See—*
Heilgeist, Michael, 4,439,326, Cl. 210-757.000.
Kesselman, Howard: *See—*
Kesselman, Jacob; and Kesselman, Howard, 4,438,844, Cl. 206-287.100.
Kesselman, Jacob; and Kesselman, Howard. Traveling garment bag. 4,438,844, Cl. 206-287.100.
Kessler, John O., to University of Arizona Foundation, The. Algal cell growth, modification and harvesting. 4,438,591, Cl. 47-1.400.
Kettelson, Ernest: *See—*
Slatton, B. Dale, 4,438,585, Cl. 43-113.000.
Keyes, George B.; and Richards, Randall G., to Drackett Company, The. Passive dispenser. 4,438,534, Cl. 4-227.000.
Keys, Deborah A.: *See—*
Magill, Thomas S.; and Keys, Deborah A., 4,439,147, Cl. 433-3.000.
KG Spezialmaschinenfabrik: *See—*
Stengle, Rolf; and Grupp, Rolf, 4,438,914, Cl. 270-31.000.
Khanna, Pyare; and Colvin, Warren, to Syva Company. Unsymmetrical fluorescein derivatives. 4,439,356, Cl. 260-112.00R.
Kidde Recreation Products, Inc.: *See—*
Simonds, Gary, 4,438,753, Cl. 124-24.00R.
Kiguchi, Majime, to Tokyo Shibaura Denki Kabushiki Kaisha. Turntable lifting apparatus of a video disc player. 4,439,851, Cl. 369-77.200.
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, to Ricoh Company, Ltd. Copier sorter with memory and counter controlled inlet gate for manually inserted covers or partition sheets. 4,439,865, Cl. 377-8.000.
Kikuzawa, Kenji; and Akasaka, Shozo, to Asahi Kasei Kogyo Kabushiki Kaisha. Artificial reef unit. 4,439,059, Cl. 405-25.000.
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., to U.S. Philips Corporation. Circuit arrangement with electronically controllable transfer characteristic. 4,439,739, Cl. 330-107.000.
Kim, Jinchoon, to United States of America, Energy. Neutral beamline with improved ion energy recovery. 4,439,395, Cl. 376-130.000.
Kim, Sang N.; and Kastelic, John R., to Celanese Corporation. Use of liquid crystal polymer particulates having a high aspect ratio in polymeric molding resins to suppress melt dripping. 4,439,578, Cl. 524-538.000.
Kimmell, Garman O. Pumping system. 4,439,114, Cl. 417-403.000.
Kimura, Kiyoshi: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.
Kimura, Kouhei: *See—*
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, to Nippon Kokan Kabushiki Kaisha. Gas blowing nozzle, and production and usage thereof. 4,438,907, Cl. 266-217.000.
Kimura, Takeshi: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Kimura, Tomohiro: *See—*
Toma, Hitoshi; Kimura, Tomohiro; and Kondo, Hideyo, 4,439,258, Cl. 156-86.000.
Kimwood Corporation: *See—*
Plough, Irving L., 4,438,795, Cl. 144-373.000.
Kindrick, Robert H., to Sherwin-Williams Company, The. Zinc oxide-zinc salt smoke suppressant/flame retardants. 4,439,572, Cl. 524-405.000.
King, Michael H.; Poppe, Lee W., Jr.; and Wurtenberg, Oscar A., to National ICEE Corporation. Apparatus for popping popcorn. 4,438,682, Cl. 99-323.700.
King, Roderick V., to Ethyl Products Company. Apparatus for threading closures. 4,439,082, Cl. 413-56.000.
Kingsbury, Robert P., to American Colloid Co. Sealing system and method for sealing earthen containers. 4,439,062, Cl. 405-24.000.
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., to Olin Corporation. Monopolar membrane electrolytic cell. 4,439,297, Cl. 204-257.000.
Kiselevsky, Leonid I.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
Kishimoto, Yoshio: *See—*
Hotta, Shu; Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,439,569, Cl. 524-128.000.
Kispert, Klaus: *See—*
Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,438,992, Cl. 308-201.000.
Kiss, Gunter H., to Lignotock Verfahrenstechnik GmbH. Fiber mat for producing a three dimensional molded molding by the dry process. 4,439,477, Cl. 428-102.000.
Kisters, Gunter, to Kollmorgen Technologies Corporation. Method for producing multiplane circuit boards. 4,438,560, Cl. 29-830.000.
Kitahara, Nobuko: *See—*
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,439,504, Cl. 430-42.000.
Kitajima, Nobuo: *See—*
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,439,504, Cl. 430-42.000.
Kitajima, Soichi; Iwamura, Kazuyuki; and Takeda, Yasuhiko, to Matsushita Electric Industrial Co., Ltd. Heat-pipe type solar water heater. 4,438,759, Cl. 126-433.000.
Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,439,795, Cl. 360-131.000.
Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,439,796, Cl. 360-131.000.
Kitatani, Seizo: *See—*
Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, 4,439,237, Cl. 75-243.000.
Kitsnik, Henrik M., to HK-Engineering AB. Method and apparatus for pumping viscous and/or abrasive fluids. 4,439,112, Cl. 417-383.000.
Kittle, Carl E., to Deere & Company. Dual mode control lever assembly. 4,438,660, Cl. 74-531.000.
Klauke, Erich; and Grohe, Klaus, to Bayer Aktiengesellschaft. 2,4-Dichloro-5-fluorobenzoyl halide and a process for its preparation. 4,439,620, Cl. 562-493.000.
Kleiner, Eduard K.; and Falk, Robert A., to Ciba-Geigy Corporation. Aqueous based fire fighting foam compositions containing hydrocarbyl sulfide terminated oligomer stabilizers. 4,439,329, Cl. 252-8.050.
Kline, Larry H. Flowable substance applicator with plunger projection. 4,439,180, Cl. 604-54.000.
Klingenberg, Wolfgang, to Olympia Werke AG. One line text display with two input locations. 4,439,838, Cl. 364-900.000.
Klotz, Helmut; and Fitzky, Hans G., to Bayer Aktiengesellschaft. Treatment of perfluorinated polymer membranes containing carboxyl groups. 4,439,292, Cl. 204-165.000.
Knapp, Charles A., to United States of America, Army. White smoke spotting composition for training ammunition. 4,438,700, Cl. 102-334.000.
Kneib, Kristine N.; and Vensko, George, to International Telephone and Telegraph Corporation. Dynamically programmable processing element. 4,439,839, Cl. 364-900.000.
Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., to Steelcase Inc. Chain control locking assembly. 4,438,898, Cl. 248-561.000.
Knodler, Helmut: *See—*
Lang, Armin; and Knodler, Helmut, 4,438,679, Cl. 91-370.000.
Koa Oil Company, Limited: *See—*
Noguchi, Kosaku, 4,439,275, Cl. 202-100.000.
Kobayashi, Herbert S.; Shores, Paul W.; and Rozas, Patrick, to United States of America, National Aeronautics & Space Administration. Doppler radar having phase modulation of both transmitted and reflected return signals. 4,439,766, Cl. 343-9.00R.
Kobayashi, Makio: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.
Kobayashi, Nobuo: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Kobayashi, Tsuneki: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.
Kobayashi, Yoshinori: *See—*
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.
Kobe Steel, Ltd.: *See—*
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.
Suzuki, Tomio; and Morimoto, Kotaro, 4,439,137, Cl. 431-8.000.
Koble, Robert L., Jr., to Phoenix Manufacturing, Inc. Evaporative cooler apparatus. 4,439,375, Cl. 261-29.000.

Kockler, Barry C.: *See—*
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.

Kodama, Hisashi: *See—*
Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,438,739, Cl. 123-90.550.

Kodama, Hitoshi: *See—*
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.

Kodama, Kenji: *See—*
Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, 4,439,126, Cl. 425-135.000.

Koenig, Karl-Heinz; and Schwendemann, Volker, to BASF Aktiengesellschaft. Halogenated, tertiary diisocyanates and their preparation. 4,439,369, Cl. 260-453.00P.

Koerte, Klaus, to Sandoz Ltd. Azo compounds having one or two 1,4-dioxanylmethoxycarbonyl-alkyl or -alkoxyalkyl groups. 4,439,362, Cl. 260-152.000.

Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., to Eastman Kodak Company. Sensitized high aspect ratio silver halide emulsions and photographic elements. 4,439,520, Cl. 430-434.000.

Koga, Shigenobu: *See—*
Shimoyama, Yoshiaki; Tachino, Ichiro; and Koga, Shigenobu, 4,439,251, Cl. 148-31.550.

Kogo, Yasuo: *See—*
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.

Kohmoto, Shinsuke: *See—*
Okura, Zenichi; and Kohmoto, Shinsuke, 4,439,029, Cl. 354-479.000.

Kohno, Susumu: *See—*
Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, 4,439,555, Cl. 523-122.000.

Kohri, Kitijiro: *See—*
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.

Kohring, Mark D.: *See—*
Kamman, Joseph T.; and Kohring, Mark D., 4,438,599, Cl. 51-238.00S.

Kohzai, Yoshinori; and Oyama, Shigeaki, to Fujitsu Fanuc Limited. Direct current motor. 4,439,703, Cl. 310-186.000.

Koide, Akio; and Ebata, Yoshikazu, to Janome Sewing Machine Co., Ltd. Multi-switch sewing machine. 4,438,716, Cl. 112-168.000.

Kojima, Tetsuhiko; Tsuji, Masakazu; and Sugimori, Shigeru, to Chisso Corporation. Cyano-mono-or diphenylbicyclohexane derivatives. 4,439,340, Cl. 252-299.630.

Kollmeyer, Willy D., to Shell Oil Company. Herbicidal cyano-tetrahydrofuranylmethyl ether and cyano-tetrahydropyranylmethyl ether derivatives. 4,439,225, Cl. 71-88.000.

Kollmorgen Technologies Corporation: *See—*
Kisters, Gunter, 4,438,560, Cl. 29-830.000.

Komaki, Takao: *See—*
Matsumoto, Seiji; Teraoka, Masanori; and Komaki, Takao, 4,439,682, Cl. 250-327.200.

Komatsu, Fumiaki: *See—*
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.

Komatsu, Hiroaki; and Yoshioka, Kenji, to Alps Electric Co., Ltd. Electronic tuning block. 4,439,749, Cl. 334-7.000.

Komatsu, Shigeru; and Nakamura, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of forming doped polycrystalline silicon pattern by selective implantation and plasma etching of undoped regions. 4,438,556, Cl. 29-576.00B.

Komori Printing Machinery Co., Ltd.: *See—*
Kawaguchi, Shoichi, 4,438,916, Cl. 271-93.000.

Kondo, Hideyo: *See—*
Toma, Hitoshi; Kimura, Tomohiro; and Kondo, Hideyo, 4,439,258, Cl. 156-86.000.

Kondo, Hirokazu: *See—*
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatsu, 4,438,701, Cl. 104-172.00B.

Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, to Kanzaki Paper Manufacturing Company, Ltd. Process for preparing triarylmethane derivatives. 4,439,610, Cl. 548-469.000.

Kondoh, Syunichi: *See—*
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.

Konigs, Heinz; Kremer, Hubert; and Pieters, Hans-Theo, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Knife construction for a double-lift open-shed Jacquard loom. 4,438,786, Cl. 139-59.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.

Koob, Hubert: *See—*
Fitterer, Horst; Koob, Hubert; and Nestler, Bert, 4,438,892, Cl. 242-199.000.

Kopic, Johachim: *See—*
Handke, Gunther; and Kopic, Johachim, 4,438,834, Cl. 188-322.160.

Korotkevich, Sergei G.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L. Continuous casting withdrawal apparatus. 4,438,802, Cl. 164-443.000.

Kostrov, Valery P.: *See—*
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.

Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, to Toho Beslon Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Rocker arm and process for producing the same. 4,438,738, Cl. 123-90.390.

Kotai, Ferenc: *See—*
Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, 4,438,677, Cl. 89-36.00K.

Kothe, Norbert: *See—*
Bonhard, Klaus; Eichentopf, Bertram; and Kothe, Norbert, 4,439,357, Cl. 260-112.00B.

Kovacs, Jenoe: *See—*
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.

Kovalenko, Vitaly I.: *See—*
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Kovar, Wayne A.: *See—*
Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., 4,439,167, Cl. 464-20.000.

Kozima, Sadao; and Makino, Hisao, to Kaiyo Koggyo Co. Ltd. Water purifier. 4,439,316, Cl. 210-150.000.

Kozlik, Robert: *See—*
Merle, Rene; Uecker, Myron; and Kozlik, Robert, 4,438,634, Cl. 62-123.000.

Kozlovsky, Vadim V.: *See—*
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Gugel, Georg, 4,438,805, Cl. 165-76.000.

Krajcsovics, Ferenc: *See—*
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Kramer, Melvin G.; and Iden, Marlin, to Brunton Company, The. Recreational compass. 4,438,568, Cl. 33-348.000.

Kramer, Willi: *See—*
Fichtner, Karl-Heinz; Kramer, Willi; and Muskulus, Willi, 4,439,100, Cl. 414-115.000.

Krauss-Maffei Aktiengesellschaft: *See—*
Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, 4,438,677, Cl. 89-36.00K.

Krauss u. Reichert GmbH & Co.: *See—*
Stengle, Rolf; and Grupp, Rolf, 4,438,914, Cl. 270-31.000.

Kreinheder, Donald E.; and Lingren, Terrance D., to Hughes Aircraft Co. Method for improving selectivity in cylindrical TE_{011} filters by TE_{211}/TE_{311} mode control. 4,439,747, Cl. 333-208.000.

Kremer, Hubert: *See—*
Konigs, Heinz; Kremer, Hubert; and Pieters, Hans-Theo, 4,438,786, Cl. 139-59.000.

Krempel, Ralf. Visual communication system. 4,439,160, Cl. 434-170.000.

Kresky, Fred C.; and Boyer, Daniel R., to Keiper U.S.A., Inc. Guide profile for inertia latch. 4,438,974, Cl. 297-379.000.

Kretschmer, Frank F., Jr.: *See—*
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,439,770, Cl. 343-381.000.

Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, to Merck & Co., Inc. Process for the preparation of monochloroacetone. 4,439,623, Cl. 568-393.000.

Krishna, Rajamani: *See—*
Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, 4,439,306, Cl. 208-11.00R.

Kritchevsky, David: *See—*
Scolastico, Carlo; Sirtori, Cesare; and Kritchevsky, David, 4,439,366, Cl. 260-397.100.

Kroschel, Heinz: *See—*
Fischer, Klaus H.; and Kroschel, Heinz, 4,438,675, Cl. 89-1.811.

Krupp-Koppers GmbH: *See—*
Jakobi, Wilhelm, 4,438,571, Cl. 34-65.000.

KSM Fastening Systems Inc.: *See—*
Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., 4,439,661, Cl. 219-99.000.

Kubicek, Frantisek: *See—*
Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, 4,438,681, Cl. 99-323.200.

Kubota, Tatsushi: *See—*
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.

Kudo, Mitsuhiro: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Kufner Textilwerke KG: *See—*
Hefele, Josef, 4,438,533, Cl. 2-97.000.

Kuhl, Adolf. Dilation device. 4,439,186, Cl. 604-99.000.

Kuhls, Jurgen; Weiss, Eduard; and Burgstaller, Gottfried, to Hoechst Aktiengesellschaft. Continuous process for the agglomeration of PTFE powders in a liquid medium. 4,439,385, Cl. 264-37.000.

Kuhn, Willi; and Mausner, Eberhard, to Robert Bosch GmbH. PWM, Single-ended, separately driven d.c.-d.c. converter. 4,439,820, Cl. 363-21.000.

Kuhner, Gerhard: *See—*
Voll, Manfred; Rothbuhr, Lothar; and Kuhner, Gerhard, 4,439,401, Cl. 422-150.000.

Kuka Webrtechnik GmbH: *See—*
Kaustrater, Gert, 4,438,676, Cl. 89-34.000.

Kumar, Mahesh; and Upadhyayula, Lakshminarasimha C., to RCA Corporation. Variable power amplifier. 4,439,744, Cl. 330-285.000.

Kumasaka, Noriyuki: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Kume, Masaharu; Ishii, Kenichi; and Hokusho, Takayasu, to Asahi Glass Company, Ltd. Glass antenna system for an automobile. 4,439,771, Cl. 343-704.000.

Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, to Mitsui Mining & Smelting Co., Ltd. Metallurgically bonded diamond-metal composite sintered materials and method of making same. 4,439,237, Cl. 75-243.000.

Kupcikevicius, Vytautas; and Raudys, Vytas A., to Union Carbide Corporation. Stuffing method and apparatus. 4,438,545, Cl. 17-49.000.

Kupschus, Peter: *See—*
Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, 4,439,684, Cl. 250-396.00R.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, 4,439,811, Cl. 361-313.000.

Kurnit, Norman A., to United States of America, Energy. Optical pumping in a whispering mode optical waveguide. 4,439,860, Cl. 372-70.000.

Kurosawa, Makoto: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.

Kurth, Roman: *See—*
Wiebke, Gunther, deceased, Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.

Kuruma, Dennis K.: *See—*
Gegaregian, Albert A.; Kuruma, Dennis K.; and Lengel, Kenneth W., 4,438,866, Cl. 220-319.000.

Kurumaji, Masanobu: *See—*
Sano, Tsutomu; Takeuchi, Naoki; and Kurumaji, Masanobu, 4,439,123, Cl. 425-112.000.

Kuy, Bert. Agricultural applications of thixotropic aluminum hydroxide chloride. 4,439,457, Cl. 426-310.000.

Kuzmin, Gennady G.: *See—*
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.

Kuznetsov, Alexandr N.: *See—*
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.

Kuznetsov, Vsevolod V.: *See—*
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.

Kyle, Richard F., to Kyle, Richard F. Orthopedic hip fixation device. 4,438,762, Cl. 128-92.0BB.

L. B. (Plastics) Limited: *See—*
Davis, Harry H., 4,438,994, Cl. 312-330.00R.

La Cellophane: *See—*
Ceintrey, Claude, 4,439,512, Cl. 430-180.000.

La-Z-Boy Chair Company: *See—*
LaPointe, Larry P., 4,438,973, Cl. 297-349.000.

Lacoste, Francois R.; and Biard, Francoise M. H., to Patentex S.A. Tennis ball with fabric covering. 4,439,471, Cl. 428-35.000.

Laforest, Pierre: *See—*
Gagnon, Pierre; and Laforest, Pierre, 4,438,903, Cl. 254-269.000.

Lai, George Y.: *See—*
Herchenroeder, Robert B.; and Lai, George Y., 4,439,248, Cl. 148-6.200.

Lamb, Charles G.; and Sanford, Robert A., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,438,776, Cl. 131-336.000.

Lambert, Frederic J.; Bosack, Donald J.; and Johansen, David K., to GNB Batteries Inc. Variable timing circuit for motive power battery chargers. 4,439,719, Cl. 320-31.000.

Lambrecht, Leonard S. Filter assembly having filter retainer apparatus. 4,439,219, Cl. 55-499.000.

Lancaster, Cleo: *See—*
Robert, Andre; and Lancaster, Cleo, 4,439,445, Cl. 424-304.000.

Lancet, Michael S., to Conoco Inc. Method of catalytic gasification with increased ash fusion temperature. 4,439,210, Cl. 48-202.000.

Landa, Benzion, to Savin Corporation. Copier cleaning system incorporating resilient noncellular sealing roller. 4,439,035, Cl. 355-15.000.

Lane, E. James, to Eaton Corporation. Speed responsive reverse control. 4,438,666, Cl. 74-868.000.

Lang, Aage, to Clean-Tex. Nap mat or carpet of washable type having increased liquid removal therefrom during washing thereof. 4,439,475, Cl. 428-92.000.

Lang, Armin; and Knodler, Helmut, to Zahnradfabrik Friedrichshafen, AG. Axial thrust compensating means for power steering control valve. 4,438,679, Cl. 91-370.000.

Lang, Armin, to Zahnradfabrik Friedrichshafen, AG. Servo steering, especially for motor vehicles. 4,438,827, Cl. 180-143.000.

Lang, Donald D., to Allied Corporation. Wire pin connector for ribbon cable. 4,438,999, Cl. 339-176.0MF.

Lang, Roger J.: *See—*
Curley, James H.; and Lang, Roger J., 4,439,001, Cl. 339-176.0MP.

Lange, Hans: *See—*
Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, 4,439,527, Cl. 436-135.000.

Lannom, Charles S.; and Delgado, Daniel R. Lens carrier assembly for automatic lens blocking. 4,438,602, Cl. 51-277.000.

LaPointe, Larry P., to La-Z-Boy Chair Company. Swivel chair with brake. 4,438,973, Cl. 297-349.000.

Larkin, Mark E., to Abbott Laboratories. Apparatus for connecting medical liquid containers. 4,439,193, Cl. 604-411.000.

Larsen, Peter. Combination tool for carpentry. 4,438,538, Cl. 7-164.000.

Larson, Bradley W.: *See—*
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.

LaRussa, Joseph A., to Farrand Optical Co., Inc. Head-up infinity display and pilot's sight. 4,439,755, Cl. 340-980.000.

Latimer, John P., to Deepsea Ventures, Inc. Pipe string lift system. 4,438,902, Cl. 254-106.000.

Lauks, Imants R., to University Patents, Inc. Composition and method for forming amorphous chalcogenide films from solution. 4,439,464, Cl. 427-76.000.

Laurich, Louis: *See—*
Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, 4,439,125, Cl. 425-140.000.

Laurijsen, Piet J. L.: *See—*
Wiebke, Gunther, deceased; Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.

Lauton, Alain; and Wurmli, Albert, to Ciba-Geigy Corporation. Process for retanning leather with acrylic-based oligomers. 4,439,201, Cl. 8-436.000.

LaValle, Bernard A. Bench rest device for handguns. 4,438,581, Cl. 42-94.000.

Lawrence, Alan J.; and Upp, Daniel C., to International Telephone & Telegraph Corporation. Diagnostic system for a distributed control switching network. 4,439,826, Cl. 364-200.000.

Lawson, Richard J. A. Musical expression pedal. 4,438,674, Cl. 84-1.240.

Lawter, Raymond L., to NCR Corporation. Single printing station, multiple record member feeding mechanism. 4,439,051, Cl. 400-605.000.

Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., to Bell Telephone Laboratories, Incorporated. Low dispersion single mode fiber. 4,439,007, Cl. 350-96.300.

League, Richard B.: *See—*
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.

Lee, Cheuk-Ming, to Refined Industry Company, Limited, The. Electric motor toy car. 4,438,590, Cl. 46-257.000.

Lee, Raymond: *See—*
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,439,381, Cl. 264-26.000.

Lees, Geoffrey C., to J. C. Ludowici & Son Ltd. Fluid seals. 4,438,935, Cl. 277-205.000.

LeFevere, Robert E., to American Standard Inc. Binder clamp spring safety device. 4,439,080, Cl. 412-9.000.

Leggett, Leo J.: *See—*
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., 4,438,725, Cl. 119-4.000.

Lehmann, Helmut: *See—*
Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, 4,439,579, Cl. 524-602.000.

Lehment, Klaus-Friedrich: *See—*
Hugl, Herbert; Wolfrum, Gerhard; and Lehment, Klaus-Friedrich, 4,439,372, Cl. 260-465.00E.

Leighton, John D.: *See—*
Brown, William L., 4,439,650, Cl. 200-61.890.

Lemaire, Paul J.: *See—*
Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,439,007, Cl. 350-96.300.

Le Mehaute, Bernard J., to University of Miami. Asymmetric seaweeds. 4,439,058, Cl. 405-24.000.

Lengel, Kenneth W.: *See—*
Gegaregian, Albert A.; Kuruma, Dennis K.; and Lengel, Kenneth W., 4,438,866, Cl. 220-319.000.

Lenni Products, Inc.: *See—*
Weirich, Stephen; and Crothers, James L., 4,438,671, Cl. 83-212.000.

Leonard, Eugene, to VVR Associates. Subscriber television system. 4,439,785, Cl. 358-120.000.

Leppala, Matti. Drill steel guiding and centralizing mechanism. 4,438,984, Cl. 308-3.900.

Leroy, Pierre-Loup: *See—*
Bobichon, Jacques; and Leroy, Pierre-Loup, 4,438,784, Cl. 138-92.000.

Lessard, Philip A.; and Bartlett, Allen J., to Helix Technology Corporation. Means for periodic desorption of a cryopump. 4,438,632, Cl. 62-55.500.

Letterio, Fred, to Sweeney, Paul L., Jr. Subarachnoid bolt. 4,438,773, Cl. 128-748.000.

Leurink, Hendrik J., to Stichting Centraal Laboratorium Van De Bloedtransfusiedienst Van Het Nederlandse Rode Kruis. Container for liquids for use in medicine and surgery. 4,439,192, Cl. 604-408.000.

Levkov, Ilya I. Shielded lock assembly. 4,438,641, Cl. 70-95.000.

Levy, Alvin C.: *See—*
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.

Lew, Hyok S. Rotational mixing vessel. 4,439,045, Cl. 366-297.000.

Lewis, Bernard L.; and Kretschmer, Frank F., Jr., to United States of America, Navy. Cascaded adaptive loops. 4,439,770, Cl. 343-381.000.

Lewis, Nathan S.: *See—*
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Lewis, Robert M.; Ryan, Robert C.; and Slaugh, Lynn H., to Shell Oil Company. Conversion of dimethyl ether to formaldehyde using Bi-Mo-Cu catalyst. 4,439,624, Cl. 568-470.000.

Lewyn, Lanny L.: *See—*
Lucas, Charles H.; and Lewyn, Lanny L., 4,439,693, Cl. 307-353.000.

Liang, Anthony; and Cheng, Hsiao L., to GTE Products Corporation. Platinum coated silver powder. 4,439,468, Cl. 427-216.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Lutz, Manfred; and Reimer, Bernd, 4,439,508, Cl. 430-84.000.
Rauth, Erich; and Schmack, Hans-Jurgen, 4,439,857, Cl. 370-100.000.

Lichtenfels, William C.: *See—*
Soloviff, Paul G.; and Lichtenfels, William C., 4,438,962, Cl. 292-144.000.

Lickei, Donald L.: *See—*
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,576, Cl. 524-425.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,577, Cl. 524-425.000.

Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, to International Flavors & Fragrances Inc. Tricyclic alcohols, ethers and esters, process for preparing same and use thereof in augmenting or enhancing the organoleptic properites of consumable materials. 4,439,354, Cl. 252-522.00R.

Lightstone, Alexander W.: *See—*
Smyth, Lawrence C.; and Lightstone, Alexander W., 4,439,221, Cl. 65-4.210.

Lignotock Verfahrenstechnik GmbH: *See—*
Kiss, Gunter H., 4,439,477, Cl. 428-102.000.

Lilienthal, Alfred: *See—*
Dickhut, Heinrich; and Lilienthal, Alfred, 4,439,130, Cl. 425-388.000.

Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, to Philip Morris Incorporated. Method and system for laser perforation of sheet material. 4,439,663, Cl. 219-121.0LK.

Limb, John O., to Bell Telephone Laboratories, Incorporated. Collision avoiding system and protocol for a multiple access digital communications system. 4,439,763, Cl. 340-825.500.

Lincicum, Leon L.: *See—*
Perkins, Dale J.; and Lincicum, Leon L., 4,438,899, Cl. 248-642.000.

Lincoln Manufacturing Co., Inc.: *See—*
Kaminski, Daniel S., 4,438,572, Cl. 34-218.000.

Lindstrom, James A. Handle for racquetball racquet. 4,438,925, Cl. 273-75.000.

Lingren, Terrance D.: *See—*
Kreinheder, Donald E.; and Lingren, Terrance D., 4,439,747, Cl. 333-208.000.

Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, to Uhde GmbH. Process for the generation of steam. 4,438,730, Cl. 122-40.000.

Lipatov, Nikolai K.: *See—*
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Lipnitskaya, Nelli I.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Lippiatt, Sidney A., to Bendix Limited. Proportioning valve with pressure port communicating with stepped area of differential piston. 4,438,980, Cl. 303-6.00C.

Lippman, Jerry. Hydrophobic foam fabric coating. 4,439,473, Cl. 428-90.000.

Liscio, Mary A. Marine circulator. 4,439,060, Cl. 405-61.000.

Litchfield, Philip F., to Sci-Med Environmental Systems, Inc. Lighting and air filter structure. 4,439,816, Cl. 362-96.000.

Litvishkov, Jury N.: *See—*
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Liu-Rash, Catherine R.: *See—*
Hooper, John A.; Mankarious, Samia; and Liu-Rash, Catherine R., 4,439,421, Cl. 424-85.000.

Lobb, Daniel R.: *See—*
Breglia, Denis R.; Lobb, Daniel R.; and Spooner, Archer M., 4,439,157, Cl. 434-40.000.

Lockheed Electronics Company, Inc.: *See—*
Wiig, Selmer L., 4,438,891, Cl. 242-190.000.

Lockheed Missiles & Space Co., Inc.: *See—*
Meyer, John W.; Bonin, John H.; and Daniel, Arnold D., 4,439,200, Cl. 406-99.000.

Loctite Corporation: *See—*
Moran, James P., Jr., 4,439,600, Cl. 528-392.000.

Lodge, John H.: *See—*
Eichenberger, Peter; and Lodge, John H., 4,438,663, Cl. 74-760.000.

Loesch, Stanley B.; St. John, James C.; and Mints, Danny K., to Halliburton Company. Flameless nitrogen skid unit. 4,438,729, Cl. 122-26.000.

Loeser, Werner: *See—*
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.

Loew, Peter: *See—*
Stingelin, Willy; and Loew, Peter, 4,439,204, Cl. 8-497.000.

Loffler, Walter: *See—*
Schmolke, Karl H.; Finsterbusch, Joachim; and Loffler, Walter, 4,438,547, Cl. 19-98.000.

Loftness, Marvin O. Ultrasonic and VHF locator of electrical systems defects. 4,439,723, Cl. 324-52.000.

Logan Graphic Products, Inc.: *See—*
Logan, Malcolm, 4,438,578, Cl. 40-152.000.

Logan, John G., III: *See—*
Jarrell, Donald, 4,439,317, Cl. 210-151.000.

Logan, Malcolm, to Logan Graphic Products, Inc. Picture frame and corner bracket assembly. 4,438,578, Cl. 40-152.000.

Lomas, David A.; and Thompson, Gregory J., to UOP Inc. Fluid particle backmixed cooling process. 4,439,533, Cl. 502-6.000.

Long, Gary R.; and Okunami, Hideo, to Wehr Corporation. Hydraulic refractory press including floating upper and lower plunger assemblies. 4,439,129, Cl. 425-352.000.

Long, Richard W.; and Stinton, Robert T., to Diving Unlimited International, Inc. Low friction means to facilitate putting on an underwater diving suit. 4,438,531, Cl. 2-2.10R.

Loomis, Russell M.; Gaikowski, Michael D.; and Brzezinski, Denis R., to Unarco Industries, Inc. Movable freight restraining device for freight cars and the like. 4,439,076, Cl. 410-153.000.

Loper, Bernd: *See—*
Renz, Dieter; and Loper, Bernd, 4,438,979, Cl. 301-37.0PB.

Lord Electric Company, Inc.: *See—*
Salaman, Roy G., 4,439,672, Cl. 235-463.000.

Lorenzoni, Loreno: *See—*
Messina, Giuseppe; Lorenzoni, Loreno; and Fadda, Antonio L., 4,439,570, Cl. 524-154.000.

Losada, Al. Wall anchor assembly. 4,439,079, Cl. 411-345.000.

Louik, Leonard; and Ballard, Richard E., to RCA Corporation. Apparatus for molding a recorded disc having a molded-in center hole. 4,439,128, Cl. 425-290.000.

Love, Charles J.: *See—*
Jacob, Joseph; and Love, Charles J., 4,438,541, Cl. 15-167.00R.

Lubrizol Corporation, The: *See—*
Higgins, William A.; and Clark, Alan C., 4,439,594, Cl. 528-89.000.

Lucas, Charles H.; and Lewyn, Lanny L., to Hughes Aircraft Co. Sample and hold circuit with improved offset compensation. 4,439,693, Cl. 307-353.000.

Lucas Industries Limited: *See—*
Skinner, Robert T. J.; and Tumber, Brian W., 4,438,747, Cl. 123-450.000.

Lucking, Hans J.: *See—*
Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, 4,439,592, Cl. 528-14.000.

Lueders, Arthur; and Bellotti, Marc, to Baxter Travenol Laboratories, Inc. Dual tubing clamp. 4,439,179, Cl. 604-34.000.

Lukin, Alexandr M.: *See—*
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.

Lummis, Michael G., to Pacific Atlantic Products, Ltd. Downrigger system mounting arrangement. 4,438,582, Cl. 43-27.400.

Lummus Company, The: *See—*
Schindler, Harvey D.; and Sze, Morgan C., 4,439,313, Cl. 208-251.00H.

Lundgren, Bengt, to SKF Nova AB. Bearing housing. 4,438,991, Cl. 308-189.00R.

Lundquist, Ingemar H., to Advanced Cardiovascular Systems, Inc. Inflating and deflating device for vascular dilating catheter assembly. 4,439,185, Cl. 604-97.000.

Lundstrom, Ove V. Vibrating ditcher plow. 4,438,576, Cl. 37-98.000.

Luoma, Richard W.: *See—*
Brende, Arthur P.; and Luoma, Richard W., 4,439,699, Cl. 310-13.000.

Lutz, Horst, to Daimler-Benz Aktiengesellschaft. Leveller for motor vehicles. 4,438,645, Cl. 72-482.000.

Lutz, Manfred; and Reimer, Bernd, to Licentia Patent-Verwaltungs-GmbH. Electrophotographic recording material comprises arsenic, selenium and tellurium. 4,439,508, Cl. 430-84.000.

Lyman, Susan P.: *See—*
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.

Maag Gear-Wheel & Machine Company Limited: *See—*
Donner, Meinrad, 4,439,825, Cl. 364-167.000.

Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Preparation of polydiorganosiloxanes having terminal triorganosilyl groups. 4,439,592, Cl. 528-14.000.

MacBean, Donald G., to JWI Ltd. Woven pin seam in fabric and method. 4,438,789, Cl. 139-383.00A.

MacDonald, John A., to Railtech Ltd. Plug door assembly. 4,438,595, Cl. 49-219.000.

Machmerth, Herbert, to Ernst Leitz Wetzlar GmbH. Apparatus for focusing an optical system. 4,439,011, Cl. 350-255.000.

Machnev, Vyacheslav P.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Mactaggart, John W., to Sentrol Systems Ltd. Method and apparatus for measuring and controlling the color of a moving web. 4,439,038, Cl. 356-408.000.

Madden, Jean D., Jr., to Electro-Films, Inc. Apertured electronic circuit package. 4,439,754, Cl. 338-320.000.

Mader, Herbert: *See—*
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.

Maeda, Kouzo: *See—*
Kamijo, Ken; and Maeda, Kouzo, 4,438,969, Cl. 296-146.000.

Maeda, Toshiaki: *See—*
Aiga, Toshiro; and Maeda, Toshiaki, 4,438,804, Cl. 164-522.000.

Magerramova, Zemfira J. K.: *See—*
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Maggart, Michael J., to Eljo Products, Inc. Adjustable hinge mount. 4,438,597, Cl. 49-501.000.

Maggio, Joseph D., to Mercor Corporation. Flow control system. 4,438,731, Cl. 123-25.00N.

Magill, Thomas S.; and Keys, Deborah A. Bite-taking device. 4,439,147, Cl. 433-3.000.

Maier, Peter; and Niedermaier, Arnold, to Albert-Frankenthal AG. Cylinder for machines processing running lengths of material. 4,438,695, Cl. 101-153.000.

Maillefer S.A.: *See—*
Meisser, Marc; Weber, Kurt; and Veyrassat, Louis, 4,438,886, Cl. 242-25.00A.

Mair, Eduard, to Siemens Aktiengesellschaft. Device for fixing recordings consisting of powdery material applied to a tape-shape recording medium with the assistance of solvent vapor. 4,439,144, Cl. 432-59.000.

Majik-Ironers, Inc.: *See—*
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 4,438,577, Cl. 38-107.000.

Makino, Hisao: *See—*
Kozima, Sadao; and Makino, Hisao, 4,439,316, Cl. 210-150.000.

Makino, Takao; and Ikeda, Toshiaki, to Kabushiki Kaisha Morita Seisakusho. Medical X-ray radiation power supply apparatus. 4,439,868, Cl. 378-112.000.

Malaviya, Sashi D., to International Business Machines Corp. Bipolar transistor read only or read-write store with low impedance sense amplifier. 4,439,842, Cl. 365-104.000.

Maley, Gerald A.; Warren, Raymond H.; and Westcott, Douglas W., to International Business Machines Corporation. Three-gate hazard-free polarity hold latch. 4,439,690, Cl. 307-272.00R.

Malherbe, Roger F.: *See—*
Winter, Roland A. E.; Malherbe, Roger F.; and Tieh-Yin Fu, Frank, 4,439,565, Cl. 524-103.000.

Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., to Phillips Petroleum Company. Production of single cell protein material. 4,439,523, Cl. 435-243.000.

Maltsev, Viacheslav B.: *See—*
DeYoung, Thomas W.; and Maltsev, Viacheslav B., 4,439,780, Cl. 346-140.00R.

Manganaro, James L., to FMC Corporation. Production of sodium hydrosulfide. 4,439,411, Cl. 423-560.000.

Mankarious, Samia: *See—*
Hooper, John A.; Mankarious, Samia; and Liu-Rash, Catherine R., 4,439,421, Cl. 424-85.000.

Mantey, John P.: *See—*
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., 4,438,917, Cl. 271-227.000.

Manville Service Corporation: *See—*
Cimochowski, Anthony E.; and Heffelmire, Brad A., 4,439,175, Cl. 493-413.000.
Graser, Earl J., 4,438,843, Cl. 206-148.000.

Marathon Oil Company: *See—*
Duke, Roy B., 4,439,345, Cl. 252-330.000.

Marchitto, Michael J.: *See—*
Ferris, Donald L.; Olster, Elliot F.; and Marchitto, Michael J., 4,439,106, Cl. 416-61.000.

Marcon Electronics Co., Ltd.: *See—*
Shimada, Hiroshi; and Sakamoto, Kiyoshi, 4,439,810, Cl. 361-272.000.

Marconi Company Limited, The: *See—*
Claydon, Gyongyver; and Iles, Gordon D., 4,439,786, Cl. 358-148.000.
Taylor, Malcolm F., 4,439,715, Cl. 318-627.000.

Mareck B.V.: *See—*
Olsson, Karl B., 4,439,134, Cl. 431-1.000.

Maresca, Louis M.: *See—*
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,439,586, Cl. 525-169.000.

Marfurt, Hans-Rudolf; and Zurer, August, to Ciba-Geigy Corporation. Process for the separation of oil-in-water emulsions by electrolysis. 4,439,290, Cl. 204-149.000.

Marinescu, Marlene: *See—*
Menzel, Klaus; Erd, Ludwig; and Marinescu, Marlene, 4,439,700, Cl. 310-13.000.

Marino, Joseph A., to Arco Industries Ltd. Blowgun toy car launcher. 4,438,587, Cl. 46-44.000.

Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., to United States of America, Navy. Anti-armor weapons trainer. 4,439,156, Cl. 434-12.000.

Martin, Daniel B., to International Business Machines Corp. Instruction substitution mechanism in an instruction handling unit of a data processing system. 4,439,828, Cl. 364-200.000.

Martin, David C.: *See—*
Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., 4,439,661, Cl. 219-99.000.

Martin, F. Glenn, to Atlantic Richfield Company. Wellbore fracture tracing. 4,439,677, Cl. 250-260.000.

Martin, F. Glenn, to Atlantic Richfield Company. Wellbore treatment. 4,439,678, Cl. 250-260.000.

Martin, Henry: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,228, Cl. 71-95.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,230, Cl. 71-96.000.

Martin, John E. Remote control ball. 4,438,588, Cl. 46-228.000.

Martin, Mervin G., to Hedlund Manufacturing Co., Inc. Manure loader. 4,438,885, Cl. 241-101.00B.

Martin, Peter: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Martinez, Carlos J.; and Chen, Albert C., to Mobil Oil Corporation. Water dispersible acrylic modified chlorinated rubber. 4,439,587, Cl. 525-292.000.

Martins, Agusto B.: *See—*
Amkraut, Alfred A.; and Martins, Agusto B., 4,439,199, Cl. 604-894.000.

Maruko, Saburo, to Nihon Chemical Plant Consultant Co., Ltd. Sunrays focusing apparatus. 4,439,020, Cl. 350-443.000.

Marvin Glass & Associates: *See—*
Wildman, John R.; and Breslow, Jeffrey D., 4,438,586, Cl. 46-1.00R.

Masak, Raymond J., to United States of America, Air Force. Combined adaptive sidelobe canceller and frequency filter system. 4,439,769, Cl. 343-380.000.

Maschinenfabrick Koppern GmbH & Co. KG: *See—*
Bergendahl, Hans G., 4,439,384, Cl. 264-37.000.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See—*
Konigs, Heinz; Kremer, Hubert; and Pieters, Hans-Theo, 4,438,786, Cl. 139-59.000.

Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, trustees. High efficiency broadband directional sonar transducer. 4,439,847, Cl. 367-151.000.

Massachusetts Institute of Technology: *See—*
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Massaux, Jean G. Controlling and regulating device for pumps with constant volume. 4,439,110, Cl. 417-129.000.

Mathur, Achint P.; Tornianen, Matti J.; and Shawcross, James P., to Carrier Corporation. High performance heat transfer tube. 4,438,807, Cl. 165-133.000.

Matoba, Isao: *See—*
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.

Matsubara, Masaki: *See—*
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, 4,439,023, Cl. 351-206.000.

Matsuda, Yasuhiko: *See—*
Sato, Yo; Kashiwaba, Tadao; and Matsuda, Yasuhiko, 4,439,257, Cl. 156-64.000.

Matsui, Koichi: *See—*
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.

Matsumoto, Fumio, to Showa Manufacturing Co., Ltd. Vehicle front fork. 4,438,909, Cl. 267-64.260.

Matsumoto, Hiroaki: *See—*
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, 4,438,918, Cl. 271-251.000.

Matsumoto, Seiji; Teraoka, Masanori; and Komaki, Takao, to Fuji Photo Film Co., Ltd. Noise erasing method in a radiation image recording and reproducing method. 4,439,682, Cl. 250-327.200.

Matsumura, Rumiko, administrator: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Matsumura, Shingo, deceased: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Matsumura, Shogo: *See—*
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.

Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, to Kao Soap Co., Ltd. Shampoo composition. 4,439,417, Cl. 424-70.000.

Matsunaga, Osamu: *See—*
Mogi, Takao; Morita, Kouji; and Matsunaga, Osamu, 4,439,787, Cl. 358-195.100.

Matsuoka, Youichi; and Tajika, Fumitaka, to Nihon Dempa Kogyo Company Limited. Quartz crystal vibrator. 4,439,706, Cl. 310-353.000.

Matsushiro, Yukimitsu, to Kabushiki Kaisha Matsushiro. Moving toy with movable battery receptacle. 4,438,589, Cl. 46-251.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hotta, Shu; Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,439,569, Cl. 524-128.000.
Kitajima, Soichi; Iwamura, Kazuyuki; and Takeda, Yasuhiko, 4,438,759, Cl. 126-433.000.
Nishikawa, Takuji, 4,439,783, Cl. 358-22.000.

Matsuzawa, Yasue: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.

Mattei, Anthony, to RCA Corporation. Phase locked loop, as for MPSK signal detector. 4,439,737, Cl. 329-50.000.

Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, to Ethicon, Inc. Absorbable hemostatic composition. 4,439,420, Cl. 424-78.000.

Mattel, Inc.: *See—*
Gross, Raymond J.; and Hogg, Fredrick W., 4,439,757, Cl. 340-365.0VL.

Maurer, Gunter: *See—*
Wiebke, Gunther, deceased; Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.

Mausner, Eberhard: *See—*
Kuhn, Willi; and Mausner, Eberhard, 4,439,820, Cl. 363-21.000.

Maxwell, Ralph A. Adjustable water ski fin and wing. 4,439,166, Cl. 441-79.000.

May, Adolf: *See—*
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,439,331, Cl. 252-8.800.

Mayclin, Thomas J. Permanent identification method for removable dental prosthesis and structure. 4,439,154, Cl. 433-229.000.

Mayer, Ferdy, to Mayer, Ferdy. Device having one or more manually controlled functions. 4,439,824, Cl. 364-150.000.

Mayer, Walter; and Wittmann, Stephan, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Overhung mounted rotatable centering spindle. 4,438,624, Cl. 57-352.000.

Mayne, David L.; and Jahsman, David, to Industrial Design & Development Corp. Electrical component dispensing tool. 4,438,867, Cl. 221-197.000.

Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., to R. J. Reynolds Tobacco Company. Apparatus and process for treating tobacco. 4,438,775, Cl. 131-300.000.

McAllister, Ronald L.: *See—*
Priepke, Edward H.; and McAllister, Ronald L., 4,439,218, Cl. 55-288.000.

McBarron, George P., to Stride Rite International, Ltd. Ventilated athletic shoe. 4,438,573, Cl. 36-3.00B.

McCarty, J. Richard: *See—*
Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, 4,439,125, Cl. 425-140.000.

McCheyne, Robert: *See—*
Morrison, John D.; and McCheyne, Robert, 4,438,785, Cl. 138-103.000.

McConway & Torley Corporation: *See—*
Baughman, Donald L.; and Elliott, William O., 4,438,854, Cl. 213-127.000.

McCown, Frank E., Jr.: *See—*
Joo' , Louis A.; Tucker, Kenneth W.; and McCown, Frank E., Jr., 4,439,382, Cl. 264-29.500.

McCoy, William J., Jr. Evaporative condenser refrigeration system. 4,438,635, Cl. 62-305.000.

McCurdy, J. L.; and Jarvis, Marvin A., to Cosden Technology, Inc. Multiple stage devolatilization process for mass processable polymers. 4,439,601, Cl. 528-481.000.

McDaniel, Max P.; and Stricklen, Phil M., to Phillips Petroleum Company. Co Reduced chromyl halide on silica catalyst. 4,439,543, Cl. 502-228.000.

McDonnell Douglas Corporation: *See—*
Byrd, Norman R., 4,439,282, Cl. 204-38.00R.
Roe, George W., 4,439,155, Cl. 434-12.000.
Stacy, Robert A.; and Rice, Robert R., 4,439,014, Cl. 350-388.000.

McDougal, Thomas F. Quick set hydraulic vise structure. 4,438,911, Cl. 269-32.000.

McFadden, Edward J., to Hughes Tool Company. Shock absorbing snubber for derrick hooks. 4,438,910, Cl. 267-126.000.

McFerron, Richard G.: *See—*
Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., 4,439,055, Cl. 403-330.000.

McGhie, Joseph A.: *See—*
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,439,354, Cl. 252-522.00R.

McGourty, Lawrence E., Jr.; Audette, Gabriel; and Audette, Jean M. Interior decoration system. 4,438,604, Cl. 52-28.000.

McGowen, Wayne H. Therapeutic device for a human body. 4,438,761, Cl. 128-75.000.

McGuffey, James W., to Process Equipment Corporation. Vented inlet for tanks loaded form pressurized tankers. 4,438,861, Cl. 220-86.00R.

McIlroy, Malcolm B.; and Targett, Ralph C., to University of California, The Regents of the. Transcutaneous gas tension measurement using a dual sampling chamber and gas analysis system. 4,439,679, Cl. 250-282.000.

McKay, Dwight L.: *See—*
Bertus, Brent J.; and McKay, Dwight L., 4,439,536, Cl. 502-64.000.

McKenzie, John: *See—*
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.

McLoughlin, Arthur R., to Research Holdings Pty Limited. Method for the production of dry toner for electrostatography using interfacial polycondensation techniques. 4,439,510, Cl. 430-137.000.

McNally, Michael P. Pervious tunnel liner member. 4,439,066, Cl. 405-153.000.

McNeil, Fred A. Triphammer nutcracker. 4,438,687, Cl. 99-571.000.

McNew, George L.; and Thomas, Norman W., to Celanese Corporation. Anti-fungal performance in pelleted seeds through use of hydrophobes. 4,438,593, Cl. 47-57.600.

McVey, Harold C.: *See—*
Smith, Samuel W.; and McVey, Harold C., 4,438,714, Cl. 112-130.000.

Mead Corporation, The: *See—*
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.
Zeiler, Kenneth T., 4,439,776, Cl. 346-75.000.

Mebus, Henry R., to Harris Graphics Corporation. Separator sheet feeder. 4,439,097, Cl. 414-42.000.

Medicoteknisk Institut, Svejsecentralen: *See—*
Northeved, Allan; and Nilsson, Ole, 4,439,037, Cl. 356-402.000.

Meek, Larry F., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Anti-G suit test rig. 4,438,650, Cl. 73-432.0SD.

Mehta, Arun K.: *See—*
Borio, Richard W.; Nelson, Hugh W.; and Mehta, Arun K., 4,438,709, Cl. 110-347.000.

Meijer, Roelf J.; Brown, Robert J.; and Ziph, Benjamin, to Stirling Thermal Motors, Inc. Pressure containment device. 4,439,169, Cl. 464-170.000.

Meining, Hans: *See—*
Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,438,992, Cl. 308-201.000.

Meisser, Marc; Weber, Kurt; and Veyrassat, Louis, to Maillefer S.A. Double wire-winding machine with automatic transfer. 4,438,886, Cl. 242-25.00A.

Melvin, Maxwell V.: *See—*
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., 4,438,725, Cl. 119-4.000.

Mendenhall, Robert L. Recycling apparatus for particulate asphaltic concrete. 4,439,040, Cl. 366-2.000.

Mengon, Albert C., deceased: *See—*
Jaquay, Louis H.; and Mengon, Albert C., deceased, 4,439,307, Cl. 208-11.00R.

Mengon, Mary A., administratrix: *See—*
Jaquay, Louis H.; and Mengon, Albert C., deceased, 4,439,307, Cl. 208-11.00R.

Menin, Albert S., to Bendix Corporation, The. Salmon counter with separate king salmon tabulator. 4,439,844, Cl. 367-87.000.

Menn, Walter A.: *See—*
Close, Anthony D.; and Menn, Walter A., 4,439,815, Cl. 361-386.000.

Mennemann, Karl; and Geiler, Volkmar, to Schott Glaswerke. CdO-ThO_2-Free, highly refractive optical glass. 4,439,531, Cl. 501-75.000.

Menzel, Klaus; Erd, Ludwig; and Marinescu, Marlene, to Vacuumschmelze GmbH. Magnetic drive system for generating linear movements. 4,439,700, Cl. 310-13.000.

Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., to Rib Loc (H.K.) Limited. Machine for forming tubes from a strip. 4,438,643, Cl. 72-49.000.

Merck & Co., Inc.: *See—*
Harwood, Richard J.; and Bondi, Joseph V., 4,439,194, Cl. 604-890.000.
Higuchi, Takeru, 4,439,196, Cl. 604-890.000.
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.
Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, 4,439,623, Cl. 568-393.000.

Mercor Corporation: *See—*
Maggio, Joseph D., 4,438,731, Cl. 123-25.00N.

Mergerian, Dickron: *See—*
Ogland, Jon W.; Bradley, Joe C.; and Mergerian, Dickron, 4,439,016, Cl. 350-356.000.

Merle, Rene; Uecker, Myron; and Kozlik, Robert, to General Mills, Inc. Freeze concentration apparatus. 4,438,634, Cl. 62-123.000.

Merrell Toraude et Compagnie: *See—*
Bey, Philippe; Gerhart, Fritz; and Jung, Michel, 4,439,619, Cl. 560-169.000.

Meschaninova, Tatyana V.: *See—*
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.

Meserve, Robert F., to New England Electric Wire Corporation. Method of producing flat stranded magnetic conductor cable. 4,439,256, Cl. 156-50.000.

Messerschmitt Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, 4,439,684, Cl. 250-396.00R.
Seidel, Albert; and Wolf, Dietmar, 4,439,111, Cl. 417-379.000.

Messina, Giuseppe; Lorenzoni, Loreno; and Fadda, Antonio L., to Euteco Impianti S.p.A. Phenolic antioxidant compositions for organic polymers. 4,439,570, Cl. 524-154.000.

Mester, Heinz: *See—*
Hermeyer, Bernd; Mester, Heinz; and Negle, Hans, 4,439,869, Cl. 378-113.000.

Meyer, John W.; Bonin, John H.; and Daniel, Arnold D., to Lockheed Missiles & Space Co., Inc. Single stage high pressure centrifugal slurry pump. 4,439,200, Cl. 406-99.000.

Mibae, Giro: *See—*
Kawamura, Hiroshi; and Mibae, Giro, 4,439,557, Cl. 523-216.000.

Michel, Helle, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Magnetoresistant transduction device for reading low density coded data. 4,439,671, Cl. 235-449.000.

Michl, Rudy; and Willi, Hanspeter, to Etablissement Dentaire Ivoclar. Photopolymerizable composition, especially for dental purposes. 4,439,380, Cl. 264-16.000.

Midland-Ross Corporation: *See—*
Wang, Robert, 4,439,212, Cl. 55-27.000.

Midrex Corporation: *See—*
Faccone, Dominic M., 4,439,233, Cl. 75-35.000.

Miho, Takuya: *See—*
Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, 4,439,599, Cl. 528-80.000.

Miles Laboratories, Inc.: *See—*
Coan, Michael H.; and Brockway, William J., 4,439,358, Cl. 260-112.00B.

Miller, Cardel E.: *See—*
Waldo, Russell W.; and Miller, Cardel E., 4,438,544, Cl. 16-85.000.

Miller, Michael E., to RCA Corporation. Video disc stylus. 4,439,854, Cl. 369-126.000.

Miller, Stephen C., to Atlantic Richfield Company. Plasma assisted deposition system. 4,439,463, Cl. 427-39.000.

Millhone, Ralph S.: *See—*
Elson, Thomas D.; and Millhone, Ralph S., 4,438,815, Cl. 166-278.000.

Milliken Research Corporation: *See—*
Schroder, William J., 4,438,890, Cl. 242-130.000.

Mills, King L.: *See—*
Cheng, Paul J.; and Mills, King L., 4,439,400, Cl. 422-111.000.

Minalga, Philip F.: *See—*
Dunn, William H.; Edwards, William J.; and Minalga, Philip F., 4,438,715, Cl. 112-158.00B.

Minella, Giancarlo; Motta, Bruno; and Pedone, Egidio, to Rockwell International Corporation. Needle protector for sewing machines. 4,438,717, Cl. 112-227.000.

Mining Supplies Limited: *See—*
Stoppani, Brian R.; Box, Nigel J.; and Phillips, David D., 4,438,837, Cl. 198-735.000.

Minnich, George E., to Singer Company, The. Compensation apparatus for an electrohydraulic servovalve. 4,439,716, Cl. 318-632.000.

Mino, Masao; and Ohno, Takeshi, to Kabushiki Kaisha Mino Seisakusho. Grooved traverse drum for use in drum winder. 4,438,887, Cl. 242-43.200.

Minolta Camera Kabushiki Kaisha: *See—*
Hanamoto, Hiroyuki; and Horie, Yoshihiro, 4,439,143, Cl. 432-36.000.

Mints, Danny K.: *See—*
Loesch, Stanley B.; St. John, James C.; and Mints, Danny K., 4,438,729, Cl. 122-26.000.

Mirataev, Mirabdulla M. O.: *See—*
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Mircheva, Vera V.: *See—*
Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., 4,439,286, Cl. 204-54.00R.

Misawa, Kazuo: *See—*
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.

Mishima, Yasuhiro: *See—*
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.

Mitsubishi Chemical Industries Ltd.: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Baba, Sadaaki, 4,439,803, Cl. 361-63.000.
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.
Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, 4,439,701, Cl. 310-45.000.
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,438,580, Cl. 40-590.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, 4,439,560, Cl. 523-437.000.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, 4,439,237, Cl. 75-243.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.

Mitsui, Yoshiaki. Laminated core manufacturing apparatus. 4,438,558, Cl. 29-732.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,438,566, Cl. 33-178.00R.

Miyakawa, Susumu: *See—*
Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, 4,439,321, Cl. 210-493.100.

Miyake, Makoto: *See—*
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.

Miyauchi, Tetsuya: *See—*
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.

Miyazaki, Naomi: *See—*
Noguchi, Hiroki; Fukami, Akira; and Miyazaki, Naomi, 4,438,543, Cl. 15-250.420.

Miyoshi, Akio: *See—*
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.

Miyoshi, Isao: *See—*
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, 4,438,796, Cl. 152-353.00R.

Miyoshi, Katsuyoshi: *See—*
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.

Mizuno, Ichiro: *See—*
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,438,566, Cl. 33-178.00R.

Mizutani, Yukihisa: *See—*
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

Mo och Domsjo Aktiebolag: *See—*
Samuelson, Hans O., 4,439,271, Cl. 162-19.000.

Moates, Roger D.: *See—*
York, Theodore H.; and Moates, Roger D., 4,439,764, Cl. 340-870.020.

Mobay Chemical Corporation: *See—*
Kelso, Robert G.; Ahuja, Meena S.; and Schmitt, Peter D., 4,439,593, Cl. 528-45.000.

Mobil Oil Corporation: *See—*
Audeh, Costandi A.; and Scott, Eric J. Y., 4,439,310, Cl. 208-111.000.
Canterino, Peter J.; and Allen, Craig E., 4,439,260, Cl. 156-259.000.
Hasenauer, Randal J., 4,439,389, Cl. 264-216.000.
Hein, Carl C.; Wagner, John R., Jr.; and Powell, Mark S., 4,439,493, Cl. 428-414.000.
Kelly, John, Jr.; and Edelbrock, Gregory J., 4,439,069, Cl. 405-195.000.
Martinez, Carlos J.; and Chen, Albert C., 4,439,587, Cl. 525-292.000.
Tobias, Michael A., 4,439,495, Cl. 428-463.000.

Mochow, Charles M. Control package for elongated article. 4,438,845, Cl. 206-366.000.

Moffett, Daniel J. Wood burning stove having water heater. 4,438,755, Cl. 126-34.000.

Mogi, Takao; Morita, Kouji; and Matsunaga, Osamu, to Sony Corporation. AFT Circuit. 4,439,787, Cl. 358-195.100.

Mohler, Galen E., to Cooper LaserSonics. Rigid laser mirror mount and protection assembly. 4,439,862, Cl. 372-107.000.

Moity, Randolph M. Well servicing fluid additive. 4,439,328, Cl. 252-8.5LC.

Molins Limited: *See—*
Dyett, Derek H.; and Harvey, Rex, 4,438,774, Cl. 131-282.000.
Moller, Hinrich; Wallat, Siegfried; and Bartnik, Friedhelm, to Henkel KGaA. Topical preparations for the treatment of seborrhea and process for inhibiting sebum production. 4,439,418, Cl. 424-70.000.
Mominee, David E.: *See—*
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,438,643, Cl. 72-49.000.
Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., 4,438,950, Cl. 283-70.000.
Monsanto Company: *See—*
Dufour, Daniel L.; Harris, Alva F.; and Ott, John B., 4,439,571, Cl. 524-183.000.
Ellis, Earle R., 4,439,483, Cl. 428-287.000.
Hobbs, Charles F., 4,439,626, Cl. 585-435.000.
Hobbs, Charles F., 4,439,627, Cl. 585-435.000.
Hobbs, Charles F., 4,439,628, Cl. 585-435.000.
Vogel, Stephen H., 4,439,453, Cl. 424-324.000.
Montealegre, James; and Rader, James L., to Container Corporation of America. Cushioning carton. 4,438,848, Cl. 206-588.000.
Montedison S.p.A.: *See—*
Cecchin, Giuliano; and Albizzati, Enrico, 4,439,540, Cl. 502-125.000.
Cometti, Giuseppe; and Chiusoli, Gian P., 4,439,618, Cl. 560-56.000.
Monterey Laboratories, Inc.: *See—*
Numbers, Jody L., 4,438,853, Cl. 211-77.000.
Moon, Seaton: *See—*
Treichel, Richard; and Moon, Seaton, 4,438,818, Cl. 172-9.000.
Moran, James P., Jr., to Loctite Corporation. Cure to elastomers compositions. 4,439,600, Cl. 528-392.000.
Moreland, N. Flynt: *See—*
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.
Moretto, Hans-Heinrich: *See—*
Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, 4,439,592, Cl. 528-14.000.
Morgan, Dean T., to Thermo Electron Corporation. Heat-actuated air conditioner/heat pump. 4,438,636, Cl. 62-325.000.
Mori, Sanae, to Daido Metal Company Ltd. Multi-layer bearing with coating of tetrafluoroethylene-perfluoroalkylvinyl either copolymer resin and polytetrafluoroethylene resin. 4,439,484, Cl. 428-318.400.
Moriarty, Maurice J. Piston ring. 4,438,937, Cl. 277-215.000.
Morimoto, Kotaro: *See—*
Suzuki, Tomio; and Morimoto, Kotaro, 4,439,137, Cl. 431-8.000.
Morioka, Yoshihiro: *See—*
Nakamura, Takashi; and Morioka, Yoshihiro, 4,439,713, Cl. 315-370.000.
Nakamura, Takashi; and Morioka, Yoshihiro, 4,439,714, Cl. 315-371.000.
Morita, Kouji: *See—*
Mogi, Takao; Morita, Kouji; and Matsunaga, Osamu, 4,439,787, Cl. 358-195.100.
Morita, Tatsuo: *See—*
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, 4,438,748, Cl. 123-491.000.
Morong, William H., III, to Analog Devices, Incorporated. Apparatus for determining the number of turns of a magnetic coil. 4,439,724, Cl. 324-55.000.
Morris, Bruce E.: *See—*
Reneau, Bobby J.; and Morris, Bruce E., 4,438,901, Cl. 254-29.00A.
Morrison, Ian D.: *See—*
Pan, Frank Y.; Morrison, Ian D.; and Teuscher, Leon A., 4,439,507, Cl. 430-058.000.
Morrison, John D.; and McCheyne, Robert. Pipe enclosure. 4,438,785, Cl. 138-103.000.
Morrison, Rocky V., to Discovision Associates. Hot sprue assembly for an injection molding machine. 4,439,132, Cl. 425-548.000.
Moser, Helmut; and Robinson, Tibor, to Sandoz Ltd. Method for improving the fastness of dyeings with basic dyes on cellulosic substrates. 4,439,208, Cl. 8-556.000.
Moskovsky, Vladislav G.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
Mostek Corporation: *See—*
Terry, Michael B., 4,439,637, Cl. 179-16.00F.
Motomiya, Tetsuo, to Kabushiki Kaisha Endo Seisakusho. Golf club head. 4,438,931, Cl. 273-167.00H.
Motorola, Inc.: *See—*
Bresin, Mark S.; and Gilmore, Peter B., 4,439,654, Cl. 200-302.100.
Budnik, Brian J., 4,439,722, Cl. 323-248.000.
Hoppe, David R., 4,439,046, Cl. 368-120.000.
Stevenson, David W., 4,439,006, Cl. 350-96.200.
Turner, Harvey N., Jr., 4,439,741, Cl. 330-149.000.
Motta, Bruno: *See—*
Minella, Giancarlo; Motta, Bruno; and Pedone, Egidio, 4,438,717, Cl. 112-227.000.
MRJ, Inc.: *See—*
Bradford, James N., 4,439,861, Cl. 372-25.000.
Muckelroy, Naomi, executrix: *See—*
Dowden, William, deceased; and Muckelroy, Naomi, executrix, 4,438,835, Cl. 192-3.00M.
Mueller, Richard W., to Rogers Corporation. Method of reworking printed circuit boards. 4,438,561, Cl. 29-831.000.
Mueller-Schloer, Christian, to Siemens Corporation. Apparatus and method for cryptographic identity verification. 4,438,824, Cl. 178-22.080.
Mullay, John J., to Atlas Powder Company. Solid sensitizers in water gel explosives and method. 4,439,254, Cl. 149-2.000.
Muller, Hans, to Dr. Muller AG. Backwash multiple alluvial filter and method of filtering therewith. 4,439,327, Cl. 210-772.000.
Muller, Kurt: *See—*
Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, 4,438,783, Cl. 138-89.000.
Mulzet, Alfred P., to International Business Machines Corporation. Sealless centrifuge processing channel and tube system. 4,439,178, Cl. 494-85.000.
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased (by Matsumura, Rumiko, administrator), to Mitsubishi Chemical Industries Ltd.; and Nippon Shinyaku Co., Ltd. Glutamine derivatives. 4,439,448, Cl. 424-309.000.
Munter, Ernst A., to Northern Telecom Limited. Digital circuit and method for the detection of call progress tones in telephone systems. 4,439,639, Cl. 179-84.0VF.
Mura, Richard J., to Outboard Marine Corporation. Magneto alternator regulator with tachometer output. 4,439,721, Cl. 322-31.000.
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, to Toho Titanium Co., Ltd. Process for the preparation of catalyst component for the polymerization of olefins. 4,439,537, Cl. 502-105.000.
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatsu, to Tsubakimoto Chain Company. Truck conveyor. 4,438,701, Cl. 104-172.00B.
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Metal vapor discharge lamp. 4,439,711, Cl. 313-487.000.
Murata Manufacturing Co., Ltd.: *See—*
Takaya, Tadashi, 4,439,640, Cl. 179-110.00A.
Murray, Richard C.: *See—*
Gibbard, Henry F.; Murray, Richard C.; and Cech, Jay M., 4,439,500, Cl. 429-27.000.
Muryoi, Takeshi, to Nippon Kogaku K.K. Zoom lens barrel with single-ring continuous focusing. 4,439,019, Cl. 350-430.000.
Muryoi, Takeshi, to Nippon Kogaku K.K. Diaphragm driving device for a lens barrel. 4,439,031, Cl. 354-274.000.
Muskulus, Willi: *See—*
Fichtner, Karl-Heinz; Kramer, Willi; and Muskulus, Willi, 4,439,100, Cl. 414-115.000.
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cephalosporin derivative and pharmaceutical composition containing the derivative. 4,439,434, Cl. 424-246.000.
Mutschler, Ulrich. Device for selecting the hooks of a weaving mechanism by successively feeling the two halves of a card of the Jacquard type. 4,438,787, Cl. 139-329.000.
Myers, Kenneth J. Wick bar lift. 4,438,592, Cl. 47-1.500.
Myers, Ronald W., to AMP Incorporated. Modular plug-dial modular jack adaptor. 4,438,998, Cl. 339-154.00A.
N.K.F. Groep B.V.: *See—*
Grooten, Albertus T. M., 4,439,633, Cl. 174-106.00R.
Nabeshima, Daiki, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotational speed controlling apparatus for recording disc. 4,439,849, Cl. 369-50.000.
Nagubandi, Sreeramulu, to Stauffer Chemical Company. Process for preparing phosphonomethylated amino acids. 4,439,373, Cl. 260-502.50F.
Nagy, Gabor: *See—*
Sciola, Joseph; and Nagy, Gabor, 4,438,554, Cl. 29-57.000.
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, to Beton- es Vasbetonipari Muvek. Apparatus for producing concrete elements of high dimensional accuracy. 4,439,131, Cl. 425-436.00R.
Naito, Hideki: *See—*
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, 4,439,513, Cl. 430-203.000.
Naito, Sachio: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,439,417, Cl. 424-70.000.
Nakagawa, Masahiro: *See—*
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.
Nakagawa, Mitsuo, to Honda Giken Kogyo Kabushiki Kaisha. Air cleaner device in motorcycles. 4,438,828, Cl. 180-219.000.
Nakahara, Masao: *See—*
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,438,566, Cl. 33-178.00R.
Nakahashi, Ken-ichi: *See—*
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, 4,439,023, Cl. 351-206.000.
Nakajima, Isao: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.
Nakamura, Hitoshi: *See—*
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.

Nakamura, Michio: *See—*
Komatsu, Shigeru; and Nakamura, Michio, 4,438,556, Cl. 29-576.00B.
Nakamura, Shiro: *See—*
Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, 4,439,701, Cl. 310-45.000.
Nakamura, Takashi; and Morioka, Yoshihiro, to Sony Corporation. Deflection control circuit for image pick-up tube. 4,439,713, Cl. 315-370.000.
Nakamura, Takashi; and Morioka, Yoshihiro, to Sony Corporation. Deflection control circuit. 4,439,714, Cl. 315-371.000.
Nakanishi, Kiyoshi: *See—*
Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,438,741, Cl. 123-188.00M.
Nakao, Sho: *See—*
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.
Nakashima, Naoki: *See—*
Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, 4,439,599, Cl. 528-80.000.
Nakayama, Kazuaki, to Pioneer Electronic Corporation. Amplifier circuit. 4,439,745, Cl. 330-296.000.
Nakura, Toshiyuki: *See—*
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.
Naldi, Lawrence J.: *See—*
Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, 4,439,623, Cl. 568-393.000.
Namba, Yuzuru; and Aoyagi, Kenichi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,438,742, Cl. 123-308.000.
Namba, Yuzuru; and Aoyagi, Kenichi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,438,743, Cl. 123-308.000.
Nanny, Walter C.; Stewart, Thomas L.; and Hemphill, Dean P., to Shell Oil Company. Method for sensing and remotely controlling a tool to workpiece spatial relationship. 4,438,754, Cl. 125-14.000.
Nartowski, Andre, to Regie Nationale des Usines Renault. Carburetor for an internal combustion motor. 4,439,377, Cl. 261-52.000.
Nater, Charles, to Fuji Photo Film Co., Ltd. Thin film head array. 4,439,793, Cl. 360-121.000.
National ICEE Corporation: *See—*
King, Michael H.; Poppe, Lee W., Jr.; and Wurtenberg, Oscar A., 4,438,682, Cl. 99-323.700.
Nauchno Proizvodstvennoe Obiedienenie Po Toplivnoi Apparature Dvigatelei: *See—*
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.
Naumenko, Nikolai N.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
NCR Corporation: *See—*
Aiena, Peter P.; and Schulz, Eduard, 4,439,837, Cl. 364-900.000.
Hutcheon, Alfred J., 4,438,704, Cl. 109-44.000.
Lawter, Raymond L., 4,439,051, Cl. 400-605.000.
Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek: *See—*
Schwippert, Guusstaaf A., 4,438,749, Cl. 123-494.000.
Negele, Richard; and Birkenmaier, Wilhelm, to SKF Kugellagerfabriken GmbH. Ball bearing. 4,438,989, Cl. 308-184.00R.
Negle, Hans: *See—*
Hermeyer, Bernd; Mester, Heinz; and Negle, Hans, 4,439,869, Cl. 378-113.000.
Neilson, William J.: *See—*
Garner, Claude R.; and Neilson, William J., 4,438,934, Cl. 277-92.000.
Nelson, Delmer R., to A. O. Smith Harvestore Products, Inc. Method and apparatus for leveling a storage structure. 4,438,607, Cl. 52-126.100.
Nelson, Hugh W.: *See—*
Borio, Richard W.; Nelson, Hugh W.; and Mehta, Arun K., 4,438,709, Cl. 110-347.000.
Nelson, Lorne W.; and Torborg, Ralph H., to Honeywell Inc. Furnace stack damper control apparatus. 4,439,139, Cl. 431-20.000.
Nelson, Priscilla E. Exfoliator disc. 4,438,767, Cl. 128-304.000.
Neomed Inc.: *See—*
Ecanow, Charles S.; and Ecanow, Bernard, 4,439,424, Cl. 424-153.000.
Nesseth, Clifford B.: *See—*
Nesseth, Clinton A.; and Nesseth, Clifford B., 4,439,115, Cl. 417-460.000.
Nesseth, Clinton A.; and Nesseth, Clifford B., to Butler Manufacturing Company. Manure transfer system having a pull pump. 4,439,115, Cl. 417-460.000.
Nestler, Bert: *See—*
Fitterer, Horst; Koob, Hubert; and Nestler, Bert, 4,438,892, Cl. 242-199.000.
Neuhauser, Werner: *See—*
Hagn, Bruno; Neuhauser, Werner; and Wimmer, Robert, 4,439,013, Cl. 350-307.000.
Neveri, Istvan: *See—*
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.
New England Electric Wire Corporation: *See—*
Meserve, Robert F., 4,439,256, Cl. 156-50.000.
Newkirk, Larry: *See—*
Newkirk, Martha; and Newkirk, Larry, 4,439,636, Cl. 179-7.10R.
Newkirk, Martha; and Newkirk, Larry. Credit card actuated telecommunication access network. 4,439,636, Cl. 179-7.10R.
Nguyen, Xuan T. Pulp mill residual liquor recovery process. 4,439,272, Cl. 162-30.110.
Nicoloso, Dante: *See—*
Thuries, Edmond; Nicoloso, Dante; and Pham Van, Doan, 4,439,651, Cl. 200-144.0AP.
Niedermaier, Arnold: *See—*
Maier, Peter; and Niedermaier, Arnold, 4,438,695, Cl. 101-153.000.
Nielson, Erik I.; and Hope, Robert B., to Schlegel Corporation. Urethane bonded windshield dam. 4,438,609, Cl. 52-208.000.
Niemann, Heinz, to ESGE-Marby GmbH & Co., KG. Bicycle luggage carrier and reflector structure combination. 4,439,009, Cl. 350-99.000.
Nifco Inc.: *See—*
Omata, Nobuaki, 4,438,552, Cl. 24-297.000.
Nihon Chemical Plant Consultant Co., Ltd.: *See—*
Maruko, Saburo, 4,439,020, Cl. 350-443.000.
Nihon Dempa Kogyo Company Limited: *See—*
Matsuoka, Youichi; and Tajika, Fumitaka, 4,439,706, Cl. 310-353.000.
Nihon Medi-Physics Company, Ltd.: *See—*
Hayashi, Miki; Takahashi, Keietsu; and Hazue, Masaaki, 4,439,413, Cl. 424-1.100.
Nihon Seikan Kabushiki Kaisha: *See—*
Kawamata, Kiyoshi, 4,438,721, Cl. 118-249.000.
Niimura, Kouichi: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.
Nike, Inc.: *See—*
Johnson, Jeffrey O., 4,438,574, Cl. 36-45.000.
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., to Proizvodstvennoe Geologicheskoe Obiedinenie "Tsentrogeologia". Device for applying plugging mix to well walls. 4,438,813, Cl. 166-177.000.
Nilsson, Ole: *See—*
Northeved, Allan; and Nilsson, Ole, 4,439,037, Cl. 356-402.000.
Nimerick, Kenneth H.; and Copeland, Claude T., to Dow Chemical Company, The. Composition and method for preventing freezing together of various surfaces. 4,439,337, Cl. 252-70.000.
Nimura, Youichi: *See—*
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.
Nintendo Co., Ltd.: *See—*
Yokoi, Gunpei; and Okada, Satoru, 4,438,926, Cl. 273-85.00G.
Nippon Electric Co., Ltd.: *See—*
Akamatsu, Yoshiyuki; and Shimogawara, Jun, 4,438,915, Cl. 271-9.000.
Takamatsu, Ryoichi, 4,439,843, Cl. 365-218.000.
Nippon Kogaku K.K.: *See—*
Muryoi, Takeshi, 4,439,019, Cl. 350-430.000.
Muryoi, Takeshi, 4,439,031, Cl. 354-274.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.
Nippon Oil and Fats Co., Ltd.: *See—*
Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, 4,439,555, Cl. 523-122.000.
Nippon Shinyaku Co., Ltd.: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.
Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,707, Cl. 313-130.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,708, Cl. 313-140.000.
Noguchi, Hiroki; Fukami, Akira; and Miyazaki, Naomi, 4,438,543, Cl. 15-250.420.
Ozaki, Tadashi; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,438,647, Cl. 73-117.300.
Nippon Steel Corporation: *See—*
Shimoyama, Yoshiaki; Tachino, Ichiro; and Koga, Shigenobu, 4,439,251, Cl. 148-31.550.
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.
Nippon Suisan Kabushiki Kaisha: *See—*
Kammuri, Youichi; Yamauchi, Takafumi; and Takahashi, Toshikatsu, 4,439,456, Cl. 426-276.000.
Nippon Telecommunication Engineering Company Limited: *See—*
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.
Nippondenso Co., Ltd.: *See—*
Imai, Takeshi; and Kako, Naohiro, 4,439,255, Cl. 156-49.000.

Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, 4,439,321, Cl. 210-493.100.

Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, to Sanofi. Amidobenzamides, their salts and pharmaceutical compositions containing them. 4,439,444, Cl. 424-285.000.

Nishida, Minoru: *See—*
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,707, Cl. 313-130.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,708, Cl. 313-140.000.

Nishigaki, Yuji: *See—*
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,439,504, Cl. 430-42.000.

Nishikawa, Takuji, to Matsushita Electric Industrial Co., Ltd. Image synthesizing apparatus. 4,439,783, Cl. 358-22.000.

Nishimaki, Tsunetoshi: *See—*
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, 4,438,972, Cl. 296-223.000.

Nishimura, Koji, to Vital Kogyo Kabushiki Kaisha. Device for mounting and dismounting chain blocks. 4,438,905, Cl. 254-389.000.

Nishimura, Yuji: *See—*
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.

Nissan Motor Co., Ltd.: *See—*
Hara, Seinosuke; Ofuji, Hiromichi; and Gotou, Takaharu, 4,438,736, Cl. 123-90.160.
Hayashi, Yoshimasa, 4,438,734, Cl. 123-90.270.
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, 4,438,748, Cl. 123-491.000.
Kamijo, Ken; and Maeda, Kouzo, 4,438,969, Cl. 296-146.000.
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, 4,438,972, Cl. 296-223.000.
Yamaguchi, Hiroshi; and Ikeura, Kenji, 4,439,833, Cl. 364-431.090.

Nissan Motor Corp.: *See—*
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, 4,438,894, Cl. 248-73.000.

Nitzberg, Leonard R., to Patent Development Ltd. Method for remote positioning of explosive charges in mining voids. 4,438,699, Cl. 102-313.000.

NL Industries, Inc.: *See—*
House, Roy F.; and Hoover, Lonnie D., 4,439,333, Cl. 252-8.55R.
Schaeper, Gary R.; and Olson, Richard A., 4,438,900, Cl. 251-1.00B.

Nobis, Dieter, to Deere & Company. Shift device for the drive of a utility vehicle. 4,438,657, Cl. 74-477.000.

Noffke, Roy O.; and Engel, Thomas G., to Appleton Papers, Inc. Slitter mounting bracket. 4,438,673, Cl. 83-502.000.

Nogi, Tatsuo: *See—*
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, 4,439,322, Cl. 210-500.200.

Noguchi, Hiroki; Fukami, Akira; and Miyazaki, Naomi, to Nippon Soken, Inc. Windshield wiper device. 4,438,543, Cl. 15-250.420.

Noguchi, Kosaku, to Koa Oil Company, Limited. Coke calcining apparatus. 4,439,275, Cl. 202-100.000.

Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Motor power control circuit for A.C. induction motors. 4,439,718, Cl. 318-729.000.

Nomura, Yoshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Slide pin device in a floating caliper type disc brake. 4,438,832, Cl. 188-73.450.

Noonan, Daniel T.: *See—*
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.

Norioka, Setsuo; and Date, Naoki, to Jeol Ltd. Charged particle beam scanning device. 4,439,681, Cl. 250-310.000.

Northern Telecom Limited: *See—*
Munter, Ernst A., 4,439,639, Cl. 179-84.0VF.

Northeved, Allan; and Nilsson, Ole, to Medicoteknisk Institut, Svejsecntralen. Process for optically determining the meat-to-lard-ratio in for instance slaughtered animals. 4,439,037, Cl. 356-402.000.

Norwich Eaton Pharmaceuticals, Inc.: *See—*
Gray, Joseph E., 4,439,429, Cl. 424-285.000.
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,439,608, Cl. 546-283.000.

Novikov, Evgeny V.: *See—*
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.

Novo Industri A/S: *See—*
Villettaz, Jean-Claude, 4,439,455, Cl. 426-12.000.

Noyori, Tatsuhiko: *See—*
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.

NSK-Warner K.K.: *See—*
Imai, Hironobu, 4,438,551, Cl. 24-68.0SB.

Numbers, Jody L., to Monterey Laboratories, Inc. Rotating storage rack for baby food containers. 4,438,853, Cl. 211-77.000.

N.V. Nederlandsche Apparatenfabriek Nedap: *See—*
De Jong, Hendrik J., 4,438,642, Cl. 70-232.000.

O'Blasny, Richard H., to Delta Central Refining, Inc. Rerefining used lubricating oil with hydride reducing agents. 4,439,311, Cl. 208-179.000.

O'Brien, Edward J.; Paulsen, Gary A.; and Filicicchia, Daniel J., to Spraying Systems Company. Quick disconnect nozzle. 4,438,884, Cl. 239-600.000.

Occidental Chemical Corporation: *See—*
Swarup, Rajeshwar, 4,439,296, Cl. 204-253.000.

Occidental Research Corporation: *See—*
Baughman, David R.; and Bergeson, Jerry R., 4,438,976, Cl. 299-4.000.

O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., to Olin Corporation. Modified polyurethane liquid polymer compositions. 4,439,576, Cl. 524-425.000.

O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., to Olin Corporation. Modified polyurethane liquid polymer compositions. 4,439,577, Cl. 524-425.000.

Oda, Kiyoshi, to Yoshida Kogyo K. K. Lockable slider for slide fasteners. 4,438,550, Cl. 70-57.000.

Odessky Politekhnichesky Institut: *See—*
Belikov, Viktor T.; Ivlev, Anatoly D.; and Chelak, Viktor G., 4,439,702, Cl. 310-80.000.

Oe, Kunio: *See—*
Asai, Koichi; Oe, Kunio; and Tuda, Mamoru, 4,438,559, Cl. 29-740.000.

Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, to Aktiengesellschaft Adolph Saurer AG. Weft thread-selection apparatus for a weaving machine. 4,438,791, Cl. 139-453.000.

Ofuji, Hiromichi: *See—*
Hara, Seinosuke; Ofuji, Hiromichi; and Gotou, Takaharu, 4,438,736, Cl. 123-90.160.

Ogasawara, Hiroomi. Microdisplacement detector. 4,439,725, Cl. 324-61.00R.

Ogata, Minoru: *See—*
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, 4,438,918, Cl. 271-251.000.

Ogland, Jon W.; Bradley, Joe C.; and Mergerian, Dickron, to Westinghouse Electric Corp. Optical beam deflection system. 4,439,016, Cl. 350-356.000.

Ohie, Tomonori, to Diesel Kiki Co., Ltd. Fuel injection pump. 4,439,116, Cl. 417-499.000.

Ohki, Nobutaka; Kawata, Ken; and Itoh, Isamu, to Fuji Photo Film Co., Ltd. Silver-halide photographic light-sensitive material. 4,439,519, Cl. 430-405.000.

Ohmori, Taiji: *See—*
Sato, Makoto; Tsuchiya, Yoshikazu; and Ohmori, Taiji, 4,439,832, Cl. 364-426.000.

Ohno, Takeshi: *See—*
Mino, Masao; and Ohno, Takeshi, 4,438,887, Cl. 242-43.200.

Ohta, Masafumi; and Sasaki, Masaomi, to Ricoh Co., Ltd. Multilayer electrophotographic element containing a trisazo charge carrier generating substance and an anthracene or divinyl benzene charge carrier transfer substance. 4,439,506, Cl. 430-58.000.

Ohta, Minoru: *See—*
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,707, Cl. 313-130.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,708, Cl. 313-140.000.

Ohta, Mutsuru: *See—*
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, 4,439,811, Cl. 361-313.000.

Ohta, Yoshikatsu: *See—*
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.

Ohta, Yoshitsugu: *See—*
Furukawa, Hajime; and Ohta, Yoshitsugu, 4,439,784, Cl. 358-86.000.

Okabe, Yoshio: *See—*
Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,438,739, Cl. 123-90.550.

Okada, Satoru: *See—*
Yokoi, Gunpei; and Okada, Satoru, 4,438,926, Cl. 273-85.00G.

Okajima, Hidekazu; and Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Zoom lens structure. 4,439,018, Cl. 350-430.000.

Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, to Mitsubishi Denki Kabushiki Kaisha. Rotor of a superconductive rota y electric machine. 4,439,701, Cl. 310-45.000.

Okamoto, Yukio: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.

Okamura, Masatoshi; and Shibaj, Haruo, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,438,860, Cl. 220-4.00B.

Okumura, Takeo: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,439,417, Cl. 424-70.000.

Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for controlling a flow in a helical type intake port. 4,438,741, Cl. 123-188.00M.

Okunami, Hideo: *See—*
Long, Gary R.; and Okunami, Hideo, 4,439,129, Cl. 425-352.000.

Okura, Zenichi; and Kohmoto, Shinsuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera with information transmitting elements. 4,439,029, Cl. 354-479.000.

Olin Corporation: *See—*
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,439,298, Cl. 204-258.000.
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., 4,439,297, Cl. 204-257.000.

O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,576, Cl. 524-425.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,577, Cl. 524-425.000.

Olschewski, Armin; Kispert, Klaus; and Meining, Hans, to SKF Kugellagerfabriken GmbH. Two-piece rolling bearing cage. 4,438,992, Cl. 308-201.000.

Olson, Alvin O. Sandpaper cleaning device. 4,438,601, Cl. 51-262.00A.

Olson, Daniel R., to General Electric Company. Silyl-polyacrylates for polycarbonate substrates. 4,439,494, Cl. 428-412.000.

Olson, Richard A.: *See—*
Schaeper, Gary R.; and Olson, Richard A., 4,438,900, Cl. 251-1.00B.

Olsson, Karl B., to Mareck B.V. Combustion chamber for pulsating combustion. 4,439,134, Cl. 431-1.000.

Olster, Elliot F.: *See—*
Ferris, Donald L.; Olster, Elliot F.; and Marchitto, Michael J., 4,439,106, Cl. 416-61.000.

Olszewski, Walter J.; Pahade, Ravindra F.; and Ziemer, John H., to Union Carbide Corporation. Dual column high pressure nitrogen process. 4,439,220, Cl. 62-31.000.

Olympia Werke AG: *See—*
Klingenberg, Wolfgang, 4,439,838, Cl. 364-900.000.

Olympus Optical Co., Ltd.: *See—*
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, 4,439,023, Cl. 351-206.000.
Ueda, Yasuhiro, 4,439,030, Cl. 354-62.000.

Omata, Nobuaki, to Nifco Inc. Plastic fastener. 4,438,552, Cl. 24-297.000.

OMI International Corporation: *See—*
Tomaszewski, Thaddeus W., 4,439,285, Cl. 204-51.000.
Verberne, Wim J. C.; and Hadley, John S., 4,439,283, Cl. 204-38.00R.

Ono, Minoru: *See—*
Tamagawa, Shigehisa; Fuchizawa, Tetsuro; and Ono, Minoru, 4,439,496, Cl. 428-513.000.

Ono, Takeo: *See—*
Asaoka, Sachio; Ono, Takeo; and Shiroto, Yoshimi, 4,439,312, Cl. 208-216.0PP.

Ontario Cancer Institute: *See—*
Archer, Michael C.; and Jain, Kanti, 4,439,521, Cl. 435-1.000.

Ooms, Julius, to Procter & Gamble Company, The. Textile treatment compositions. 4,439,330, Cl. 252-8.800.

Operti, Claudio: *See—*
Schalk, Bartje; Operti, Claudio; and Bras, Johan C., 4,438,990, Cl. 308-187.100.

Optische Werke G. Rodenstock: *See—*
Wilms, Karl-Heinz, 4,439,026, Cl. 351-219.000.

Orain, Michel, to Spicer, Glaenzer. Coupling between two rotary shafts. 4,439,168, Cl. 464-69.000.

Orav, Tonu: *See—*
Hintsa, Roy A.; and Orav, Tonu, 4,438,613, Cl. 52-484.000.

Orenco Systems, Inc.: *See—*
Ball, Harold L., 4,439,323, Cl. 210-608.000.

Orikasa, Shoji: *See—*
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.

Orlowski, Gerald J.; and Adamson, Robert S., to Armour Food Company. Apparatus for separating nested cup-shaped containers. 4,439,101, Cl. 414-126.000.

Orr, John R.: *See—*
Riddle, Michael H.; and Orr, John R., 4,439,804, Cl. 361-92.000.

Orthodyne Electronics Corporation: *See—*
Smith, Michael C.; and Smith, Hal W., Jr., 4,438,880, Cl. 228-1.00A.

Osakabe, Kuniharu; Yoshimi, Isao; and Fukuda, Kyohei, to Hitachi, Ltd. Electromagnetic focusing cathode-ray tube. 4,439,710, Cl. 313-414.000.

Osborne, Trevor R., to Scott Bader Company Limited. Moulding compositions. 4,439,559, Cl. 523-513.000.

Oshima, Hirofumi: *See—*
Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, 4,439,402, Cl. 422-159.000.

Ost, Christian: *See—*
Herrmann, Fritz; and Ost, Christian, 4,439,279, Cl. 204-1.500.

Osthoff, Herbert. Cover grating for manure removal canals in stables. 4,438,726, Cl. 119-28.000.

O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., to ICI Australia Limited; and State of South Australia. Method of growing molluscs. 4,438,725, Cl. 119-4.000.

Oswald, Peter, to Rieter Machine Works Ltd. Gripper apparatus on a ring spinning or ring twisting machine. 4,438,623, Cl. 57-275.000.

Otid Engineering Corporation: *See—*
Patel, Dhirajlal C., 4,438,811, Cl. 166-123.000.

Otsu, Jun: *See—*
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.

Ott, John B.: *See—*
Dufour, Daniel L.; Harris, Alva F.; and Ott, John B., 4,439,571, Cl. 524-183.000.

Outboard Marine Corporation: *See—*
Burmeister, Dennis N.; Busse, Thomas A.; and Jones, Wesley C., 4,439,163, Cl. 440-86.000.
Mura, Richard J., 4,439,721, Cl. 322-31.000.

Outinord St. Amand S.A.: *See—*
van der Gaarden, Cornelis, 4,439,064, Cl. 405-150.000.

Ovard, John C. Cooling tower splash bar method and apparatus. 4,439,378, Cl. 261-111.000.

Ovodenko, Maxim B.: *See—*
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.

Owen, David A. A.: *See—*
Ganellin, Charon R.; Ife, Robert J.; and Owen, David A. A., 4,439,435, Cl. 424-251.000.

Owen, Douglas B., to D. W. Zimmerman Mfg., Inc. Liquid pump with flexible bladder member. 4,439,113, Cl. 417-394.000.

Owens-Illinois, Inc.: *See—*
Appleyard, John A., 4,439,394, Cl. 264-535.000.
Chang, Long F., 4,438,856, Cl. 215-12.00R.

Oyama, Shigeaki: *See—*
Kohzai, Yoshinori; and Oyama, Shigeaki, 4,439,703, Cl. 310-186.000.

Ozaki, Tadashi; Hattori, Tadashi; and Yamaguchi, Hiroaki, to Nippon Soken, Inc. Ignition range detector for internal combustion engines. 4,438,647, Cl. 73-117.300.

P.I.V. Antrieb Werner Reimers, GmbH & Co. KG: *See—*
Steuer, Herbert K., 4,439,170, Cl. 474-28.000.

Paccar Inc.: *See—*
Boucher, Graeme B., 4,438,970, Cl. 296-190.000.
Stephens, Donald L., 4,438,825, Cl. 180-89.120.

Pace Incorporated: *See—*
Sylvia, Frank, 4,439,667, Cl. 219-230.000.

Pacific Atlantic Products, Ltd.: *See—*
Lummis, Michael G., 4,438,582, Cl. 43-27.400.

Pack Image, Inc.: *See—*
Stone, Orison W., 4,438,849, Cl. 206-592.000.

Padias, Anne B.: *See—*
Hall, Henry K., Jr.; and Padias, Anne B., 4,439,597, Cl. 528-272.000.

Paglia, Richard, to Polaroid Corporation. Ultrasonic transducer for use in a vibratory environment. 4,439,641, Cl. 179-111.00R.

Pahade, Ravindra F.: *See—*
Olszewski, Walter J.; Pahade, Ravindra F.; and Ziemer, John H., 4,439,220, Cl. 62-31.000.

Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, to Boehringer Mannheim GmbH. Composition and method for the detection of hydrogen peroxide. 4,439,527, Cl. 436-135.000.

Paladino, Anthony, to Timberland Equipment Limited. Seedling planter. 4,438,710, Cl. 111-3.000.

Palmer, John L.: *See—*
Blackshear, Perry J.; Palmer, John L.; and Rohde, Thomas D., 4,439,181, Cl. 604-56.000.

Pan, Frank Y.; Morrison, Ian D.; and Teuscher, Leon A., to Xerox Corporation. Layered photoresponsive imaging device with photogenerating pigments dispersed in a polyhydroxy ether composition. 4,439,507, Cl. 430-058.000.

Pantaleon-Stemberg, Gerd: *See—*
Eckstein, William; and Pantaleon-Stemberg, Gerd, 4,438,966, Cl. 292-259.00R.

Papis, Thaddeus. Tapered plate annular heat exchanger. 4,438,809, Cl. 165-166.000.

Papp, Laszlo: *See—*
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.

Papst-Motoren GmbH & Co. KG: *See—*
Schuh, Bernhard, 4,438,542, Cl. 360-97.000.

Paredes, Candelario. Seat and cover assembly for a toilet bowl. 4,438,535, Cl. 4-234.000.

Parello, Joseph: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.

Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., to Woodland International Corporation. Method of using an areal array of tubular electron sources. 4,438,557, Cl. 29-576.00B.

Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., to Crosfield Electronics Limited. Gravure color printing press. 4,438,694, Cl. 101-152.000.

Parks, Kenneth L., to Agrico Chemical Company. Method for improving filterability of gypsum and wet process phosphoric acid. 4,439,407, Cl. 423-317.000.

Parlman, Robert M.; and Bresson, Clarence R., to Phillips Petroleum Company. Flotation reagents. 4,439,314, Cl. 209-166.000.

Pask, George; and Golton, Howard J., to Rolls-Royce Limited. Annular seal for a gas turbine engine. 4,438,939, Cl. 277-236.000.

Patel, Dhirajlal C., to Otid Engineering Corporation. Latch for use in a well. 4,438,811, Cl. 166-123.000.

Patel, Gordhanbhai N.; and Ivory, Dawn M., to Allied Corporation. Polydiacetylene gels. 4,439,346, Cl. 252-408.100.

Patent Development Ltd.: *See—*
Nitzberg, Leonard R., 4,438,699, Cl. 102-313.000.

Patentex S.A.: *See—*
Lacoste, Francois R.; and Biard, Francoise M. H., 4,439,471, Cl. 428-35.000.

Paul Kiefel GmbH: *See—*
Schaeffer, Gerard; and Hoffarth, Dieter, 4,439,041, Cl. 366-144.000.

Paulsen, Gary A.: *See—*
O'Brien, Edward J.; Paulsen, Gary A.; and Filicicchia, Daniel J., 4,438,884, Cl. 239-600.000.

Pavone, Peter J.; and Van Demark, Richard D., to International Business Machines Corporation. Composite pallet. 4,439,261, Cl. 156-345.000.

PCUK Produits Chimiques Ugine Kuhlmann: *See—*
Foulletier, Louis, 4,439,534, Cl. 502-8.000.

PDA Engineering: *See—*
Schutzler, Jerome C.; and Jechel, Kurt E., 4,439,392, Cl. 264-511.000.

Peake, Steven L.: *See—*
Raghu, Sivaraman; Proverb, Robert J.; and Peake, Steven L., 4,439,611, Cl. 548-533.000.

Pearson, Arthur D.: *See—*
Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,439,007, Cl. 350-96.300.

Pearson, Robert D.: *See—*
Sullivan, John L., Jr.; Pearson, Robert D.; and Youngblood, Donald A., 4,438,698, Cl. 101-287.000.

Peat, Raymond F. Treatment of progesterone deficiency and related conditions with a stable composition of progesterone and tocopherols. 4,439,432, Cl. 424-240.000.

Peavey Electronics Corp.: *See—*
Sondermeyer, Jack C., 4,439,742, Cl. 330-262.000.

PEDCO: *See—*
Congdon, Jon M., 4,439,032, Cl. 354-293.000.

Pedone, Egidio: *See—*
Minella, Giancarlo; Motta, Bruno; and Pedone, Egidio, 4,438,717, Cl. 112-227.000.

Peelle Company, The: *See—*
Almagor, Daniel, 4,439,103, Cl. 414-661.000.

Peil, Archie W.: *See—*
Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., 4,439,167, Cl. 464-20.000.

Peleg, Yigal, to Stouffer Corporation, The. Apparatus and method for the reconstitution of frozen foods in a microwave oven. 4,439,656, Cl. 219-10.55E.

Pelletier, Joel A.; and Breuillard, Robert, to U.S. Philips Corporation. Interface circuits between injection-logic layers which are superimposed and biassed with different voltages. 4,439,695, Cl. 307-477.000.

Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, to Norwich Eaton Pharmaceuticals, Inc. 2-[2-(5-Phenylfurfurylamino)ethyl]pyridines. 4,439,608, Cl. 546-283.000.

Pelz, Herbert, to Keiper Automobiltechnik GmbH & Co. KG. Swivel joint, especially for seats with adjustable backrest. 4,439,053, Cl. 403-101.000.

Pendergrass, Joseph C. Solar assisted heat pump heating system. 4,438,881, Cl. 237-2.00B.

Pennwalt Corporation: *See—*
Groepper, Jurgen, 4,439,388, Cl. 264-130.000.

Perez, Simon A., to Innovatec, Inc. Apparatus for mixing a comminuted food material and a liquid. 4,438,686, Cl. 99-353.000.

Perkins, Dale J.; and Lincicum, Leon L. Transport bracket for outboard motors. 4,438,899, Cl. 248-642.000.

Perlstein, Jerome H.; and Haley, Neil F., to Eastman Kodak Company. Electrical conductive compositions. 4,439,505, Cl. 430-58.000.

Perrott, Lynn F.: *See—*
Riley, Joseph L., 4,439,094, Cl. 414-786.000.

Perryman, John W., to Combustion Engineering, Inc. Electrostatic precipitator having apparatus for sensing electrostatic field strengths. 4,439,216, Cl. 55-104.000.

Pete, Sandor: *See—*
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Peters, Albin, to Wico Corporation. Drop target with cam means. 4,438,929, Cl. 273-127.00R.

Peters, Albin, to Wico Corporation. Rollover switch apparatus. 4,438,930, Cl. 273-127.00R.

Peters, William S., to Pierce Manufacturing, Inc. Paddle operated vehicle latch. 4,438,964, Cl. 292-216.000.

Petersen, Gerald W., to Zehntel, Inc. Digital in-circuit tester. 4,439,858, Cl. 371-20.000.

Petersen, Hans C.; and Sorensen, Soren N., to Danfoss A/S. Gerotor machine with commutating valving through the ring gear. 4,439,119, Cl. 418-61.00B.

Pettersson, Helge, to Gislaved Aktiebolag. Ground-engaging contact element for endless-track vehicles. 4,438,982, Cl. 305-35.0EB.

Pettibone Corporation: *See—*
Reilly, Clair H.; and Reilly, Robert M., 4,439,056, Cl. 404-90.000.

Pfaff Industriemaschinen GmbH: *See—*
Dietrich, Herbert, 4,438,711, Cl. 112-16.000.

Pfefferle, William C., to United States of America, Environmental Protection Agency. Thermal shock resistant spherical plate structures. 4,439,136, Cl. 431-7.000.

Pfeifer, Werner: *See—*
Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus, 4,439,403, Cl. 422-159.000.

Pflaugner, Josef: *See—*
Adelski, Hans-Joachim; and Pflaugner, Josef, 4,439,704, Cl. 310-211.000.

Pham Van, Doan: *See—*
Thuries, Edmond; Nicoloso, Dante; and Pham Van, Doan, 4,439,651, Cl. 200-144.0AP.

Philip Morris Incorporated: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Phillips, David D.: *See—*
Stoppani, Brian R.; Box, Nigel J.; and Phillips, David D., 4,438,837, Cl. 198-735.000.

Phillips Petroleum Company: *See—*
Bertus, Brent J.; and McKay, Dwight L., 4,439,536, Cl. 502-64.000.
Cheng, Paul J.; and Mills, King L., 4,439,400, Cl. 422-111.000.
Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., 4,439,523, Cl. 435-243.000.
McDaniel, Max P.; and Stricklen, Phil M., 4,439,543, Cl. 502-228.000.
Parlman, Robert M.; and Bresson, Clarence R., 4,439,314, Cl. 209-166.000.
Shay, Lucas K.; and Wegner, Eugene H., 4,439,525, Cl. 435-247.000.

Phoenix Manufacturing, Inc.: *See—*
Koble, Robert L., Jr., 4,439,375, Cl. 261-29.000.

Piegay, Yves, to Skis Rossignol S.A. Slalom ski with vibration damper. 4,438,946, Cl. 280-602.000.

Pierce Manufacturing, Inc.: *See—*
Peters, William S., 4,438,964, Cl. 292-216.000.

Pierrel S.p.A.: *See—*
Toscano, Luciano; and Cappelletti, Leonardo M., 4,439,426, Cl. 424-181.000.

Pieters, Hans-Theo: *See—*
Konigs, Heinz; Kremer, Hubert; and Pieters, Hans-Theo, 4,438,786, Cl. 139-59.000.

Pigasse, Daniel, to I.C.I. Francolor S.A. Copper phthalocyanine pigments their preparation process and their use. 4,439,238, Cl. 106-20.000.

Pilgram, Kurt H., to Shell Oil Company. Herbicidal 4-((benzimidazol-1-yl)phenoxy)alkanoic acids, esters and salts. 4,439,226, Cl. 71-92.000.

Pioneer Electronic Corporation: *See—*
Furukawa, Hajime; and Ohta, Yoshitsugu, 4,439,784, Cl. 358-86.000.
Nakayama, Kazuaki, 4,439,745, Cl. 330-296.000.

Pirkle, Fred L. Freeze protection valve with improved resetting capability. 4,438,777, Cl. 137-62.000.

Pischtschan, Alfred: *See—*
Alberts, Heinrich; Schubart, Rudiger; and Pischtschan, Alfred, 4,439,589, Cl. 526-209.000.

Pissiotas, Georg: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,228, Cl. 71-95.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,230, Cl. 71-96.000.

Platt, Alan: *See—*
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, 4,439,813, Cl. 361-321.000.

Plessey Overseas Limited: *See—*
Wood, Robert S., 4,439,109, Cl. 418-88.000.

Plies, Erich, to Siemens Aktiengesellschaft. Corpuscular beam blanking system. 4,439,685, Cl. 250-398.000.

Plough, Irving L., to Kimwood Corporation. Flexible platen planer. 4,438,795, Cl. 144-373.000.

Pocsy, Ferenc: *See—*
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Pokladnik, Roger L.; and Valka, William A., to Armco Inc. Subsea well with retrievable piping deck. 4,438,817, Cl. 166-341.000.

Pokladnik, Roger L., to Armco Inc. Releasable guide post mount and method for recovering guide posts by remote operations. 4,439,068, Cl. 405-169.000.

Polaroid Corporation: *See—*
Paglia, Richard, 4,439,641, Cl. 179-111.00R.
Reynard, John M., 4,439,642, Cl. 179-111.00R.
Rodriguez, Marie T., 4,439,846, Cl. 367-99.000.

Poletto, John F.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.

Politechnika Gdanska: *See—*
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Pollution Controls Industries, Inc.: *See—*
Curtis, Stanley F., 4,438,945, Cl. 280-501.000.

Polymer Composites, Inc.: *See—*
Hawley, Ronald C., 4,439,387, Cl. 264-108.000.

Pongratz, Leonhard: *See—*
Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, 4,438,677, Cl. 89-36.00K.

Pons, Roberto E. Apparatus for automatic creeling in ring spinning frames. 4,438,622, Cl. 57-261.000.

Poppe, Lee W., Jr.: *See—*
King, Michael H.; Poppe, Lee W., Jr.; and Wurtenberg, Oscar A., 4,438,682, Cl. 99-323.700.

Porter, John T., II, to GA Technologies Inc. Separation of uranium isotopes. 4,439,404, Cl. 423-3.000.

Porter, Wilbur A.: *See—*
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,438,557, Cl. 29-576.00B.

Post, Robert E.: *See—*
Reid, Margaret A.; Post, Robert E.; and Soltis, Daniel G., 4,439,465, Cl. 427-115.000.

Postle, Stephen R., to Ciba-Geigy A.G. Process for the production of a photographic image. 4,439,518, Cl. 430-402.000.

Poulsen, Martin E.; Vratny, Frederick; and Zacharias, Alfred, to Bell Telephone Laboratories, Incorporated. X-Ray source and method of making same. 4,439,870, Cl. 378-143.000.

Powell, Jimmie L.; Standley, Charles L.; and Suierveld, John, to International Business Machines Corporation. Process for the controlled etching of tapered vias in borosilicate glass dielectrics. 4,439,270, Cl. 156-644.000.

Powell, Mark S.: *See—*
Hein, Carl C.; Wagner, John R., Jr.; and Powell, Mark S., 4,439,493, Cl. 428-414.000.

Powell, Steven H., to Iomega Corporation. Servo control of seek operation in magnetic disk drive. 4,439,800, Cl. 360-78.000.

PPG Industries, Inc.: *See—*
Girgis, Mikhail M., 4,439,556, Cl. 523-206.000.
Greigger, Paul P.; Boberski, William G.; and Seiner, Jerome A., 4,439,239, Cl. 106-287.160.
Tamosauskas, Albert E.; and Temple, Chester S., 4,439,558, Cl. 523-217.000.
Valimont, James L., 4,439,264, Cl. 156-556.000.

Pratt, Clyde R.; and Carignan, Roger G. Medical staple device. 4,438,769, Cl. 128-334.00R.

Prengaman, Raymond D., to RSR Corporation. Method of alloying calcium and aluminum into lead. 4,439,398, Cl. 420-564.000.

Price, Benjamin J.: *See—*
Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., 4,438,694, Cl. 101-152.000.

Priepke, Edward H.; and McAllister, Ronald L., to Sperry Corporation. Screen cleaning means. 4,439,218, Cl. 55-288.000.

Prize Frize, Inc.: *See—*
Bartfield, William, 4,438,683, Cl. 99-330.000.

Prizzia, Thomas C.: *See—*
Acharya, Shankar C.; Prizzia, Thomas C.; and Rutigliano, Olha, 4,439,250, Cl. 148-23.000.

Process Equipment Corporation: *See—*
McGuffey, James W., 4,438,861, Cl. 220-86.00R.

Procter & Gamble Company, The: *See—*
Burns, Michael E., 4,439,335, Cl. 252-8.750.
Ooms, Julius, 4,439,330, Cl. 252-8.800.
Sagel, Paul J., 4,439,474, Cl. 428-90.000.

Proizvodstvennoe Geologicheskoe Obiedinenie "Tsentrogeologia": *See—*
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Protzmann, Donald E.; Roveda, Ronald P.; and Uhoch, John, to Chesebrough-Pond's Inc. Underwater drainage device. 4,439,190, Cl. 604-319.000.

Proverb, Robert J.: *See—*
Raghu, Sivaraman; Proverb, Robert J.; and Peake, Steven L., 4,439,611, Cl. 548-533.000.

Psaras, John: *See—*
Frey, Bill; Haynie, Mark; and Psaras, John, 4,439,213, Cl. 55-31.000.

Pugsley, Peter C.: *See—*
Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., 4,438,694, Cl. 101-152.000.

Pulciani, Sam C.: *See—*
Holk, Albert J.; and Pulciani, Sam C., 4,439,081, Cl. 413-1.000.

Puppe, Lothar; and Weisser, Jurgen, to Bayer Aktiengesellschaft. Crystalline aluminosilicate PSH-3 and its process of preparation. 4,439,409, Cl. 423-328.000.

Puri, Ajai, to Coca-Cola Company, The. Preparation of citrus juices, concentrates and dried powders which are reduced in bitterness. 4,439,458, Cl. 426-330.500.

Quaker Oats Company, The: *See—*
Akerberg, Denis W., 4,439,348, Cl. 252-426.000.
Bogner, Ben R., 4,439,568, Cl. 524-111.000.

Quermann, Thomas R., to Sperry Corporation. Flexure suspension for free rotor gyroscopes. 4,438,655, Cl. 74-5.00F.

Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., to Vetco Offshore, Inc. Anchor connector. 4,439,055, Cl. 403-330.000.

Qureshi, Shahid U. H., to Codex Corporation. Modem circuitry. 4,439,864, Cl. 375-98.000.

R. J. Reynolds Tobacco Company: *See—*
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,438,775, Cl. 131-300.000.

R. Jennings Manufacturing Company, Inc.: *See—*
Serrianne, Russell A.; and Jennings, Roger L., 4,438,693, Cl. 101-129.000.

Rabas, Kenneth J., to DCI Marketing. Display case including improved hinge connection arrangement. 4,438,993, Cl. 312-140.000.

Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, to Societe d'Assistance Technique pour Produits Nestle S.A. Installation for solubilizing cocoa. 4,438,681, Cl. 99-323.200.

Radebold, Reinhart. Concentrating reflector for solar radiation of low aerodynamic friction force and high aerodynamic buoyancy force. 4,438,760, Cl. 126-438.000.

Rader, James L.: *See—*
Montealegre, James; and Rader, James L., 4,438,848, Cl. 206-588.000.

Raghu, Sivaraman; Proverb, Robert J.; and Peake, Steven L., to American Cyanamid Company. Isolation of [S-(R*, S*)]-1-(3-acetylthio-3-benzoyl-2-methylpropionyl)-L-proline from a diastereomeric mixture. 4,439,611, Cl. 548-533.000.

Raiha, Antti P. Center locator for alignment of work to machine spindle. 4,438,567, Cl. 33-286.000.

Railtech Ltd.: *See—*
MacDonald, John A., 4,438,595, Cl. 49-219.000.

Raith, Richard L.; and Davenport, Joseph A., to Hauserman, Inc. Demountable interior partition system and components therefor. 4,438,614, Cl. 52-580.000.

Ramanan, V. R. V., to Allied Corporation. Cobalt rich manganese containing near-zero magnetostrictive metallic glasses having high saturation induction. 4,439,253, Cl. 148-403.000.

Ramaswamy, Vellayan: *See—*
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.

Ranganathan, Ramachandran: *See—*
Sovak, Milos; and Ranganathan, Ramachandran, 4,439,613, Cl. 549-347.000.

Rao, Velliyur Nott M., to Du Pont de Nemours, E. I., and Company. Production of formaldehyde. 4,439,625, Cl. 568-473.000.

Raudys, Vytas A.: *See—*
Kupcikevicius, Vytautas; and Raudys, Vytas A., 4,438,545, Cl. 17-49.000.

Rauth, Erich; and Schmack, Hans-Jurgen, to Licentia Patent-Verwaltungs-GmbH. Digital data transmission system. 4,439,857, Cl. 370-100.000.

Rawicki, Bogdan J. Apparatus and method for extracting dust from air. 4,439,215, Cl. 55-95.000.

Ray, Ranjan, to Allied Corporation. Complex boride particle containing alloys. 4,439,236, Cl. 75-123.00B.

Raymond Corporation, The: *See—*
Allen, Ralph E., 4,439,102, Cl. 414-633.000.

Raytheon Company: *See—*
Wilkes, Dean M., 4,439,827, Cl. 364-200.000.

RCA Corporation: *See—*
Butterwick, Gilbert N., 4,439,712, Cl. 313-533.000.
Dholakia, Anil R., 4,439,853, Cl. 369-126.000.
Dholakia, Anil R., 4,439,855, Cl. 369-126.000.
Hughes, Larry M., 4,439,852, Cl. 369-77.200.
Kumar, Mahesh; and Upadhyayula, Lakshminarasimha C., 4,439,744, Cl. 330-285.000.
Louik, Leonard; and Ballard, Richard E., 4,439,128, Cl. 425-290.000.
Mattei, Anthony, 4,439,737, Cl. 329-50.000.
Miller, Michael E., 4,439,854, Cl. 369-126.000.
Rickman, James D., Jr., 4,439,728, Cl. 324-164.000.
Riddle, Michael H.; and Orr, John R., 4,439,804, Cl. 361-92.000.
Sohn, Frank M., 4,439,709, Cl. 313-406.000.
Wu, Chung P., 4,439,245, Cl. 148-1.500.

Rees, Herbert; Brown, Paul; and Grund, Miroslaw, to Husky Injection Molding Systems Ltd. Turret-type injection-molding machine. 4,439,133, Cl. 425-556.000.

Rees, Richard W. A., to General Motors Corporation. Vertical seat adjuster for vehicle seats. 4,438,895, Cl. 248-396.000.

Refined Industry Company, Limited, The: *See—*
Lee, Cheuk-Ming, 4,438,590, Cl. 46-257.000.

Regan, John F., to Rockwell International. Switching regulator with controlled simulated load. 4,439,819, Cl. 363-17.000.

Regie Nationale des Usines Renault: *See—*
Nartowski, Andre, 4,439,377, Cl. 261-52.000.

Rehberg, Heinrich: *See—*
Karrenbauer, Kurt; Behringer, Hartmut; and Rehberg, Heinrich, 4,439,361, Cl. 260-141.000.

Reichman, Benjamin; and Byvik, Charles E., to United States of America, National Aeronautics and Space Administration. Photoelectrochemical cells including chalcogenophosphate photoelectrodes. 4,439,301, Cl. 204-278.000.

Reid, Lloyd E.: *See—*
Gudelis, David A.; and Reid, Lloyd E., 4,439,308, Cl. 208-33.000.

Reid, Margaret A.; Post, Robert E.; and Soltis, Daniel G., to United States of America, National Aeronautics and Space Administration. Method of making a light weight battery plaque. 4,439,465, Cl. 427-115.000.

Reifschneider, Walter, to Dow Chemical Company, The. O,O-Diethyl O-[(p-tertiarybutylthio)phenyl]phosphorothioates and its insecticidal use. 4,439,430, Cl. 424-216.000.

Reifschneider, Walter, to Dow Chemical Company, The. O,O-Diethyl O-((4-tertiarybutylsulfonyl)m-tolyl)phosphorothioate and its insecticidal use. 4,439,431, Cl. 424-216.000.

Reilly, Clair H.; and Reilly, Robert M., to Pettibone Corporation. Machine suitable for breaking concrete pavement in place. 4,439,056, Cl. 404-90.000.

Reilly, Robert M.: *See—*
Reilly, Clair H.; and Reilly, Robert M., 4,439,056, Cl. 404-90.000.

Reimer, Bernd: *See—*
Lutz, Manfred; and Reimer, Bernd, 4,439,508, Cl. 430-84.000.

Reiner, Norbert L.; and Sledesky, Stephen M., to Coleco Industries, Inc. Joystick-type controller. 4,439,648, Cl. 200-6.00A.

Reinhardt, Rudolf: *See—*
Galtz, Rudiger; and Reinhardt, Rudolf, 4,439,095, Cl. 415-52.000.

Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, to BASF Aktiengesellschaft. Preparation of aqueous thermosetting electrical insulating varnishes. 4,439,579, Cl. 524-602.000.

Reitz, Roderick, to General Electric Company. Secondary arrester. 4,439,807, Cl. 361-127.000.

Remp, Thomas E.: *See—*
Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, 4,438,783, Cl. 138-89.000.
Remp, Thomas E., Jr.: *See—*
Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, 4,438,783, Cl. 138-89.000.
Reneau, Bobby J.; and Morris, Bruce E., to Gripper, Inc. Apparatus for tensioning a stud and method of doing same. 4,438,901, Cl. 254-29.00A.
Renz, Dieter; and Loper, Bernd, to Daimler-Benz Aktiengesellschaft. Wheel cover. 4,438,979, Cl. 301-37.0PB.
Research Corporation: *See—*
Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., 4,439,422, Cl. 424-92.000.
Research Holdings Pty Limited: *See—*
McLoughlin, Arthur R., 4,439,510, Cl. 430-137.000.
Rexnord Inc.: *See—*
Hodlewsky, Wasyly G.; and Schroeder, Roger H., 4,438,838, Cl. 198-853.000.
Reynard, John M., to Polaroid Corporation. High energy ultrasonic transducer. 4,439,642, Cl. 179-111.00R.
Reynolds Metals Company: *See—*
Kahn, Merle S., 4,438,850, Cl. 206-634.000.
Rhodes, Arthur B. Endless conveyor system. 4,438,702, Cl. 104-172.00B.
Rhodes, Junior I., to General Electric Company. Laser adjustable capacitor and fabrication process. 4,439,814, Cl. 361-321.000.
Rhodes, Richard P., to Exxon Research and Engineering Co. Process for pyrolysis of carbonous materials. 4,439,305, Cl. 208-10.000.
Rhone-Poulenc Specialites Chimiques: *See—*
Schuppiser, Jean-Luc; and Daniel, Jean-Claude, 4,439,574, Cl. 524-458.000.
Rib Loc (H.K.) Limited: *See—*
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,438,643, Cl. 72-49.000.
Rice, Doris M.: *See—*
Brennan, Michael E.; and Rice, Doris M., 4,439,546, Cl. 521-48.000.
Rice, Ivan G. Reheat gas turbine combined with steam turbine. 4,438,625, Cl. 60-39.170.
Rice, Robert R.: *See—*
Stacy, Robert A.; and Rice, Robert R., 4,439,014, Cl. 350-388.000.
Rich, Roland; Villiger, Alois; and Widmer, Erich, to Hoffmann-La Roche Inc. Disubstituted ethanes. 4,439,015, Cl. 350-350.00R.
Richards, Joseph M. Chlorine generating apparatus. 4,439,295, Cl. 204-229.000.
Richards, Randall G.: *See—*
Keyes, George B.; and Richards, Randall G., 4,438,534, Cl. 4-227.000.
Richardson-Merrell Inc.: *See—*
Giroux, Eugene L., 4,439,443, Cl. 424-285.000.
Rickman, James D., Jr., to RCA Corporation. Motion sensor utilizing eddy currents. 4,439,728, Cl. 324-164.000.
Ricoh Company, Ltd.: *See—*
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.
Ohta, Masafumi; and Sasaki, Masaomi, 4,439,506, Cl. 430-58.000.
Yano, Takashi, 4,439,781, Cl. 346-153.100.
Riddle, Michael H.; and Orr, John R., to RCA Corporation. Protection circuit for memory programming system. 4,439,804, Cl. 361-92.000.
Rienks, Bert J., to Bauer, Robert L.; and Upthegrove, Richard. Frame-handling-and-stacking apparatus. 4,439,098, Cl. 414-43.000.
Rieter Machine Works Ltd.: *See—*
Oswald, Peter, 4,438,623, Cl. 57-275.000.
Rikagaku Kenkyusho: *See—*
Tateno, Haruo, 4,439,662, Cl. 219-121.0PY.
Riley, Joseph L., to Corbett, Scott S., Jr.; and Perrott, Lynn F. Method for storing wheeled frames of detachable cargo container type trailers. 4,439,094, Cl. 414-786.000.
Ritter, Gerhard: *See—*
Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, 4,439,658, Cl. 219-56.000.
Ritter, Josef: *See—*
Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, 4,439,658, Cl. 219-56.000.
Ritter, Klaus: *See—*
Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, 4,439,658, Cl. 219-56.000.
Ritzi, Emil W.: *See—*
Hays, Lance G.; Studhalter, Walter R.; and Ritzi, Emil W., 4,438,638, Cl. 62-500.000.
Riva, Giuseppe. Process for choline and vitamin stabilization. 4,439,454, Cl. 424-329.000.
Rivera, Alfredo. High pressure toilet water feeder conversation tank. 4,438,536, Cl. 4-343.000.
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K. Method for preparing phthalonitriles. 4,439,371, Cl. 260-465.00C.
Robert, Andre; and Lancaster, Cleo, to Upjoin Company, The. Cyto-protective use of oxamate derivatives. 4,439,445, Cl. 424-304.000.
Robert Bosch GmbH: *See—*
Greiner, Max, 4,438,746, Cl. 123-373.000.
Kuhn, Willi; and Mausner, Eberhard, 4,439,820, Cl. 363-21.000.
Robert, Jacques: *See—*
Delaplace, Lucien; and Robert, Jacques, 4,438,707, Cl. 110-264.000.
Robinson, Tibor: *See—*
Moser, Helmut; and Robinson, Tibor, 4,439,208, Cl. 8-556.000.
Rock, John G. Receptacle for the collection of medical specimens and the like. 4,439,319, Cl. 210-238.000.
Rockwell International: *See—*
Regan, John F., 4,439,819, Cl. 363-17.000.
Rockwell International Corporation: *See—*
Bellamy, John C., 4,439,863, Cl. 375-18.000.
Best, David W.; and Russell, Jeffrey D., 4,439,835, Cl. 364-786.000.
Harrington, Timothy A., 4,439,740, Cl. 330-124.00R.
Minella, Giancarlo; Motta, Bruno; and Pedone, Egidio, 4,438,717, Cl. 112-227.000.
Walter, Robert J., 4,439,284, Cl. 204-43.00T.
Rockwood, Robert E.; and Antkowiak, Richard P., to A. W. Chesterton Company. Impeller adjuster for centrifugal pump. 4,439,096, Cl. 415-131.000.
Rodriguez, Marie T., to Polaroid Corporation. Sonar rangefinder system. 4,439,846, Cl. 367-99.000.
Rodriguez, Thomas A.; and Zavaglia, Angelo J. Handcart for banquet tables. 4,439,085, Cl. 414-447.000.
Roe, George W., to McDonnell Douglas Corporation. End caps for use with a launch environment simulator process and structure. 4,439,155, Cl. 434-12.000.
Roe, Jonas L., to Terradyne Limited. Continuous excavating apparatus. 4,438,575, Cl. 37-4.000.
Roes, Christian: *See—*
Gebhardt, Axel; Jurgensen, Heinrich; and Roes, Christian, 4,439,022, Cl. 350-572.000.
Rogers Corporation: *See—*
Mueller, Richard W., 4,438,561, Cl. 29-831.000.
Rogers, Robert C.: *See—*
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,438,557, Cl. 29-576.00B.
Rohanna, James E., to Westinghouse Electric Corp. Elevator system. 4,438,831, Cl. 187-30.000.
Rohde, Thomas D.: *See—*
Blackshear, Perry J.; Palmer, John L.; and Rohde, Thomas D., 4,439,181, Cl. 604-56.000.
Rohm and Haas Company: *See—*
Swithenbank, Colin, 4,439,229, Cl. 71-96.000.
Rohner, Joachim, to W. Schlafhorst & Co. Thread joining device. 4,438,621, Cl. 57-22.000.
Rojas, Fernando: *See—*
Everett, Douglas H.; Bligh, Stephen G.; and Rojas, Fernando, 4,439,349, Cl. 502-180.000.
Rolf Baumgartner AG: *See—*
Buttiker, Urs, 4,439,044, Cl. 366-292.000.
Roller, Donald C.: *See—*
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., 4,438,917, Cl. 271-227.000.
Rolls Royce Limited: *See—*
Jones, Thomas J.; and Curtis, David S., 4,438,956, Cl. 285-223.000.
Pask, George; and Golton, Howard J., 4,438,939, Cl. 277-236.000.
Rolstad, Erik, to Scandpower, Inc. Multijunction difference thermocouples for gamma sensors. 4,439,396, Cl. 376-247.000.
Roncucci, Romeo: *See—*
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.
Roper, Linwood W., Jr., to Sonoco Products Company. Piling encasement system. 4,439,071, Cl. 405-216.000.
Rosas, Carlos B.: *See—*
Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, 4,439,623, Cl. 568-393.000.
Rosenberg, Heinz-Jurgen: *See—*
Zodrow, Rudolf; Hoveler, Egon; and Rosenberg, Heinz-Jurgen, 4,439,262, Cl. 156-364.000.
Rosenberger, Siegfried; Evans, Samuel; and Gilg, Bernard, to Ciba-Geigy Corporation. Mercaptophenol stabilizers. 4,439,615, Cl. 560-15.000.
Rosin, Michael L.: *See—*
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,576, Cl. 524-425.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,577, Cl. 524-425.000.
Rotblum, Yehuda: *See—*
Bartoli, Thomas J.; and Rotblum, Yehuda, 4,439,691, Cl. 307-279.000.
Roth, Ronald B., to Honeywell Inc. Remote counter-balancing mechanism. 4,439,003, Cl. 350-6.600.
Rothbuhr, Lothar: *See—*
Voll, Manfred; Rothbuhr, Lothar; and Kuhner, Gerhard, 4,439,401, Cl. 422-150.000.
Rothstein, Andrew M., to Rothstein, Harold Louis; and Rothstein, Arthur. Aquatic body board. 4,439,165, Cl. 441-74.000.
Rothstein, Arthur: *See—*
Rothstein, Andrew M., 4,439,165, Cl. 441-74.000.
Rothstein, Harold Louis: *See—*
Rothstein, Andrew M., 4,439,165, Cl. 441-74.000.
Roussel Uclaf: *See—*
Heymes, Rene; and Vignau, Michel, 4,439,433, Cl. 424-246.000.
Roveda, Ronald P.: *See—*
Protzmann, Donald E.; Roveda, Ronald P.; and Uhoch, John, 4,439,190, Cl. 604-319.000.
Rowe, George H., to Combustion Engineering, Inc. Method and system for maintaining operating temperatures in a molten salt co-generating unit. 4,438,630, Cl. 60-676.000.

Royer, Michel E., to S. T. Dupont. Stratified corrosion-resistant complex. 4,439,499, Cl. 428-670.000.
Rozas, Patrick: *See—*
Kobayashi, Herbert S.; Shores, Paul W.; and Rozas, Patrick, 4,439,766, Cl. 343-9.00R.
RSR Corporation: *See—*
Prengaman, Raymond D., 4,439,398, Cl. 420-564.000.
Rudi, Guttorm, to Tandberg Data A/S. Suspension for the pivotably seated tape drive motor in a casaette magnetic tape device. 4,438,879, Cl. 226-188.000.
Rudolf, Peter: *See—*
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.
Rudolph, Eugene D.: *See—*
George, John W.; and Rudolph, Eugene D., 4,438,696, Cl. 101-180.000.
Ruegg, Rudolf, to Hoffmann-La Roche Inc. Extraction process for beta-carotene. 4,439,629, Cl. 585-803.000.
Ruger, William B., to Sturm, Ruger & Company, Inc. Bolt stop and cartridge ejector for auto-loading rifle. 4,438,678, Cl. 89-138.000.
Ruhrgas Aktiengesellschaft: *See—*
Altemark, Detlef; Sommers, Hans; and Weid, Manfred, 4,439,135, Cl. 431-2.000.
Rulseh, Roy M.: *See—*
Craig, Glenn D.; Wilhelm, Ronald K.; and Rulseh, Roy M., 4,439,138, Cl. 431-12.000.
Runyon, James R.; and Valenti, Salvatore, to Sandoz Ltd. Process for improving the wetfastness of dyeings, printings and optical brightenings on cellulosic substrates and compositions useful therefor. 4,439,203, Cl. 8-496.000.
Russell, Jeffrey D.: *See—*
Best, David W.; and Russell, Jeffrey D., 4,439,835, Cl. 364-786.000.
Russell, Larry R. Clamp-on drill collar stabilizers. 4,438,822, Cl. 175-325.000.
Rut, Tadeusz, to Instytut Obrobki Plastycznej. Forging device. 4,438,644, Cl. 72-356.000.
Ruti Machinery Works Ltd.: *See—*
Steiner, Alois, 4,438,790, Cl. 139-435.000.
Rutigliano, Olha: *See—*
Acharya, Shankar C.; Prizzia, Thomas C.; and Rutigliano, Olha, 4,439,250, Cl. 148-23.000.
Ryals, Lloyd E. Rice levee shaper and packer. 4,438,819, Cl. 172-536.000.
Ryan, Bobby W., to WFI International, Inc. Acute angled vessel connector. 4,438,955, Cl. 285-189.000.
Ryan, Robert C.: *See—*
Lewis, Robert M.; Ryan, Robert C.; and Slaugh, Lynn H., 4,439,624, Cl. 568-470.000.
Ryffel, Louis. Instantaneous electrode-type water heater. 4,439,669, Cl. 219-289.000.
Rysin, Nikolai I.: *See—*
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.
S-Cubed: *See—*
Duff, Russell E., 4,438,708, Cl. 110-346.000.
S. T. Dupont: *See—*
Royer, Michel E., 4,439,499, Cl. 428-670.000.
Saban, C. John, to Caterpillar Tractor Co. Crankshaft journal surface gauge and kit thereof. 4,438,646, Cl. 73-105.000.
Sach, George S.: *See—*
Cooper, David G.; and Sach, George S., 4,439,609, Cl. 546-334.000.
Sachs, Peter R.; and Sears, James W., to Tarkett AB. Radiation cured coating and process therefor. 4,439,480, Cl. 428-161.000.
Sackis, John J.; and Anderson, Paul H., to W. R. Meadows, Inc. Water based concrete cure. 4,439,563, Cl. 524-96.000.
Sacks, Jacob M.: *See—*
Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., 4,439,840, Cl. 364-900.000.
Sadowski, Edward P., to International Nickel Company, Inc., The. Corrosion resistant stainless steel covered electrode. 4,439,498, Cl. 428-558.000.
Saeki, Tsuyoshi: *See—*
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.
Saeki, Yukihiro: *See—*
Suzuki, Yasoji; Suzuki, Hiroaki; and Saeki, Yukihiro, 4,439,697, Cl. 307-530.000.
Sagel, Paul J., to Procter & Gamble Company, The. Disposable floor mat with improved wet soil absorptivity. 4,439,474, Cl. 428-90.000.
St. John, James C.: *See—*
Loesch, Stanley B.; St. John, James C.; and Mints, Danny K., 4,438,729, Cl. 122-26.000.
Saito, Hiroyuku: *See—*
Asada, Eiichi; Inokuma, Toshio; and Saito, Hiroyuku, 4,439,352, Cl. 252-518.000.
Saito, Kouji, to Hitachi, Ltd. Ultrasonic Doppler flowmeter. 4,438,652, Cl. 73-861.250.
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, to Yoshino Kogyosho Co., Ltd. Method of producing synthetic resin bottle with handle. 4,439,393, Cl. 264-532.000.
Sakaki, Yorihisa: *See—*
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.
Sakamoto, Kiyoshi: *See—*
Shimada, Hiroshi; and Sakamoto, Kiyoshi, 4,439,810, Cl. 361-272.000.
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, to Mitutoyo Mfg. Co., Ltd. Inner diameter measuring instrument. 4,438,566, Cl. 33-178.00R.
Sakuyama, Masaki: *See—*
Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, 4,439,701, Cl. 310-45.000.
Salaman, Roy G., to Lord Electric Company, Inc. Control system for automated manipulator device. 4,439,672, Cl. 235-463.000.
Samant, Vijay: *See—*
Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, 4,439,623, Cl. 568-393.000.
Samuelson, Hans O., to Mo och Domajo Aktiebolag. Process for the oxygen bleaching of cellulose pulp. 4,439,271, Cl. 162-19.000.
Sanden Corporation: *See—*
Iimori, Takayuki, 4,439,118, Cl. 418-55.000.
Sanders Associates, Inc.: *See—*
Sands, Timothy B.; and Sinclair, Ronald R., 4,438,893, Cl. 244-3.210.
Viglione, Gaetano T., 4,439,289, Cl. 204-146.000.
Sandoz Ltd.: *See—*
Altermatt, Ruedi; and Jakob, Hans, 4,439,207, Cl. 8-639.000.
Bohler, Hans, 4,439,562, Cl. 524-90.000.
Koerte, Klaus, 4,439,362, Cl. 260-152.000.
Moser, Helmut; and Robinson, Tibor, 4,439,208, Cl. 8-556.000.
Runyon, James R.; and Valenti, Salvatore, 4,439,203, Cl. 8-496.000.
Sands, Timothy B.; and Sinclair, Ronald R., to Sanders Associates, Inc. Prime power source and control for a guided projectile. 4,438,893, Cl. 244-3.210.
Sanford, Robert A.: *See—*
Lamb, Charles G.; and Sanford, Robert A., 4,438,776, Cl. 131-336.000.
Sanmiya, Tsugumi: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.
Sano, Tsutomu; Takeuchi, Naoki; and Kurumaji, Masanobu, to Kabushiki Kaisha Kobe Seiko Sho. Injection molding machine. 4,439,123, Cl. 425-112.000.
Sano, Yutaka: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.
SANOFI: *See—*
Chick, Jacques A.; Heymes, Alain; and Blasioli, Carlo, 4,439,442, Cl. 424-285.000.
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.
Sanraku-Ocean Co., Ltd.: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.
Santa Barbara Research Center: *See—*
Davis, Roland O., 4,438,983, Cl. 308-2.00A.
Santen, Sven; and Edstrom, John O., to SKF Steel Engineering Aktiebolag. Method of manufacturing silicon from powdered material containing silica. 4,439,410, Cl. 423-350.000.
Santora, Frank. Vertical bearing assembly. 4,438,988, Cl. 308-174.000.
Sanyo Electric Co., Ltd.: *See—*
Takahara, Ichiro; and Yabu, Tadahiko, 4,439,850, Cl. 369-77.200.
Sarcia, Domenico S., to CVI Incorporated. Cryogenic refrigerator. 4,438,631, Cl. 62-6.000.
Sargeant, John E.; and Hoffa, Jack L., to Bentley Laboratories, Inc. Pleural drainage system. 4,439,189, Cl. 604-317.000.
Sarnecki, Wilhelm: *See—*
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.
Sasaki, Masaomi: *See—*
Ohta, Masafumi; and Sasaki, Masaomi, 4,439,506, Cl. 430-58.000.
Sasaki, Tateyo: *See—*
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Capacitor. 4,439,811, Cl. 361-313.000.
Sasaki, Yoshihiro, to Yanmar Diesel Engine Co., Ltd. Air cooled internal combustion engine. 4,438,733, Cl. 123-41.620.
Sasaki, Yoshikazu. Pipe shearing device. 4,438,672, Cl. 83-319.000.
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material with naphthol redox dye releaser. 4,439,513, Cl. 430-203.000.
Sato, Makoto; and Fujii, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for simultaneously adjusting fluid pressures in a dual fluid system and associated method. 4,438,629, Cl. 60-579.000.
Sato, Makoto; Tsuchiya, Yoshikazu; and Ohmori, Taiji, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for controlling an anti-skid brake system. 4,439,832, Cl. 364-426.000.
Sato, Seiichi: *See—*
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, 4,438,894, Cl. 248-73.000.
Sato, Shigeru: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Sato, Yo; Kashiwaba, Tadao; and Matsuda, Yasuhiko, to Kabushiki Kaisha Sato. Label printing and applying apparatus. 4,439,257, Cl. 156-64.000.

Satronic AG: *See—*
Frehner, Herbert, 4,438,882, Cl. 239-462.000.

Savin Corporation: *See—*
Landa, Benzion, 4,439,035, Cl. 355-15.000.

Sawada, Yoshihisa: *See—*
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.

Sawamoto, Kunifumi: *See—*
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, 4,438,748, Cl. 123-491.000.

Scalzo, John P., to Gentex Corporation. Sound attenuating earcup assembly with outside communication capability. 4,439,645, Cl. 179-156.00R.

Scandpower, Inc.: *See—*
Rolstad, Erik, 4,439,396, Cl. 376-247.000.

Scapa Inc.: *See—*
Harwood, William J., 4,438,788, Cl. 139-383.00A.

Scattaregia, Joseph J., to Scattaregia, Joseph J. Anti-spill lid for a drinking cup. 4,438,865, Cl. 220-270.000.

Schaefer, Wolfgang, to Gildemeister AG. Workpiece handling apparatus. 4,439,090, Cl. 414-736.000.

Schaeffer, Gerard; and Hoffarth, Dieter, to Paul Kiefel GmbH. Feed bushing for single-screw extruders. 4,439,041, Cl. 366-144.000.

Schaeper, Gary R.; and Olson, Richard A., to NL Industries, Inc. Locking mechanism for annular blowout preventer. 4,438,900, Cl. 251-1.00B.

Schafer, Willi, to Stabilus GmbH. Piston for a pneumatic, hydraulic, or hydropneumatic installation. 4,438,833, Cl. 188-320.000.

Schalk, Bartje; Operti, Claudio; and Bras, Johan C., to SKF Industrial Trading & Development Co. B.V. Sealing assembly for a rolling bearing. 4,438,990, Cl. 308-187.100.

Schank, Richard L., to Xerox Corporation. Process for preparing overcoated electrophotographic imaging members. 4,439,509, Cl. 430-132.000.

Schaper, Raymond J., to Calgon Corporation. Cationic water-in-oil polymer emulsions. 4,439,580, Cl. 524-801.000.

Schaub, Robert E.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.

Scheib, Joseph J. Flexible light display with evenly distributed illumination. 4,439,818, Cl. 362-250.000.

Schenck, Hans-Uwe: *See—*
Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, 4,439,579, Cl. 524-602.000.

Schenk, Hanspeter, to Givaudan Corporation. Esters of substituted 2,2-dimethylcyclohexanoic acid. 4,439,353, Cl. 252-522.00R.

Schenk, Roy U., to Jorksten Research Laboratories, Inc. Proteolytic enzyme composition. 4,439,522, Cl. 435-188.000.

Scheuermann, Klaus: *See—*
Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus, 4,439,403, Cl. 422-159.000.

Schindler, Harvey D.; and Sze, Morgan C., to Lummus Company, The. Removal of arsenic impurity from hydrocarbons. 4,439,313, Cl. 208-251.00H.

Schink, Dave K. Stock rack and loading chute for trucks. 4,439,087, Cl. 414-537.000.

Schlegel Corporation: *See—*
Nielson, Erik I.; and Hope, Robert B., 4,438,609, Cl. 52-208.000.

Schlegel, Rainer. Secondary sealing element with U-shaped sealing ring for mechanical seals. 4,438,936, Cl. 277-212.00C.

Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, to Arbed S.A. Method of increasing the cold material charging capacity in the top-blowing production of steel. 4,439,234, Cl. 75-52.000.

Schlumberger Technical Corporation: *See—*
Sinclair, Paul L., 4,439,831, Cl. 364-422.000.

Schmack, Hans-Jurgen: *See—*
Rauth, Erich; and Schmack, Hans-Jurgen, 4,439,857, Cl. 370-100.000.

Schmidt, Dieter, to Volkswagenwerk Aktiengesellschaft. Control system for an automobile drive. 4,438,665, Cl. 74-867.000.

Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, to EVG Entwicklungs-und Verwertungs Gesellschaft m.b.H. Apparatus for producing welded wire grids. 4,439,658, Cl. 219-56.000.

Schmitt, Joseph M.: *See—*
Frank, Simon; Coscia, Anthony T.; and Schmitt, Joseph M., 4,439,332, Cl. 252-8.55D.

Schmitt, Peter D.: *See—*
Kelso, Robert G.; Ahuja, Meena S.; and Schmitt, Peter D., 4,439,593, Cl. 528-45.000.

Schmolke, Karl H.; Finsterbusch, Joachim; and Loffler, Walter, to Hollingsworth GmbH. Carding element for a carding machine. 4,438,547, Cl. 19-98.000.

Schneider, Claus; and Benczur-Urmossy, Gabor, to Deutsche Automobilgesellschaft. Process for producing a stable connection between an electrode structure made from a metallized body of a fibrous nature and a current lead out tab. 4,439,281, Cl. 204-2.100.

Schneider, Randy G.: *See—*
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.

Scholpp, Werner: *See—*
Hochreuther, Karl; Heinze, Siegfried; and Scholpp, Werner, 4,439,726, Cl. 324-156.000.

Schonmeier, Herbert, to Jagenberg Werke AG. System for decelerating the drive of a web-winding apparatus. 4,438,889, Cl. 242-67.10R.

Schornack, Louis W., to Dynascan Corporation. Electrical control apparatus. 4,439,688, Cl. 307-115.000.

Schott Glaswerke: *See—*
Mennemann, Karl; and Geiler, Volkmar, 4,439,531, Cl. 501-75.000.

Schrader, Hellmut. Projector assembly. 4,439,028, Cl. 353-119.000.

Schrank, Wolfgang: *See—*
Goossens, Walter; and Schrank, Wolfgang, 4,439,274, Cl. 201-41.000.

Schroder, William J., to Milliken Research Corporation. Bobbin lock. 4,438,890, Cl. 242-130.000.

Schroeder, Roger H.: *See—*
Hodlewsky, Wasyly G.; and Schroeder, Roger H., 4,438,838, Cl. 198-853.000.

Schubart, Rudiger: *See—*
Alberts, Heinrich; Schubart, Rudiger; and Pischtschan, Alfred, 4,439,589, Cl. 526-209.000.

Schubert, Hiltmar: *See—*
Hansen, Rolf; Engel, Walter; and Schubert, Hiltmar, 4,439,622, Cl. 564-406.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Mayer, Walter; and Wittmann, Stephan, 4,438,624, Cl. 57-352.000.

Schuh, Bernhard, to Papst-Motoren GmbH & Co. KG. Disk storage drive. 4,438,542, Cl. 360-97.000.

Schulteis, David T., to Wilbur-Ellis Company. Plant growth regulator and method for the use thereof. 4,439,224, Cl. 71-76.000.

Schulz, Eduard: *See—*
Aiena, Peter P.; and Schulz, Eduard, 4,439,837, Cl. 364-900.000.

Schuppiser, Jean-Luc; and Daniel, Jean-Claude, to Rhone-Poulenc Specialites Chimiques. Process for the preparation of lattices of vinylacetate/olefin copolymers. 4,439,574, Cl. 524-458.000.

Schurfeld, Armin: *See—*
Hartel, Gunter; and Schurfeld, Armin, 4,439,376, Cl. 261-50.00A.

Schutt, Hermann, to Bayer Aktiengesellschaft. Stereoselective resolution of phenylglycine derivatives with enzyme resins. 4,439,524, Cl. 435-280.000.

Schutzler, Jerome C.; and Jechel, Kurt E., to PDA Engineering. Method and apparatus for making a glass laminated structure. 4,439,392, Cl. 264-511.000.

Schwartz, Frederick W., to Cable Electric Products, Inc. Battery testing system. 4,439,736, Cl. 324-437.000.

Schwarz, Gunther, to BASF Farben + Fasern AG. Process for preparing aqueous varnishes. 4,439,575, Cl. 524-489.000.

Schwarz, Manfred; and Higuchi, Tadashi, to Sony Corporation. Biasing circuit for power amplifier. 4,439,743, Cl. 330-267.000.

Schwarz, Richard A., to Cosden Technology, Inc. Expandable polymeric styrene particles. 4,439,490, Cl. 428-407.000.

Schweizer, Rene. System assembly for mounting electrical apparatus on walls and ceilings. 4,439,643, Cl. 179-146.00E.

Schwendemann, Volker: *See—*
Koenig, Karl-Heinz; and Schwendemann, Volker, 4,439,369, Cl. 260-453.00P.

Schwinn Bicycle Company: *See—*
Szymski, Eugene J., 4,438,921, Cl. 272-73.000.

Schwippert, Guusstaaf A., to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek. Fuel supply system for combustion engines. 4,438,749, Cl. 123-494.000.

Sci-Med Environmental Systems, Inc.: *See—*
Litchfield, Philip F., 4,439,816, Cl. 362-96.000.

Scientific Research Foundation, The: *See—*
Tabor, Harry Z., 4,438,952, Cl. 285-39.000.

Sciola, Joseph; and Nagy, Gabor. Ram drive chuck. 4,438,554, Cl. 29-57.000.

Scolastico, Carlo; Sirtori, Cesare; and Kritchevsky, David. Derivatives of chenodeoxycholic acid. 4,439,366, Cl. 260-397.100.

Scott Bader Company Limited: *See—*
Osborne, Trevor R., 4,439,559, Cl. 523-513.000.

Scott, Eric J. Y.: *See—*
Audeh, Costandi A.; and Scott, Eric J. Y., 4,439,310, Cl. 208-111.000.

Sears, James W.: *See—*
Sachs, Peter R.; and Sears, James W., 4,439,480, Cl. 428-161.000.

SEB S.A.: *See—*
Daloz, Joanny, 4,439,043, Cl. 366-164.000.

See, Benito: *See—*
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,439,586, Cl. 525-169.000.

Seelinger, Hugh D., to International Business Machines Corp. Self-aligning web reel. 4,438,888, Cl. 242-56.900.

Segawa, Takashi, to Shimano Industrial Company Limited. Chain gear and crank mounting assembly. 4,439,172, Cl. 474-160.000.

Seidel, Albert; and Wolf, Dietmar, to Messerschmitt-Bolkow-Blohm GmbH. Solar pumping installation for pumping liquid and solar collector construction. 4,439,111, Cl. 417-379.000.

Seifert, Peter R., to Daimler-Benz Aktiengesellschaft. Cooling arrangement for an internal combustion engine. 4,438,732, Cl. 123-41.050.

Seiner, Jerome A.: *See—*
Greigger, Paul P.; Boberski, William G.; and Seiner, Jerome A., 4,439,239, Cl. 106-287.160.

Seligsohn, Scott; Bolgiano, Duane R.; and Seligsohn, Sherwin I., to International Mobile Machines Corp. Sound-activated code-controlled detection system for telephones and the like. 4,439,638, Cl. 179-84.00C.

Seligsohn, Sherwin I.: *See—*
Seligsohn, Scott; Bolgiano, Duane R.; and Seligsohn, Sherwin I., 4,439,638, Cl. 179-84.00C.

Sella, Lino: *See—*
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.

Senour, Walter H., to Amway Corporation. Wringable mop assembly. 4,438,540, Cl. 15-119.00A.

Sentrol Systems Ltd.: *See—*
Mactaggart, John W., 4,439,038, Cl. 356-408.000.

Sernaker, Howard, to Virginville Patents, Inc. Embroidered transfer and method of making same. 4,439,202, Cl. 8-471.000.

Serrianne, Russell A.; and Jennings, Roger L., to R. Jennings Manufacturing Company, Inc. Silk screen printing onto the front panel of a cap. 4,438,693, Cl. 101-129.000.

Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, to Ayerst, McKenna & Harrison Inc. N-Naphthoylglycine derivatives. 4,439,617, Cl. 560-39.000.

Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, to Ceskoslovenska akademie ved. Polymers of pivaloyloxyalkyl methacrylates, method for their preparation and modification. 4,439,588, Cl. 525-366.000.

Sharp Kabushiki Kaisha: *See—*
Yoshida, Kunio, 4,439,836, Cl. 364-900.000.

Shasha, Baruch S.: *See—*
Trimnell, Donald; and Shasha, Baruch S., 4,439,488, Cl. 428-402.240.

Shaw, Bon F.: *See—*
Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., 4,439,156, Cl. 434-12.000.

Shaw, David N., to Dunham-Bush, Inc. Self-cleaning single loop mist type lubrication system for screw compressors. 4,439,121, Cl. 418-98.000.

Shawcross, James P.: *See—*
Mathur, Achint P.; Torniainen, Matti J.; and Shawcross, James P., 4,438,807, Cl. 165-133.000.

Shay, Lucas K.; and Wegner, Eugene H., to Phillips Petroleum Company. High methionine content *Pichia pastoris* yeasts. 4,439,525, Cl. 435-247.000.

Sheads, Richard E., to Union Carbide Corporation. One solvent process for preparation of esters of 3,5-dibromo-4-hydroxybenzonitrile. 4,439,368, Cl. 260-404.000.

Sheinin, Viktor E.: *See—*
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Shell Internationale Research Maatschappij B.V.: *See—*
Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, 4,439,306, Cl. 208-11.00R.

Shell Oil Company: *See—*
DiFoggio, Rocco, 4,439,497, Cl. 428-539.500.
Kollmeyer, Willy D., 4,439,225, Cl. 71-88.000.
Lewis, Robert M.; Ryan, Robert C.; and Slaugh, Lynn H., 4,439,624, Cl. 568-470.000.
Nanny, Walter C.; Stewart, Thomas L.; and Hemphill, Dean P., 4,438,754, Cl. 125-14.000.
Pilgram, Kurt H., 4,439,226, Cl. 71-92.000.
Soloway, Samuel B., 4,439,446, Cl. 424-304.000.

Shenoi, Kishan; and Agrawal, Bhagwati P., to International Telephone and Telegraph Corporation. Delta-Sigma modulator with switch capacitor implementation. 4,439,756, Cl. 340-347.0AD.

Shepard, James J., Jr.: *See—*
Simpson, Charles H., 4,439,235, Cl. 75-101.00R.

Shepard, Kenneth L.: *See—*
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.

Shepherd, Robert G.: *See—*
Du, Mila T.; and Shepherd, Robert G., 4,439,606, Cl. 544-356.000.

Sherwin-Williams Company, The: *See—*
Kindrick, Robert H., 4,439,572, Cl. 524-405.000.

Shibaj, Haruo: *See—*
Okamura, Masatoshi; and Shibaj, Haruo, 4,438,860, Cl. 220-4.00B.

Shields, Charles. Method and machine for preparing an end portion of a multi-conductor flat cable for receiving a connector thereon. 4,439,631, Cl. 174-74.00R.

Shifrin, Gordon A.: *See—*
Hunsperger, Robert G.; and Shifrin, Gordon A., 4,439,004, Cl. 350-96.120.

Shikano, Yukio: *See—*
Fujii, Kunihisa; Tomono, Noboru; and Shikano, Yukio, 4,439,750, Cl. 335-274.000.

Shimada, Hiroshi; and Sakamoto, Kiyoshi, to Marcon Electronics Co., Ltd. Electric capacitor with enclosure structure consisting of plastic laminated film. 4,439,810, Cl. 361-272.000.

Shimano Industrial Company Limited: *See—*
Segawa, Takashi, 4,439,172, Cl. 474-160.000.

Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., to Institut Fiziki Akademii Nauk Belorusskoi SSR. Apparatus for high temperature treatment of rectilinear-generatrix surfaces of nonconductive products. 4,439,657, Cl. 219-121.0PR.

Shimizu, Akihiko, to Japax Incorporated. Electrode feed system in electrical machining, capable of quick-response electrode retraction and reciprocation. 4,439,659, Cl. 219-69.00V.

Shimogawara, Jun: *See—*
Akamatsu, Yoshiyuki; and Shimogawara, Jun, 4,438,915, Cl. 271-9.000.

Shimoi, Masahiro: *See—*
Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, 4,439,560, Cl. 523-437.000.

Shimotsuma, Wataru: *See—*
Hotta, Shu; Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,439,569, Cl. 524-128.000.

Shimoyama, Yoshiaki; Tachino, Ichiro; and Koga, Shigenobu, to Nippon Steel Corporation. Non-oriented electric iron sheet and method for producing the same. 4,439,251, Cl. 148-31.550.

Shinogle, Ronald D.: *See—*
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.

Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, to Fuji Photo Film Co., Ltd. Light-sensitive ethylenically unsaturated materials containing benzanthrones and novel sensitizers. 4,439,515, Cl. 430-285.000.

Shioda, Takizo; Ito, Norio; and Horiuchi, Hiroshi, to Sony Corporation. Rear projection apparatus. 4,439,027, Cl. 353-77.000.

Shiozaki, Tomoharu: *See—*
Irii, Shinsuke; and Shiozaki, Tomoharu, 4,439,581, Cl. 524-839.000.

Shipai, Andrei K.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Shipley, Charles R.: *See—*
Cernigliaro, George J.; and Shipley, Charles R., 4,439,516, Cl. 430-323.000.

Shipley Company Inc.: *See—*
Cernigliaro, George J.; and Shipley, Charles R., 4,439,516, Cl. 430-323.000.

Shiraishi, Tetsuo: *See—*
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.

Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, to Hitachi, Ltd.; and Hitachi Metals, Ltd. Magnetic head. 4,439,794, Cl. 360-127.000.

Shiroto, Yoshimi: *See—*
Asaoka, Sachio; Ono, Takeo; and Shiroto, Yoshimi, 4,439,312, Cl. 208-216.0PP.

Shiue, Chyng-Yann; and Wolf, Alfred P., to United States of America, Energy. $1\text{-}^{11}C$-D-Glucose and related compounds. 4,439,414, Cl. 424-1.100.

Shockman, Gerald D.: *See—*
Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., 4,439,422, Cl. 424-92.000.

Shoda, Isao: *See—*
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.

Shoei Chemical Inc.: *See—*
Asada, Eiichi; Inokuma, Toshio; and Saito, Hiroyuku, 4,439,352, Cl. 252-518.000.

Shores, Paul W.: *See—*
Kobayashi, Herbert S.; Shores, Paul W.; and Rozas, Patrick, 4,439,766, Cl. 343-9.00R.

Showa Manufacturing Co., Ltd.: *See—*
Matsumoto, Fumio, 4,438,909, Cl. 267-64.260.
Terada, Makato, 4,438,908, Cl. 267-8.00R.

Shubkin, Ronald L.: *See—*
Burton, Lester P. J.; and Shubkin, Ronald L., 4,439,374, Cl. 260-512.00R.

Shur-Lok International SA: *See—*
Dessouroux, Alexis A. J. F., 4,439,078, Cl. 411-178.000.

Siemens AG: *See—*
Beier, Helmut, 4,439,652, Cl. 200-148.00A.

Siemens Aktiengesellschaft: *See—*
Adelski, Hans-Joachim; and Pflaugner, Josef, 4,439,704, Cl. 310-211.000.
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,439,287, Cl. 204-58.000.
Brajder, Antonio, 4,439,806, Cl. 361-98.000.
Claussen, Ulf, 4,439,729, Cl. 324-165.000.
Fritz, Otmar, 4,438,847, Cl. 206-330.000.
Mair, Eduard, 4,439,144, Cl. 432-59.000.
Plies, Erich, 4,439,685, Cl. 250-398.000.
Winzer, Gerhard, 4,439,005, Cl. 350-96.150.

Siemens Corporation: *See—*
Mueller-Schloer, Christian, 4,438,824, Cl. 178-22.080.

Sievers, George K., to Sievers, George Kelly. Method for forming ternary alloys using precious metals and interdispersed phase. 4,439,470, Cl. 427-252.000.

Sievers, George Kelly: *See—*
Sievers, George K., 4,439,470, Cl. 427-252.000.
Signetics Corporation: *See—*
Beekmans, Jan J. P. M.; and Hughes, John B., 4,439,692, Cl. 307-297.000.
Silander, Keijo. Arrangement of fittings for flats in a carding machine. 4,438,549, Cl. 19-107.000.
Silverstein, Lewis S.: *See—*
Dahlgren, William V., Jr.; and Silverstein, Lewis S., 4,439,834, Cl. 364-474.000.
Simich, Emil, to A. J. Gerrard & Co. Material baling device. 4,438,689, Cl. 100-25.000.
Simonds, Gary, to Kidde Recreation Products, Inc. Compound bow. 4,438,753, Cl. 124-24.00R.
Simpson, Charles H., to Shepard, James J., Jr. Chlorination process for removing precious metals from ore. 4,439,235, Cl. 75-101.00R.
Sinclair, Paul L., to Schlumberger Technical Corporation. Digital induction logging system including autocalibration. 4,439,831, Cl. 364-422.000.
Sinclair, Ronald R.: *See—*
Sands, Timothy B.; and Sinclair, Ronald R., 4,438,893, Cl. 244-3.210.
Singer Company, The: *See—*
Dunn, William H.; Edwards, William J.; and Minalga, Philip F., 4,438,715, Cl. 112-158.00B.
Minnich, George E., 4,439,716, Cl. 318-632.000.
Singh, Balwant; Chang, Laurence W.; and Forgione, Peter S., to American Cyanamid Company. Tertiary aralkyl urethanes and isocyanates derived therefrom. 4,439,616, Cl. 560-25.000.
Singh, Gurvinder P.; and Jolly, William D., to Victor Equipment Company; and ESAB North America, Inc. Automated cutting of plate steel. 4,439,249, Cl. 148-9.00R.
Sinha, Rabindra K., to Calgon Corporation. Use of anionic or cationic polymers to lower the electrical resistivity of fly ash. 4,439,351, Cl. 252-500.000.
Sirtori, Cesare: *See—*
Scolastico, Carlo; Sirtori, Cesare; and Kritchevsky, David, 4,439,366, Cl. 260-397.100.
Skarbek, Louis: *See—*
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.
Skega AB: *See—*
Berggren, Per-Olov, 4,439,120, Cl. 418-77.000.
SKF Industrial Trading & Development Company B.V.: *See—*
Kapaan, Hendrikus J., 4,438,987, Cl. 308-10.000.
Schalk, Bartje; Operti, Claudio; and Bras, Johan C., 4,438,990, Cl. 308-187.100.
SKF Kugellagerfabriken GmbH: *See—*
Negele, Richard; and Birkenmaier, Wilhelm, 4,438,989, Cl. 308-184.00R.
Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,438,992, Cl. 308-201.000.
SKF Nova AB: *See—*
Lundgren, Bengt, 4,438,991, Cl. 308-189.00R.
SKF Steel Engineering Aktiebolag: *See—*
Santen, Sven; and Edstrom, John O., 4,439,410, Cl. 423-350.000.
Skinner, Robert T. J.; and Tumber, Brian W., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,438,747, Cl. 123-450.000.
Skis Rossignol S.A.: *See—*
Piegay, Yves, 4,438,946, Cl. 280-602.000.
Slatton, B. Dale, to Kettelson, Ernest, a part interest. Insect exterminating device. 4,438,585, Cl. 43-113.000.
Slaugh, Lynn H.: *See—*
Lewis, Robert M.; Ryan, Robert C.; and Slaugh, Lynn H., 4,439,624, Cl. 568-470.000.
Slavin, Martin J., to Intech Systems Corp. Differential stethoscope. 4,438,772, Cl. 128-715.000.
Sledesky, Stephen M.: *See—*
Reiner, Norbert L.; and Sledesky, Stephen M., 4,439,648, Cl. 200-6.00A.
Slee, Roger H., to Brico Engineering Limited. Valve seat inserts for internal combustion engines. 4,438,740, Cl. 123-188.00S.
Small, Irwin A. Method of jawbone abutment implant for dental prostheses and implant device. 4,439,152, Cl. 433-173.000.
Smirmaul, Heinz J. Variable circular dual image corneal radius measurement instrument. 4,439,025, Cl. 351-212.000.
Smith, Geoffrey M.: *See—*
Gyugyi, Laszlo; Smith, Geoffrey M.; and Stacey, Eric J., 4,439,823, Cl. 363-161.000.
Smith, Hal W., Jr.: *See—*
Smith, Michael C.; and Smith, Hal W., Jr., 4,438,880, Cl. 228-1.00A.
Smith, Harry D., Jr.; and Arnold, Dan M., to Texaco Inc. Natural gamma ray logging with borehole effect compensation. 4,439,676, Cl. 250-256.000.
Smith International, Inc.: *See—*
Garner, Claude R.; and Neilson, William J., 4,438,934, Cl. 277-92.000.
Smith Kline & French Laboratories Limited: *See—*
Cooper, David G.; and Sach, George S., 4,439,609, Cl. 546-334.000.
Ganellin, Charon R.; Ife, Robert J.; and Owen, David A. A., 4,439,435, Cl. 424-251.000.
Jones, Martin; and Young, Rodney C., 4,439,437, Cl. 424-263.000.
Smith Laboratories, Inc.: *See—*
Smith, William S., 4,439,423, Cl. 424-94.000.
Smith, Michael C.; and Smith, Hal W., Jr., to Orthodyne Electronics Corporation. Ultrasonic wire bond touchdown sensor. 4,438,880, Cl. 228-1.00A.
Smith, Samuel W.; and McVey, Harold C., to Blue Grass Industries, Inc. Radius blade cutting apparatus for a sewing machine. 4,438,714, Cl. 112-130.000.
Smith, William S., to Smith Laboratories, Inc. Chymopapain and method for its use. 4,439,423, Cl. 424-94.000.
Smolin, William; and Estes, John H., to Texaco Inc. Zeolite adsorbent for separation of para-xylene. 4,439,535, Cl. 502-62.000.
Smyth, Lawrence C.; and Lightstone, Alexander W., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Method for making optical fiber couplers. 4,439,221, Cl. 65-4.210.
Societe Aman: *See—*
Georges, Jean-Claude, 4,439,720, Cl. 322-4.000.
Societe d "Expansion Scientifique "Expansia": *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, 4,438,681, Cl. 99-323.200.
Societe de Telecommunications Electronique Aeronautique et Maritime T.E.A.M.: *See—*
Bouvrande, Andre M., 4,439,646, Cl. 200-5.00A.
Societe d'Etudes et Applications Techniques S E A T: *See—*
Amberny, Philippe; and de Mendez, Michel O., 4,439,674, Cl. 250-227.000.
Societe Metallurgique de Gerzat: *See—*
Develay, Roger; and Anagnostidis, Marc, 4,439,246, Cl. 148-2.000.
Soejima, Munenori: *See—*
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.
Soft Sheen Products, Inc.: *See—*
Bernstein, Joel E., 4,439,427, Cl. 424-199.000.
Sohn, Frank M., to RCA Corporation. Color picture tube having improved temperature compensating support for a mask-frame assembly. 4,439,709, Cl. 313-406.000.
Sojka, Bernward: *See—*
Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, 4,439,527, Cl. 436-135.000.
Sokaris, Jerry G.: *See—*
Johnson, Cary P.; and Sokaris, Jerry G., 4,439,481, Cl. 428-235.000.
Solberg, Per I., to Stord Bartz A/S. Screw press arrangements. 4,438,691, Cl. 100-117.000.
Solek, Leszek, to Commander Electrical Materials, Inc. Electrical junction and outlet box. 4,438,859, Cl. 220-3.200.
Solem, Richard H.: *See—*
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,439,048, Cl. 374-34.000.
Solomon, Yeheskel. Wrench. 4,438,668, Cl. 81-352.000.
Soloviff, Paul G.; and Lichtenfels, William C., to Emhart Industries, Inc. Alternate manually and electrically actuated bolt. 4,438,962, Cl. 292-144.000.
Soloway, Gerald S.: *See—*
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,759, Cl. 340-703.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,761, Cl. 340-735.000.
Soloway, Samuel B., to Shell Oil Company. Fluorine-containing oxyiminocyclopropanecarboxylates. 4,439,446, Cl. 424-304.000.
Soltis, Daniel G.: *See—*
Reid, Margaret A.; Post, Robert E.; and Soltis, Daniel G., 4,439,465, Cl. 427-115.000.
Sommers, Hans: *See—*
Altemark, Detlef; Sommers, Hans; and Weid, Manfred, 4,439,135, Cl. 431-2.000.
Sondermeyer, Jack C., to Peavey Electronics Corp. Circuit for simulating vacuum tube compression in transistor amplifiers. 4,439,742, Cl. 330-262.000.
Sonoco Products Company: *See—*
Roper, Linwood W., Jr., 4,439,071, Cl. 405-216.000.
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, to Toray Industries, Inc. Polymethyl methacrylate membrane. 4,439,322, Cl. 210-500.200.
Sony Corporation: *See—*
Mogi, Takao; Morita, Kouji; and Matsunaga, Osamu, 4,439,787, Cl. 358-195.100.
Nakamura, Takashi; and Morioka, Yoshihiro, 4,439,713, Cl. 315-370.000.
Nakamura, Takashi; and Morioka, Yoshihiro, 4,439,714, Cl. 315-371.000.
Schwarz, Manfred; and Higuchi, Tadashi, 4,439,743, Cl. 330-267.000.
Shioda, Takizo; Ito, Norio; and Horiuchi, Hiroshi, 4,439,027, Cl. 353-77.000.
Sugita, Kazuhiro, 4,439,146, Cl. 432-253.000.
Yokoya, Satoshi, 4,439,696, Cl. 307-494.000.
Sorensen, Soren N.: *See—*
Petersen, Hans C.; and Sorensen, Soren N., 4,439,119, Cl. 418-61.00B.
Souriau et Cie: *See—*
Amberny, Philippe; and de Mendez, Michel O., 4,439,674, Cl. 250-227.000.
Sovak, Milos; and Ranganathan, Ramachandran, to University of California, The Regents of the. Novel amino-dioxepane intermediates for the synthesis of new non-ionic contrast media. 4,439,613, Cl. 549-347.000.
Space Structures International Corp.: *See—*
Wendel, Wendel R., 4,438,615, Cl. 52-648.000.
Spears, Lonnie K.: *See—*
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.
Spectron Development Laboratories, Inc.: *See—*
Doty, James L., 4,439,010, Cl. 350-174.000.
Spencer, William R., to General Electric Company. Maximum pressure selector device. 4,438,778, Cl. 137-112.000.
Sperry Corporation: *See—*
Priepke, Edward H.; and McAllister, Ronald L., 4,439,218, Cl. 55-288.000.
Quermann, Thomas R., 4,438,655, Cl. 74-5.00F.
Weight, Merle E.; and Swenson, Theodore S., 4,439,809, Cl. 361-220.000.
Spicer, Glaenzer: *See—*
Orain, Michel, 4,439,168, Cl. 464-69.000.
Spierings, Gijsbertus A. C. M.: *See—*
Joormann, Hendrik J. M.; and Spierings, Gijsbertus A. C. M., 4,439,008, Cl. 350-96.310.
Spooner, Archer M.: *See—*
Breglia, Denis R.; Lobb, Daniel R.; and Spooner, Archer M., 4,439,157, Cl. 434-40.000.
Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, to Krauss-Maffei Aktiengesellschaft. Munition-supply system for an armored vehicle weapon. 4,438,677, Cl. 89-36.00K.
Sprague Electric Company: *See—*
Gontowski, Walter S., Jr., 4,439,673, Cl. 250-214.00A.
Sprague, Gale. Soil compactor drive assembly. 4,439,057, Cl. 404-133.000.
Spraying Systems Company: *See—*
O'Brien, Edward J.; Paulsen, Gary A.; and Filicicchia, Daniel J., 4,438,884, Cl. 239-600.000.
SRI International: *See—*
Dawson, Marcia I.; Chan, Rebecca; and Hobbs, Peter D., 4,439,614, Cl. 560-8.000.
SRO Kugellagerwerke J. Schmid-Roost AG: *See—*
Borel, Denis, 4,438,985, Cl. 308-6.00C.
Stabilus GmbH: *See—*
Schafer, Willi, 4,438,833, Cl. 188-320.000.
Stacey, Eric J.: *See—*
Gyugyi, Laszlo; Smith, Geoffrey M.; and Stacey, Eric J., 4,439,823, Cl. 363-161.000.
Stacy, Robert A.; and Rice, Robert R., to McDonnell Douglas Corporation. Low voltage electro-optic modulator. 4,439,014, Cl. 350-388.000.
Stafsudd, Oscar M.: *See—*
Gentile, Anthony L.; Bowers, John L.; and Stafsudd, Oscar M., 4,439,266, Cl. 156-614.000.
Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive mixture based on O-naphthoquinone diazide ester of condensate of bisphenol and formaldehyde and light-sensitive copying material prepared therefrom. 4,439,511, Cl. 430-165.000.
Stain, Donald B.: *See—*
Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., 4,439,405, Cl. 423-10.000.
Stallningsgruppen i Goteborg Aktiebolag: *See—*
Wallther, Harry, 4,439,052, Cl. 403-49.000.
Stamberg, Jiri: *See—*
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,439,588, Cl. 525-366.000.
Standard Oil Company, The: *See—*
Bonny, Alan, 4,439,542, Cl. 502-207.000.
Standley, Charles L.: *See—*
Powell, Jimmie L.; Standley, Charles L.; and Suierveld, John, 4,439,270, Cl. 156-644.000.
Stanek, Jaroslav: *See—*
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.
Stanley Aviation Corporation: *See—*
Valentine, Gordon A., 4,438,959, Cl. 285-340.000.
Stape, William J.: *See—*
Kaufman, John W.; Stape, William J.; and Yeager, Patrick F., 4,439,000, Cl. 339-176.0MP.
Starr, James B., to Honeywell Inc. Semiconductor pressure transducer. 4,439,752, Cl. 338-2.000.
State of South Australia: *See—*
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., 4,438,725, Cl. 119-4.000.
Stauffer Chemical Company: *See—*
Green, Laddie L., 4,439,227, Cl. 71-95.000.
Im Han, Kyoung R., 4,439,538, Cl. 502-105.000.
Nagubandi, Sreeramulu, 4,439,373, Cl. 260-502.50F.
Stearns, Chris, to C. K. Locks Limited. Locking device for vehicles equipped with sliding windows. 4,438,965, Cl. 292-256.750.
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, to BASF Aktiengesellschaft. Preparation of acicular ferromagnetic metal particles consisting essentially of iron. 4,439,231, Cl. 75-0.5AA.
Steelcase Inc.: *See—*
Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,438,898, Cl. 248-561.000.
Stefanov, Stefan R.: *See—*
Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., 4,439,286, Cl. 204-54.00R.
Stein Industrie: *See—*
Bobichon, Jacques; and Leroy, Pierre-Loup, 4,438,784, Cl. 138-92.000.
Delaplace, Lucien; and Robert, Jacques, 4,438,707, Cl. 110-264.000.
Steiner, Alois, to Ruti Machinery Works Ltd. Apparatus for guiding a fluid medium driven weft thread in the shed of a loom and use of the apparatus at a multiple longitudinal traversing shed loom. 4,438,790, Cl. 139-435.000.
Stengle, Rolf; and Grupp, Rolf, to Krauss u. Reichert GmbH & Co.; and KG Spezialmaschinenfabrik. Cloth laying machine. 4,438,914, Cl. 270-31.000.
Stenograph Corporation: *See—*
Chvojcsek, Frank, 4,439,798, Cl. 360-4.000.
Stephens, Donald L., to PACCAR Inc. Cab pitch restraint. 4,438,825, Cl. 180-89.120.
Stephens, Raymond A., to Valeron Corporation, The. Actuator for generating tool head. 4,438,539, Cl. 10-120.50R.
Stephenson, Martin: *See—*
Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, 4,439,420, Cl. 424-78.000.
Sterling Drug Inc.: *See—*
Wentland, Mark P.; and Bailey, Denis M., 4,439,436, Cl. 424-258.000.
Steuer, Herbert K., to P.I.V. Antrieb Werner Reimers, GmbH & Co. KG. Infinitely variable cone pulley transmission. 4,439,170, Cl. 474-28.000.
Stevenson, David W., to Motorola, Inc. Low cost electro-optical connector. 4,439,006, Cl. 350-96.200.
Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Method of capturing sulfur. 4,439,406, Cl. 423-244.000.
Stewart, Thomas L.: *See—*
Nanny, Walter C.; Stewart, Thomas L.; and Hemphill, Dean P., 4,438,754, Cl. 125-14.000.
Stichting Centraal Laboratorium Van De Bloedtransfuiedienst Van Het Nederlandse Rode Kruis: *See—*
Leurink, Hendrik J., 4,439,192, Cl. 604-408.000.
Stingelin, Willy; and Loew, Peter, to Ciba-Geigy Corporation. Dye salts. 4,439,204, Cl. 8-497.000.
Stinton, Robert T.: *See—*
Long, Richard W.; and Stinton, Robert T., 4,438,531, Cl. 2-2.10R.
Stirling Thermal Motors, Inc.: *See—*
Meijer, Roelf J.; Brown, Robert J.; and Ziph, Benjamin, 4,439,169, Cl. 464-170.000.
Stoger, Klaus: *See—*
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,439,287, Cl. 204-58.000.
Stone, Orison W., to Pack Image, Inc. Package for protecting a generally rectangular parallelpiped article. 4,438,849, Cl. 206-592.000.
Stoneleigh Trust, The: *See—*
Massa, Frank, 4,439,847, Cl. 367-151.000.
Stoppani, Brian R.; Box, Nigel J.; and Phillips, David D., to Mining Supplies Limited. Conveyor drive gear box. 4,438,837, Cl. 198-735.000.
Stord Bartz A/S: *See—*
Solberg, Per I., 4,438,691, Cl. 100-117.000.
Stouffer Corporation, The: *See—*
Peleg, Yigal, 4,439,656, Cl. 219-10.55E.
Stout, Mark E., to Honeywell Inc. Energy saving boiler purge sequence control. 4,439,140, Cl. 431-31.000.
Strachan, Robert G.: *See—*
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.
Strassman, Richard J., to Badger Die Casting Corp. Aluminum furnace and preheater therefor. 4,439,145, Cl. 432-164.000.
Stricklen, Phil M.: *See—*
McDaniel, Max P.; and Stricklen, Phil M., 4,439,543, Cl. 502-228.000.
Stride Rite International, Ltd.: *See—*
McBarron, George P., 4,438,573, Cl. 36-3.00B.
Stringer, Frederick D.: *See—*
Ferguson, Daniel F.; Stringer, Frederick D.; and Esakov, Michael D., 4,439,478, Cl. 428-137.000.
Strother, Greene W., Jr., to Dow Chemical Company, The. Casting slip made from spinel and spinel refractories. 4,439,532, Cl. 501-117.000.
Strzegowski, Joseph C., Jr.: *See—*
Hardigg, James S.; Turner, E. Wayne; and Strzegowski, Joseph C., Jr., 4,439,263, Cl. 156-497.000.
Studhalter, Walter R.: *See—*
Hays, Lance G.; Studhalter, Walter R.; and Ritzi, Emil W., 4,438,638, Cl. 62-500.000.
Stull, Morton. Captive dispensing cap construction. 4,438,870, Cl. 222-48.000.
Stultz, Edward B.: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.
Stulz, Lawrence W.: *See—*
Coldren, Larry A.; and Stulz, Lawrence W., 4,439,268, Cl. 156-626.000.
Sturm, Ruger & Company, Inc.: *See—*
Ruger, William B., 4,438,678, Cl. 89-138.000.

Stylianou, Andreas S. Cassette box construction. 4,438,846, Cl. 206-387.000.

Sublett, Bobby J.; and Hilbert, Samuel D., to Eastman Kodak Company. Modified poly(tetramethylene terephthalate). 4,439,598, Cl. 528-295.300.

Suckow, David S., to Caterpillar Tractor Co. Seal for a multipiece wheel assembly. 4,438,797, Cl. 152-410.000.

Suda, Kataro, to Suda Kinzoku Seisakusho Co., Ltd. Toy for steering a simulated car. 4,438,922, Cl. 273-1.0GA.

Suda Kinzoku Seisakusho Co., Ltd.: *See*—
Suda, Kataro, 4,438,922, Cl. 273-1.0GA.

Sudbury, John D.; and Zielke, Clyde W., to Conoco Inc. Process for beneficiating high sulfur, high fluidity coal. 4,439,304, Cl. 208-8.0LE.

Sueda, Keizi: *See*—
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,439,222, Cl. 65-99.200.

Suehiro, Keigo: *See*—
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.

Suematsu, Masakazu, to Teijin Limited. Pressure-sensitive adhesive tape. 4,439,482, Cl. 428-252.000.

Sugimori, Shigeru: *See*—
Kojima, Tetsuhiko; Tsuji, Masakazu; and Sugimori, Shigeru, 4,439,340, Cl. 252-299.630.

Sugita, Kazuhiro, to Sony Corporation. Heat treatment apparatus. 4,439,146, Cl. 432-253.000.

Sugiura, Hiroaki: *See*—
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, 4,439,393, Cl. 264-532.000.

Suierveld, John: *See*—
Powell, Jimmie L.; Standley, Charles L.; and Suierveld, John, 4,439,270, Cl. 156-644.000.

Sullivan, John L., Jr.; Pearson, Robert D.; and Youngblood, Donald A., to Burroughs Corporation. Endorsing apparatus utilizing holding force pressure. 4,438,698, Cl. 101-287.000.

Sullivan, Raymond B. Fishing lure. 4,438,583, Cl. 43-42.060.

Sumitomo Chemical Company, Limited: *See*—
Harada, Naoki; and Abeta, Sadaharu, 4,439,205, Cl. 8-527.000.

Sumitomo Metal Mining Company Limited: *See*—
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.

Summa, Gareth, to Summa-Rise. Bucket attachment for tractors. 4,439,088, Cl. 414-703.000.

Summa-Rise: *See*—
Summa, Gareth, 4,439,088, Cl. 414-703.000.

Sun, Lilla S.; and Anderson, John C., to Beckman Instruments, Inc. Photometric accuracy and linearity test solution. 4,439,347, Cl. 252-408.100.

Suncom, Incorporated: *See*—
Cecchi, Marino, 4,439,649, Cl. 200-6.00A.

Suovaniemi, Osmo A., to Eflab Oy. Photometer. 4,439,039, Cl. 356-416.000.

Suzuki, Hiroaki: *See*—
Suzuki, Yasoji; Suzuki, Hiroaki; and Saeki, Yukihiro, 4,439,697, Cl. 307-530.000.

Suzuki, Hiroshi: *See*—
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Namba, Yuzuru; and Aoyagi, Kenichi, 4,438,742, Cl. 123-308.000.
Namba, Yuzuru; and Aoyagi, Kenichi, 4,438,743, Cl. 123-308.000.

Suzuki, Kenji: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.

Suzuki, Minoru: *See*—
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,439,222, Cl. 65-99.200.

Suzuki, Tomio; and Morimoto, Kotaro, to Kobe Steel, Limited. Method and apparatus for combustion with a minimum of NOx emission. 4,439,137, Cl. 431-8.000.

Suzuki, Yasoji; Suzuki, Hiroaki; and Saeki, Yukihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Sense amplifier circuit. 4,439,697, Cl. 307-530.000.

Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., to Nauchno Proizvodstvennoe Obiedienenie Po Toplivnoi Apparature Dvigatelei. Device for fuel delivery to internal combustion engine with vaporization of injected fuel. 4,438,750, Cl. 123-557.000.

Svrcek, William Y.: *See*—
Behie, Leo A.; Berk, Dimitrios; Bishnoi, P. Raj; and Svrcek, William Y., 4,439,412, Cl. 423-573.00G.

Swanson, David; and Edgren, David, to Alza Corporation. Theophylline therapy. 4,439,195, Cl. 604-890.000.

Swartley, John S. Convection food heating. 4,439,459, Cl. 426-438.000.

Swarup, Rajeshwar, to Occidental Chemical Corporation. Method for repairing perfluorinated polymeric microporous electrolytic cell separators by heat sealing. 4,439,296, Cl. 204-253.000.

Sweeney, Paul L., Jr.: *See*—
Letterio, Fred, 4,438,773, Cl. 128-748.000.

Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., to Research Corporation. Group B Streptococcus antigens and vaccines. 4,439,422, Cl. 424-92.000.

Swenson, Theodore S.: *See*—
Weight, Merle E.; and Swenson, Theodore S., 4,439,809, Cl. 361-220.000.

Swiatosz, Edmund, to United States of America, Navy. Smoke generator for use with water and smoke generant. 4,439,341, Cl. 252-305.000.

Swithenbank, Colin, to Rohm and Haas Company. Substituted phthalimides herbicides. 4,439,229, Cl. 71-96.000.

Sylvia, Frank, to Pace Incorporated. Desoldering device and improved heater assembly therefor. 4,439,667, Cl. 219-230.000.

SYNTEX (U.S.A.) Inc.: *See*—
Halleay, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,439,441, Cl. 424-273.00R.

Syva Company: *See*—
Khanna, Pyare; and Colvin, Warren, 4,439,356, Cl. 260-112.00R.

Sze, Morgan C.: *See*—
Schindler, Harvey D.; and Sze, Morgan C., 4,439,313, Cl. 208-251.00H.

Szikora, Bela: *See*—
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Szirmai, Endre: *See*—
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Szymski, Eugene J., to Schwinn Bicycle Company. Calibration of load indicator for ergometric exerciser. 4,438,921, Cl. 272-73.000.

Tabor, Harry Z., to Scientific Research Foundation, The. Pipe coupling. 4,438,952, Cl. 285-39.000.

Tabuchi, Takahisa: *See*—
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.

Tachino, Ichiro: *See*—
Shimoyama, Yoshiaki; Tachino, Ichiro; and Koga, Shigenobu, 4,439,251, Cl. 148-31.550.

Taguchi, Kiyomi: *See*—
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Tagusagawa, Atsushi: *See*—
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.

Tahara, Tamotsu: *See*—
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

Tajika, Fumitaka: *See*—
Matsuoka, Youichi; and Tajika, Fumitaka, 4,439,706, Cl. 350-353.000.

Tajima, Hidemi, to Hoya Corporation. Optical glass. 4,439,530, Cl. 501-45.000.

Takahara, Ichiro; and Yabu, Tadahiko, to Sanyo Electric Co., Ltd. Record player. 4,439,850, Cl. 369-77.200.

Takahashi, Keietsu: *See*—
Hayashi, Miki; Takahashi, Keietsu; and Hazue, Masaaki, 4,439,413, Cl. 424-1.100.

Takahashi, Toshikatsu: *See*—
Kammuri, Youichi; Yamauchi, Takafumi; and Takahashi, Toshikatsu, 4,439,456, Cl. 426-276.000.

Takahashi, Toshio: *See*—
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.

Takamatsu, Ryoichi, to Nippon Electric Co., Ltd. Memory device. 4,439,843, Cl. 365-218.000.

Takamisawa Electric Co., Ltd.: *See*—
Fujii, Kunihisa; Tomono, Noboru; and Shikano, Yukio, 4,439,750, Cl. 335-274.000.

Takano, Ikuo: *See*—
Umino, Hiroshi; and Takano, Ikuo, 4,439,653, Cl. 200-153.0SC.

Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, to Mitsubishi Gas Chemical Company, Inc. Coating composition. 4,439,560, Cl. 523-437.000.

Takatsuki, Yukio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.

Takaya, Tadashi, to Murata Manufacturing Co., Ltd. Piezoelectric loudspeaker. 4,439,640, Cl. 179-110.00A.

Takeda, Yasuhiko: *See*—
Kitajima, Soichi; Iwamura, Kazuyuki; and Takeda, Yasuhiko, 4,438,759, Cl. 126-433.000.

Takemura, Shuji; Kawano, Yoshihiko; and Hirakawa, Kazumi, to Honshu Seishi Kabushiki Kaisha. Electric discharge recording materials. 4,439,485, Cl. 428-323.000.

Takenaka, Shigenori: *See*—
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, 4,439,322, Cl. 210-500.200.

Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, to Nippon Steel Corporation. Continuous casting of steel slabs and blooms free from surface defects. 4,438,803, Cl. 164-472.000.

Takeuchi, Naoki: *See*—
Sano, Tsutomu; Takeuchi, Naoki; and Kurumaji, Masanobu, 4,439,123, Cl. 425-112.000.

Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.

Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, to Nippondenso Co., Ltd. Filter means. 4,439,321, Cl. 210-493.100.

Takino, Shigekatsu: *See*—
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatsu, 4,438,701, Cl. 104-172.00B.

Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, to Toyo Stauffer Chemical Co., Ltd. Catalytic component for polymerization of α-olefin and method for homo- or co-polymerization of α-olefin. 4,439,539, Cl. 502-112.000.

Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, to Toyo Stauffer Chemical Co., Ltd. Catalytic component for polymerization of α-olefin and method for homo- or co-polymerization of α-olefin. 4,439,541, Cl. 502-125.000.

Takushima, Takashi: *See*—
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,438,580, Cl. 40-590.000.

Tamagawa, Shigehisa; Fuchizawa, Tetsuro; and Ono, Minoru, to Fuji Photo Film Co., Ltd. Water-proof photographic support. 4,439,496, Cl. 428-513.000.

Tamosauskas, Albert E.; and Temple, Chester S., to PPG Industries, Inc. Aqueous peroxide emulsion for use with glass fibers. 4,439,558, Cl. 523-217.000.

Tamura, Takeo: *See*—
Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, 4,439,402, Cl. 422-159.000.

Tamura, Teizo: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Tanaka, Kazuyoshi: *See*—
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.

Tanaka, Yoshitaka: *See*—
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, 4,439,322, Cl. 210-500.200.

Tandberg Data A/S: *See*—
Rudi, Guttorm, 4,438,879, Cl. 226-188.000.

Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, to Ciba-Geigy Corporation. Peptide derivatives. 4,439,425, Cl. 424-177.000.

Targett, Ralph C.: *See*—
McIlroy, Malcolm B.; and Targett, Ralph C., 4,439,679, Cl. 350-353.000.

Tarkett AB: *See*—
Sachs, Peter R.; and Sears, James W., 4,439,480, Cl. 428-161.000.

Tarleton, George K., to GTE Automatic Electric Labs Inc. Low voltage protection circuit. 4,439,805, Cl. 361-92.000.

Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Method for transferring and fixing a toner image. 4,439,462, Cl. 427-14.100.

Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Doryokuro Kakunenryo Kaihatsu Jigyodan. Nuclear fuel conversion systems. 4,439,402, Cl. 422-159.000.

Tateno, Haruo, to Rikagaku Kenkyusho. Method of operating a plasma generating apparatus. 4,439,662, Cl. 219-121.0PY.

Tatevosian, Ruben A.: *See*—
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Taylor, Malcolm F., to Marconi Company Limited, The. Apparatus for accurately moving a body in accordance with a predetermined motion. 4,439,715, Cl. 318-627.000.

Tazaki, Kichiya: *See*—
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

TDK Electronics Co., Ltd.: *See*—
Okamura, Masatoshi; and Shibaj, Haruo, 4,438,860, Cl. 220-4.00B.

Technicare Corporation: *See*—
Hinshaw, Waldo S.; and Gauss, Robert C., 4,439,733, Cl. 324-322.000.

Teijin Limited: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.
Suematsu, Masakazu, 4,439,482, Cl. 428-252.000.

Telefonaktiebolaget L M Ericsson: *See*—
Johansson, Jan H., 4,439,802, Cl. 361-56.000.

Temple, Chester S.: *See*—
Tamosauskas, Albert E.; and Temple, Chester S., 4,439,558, Cl. 523-217.000.

Tennessee Valley Authority: *See*—
Boles, Jeffrey L.; and Jones, Thomas M., 4,439,223, Cl. 71-30.000.

Terada, Makato, to Showa Manufacturing Co., Ltd. Spring receiving structure for hydraulic shock absorber. 4,438,908, Cl. 267-8.00R.

Terada, Osamu: *See*—
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Teramachi, Hiroshi. Ball screw assembly containing a ball spline unit for exact slow feed and power transmission mechanism comprising said ball screw assembly. 4,438,986, Cl. 308-6.00R.

Terano, Minoru: *See*—
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.

Teraoka, Masanori: *See*—
Matsumoto, Seiji; Teraoka, Masanori; and Komaki, Takao, 4,439,682, Cl. 250-327.200.

Terasaki, Syuuzi: *See*—
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, 4,439,811, Cl. 361-313.000.

Tereschenko, Lev A.: *See*—
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Terradyne Limited: *See*—
Roe, Jonas L., 4,438,575, Cl. 37-4.000.

Terry, Michael B., to Mostek Corporation. Low loop current switch latch circuit. 4,439,637, Cl. 179-16.00F.

Tetra Pak Developpement Ltd.: *See*—
Cheever, Richard N., 4,439,686, Cl. 250-492.300.

Teuscher, Leon A.: *See*—
Pan, Frank Y.; Morrison, Ian D.; and Teuscher, Leon A., 4,439,507, Cl. 430-058.000.

Texaco Inc.: *See*—
Babic, Gary T., 4,439,612, Cl. 548-546.000.
Bousaid, Issam S., 4,438,814, Cl. 166-273.000.
Brennan, Michael E.; and Rice, Doris M., 4,439,546, Cl. 521-48.000.
Brennan, Michael E., 4,439,549, Cl. 521-131.000.
Brennan, Michael E., 4,439,550, Cl. 521-131.000.
Smith, Harry D., Jr.; and Arnold, Dan M., 4,439,676, Cl. 250-256.000.
Smolin, William; and Estes, John H., 4,439,535, Cl. 502-62.000.
Yeakey, Ernest L.; Cuscurida, Michael; and Brennan, Michael E., 4,439,551, Cl. 521-131.000.

Texas Instruments Incorporated: *See*—
Allevato, Tony E., 4,439,244, Cl. 134-33.000.
Titus, Stephen D., 4,439,243, Cl. 134-33.000.
Wiggins, Richard H.; Doddington, George; and Cato, Craig J., 4,439,161, Cl. 434-201.000.

Tezuka, Toshiro: *See*—
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, 4,438,796, Cl. 152-353.00R.

Thede, Ralph W. Boat loader. 4,439,086, Cl. 414-462.000.

Theeuwes, Felix, to ALZA Corporation. Parenteral agent dispensing equipment. 4,439,183, Cl. 604-85.000.

Theis, Peter F.; and Buchberger, Gregory, to Theis, Peter F. Message delivery system. 4,439,635, Cl. 179-6.200.

Theodorakis, Michael C.: *See*—
Brightman, Alan H., II; and Theodorakis, Michael C., 4,439,198, Cl. 604-894.000.

Thermo Electron Corporation: *See*—
Morgan, Dean T., 4,438,636, Cl. 62-325.000.

Thill, Fernand: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, 4,439,234, Cl. 75-52.000.

Thomas, David K.: *See*—
Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., 4,438,694, Cl. 101-152.000.

Thomas, Lowell S., to Dow Chemical Company, The. Carbonate polymers containing a salt of a crown complex as an ignition depressant. 4,439,566, Cl. 524-108.000.

Thomas, Norman W.: *See*—
McNew, George L.; and Thomas, Norman W., 4,438,593, Cl. 47-57.600.

Thompson, Gregory J.: *See*—
Lomas, David A.; and Thompson, Gregory J., 4,439,533, Cl. 502-6.000.

Thompson, Kenneth H. Mobile toy for kitten or similar animal. 4,438,727, Cl. 119-29.000.

Thomson-CSF: *See*—
Epsztein, Bernard, 4,439,746, Cl. 331-82.000.

Three Sisters Ranch Enterprises: *See*—
Bullock, Joseph J., III, 4,438,857, Cl. 215-256.000.

Thuries, Edmond; Nicoloso, Dante; and Pham Van, Doan, to Alsthom-Atlantique. Pressurized gas circuit-breaker having opening and closing resistors. 4,439,651, Cl. 200-144.0AP.

Tiegs, Paul E.: *See*—
Chamberlain, Joseph G.; and Tiega, Paul E., 4,438,756, Cl. 126-131.000.

Tieh-Yin Fu, Frank: *See*—
Winter, Roland A. E.; Malherbe, Roger F.; and Tieh-Yin Fu, Frank, 4,439,565, Cl. 524-103.000.

Timberlake, George A., Jr., to Air Products and Chemicals, Inc. Pressure relief alert. 4,438,792, Cl. 141-95.000.

Timberland Equipment Limited: *See*—
Paladino, Anthony, 4,438,710, Cl. 111-3.000.

Timm, Edward E.: *See*—
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,439,048, Cl. 374-34.000.

Timme, Albert C., Jr., to Hughes Tool Company. Tool joint bench mark. 4,438,953, Cl. 285-93.000.

Timofeev, Alexandr N.: *See*—
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.

Titov, Mikhail Y.: *See—*
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Titus, Stephen D., to Texas Instruments Incorporated. Apparatus and method of material removal with fluid flow within a slot. 4,439,243, Cl. 134-33.000.

Tkhai, Vitaly S.: *See—*
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.

TMC Corporation: *See—*
Gertsch, Ulrich, 4,438,948, Cl. 280-618.000.

Tobias, Michael A., to Mobil Oil Corporation. Acrylic modified anionic water dispersible styrene (meth)acrylonitrile copolymers. 4,439,495, Cl. 428-463.000.

Todo Seisakusho Ltd.: *See—*
Hamada, Shoichi, 4,438,553, Cl. 28-184.000.

Todorov, Ivan M.: *See—*
Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., 4,439,286, Cl. 204-54.00R.

Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., to Edinen Centar Po Chimia. Electrolyte for the deposition of bright tin coatings. 4,439,286, Cl. 204-54.00R.

Toho Beslon Co., Ltd.: *See—*
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.

Toho Titanium Co., Ltd.: *See—*
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.

Tokai Industrial Sewing Machine Co. Ltd.: *See—*
Kato, Takashi, 4,438,713, Cl. 112-100.000.

Tokunaga, Hiroshi: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Aiga, Toshiro; and Maeda, Toshiaki, 4,438,804, Cl. 164-522.000.
Kiguchi, Majime, 4,439,851, Cl. 369-77.200.
Komatsu, Shigeru; and Nakamura, Michio, 4,438,556, Cl. 29-576.00B.
Nabeshima, Daiki, 4,439,849, Cl. 369-50.000.
Suzuki, Yasoji; Suzuki, Hiroaki; and Saeki, Yukihiro, 4,439,697, Cl. 307-530.000.
Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, 4,439,402, Cl. 422-159.000.
Umino, Hiroshi; and Takano, Ikuo, 4,439,653, Cl. 200-153.0SC.
Yoshimaru, Tomohisa; Yamashita, Mitsuo; and Daigo, Junichi, 4,439,797, Cl. 360-134.000.

Toma, Hitoshi; Kimura, Tomohiro; and Kondo, Hideyo, to Canon Kabushiki Kaisha. Method for covering with cylindrically shaped heat-shrinkable film. 4,439,258, Cl. 156-86.000.

Tomaiuolo, Francesco; and Capano, Michele, to Alfachimici S.p.A. Solution for stripping a layer of tin or tin-lead alloy from a substrate by means of a spraying operation. 4,439,338, Cl. 252-79.100.

Tomaszewski, Thaddeus W., to OMI International Corporation. Trivalent chromium electrolyte and process employing neodymium reducing agent. 4,439,285, Cl. 204-51.000.

Tomiyasu, Shizuo: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,539, Cl. 502-112.000.
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,541, Cl. 502-125.000.

Tomono, Makoto: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.

Tomono, Noboru: *See—*
Fujii, Kunihisa; Tomono, Noboru; and Shikano, Yukio, 4,439,750, Cl. 335-274.000.

Tomren, Douglas R.: *See—*
Hefley, Richard M.; Tomren, Douglas R.; and Jacoby, Jerold L., 4,439,767, Cl. 343-18.00E.

Tomson, James M., to General Electric Company. Apparatus and methods for assembling end shield assemblies for dynamoelectric machines. 4,438,839, Cl. 198-345.000.

Toohey, William J., to Jetline Engineering, Inc. Welding apparatus wherein physical contact of welding electrode with workpiece is mechanically sensed. 4,439,664, Cl. 219-124.020.

Toray Industries, Incorporated: *See—*
Kawamura, Hiroshi; and Mibae, Giro, 4,439,557, Cl. 523-216.000.
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, 4,439,322, Cl. 210-500.200.

Torborg, Ralph H.: *See—*
Nelson, Lorne W.; and Torborg, Ralph H., 4,439,139, Cl. 431-20.000.

Torniainen, Matti J.: *See—*
Mathur, Achint P.; Torniainen, Matti J.; and Shawcross, James P., 4,438,807, Cl. 165-133.000.

Torstensson, Bengt-Arne. Device for taking ground water samples in soil and rock. 4,438,654, Cl. 73-864.520.

Toscano, Luciano; and Cappelletti, Leonardo M., to Pierrel S.p.A. Semisynthetic macrolidic antibiotics, intermediate compounds for their preparation and related pharmaceutical compositions containing them. 4,439,426, Cl. 424-181.000.

Toth, Laszlo: *See—*
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.

Towle, Herbert C.: *See—*
Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., 4,439,156, Cl. 434-12.000.

Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., to Dow Chemical Company, The. Accelerating rate calorimeter and method of operation. 4,439,048, Cl. 374-34.000.

Toyo Stauffer Chemical Co., Ltd.: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,539, Cl. 502-112.000.
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,541, Cl. 502-125.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nomura, Yoshihisa, 4,438,832, Cl. 188-73.450.
Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,438,741, Cl. 123-188.00M.
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.

Tractel S.A.: *See—*
Desplats, Andre, 4,438,659, Cl. 74-529.000.

Traenckner, Hans-Joachim: *See—*
Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, 4,439,591, Cl. 528-73.000.

Treasurywala, Adi: *See—*
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, 4,439,617, Cl. 560-39.000.

Treichel, Richard; and Moon, Seaton, to Deere & Company. Draft control system for agricultural tractor. 4,438,818, Cl. 172-9.000.

Trekoval, Jiri: *See—*
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,439,588, Cl. 525-366.000.

Trimnell, Donald; and Shasha, Baruch S., to United States of America, Agriculture. Encapsulation by entrapment within polyhydroxy polymer borates. 4,439,488, Cl. 428-402.240.

TRW Inc.: *See—*
Zehren, James N., 4,438,996, Cl. 339-40.000.

Tsau, Josef H.; and Young, James G., to G. D. Searle & Co. Dipeptide sweetener sulfate and sulfonate salts. 4,439,460, Cl. 426-548.000.

Tsiang, Horace H., to Wang Laboratories, Inc. Data processing machine with improved cache memory management. 4,439,829, Cl. 364-200.000.

Tsubakimoto Chain Company: *See—*
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatsu, 4,438,701, Cl. 104-172.00B.

Tsuchiya, Yoshikazu: *See—*
Sato, Makoto; Tsuchiya, Yoshikazu; and Ohmori, Taiji, 4,439,832, Cl. 364-426.000.

Tsuda, Kazuhiko: *See—*
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.

Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Automatically fastening seatbelt system. 4,438,949, Cl. 280-804.000.

Tsuji, Masakazu: *See—*
Kojima, Tetsuhiko; Tsuji, Masakazu; and Sugimori, Shigeru, 4,439,340, Cl. 252-299.630.

Tsuji, Nobuo: *See—*
Yamada, Yasuyuki; Fujiyama, Masaaki; and Tsuji, Nobuo, 4,439,486, Cl. 428-332.000.

Tsuji, Sadahiko: *See—*
Okajima, Hidekazu; and Tsuji, Sadahiko, 4,439,018, Cl. 350-430.000.

Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of fixing an annular element on a shaft. 4,438,555, Cl. 29-505.000.

Tsurufuji, Makoto: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Tsushima, Rikio: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,439,417, Cl. 424-70.000.

Tucker, Albert R.: *See—*
Williams, Michael R.; and Tucker, Albert R., 4,438,957, Cl. 285-223.000.

Tucker, Kenneth W.: *See—*
Joo', Louis A.; Tucker, Kenneth W.; and McCown, Frank E., Jr., 4,439,382, Cl. 264-29.500.

Tuda, Mamoru: *See—*
Asai, Koichi; Oe, Kunio; and Tuda, Mamoru, 4,438,559, Cl. 29-740.000.

Tumber, Brian W.: *See—*
Skinner, Robert T. J.; and Tumber, Brian W., 4,438,747, Cl. 123-450.000.

Turer, Robert N.: *See—*
Zison, Stanley W.; and Turer, Robert N., 4,438,883, Cl. 239-553.300.

Turfco Manufacturing, Inc.: *See—*
Kaercher, William C., Jr., 4,438,873, Cl. 222-616.000.

Turner, David D. Hand-held cutting tool. 4,438,563, Cl. 30-156.000.

Turner, E. Wayne: *See—*
Hardigg, James S.; Turner, E. Wayne; and Strzegowski, Joseph C., Jr., 4,439,263, Cl. 156-497.000.

Turner, Harvey N., Jr., to Motorola, Inc. Stabilized high efficiency radio frequency amplifier. 4,439,741, Cl. 330-149.000.

Twieg, Robert J.: *See—*
Gendler, Paul L.; and Twieg, Robert J., 4,439,280, Cl. 204-2.000.

Tyndale Plains-Hunter, Ltd.: *See—*
Gould, Francis E.; and Johnston, Christian W., 4,439,583, Cl. 525-127.000.
Gould, Francis E.; and Johnston, Christian W., 4,439,584, Cl. 525-127.000.
Gould, Francis E.; and Johnston, Christian W., 4,439,585, Cl. 525-127.000.

UBE Industries: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.

Uchida, Manabu: *See—*
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, 4,439,605, Cl. 536-71.000.

Uecker, Myron: *See—*
Merle, Rene; Uecker, Myron; and Kozlik, Robert, 4,438,634, Cl. 62-123.000.

Ueda, Katsuhiko: *See—*
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.

Ueda, Yasuhiro, to Olympus Optical Co., Ltd. Connecting device for an endoscopic television camera. 4,439,030, Cl. 354-62.000.

Uhde GmbH: *See—*
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.

Uhoch, John: *See—*
Protzmann, Donald E.; Roveda, Ronald P.; and Uhoch, John, 4,439,190, Cl. 604-319.000.

Ulrich, Lawrence W.; and Walker, Connie W., to Durable Packaging Corporation. Belt tracking and tensioning arrangement. 4,438,617, Cl. 53-137.000.

Ulug, Mehmet E., to General Electric Company. Bimodal bus accessing system. 4,439,856, Cl. 370-85.000.

Umemoto, Yoshiro: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.

Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, to Sanraku-Ocean Co., Ltd. Anthracycline derivatives of β-rhodomycinone glycosides. 4,439,603, Cl. 536-6.400.

Umino, Hiroshi; and Takano, Ikuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit breaker operating apparatus. 4,439,653, Cl. 200-153.0SC.

Unarco Industries, Inc.: *See—*
Loomis, Russell M.; Gaikowski, Michael D.; and Brzezinski, Denis R., 4,439,076, Cl. 410-153.000.

UNC Recovery Corporation: *See—*
Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., 4,439,405, Cl. 423-10.000.

Unger, Hans P. O.; and Westberg, Johan E. H., to Unger, Hans Peter Olof; and Westberg, Johan Eric Hayden. Skin incising device. 4,438,770, Cl. 128-637.000.

Unger, Hans Peter Olof: *See—*
Unger, Hans P. O.; and Westberg, Johan E. H., 4,438,770, Cl. 128-637.000.

Unied Scientific Corporation: *See—*
Hesterman, Victor W.; and Drummond, William E., 4,439,732, Cl. 324-247.000.

Union Carbide Corporation: *See—*
Barber, Alan G., 4,439,561, Cl. 524-13.000.
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,439,586, Cl. 525-169.000.
Kupcikevicius, Vytautas; and Raudys, Vytas A., 4,438,545, Cl. 17-49.000.
Olszewski, Walter J.; Pahade, Ravindra F.; and Ziemer, John H., 4,439,220, Cl. 62-31.000.
Sheada, Richard E., 4,439,368, Cl. 260-404.000.

Union Oil Company of California: *See—*
Ghandehari, Mohammad H., 4,439,232, Cl. 75-10.00R.

United Industries Corporation: *See—*
Albanese, James J., 4,439,342, Cl. 252-305.000.
Albanese, James J., 4,439,343, Cl. 252-305.000.
Albanese, James J., 4,439,344, Cl. 252-312.000.

United States of America
Agriculture: *See—*
Trimnell, Donald; and Shasha, Baruch S., 4,439,488, Cl. 428-402.240.
Air Force: *See—*
Hawrylo, Frank Z., 4,439,399, Cl. 420-580.000.
Hefley, Richard M.; Tomren, Douglas R.; and Jacoby, Jerold L., 4,439,767, Cl. 343-18.00E.
Masak, Raymond J., 4,439,769, Cl. 343-380.000.
Army: *See—*
Christy, Orrin D., 4,439,012, Cl. 350-294.000.
Jackson, David A., Jr., 4,439,267, Cl. 156-614.000.
Knapp, Charles A., 4,438,700, Cl. 102-334.000.
Energy: *See—*
Kim, Jinchoon, 4,439,395, Cl. 376-130.000.
Kurnit, Norman A., 4,439,860, Cl. 372-70.000.
Shiue, Chyng-Yann; and Wolf, Alfred P., 4,439,414, Cl. 424-1.100.
Environmental Protection Agency: *See—*
Pfefferle, William C., 4,439,136, Cl. 431-7.000.
National Aeronautics and Space Administration: *See—*
Nola, Frank J., 4,439,718, Cl. 318-729.000.
Reichman, Benjamin; and Byvik, Charles E., 4,439,301, Cl. 204-278.000.
Reid, Margaret A.; Post, Robert E.; and Soltis, Daniel G., 4,439,465, Cl. 427-115.000.
National Aeronautics & Space Administration: *See—*
Kobayashi, Herbert S.; Shores, Paul W.; and Rozas, Patrick, 4,439,766, Cl. 343-9.00R.
Navy: *See—*
Breglia, Denis R.; Lobb, Daniel R.; and Spooner, Archer M., 4,439,157, Cl. 434-40.000.
Cukauskas, Edward J., 4,439,269, Cl. 156-643.000.
Kelly, Joseph E., 4,438,782, Cl. 137-628.000.
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,439,770, Cl. 343-381.000.
Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., 4,439,156, Cl. 434-12.000.
Swiatosz, Edmund, 4,439,341, Cl. 252-305.000.
U.S. Philips Corporation: *See—*
Berney, Jean-Claude, 4,439,717, Cl. 318-696.000.
Bril, Thijs W.; and van den Hoek, Willibrordus G. M., 4,439,294, Cl. 204-192.00E.
Haubrich, Peter; Hoogendoorn, Abraham; and Jahnke, Uwe, 4,439,799, Cl. 360-77.000.
Hermeyer, Bernd; Mester, Heinz; and Negle, Hans, 4,439,869, Cl. 378-113.000.
Joormann, Hendrik J. M.; and Spierings, Gijsbertus A. C. M., 4,439,008, Cl. 350-96.310.
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,439,529, Cl. 501-45.000.
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Else C.; and van de Plassche, Rudy J., 4,439,739, Cl. 330-107.000.
Pelletier, Joel A.; and Breuillard, Robert, 4,439,695, Cl. 307-477.000.
van de Bult, Oelke, 4,439,792, Cl. 360-106.000.
United Technologies Corporation: *See—*
Antonellis, Stephen M., 4,439,107, Cl. 416-95.000.
Ault, Earle A.; and Bevan, Charles E., 4,439,241, Cl. 134-22.170.
Ferris, Donald L.; Oister, Elliot F.; and Marchitto, Michael J., 4,439,106, Cl. 416-61.000.
University of Arizona Foundation, The: *See—*
Kessler, John O., 4,438,591, Cl. 47-1.400.
University of California, The Regents of the: *See—*
McIlroy, Malcolm B.; and Targett, Ralph C., 4,439,679, Cl. 250-282.000.
Sovak, Milos; and Ranganathan, Ramachandran, 4,439,613, Cl. 549-347.000.
University of Illinois Foundation: *See—*
Brightman, Alan H., II; and Theodorakis, Michael C., 4,439,198, Cl. 604-894.000.
Holonyak, Nick, Jr., 4,439,782, Cl. 357-17.000.
University of Miami: *See—*
Le Mehaute, Bernard J., 4,439,058, Cl. 405-24.000.
University of Minnesota, Regents of the: *See—*
Blackshear, Perry J.; Palmer, John L.; and Rohde, Thomas D., 4,439,181, Cl. 604-56.000.
Broadhurst, John H., 4,439,680, Cl. 250-310.000.
University of Virginia Alumni Patents Foundation: *See—*
Friesen, W. Otto; and Block, Gene D., 4,438,771, Cl. 128-671.000.
University Patents, Inc.: *See—*
Garito, Anthony F., 4,439,514, Cl. 430-272.000.
Lauks, Imants R., 4,439,464, Cl. 427-76.000.
UOP Inc.: *See—*
Lomas, David A.; and Thompson, Gregory J., 4,439,533, Cl. 502-6.000.
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,438,816, Cl. 166-303.000.
Wood, Charles E.; and Vangelisti, Ronald J., 4,439,687, Cl. 290-40.00R.
Upadhyayula, Lakshminarasimha C.: *See—*
Kumar, Mahesh; and Upadhyayula, Lakshminarasimha C., 4,439,744, Cl. 330-285.000.
Upjohn Company, The: *See—*
Coleman, James H., 4,439,451, Cl. 424-317.000.
Robert, Andre; and Lancaster, Cleo, 4,439,445, Cl. 424-304.000.
Vecchio, Thomas J., 4,439,419, Cl. 424-78.000.
Wiley, Paul F., 4,439,602, Cl. 536-6.400.
Upjohn Manufacturing Company M, The: *See—*
Coleman, James H., 4,439,450, Cl. 424-317.000.
Upp, Daniel C.: *See—*
Lawrence, Alan J.; and Upp, Daniel C., 4,439,826, Cl. 364-200.000.
Upthegrove, Richard: *See—*
Rienks, Bert J., 4,439,098, Cl. 414-43.000.
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, to UOP Inc. Process for recovery of hydrocarbons from oil shale. 4,438,816, Cl. 166-303.000.

Vacuumschmelze GmbH: *See—*
Menzel, Klaus; Erd, Ludwig; and Marinescu, Marlene, 4,439,700, Cl. 310-13.000.

Valenti, Salvatore: *See—*
Runyon, James R.; and Valenti, Salvatore, 4,439,203, Cl. 8-496.000.

Valentine, Gordon A., to Stanley Aviation Corporation. Torsionally deflectable seal ring assembly for fluid-receiving systems. 4,438,959, Cl. 285-340.000.

Valeron Corporation, The: *See—*
Stephens, Raymond A., 4,438,539, Cl. 10-120.50R.

Valimont, James L., to PPG Industries, Inc. Method and apparatus for assembling sandwiches comprising hot bent glass sheets. 4,439,264, Cl. 156-556.000.

Valka, William A.: *See—*
Pokladnik, Roger L.; and Valka, William A., 4,438,817, Cl. 166-341.000.

Vance, Gilbert W.: *See—*
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,438,643, Cl. 72-49.000.

van de Bult, Oelke, to U.S. Philips Corporation. Swing arm arrangement for a magnetic disc storage apparatus. 4,439,792, Cl. 360-106.000.

Van Demark, Richard D.: *See—*
Pavone, Peter J.; and Van Demark, Richard D., 4,439,261, Cl. 156-345.000.

van den Bemt, Johannes C. A.: *See—*
Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., 4,439,049, Cl. 374-124.000.

van den Hoek, Willibrordus G. M.: *See—*
Bril, Thijs W.; and van den Hoek, Willibrordus G. M., 4,439,294, Cl. 204-192.00E.

van de Plassche, Rudy J.: *See—*
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,439,739, Cl. 330-107.000.

van der Gaarden, Cornelis, to Outinord St. Amand S.A. Tunnel framings. 4,439,064, Cl. 405-150.000.

Vanderveen, John W.: *See—*
Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., 4,439,523, Cl. 435-243.000.

van der Veen, Romke. Method and device for measuring the density of fluids particularly dredgings. 4,438,651, Cl. 73-433.000.

Vangelisti, Ronald J.: *See—*
Wood, Charles E.; and Vangelisti, Ronald J., 4,439,687, Cl. 290-40.00R.

van Hes, Roelof; and Grosscurt, Arnoldus C., to Duphar International Research B.V. 1-Alkoxycarbonylphenylcarbamoyl-3-phenyl-4-cyanoalkyl-2-pyrazolines and use as insecticides. 4,439,440, Cl. 424-273.00P.

Van Kol, Gerald W. Inductor type half wave antenna. 4,439,772, Cl. 343-749.000.

van Meurs, Hubrecht C. A.: *See—*
Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, 4,439,306, Cl. 208-11.00R.

van Schagen, Nicolaas L.: *See—*
Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., 4,439,049, Cl. 374-124.000.

Van Vliet, James G.; and Aralis, Frank M., to Beckman Instruments, Inc. Graphics memory expansion system. 4,439,762, Cl. 340-750.000.

Varga, Sandor L.: *See—*
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.

Varnagy, Zoltan: *See—*
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.

Varo, Inc.: *See—*
Grippe, James M., 4,439,821, Cl. 363-26.000.

Varta Batterie Aktiengesellschaft: *See—*
Bittihn, Rainer; and Yalcin, Eren, 4,439,502, Cl. 429-104.000.

Vaughan, Daniel J. Electrodialytic purification process. 4,439,293, Cl. 204-180.00P.

Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Doliner, Herbert, 4,438,697, Cl. 101-183.000.

Veber, Daniel F.: *See—*
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.

Vecchiarelli, Francis, to Hunter Douglas International N.V. Headrail installation bracket. 4,438,897, Cl. 248-544.000.

Vecchio, Thomas J., to Upjohn Company, The. Method of treating gastric hyperacidity in humans employing a copolymer of polyethylenepolyamine and a bifunctional subetance as epichlorhydrin. 4,439,419, Cl. 424-78.000.

Veillette, Pierre. Exercise device. 4,438,920, Cl. 272-67.000.

Venables, Herbert J., III; and Venables, Herbert J., IV. Heat exchanger tube. 4,438,808, Cl. 165-150.000.

Venables, Herbert J., IV: *See—*
Venables, Herbert J., III; and Venables, Herbert J., IV, 4,438,808, Cl. 165-150.000.

Vensko, George: *See—*
Kneib, Kristine N.; and Vensko, George, 4,439,839, Cl. 364-900.000.

Verberne, Wim J. C.; and Hadley, John S., to OMI International Corporation. Zinc cobalt alloy plating. 4,439,283, Cl. 204-38.00R.

Verdini, Antonio S.; and Viscomi, Giuseppe C., to Anic S.p.A. Retro-inverso analogues of C-terminal penta and hexapeptides of Substance P. 4,439,360, Cl. 260-112.50R.

Veronesi, Luciano, to Westinghouse Electric Corp. Latching mechanism. 4,439,054, Cl. 403-322.000.

Verweij, Hendrik: *See—*
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,439,529, Cl. 501-45.000.

Veselov, Alexandr V.: *See—*
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.

Vetco Offshore, Inc.: *See—*
Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., 4,439,055, Cl. 403-330.000.

Veyrassat, Louis: *See—*
Meisser, Marc; Weber, Kurt; and Veyrassat, Louis, 4,438,886, Cl. 242-25.00A.

Vickers, William E.: *See—*
Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., 4,439,405, Cl. 423-10.000.

Vickery, Brian H.: *See—*
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,439,441, Cl. 424-273.00R.

Victor Company of Japan, Ltd.: *See—*
Hirata, Atsumi, 4,439,791, Cl. 358-342.000.

Victor Equipment Company: *See—*
Singh, Gurvinder P.; and Jolly, William D., 4,439,249, Cl. 148-9.00R.

Victorino, Robert W., to Growers Vacuum Cool Company. Carton handling system. 4,439,093, Cl. 414-786.000.

Vierkotter, Peter; and Weltgen, Paul-Otto, to Henkel Kommanditgesellschaft auf Aktien. Dosing device with ball valve and operating method. 4,438,869, Cl. 222-1.000.

Viglione, Gaetano T., to Sanders Associates, Inc. Process for removal of magnetic coatings from computer memory discs. 4,439,289, Cl. 204-146.000.

Vignau, Michel: *See—*
Heymes, Rene; and Vignau, Michel, 4,439,433, Cl. 424-246.000.

Villamosipari Kutato Intezet: *See—*
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Villettaz, Jean-Claude, to Novo Industri A/S. Enzymatic treatment of wine and must. 4,439,455, Cl. 426-12.000.

Villiger, Alois: *See—*
Rich, Roland; Villiger, Alois; and Widmer, Erich, 4,439,015, Cl. 350-350.00R.

Virginville Patents, Inc.: *See—*
Sernaker, Howard, 4,439,202, Cl. 8-471.000.

Viriyayuthakorn, Montri: *See—*
Kassahun, Bahiru; and Viriyayuthakorn, Montri, 4,439,467, Cl. 427-163.000.

Viscomi, Giuseppe C.: *See—*
Verdini, Antonio S.; and Viscomi, Giuseppe C., 4,439,360, Cl. 260-112.50R.

Vital Kogyo Kabushiki Kaisha: *See—*
Nishimura, Koji, 4,438,905, Cl. 254-389.000.

Voelskow, Peter. Method and apparatus for the sorting out of plastic foils from a mixture of refuse. 4,438,851, Cl. 209-616.000.

Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, to Shell Internationale Research Maatschappij B.V. Process for the extraction of hydrocarbons from a hydrocarbon-bearing substrate and an apparatus therefor. 4,439,306, Cl. 208-11.00R.

Vogel, Stephen H., to Monsanto Company. Directly compressible acetaminophen granulation. 4,439,453, Cl. 424-324.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Fiala, Ernst, 4,438,664, Cl. 74-866.000.
Schmidt, Dieter, 4,438,665, Cl. 74-867.000.

Voll, Manfred; Rothbuhr, Lothar; and Kuhner, Gerhard. Process and apparatus for the production of carbon black. 4,439,401, Cl. 422-150.000.

von Allworden, Wilhelm, to Howard Machinery Limited. Pneumatically operated press. 4,438,690, Cl. 100-116.000.

Vratny, Frederick: *See—*
Poulsen, Martin E.; Vratny, Frederick; and Zacharias, Alfred, 4,439,870, Cl. 378-143.000.

VVR Associates: *See—*
Leonard, Eugene, 4,439,785, Cl. 358-120.000.

W. R. Grace & Co.: *See—*
Bryant, George E., 4,438,611, Cl. 52-309.200.
Guthrie, James L.; and Kehr, Clifton L., 4,439,553, Cl. 521-159.000.

W. R. Grace & Co., Cryovac Division: *See—*
Ferguson, Daniel F.; Stringer, Frederick D.; and Esakov, Michael D., 4,439,478, Cl. 428-137.000.

W. R. Meadows, Inc.: *See—*
Sackis, John J.; and Anderson, Paul H., 4,439,563, Cl. 524-96.000.

W. Schlafhorst & Co.: *See—*
Rohner, Joachim, 4,438,621, Cl. 57-22.000.

Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, to Asahi-Dow Limited. Injection molded articles with improved surface characteristics. 4,439,492, Cl. 428-409.000.

Wada, Hiroki: *See—*
Kawahara, Haruyuki; Ishizaki, Nobuhiro; and Wada, Hiroki, 4,439,153, Cl. 433-200.000.

Wada Seimitsu Shiken Kabushiki Kaisha: *See—*
Kawahara, Haruyuki; Ishizaki, Nobuhiro; and Wada, Hiroki, 4,439,153, Cl. 433-200.000.

Wagatsuma, Kazuo: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Wagner, John R., Jr.: *See—*
Hein, Carl C.; Wagner, John R., Jr.; and Powell, Mark S., 4,439,493, Cl. 428-414.000.

Wagoner, Max A.: *See—*
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,438,775, Cl. 131-300.000.

Waldo, Russell W.; and Miller, Cardel E., to Ideal Security Hardware Corporation. Looped rod safety stop. 4,438,544, Cl. 16-85.000.

Walker, Connie W.: *See—*
Ulrich, Lawrence W.; and Walker, Connie W., 4,438,617, Cl. 53-137.000.

Walker, Keith A. M.: *See—*
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,439,441, Cl. 424-273.00R.

Walker, Lance A.: *See—*
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., 4,438,917, Cl. 271-227.000.

Wallat, Siegfried: *See—*
Moller, Hinrich; Wallat, Siegfried; and Bartnik, Friedhelm, 4,439,418, Cl. 424-70.000.

Wallther, Harry, to Stallningsgruppen i Goteborg Aktiebolag. Device for coupling together laterally directed scaffold elements to uprights in a scaffold or the like. 4,439,052, Cl. 403-49.000.

Walter, Robert J., to Rockwell International Corporation. Composition control of electrodeposited nickel-cobalt alloys. 4,439,284, Cl. 204-43.00T.

Walton, Eric K.; and Harris, Gary W. Automatic control system having manual control engageable at will. 4,438,662, Cl. 74-625.000.

Wang Laboratories, Inc.: *See—*
Tsiang, Horace H., 4,439,829, Cl. 364-200.000.

Wang, Robert, to Midland-Ross Corporation. Process and device for gaseous atmosphere separation in plants for heat treatment under atomosphere. 4,439,212, Cl. 55-27.000.

Ward, Russell G. Combination back pack and tent frame. 4,438,876, Cl. 224-154.000.

Warner-Lambert Company: *See—*
Cook, P. Dan, 4,439,604, Cl. 536-24.000.

Warren, Raymond H.: *See—*
Maley, Gerald A.; Warren, Raymond H.; and Westcott, Douglas W., 4,439,690, Cl. 307-272.00R.

Washizawa, Yasuo: *See—*
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.

Watanabe, Hidefumi, to Daieigiken, Inc. Machine for automatically making rolled food products such as egg rolls and the like. 4,439,124, Cl. 423-112.000.

Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, to Daicel Chemical Industries, Ltd. Polyurethane having excellent elastic recovery and elastic filament of the same. 4,439,599, Cl. 528-80.000.

Watanabe, Shunso F., to Ford Motor Company. Engine idle speed control device. 4,438,745, Cl. 123-339.000.

Water-Line S.A.: *See—*
Bertoglio, Guido, 4,439,042, Cl. 366-154.000.

Waters, Donald I. Emergency rescue box. 4,438,829, Cl. 182-150.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Galtz, Rudiger; and Reinhardt, Rudolf, 4,439,095, Cl. 415-52.000.

Weber, Harold J. Teaching indicator for efficient vehicle gearshift operation. 4,439,158, Cl. 434-71.000.

Weber, Harold J. Metal object locator including frequency shift detector. 4,439,734, Cl. 324-327.000.

Weber, Kurt: *See—*
Meisser, Marc; Weber, Kurt; and Veyrassat, Louis, 4,438,886, Cl. 242-25.00A.

Weber, Richard A.: *See—*
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.

Weglin, Walter, to Gillespie, Robert J. Drafting machine. 4,438,569, Cl. 33-438.000.

Wegner, Eugene H.: *See—*
Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., 4,439,523, Cl. 435-243.000.
Shay, Lucas K.; and Wegner, Eugene H., 4,439,525, Cl. 435-247.000.

Wehr Corporation: *See—*
Long, Gary R.; and Okunami, Hideo, 4,439,129, Cl. 425-352.000.

Weid, Manfred: *See—*
Altemark, Detlef; Sommers, Hans; and Weid, Manfred, 4,439,135, Cl. 431-2.000.

Weight, Merle E.; and Swenson, Theodore S., to Sperry Corporation. Electrostatic discharge protection system. 4,439,809, Cl. 361-220.000.

Weirich, Stephen; and Crothers, James L., to Lenni Products, Inc. Cutter for slot wedges. 4,438,671, Cl. 83-212.000.

Weisman, Morey. Modified polyurethane product having improved load-bearing characteristics. 4,439,548, Cl. 521-130.000.

Weiss, Eduard: *See—*
Kuhls, Jurgen; Weiss, Eduard; and Burgstaller, Gottfried, 4,439,385, Cl. 264-37.000.

Weiss, Martin J.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.

Weisser, Jurgen: *See—*
Puppe, Lothar; and Weisser, Jurgen, 4,439,409, Cl. 423-328.000.

Wells, Alton R. Pedestal type electro-heated container. 4,439,668, Cl. 219-438.000.

Weltgen, Paul-Otto: *See—*
Vierkotter, Peter; and Weltgen, Paul-Otto, 4,438,869, Cl. 222-1.000.

Wendel, Wendel R., to Space Structures International Corp. Orbs-hub. 4,438,615, Cl. 52-648.000.

Wentland, Mark P.; and Bailey, Denis M., to Sterling Drug Inc. 1,3-Dioxolo(4,5-G)quinoline compounds. 4,439,436, Cl. 424-258.000.

Werkheiser, James S., to Harris Graphics Corporation. Palletizer for newspaper bundles. 4,439,084, Cl. 414-62.000.

Westberg, Johan E. H.: *See—*
Unger, Hans P. O.; and Westberg, Johan E. H., 4,438,770, Cl. 128-637.000.

Westberg, Johan Eric Hayden: *See—*
Unger, Hans P. O.; and Westberg, Johan E. H., 4,438,770, Cl. 128-637.000.

Westcott, Douglas W.: *See—*
Maley, Gerald A.; Warren, Raymond H.; and Westcott, Douglas W., 4,439,690, Cl. 307-272.00R.

Western Electric Co., Inc.: *See—*
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.
Kassahun, Bahiru; and Viriyayuthakorn, Montri, 4,439,467, Cl. 427-163.000.

Westinghouse Electric Corp.: *See—*
Gegaregian, Albert A.; Kuruma, Dennis K.; and Lengel, Kenneth W., 4,438,866, Cl. 220-319.000.
Geohegan, Kenneth P., Jr.; and Gruen, Henry M., 4,439,845, Cl. 367-87.000.
Gyugyi, Laszlo; Smith, Geoffrey M.; and Stacey, Eric J., 4,439,823, Cl. 363-161.000.
Ogland, Jon W.; Bradley, Joe C.; and Mergerian, Dickron, 4,439,016, Cl. 350-356.000.
Rohanna, James E., 4,438,831, Cl. 187-30.000.
Veronesi, Luciano, 4,439,054, Cl. 403-322.000.
York, Theodore H.; and Moates, Roger D., 4,439,764, Cl. 340-870.020.

WFI International, Inc.: *See—*
Ryan, Bobby W., 4,438,955, Cl. 285-189.000.

Wheeler, Robert P., to Concord Laboratories, Inc. Two-dose syringe. 4,439,184, Cl. 604-90.000.

Whelan, Cahal. Dental device. 4,439,151, Cl. 433-60.000.

Whipps, George E., to Whipps, Inc. Aluminum stoplogs. 4,439,061, Cl. 405-104.000.

Whipps, Inc.: *See—*
Whipps, George E., 4,439,061, Cl. 405-104.000.

White, Bobby E. Drawworks. 4,438,904, Cl. 254-311.000.

White, Harold J. Filling hole swing valve for sandblasters. 4,439,073, Cl. 406-125.000.

Whiteside, C. H. Methane generator. 4,439,315, Cl. 210-90.000.

Wico Corporation: *See—*
Peters, Albin, 4,438,929, Cl. 273-127.00R.
Peters, Albin, 4,438,930, Cl. 273-127.00R.
Wiczer, Max, 4,438,928, Cl. 273-121.00R.

Wiczer, Max, to Wico Corporation. Pinball game with ganged kicker mechanisms. 4,438,928, Cl. 273-121.00R.

Widmer, Erich: *See—*
Rich, Roland; Villiger, Alois; and Widmer, Erich, 4,439,015, Cl. 350-350.00R.

Wiebke, Gunther, deceased (by Wieloch, Peter, executor); Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, to Elektroschmelzwerk Kempten GmbH. Adsorption device for the dry purification of gases. 4,439,214, Cl. 55-74.000.

Wiederkehr, Hans. Toolholder for rotary tool. 4,439,075, Cl. 408-239.00R.

Wieloch, Peter, executor: *See—*
Wiebke, Gunther, deceased; Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.

Wiggins, Richard H.; Doddington, George; and Cato, Craig J., to Texas Instruments Incorporated. Taught learning aid. 4,439,161, Cl. 434-201.000.

Wiig, Selmer L., to Lockheed Electronics Company, Inc. Tape transport system. 4,438,891, Cl. 242-190.000.

Wilbur-Ellis Company: *See—*
Schulteis, David T., 4,439,224, Cl. 71-76.000.

Wilcoxson, Anthony L.: *See—*
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,439,381, Cl. 264-26.000.

Wildman, John R.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Game device with template for arranging objects. 4,438,586, Cl. 46-1.00R.

Wiley, Paul F., to Upjohn Company, The. Nogalamycin derivatives. 4,439,602, Cl. 536-6.400.

Wilgus, Herbert S.: *See—*
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.

Wilhelm, Ronald K.: *See—*
Craig, Glenn D.; Wilhelm, Ronald K.; and Rulseh, Roy M., 4,439,138, Cl. 431-12.000.
Wilinsky, Jack. Motion sensitive firable device. 4,438,765, Cl. 128-303.100.
Wilkes, Dean M., to Raytheon Company. Dual fetch microsequencer. 4,439,827, Cl. 364-200.000.
Wilkinson, Gregory J., to Dresser Industries, Inc. Apparatus for decentralizing and orienting a well logging or perforating instrument. 4,438,810, Cl. 166-65.00M.
Will, Richard. Windmill having centrifically feathered rotors to control rotor speed. 4,439,108, Cl. 416-131.000.
Willi, Hanspeter: *See—*
Michl, Rudy; and Willi, Hanspeter, 4,439,380, Cl. 264-16.000.
Williams, Michael R.; and Tucker, Albert R., to FMC Corporation. Constant motion swivel joint. 4,438,957, Cl. 285-223.000.
Williams, Ralph J., to Dentsply Research & Development Corp. Armrest for a seat. 4,438,975, Cl. 297-412.000.
Williams, Robert S.: *See—*
Wilwerding, Carl M.; and Williams, Robert S., 4,439,209, Cl. 48-76.000.
Williard, Daniel G.: *See—*
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,438,775, Cl. 131-300.000.
Willis, Robert E. Portable door brace. 4,438,640, Cl. 70-94.000.
Wilmot, Richard D., to Hughes Aircraft Company. Radar video processor. 4,439,765, Cl. 343-6.00A.
Wilms, Karl-Heinz, to Optische Werke G. Rodenstock. Optical device with two reflecting surfaces. 4,439,026, Cl. 351-219.000.
Wilson, John V.; and Kays, William B., to Globe Linings, Inc. Gas venting floating cover. 4,438,863, Cl. 220-227.000.
Wilson, William F., to Great Lakes Carbon Corporation. Oxidation retardant for graphite. 4,439,491, Cl. 428-408.000.
Wilwerding, Carl M.; and Williams, Robert S. Thermal decomposition apparatus. 4,439,209, Cl. 48-76.000.
Wimmer, Robert: *See—*
Hagn, Bruno; Neuhauser, Werner; and Wimmer, Robert, 4,439,013, Cl. 350-307.000.
Winter, Roland A. E.; Malherbe, Roger F.; and Tieh-Yin Fu, Frank, to Ciba-Geigy Corporation. Oligomeric esteramides containing pendant hindered amine groups. 4,439,565, Cl. 524-103.000.
Winzer, Gerhard, to Siemens Aktiengesellschaft. Branching element for optical waveguides. 4,439,005, Cl. 350-96.150.
Wischerath and Schreiner KG: *See—*
Eckert, Josef, 4,438,871, Cl. 222-137.000.
Wittmann, Stephan: *See—*
Mayer, Walter; and Wittmann, Stephan, 4,438,624, Cl. 57-352.000.
Wohlmuth, Clinton J., to Cummins Engine Company, Inc. Surface temperature control apparatus. 4,438,598, Cl. 51-165.730.
Wolf, Alfred P.: *See—*
Shiue, Chyng-Yann; and Wolf, Alfred P., 4,439,414, Cl. 424-1.100.
Wolf, Dietmar: *See—*
Seidel, Albert; and Wolf, Dietmar, 4,439,111, Cl. 417-379.000.
Wolf, Ludwig, Jr.: *See—*
Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,439,188, Cl. 604-283.000.
Wolfrum, Gerhard: *See—*
Hugl, Herbert; Wolfrum, Gerhard; and Lehment, Klaus-Friedrich, 4,439,372, Cl. 260-465.00E.
Wood, Charles E.; and Vangelisti, Ronald J., to UOP Inc. Generator synchronization in power recovery units. 4,439,687, Cl. 290-40.00R.
Wood, Eric, to Insituform International N.V. Formation of a lining in pipelines. 4,439,469, Cl. 427-230.000.
Wood, Robert S., to Plessey Overseas Limited. Pump for pumping a liquid containing solid contaminants. 4,439,109, Cl. 418-88.000.
Woodard, Kenneth E., Jr.: *See—*
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,439,298, Cl. 204-258.000.
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., 4,439,297, Cl. 204-257.000.
Woodland International Corporation: *See—*
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,438,557, Cl. 29-576.00B.
Worthing, Ralph. Deflecting device for truck load. 4,438,968, Cl. 296-1.00R.
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., to Massachusetts Institute of Technology. Redox mediation and hydrogen-generation with bipyridinium reagents. 4,439,302, Cl. 204-290.00R.
Wu, Chung P., to RCA Corporation. Electromagnetic radiation annealing of semiconductor material. 4,439,245, Cl. 148-1.500.
Wurmli, Albert: *See—*
Lauton, Alain; and Wurmli, Albert, 4,439,201, Cl. 8-436.000.
Wurtenberg, Oscar A.: *See—*
King, Michael H.; Poppe, Lee W., Jr.; and Wurtenberg, Oscar A., 4,438,682, Cl. 99-323.700.
Xenell Corporation: *See—*
Fajt, John, 4,439,801, Cl. 361-55.000.
Xerox Corporation: *See—*
Pan, Frank Y.; Morrison, Ian D.; and Teuscher, Leon A., 4,439,507, Cl. 430-058.000.
Schank, Richard L., 4,439,509, Cl. 430-132.000.
Yabu, Tadahiko: *See—*
Takahara, Ichiro; and Yabu, Tadahiko, 4,439,850, Cl. 369-77.200.
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, to Daicel Chemical Industries, Ltd. Process for producing cellulose acetate. 4,439,605, Cl. 536-71.000.
Yakovlev, Arian M.: *See—*
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.
Yalcin, Eren: *See—*
Bittihn, Rainer; and Yalcin, Eren, 4,439,502, Cl. 429-104.000.
Yamabe, Masaaki; and Akiyama, Katsuyuki, to Asahi Glass Company, Ltd. Permselective element for gas separation. 4,439,217, Cl. 55-158.000.
Yamada, Tadao: *See—*
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.
Yamada, Tadatoshi: *See—*
Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, 4,439,701, Cl. 310-45.000.
Yamada, Yasuyuki; Fujiyama, Masaaki; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,439,486, Cl. 428-332.000.
Yamagishi, Takashi: *See—*
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.
Yamaguchi, Hiroaki: *See—*
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,707, Cl. 313-130.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,708, Cl. 313-140.000.
Ozaki, Tadashi; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,438,647, Cl. 73-117.300.
Yamaguchi, Hiroshi; and Ikeura, Kenji, to Nissan Motor Co., Ltd. Method and apparatus for detecting the gear position of transmission. 4,439,833, Cl. 364-431.090.
Yamaguchi, Hiroshi: *See—*
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, 4,438,748, Cl. 123-491.000.
Yamaguchi, Shin, to Canon Kabushiki Kaisha. Zoom lens. 4,439,017, Cl. 350-427.000.
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Stacking type movable large display device. 4,438,580, Cl. 40-590.000.
Yamashita, Mitsuo: *See—*
Yoshimaru, Tomohisa; Yamashita, Mitsuo; and Daigo, Junichi, 4,439,797, Cl. 360-134.000.
Yamashita, Takeo: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Yamauchi, Takafumi: *See—*
Kammuri, Youichi; Yamauchi, Takafumi; and Takahashi, Toshikatsu, 4,439,456, Cl. 426-276.000.
Yamauchi, Takahiko: *See—*
Itoh, Hideo; and Yamauchi, Takahiko, 4,439,841, Cl. 365-51.000.
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Printing apparatus with cooling of hammer printing coils. 4,438,692, Cl. 101-93.040.
Yanizeski, George M.: *See—*
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.
Yanmar Diesel Engine Co., Ltd.: *See—*
Sasaki, Yoshihiro, 4,438,733, Cl. 123-41.620.
Yano, Takashi, to Ricoh Company, Ltd. Image recording method and apparatus. 4,439,781, Cl. 346-153.100.
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, to Nissan Motor Corp.; and Kato Hatsujyo Kaisha Ltd. Holder. 4,438,894, Cl. 248-73.000.
Yasui, Kiyoshi: *See—*
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.
Yeager, Patrick F.: *See—*
Kaufman, John W.; Stape, William J.; and Yeager, Patrick F., 4,439,000, Cl. 339-176.0MP.
Yeakey, Ernest L.; Cuscurida, Michael; and Brennan, Michael E., to Texaco, Inc. Packaging foam polyurethane composition employing novel polyol blend. 4,439,551, Cl. 521-131.000.
Yissum Research Development Company of the Hebrew University of Jerusalem: *See—*
Baniel, Avraham M.; and Eyal, Aharon M., 4,439,408, Cl. 423-321.00S.
Yokoi, Gunpei; and Okada, Satoru, to Nintendo Co., Ltd. Timepiece apparatus having a game function. 4,438,926, Cl. 273-85.00G.
Yokoya, Satoshi, to Sony Corporation. Dividing circuit. 4,439,696, Cl. 307-494.000.
York, Theodore H.; and Moates, Roger D., to Westinghouse Electric Corp. Dual mode meter reading apparatus. 4,439,764, Cl. 340-870.020.
Yoshida Kogyo K. K.: *See—*
Oda, Kiyoshi, 4,438,550, Cl. 70-57.000.
Yoshida, Kunio, to Sharp Kabushiki Kaisha. Electronic translator. 4,439,836, Cl. 364-900.000.
Yoshida, Minoru. X-Ray photograph unit. 4,439,867, Cl. 378-96.000.

Yoshida, Minoru: *See—*
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, 4,438,894, Cl. 248-73.000.
Yoshida, Tadashi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,439,790, Cl. 358-256.000.
Yoshida, Takao: *See—*
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,439,354, Cl. 252-522.00R.
Yoshikawa, Hirofumi: *See—*
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.
Yoshikumi, Chikao: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.
Yoshimaru, Tomohisa; Yamashita, Mitsuo; and Daigo, Junichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Recording tape for use in a recording and reproducing apparatus. 4,439,797, Cl. 360-134.000.
Yoshimi, Isao: *See—*
Osakabe, Kuniharu; Yoshimi, Isao; and Fukuda, Kyohei, 4,439,710, Cl. 313-414.000.
Yoshimoto, Akihiro: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.
Yoshimoto, Toshio: *See—*
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, 4,438,796, Cl. 152-353.00R.
Yoshino Kogyosho Co., Ltd.: *See—*
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, 4,439,393, Cl. 264-532.000.
Yoshioka, Kenji: *See—*
Komatsu, Hiroaki; and Yoshioka, Kenji, 4,439,749, Cl. 334-7.000.
Young, James G.: *See—*
Tsau, Josef H.; and Young, James G., 4,439,460, Cl. 426-548.000.
Young, Rodney C.: *See—*
Jones, Martin; and Young, Rodney C., 4,439,437, Cl. 424-263.000.
Youngblood, Donald A.: *See—*
Sullivan, John L., Jr.; Pearson, Robert D.; and Youngblood, Donald A., 4,438,698, Cl. 101-287.000.
Yu, Chia-Nien: *See—*
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,439,608, Cl. 546-283.000.
Zablen, Marshall A. Ambulatory apparatus for use in combination with an intravenous delivery system. 4,438,763, Cl. 128-133.000.
Zacharias, Alfred: *See—*
Poulsen, Martin E.; Vratny, Frederick; and Zacharias, Alfred, 4,439,870, Cl. 378-143.000.
Zahnradfabrik Friedrichshafen, AG: *See—*
Lang, Armin; and Knodler, Helmut, 4,438,679, Cl. 91-370.000.
Lang, Armin, 4,438,827, Cl. 180-143.000.
Zama, Hideo: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Zanol, Elmar: *See—*
Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, 4,438,791, Cl. 139-453.000.
Zapp, Reinhold: *See—*
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.
Zavaglia, Angelo J.: *See—*
Rodriguez, Thomas A.; and Zavaglia, Angelo J., 4,439,085, Cl. 414-447.000.
Zaweski, Edward F., to Ethyl Corporation. Lubricant composition containing mixed fatty acid ester and amide of diethanolamine. 4,439,336, Cl. 252-32.70E.
Zaydel, Wieslaw S.; Aldikacti, Hulki; and Bouck, James G., to General Motors Corporation. Method and apparatus for plastic body panel attachment. 4,438,971, Cl. 296-191.000.
Zehntel, Inc.: *See—*
Petersen, Gerald W., 4,439,858, Cl. 371-20.000.
Zehren, James N., to TRW Inc. Apparatus for use in energizing submergible pumping equipment in underwater wells. 4,438,996, Cl. 339-40.000.
Zeijlmans, Jan W.: *See—*
Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., 4,439,049, Cl. 374-124.000.
Zeiler, Kenneth T., to Mead Corporation, The. Ink jet charge electrode protection circuit. 4,439,776, Cl. 346-75.000.
Zellweger Uster Ltd.: *See—*
Grunder, Werner, 4,438,548, Cl. 19-105.000.
Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Preparation of trans cyclohexane 1,4-diisocyanate. 4,439,370, Cl. 260-453.00P.
Zenith Radio Corporation: *See—*
Alvite, Armando; Hines, Enrico D.; and Kautz, Allan D., 4,439,735, Cl. 324-404.000.
Zielke, Clyde W.: *See—*
Sudbury, John D.; and Zielke, Clyde W., 4,439,304, Cl. 208-8.0LE.
Ziemer, John H.: *See—*
Olszewski, Walter J.; Pahade, Ravindra F.; and Ziemer, John H., 4,439,220, Cl. 62-31.000.
Zimmerman, John C., to Halliburton Company. Hydraulic set high temperature isolation packer. 4,438,933, Cl. 277-9.500.
Ziph, Benjamin: *See—*
Meijer, Roelf J.; Brown, Robert J.; and Ziph, Benjamin, 4,439,169, Cl. 464-170.000.
Zison, Stanley W.; and Turer, Robert N., to Getty Synthetic Fuels, Inc. Dynamic pressure attenuator and method. 4,438,883, Cl. 239-553.300.
Zodrow, Rudolf; Hoveler, Egon; and Rosenberg, Heinz-Jurgen, to Jagenberg AG. Labeling station for articles like bottles. 4,439,262, Cl. 156-364.000.
Zolotovsky, Anatoly I.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
Zuckerman, Andrew M.: *See—*
Zuckerman, Jack M.; and Zuckerman, Andrew M., 4,438,874, Cl. 223-88.000.
Zuckerman, Jack M.; and Zuckerman, Andrew M. Unitary garment hanger system. 4,438,874, Cl. 223-88.000.
Zurer, August: *See—*
Marfurt, Hans-Rudolf; and Zurer, August, 4,439,290, Cl. 204-149.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bank, Howard M.; and Michael, Keith W., to Dow Corning Corporation. Curable compositions. Re. 31,543, Cl. 523-435.000.

Dennison Manufacturing Company: *See—*
Wood, William E., Re. 31,541, Cl. 24-16.0PB.

Dow Corning Corporation: *See—*
Bank, Howard M.; and Michael, Keith W., Re. 31,543, Cl. 523-435.000.

Hedberg, John B. G., to Thermal Dynamics Corporation. Current unit for arc welding. Re. 31,544, Cl. 219-130.210.

Hetrick, Glenn C. Safety attachment for lawn mowers. Re. 31,542, Cl. 56-295.000.

Michael, Keith W.: *See—*
Bank, Howard M.; and Michael, Keith W., Re. 31,543, Cl. 523-435.000.

Quinn, Patrick A., to Tektronix, Inc. Feed-forward amplifier. Re. 31,545, Cl. 330-149.000.

Tektronix, Inc.: *See—*
Quinn, Patrick A., Re. 31,545, Cl. 330-149.000.

Thermal Dynamics Corporation: *See—*
Hedberg, John B. G., Re. 31,544, Cl. 219-130.210.

Wood, William E., to Dennison Manufacturing Company. Webbed harnessing device. Re. 31,541, Cl. 24-16.0PB.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Amp Incorporated: *See—*
Hughes, Donald W. K.; and Myers, Ronald W., B1 4,210,376, Cl. 339-17.0LC.

Bayer Aktiengesellschaft: *See—*
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

Bodendorf, Warren J.; and Presto, Alphonse R., to Texon Inc. Decay resistant material. B1 4,337,117, 3-27-84, Cl. 162-161.000.

Burns Bros.: *See—*
Martinelli, Rene J., B1 4,321,956, Cl. 152-222.000.

Cohen, Charles A.; and Muessig, Clifford W., to Esso Research and Engineering Company. Jet and rocket fuel. B1 3,381,046, 3-27-84, Cl. 585-253.000.

Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., to International Business Machines Corporation. Serial storage interface apparatus for coupling a serial storage mechanism to a data processor input/output bus. B1 4,344,132, 3-27-84, Cl. 364-200.000.

Eimer, Johannes: *See—*
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

Esso Research and Engineering Company: *See—*
Cohen, Charles A.; and Muessig, Clifford W., B1 3,381,046, Cl. 585-253.000.

Farrell, Robert H.: *See—*
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., B1 4,344,132, Cl. 364-200.000.

GTE Products Corp.: *See—*
Kane, Hugh; and Oellerich, Bruce A., B1 4,184,134, Cl. 335-198.000.

Hughes, Donald W. K.; and Myers, Ronald W., to Amp Incorporated. Electrical connector receptacle. B1 4,210,376, 3-27-84, Cl. 339-17.0LC.

International Business Machines Corporation: *See—*
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., B1 4,344,132, Cl. 364-200.000.

Kane, Hugh; and Oellerich, Bruce A., to GTE Products Corp. Electrical switching apparatus having convertible contact structure. B1 4,184,134, 3-27-84, Cl. 335-198.000.

Koperda, Francis R.: *See—*
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., B1 4,344,132, Cl. 364-200.000.

Liebsch, Dietrich: *See—*
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

Martinelli, Rene J., to Burns Bros. Belt attachment for tire chains. B1 4,321,956, 3-27-84, Cl. 152-222.000.

Muessig, Clifford W.: *See—*
Cohen, Charles A.; and Muessig, Clifford W., B1 3,381,046, Cl. 585-253.000.

Myers, Ronald W.: *See—*
Hughes, Donald W. K.; and Myers, Ronald W., B1 4,210,376, Cl. 339-17.0LC.

Oellerich, Bruce A.: *See—*
Kane, Hugh; and Oellerich, Bruce A., B1 4,184,134, Cl. 335-198.000.

Presto, Alphonse R.: *See—*
Bodendorf, Warren J.; and Presto, Alphonse R., B1 4,337,117, Cl. 162-161.000.

Raab, Rainer: *See—*
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

Texon Inc.: *See—*
Bodendorf, Warren J.; and Presto, Alphonse R., B1 4,337,117, Cl. 162-161.000.

Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, to Bayer Aktiengesellschaft. Process for the production of polyisocyanates with a biuret structure. B1 3,976,622, 3-27-84, Cl. 528-67.000.

Zirner, Joachim: *See—*
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
Wilkinson, Kenneth E.; and Balistreri, Thomas W., 273,227, Cl. D24-48.000.

Abbott, Thomas R. Tie down device. 273,176, 3-27-84, Cl. D8-356.000.

Adamson, Gerhard; and Voorhees, Earl W., Jr. Grocery bag holding rack. 273,159, 3-27-84, Cl. D6-85.000.

Almela, Jose C. Cradle. 273,154, 3-27-84, Cl. D6-15.000.

Anderson, Richard: *See—*
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, 273,189, Cl. D14-106.000.

Antonacci, Frank; and Carluccio, Ronald. Blow dryer. 273,239, 3-27-84, Cl. D28-13.000.

Antonacci, Frank; and Carluccio, Ronald. Blow dryer. 273,240, 3-27-84, Cl. D28-13.000.

Apple Computer, Inc.: *See—*
Oyama, Terrell A.; and Stirling, Loren D., 273,191, Cl. D14-113.000.

Argandona, Augusto, to Quaker Oats Company, The. Toy dish drainer. 273,214, 3-27-84, Cl. D21-121.000.

Atobe, Takashi; and Iinuma, Kanji, to Daiwa Seiko, Inc. Reel for fishing. 273,218, 3-27-84, Cl. D22-25.000.

Bailly, Francois, to Equipements Automobiles Marchal. Headlight cover. 273,236, 3-27-84, Cl. D26-139.000.

Baisch, Herbert: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 273,195, Cl. D15-141.000.

Baker, Robert L., to Keystone Consolidated Industries, Inc. Display sign strip. 273,204, 3-27-84, Cl. D20-44.000.

Balistreri, Thomas W.: *See—*
Wilkinson, Kenneth E.; and Balistreri, Thomas W., 273,227, Cl. D24-48.000.

Barnsfather, Gebus: *See—*
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,197, Cl. D15-148.000.

Baumgartner, Robert L.: *See—*
Taylor, Albert K.; and Baumgartner, Robert L., 273,238, Cl. D28-7.000.

Bayerische Motoren Werke A.G.: *See—*
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,234, Cl. D26-35.000.

Beerens, Cornelis J. M. Saw sharpening guide. 273,174, 3-27-84, Cl. D8-71.000.

Benson, David L. Aircraft console. 273,150, 3-27-84, Cl. D3-40.000.

Bisson, Nicole, to Salon Nicole Bisson Inc. Hair pin. 273,241, 3-27-84, Cl. D28-40.000.

Bohnas, Robert D.: *See—*
Martinez, Robert A.; and Bohnas, Robert D., 273,230, Cl. D25-49.000.

Bone, Arnold R., to Dennison Manufacturing Company. Dispensing device for fasteners. 273,171, 3-27-84, Cl. D8-49.000.

Bowen, Robert F.; Martel, Thomas J.; and Pollack, Wayne I., to Raytheon Company. Microwave pizza maker utensil. 273,168, 3-27-84, Cl. D7-354.000.

Braddon, George B. Food packaging tray. 273,181, 3-27-84, Cl. D9-425.000.

Braun, Hans: *See—*
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,234, Cl. D26-35.000.

Brian Davis & Company Proprietary Limited: *See—*
Carlson, Arthur R., 273,167, Cl. D7-79.000.

Brorsson, Jan-Erik. Lockable quick foot for vehicle racks. 273,187, 3-27-84, Cl. D12-157.000.

Bruning, Richard P., to General Motors Corporation. Vehicle. 273,186, 3-27-84, Cl. D12-85.000.

Canon Denshi Kabushiki Kaisha: *See—*
Yoshida, Shigeru, 273,192, Cl. D14-114.000.

Canon Kabushiki Kaisha: *See—*
Yoshida, Shigeru, 273,192, Cl. D14-114.000.

Caputo, Jackie: *See—*
Dubbin, Barbara; and Caputo, Jackie, 273,156, Cl. D6-47.000.
Dubbin, Barbara; and Caputo, Jackie, 273,158, Cl. D6-61.000.

Carlson, Arthur R., to Brian Davis & Company Proprietary Limited. Canister. 273,167, 3-27-84, Cl. D7-79.000.

Carluccio, John F. Cosmetic jar. 273,180, 3-27-84, Cl. D9-352.000.

Carluccio, Ronald: *See—*
Antonacci, Frank; and Carluccio, Ronald, 273,239, Cl. D28-13.000.
Antonacci, Frank; and Carluccio, Ronald, 273,240, Cl. D28-13.000.

Casa Bella Imports, Inc.: *See—*
Dubbin, Barbara; and Caputo, Jackie, 273,156, Cl. D6-47.000.
Dubbin, Barbara; and Caputo, Jackie, 273,158, Cl. D6-61.000.

Ciganko, David J., to Quaker Oats Company, The. Toy carrier. 273,209, 3-27-84, Cl. D21-59.000.

Clanton, W. Porter, to Quaker Oats Company, The. Toy carrier. 273,207, 3-27-84, Cl. D21-59.000.

Combi, Co., Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Sugita, Kuniko, 273,210, Cl. D21-64.000.

Commercial Mailing Accessories, Inc.: *See—*
Oglander, Allen H.; and Shannon, Richard E., 273,202, Cl. D18-19.000.

Cotton, Sammy. Building structure. 273,228, 3-27-84, Cl. D25-1.000.

Croizyveuve Daignas, Anne Marie Y. Rotary element of plastering machine. 273,198, 3-27-84, Cl. D15-199.000.

Daiwa Seiko, Inc.: *See—*
Atobe, Takashi; and Iinuma, Kanji, 273,218, Cl. D22-25.000.
Iinuma, Kanji, 273,219, Cl. D22-25.000.
Iinuma, Kanji; and Nakamura, Hideo, 273,220, Cl. D22-25.000.
Iinuma, Kanji, 273,221, Cl. D22-25.000.

Davis, Robert P.: *See—*
Katz, Ira R.; and Davis, Robert P., 273,151, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 273,152, Cl. D3-71.000.

Dennison Manufacturing Company: *See—*
Bone, Arnold R., 273,171, Cl. D8-49.000.

Dubbin, Barbara; and Caputo, Jackie, to Casa Bella Imports, Inc. Armless sofa. 273,156, 3-27-84, Cl. D6-47.000.

Dubbin, Barbara; and Caputo, Jackie, to Casa Bella Imports, Inc. Open curved sofa. 273,158, 3-27-84, Cl. D6-61.000.

Dunlap, Jerald V., to M-D & Co. Packaged air inflator set. 273,178, 3-27-84, Cl. D15-7.000.

Duo-Fast Corporation: *See—*
Radtke, Lee F., 273,196, Cl. D15-147.000.

Equipements Automobiles Marchal: *See—*
Bailly, Francois, 273,236, Cl. D26-139.000.

Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Power tool table. 273,195, 3-27-84, Cl. D15-141.000.

Ferrari, Paolo, to Zether Limited. Kite. 273,211, 3-27-84, Cl. D21-88.000.

Fifield, Bruce. Carrying case. 273,149, 3-27-84, Cl. D3-30.100.

Fogarty, A. Edward; and Fogarty, Bonnie R. Toy picture frame or similar article. 273,208, 3-27-84, Cl. D21-59.000.

Fogarty, Bonnie R.: *See—*
Fogarty, A. Edward; and Fogarty, Bonnie R., 273,208, Cl. D21-59.000.

Gannett Co., Inc.: *See—*
Gore, Fred M., 273,203, Cl. D20-6.000.

General Motors Corporation: *See—*
Bruning, Richard P., 273,186, Cl. D12-85.000.

Gore, Fred M., to Gannett Co., Inc. Newspaper vending rack or similar article. 273,203, 3-27-84, Cl. D20-6.000.

Halme, Matti. Pupil'desk. 273,163, 3-27-84, Cl. D6-181.000.

Halverson, Lance K. Rack or similar article. 273,162, 3-27-84, Cl. D6-125.000.

Hartmann Luggage Company: *See—*
Katz, Ira R.; and Davis, Robert P., 273,151, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 273,152, Cl. D3-71.000.

Hawaiian Motor Company: *See—*
Rahe, Jon A.; and Motruk, John, 273,169, Cl. D8-8.000.

Hirsh Company: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 273,195, Cl. D15-141.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ogishima, Tetsuo, 273,235, Cl. D26-35.000.

Horvath, Tibor, to Lazere Financial Corporation. Filter. 273,223, 3-27-84, Cl. D23-4.000.

House, Harold. Tool for cutting the inside of plastic pipes. 273,194, 3-27-84, Cl. D15-139.000.

Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, to Reliance Electric Company. Variable speed belt drive. 273,197, 3-27-84, Cl. D15-148.000.

Hunter Douglas Industries, B.V.: *See—*
Norgate, Robert B., 273,233, Cl. D25-92.000.

Iinuma, Kanji, to Daiwa Seiko, Inc. Reel for fishing. 273,219, 3-27-84, Cl. D22-25.000.

Iinuma, Kanji; and Nakamura, Hideo, to Daiwa Seiko, Inc. Reel for fishing. 273,220, 3-27-84, Cl. D22-25.000.

Iinuma, Kanji, to Daiwa Seiko, Inc. Reel for fishing. 273,221, 3-27-84, Cl. D22-25.000.

Iinuma, Kanji: *See—*
Atobe, Takashi; and Iinuma, Kanji, 273,218, Cl. D22-25.000.

Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Sugita, Kuniko, 273,210, Cl. D21-64.000.

Ishiyama, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Snowmobile. 273,185, 3-27-84, Cl. D12-7.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 273,151, 3-27-84, Cl. D3-71.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 273,152, 3-27-84, Cl. D3-71.000.

Keystone Consolidated Industries, Inc.: *See—*
Baker, Robert L., 273,204, Cl. D20-44.000.

Kido, Katsutoshi; and Usami, Satoru, to Matsushita Electric Industrial Co., Ltd. Combined radio and cassette tape recorder. 273,188, 3-27-84, Cl. D14-5.000.

King, Harold. Solar panel. 273,224, 3-27-84, Cl. D23-72.000.

Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, to Paradyne Corporation. Display terminal. 273,189, 3-27-84, Cl. D14-106.000.

Koves, Thomas. Inflatable foldable cushion. 273,166, 3-27-84, Cl. D6-201.000.

Krome, Edward F., Jr.: *See—*
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,197, Cl. D15-148.000.

La Compagnie Nationale Air France: *See—*
Staub, Lucien, 273,157, Cl. D6-48.000.

Lazere Financial Corporation: *See—*
Horvath, Tibor, 273,223, Cl. D23-4.000.

Lippe, Claude: *See—*
Lippe, Michel; Lippe, Claude; and Lippe, Jacques, 273,229, Cl. D25-2.000.

Lippe, Jacques: *See—*
Lippe, Michel; Lippe, Claude; and Lippe, Jacques, 273,229, Cl. D25-2.000.

Lippe, Michel; Lippe, Claude; and Lippe, Jacques. Swimming pool. 273,229, 3-27-84, Cl. D25-2.000.

Lujan, Ysauro B., Jr. Air rescue carrier. 273,243, 3-27-84, Cl. D34-28.000.

Luthe, Claus; Rennen, Manfred; and Braun, Hans, to Bayerische Motoren Werke A.G. Tail light for automobile. 273,234, 3-27-84, Cl. D26-35.000.

M-D & Co.: *See—*
Dunlap, Jerald V., 273,178, Cl. D15-7.000.

Martel, Thomas J.: *See—*
Bowen, Robert F.; Martel, Thomas J.; and Pollack, Wayne I., 273,168, Cl. D7-354.000.

Martinez, Robert A.; and Bohnas, Robert D., to Martinez, Robert A. Garage door. 273,230, 3-27-84, Cl. D25-49.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kido, Katsutoshi; and Usami, Satoru, 273,188, Cl. D14-5.000.

Matthews, Mark A. Foldable display stand or the like. 273,164, 3-27-84, Cl. D6-186.000.

LIST OF DESIGN PATENTEES

Maza, Dale T.; Ruckman, Harold; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Mobile maintenance cart. 273,242, 3-27-84, Cl. D34-21.000.

Moreland, Ralph E. Combined holder and dispenser for tissue paper rolls. 273,160, 3-27-84, Cl. D6-97.000.

Motruk, John: *See*—
Rahe, Jon A.; and Motruk, John, 273,169, Cl. D8-8.000.

Nakamura, Hideo: *See*—
Iinuma, Kanji; and Nakamura, Hideo, 273,220, Cl. D22-25.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Sugita, Kuniko, to Combi, Co., Ltd. Toy trumpet. 273,210, 3-27-84, Cl. D21-64.000.

Niemann, Jeffrey. Fish handling device. 273,222, 3-27-84, Cl. D22-31.000.

Norgate, Robert B., to Hunter Douglas Industries, B.V. Roofing tile. 273,233, 3-27-84, Cl. D25-92.000.

Ogishima, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle headlight. 273,235, 3-27-84, Cl. D26-35.000.

Oglander, Allen H.; and Shannon, Richard E., to Commercial Mailing Accessories, Inc. Label dispenser. 273,202, 3-27-84, Cl. D18-19.000.

Ohie, Yoshihisa, to Sharp Corporation. Computer. 273,190, 3-27-84, Cl. D14-106.000.

Oyama, Terrell A.; and Stirling, Loren D., to Apple Computer, Inc. Computer data display monitor. 273,191, 3-27-84, Cl. D14-113.000.

Palson, Richard C. J., to Woodlets, Inc. Air freshener housing. 273,225, 3-27-84, Cl. D23-150.000.

Paradyne Corporation: *See*—
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, 273,189, Cl. D14-106.000.

Perimet, Inc.: *See*—
Stowe, John K., 273,193, Cl. D15-133.000.

Petitt, Donald C. Arm chair. 273,155, 3-27-84, Cl. D6-31.000.

Plough, Inc.: *See*—
Taylor, Albert K.; and Baumgartner, Robert L., 273,238, Cl. D28-7.000.

Pollack, Wayne I.: *See*—
Bowen, Robert F.; Martel, Thomas J.; and Pollack, Wayne I., 273,168, Cl. D7-354.000.

Poon, Tit-Wing. Car polisher. 273,173, 3-27-84, Cl. D8-62.000.

Quaker Oats Company, The: *See*—
Argandona, Augusto, 273,214, Cl. D21-121.000.
Ciganko, David J., 273,209, Cl. D21-59.000.
Clanton, W. Porter, 273,207, Cl. D21-59.000.
Sahler, John T., 273,205, Cl. D21-59.000.
Sahler, John T., 273,206, Cl. D21-59.000.
Sahler, John T., 273,212, Cl. D21-120.000.
Sahler, John T., 273,215, Cl. D21-150.000.
Simmons, Carl J., 273,213, Cl. D21-121.000.

Radtke, Lee F., to Duo-Fast Corporation. Feeder housing. 273,196, 3-27-84, Cl. D15-147.000.

Rahe, Jon A.; and Motruk, John, to Hawaiian Motor Company. Cutting head of a weed cutter of the type using a rotating cutting string. 273,169, 3-27-84, Cl. D8-8.000.

Raytheon Company: *See*—
Bowen, Robert F.; Martel, Thomas J.; and Pollack, Wayne I., 273,168, Cl. D7-354.000.

Reliance Electric Company: *See*—
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,197, Cl. D15-148.000.

Rennen, Manfred: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,234, Cl. D26-35.000.

Riedell, Edwin H. Single use catheter device. 273,226, 3-27-84, Cl. D24-54.000.

Roberts, James A. Decorative molding strip. 273,232, 3-27-84, Cl. D25-79.000.

Rubbermaid Commercial Products Inc.: *See*—
Maza, Dale T.; Ruckman, Harold; and Tomblin, Glen E., 273,242, Cl. D34-21.000.

Ruckman, Harold: *See*—
Maza, Dale T.; Ruckman, Harold; and Tomblin, Glen E., 273,242, Cl. D34-21.000.

Sahler, John T., to Quaker Oats Company, The. Toy bar magnet. 273,205, 3-27-84, Cl. D21-59.000.

Sahler, John T., to Quaker Oats Company, The. Toy horseshoe magnet. 273,206, 3-27-84, Cl. D21-59.000.

Sahler, John T., to Quaker Oats Company, The. Toy tape measure. 273,212, 3-27-84, Cl. D21-120.000.

Sahler, John T., to Quaker Oats Company, The. Action pull toy. 273,215, 3-27-84, Cl. D21-150.000.

Sakata, Keiji, to Sharp Corporation. Electronic calculator with solar batteries. 273,200, 3-27-84, Cl. D18-7.000.

Sakata, Keiji, to Sharp Corporation. Electronic calculator. 273,201, 3-27-84, Cl. D18-7.000.

Salon Nicole Bisson Inc.: *See*—
Bisson, Nicole, 273,241, Cl. D28-40.000.

Sanwa Cutlery Ltd.: *See*—
Yamagishi, Masami, 273,172, Cl. D8-57.000.

Sato, Hisao. Paper clip driver and applicator. 273,170, 3-27-84, Cl. D8-49.000.

Sawada, Masaji, to Sharp Corporation. Calculator with printer. 273,199, 3-27-84, Cl. D18-7.000.

Shane, Claudia A.: *See*—
Shane, William B.; and Shane, Claudia A., 273,182, Cl. D11-157.000.
Shane, William B.; and Shane, Claudia A., 273,183, Cl. D11-157.000.

Shane, William B.; and Shane, Claudia A. Tea pot simulating thimble. 273,182, 3-27-84, Cl. D11-157.000.

Shane, William B.; and Shane, Claudia A. Coffee pot simulating thimble. 273,183, 3-27-84, Cl. D11-157.000.

Shannon, Richard E.: *See*—
Oglander, Allen H.; and Shannon, Richard E., 273,202, Cl. D18-19.000.

Sharp Corporation: *See*—
Ohie, Yoshihisa, 273,190, Cl. D14-106.000.
Sakata, Keiji, 273,200, Cl. D18-7.000.
Sakata, Keiji, 273,201, Cl. D18-7.000.
Sawada, Masaji, 273,199, Cl. D18-7.000.

Shore, Sydney. Packaging container for a ribbon cartridge. 273,179, 3-27-84, Cl. D9-346.000.

Simmons, Carl J., to Quaker Oats Company, The. Toy tray. 273,213, 3-27-84, Cl. D21-121.000.

Sinrod, Harold S. Multi-purpose defense baton. 273,216, 3-27-84, Cl. D22-1.000.

Staub, Lucien, to La Compagnie Nationale Air France. Aircraft seat. 273,157, 3-27-84, Cl. D6-48.000.

Sternberg, Steven. Electronic game stand. 273,165, 3-27-84, Cl. D6-188.000.

Stirling, Loren D.: *See*—
Oyama, Terrell A.; and Stirling, Loren D., 273,191, Cl. D14-113.000.

Stowe, John K., to Perimet, Inc. Gage bar for miter cutting machine. 273,193, 3-27-84, Cl. D15-133.000.

Suarez, Jorge: *See*—
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, 273,189, Cl. D14-106.000.

Suckno, Abraham. Spiral stairway. 273,231, 3-27-84, Cl. D25-62.000.

Sugita, Kuniko: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Sugita, Kuniko, 273,210, Cl. D21-64.000.

Swenson, Armand. Gun sight. 273,217, 3-27-84, Cl. D22-8.000.

Sylvan, Richard: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 273,195, Cl. D15-141.000.

Taylor, Albert K.; and Baumgartner, Robert L., to Plough, Inc. Eye makeup applicator. 273,238, 3-27-84, Cl. D28-7.000.

Tcherneshoff Associates, Inc.: *See*—
Tcherneshoff, John K., 273,177, Cl. D8-382.000.

Tcherneshoff, John K., to Tcherneshoff Associates, Inc. Tamper-proof fastening device for tags and the like. 273,177, 3-27-84, Cl. D8-382.000.

Tippett, Pete A. Device for sorting tobacco leaves and the like. 273,237, 3-27-84, Cl. D27-51.000.

Tomblin, Glen E.: *See*—
Maza, Dale T.; Ruckman, Harold; and Tomblin, Glen E., 273,242, Cl. D34-21.000.

Usami, Satoru: *See*—
Kido, Katsutoshi; and Usami, Satoru, 273,188, Cl. D14-5.000.

Voorhees, Earl W., Jr.: *See*—
Adamson, Gerhard; and Voorhees, Earl W., Jr., 273,159, Cl. D6-85.000.

Wabeke, Paul E. Flag or similar article. 273,184, 3-27-84, Cl. D11-173.000.

Wagner, Eugene C. Toothbrush. 273,153, 3-27-84, Cl. D4-28.000.

Weber, Lee E. Towel rack. 273,161, 3-27-84, Cl. D6-100.000.

Wilkinson, Kenneth E.; and Balistreri, Thomas W., to Abbott Laboratories. Pull ring port cap for a medical fluid container. 273,227, 3-27-84, Cl. D24-48.000.

Wissman, Thomas: *See*—
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, 273,189, Cl. D14-106.000.

Woodlets, Inc.: *See*—
Palson, Richard C. J., 273,225, Cl. D23-150.000.

Yamagishi, Masami, to Sanwa Cutlery Ltd. Thread nipper or the like. 273,172, 3-27-84, Cl. D8-57.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Ishiyama, Atsushi, 273,185, Cl. D12-7.000.

Yoshida, Shigeru, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Cartridge for magnetic disc. 273,192, 3-27-84, Cl. D14-114.000.

Zether Limited: *See*—
Ferrari, Paolo, 273,211, Cl. D21-88.000.

Ziaylek, Theodore, Jr. Wall and ceiling hook tool head, for use in fighting fires. 273,175, 3-27-84, Cl. D8-81.000.

LIST OF PLANT PATENTEES

Hansen, Betty C., successor: *See*—
Hansen, Carl J., deceased, 5,210, Cl. 30.000.

Hansen, Carl J., deceased (by Hansen, Betty C., successor), to University of California, The Regents of the. Almond × peach hybrid rootstock tree (Hansen 2168). 5,210, 3-27-84, Cl. 30.000.

Jost, Donald J. Nectarine tree, "Summer Red". 5,211, 3-27-84, Cl. 41.000.

Monrovia Nursery Company: *See*—
Usrey, William B., 5,212, Cl. 54.000.

University of California, The Regents of the: *See*—
Hansen, Carl J., deceased, 5,210, Cl. 30.000.

Usrey, William B., to Monrovia Nursery Company. *Raphiolepis indica* cv. Monruce. 5,212, 3-27-84, Cl. 54.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 27, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2.1 R 4,438,531
16 4,438,532
97 4,438,533

CLASS 4

227 4,438,534
234 4,438,535
343 4,438,536
492 4,438,537

CLASS 7

164 4,438,538

CLASS 8

436 4,439,201
471 4,439,202
496 4,439,203
497 4,439,204
527 4,439,205
543 4,439,206
556 4,439,208
639 4,439,207

CLASS 10

120.5 R 4,438,539

CLASS 15

119 A 4,438,540
167 R 4,438,541
250.42 4,438,543

CLASS 16

85 4,438,544

CLASS 17

49 4,438,545
50 4,438,546

CLASS 19

98 4,438,547
105 4,438,548
107 4,438,549

CLASS 24

16 PB Re.31,541
68 SB 4,438,551
297 4,438,552

CLASS 28

184 4,438,553

CLASS 29

57 4,438,554
505 4,438,555
576 B 4,438,556
4,438,557
732 4,438,558
740 4,438,559
830 4,438,560
831 4,438,561

CLASS 30

99 4,438,562
156 4,438,563
324 4,438,564
341 4,438,565

CLASS 33

178 R 4,438,566
286 4,438,567
348 4,438,568
438 4,438,569

CLASS 34

1 4,438,570
65 4,438,571
218 4,438,572

CLASS 36

3 B 4,438,573
45 4,438,574

CLASS 37

4 4,438,575
98 4,438,576

CLASS 38

107 4,438,577

CLASS 40

152 4,438,578
160 4,438,579
590 4,438,580

CLASS 42

94 4,438,581

CLASS 43

27.4 4,438,582
42.06 4,438,583
58 4,438,584
113 4,438,585

CLASS 46

1 R 4,438,586
44 4,438,587
228 4,438,588
251 4,438,589
257 4,438,590

CLASS 47

1.4 4,438,591
1.5 4,438,592
57.6 4,438,593

CLASS 48

76 4,439,209
202 4,439,210

CLASS 49

177 4,438,594
219 4,438,595
463 4,438,596
501 4,438,597

CLASS 51

165.73 4,438,598
238 S 4,438,599
241 S 4,438,600
262 A 4,438,601
277 4,438,602

CLASS 52

5 4,438,603
28 4,438,604
71 4,438,605
79.1 4,438,606
126.1 4,438,607
187 4,438,608
208 4,438,609
263 4,438,610
309.2 4,438,611
427 4,438,612
484 4,438,613
580 4,438,614
648 4,438,615
650 4,438,616

CLASS 53

137 4,438,617
430 4,438,618

CLASS 55

1 4,439,211
27 4,439,212
31 4,439,213
74 4,439,214
95 4,439,215
104 4,439,216
158 4,439,217
288 4,439,218
499 4,439,219

CLASS 56

119 4,438,619
295 Re.31,542
332 4,438,620

CLASS 57

22 4,438,621
261 4,438,622
275 4,438,623
352 4,438,624

CLASS 60

39.17 4,438,625
39.32 4,438,626
278 4,438,627
374 4,438,628
579 4,438,629
676 4,438,630

CLASS 62

6 4,438,631
31 4,439,220
55.5 4,438,632
116 4,438,633
123 4,438,634
305 4,438,635
325 4,438,636
457 4,438,637
500 4,438,638

CLASS 65

4.21 4,439,221
99.2 4,439,222

CLASS 66

64 4,438,639

CLASS 70

57 4,438,550
94 4,438,640
95 4,438,641
232 4,438,642

CLASS 71

30 4,439,223
76 4,439,224
88 4,439,225
92 4,439,226
95 4,439,227
4,439,228
96 4,439,229
4,439,230

CLASS 72

49 4,438,643
356 4,438,644
482 4,438,645

CLASS 73

105 4,438,646
117.3 4,438,647
195 4,438,648
432 R 4,438,649
432 SD 4,438,650
433 4,438,651
861.25 4,438,652
863.11 4,438,653
864.52 4,438,654

CLASS 74

5 F 4,438,655
63 4,438,656
477 4,438,657
501 R 4,438,658
529 4,438,659
531 4,438,660
551.9 4,438,661
625 4,438,662
760 4,438,663
866 4,438,664
867 4,438,665
868 4,438,666

CLASS 75

0.5 AA 4,439,231
10 R 4,439,232
35 4,439,233
52 4,439,234
101 R 4,439,235
123 B 4,439,236
243 4,439,237

CLASS 76

36 4,438,667

CLASS 81

352 4,438,668
410 R 4,438,669

CLASS 83

154 4,438,670
212 4,438,671
319 4,438,672
502 4,438,673

CLASS 84

1.24 4,438,674

CLASS 89

1.811 4,438,675
34 4,438,676
36 K 4,438,677
138 4,438,678

CLASS 91

370 4,438,679

CLASS 98

43 C 4,438,680

CLASS 99

323.2 4,438,681
323.7 4,438,682
330 4,438,683
341 4,438,684
342 4,438,685
353 4,438,686
571 4,438,687
574 4,438,688

CLASS 100

25 4,438,689
116 4,438,690
117 4,438,691

CLASS 101

93.04 4,438,692
129 4,438,693
152 4,438,694
153 4,438,695
180 4,438,696
183 4,438,697
287 4,438,698

CLASS 102

313 4,438,699
334 4,438,700

CLASS 104

172 B 4,438,701
4,438,702

CLASS 105

224.1 4,438,703

CLASS 106

20 4,439,238
287.16 4,439,239
288 Q 4,439,240

CLASS 109

44 4,438,704

CLASS 110

235 4,438,705
238 4,438,706
264 4,438,707
346 4,438,708
347 4,438,709

CLASS 111

3 4,438,710

CLASS 112

16 4,438,711
100 4,438,712
4,438,713
130 4,438,714
158 B 4,438,715
168 4,438,716
227 4,438,717
274 4,438,718

CLASS 114

74 A 4,438,719

CLASS 116

215 4,438,720

CLASS 118

249 4,438,721
657 4,438,722
718 4,438,723
719 4,438,724

CLASS 119

4 4,438,725
28 4,438,726
29 4,438,727

CLASS 122

14 4,438,728
26 4,438,729
40 4,438,730

CLASS 123

25 N 4,438,731
41.05 4,438,732
41.62 4,438,733
90.16 4,438,735
4,438,736
90.17 4,438,737
90.27 4,438,734
90.39 4,438,738
90.55 4,438,739
188 M 4,438,741
188 S 4,438,740
308 4,438,742
4,438,743
327 4,438,744
339 4,438,745
373 4,438,746
450 4,438,747
491 4,438,748
494 4,438,749
557 4,438,750
606 4,438,751
630 4,438,752

CLASS 124

24 R 4,438,753

CLASS 125

14 4,438,754

CLASS 126

34 4,438,755
131 4,438,756
360 R 4,438,757
419 4,438,758
433 4,438,759
438 4,438,760

CLASS 128

75 4,438,761
92 BB 4,438,762
133 4,438,763
205.22 4,438,764
303.1 4,438,765
303.14 4,438,766
304 4,438,767
305.3 4,438,768
334 R 4,438,769
637 4,438,770
671 4,438,771
715 4,438,772
748 4,438,773

CLASS 131

282 4,438,774
300 4,438,775
336 4,438,776

CLASS 134

22.17 4,439,241
25.2 4,439,242
33 4,439,243
4,439,244

CLASS 137

62 4,438,777
112 4,438,778
614.06 4,438,779
625.28 4,438,781
625.6 4,438,780
628 4,438,782

CLASS 138

89 4,438,783
92 4,438,784
103 4,438,785

CLASS 139

59 4,438,786
329 4,438,787
383 A 4,438,788
4,438,789
435 4,438,790
453 4,438,791

CLASS 141

95 4,438,792
382 4,438,793

CLASS 144

208 E 4,438,794
373 4,438,795

CLASS 148

1.5 4,439,245
2 4,439,246
4,439,247
6.2 4,439,248
9 R 4,439,249
23 4,439,250
31.55 4,439,251
111 4,439,252
403 4,439,253

CLASS 149

2 4,439,254

CLASS 152

222 B1 4,321,956
353 R 4,438,796
410 4,438,797

CLASS 156

49 4,439,255
50 4,439,256
64 4,439,257
86 4,439,258
245 4,439,259
259 4,439,260
345 4,439,261
364 4,439,262
497 4,439,263
556 4,439,264
606 4,439,265
614 4,439,266
4,439,267
626 4,439,268
643 4,439,269
644 4,439,270

CLASS 160

126 4,438,798
263 4,438,799
371 4,438,800

CLASS 162

19 4,439,271
30.11 4,439,272
161 B1 4,337,117
358 4,439,273

CLASS 164

130 4,438,801
443 4,438,802
472 4,438,803
522 4,438,804

CLASS 165

76 4,438,805
108 4,438,806
133 4,438,807
150 4,438,808
166 4,438,809

CLASS 166

65 M 4,438,810
123 4,438,811
173 4,438,812
177 4,438,813
273 4,438,814
278 4,438,815
303 4,438,816
341 4,438,817

CLASS 172

9 4,438,818
536 4,438,819

CLASS 174

21 R 4,439,630
74 R 4,439,631
106 D 4,439,632
106 R 4,439,633

CLASS 175

45 4,438,820
74 4,438,821
325 4,438,822

CLASS 177

210 EM 4,438,823

CLASS 178

22.08 4,438,824

CLASS 179

2.51 4,439,634
6.2 4,439,635
7.1 R 4,439,636
16 F 4,439,637
84 C 4,439,638
84 VF 4,439,639
110 A 4,439,640
111 R 4,439,641
4,439,642
146 E 4,439,643
4,439,644
156 B 4,439,645

CLASS 180
89.12 4,438,825
89.14 4,438,826
143 4,438,827
219 4,438,828

CLASS 182
150 4,438,829

CLASS 187
12 4,438,830
30 4,438,831

CLASS 188
73.45 4,438,832
320 4,438,833
322.16 4,438,834

CLASS 192
3 M 4,438,835
36 4,438,836

CLASS 198
345 4,438,839
398 4,438,840
524 4,438,841
735 4,438,837
838 4,438,842
853 4,438,838

CLASS 200
5 A 4,439,646
4,439,647
6 A 4,439,648
4,439,649
61.89 4,439,650
144 AP 4,439,651
148 A 4,439,652
153 SC 4,439,653
302.1 4,439,654
340 4,439,655

CLASS 201
41 4,439,274

CLASS 202
100 4,439,275
239 4,439,276
248 4,439,277

CLASS 203
9 4,439,278

CLASS 204
1.5 4,439,279
2 4,439,280
2.1 4,439,281
38 R 4,439,282
4,439,283
43 T 4,439,284
51 4,439,285
54 R 4,439,286
58 4,439,287
114 4,439,288
146 4,439,289
149 4,439,290
159.23 4,439,291
165 4,439,292
180 P 4,439,293
192 E 4,439,294
229 4,439,295
253 4,439,296
257 4,439,297
258 4,439,298
271 4,439,299
272 4,439,300
278 4,439,301
290 R 4,439,302
434 4,439,303

CLASS 206
148 4,438,843
287.1 4,438,844
330 4,438,847
366 4,438,845
387 4,438,846
588 4,438,848
592 4,438,849
634 4,438,850

CLASS 208
8 LE 4,439,304
10 4,439,305
11 R 4,439,306
4,439,307
33 4,439,308
51 4,439,309
111 4,439,310
179 4,439,311
216 PP 4,439,312
251 H 4,439,313

CLASS 209
166 4,439,314
616 4,438,851

CLASS 210
90 4,439,315
150 4,439,316
151 4,439,317
208 4,439,318
238 4,439,319
394 4,439,320
493.1 4,439,321
500.2 4,439,322
608 4,439,323
691 4,439,324
740 4,439,325
757 4,439,326
772 4,439,327

CLASS 211
11 4,438,852
77 4,438,853

CLASS 213
127 4,438,854
153 4,438,855

CLASS 215
12 R 4,438,856
256 4,438,857

CLASS 219
10.55 E 4,439,656
56 4,439,658
69 M 4,439,660
69 V 4,439,659
99 4,439,661
121 LK 4,439,663
121 PR 4,439,657
121 PY 4,439,662
124.02 4,439,664
4,439,665
130.21 Re.31,544
213 4,439,666
230 4,439,667
289 4,439,669
438 4,439,668

CLASS 220
3 4,438,858
3.2 4,438,859
4 B 4,438,860
86 AT 4,438,862
86 R 4,438,861
227 4,438,863
265 4,438,864
270 4,438,865
319 4,438,866

CLASS 221
197 4,438,867
240 4,438,868

CLASS 222
1 4,438,869
48 4,438,870
137 4,438,871
217 4,438,872
616 4,438,873

CLASS 223
88 4,438,874

CLASS 224
42.03 R 4,438,875
154 4,438,876
275 4,438,877
319 4,438,878

CLASS 226
188 4,438,879

CLASS 228
1 A 4,438,880

CLASS 235
382 4,439,670
449 4,439,671
463 4,439,672

CLASS 237
2 B 4,438,881

CLASS 239
462 4,438,882
553.3 4,438,883
600 4,438,884

CLASS 241
101 B 4,438,885

CLASS 242
25 A 4,438,886
43.2 4,438,887
56.9 4,438,888
67.1 R 4,438,889
130 4,438,890
190 4,438,891
199 4,438,892

CLASS 244
3.21 4,438,893

CLASS 248
73 4,438,894
396 4,438,895
323 4,438,896
544 4,438,897
561 4,438,898
642 4,438,899

CLASS 250
214 A 4,439,673
227 4,439,674
253 4,439,675
256 4,439,676
260 4,439,677
4,439,678
282 4,439,679
310 4,439,680
4,439,681
327.2 4,439,682
381 4,439,683
396 R 4,439,684
398 4,439,685
492.3 4,439,686

CLASS 251
1 B 4,438,900

CLASS 252
8.05 4,439,329
8.5 LC 4,439,328
8.55 D 4,439,332
4,439,334
8.55 R 4,439,333
8.75 4,439,335
8.8 4,439,330
4,439,331
32.7 E 4,439,336
70 4,439,337
79.1 4,439,338
80 4,439,339
299.63 4,439,340
305 4,439,341
4,439,342
4,439,343
312 4,439,344
330 4,439,345
408.1 4,439,346
4,439,347
426 4,439,348
500 4,439,351
518 4,439,352
522 R 4,439,353
4,439,354
541 4,439,355

CLASS 254
29 A 4,438,901
106 4,438,902
269 4,438,903
311 4,438,904
389 4,438,905

CLASS 260
112 B 4,439,357
4,439,358
112 R 4,439,356
112.5 R 4,439,359
4,439,360
141 4,439,361
152 4,439,362
239.1 4,439,363
239.3 R 4,439,364
395 4,439,365
397.1 4,439,366
404 4,439,368
453 P 4,439,369
4,439,370
465 C 4,439,371
465 E 4,439,372
502.5 F 4,439,373
512 R 4,439,374

CLASS 261
29 4,439,375
50 A 4,439,376
52 4,439,377
111 4,439,378

CLASS 264
12 4,439,379
16 4,439,380
26 4,439,381
29.5 4,439,382
32 4,439,383
37 4,439,384
4,439,385
102 4,439,386
108 4,439,387
130 4,439,388
216 4,439,389
297.2 4,439,390
317 4,439,391
511 4,439,392
532 4,439,393
535 4,439,394

CLASS 266
44 4,438,906
217 4,438,907

CLASS 267
8 R 4,438,908
64.26 4,438,909
126 4,438,910

CLASS 269
32 4,438,911
55 4,438,912
60 4,438,913

CLASS 270
31 4,438,914

CLASS 271
9 4,438,915
93 4,438,916
227 4,438,917
251 4,438,918

CLASS 272
1 B 4,438,919
67 4,438,920
73 4,438,921

CLASS 273
1 GA 4,438,922
1.5 R 4,438,923
58 B 4,438,924
75 4,438,925
85 G 4,438,926
90 4,438,927
121 R 4,438,928
127 R 4,438,929
4,438,930
167 H 4,438,931
237 4,438,932

CLASS 277
9.5 4,438,933
92 4,438,934
205 4,438,935
212 C 4,438,936
215 4,438,937
230 4,438,938
236 4,438,939

CLASS 280
12 S 4,438,940
47.4 4,438,941
278 4,438,942
432 4,438,943
460 R 4,438,944
501 4,438,945
602 4,438,946
615 4,438,947
618 4,438,948
804 4,438,949

CLASS 283
70 4,438,950

CLASS 285
39 4,438,952
93 4,438,953
104 4,438,954
189 4,438,955
223 4,438,956
4,438,957
234 4,438,958
340 4,438,959
367 4,438,960

CLASS 290
40 R 4,439,687

CLASS 292
67 4,438,961
144 4,438,962
168 4,438,963
216 4,438,964
256.75 4,438,965
259 R 4,438,966

CLASS 294
164 4,438,967

CLASS 296
1 R 4,438,968
146 4,438,969
190 4,438,970
191 4,438,971
223 4,438,972

CLASS 297
304 4,438,978
349 4,438,973
379 4,438,974
412 4,438,975

CLASS 299
4 4,438,976
64 4,438,977

CLASS 301
37 PB 4,438,979

CLASS 303
6 C 4,438,980

CLASS 305
14 4,438,981
35 EB 4,438,982

CLASS 307
115 4,439,688
265 4,439,689
272 R 4,439,690
279 4,439,691
297 4,439,692
353 4,439,693
362 4,439,694
477 4,439,695
494 4,439,696
530 4,439,697

CLASS 308
2 A 4,438,983
3.9 4,438,984
6 C 4,438,985
6 R 4,438,986
10 4,438,987
174 4,438,988
184 R 4,438,989
187.1 4,438,990
189 R 4,438,991
201 4,438,992

CLASS 310
12 4,439,698
13 4,439,699
4,439,700
4,439,701
45 4,439,702
80 4,439,703
186 4,439,704
211 4,439,705
338 4,439,706
353 4,439,706

CLASS 312
140 4,438,993
330 R 4,438,994

CLASS 313
130 4,439,707
140 4,439,708
406 4,439,709
414 4,439,710
487 4,439,711
533 4,439,712

CLASS 315
370 4,439,713
371 4,439,714

CLASS 318
627 4,439,715
632 4,439,716
696 4,439,717
729 4,439,718

CLASS 320
31 4,439,719

CLASS 322
4 4,439,720
31 4,439,721

CLASS 323
248 4,439,722

CLASS 324
52 4,439,723
55 4,439,724
61 R 4,439,725
156 4,439,726
158 R 4,439,727
164 4,439,728
165 4,439,729
232 4,439,730
239 4,439,731
247 4,439,732
322 4,439,733
327 4,439,734
404 4,439,735
437 4,439,736

CLASS 329
50 4,439,737

CLASS 330
10 4,439,738
107 4,439,739
124 R 4,439,740
149 Re.31,545
4,439,741
262 4,439,742
267 4,439,743
285 4,439,744
296 4,439,745

CLASS 331
82 4,439,746

CLASS 333
208 4,439,747
239 4,439,748

CLASS 334
7 4,439,749

CLASS 335
198 B1,4,184,134
274 4,439,750
278 4,439,751

CLASS 338
2 4,439,752
320 4,439,754
325 4,439,753

CLASS 339
19 LC B1,4,210,376
39 4,438,995
40 4,438,996
97 R 4,438,997
154 A 4,438,998
176 MF 4,438,999
176 MP 4,439,000
4,439,001

CLASS 340
347 AD 4,439,756
365 VL 4,439,757
546 4,439,758
703 4,439,759
735 4,439,761
750 4,439,762
799 4,439,760
825.5 4,439,763
870.02 4,439,764
980 4,439,755

CLASS 343
6 A 4,439,765
9 R 4,439,766
18 B 4,439,768
18 E 4,439,767
380 4,439,769
381 4,439,770
704 4,439,771
749 4,439,772
778 4,439,773
912 4,439,774

CLASS 346
75 4,439,775
4,439,776
76 PH 4,439,777
136 4,439,778
140 PD 4,439,779
140 R 4,439,780
153.1 4,439,781

CLASS 350
4.1 4,439,002
6.6 4,439,003
96.12 4,439,004
96.15 4,439,005
96.20 4,439,006
96.30 4,439,007
96.31 4,439,008
99 4,439,009
174 4,439,010
255 4,439,011
294 4,439,012
307 4,439,013
350 R 4,439,015
356 4,439,016
388 4,439,014
427 4,439,017
430 4,439,018
4,439,019
443 4,439,020
452 4,439,021
572 4,439,022

CLASS 351
206 4,439,023
207 4,439,024
212 4,439,025
219 4,439,026

CLASS 353
77 4,439,027
119 4,439,028

CLASS 354
62 4,439,030
274 4,439,031
293 4,439,032
316 4,439,033
479 4,439,029

CLASS 355
3 DD 4,439,034
15 4,439,035
75 4,439,036

CLASS 356
402 4,439,037
408 4,439,038
416 4,439,039

CLASS 357
17 4,439,782

CLASS 388
22 4,439,783
86 4,439,784
120 4,439,785
148 4,439,786
195.1 4,439,787
213 4,439,788
256 4,439,789
4,439,790
342 4,439,791

CLASS 360
4 4,439,798
77 4,439,799
78 4,439,800
97 4,438,542
106 4,439,792
121 4,439,793
127 4,439,794
131 4,439,795
4,439,796
134 4,439,797

CLASS 361
55 4,439,801
56 4,439,802
63 4,439,803
92 4,439,804
4,439,805
98 4,439,806
127 4,439,807
144 4,439,808
220 4,439,809
272 4,439,810
313 4,439,811
314 4,439,812
321 4,439,813
4,439,814
386 4,439,815

CLASS 362
96 4,439,816
250 4,439,818
255 4,439,817

CLASS 363
17 4,439,819
21 4,439,820
26 4,439,821
56 4,439,822
161 4,439,823

CLASS 364
150 4,439,824
167 4,439,825
200 4,439,826
4,439,827
4,439,828
4,439,829
4,439,830
200 B1,4,344,132
422 4,439,831
426 4,439,832
431.09 4,439,833
474 4,439,834
786 4,439,835
900 4,439,836
4,439,837
4,439,838
4,439,839
4,439,840

CLASS 365
51 4,439,841
104 4,439,842
218 4,439,843

CLASS 366
2 4,439,040
144 4,439,041
154 4,439,042
164 4,439,043
292 4,439,044
297 4,439,045

CLASS 367
87 4,439,844
4,439,845
99 4,439,846
151 4,439,847

CLASS 368
120 4,439,046

CLASS 369
45 4,439,848
50 4,439,849
77.2 4,439,850
4,439,851
4,439,852
126 4,439,853
4,439,854
4,439,855

CLASS 370
85 4,439,856
100 4,439,857

CLASS 371
20 4,439,858
32 4,439,859

CLASS 372
25 4,439,861
70 4,439,860
107 4,439,862

CLASS 374
34 4,439,048
124 4,439,049

CLASS 375
18 4,439,863
98 4,439,864

CLASS 376
130 4,439,395
247 4,439,396

CLASS 377
8 4,439,865

CLASS 378
19 4,439,866
96 4,439,867
112 4,439,868
113 4,439,869
143 4,439,870

CLASS 384
100 4,439,050

CLASS 400
605 4,439,051

CLASS 403
49 4,439,052
101 4,439,053
322 4,439,054
330 4,439,055

CLASS 404
90 4,439,056
133 4,439,057

CLASS 405
24 4,439,058
4,439,062
4,439,059
4,439,060
104 4,439,061
145 4,439,063
150 4,439,064
151 4,439,065
153 4,439,066
154 4,439,067
169 4,439,068
195 4,439,069
216 4,439,070
4,439,071

CLASS 406
91 4,439,072
99 4,439,200
125 4,439,073

CLASS 408
178 4,439,074
239 R 4,439,075

CLASS 410
153 4,439,076

CLASS 411
178 4,439,078
345 4,439,079
411 4,439,077

CLASS 412
9 4,439,080

CLASS 413
1 4,439,081
56 4,439,082

CLASS 414
42 4,439,097
43 4,439,098
45 4,439,099
46 4,439,083
62 4,439,084
115 4,439,100
126 4,439,101
447 4,439,085
462 4,439,086
537 4,439,087
633 4,439,102
661 4,439,103
703 4,439,088
722 4,439,089
736 4,439,090
745 4,439,091
752 4,439,092
786 4,439,093
4,439,094

CLASS 415
52 4,439,095
131 4,439,096
161 4,439,104

CLASS 416
13 4,439,105
61 4,439,106
95 4,439,107
131 4,439,108

CLASS 417
129 4,439,110
379 4,439,111
383 4,439,112
394 4,439,113
403 4,439,114
460 4,439,115
499 4,439,116

CLASS 418
22 4,439,117
55 4,439,118
61 B 4,439,119
77 4,439,120
88 4,439,109
98 4,439,121

CLASS 420
519 4,439,397
564 4,439,398
580 4,439,399

CLASS 423
111 4,439,400
150 4,439,401
159 4,439,402
4,439,403

CLASS 423
3 4,439,404
10 4,439,405
244 4,439,406
317 4,439,407
321 S 4,439,408
328 4,439,409
350 4,439,410
560 4,439,411
573 G 4,439,412

CLASS 424
1.1 4,439,413
4,439,414
16 4,439,415
47 4,439,416
70 4,439,417
4,439,418
78 4,439,419
4,439,420
85 4,439,421
92 4,439,422
94 4,439,423
153 4,439,424
177 4,439,425
181 4,439,426
199 4,439,427
200 4,439,428
216 4,439,430
4,439,431
240 4,439,432
246 4,439,433
4,439,434
251 4,439,435
258 4,439,436
263 4,439,437
270 4,439,439
273 P 4,439,440
273 R 4,439,441
285 4,439,429
4,439,442
4,439,443
4,439,444
304 4,439,445
4,439,446
309 4,439,447
4,439,448
317 4,439,449
4,439,450
4,439,451
319 4,439,452
324 4,439,453
329 4,439,454

CLASS 425
4 R 4,439,122
112 4,439,123
4,439,124
135 4,439,126
140 4,439,125
155 4,439,127
290 4,439,128
352 4,439,129
388 4,439,130
436 R 4,439,131
548 4,439,132
556 4,439,133

CLASS 426
12 4,439,455
276 4,439,456
310 4,439,457
330.5 4,439,458
438 4,439,459
548 4,439,460
601 4,439,461

CLASS 427
14.1 4,439,462
39 4,439,463
76 4,439,464
115 4,439,465
123 4,439,466
163 4,439,467
216 4,439,468
230 4,439,469
252 4,439,470

CLASS 428
35 4,439,471
71 4,439,472
90 4,439,473
4,439,474
92 4,439,475
96 4,439,476
102 4,439,477
137 4,439,478
148 4,439,479
161 4,439,480
235 4,439,481
252 4,439,482
287 4,439,483
318.4 4,439,484
323 4,439,485
332 4,439,486
397 4,439,487
402.24 4,439,488
404 4,439,489
407 4,439,490
408 4,439,491
409 4,439,492
412 4,439,494
414 4,439,493
463 4,439,495
513 4,439,496
539.5 4,439,497
558 4,439,498
670 4,439,499

CLASS 429
27 4,439,500
70 4,439,501
104 4,439,502
108 4,439,503

CLASS 430
42 4,439,504
58 4,439,505
4,439,506
84 4,439,508
058 4,439,507
132 4,439,509
137 4,439,510
165 4,439,511
180 4,439,512
203 4,439,513
272 4,439,514
285 4,439,515
323 4,439,516
328 4,439,517
402 4,439,518
405 4,439,519
434 4,439,520

CLASS 431
1 4,439,134
2 4,439,135
7 4,439,136
8 4,439,137
12 4,439,138
20 4,439,139
31 4,439,140

CLASS 432
14 4,439,141
18 4,439,142
36 4,439,143
59 4,439,144
164 4,439,145
253 4,439,146

CLASS 433
3 4,439,147
5 4,439,148
6 4,439,149
56 4,439,150
60 4,439,151
173 4,439,152
200 4,439,153
229 4,439,154

CLASS 434
12 4,439,155
4,439,156
40 4,439,157
71 4,439,158
85 4,439,159
170 4,439,160
201 4,439,161
268 4,439,162

CLASS 435
1 4,439,521
188 4,439,522
243 4,439,523
247 4,439,525
280 4,439,524

CLASS 436
135 4,439,527
180 4,439,526

CLASS 440
86 4,439,163
91 4,439,164

CLASS 441
74 4,439,165
79 4,439,166

CLASS 464
20 4,439,167
69 4,439,168
170 4,439,169

CLASS 474
28 4,439,170
80 4,439,171
160 4,439,172
191 4,439,173

CLASS 493
125 4,439,174
413 4,439,175
419 4,439,176

CLASS 494
20 4,439,177
85 4,439,178

CLASS 501
32 4,439,528
45 4,439,529
4,439,530
75 4,439,531
117 4,439,532

CLASS 502
6 4,439,533
8 4,439,534
62 4,439,535
64 4,439,536
105 4,439,537
4,439,538
112 4,439,539
125 4,439,540
4,439,541
180 4,439,349
207 4,439,542
228 4,439,543
234 4,439,544
527 4,439,350

CLASS 521
32 4,439,545
48 4,439,546
56 4,439,547
130 4,439,548
131 4,439,549
4,439,550
4,439,551
139 4,439,552
4,439,553

CLASS 523
115 4,439,554
122 4,439,555
206 4,439,556
216 4,439,557
217 4,439,558
435 Re.31,543
437 4,439,560
513 4,439,559

CLASS 524
13 4,439,561
90 4,439,562
96 4,439,563
101 4,439,564
103 4,439,565
108 4,439,566
4,439,567
111 4,439,568
128 4,439,569
154 4,439,570
183 4,439,571
405 4,439,572
425 4,439,576
4,439,577
451 4,439,573
458 4,439,574
489 4,439,575
538 4,439,578
602 4,439,579
801 4,439,580
839 4,439,581

CLASS 525
67 4,439,582
127 4,439,583
4,439,584
4,439,585
169 4,439,586
292 4,439,587
366 4,439,588

CLASS 526
209 4,439,589
285 4,439,590

CLASS 528
14 4,439,592
45 4,439,593
67 Bl 3,976,622
73 4,439,591
80 4,439,599
89 4,439,594
191 4,439,595
4,439,596
272 4,439,597
295.3 4,439,598
392 4,439,600
481 4,439,601

CLASS 536
6.4 4,439,602
4,439,603
24 4,439,604
71 4,439,605

CLASS 544
356 4,439,606

CLASS 546
89 4,439,607
283 4,439,608
334 4,439,609

CLASS 548
469 4,439,610
533 4,439,611
546 4,439,612

CLASS 549
347 4,439,613

CLASS 560
8 4,439,614
15 4,439,615
25 4,439,616
39 4,439,617
56 4,439,618
169 4,439,619

CLASS 562
493 4,439,620
599 4,439,621

CLASS 564
406 4,439,622

CLASS 568
393 4,439,623
470 4,439,624
473 4,439,625

CLASS 585
253 Bl,3,381,046
435 4,439,626
4,439,627
4,439,628
803 4,439,629

CLASS 604
34 4,439,179
54 4,439,180
56 4,439,181
85 4,439,182
4,439,183
90 4,439,184
97 4,439,185
99 4,439,186
111 4,439,187
283 4,439,188
317 4,439,189
319 4,439,190
332 4,439,191
408 4,439,192
411 4,439,193
890 4,439,194
4,439,195
4,439,196
891 4,439,197
894 4,439,198
4,439,199

CLASSIFICATION OF DESIGNS

D3—	30.1	273,149		188	273,165	D11—	157	273,182		148	273,197		121	273,213		2	273,229
	40	273,150		201	273,166			273,183		199	273,198			273,214		49	273,230
	71	273,151	D7—	79	273,167		173	273,184	D18—	7	273,199		150	273,215		62	273,231
		273,152		354	273,168	D12—	7	273,185			273,200	D22—	1	273,216		79	273,232
D4—	28	273,153	D8—	8	273,169		85	273,186			273,201		8	273,217		92	273,233
D6—	15	273,154		49	273,170		157	273,187		19	273,202		25	273,218	D26—	35	273,234
	31	273,155			273,171	D14—	5	273,188	D20—	6	273,203			273,219			273,235
	47	273,156		57	273,172		106	273,189		44	273,204			273,220		139	273,236
	48	273,157		62	273,173			273,190	D21—	59	273,205			273,221	D27—	51	273,237
	61	273,158		71	273,174		113	273,191			273,206		31	273,222	D28—	7	273,238
	85	273,159		81	273,175		114	273,192			273,207	D23—	4	273,223		13	273,239
	97	273,160		356	273,176	D15—	7	273,178			273,208		72	273,224			273,240
	100	273,161		382	273,177		133	273,193			273,209		150	273,225			273,241
	125	273,162	D9—	346	273,179		139	273,194		64	273,210	D24—	48	273,227		40	273,242
	181	273,163		352	273,180		141	273,195		88	273,211		54	273,226	D34—	21	273,243
	186	273,164		425	273,181		147	273,196		120	273,212	D25—	1	273,228		28	

CLASSIFICATION OF PLANTS

P.—	30	5,210		41	5,211		54	5,212			

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,438,794	4,439,356	4,439,223		4,439,240	4,438,928	4,439,759
	4,439,718	4,439,378	04 : 4,438,591		4,439,293	4,438,929	4,439,760
4 :	4,438,686	4,439,381	4,438,853		4,439,364	4,438,930	4,439,761
	4,438,888	4,439,392	06 : 4,438,561		4,439,595	4,439,002	4,439,852
	4,438,937	4,439,395	4,438,638		4,439,596	4,439,046	4,439,854
	4,438,976	4,439,404	4,438,830		4,439,625	4,439,070	19 : 4,438,601
	4,439,006	4,439,421	4,438,932	12 :	4,438,563	4,439,076	4,438,602
	4,439,101	4,439,431	4,438,944		4,438,669	4,439,077	4,438,620
	4,439,104	4,439,463	4,438,983		4,438,698	4,439,081	4,438,660
	4,439,173	4,439,466	4,438,999		4,438,753	4,439,085	4,438,818
	4,439,235	4,439,468	4,439,001		4,438,800	4,439,089	4,438,896
	4,439,375	4,439,601	4,439,004		4,439,058	4,439,129	4,439,056
	4,439,597	4,439,614	4,439,098		4,439,073	4,439,130	4,439,319
6 :	4,438,531	4,439,664	4,439,132		4,439,155	4,439,163	4,439,740
	4,438,538	4,439,675	4,439,149		4,439,156	4,439,179	4,439,835
	4,438,575	4,439,679	4,439,174		4,439,157	4,439,188	20 : 4,438,619
	4,438,649	4,439,693	4,439,185		4,439,162	4,439,193	4,438,696
	4,438,661	4,439,705	4,439,187		4,439,297	4,439,198	4,439,196
	4,438,683	4,439,757	4,439,199		4,439,320	4,439,219	21 : 4,438,667
	4,438,708	4,439,762	4,439,200		4,439,341	4,439,348	4,438,702
	4,438,758	4,439,767	4,439,224		4,439,405	4,439,423	4,438,714
	4,438,763	4,439,772	4,439,225		4,439,407	4,439,424	4,438,776
	4,438,769	4,439,774	4,439,266		4,439,458	4,439,427	4,438,841
	4,438,793	4,439,793	4,439,347		4,439,483	4,439,452	22 : 4,438,843
	4,438,809	4,439,830	4,439,358		4,439,654	4,439,453	4,438,904
	4,438,812	4,439,834	4,439,430		4,439,668	4,439,460	4,439,311
	4,438,815	4,439,839	4,439,441		4,439,741	4,439,461	4,439,328
	4,438,835	4,439,844	4,439,446		4,344,132	4,439,488	4,439,644
	4,438,857	4,439,848	4,439,470	13 :	4,438,788	4,439,489	24 : 4,438,588
	4,438,866	4,439,858	4,439,613		4,438,881	4,439,500	4,438,727
	4,438,880	4,439,862	4,439,634		4,439,632	4,439,533	4,438,829
	4,438,883	8 : 4,438,917	4,439,665	16 :	4,438,567	4,439,552	4,439,016
	4,438,919	4,438,959	4,439,692	17 :	4,438,545	4,439,563	4,439,213
	4,438,942	4,439,045	4,439,732		4,438,578	4,439,568	4,439,553
	4,438,945	4,439,303	4,439,747		4,438,585	4,439,631	4,439,554
	4,438,962	4,439,345	4,439,765		4,438,586	4,439,635	4,439,667
	4,438,978	4,439,788	4,439,822		4,438,607	4,439,649	4,439,770
	4,439,010	4,439,818	4,439,840		4,438,617	4,439,687	4,439,845
	4,439,055	9 : 4,438,630	08 : 4,438,766		4,438,646	4,439,688	25 : Re.31,541
	4,439,093	4,438,967	4,438,842		4,438,689	4,439,722	4,438,573
	4,439,160	4,439,190	4,439,175		4,438,705	4,439,735	4,438,604
	4,439,165	4,439,332	4,439,672		4,438,728	4,439,782	4,438,626
	4,439,177	4,439,459	09 : 4,438,678		4,438,731	4,439,798	4,438,631
	4,439,183	4,439,576	4,438,709		4,438,780	4,439,805	4,438,632
	4,439,189	4,439,577	4,439,079		4,438,797	4,439,817	4,438,636
	4,439,195	4,439,611	4,439,106		4,438,816	4,439,819	4,438,767
	4,439,226	4,439,616	4,439,107		4,438,865	18 : 4,438,572	4,438,893
	4,439,227	4,439,648	4,439,121		4,438,875	4,438,598	4,439,003
	4,439,232	4,439,673	4,439,241		4,438,878	4,438,682	4,439,061
	4,439,280	4,439,683	4,439,561		4,438,884	4,438,839	4,439,158
	4,439,282	4,439,815	4,439,600		4,438,913	4,438,855	4,439,181
	4,439,284	4,439,826	4,439,756		4,438,921	4,439,128	4,439,259
	4,439,294	D1 : 4,439,216	10 : 4,438,988		4,438,924	4,439,248	4,439,263

4,439,289
4,439,302
4,439,325
4,439,501
4,439,516
4,439,571
4,439,641
4,439,642
4,439,647
4,439,686
4,439,694
4,439,724
4,439,728
4,439,734
4,439,807
4,439,827
4,439,829
4,439,846
4,439,847
4,439,864
4,337,117
26 : Re.31,543
4,438,539
4,438,540
4,438,582
4,438,583
4,438,596
4,438,640
4,438,663
4,438,666
4,438,723
4,438,724
4,438,745
4,438,751
4,438,779
4,438,798
4,438,861
4,438,877
4,438,895
4,438,898
4,438,940
4,438,960
4,438,971
4,438,973
4,438,974
4,439,048
4,439,113
4,439,152
4,439,164
4,439,169
4,439,191
4,439,285
4,439,301
4,439,374
4,439,386
4,439,419
4,439,445
4,439,566
4,439,572
4,439,582
4,439,602
4,439,604
4,439,630
4,439,650
4,439,775
27 : 4,438,544
4,438,634
4,438,656
4,438,735
4,438,737
4,438,757
4,438,762
4,438,781
4,438,848
4,438,873
4,438,925
4,439,139
4,439,140
4,439,147
4,439,154
4,439,182
4,439,387

4,439,680
4,439,699
4,439,752
4,439,809
4,439,816
28 : 4,438,819
4,439,339
4,439,742
29 : 4,438,923
4,439,014
4,439,057
4,439,087
4,439,088
4,439,105
4,439,336
4,439,342
4,439,343
4,439,344
4,439,626
4,439,627
4,439,628
31 : 4,438,592
4,438,858
4,439,072
32 : 4,438,958
4,439,040
33 : Re.31,544
4,438,574
4,439,062
4,439,096
4,439,184
4,439,256
34 : 4,438,554
4,438,587
4,438,597
4,438,700
4,438,715
4,438,764
4,438,765
4,438,824
4,438,844
4,438,870
4,438,891
4,438,897
4,438,927
4,438,963
4,438,995
4,439,007
4,439,136
4,439,166
4,439,178
4,439,236
4,439,245
4,439,253
4,439,260
4,439,265
4,439,268
4,439,305
4,439,309
4,439,310
4,439,313
4,439,346
4,439,355
4,439,399
4,439,406
4,439,411
4,439,416
4,439,420
4,439,464
4,439,467
4,439,473
4,439,495
4,439,498
4,439,544
4,439,578
4,439,583
4,439,584
4,439,585
4,439,586
4,439,587
4,439,590
4,439,607

4,439,623
4,439,636
4,439,669
4,439,744
4,439,748
4,439,763
4,439,773
4,439,804
4,439,853
4,439,855
4,439,870
3,381,046
35 : 4,438,965
4,439,860
36 : 4,438,532
4,438,536
4,438,593
4,438,605
4,438,615
4,438,641
4,438,655
4,438,680
4,438,693
4,438,772
4,438,807
4,438,867
4,438,874
4,438,943
4,439,012
4,439,021
4,439,034
4,439,060
4,439,102
4,439,103
4,439,117
4,439,151
4,439,220
4,439,250
4,439,261
4,439,270
4,439,273
4,439,296
4,439,329
4,439,365
4,439,373
4,439,379
4,439,389
4,439,391
4,439,414
4,439,429
4,439,436
4,439,480
4,439,481
4,439,493
4,439,494
4,439,505
4,439,507
4,439,509
4,439,520
4,439,526
4,439,528
4,439,535
4,439,538
4,439,548
4,439,565
4,439,606
4,439,608
4,439,612
4,439,690
4,439,716
4,439,755
4,439,769
4,439,780
4,439,785
4,439,812
4,439,813
4,439,828
4,439,842
4,439,856
37 : 4,438,775
4,438,994

4,438,997
4,439,233
4,439,368
4,439,764
4,439,859
39 : 4,438,534
4,438,541
4,438,579
4,438,584
4,438,599
4,438,600
4,438,614
4,438,662
4,438,778
4,438,808
4,438,856
4,438,906
4,438,950
4,439,051
4,439,125
4,439,141
4,439,148
4,439,211
4,439,242
4,439,299
4,439,300
4,439,335
4,439,394
4,439,443
4,439,465
4,439,474
4,439,542
4,439,564
4,439,594
4,439,621
4,439,656
4,439,661
4,439,733
4,439,758
4,439,789
4,439,837
4,184,134
40 : 4,438,729
4,438,933
4,438,977
4,438,996
4,439,114
4,439,295
4,439,314
4,439,334
4,439,337
4,439,383
4,439,400
4,439,523
4,439,525
4,439,536
4,439,543
4,439,801
41 : Re.31,545
4,438,688
4,438,756
4,438,872
4,438,876
4,438,899
4,439,086
4,439,094
4,439,209
4,439,323
4,439,432
4,321,956
42 : Re.31,542
4,438,670
4,438,671
4,438,703
4,438,768
4,438,773
4,438,777
4,438,792
4,438,821
4,438,831
4,438,854

4,438,864
4,438,885
4,438,975
4,438,998
4,439,000
4,439,054
4,439,082
4,439,084
4,439,097
4,439,108
4,439,159
4,439,194
4,439,202
4,439,210
4,439,218
4,439,229
4,439,239
4,439,254
4,439,264
4,439,304
4,439,307
4,439,351
4,439,359
4,439,422
4,439,503
4,439,514
4,439,547
4,439,556
4,439,558
4,439,580
4,439,593
4,439,638
4,439,645
4,439,691
4,439,709
4,439,712
4,439,719
4,439,737
4,439,823
4,210,376
44 : 4,438,564
4,438,799
4,439,450
4,439,451
4,439,736
4,439,754
45 : 4,438,820
4,438,890
4,439,071
4,439,180
4,439,478
47 : 4,438,635
4,438,699
4,438,845
4,438,961
4,439,080
4,439,278
4,439,298
4,439,317
4,439,382
4,439,487
4,439,491
4,439,598
48 : 4,438,535
4,438,546
4,438,557
4,438,577
4,438,625
4,438,633
4,438,658
4,438,687
4,438,720
4,438,754
4,438,761
4,438,810
4,438,811
4,438,814
4,438,817
4,438,822
4,438,868
4,438,900

4,438,901
4,438,910
4,438,934
4,438,953
4,438,955
4,438,957
4,439,025
4,439,036
4,439,050
4,439,068
4,439,069
4,439,091
4,439,161
4,439,167
4,439,243
4,439,244
4,439,249
4,439,288
4,439,315
4,439,333
4,439,350
4,439,398
4,439,490
4,439,497
4,439,532
4,439,546
4,439,549
4,439,550
4,439,551
4,439,624
4,439,637
4,439,676
4,439,677
4,439,678
4,439,730
4,439,766
4,439,776
4,439,821
4,439,831
4,439,863
49 : 4,438,637
4,439,354
4,439,666
4,439,800
50 : 4,438,823
4,438,849
51 : 4,438,771
4,438,782
4,438,850
4,438,902
4,439,267
4,439,269
4,439,663
4,439,727
4,439,814
4,439,861
53 : 4,438,569
4,438,581
4,438,603
4,438,610
4,438,611
4,438,648
4,438,795
4,438,825
4,439,032
4,439,723
4,439,738
54 : 4,438,911
55 : 4,438,673
4,438,755
4,438,838
4,438,852
4,438,964
4,438,993
4,439,115
4,439,138
4,439,145
4,439,522
4,439,721
56 : 4,438,568

DESIGN PATENTS

01 : 273,177
05 : 273,222
06 : 273,161
273,164
273,166
273,169
273,176
273,178
273,191
273,217
273,226

273,228
273,243
08 : 273,230
09 : 273,159
273,193
12 : 273,156
273,158
273,189
273,208
17 : 273,182
273,183

273,195
273,196
273,204
273,227
18 : 273,197
22 : 273,232
24 : 273,216
273,224
273,237
25 : 273,168
273,171

273,225
26 : 273,150
273,160
273,184
273,186
28 : 273,238
29 : 273,202
33 : 273,149
34 : 273,180
273,231
273,239

273,240
36 : 273,153
273,155
273,165
273,179
273,181
273,205
273,206
273,207
273,209
273,212

273,213
273,214
273,215
273,223
42 : 273,175
47 : 273,151
273,152
48 : 273,194
273,203
51 : 273,242
53 : 273,162

PLANT PATENTS

06 : 5,210

5,211

5,212

U.S. GOVERNMENT PRINTING OFFICE : O—1984

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST
COMPANY NAME OR ADDITIONAL ADDRESS LINE
STREET ADDRESS
CITY | STATE | ZIP CODE
(or) COUNTRY

PLEASE PRINT OR TYPE

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM
ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST
COMPANY NAME OR ADDITIONAL ADDRESS LINE
STREET ADDRESS
CITY | STATE | ZIP CODE
(or) COUNTRY

PLEASE PRINT OR TYPE

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL NO 1040

MARCH

1984

MICRO PHOTO DIVISION
BELL & HOWELL

END